

**Appendix A. Ocean Plan with the proposed Desalination Amendment and other non-substantive changes in blue strikeout or underline**

**Associated with the Draft Staff Report Including the Draft Substitute Environmental Documentation for the Proposed Desalination Amendment**

**WATER QUALITY CONTROL PLAN  
OCEAN WATERS OF CALIFORNIA**



**20125**

**STATE WATER RESOURCES CONTROL BOARD**  
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY



**State of California**

*Edmund G. Brown Jr. Governor*

**California Environmental Protection Agency**

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**State Water Resources Control Board**

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*Tam M. Doduc, Member*

*Steven Moore, Member*

*[Dorene D'Adamo](#) ~~Felicia Marcus~~, Member*

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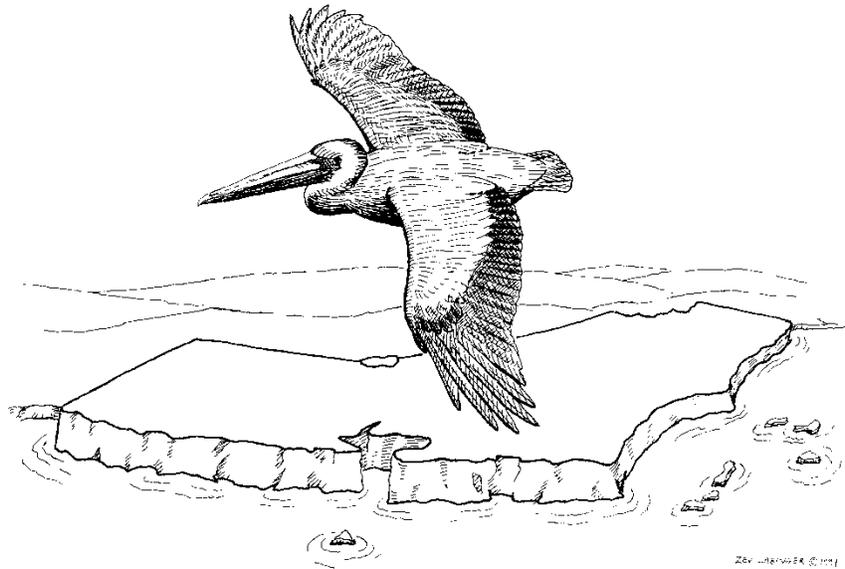
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State of California

STATE WATER RESOURCES CONTROL BOARD



20125

**CALIFORNIA OCEAN PLAN**

WATER QUALITY CONTROL PLAN

OCEAN WATERS OF CALIFORNIA

**Effective August 19, 2013**

**Adopted October 16, 2012**

**Approved by the Office of Administrative Law on July 03, 2013**

**STATE WATER RESOURCES CONTROL BOARD  
RESOLUTION NO. 2012-0056**

ADOPTING THE CALIFORNIA OCEAN PLAN AMENDMENT IMPLEMENTING STATE  
WATER BOARD RESOLUTIONS 2010-0057 AND 2011-0013  
REGARDING STATE WATER QUALITY PROTECTION AREAS AND MARINE  
PROTECTED AREAS

WHEREAS:

1. The State Water Resources Control Board (State Water Board) adopted the California Ocean Plan (Ocean Plan) in 1972 and revised it in 1978, 1983, 1988, 1990, 1997, 2001, 2005 and 2009.
2. The State Water Board is responsible for reviewing Ocean Plan water quality standards and for modifying and adopting standards in accordance with Section 303 (c)(1) of the federal Clean Water Act and section 13170.2(b) of the California Water Code.
3. On November 16, 2010, the State Water Board adopted Resolution No. 2010–0057, Marine Protected Areas and State Water Quality Protection Areas. The Resolution directed State Water Board staff to propose amendments to the Ocean Plan to address designation of new State Water Quality Protection Areas and to clarify requirements for existing discharges relative to Marine Protected Areas.
4. On March 15, 2011, the State Water Board adopted the Triennial Review Workplan 2011-2013, in Resolution No. 2011-0013, which included under Issue 1 direction to staff to propose an amendment to the Ocean Plan addressing State Water Quality Protection Areas and Marine Protected Areas.
5. On July 8, 2011, the State Water Board held a scoping meeting regarding potential Ocean Plan Amendments to solicit input from public agencies and members of the public on the scope and content of the substitute environmental documentation to be prepared in support of the amendment.
6. On May 1, 2012, the State Water Board conducted a public hearing. Twenty- four written public comments were received and reviewed. Staff considered comments and input from Board Members and the public and drafted revisions to the proposed amendments and draft SED, which were circulated on February 28, 2012.
7. On August 22, 2012, the State Water Board conducted a public workshop to consider changes proposed by staff in response to comments received. A written comment period from July 31, 2012 through August 31, 2012, allowed for submission of comments on the changes from the earlier draft documents.

8. The Ocean Plan is clear that there shall not be degradation of marine communities or other exceedances of water quality objectives due to waste discharges. This is true for all near coastal ocean waters, regardless of whether a Marine Protected Area is present. If sound scientific information becomes available demonstrating that discharges are causing or contributing to the degradation of marine communities, or causing or contributing to the exceedance of narrative or numeric water quality objectives, then new or modified limitations or conditions may be placed in the NPDES permit to provide protections for marine life, both inside and outside of Marine Protected Areas.
9. The State Water Board prepared and circulated a draft Substitute Environmental Document (SED) in accordance with the provisions of the California Environmental Quality Act and title 14, California Code of Regulations section 15251(g) and in compliance with State Water Board regulations governing certified regulatory programs. (See Cal. Code Regs., tit. 23, § 3777) The SED consists of the draft SED dated January 6, 2012, and updated on February 23 and July 25, 2012, and responses to comments on the draft SED and the proposed project. Together, these documents constitute the required environmental documentation under CEQA. (See Cal. Code Regs., tit. 14, §§ 15250, 15252; Cal. Code of Regs., tit. 23, § 3777.)
10. The State Water Board has considered the SED, which analyzes the project, alternatives to the project and reasonably foreseeable methods of compliance with the proposed amendments and concludes that the project will not result in adverse environmental impacts.
11. These amendments to the Ocean Plan do not become effective until approved by the Office of Administrative Law (OAL).

THEREFORE BE IT RESOLVED THAT:

The State Water Board:

1. After considering the entire record, including oral comments at the public hearing, adopts the State Water Quality Protection Areas and Marine Protected Areas amendment to the Ocean Plan.
2. Approves the [final SED](#), which includes the responses to comments, and directs the Executive Director or designee to transmit the Notice of Decision to the Secretary of Resources.
3. Authorizes the Executive Director or designee to submit the amended Ocean Plan to OAL for review and approval.
4. Directs the Executive Director or designee to make minor, non-substantive modifications to the language of the amendment, if OAL determines during its

approval process that such changes are needed, and inform the State Water Board of any such changes.

### CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on October 16, 2012.

AYE: Chairman Charles R. Hoppin  
Vice Chair Frances Spivy-Weber  
Board Member Tam M. Doduc  
Board Member Steven Moore  
Board Member Felicia Marcus

NAY: None

ABSENT: None

ABSTAIN: None



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Jeanine Townsend  
Clerk to the Board

**STATE WATER RESOURCES CONTROL  
BOARD RESOLUTION NO. 2012-0057**

ADOPTION OF THE CALIFORNIA OCEAN PLAN AMENDMENTS  
REGARDING MODEL MONITORING, VESSEL DISCHARGES, AND NON-  
SUBSTANTIVE CHANGES

WHEREAS:

1. The State Water Resources Control Board (State Water Board) adopted the California Ocean Plan (Ocean Plan) in 1972 and revised it in 1978, 1983, 1988, 1990, 1997, 2001, 2005 and 2009.
2. The State Water Board is responsible for reviewing Ocean Plan water quality standards and for modifying and adopting standards in accordance with Section 303 (c)(1) of the federal Clean Water Act and section 13170.2(b) of the California Water Code.
3. On August 1, 8, and 15, of 2006, the State Water Board conducted public scoping meetings in Santa Rosa, Los Angeles, and Monterey respectively to receive public comments for potential revisions to the Ocean Plan.
4. On June 26, 2007, the State Water Board held a public scoping meeting in San Francisco regarding potential Ocean Plan Amendments and solicited public comments on the scope and content of the environmental information that the State Water Board must consider.
5. On March 15, 2011, the State Water Board adopted the Ocean Plan Triennial Review Work Plan for 2011-2013 by Resolution 2011-0013. The work plan identifies issues for which further action is needed, including model monitoring, vessel discharges, and non- substantive changes, which are addressed by the proposed amendments to the Ocean Plan.
6. On November 1, 2011, the State Water Board conducted a public hearing for the proposed amendments to the Ocean Plan. Public comments were received and reviewed, and staff developed edits based on these comments.
7. On August 22, 2012, the State Water Board conducted a public workshop, where the State Water Board solicited comments on staff edits to the proposed amendments to the Ocean Plan related to model monitoring, vessel discharges and non-substantive changes.
8. The State Water Board prepared and circulated a draft Substitute Environmental Document (SED) in accordance with the provisions of the California Environmental Quality Act and title 14, California Code of Regulations section 15251(g) and in compliance with State Water Board regulations governing certified regulatory

programs. (See Cal. Code Regs., tit. 23, § 3777) The SED consists of the draft SED dated January 6, 2012, and updated on February 23 and July 25, 2012, and responses to comments on the draft SED and the proposed project. Together, these documents constitute the required environmental documentation under CEQA. (See Cal. Code Regs., tit. 14, §§ 15250, 15252; Cal. Code of Regs., tit. 23, § 3777.)

9. The State Water Board has considered the SED, which analyzes the project, alternative to the project and reasonably foreseeable methods of compliance with the proposed amendments and concludes that the project will not result in adverse environmental impacts.
10. These amendments to the Ocean Plan do not become effective until approved by the Office of Administrative Law (OAL).

THEREFORE BE IT RESOLVED THAT:

The State Water Board:

1. After considering the entire record, including oral comments at the public hearing, adopts the proposed amendments to the Ocean Plan regarding model monitoring, vessel discharges and non-substantive administrative changes.
2. Approve the [final SED](#), which includes the response to comments and directs the Executive Director or designee to transmit the Notice of Decision to the Secretary of Resources.
3. Authorizes the Executive Director or designee to submit the amended Ocean Plan to OAL for review and approval.
4. Directs the Executive Director or designee to make minor, non-substantive modifications to the language of the Policy, if during the OAL approval process, OAL determines that such changes are needed for clarity or consistency, and inform the State Water Board of any changes.

## CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on October 16, 2012.

AYE: Chairman Charles R. Hoppin  
Vice Chair Frances Spivy-Weber  
Board Member Tam M. Doduc  
Board Member Steven Moore  
Board Member Felicia Marcus  
NAY: None  
ABSENT: None  
ABSTAIN: None

  
\_\_\_\_\_  
Jeanine Townsend  
Clerk to the Board

# CALIFORNIA OCEAN PLAN

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**CALIFORNIA OCEAN PLAN**  
**WATER QUALITY CONTROL PLAN FOR**  
**OCEAN WATERS OF CALIFORNIA**

**INTRODUCTION**

A. Purpose and Authority

1. In furtherance of legislative policy set forth in Section 13000 of Division 7 of the California Water Code (CWC) (Stats. 1969, Chap. 482) pursuant to the authority contained in Section 13170 and 13170.2 (Stats. 1971, Chap. 1288) the State Water Resources Control Board (State Water Board) hereby finds and declares that protection of the quality of the ocean\* waters for use and enjoyment by the people of the State requires control of the discharge of waste\* to ocean\* waters and control of the intake of seawater\* in accordance with the provisions contained herein. The Board finds further that this plan shall be reviewed at least every three years to guarantee that the current standards are adequate and are not allowing degradation\* to marine species or posing a threat to public health.

B. Principles

1. Harmony Among Water Quality Control Plans and Policies.
  - a. In the adoption and amendment of water quality control plans, it is the intent of this Board that each plan will provide for the attainment and maintenance of the water quality standards of downstream waters.\*
  - b. To the extent there is a conflict between a provision of this plan and a provision of another statewide plan or policy, or a regional water quality control plan (basin plan), the more stringent provision shall apply except where pursuant to chapter III.J of this Plan, the State Water Board has approved an exception to the Plan requirements, and except in chapter III.M, in which the provisions of this plan shall govern.

C. Applicability

1. This plan is applicable, in its entirety, to point source discharges to the ocean\*.\* Nonpoint sources of waste\* discharges to the ocean\* are subject to Chapter I Beneficial Uses, Chapter II - WATER QUALITY OBJECTIVES (wherein compliance with water quality objectives shall, in all cases, be determined by direct measurements in the receiving waters\*) and Chapter III - PROGRAM OF IMPLEMENTATION Parts A.2, D, E, and I.
2. This plan is not applicable to discharges to enclosed\* bays and estuaries\* or inland waters or the control of dredged\* material.\*

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\* See Appendix I for definition of terms.

3. Provisions regulating the thermal aspects of waste\* discharged to the ocean\* are set forth in the Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and Enclosed\* Bays and Estuaries\* of California.
4. [Provisions regulating the intake of seawater\\* for desalination facilities\\* are established pursuant to the authority contained in section 13142.5, subdivision \(b\) of the California Water Code \(Stats. 1976, Chap. 1330\).](#)
5. Within this Plan, references to the State Board or State Water Board shall mean the State Water Resources Control Board. References to a Regional Board or Regional Water Board shall mean a California Regional Water Quality Control Board. References to the Environmental Protection Agency, USEPA, or EPA shall mean the federal Environmental Protection Agency.

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\* See Appendix I for definition of terms.

## I. BENEFICIAL USES

- A. The beneficial uses of the ocean\* waters of the State that shall be protected include industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture\*; preservation and enhancement of designated Areas\* of Special Biological Significance (ASBS); rare and endangered species; marine habitat; fish migration; fish spawning and shellfish\* harvesting.

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\* See Appendix I for definition of terms.

## II. WATER QUALITY OBJECTIVES

### A. General Provisions

1. This chapter sets forth limits or levels of water quality characteristics for ocean\* waters to ensure the reasonable protection of beneficial uses and the prevention of nuisance. The discharge of waste\* shall not cause violation of these objectives.
2. The Water Quality Objectives and Effluent Limitations are defined by a statistical distribution when appropriate. This method recognizes the normally occurring variations in treatment efficiency and sampling and analytical techniques and does not condone poor operating practices.
3. Compliance with the water quality objectives of this chapter shall be determined from samples collected at stations representative of the area within the waste\* field where initial\* dilution is completed.

### B. Bacterial Characteristics

#### 1. Water-Contact Standards

Both the State Water Board and the California Department of Public Health (CDPH) have established standards to protect water contact recreation in coastal waters from bacterial contamination. Subsection a of this section contains bacterial objectives adopted by the State Water Board for ocean\* waters used for water contact recreation. Subsection b describes the bacteriological standards adopted by CDPH for coastal waters adjacent to public beaches and public water contact sports areas in ocean waters.

##### a. State Water Board Water-Contact Standards

- (1) Within a zone bounded by the shoreline and a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, and in areas outside this zone used for water contact sports, as determined by the Regional Board (i.e., waters designated as REC-1), but including all kelp\* beds,\* the following bacterial objectives shall be maintained throughout the water column:

30-day Geometric Mean – The following standards are based on the geometric mean of the five most recent samples from each site:

- i. Total coliform density shall not exceed 1,000 per 100 mL;
- ii. Fecal coliform density shall not exceed 200 per 100 mL; and
- iii. Enterococcus density shall not exceed 35 per 100 mL.

Single Sample Maximum:

- i. Total coliform density shall not exceed 10,000 per 100 mL;
- ii. Fecal coliform density shall not exceed 400 per 100 mL;
- iii. Enterococcus density shall not exceed 104 per 100 mL; and

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\* See Appendix I for definition of terms.

iv. Total coliform density shall not exceed 1,000 per 100 mL when the fecal coliform/total coliform ratio exceeds 0.1.

(2) The “Initial\* Dilution\* Zone” of wastewater outfalls shall be excluded from designation as “kelp\* beds\*” for purposes of bacterial standards, and Regional Boards should recommend extension of such exclusion zone where warranted to the State Water Board (for consideration under Chapter III.J-). Adventitious assemblages of kelp plants on waste discharge structures (e.g., outfall pipes and multiport diffusers\*) do not constitute kelp\* beds\* for purposes of bacterial standards.

b. CDPH Standards

CDPH has established minimum protective bacteriological standards for coastal waters adjacent to public beaches and for public water-contact sports areas in ocean\* waters. These standards are found in the California Code of Regulations, title 17, section 7958, and they are identical to the objectives contained in subsection a. above. When a public beach or public water-contact sports area fails to meet these standards, CDPH or the local public health officer may post with warning signs or otherwise restrict use of the public beach or public water-contact sports area until the standards are met. The CDPH regulations impose more frequent monitoring and more stringent posting and closure requirements on certain high-use public beaches that are located adjacent to a storm drain that flows in the summer.

For beaches not covered under AB 411 regulations, CDPH imposes the same standards as contained in Title 17 and requires weekly sampling but allows the county health officer more discretion in making posting and closure decisions.

2. Shellfish\* Harvesting Standards

a. At all areas where shellfish\* may be harvested for human consumption, as determined by the Regional Board, the following bacterial objectives shall be maintained throughout the water column:

(1) The median total coliform density shall not exceed 70 per 100 mL, and not more than 10 percent of the samples shall exceed 230 per 100 mL.

C. Physical Characteristics

1. Floating particulates and grease and oil shall not be visible.
2. The discharge of waste\* shall not cause aesthetically undesirable discoloration of the ocean\* surface.
3. Natural\* light\* shall not be significantly\* reduced at any point outside the initial\* dilution zone as the result of the discharge of waste\*.\*

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\* See Appendix I for definition of terms.

4. The rate of deposition of inert solids and the characteristics of inert solids in ocean\* sediments shall not be changed such that benthic communities are degraded\*..\*

D. Chemical Characteristics

1. The dissolved oxygen concentration shall not at any time be depressed more than 10 percent from that which occurs naturally, as the result of the discharge of oxygen demanding waste\* materials.\*.
2. The pH shall not be changed at any time more than 0.2 units from that which occurs naturally.
3. The dissolved sulfide concentration of waters in and near sediments shall not be significantly\* increased above that present under natural conditions.
4. The concentration of substances set forth in Chapter II, Table 1, in marine sediments shall not be increased to levels which would degrade\* indigenous biota.
5. The concentration of organic materials\* in marine sediments shall not be increased to levels that would degrade\* marine life.
6. Nutrient materials\* shall not cause objectionable aquatic growths or degrade\* indigenous biota.
7. Numerical Water Quality Objectives
  - a. Table 1 water quality objectives apply to all discharges within the jurisdiction of this Plan. Unless otherwise specified, all metal concentrations are expressed as total recoverable concentrations.
  - b. Table 1 Water Quality Objectives

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\* See Appendix I for definition of terms.

**TABLE 1 (formerly TABLE B)  
WATER QUALITY OBJECTIVES**

	Units of Measurement	Limiting Concentrations		
		6-Month Median	Daily Maximum	Instantaneous Maximum
<b>OBJECTIVES FOR PROTECTION OF MARINE AQUATIC LIFE</b>				
Arsenic	µg/L	8.	32.	80.
Cadmium	µg/L	1.	4.	10.
Chromium (Hexavalent) (see below, a)	µg/L	2.	8.	20.
Copper	µg/L	3.	12.	30.
Lead	µg/L	2.	8.	20.
Mercury	µg/L	0.04	0.16	0.4
Nickel	µg/L	5.	20.	50.
Selenium	µg/L	15.	60.	150.
Silver	µg/L	0.7	2.8	7.
Zinc	µg/L	20.	80.	200.
Cyanide (see below, b)	µg/L	1.	4.	10.
Total Chlorine Residual (For intermittent chlorine sources see below, c)	µg/L	2.	8.	60.
Ammonia (expressed as nitrogen)	µg/L	600.	2400.	6000.
Acute* Toxicity	TUa	N/A	0.3	N/A
Chronic* Toxicity	TUc	N/A	1.	N/A
Phenolic Compounds (non-chlorinated)	µg/L	30.	120.	300.
Chlorinated Phenolics	µg/L	1.	4.	10.
Endosulfan*	µg/L	0.009	0.018	0.027
Endrin	µg/L	0.002	0.004	0.006
HCH*	µg/L	0.004	0.008	0.012
Radioactivity	Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, <a href="#">§§</a> section 30253 of the California Code of Regulations. Reference to <a href="#">§§</a> section 30253 is prospective, including future changes to any incorporated provisions of federal law, as the changes take effect.			

\* See Appendix I for definition of terms.

**TABLE 1 (formerly TABLE B) Continued**

Chemical	30-day Average (µg/L)	
	Decimal Notation	Scientific Notation
<b>OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – NONCARCINOGENS</b>		
acrolein	220.	$2.2 \times 10^2$
antimony	1,200.	$1.2 \times 10^3$
bis(2-chloroethoxy) methane	4.4	$4.4 \times 10^0$
bis(2-chloroisopropyl) ether	1,200.	$1.2 \times 10^3$
chlorobenzene	570.	$5.7 \times 10^2$
chromium (III)	190,000.	$1.9 \times 10^5$
di-n-butyl phthalate	3,500.	$3.5 \times 10^3$
dichlorobenzenes*	5,100.	$5.1 \times 10^3$
diethyl phthalate	33,000.	$3.3 \times 10^4$
dimethyl phthalate	820,000.	$8.2 \times 10^5$
4,6-dinitro-2-methylphenol	220.	$2.2 \times 10^2$
2,4-dinitrophenol	4.0	$4.0 \times 10^0$
ethylbenzene	4,100.	$4.1 \times 10^3$
fluoranthene	15.	$1.5 \times 10^1$
hexachlorocyclopentadiene	58.	$5.8 \times 10^1$
nitrobenzene	4.9	$4.9 \times 10^0$
thallium	2.	$2. \times 10^0$
toluene	85,000.	$8.5 \times 10^4$
tributyltin	0.0014	$1.4 \times 10^{-3}$
1,1,1-trichloroethane	540,000.	$5.4 \times 10^5$
<b>OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS</b>		
acrylonitrile	0.10	$1.0 \times 10^{-1}$
aldrin	0.000022	$2.2 \times 10^{-5}$
benzene	5.9	$5.9 \times 10^0$
benzidine	0.000069	$6.9 \times 10^{-5}$
beryllium	0.033	$3.3 \times 10^{-2}$
bis(2-chloroethyl) ether	0.045	$4.5 \times 10^{-2}$
bis(2-ethylhexyl) phthalate	3.5	$3.5 \times 10^0$
carbon tetrachloride	0.90	$9.0 \times 10^{-1}$
chlordane*	0.000023	$2.3 \times 10^{-5}$
chlorodibromomethane	8.6	$8.6 \times 10^0$

\* See Appendix I for definition of terms.

**TABLE 1 (formerly TABLE B) Continued**

Chemical	30-day Average ( $\mu\text{g/L}$ )	
	Decimal Notation	Scientific Notation
<b>OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS</b>		
chloroform	130.	$1.3 \times 10^2$
DDT*	0.00017	$1.7 \times 10^{-4}$
1,4-dichlorobenzene	18.	$1.8 \times 10^1$
3,3'-dichlorobenzidine	0.0081	$8.1 \times 10^{-3}$
1,2-dichloroethane	28.	$2.8 \times 10^1$
1,1-dichloroethylene	0.9	$9 \times 10^{-1}$
dichlorobromomethane	6.2	$6.2 \times 10^0$
dichloromethane	450.	$4.5 \times 10^2$
1,3-dichloropropene	8.9	$8.9 \times 10^0$
dieldrin	0.00004	$4.0 \times 10^{-5}$
2,4-dinitrotoluene	2.6	$2.6 \times 10^0$
1,2-diphenylhydrazine	0.16	$1.6 \times 10^{-1}$
halomethanes*	130.	$1.3 \times 10^2$
heptachlor	0.00005	$5 \times 10^{-5}$
heptachlor epoxide	0.00002	$2 \times 10^{-5}$
hexachlorobenzene	0.00021	$2.1 \times 10^{-4}$
hexachlorobutadiene	14.	$1.4 \times 10^1$
hexachloroethane	2.5	$2.5 \times 10^0$
isophorone	730.	$7.3 \times 10^2$
N-nitrosodimethylamine	7.3	$7.3 \times 10^0$
N-nitrosodi-N-propylamine	0.38	$3.8 \times 10^{-1}$
N-nitrosodiphenylamine	2.5	$2.5 \times 10^0$
PAHs*	0.0088	$8.8 \times 10^{-3}$
PCBs*	0.000019	$1.9 \times 10^{-5}$
TCDD equivalents*	0.0000000039	$3.9 \times 10^{-9}$
1,1,2,2-tetrachloroethane	2.3	$2.3 \times 10^0$
tetrachloroethylene	2.0	$2.0 \times 10^0$
toxaphene	0.00021	$2.1 \times 10^{-4}$
trichloroethylene	27.	$2.7 \times 10^1$
1,1,2-trichloroethane	9.4	$9.4 \times 10^0$
2,4,6-trichlorophenol	0.29	$2.9 \times 10^{-1}$
vinyl chloride	36.	$3.6 \times 10^1$

\* See Appendix I for definition of terms.

Table 1 Notes:

- a) Dischargers may at their option meet this objective as a total chromium objective.
- b) If a discharger can demonstrate to the satisfaction of the Regional Water Board (subject to EPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by the combined measurement of free cyanide, simple alkali metal cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR PART 136, as revised May 14, 1999.
- c) Water quality objectives for total chlorine residual applying to intermittent discharges not exceeding two hours, shall be determined through the use of the following equation:

$$\log y = -0.43 (\log x) + 1.8$$

where: y = the water quality objective (in µg/L) to apply when chlorine is being discharged;  
x = the duration of uninterrupted chlorine discharge in minutes.

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E. Biological Characteristics

1. Marine communities, including vertebrate, invertebrate, [algae](#), and plant species, shall not be degraded<sup>\*,\*</sup>
2. The natural taste, odor, and color of fish, shellfish<sup>\*,\*</sup>, or other marine resources used for human consumption shall not be altered.
3. The concentration of organic materials<sup>\*,\*</sup> in fish, shellfish\* or other marine resources used for human consumption shall not bioaccumulate to levels that are harmful to human health.

F. Radioactivity

1. Discharge of radioactive waste\* shall not degrade\* marine life.

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\* See Appendix I for definition of terms.

### III. PROGRAM OF IMPLEMENTATION

#### A. General Provisions

##### 1. Effective Date

- a. The *Water Quality Control Plan, Ocean Waters of California, California Ocean Plan* was adopted and has been effective since 1972. There have been multiple amendments of the Ocean Plan since its adoption.

##### 2. General Requirements For Management Of Waste Discharge To The Ocean\*

- a. Waste\* management systems that discharge to the ocean\* must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community.
- b. Waste\* discharged\* to the ocean\* must be essentially free of:
  - (1) Material\* that is floatable or will become floatable upon discharge.
  - (2) Settleable material\* or substances that may form sediments which will degrade\* benthic communities or other aquatic life.
  - (3) Substances which will accumulate to toxic levels in marine waters, sediments or biota.
  - (4) Substances that significantly\* decrease the natural\* light\* to benthic communities and other marine life.
  - (5) Materials\* that result in aesthetically undesirable discoloration of the ocean\* surface.
- c. Waste\* effluents shall be discharged in a manner which provides sufficient initial\* dilution to minimize the concentrations of substances not removed in the treatment.
- d. Location of waste\* discharges must be determined after a detailed assessment of the oceanographic characteristics and current patterns to assure that:
  - (1) Pathogenic organisms and viruses are not present in areas where shellfish\* are harvested for human consumption or in areas used for swimming or other body-contact sports.
  - (2) Natural water quality conditions are not altered in areas designated as being of special biological significance or areas that existing marine laboratories use as a source of seawater.\*
  - (3) Maximum protection is provided to the marine environment.

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\* See Appendix I for definition of terms.

e. Waste\* that contains pathogenic organisms or viruses should be discharged a sufficient distance from shellfishing\* and water-contact sports areas to maintain applicable bacterial standards without disinfection. Where conditions are such that an adequate distance cannot be attained, reliable disinfection in conjunction with a reasonable separation of the discharge point from the area of use must be provided. Disinfection procedures that do not increase effluent toxicity and that constitute the least environmental and human hazard should be used.

3. Areas of Special Biological Significance\*

a. ASBS\* shall be designated by the State Water Board following the procedures provided in Appendix IV. A list of ASBS\* is available in Appendix V.

4. Combined Sewer Overflow: Notwithstanding any other provisions in this plan, discharges from the City of San Francisco’s combined sewer system are subject to the US EPA’s Combined Sewer Overflow Policy.

B. Table 2 Effluent Limitations

**TABLE 2 (formerly TABLE A)  
EFFLUENT LIMITATIONS**

		Limiting Concentrations		
	Unit of Measurement	Monthly (30-day Average)	Weekly (7-day Average)	Maximum at any time
Grease and Oil	mg/L	25.	40.	75.
Suspended Solids			See below +	
Settleable Solids	mL/L	1.0	1.5	3.0
Turbidity	NTU	75.	100.	225.
pH	Units		Within limit of 6.0 to 9.0 at all times	

Table 2 Notes:

+ Suspended Solids: Dischargers shall, as a 30-day average, remove 75% of suspended solids from the influent stream before discharging wastewaters to the ocean\*, except that the effluent limitation to be met shall not be lower than 60 mg/l. Regional Boards may recommend that the State Water Board (Chapter III- section J), with the concurrence of the Environmental Protection Agency, adjust the lower effluent concentration limit (the 60 mg/l above) to suit the environmental and effluent characteristics of the discharge. As a further consideration in making such recommendation for adjustment, Regional Water Boards should evaluate effects on existing and potential water\* reclamation projects.

If the lower effluent concentration limit is adjusted, the discharger shall remove 75% of suspended solids from the influent stream at any time the influent concentration exceeds four times such adjusted effluent limit.

1. Table 2 effluent limitations apply only to publicly owned treatment works and industrial discharges for which Effluent Limitations Guidelines have not been established pursuant to Sections 301, 302, 304, or 306 of the Federal Clean Water Act.

\* See Appendix I for definition of terms.

2. Table 2 effluent limitations shall apply to a discharger's total effluent, of whatever origin (i.e., gross, not net, discharge), except where otherwise specified in this Plan.
3. The State Water Board is authorized to administer and enforce effluent limitations established pursuant to the Federal Clean Water Act. Effluent limitations established under Sections 301, 302, 306, 307, 316, 403, and 405 of the aforementioned Federal Act and administrative procedures pertaining thereto are included in this plan by reference. Compliance with Table 2 effluent limitations, or Environmental Protection Agency Effluent Limitations Guidelines for industrial discharges, based on Best Practicable Control Technology, shall be the minimum level\* of treatment acceptable under this plan, and shall define reasonable treatment and waste\* control technology.
4. Compliance with Table 2 effluent limitations for brine discharges from desalination facilities that commingle brine and wastewater prior to discharge to the ocean may be measured after the brine has been commingled with wastewater, provided that the permittee for the commingled discharge accepts responsibility for any exceedances of the Table 2 effluent limitations.

C. Implementation Provisions for Table 1

1. Effluent concentrations calculated from Table 1 water quality objectives shall apply to a discharger's total effluent, of whatever origin (i.e., gross, not net, discharge), except where otherwise specified in this Plan.
2. If the Regional Water Board determines, using the procedures in Appendix VI, that a pollutant is discharged into ocean\* waters at levels which will cause, have the reasonable potential to cause, or contribute to an excursion above a Table 1 water quality objective, the Regional Water Board shall incorporate a water quality-based effluent limitation in the Waste Discharge Requirement for the discharge of that pollutant.
3. Effluent limitations shall be imposed in a manner prescribed by the State Water Board such that the concentrations set forth below as water quality objectives shall not be exceeded in the receiving water\* upon completion of initial\* dilution, except that objectives indicated for radioactivity shall apply directly to the undiluted waste\* effluent.
4. Calculation of Effluent Limitations
  - a. Effluent limitations for water quality objectives listed in Table 1, with the exception of acute\* toxicity and radioactivity shall be determined through the use of the following equation:

**Equation 1:**  $C_e = C_o + D_m (C_o - C_s)$

where:

$C_e$  = the effluent concentration limit,  $\mu\text{g/L}$

$C_o$  = the concentration (water quality objective) to be met at the completion of initial\* dilution,  $\mu\text{g/L}$

$C_s$  = background seawater\* concentration (see Table 3 below, with all metals expressed as total recoverable concentrations),  $\mu\text{g/L}$

$D_m$  = minimum probable initial\* dilution expressed as parts seawater\* per part wastewater.

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\* See Appendix I for definition of terms.

Waste Constituent	Cs (µg/L)
Arsenic	3.
Copper	2.
Mercury	0.0005
Silver	0.16
Zinc	8.
For all other Table 1 parameters, Cs = 0.	

b. Determining a Mixing Zone for the Acute<sup>\*</sup> Toxicity<sub>u</sub> Objective

The mixing zone for the acute<sup>\*</sup> toxicity<sub>u</sub> objective shall be ten percent (10%) of the distance from the edge of the outfall structure to the edge of the chronic mixing zone (zone of initial dilution<sub>u</sub>). There is no vertical limitation on this zone. The effluent limitation for the acute<sup>\*</sup> toxicity<sub>u</sub> objective listed in Table 1 shall be determined through the use of the following equation:

**Equation 2:**  $C_e = C_a + (0.1) D_m (C_a)$

where:

$C_a$  = the concentration (water quality objective) to be met at the edge of the acute mixing zone.

$D_m$  = minimum probable initial<sup>\*</sup> dilution expressed as parts seawater<sub>u</sub> per part wastewater (This equation applies only when  $D_m > 24$ ).

c. Toxicity Testing Requirements based on the Minimum Initial<sup>\*</sup> Dilution Factor for Ocean Waste<sub>u</sub> Discharges

- (1) Dischargers shall conduct acute<sup>\*</sup> toxicity<sub>u</sub> testing if the minimum initial<sup>\*</sup> dilution of the effluent is greater than 1,000:1 at the edge of the mixing zone.
- (2) Dischargers shall conduct either acute<sup>\*</sup> or chronic<sup>\*</sup> toxicity<sub>u</sub> testing if the minimum initial<sup>\*</sup> dilution ranges from 350:1 to 1,000:1 depending on the specific discharge conditions. The Regional Water Board shall make this determination.
- (3) Dischargers shall conduct chronic<sup>\*</sup> toxicity<sub>u</sub> testing for ocean waste<sub>u</sub> discharges with minimum initial<sup>\*</sup> dilution factors ranging from 100:1 to 350:1. The Regional Water Board may require that acute toxicity<sub>u</sub> testing be

\* See Appendix I for definition of terms.

conducted in addition to chronic as necessary for the protection of beneficial uses of ocean<sub>u</sub> waters.

- (4) Dischargers shall conduct chronic toxicity<sub>u</sub> testing if the minimum initial\* dilution of the effluent falls below 100:1 at the edge of the mixing zone.
- d. For the purpose of this Plan, minimum initial\* dilution is the lowest average initial\* dilution within any single month of the year. Dilution estimates shall be based on observed waste<sub>u</sub> flow characteristics, observed receiving water\* density structure, and the assumption that no currents, of sufficient strength to influence the initial\* dilution process, flow across the discharge structure.
  - e. The Executive Director of the State Water Board shall identify standard dilution models for use in determining Dm, and shall assist the Regional Board in evaluating Dm for specific waste<sub>u</sub> discharges. Dischargers may propose alternative methods of calculating Dm, and the Regional Board may accept such methods upon verification of its accuracy and applicability.
  - f. The six-month median shall apply as a moving median of daily values for any 180-day period in which daily values represent flow weighted average concentrations within a 24-hour period. For intermittent discharges, the daily value shall be considered to equal zero for days on which no discharge occurred.
  - g. The daily maximum shall apply to flow weighted 24 hour composite samples.
  - h. The instantaneous maximum shall apply to grab sample determinations.
  - i. If only one sample is collected during the time period associated with the water quality objective (e.g., 30-day average or 6-month median), the single measurement shall be used to determine compliance with the effluent limitation for the entire time period.
  - j. Discharge requirements shall also specify effluent limitations in terms of mass emission rate limits utilizing the general formula:

$$\text{Equation 3: lbs/day} = 0.00834 \times C_e \times Q$$

where:

$C_e$  = the effluent concentration limit,  $\mu\text{g/L}$

$Q$  = flow rate, million gallons per day (MGD)

- k. The six-month median limit on daily mass emissions shall be determined using the six-month median effluent concentration as  $C_e$  and the observed flow rate  $Q$  in millions of gallons per day. The daily maximum mass emission shall be determined using the daily maximum effluent concentration limit as  $C_e$  and the observed flow rate  $Q$  in millions of gallons per day.
- l. Any significant<sub>u</sub> change in waste\* flow shall be cause for reevaluating effluent limitations.

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\* See Appendix I for definition of terms.

## 5. Minimum\* Levels

For each numeric effluent limitation, the Regional Board must select one or more Minimum\* Levels (and their associated analytical methods) for inclusion in the permit. The “reported” Minimum\* Level is the Minimum\* Level (and its associated analytical method) chosen by the discharger for reporting and compliance determination from the Minimum\* Levels included in their permit.

### a. Selection of Minimum\* Levels from Appendix II

The Regional Water Board must select all Minimum\* Levels from Appendix II that are below the effluent limitation. If the effluent limitation is lower than all the Minimum\* Levels in Appendix II, the Regional Board must select the lowest Minimum\* Level from Appendix II.

### b. Deviations from Minimum\* Levels in Appendix II

The Regional Board, in consultation with the State Water Board’s Quality Assurance Program, must establish a Minimum\* Level to be included in the permit in any of the following situations:

1. A pollutant is not listed in Appendix II.
2. The discharger agrees to use a test method that is more sensitive than those described in 40 CFR 136 (revised May 14, 1999).
3. The discharger agrees to use a Minimum\* Level lower than those listed in Appendix II.
4. The discharger demonstrates that their calibration standard matrix is sufficiently different from that used to establish the Minimum\* Level in Appendix II and proposes an appropriate Minimum\* Level for their matrix.
5. A discharger uses an analytical method having a quantification practice that is not consistent with the definition of Minimum\* Level (e.g., US EPA methods 1613, 1624, 1625).

## 6. Use of Minimum\* Levels

- a. Minimum\* Levels in Appendix II represent the lowest quantifiable concentration in a sample based on the proper application of method-specific analytical procedures and the absence of matrix interferences. Minimum\* Levels also represent the lowest standard concentration in the calibration curve for a specific analytical technique after the application of appropriate method-specific factors.

Common analytical practices may require different treatment of the sample relative to the calibration standard. Some examples are given below:

<u>Substance or Grouping</u>	<u>Method-Specific Treatment</u>	<u>Most Common Factor</u>
Volatile Organics	No differential treatment	1
Semi-Volatile Organics	Samples concentrated by extraction	1000
Metals	Samples diluted or concentrated	½ , 2 , and 4

\* See Appendix I for definition of terms.

- b. Other factors may be applied to the Minimum\* Level depending on the specific sample preparation steps employed. For example, the treatment typically applied when there are matrix effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied during the computation of the reporting limit. Application of such factors will alter the reported Minimum\* Level.
- c. Dischargers are to instruct their laboratories to establish calibration standards so that the Minimum\* Level (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the discharger to use analytical data derived from *extrapolation* beyond the lowest point of the calibration curve. In accordance with [Section 4b](#), above, the discharger's laboratory may employ a calibration standard lower than the Minimum\* Level in Appendix II.

## 7. Sample Reporting Protocols

- a. Dischargers must report with each sample result the reported Minimum\* Level (selected in accordance with [Section 4](#), above) and the laboratory's current MDL\*.  
MDL\*.
- b. Dischargers must also report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:
  - (1) Sample results greater than or equal to the reported Minimum\* Level must be reported "as measured" by the laboratory (i.e., the measured chemical concentration in the sample).
  - (2) Sample results less than the reported Minimum\* Level, but greater than or equal to the laboratory's MDL\*. must be reported as "Detected, but Not Quantified", or DNQ. The laboratory must write the estimated chemical concentration of the sample next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc.").
  - (3) Sample results less than the laboratory's MDL\* must be reported as "Not Detected", or ND.

## 8. Compliance Determination

Sufficient sampling and analysis shall be required to determine compliance with the effluent limitation.

### a. Compliance with Single-Constituent Effluent Limitations

Dischargers are out of compliance with the effluent limitation if the concentration of the pollutant (see [Section 7c](#), below) in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum\* Level.

### b. Compliance with Effluent Limitations expressed as a Sum of Several Constituents

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\* See Appendix I for definition of terms.

Dischargers are out of compliance with an effluent limitation which applies to the sum of a group of chemicals (e.g., PCB's\*) if the sum of the individual pollutant concentrations is greater than the effluent limitation. Individual pollutants of the group will be considered to have a concentration of zero if the constituent is reported as ND or DNQ.

c. Multiple Sample Data Reduction

The concentration of the pollutant in the effluent may be estimated from the result of a single sample analysis or by a measure of central tendency (arithmetic mean, geometric mean, median, etc.) of multiple sample analyses when all sample results are quantifiable (i.e., greater than or equal to the reported Minimum\* Level). When one or more sample results are reported as ND or DNQ, the central tendency concentration of the pollutant shall be the median (middle) value of the multiple samples. If, in an even number of samples, one or both of the middle values is ND or DNQ, the median will be the lower of the two middle values.

d. Powerplants and Heat Exchange Dischargers

Due to the large total volume of powerplant and other heat exchange discharges, special procedures must be applied for determining compliance with Table 1 objectives on a routine basis. Effluent concentration values (Ce) shall be determined through the use of equation 1 considering the minimal probable initial dilution of the combined effluent (in-plant waste\* streams plus cooling water flow). These concentration values shall then be converted to mass emission limitations as indicated in equation 3. The mass emission limits will then serve as requirements applied to all in-plant waste\* streams taken together which discharge into the cooling water flow, except that limits for total chlorine residual, acute\* (if applicable per Ssection (3)(c)) and chronic\* toxicity\* and instantaneous maximum concentrations in Table 1 shall apply to, and be measured in, the combined final effluent, as adjusted for dilution with ocean water. The Table 1 objective for radioactivity shall apply to the undiluted combined final effluent.

9. Pollutant Minimization Program

a. Pollutant Minimization Program Goal

The goal of the Pollutant Minimization Program is to reduce all potential sources of a pollutant through pollutant minimization (control) strategies, including pollution prevention measures, in order to maintain the effluent concentration at or below the effluent limitation.

Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The completion and implementation of a Pollution Prevention Plan, required in accordance with CA Water Code Ssection 13263.3 (d) will fulfill the Pollution Minimization Program requirements in this section.

b. Determining the need for a Pollutant Minimization Program

1. The discharger must develop and conduct a Pollutant Minimization Program if all of the following conditions are true:

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\* See Appendix I for definition of terms.

- (a) The calculated effluent limitation is less than the reported Minimum\*  
Level\*
  - (b) The concentration of the pollutant is reported as DNQ
  - (c) There is evidence showing that the pollutant is present in the effluent above the calculated effluent limitation.
2. Alternatively, the discharger must develop and conduct a Pollutant Minimization Program if all of the following conditions are true:
  - (a) The calculated effluent limitation is less than the Method Detection Limit\*.\*
  - (b) The concentration of the pollutant is reported as ND.
  - (c) There is evidence showing that the pollutant is present in the effluent above the calculated effluent limitation.
- c. Regional Water Boards may include special provisions in the discharge requirements to require the gathering of evidence to determine whether the pollutant is present in the effluent at levels above the calculated effluent limitation. Examples of evidence may include:
  1. health advisories for fish consumption,
  2. presence of whole effluent toxicity,
  3. results of benthic or aquatic organism tissue sampling,
  4. sample results from analytical methods more sensitive than methods included in the permit (in accordance with [§](#)section 4b, above).
  5. the concentration of the pollutant is reported as DNQ and the effluent limitation is less than the MDL\*.
- d. Elements of a Pollutant Minimization Program  
The Regional Board may consider cost-effectiveness when establishing the requirements of a Pollutant Minimization Program. The program shall include actions and submittals acceptable to the Regional Board including, but not limited to, the following:
  1. An annual review and semi-annual monitoring of potential sources of the reportable pollutant, which may include fish tissue monitoring and other bio-uptake sampling;
  2. Quarterly monitoring for the reportable pollutant in the influent to the wastewater treatment system;
  3. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable pollutant in the effluent at or below the calculated effluent limitation;
  4. Implementation of appropriate cost-effective control measures for the pollutant, consistent with the control strategy; and,
  5. An annual status report that shall be sent to the Regional Board including:

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\* See Appendix I for definition of terms.

- (a) All Pollutant Minimization Program monitoring results for the previous year;
- (b) A list of potential sources of the reportable pollutant;
- (c) A summary of all action taken in accordance with the control strategy; and,
- (d) A description of actions to be taken in the following year.

#### 10. Toxicity Reduction Requirements

- a. If a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table 1, a toxicity reduction evaluation (TRE) is required. The TRE shall include all reasonable steps to identify the source of toxicity. Once the source(s) of toxicity is identified, the discharger shall take all reasonable steps necessary to reduce toxicity to the required level.
- b. The following shall be incorporated into waste\* discharge requirements: (1) a requirement to conduct a TRE if the discharge consistently exceeds its toxicity effluent limitation, and (2) a provision requiring a discharger to take all reasonable steps to reduce toxicity once the source of toxicity is identified.

#### D. Implementation Provisions for Bacterial Characteristics

##### 1. Water-Contact Monitoring

- a. Weekly samples shall be collected from each site. The geometric mean shall be calculated using the five most recent sample results.
- b. If a single sample exceeds any of the single sample maximum (SSM) standards, repeat sampling at that location shall be conducted to determine the extent and persistence of the exceedance. Repeat sampling shall be conducted within 24 hours of receiving analytical results and continued until the sample result is less than the SSM standard or until a sanitary survey is conducted to determine the source of the high bacterial densities.
  - i) Total coliform density will not exceed 10,000 per 100 mL; or
  - ii) Fecal coliform density will not exceed 400 per 100 mL; or
  - iii) Total coliform density will not exceed 1,000 per 100 mL when the ratio of fecal/total coliform exceeds 0.1;
  - iv) enterococcus density will not exceed 104 per 100 mL.

When repeat sampling is required because of an exceedance of any one single sample density, values from all samples collected during that 30-day period will be used to calculate the geometric mean.

- c. It is state policy that the geometric mean bacterial objectives are strongly preferred for use in water body assessment decisions, for example, in developing the Clean Water Act section 303(d) list of impaired waters, because the geometric mean objectives are a more reliable measure of long-term water body conditions. In

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\* See Appendix I for definition of terms.

making assessment decisions on bacterial quality, single sample maximum data must be considered together with any available geometric mean data. The use of only single sample maximum bacterial data is generally inappropriate unless there is a limited data set, the water is subject to short-term spikes in bacterial concentrations, or other circumstances justify the use of only single sample maximum data.

- d. For monitoring stations outside of the defined water-contact recreation zone (REC-1), samples will be analyzed for total coliform only.

E. Implementation Provisions for Marine Managed Areas\*

1. Section E addresses the following Marine Managed Areas\*:

(a) State Water Quality Protection Areas (SWQPAs)\* consisting of:

- (1) SWQPA – Areas of Special Biological Significance (ASBS)\* designated by the State Water Board that require special protections as defined under section 4 below.
- (2) SWQPA – General Protection (GP) designated by the State Water Board to protect water quality within Marine Protected Areas (MPAs) that require protection under the provisions described under section 5 below.

(b) Marine Protected Areas as defined in the California Public Resources Code as State Marine Reserves, State Marine Parks and State Marine Conservation Areas, established by the Fish and Game Commission, or the Parks and Recreation Commission.

2. The designation of State Marine Parks and State Marine Conservation Areas may not serve as the sole basis for new or modified limitations, substantive conditions, or prohibitions upon existing municipal point source wastewater discharge outfalls. This provision does not apply to State Marine Reserves.
3. The State Water Board may designate SWQPAs\* to prevent the undesirable alteration of natural water quality within MPAs. These designations may include either SWQPA-ASBS or SWQPA-GP or in combination. In considering the designation of SWQPAs over MPAs, the State Water Board will consult with the affected Regional Water Quality Control Board, the Department of Fish and Game and the Department of Parks and Recreation, in accordance with the requirements of Appendix IV.

4. Implementation Provisions For SWQPA-ASBS\*

- (a) Waste\* shall not be discharged to areas designated as being of special biological significance. Discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas.

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\* See Appendix I for definition of terms.

- (b) Regional Water Boards may approve waste\* discharge requirements or recommend certification for limited-term (i.e. weeks or months) activities in ASBS\*. Limited-term activities include, but are not limited to, activities such as maintenance/repair of existing boat facilities, restoration of sea walls, repair of existing storm water pipes, and replacement/repair of existing bridges. Limited-term activities may result in temporary and short-term changes in existing water quality. Water quality degradation shall be limited to the shortest possible time. The activities must not permanently degrade\* water quality or result in water quality lower than that necessary to protect existing uses, and all practical means of minimizing such degradation shall be implemented.

5. Implementation Provisions for SWQPAs-GP\*

(a) Implementation provisions for existing point source wastewater discharges (NPDES)

- (1) An SWQPA-GP shall not be designated over existing permitted point source wastewater outfalls or encroach upon the zone of initial dilution\* associated with an existing discharge. This requirement does not apply to discharges less than one million gallons per day.
- (2) Designation of an SWQPA-GP shall not include conditions to move existing point source wastewater outfalls.
- (3) Where a new SWQPA-GP is established in the vicinity of existing municipal wastewater outfalls, there shall be no new or modified limiting condition or prohibitions for the SWQPA-GP relative to those wastewater outfalls.
- (4) Regulatory requirements for discharges from existing treated municipal wastewater outfalls shall be derived from the Chapter II – Water Quality Objectives and Chapter III – Program of Implementation.

(b) Implementation provisions for existing seawater\* intakes

- (1) Existing permitted seawater\* intakes other than those serving desalination facilities\* must be controlled to minimize entrainment and impingement by using best technology available. Existing permitted seawater\* intakes with a capacity less than one million gallons per day are excluded from this requirement.

(2) Existing permitted seawater\* intakes serving desalination facilities are governed by the provisions set forth in chapter III.M of this Plan.

(c) Implementation provisions for permitted separate storm sewer system (MS4) discharges and nonpoint source discharges.

- (1) Existing waste\* discharges are allowed, but shall not cause an undesirable alteration in natural water quality. For purposes of SWQPA-GP, an undesirable alteration in natural water quality means that for intermittent (e.g. wet weather) discharges, Table 1 instantaneous maximum concentrations for chemical constituents, and daily maximum concentrations for chronic toxicity,\* must not be exceeded in the receiving water.\*

\* See Appendix I for definition of terms.

- (2) An NPDES permitting authority\* may authorize NPDES-permitted non-storm water discharges\* to an MS4 with a direct discharge to an SWQPA-GP only to the extent the NPDES permitting authority\* finds that the discharge does not cause an undesirable alteration in natural water quality in an SWQPA-GP.
- (3) Non-storm water (dry weather) flows are effectively prohibited as required by the applicable permit. Where capacity and infrastructure exists, all dry weather flows shall be diverted to municipal sanitary sewer systems. The permitting authority\* may allow discharges essential for emergency response purposes, structural stability, and slope stability, which may include but are not limited to the following:
  - a. Discharges associated with emergency fire-fighting operations.
  - b. Foundation and footing drains.
  - c. Water from crawl space or basement pumps.
  - d. Hillside dewatering.
- (4) The following naturally occurring discharges are allowed:
  - a. Naturally occurring groundwater seepage via a storm drain
  - b. Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.
- (5) Existing storm water discharges into an SWQPA-GP shall be characterized and assessed to determine what effect if any these inputs are having on natural water quality in the SWQPA-GP. Such assessments shall include an evaluation of cumulative impacts as well as impacts stemming from individual discharges. Information to be considered shall include:
  - a. Water quality;
  - b. Flow;
  - c. Watershed pollutant sources; and
  - d. Intertidal and/ or subtidal biological surveys.

Within each SWQPA-GP the assessment shall be used to rank these existing discharges into low, medium and high threat impact categories. Cumulative impacts will be ranked similarly as well.

- (6) An initial analysis shall be performed for pre- and post-storm receiving water\* quality of Table 1 constituents and chronic toxicity\*. If post-storm receiving water\* quality has larger concentrations of constituents relative to pre-storm, and Table 1 instantaneous maximum concentrations for chemical constituents, and daily maximum concentrations for chronic toxicity,\* are exceeded, then receiving water\* shall be re-analyzed along with storm runoff (end of pipe) for the constituents that are exceeded.
- (7) If undesirable alterations of natural water quality and/or biological communities are identified, control strategies/measures shall be implemented for those discharges

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\* See Appendix I for definition of terms.

characterized as a high threat or those contributing to higher threat cumulative impacts first.

- (8) If those strategies fail, additional control strategies/measures will be implemented for discharges characterized as medium impact discharges. If these strategies do not result in improvement of water quality, those discharges classified as low threat shall also implement control strategies/measures.

(d) Implementation Provisions for New Discharges

(1) Point Source Wastewater Outfalls

No new point source wastewater outfalls shall be established within an SWQPA-GP.

(2) Seawater\* intakes

No new surface water seawater\* intakes shall be established within an SWQPA-GP. This does not apply to sub~~surface\*~~~~seafloor~~ intakes where studies are prepared showing there is no predictable entrainment, ~~or~~ impingement, or construction-related ~~of~~ marine life mortality.

(3) All Other New Discharges

There shall be no increase in nonpoint sources or permitted storm drains directly into an SWQPA-GP.

6. Impaired Tributaries to MPAs, SWQPA-ASBS and SWQPA-GP

All water bodies draining to, or that are designated as, MPAs and SWQPAs that appear on the State's CWA ~~S~~section 303(d) list shall be given a high priority to have a TMDL developed and implemented.

F. Revision of Waste\* Discharge Requirements

1. The Regional Water Boards may establish more restrictive water quality objectives and effluent limitations than those set forth in this Plan as necessary for the protection of beneficial uses of ocean\* waters.
2. Regional Water Boards may impose alternative less restrictive provisions than those contained within Table 1 of the Plan, provided an applicant can demonstrate that:
  - a. Reasonable control technologies (including source control, material\* substitution, treatment and dispersion) will not provide for complete compliance; or
  - b. Any less stringent provisions would encourage water\* reclamation;
3. Provided further that:
  - a. Any alternative water quality objectives shall be below the conservative estimate of chronic\* toxicity,\* as given in Table 4 (with all metal concentrations expressed as total recoverable concentrations), and such alternative will provide for adequate protection of the marine environment;
  - b. A receiving water\* quality toxicity objective of 1 TUc is not exceeded; and

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\* See Appendix I for definition of terms.

- c. The State Water Board grants an exception ([Chapter III.J.](#)) to the Table 1 limits as established in the Regional Board findings and alternative limits.

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\* See Appendix I for definition of terms.

G. Compliance Schedules in National Pollutant Discharge Elimination System (NPDES) Permits

1. Compliance schedules in NPDES permits are authorized in accordance with the provisions of the State Water Board's Policy for Compliance Schedules in [NPDES] Permits (2008).

**TABLE 4 (formerly TABLE D)  
CONSERVATIVE ESTIMATES OF CHRONIC\* TOXICITY**

<b>Constituent</b>	<b>Estimate of Chronic* Toxicity (µg/L)</b>
Arsenic	19.
Cadmium	8.
Hexavalent Chromium	18.
Copper	5.
Lead	22.
Mercury	0.4
Nickel	48.
Silver	3.
Zinc	51.
Cyanide	10.
Total Chlorine Residual	10.0
Ammonia	4000.0
Phenolic Compounds (non-chlorinated)	a) (see below)
Chlorinated Phenolics	a)
Chlorinated Pesticides and PCB's*	b)

Table 4 Notes:

- a) There are insufficient data for phenolics to estimate chronic\* toxicity levels. Requests for modification of water quality objectives for these waste\* constituents must be supported by chronic\* toxicity data for representative sensitive species. In such cases, applicants seeking modification of water quality objectives should consult the Regional Water Quality Control Board to determine the species and test conditions necessary to evaluate chronic effects.
- b) Limitations on chlorinated pesticides and PCB's\* shall not be modified so that the total of these compounds is increased above the objectives in Table 1.

H. Monitoring Program

1. The Regional Water Boards shall require dischargers to conduct self-monitoring programs and submit reports necessary to determine compliance with the waste\* discharge requirements, and may require dischargers to contract with agencies or persons acceptable to the Regional Water Board to provide monitoring reports.

\* See Appendix I for definition of terms.

Monitoring provisions contained in waste\* discharge requirements shall be in accordance with the Monitoring Procedures provided in Appendices III and VI.

2. The Regional Water Board may require monitoring of bioaccumulation of toxicants in the discharge zone. Organisms and techniques for such monitoring shall be chosen by the Regional Water Board on the basis of demonstrated value in waste\* discharge monitoring.

#### I. Discharge Prohibitions

##### 1. Hazardous Substances

- a. The discharge of any radiological, chemical, or biological warfare agent or high-level radioactive waste\* into the ocean\* is prohibited.

##### 2. Areas Designated for Special Water Quality Protection

- a. Waste\* shall not be discharged to designated Areas\* of Special Biological Significance except as provided in [Chapter III.E. Implementation Provisions for Marine Managed Areas\\*.](#)

##### 3. Sludge

- a. Pipeline discharge of sludge to the ocean\* is prohibited by federal law; the discharge of municipal and industrial waste\* sludge directly to the ocean\* or into a waste\* stream that discharges to the ocean\* is prohibited by this Plan. The discharge of sludge digester supernatant directly to the ocean\* or to a waste\* stream that discharges to the ocean\* without further treatment, is prohibited.
- b. It is the policy of the State Water Board that the treatment, use and disposal of sewage sludge shall be carried out in the manner found to have the least adverse impact on the total natural and human environment. Therefore, if federal law is amended to permit such discharge, which could affect California waters, the State Water Board may consider requests for exceptions to this section under [Chapter III.J](#) of this Plan, provided further that an Environmental Impact Report on the proposed project shows clearly that any available alternative disposal method will have a greater adverse environmental impact than the proposed project.

##### 4. By-Passing

- a. The by-passing of untreated wastes\* containing concentrations of pollutants in excess of those of Table 2 or Table 1 to the ocean\* is prohibited.

##### 5. Vessels

- a. Discharges of hazardous waste (as defined in California Health and Safety Code [section§ 25117](#) et seq. [but not including sewage]), oily bilge\* water\*, medical waste (as defined in [section§ 117600](#) et seq. of the California Health and Safety Code) dry-cleaning waste, and film-processing waste from large passenger vessels\* and oceangoing vessels\* are prohibited.

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\* See Appendix I for definition of terms.

- b. Discharges of graywater\* and sewage\* from large passenger vessels\* are prohibited.
- c. Discharges of sewage and sewage sludge from vessels are prohibited in No Discharge Zones\* promulgated by U.S. EPA.

J. State Board Exceptions to Plan Requirements

- 1. The State Water Board may, in compliance with the California Environmental Quality Act, subsequent to a public hearing, and with the concurrence of the Environmental Protection Agency, grant exceptions where the Board determines:
  - a. The exception will not compromise protection of ocean\* waters for beneficial uses, and,
  - b. The public interest will be served.
- 2. All exceptions issued by the State Water Board and in effect at the time of the Triennial Review will be reviewed at that time. If there is sufficient cause to re-open or revoke any exception, the State Water Board may direct staff to prepare a report and to schedule a public hearing. If after the public hearing the State Water Board decides to re-open, revoke, or re-issue a particular exception, it may do so at that time.

K. Implementation Provisions for Vessel Discharges

- 1. Vessel discharges must comply with State Lands Commission (SLC) requirements for ballast water discharges and hull fouling to control and prevent the introduction of non-indigenous species, found in the Public Resources Code sections 71200 et seq. and title 2, California Code of Regulations, section 22700 et seq.
- 2. Discharges incidental to the normal operation large passenger vessels\* and ocean-going vessels must be covered and comply with an individual or general NPDES permit.
- 3. Vessel discharges must not result in violations of water quality objectives in this plan.
- 4. Vessels subject to the federal NPDES Vessel General Permit (VGP) which are not large passenger vessels\* must follow the best management practices for graywater\* as required in the VGP, including the use of only those cleaning agents (e.g., soaps and detergents) that are phosphate-free, non-toxic, and non-bioaccumulative.

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\* See Appendix I for definition of terms.

L. Implementation Provisions for Trash\* [NOTE: The Implementation Provisions for Trash will be inserted in chapter III.L after approval by the Office of Administrative Law and the U.S. EPA where applicable. For more information please see: [http://www.swrcb.ca.gov/water\\_issues/programs/trash\\_control/index.shtml](http://www.swrcb.ca.gov/water_issues/programs/trash_control/index.shtml)]

M. Implementation Provisions for Desalination Facilities\*

1. Applicability and General Provisions

- a. Chapter III.M applies to desalination facilities\* using seawater.\* Chapter III.M.2 does not apply to desalination facilities\* operated by a federal agency. Chapter III.M.2, M.3, and M.4 do not apply to portable desalination facilities\* that withdraw less than 0.10 million gallons per day (MGD) of seawater and are operated by a governmental agency. These standards do not alter or limit in any way the authority of any public agency to implement its statutory obligations. The Executive Director of the State Water Board may temporarily waive the application of chapter III.M to desalination facilities\* that are operating to serve as a critical short term water supply during a state of emergency as declared by the Governor.
- b. Definitions of New, Expanded, and Existing Facilities:
  - (1) For purposes of chapter III.M, “existing facilities” means desalination facilities\* that have been issued an NPDES permit and all building permits and other governmental approvals necessary to commence construction for which the owner or operator has relied in good faith on those previously-issued permits and approvals and commenced construction of the facility beyond site grading prior to [effective date of this Plan]. Existing facilities do not include a facility for which permits and approvals were issued and construction commenced after January 1, 1977, but for which a regional water board did not make a determination of the best site, design, technology, and mitigations measures feasible, pursuant to Water Code section 13142.5, subdivision (b) (hereafter Water Code section 13142.5(b)).
  - (2) For purposes of chapter III.M, “expanded facilities” means existing facilities for which, after [effective date of the Plan], the owner or operator does either of the following in a manner that

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\* See Appendix I for definition of terms.

could increase intake or mortality of all forms of marine life \* beyond that which was originally approved in any NPDES permit or Water Code section 13142.5(b) determination.\* 1) increases the amount of seawater\* used either exclusively by the facility or used by the facility in conjunction with other facilities or uses, or 2) changes the design or operation of the facility. To the extent that the desalination facility\* is co-located with another facility that withdraws water for a different purpose and that other facility reduces the volume of water withdrawn to a level less than the desalination facility's\* volume of water withdrawn, the desalination facility\* is considered to be an expanded facility.

(3) For purposes of chapter III.M, “new facilities” means desalination facilities\* that are not existing facilities or expanded facilities.

- c. Chapter III.M.2 (Water Code §13142.5(b) Determinations for New and Expanded Facilities: Site, Design, Technology, and Mitigation Measures) applies to new and expanded desalination facilities\* withdrawing seawater.\*
- d. Chapter III.M.3 (Receiving Water Limitation for Salinity\*) applies to all desalination facilities\* that discharge into ocean waters\* and wastewater facilities that receive brine from seawater desalination facilities and discharge into ocean waters.\*
- e. Chapter III.M.4 (Monitoring and Reporting Programs) applies to all desalination facilities\* that discharge into ocean waters.\* Chapter III.M.4 shall not apply to a wastewater facility that receives brine from a seawater desalination facility and discharges a positively buoyant commingled effluent through an existing wastewater outfall that is covered under an existing NPDES permit as long as the owner or operator monitors for compliance with the receiving water limitation set forth in chapter III.M.3. For the purposes of chapter III.M.4, a positively buoyant commingled effluent shall mean that the commingled plume rises when it enters the receiving water body due to salinity levels in the commingled discharge being lower than the natural background salinity.\*

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\* See Appendix I for definition of terms.

- f. References to the regional water board include the regional water board acting under delegated authority. For provisions that require consultation between regional water board and State Water Board staff, the regional water board shall notify and consult with the State Water Board staff prior to making a final determination on the item requiring consultation.
  - g. All desalination facilities must comply with all other applicable sections of the Ocean Plan.
2. Water Code section 13142.5(b) Determinations for New and Expanded Facilities: Site, Design, Technology, and Mitigation Measures Feasibility Considerations
- a. General Considerations
    - (1) The owner or operator shall submit a request for a Water Code section 13142.5(b) determination to the appropriate regional water board as early as practicable. This request shall include sufficient information for the regional water board to conduct the analyses described below. The regional water board in consultation with the State Water Board staff may require an owner or operator to provide additional studies or information if needed, including any information necessary to identify and assess other potential sources of mortality to all forms of marine life. All studies and models are subject to the approval of the regional water board in consultation with State Water Board staff. The regional water board may require an owner or operator to hire a neutral third party entity to review studies and models and make recommendations to the regional water board.
    - (2) The regional water board shall conduct a Water Code section 13142.5(b) analysis of all new and expanded desalination facilities.\* A Water Code section 13142.5(b) analysis may include future expansions at the facility. The regional water board shall first analyze separately as independent considerations a range of feasible\* alternatives for the best available site, the best available design, the best available technology, and the best available mitigation measures to

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\* See Appendix I for definition of terms.

minimize intake and mortality of all forms of marine life.\* Then, the regional water board shall consider all four factors collectively and determine the best combination of feasible\* alternatives to minimize intake and mortality of all forms of marine life.\* The best combination of alternatives may not always include the best alternative under each individual factor because some alternatives may be mutually exclusive, redundant, or not feasible\* in combination.

- (3) The regional water board's Water Code section 13142.5(b) analysis for expanded facilities may be limited to those expansions or other changes that result in the increased intake or mortality of all forms of marine life,\* unless the regional water board determines that additional measures that minimize intake and mortality of all forms of marine life\* are feasible\* for the existing portions of the facility.
- (4) In conducting the Water Code section 13142.5(b) determination, the regional water boards shall consult with other state agencies involved in the permitting of that facility, including, but not limited to: California Coastal Commission, California State Lands Commission, and California Department of Fish and Wildlife. The regional water board shall consider project-specific decisions made by other state agencies; however, the regional water board is not limited to project-specific requirements set forth by other agencies and may include additional requirements in a Water Code section 13142.5(b) determination.
- (5) A regional water board may expressly condition a Water Code section 13142.5(b) determination based on the expectation of the occurrence of a future event. Such future events may include, but are not limited to, the permanent shutdown of a co-located power plant with intake structures shared with the desalination facility\* or a reduction in the volume of wastewater available for the dilution of brine.\* The regional water board must make a new Water Code section 13142.5(b) determination if the foreseeable future event occurs.
- (a) The owner or operator shall provide notice to the regional water board as soon as it becomes aware that the

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\* See Appendix I for definition of terms.

expected future event will occur, and shall submit a new request for a Water Code section 13142.5(b) determination to the regional water board at least one year prior to the event occurring. If the owner or operator does not become aware that the event will occur at least one year prior to the event occurring, the owner or operator shall submit the request as soon as possible.

(b) The regional water board may allow up to five years from the date of the event for the owner or operator to make modifications to the facility required by a new Water Code section 13142.5(b) determination, provided that the regional water board finds that 1) any water supply interruption resulting from the facility modifications requires additional time for water users to obtain a temporary replacement supply or 2) such a compliance period is otherwise in the public interest and reasonably required for modification of the facility to comply with the determination.

(c) If the regional water board makes a Water Code section 13142.5(b) determination for a desalination facility\* that will be co-located with a power plant, the regional water board shall condition its determination on the power plant remaining in compliance with the Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling.

b. Site is the general onshore and offshore location of a new or expanded facility. There may be multiple potential facility design configurations within any given site. For each potential site, in order to determine whether a proposed facility site is the best available site feasible\* to minimize intake and mortality of all forms of marine life,\* the regional water board shall require the owner or operator to:

(1) Consider whether subsurface intakes\* are feasible.\*

(2) Consider whether the identified need for desalinated\* water is consistent with an applicable adopted urban water management

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\* See Appendix I for definition of terms.

plan, or if no urban water management plan is available, other water planning documents such as a county general plan or integrated regional water management plan.

(3) Analyze the feasibility of placing intake, discharge, and other facility infrastructure in a location that avoid impacts to sensitive habitats\* and sensitive species.

(4) Analyze the direct and indirect effects on all forms of marine life\* resulting from facility construction and operation, individually and in combination with potential anthropogenic effects on all forms of marine life\* resulting from other past, present, and reasonably foreseeable future activities within the area affected by the facility.

(5) Analyze oceanographic geologic, hydrogeologic, and seafloor topographic conditions at the site, so that the siting of a facility, including the intakes and discharges, minimizes the intake and mortality of all forms of marine life.\*

(6) Analyze the presence of existing infrastructure, and the availability of wastewater to dilute the facility's brine\* discharge.

(7) Ensure that the intake and discharge structures are not located within a MPA or SWQPA\* with the exception of intake structures that do not have marine life mortality associated with the construction, operation, and maintenance of the intake structures (e.g. slant wells). Discharges shall be sited at a sufficient distance from a MPA or SWQPA\* so that the salinity\* within the boundaries of a MPA or SWQPA\* does not exceed natural background salinity.\* To the extent feasible,\* surface intakes shall be sited so as to maximize the distance from a MPA or SWQPA.\*

c. Design is the size, layout, form, and function of a facility, including the intake capacity and the configuration and type of infrastructure, including intake and outfall structures. The regional water board shall

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\* See Appendix I for definition of terms.

require that the owner or operator perform the following in determining whether a proposed facility design is the best available design feasible\* to minimize intake and mortality of all forms of marine life:\*

- (1) For each potential site, analyze the potential design configurations of the intake, discharge, and other facility infrastructure to avoid impacts to sensitive habitats\* and sensitive species.
- (2) If the regional water board determines that subsurface intakes\* are not feasible\* and surface water intakes are proposed instead, analyze potential designs for those intakes in order to minimize the intake and mortality of all forms of marine life.\*
- (3) Design the outfall so that the brine mixing zone\* does not encompass or otherwise adversely affect existing sensitive habitat.\*
- (4) Design the outfall so that discharges do not result in dense, negatively-buoyant plumes that result in adverse effects due to elevated salinity\* or hypoxic conditions occurring outside the brine mixing zone.\* An owner or operator must demonstrate that the outfall meets this requirement through plume modeling and/or field studies. Modeling and field studies shall be approved by the regional water board in consultation with State Water Board staff.
- (5) Design outfall structures to minimize the suspension of benthic sediments.

d. Technology is the type of equipment, materials,\* and methods that are used to construct and operate the design components of the desalination facility.\* The regional water board shall apply the following considerations in determining whether a proposed technology is the best available technology feasible\* to minimize intake and mortality of all forms of marine life\*:

(1) Considerations for Intake Technology:

(a) Subject to Section L.2.a.(2), the regional water board in consultation with State Water Board staff shall require

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\* See Appendix I for definition of terms.

subsurface intakes\* unless it determines that subsurface intakes\* are not feasible\* based upon a comparative analysis of the factors listed below for surface and subsurface intakes.\* A design capacity in excess of the need for desalinated\* water as identified in chapter III.M.2.b.(2) shall not be used by itself to declare subsurface intakes\* as not feasible.\*

- i. The regional water board shall consider the following factors in determining feasibility of subsurface intakes:\* geotechnical data, hydrogeology, benthic topography, oceanographic conditions, presence of sensitive habitats,\* presence of sensitive species, energy use; impact on freshwater aquifers, local water supply, and existing water users; desalinated\* water conveyance, existing infrastructure, design constraints (engineering, constructability), and project life cycle cost. Project life cycle cost shall be determined by evaluating the total cost of planning, design, land acquisition, construction, operations, maintenance, mitigation, equipment replacement and disposal over the lifetime of the facility, in addition to the cost of decommissioning the facility. In addition, the regional water board may evaluate other site- and facility-specific factors.
- ii. The regional water board may find that a combination of subsurface\* and surface intakes is the best feasible\* alternative to minimize intake and mortality of marine life.

(b) Installation and maintenance of a subsurface intake\* shall avoid, to the maximum extent feasible, the disturbance of sensitive habitats\* and sensitive species.

(c) If subsurface intakes\* are not feasible, the regional water board may approve a surface water intake subject to the following conditions:

- i. The regional water board shall require that surface water intakes be screened. Screens must be functional while the facility is withdrawing seawater.\*

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\* See Appendix I for definition of terms.

- ii. In order to reduce entrainment, all surface water intakes must be screened with a 1.0 mm (0.04 in) or smaller slot size screen when the desalination facility\* is withdrawing seawater.\*
  
- iii. An owner or operator may use an alternative method of preventing entrainment so long as the alternative method results in intake and mortality of eggs, larvae, and juvenile organisms that is less than or equivalent to a 1.0 mm (0.04 in) slot size screen. The owner or operator must demonstrate the effectiveness of the alternative method to the regional water board. The owner or operator must conduct a study to demonstrate the effectiveness of the alternative method, and use an Empirical Transport Model\* (ETM)/ Area of Production Forgone\* (APF) approach\* to estimate entrainment. The study period shall be at least 12 consecutive months. Sampling for environmental studies shall be designed to account for variation in oceanographic or hydrologic conditions and larval abundance and diversity such that abundance estimates are reasonably accurate. Samples must be collected using a mesh size no larger than 335 microns and individuals collected shall be identified to the lowest taxonomical level practicable. The ETM/APF analysis\* shall evaluate entrainment for a broad range of species, species morphologies, and sizes under the environmental and operational conditions that are representative of the entrained species and the conditions at the full-scale desalination facility. At their discretion, the regional water boards may permit the use of existing entrainment data to meet this requirement.
  
- iv. In order to minimize impingement, through-screen velocity at the surface water intake shall not exceed 0.15 meters per second (0.5 feet per second).

(2) Considerations for Brine\* Discharge Technology:

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\* See Appendix I for definition of terms.

- (a) The preferred technology for minimizing intake and mortality of all forms of marine life\* resulting from brine\* disposal is to commingle brine\* with wastewater (e.g., agricultural, municipal, industrial, power plant cooling water, etc.) that would otherwise be discharged to the ocean. The wastewater must provide adequate dilution to ensure salinity of the commingled discharge meets the receiving water limitation for salinity\* in chapter III.M.3. Nothing in this section shall preclude future recycling of the wastewater.
- (b) Multiport diffusers\* are the next best method for disposing of brine\* when the brine\* cannot be diluted by wastewater and when there are no live organisms in the discharge. Multiport diffusers\* shall be engineered to maximize dilution, minimize the size of the brine mixing zone,\* minimize the suspension of benthic sediments, and minimize mortality of all forms of marine life.\*
- (c) Brine\* disposal technologies other than wastewater dilution and multiport diffusers,\* such as flow augmentation,\* may be used if an owner or operator can demonstrate to the regional water board that the technology provides a comparable level of intake and mortality of all forms of marine life\* as wastewater dilution if wastewater is available, or multiport diffusers if wastewater is unavailable. The owner or operator must evaluate all of the individual and cumulative effects of the proposed alternative discharge method on the intake and mortality of all forms of marine life\*, including (where applicable); intake-related entrainment, osmotic stress, turbulence that occurs during water conveyance and mixing, and shearing stress at the point of discharge. When determining the intake and mortality associated with a brine\* disposal technology or combination of technologies, the regional water board shall require the owner or operator to use empirical studies or modeling to:
- i. Estimate intake entrainment impacts using an ETM/APF approach.\*

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\* See Appendix I for definition of terms.

- ii. Estimate degradation of all forms of marine life\* from elevated salinity within the brine mixing zone,\* including osmotic stresses, the size of impacted area, and the duration that all forms of marine life\* are exposed to the toxic conditions. Considerations shall be given to the most sensitive species, and community structure and function.
- iii. Estimate the intake and mortality of all forms of marine life\* that occurs as a result of water conveyance, in-plant turbulence or mixing, and waste discharge.

(d) An owner or operator proposing to use flow augmentation\* as an alternative brine\* discharge technology must:

- i. Use low turbulence intakes (e.g., screw centrifugal pumps or axial flow pumps) and conveyance pipes.
- ii. Convey and mix dilution water in a manner that limits thermal stress, osmotic stress, turbulent shear stress, and other factors that could cause intake and mortality of all forms of marine life.\*
- iii. Within 18 months of beginning operation, submit to the regional water board an empirical study that evaluates intake and mortality of all forms of marine life\* associated with flow augmentation.\* The study must evaluate impacts caused by augmented intake volume, intake and pump technology, water conveyance, waste brine\* mixing, and effluent discharge. Unless demonstrated otherwise, organisms entrained by flow augmentation\* are assumed to have a mortality rate of 100 percent. The study period shall be at least 12 consecutive months. If the regional water board requires a study period longer than 12 months, the final report must be submitted to the regional water board within 6 months of the completion of the empirical study.

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\* See Appendix I for definition of terms.

- iv. If the empirical study shows that flow augmentation\* results in more intake and mortality of all forms of marine life\* than a facility using wastewater dilution or multiport diffusers,\* then the facility must either (1) cease using flow augmentation\* technology and install and use wastewater dilution or multiport diffusers\* to discharge brine\* waste, or (2) re-design the flow augmentation\* system to minimize intake and mortality of all forms of marine life\* to a level that is comparable with wastewater dilution if wastewater is available, or multiport diffusers if wastewater is unavailable,\* subject to regional water board approval.
- v. Facilities proposing to use flow augmentation\* must comply with chapter III.M.2.d.(1).
- vi. Facilities proposing to use flow augmentation\* through surface intakes are prohibited from discharging through multiport diffusers.\*

(e) Facilities that use subsurface intakes\* to supply augmented flow water for dilution are exempt from the requirements of chapter III.M.2.d.(2) if the facility meets the receiving water limitation for salinity in chapter III.M.3.

e. Mitigation for the purposes of this section is the replacement of all forms of marine life\* or habitat that is lost due to the construction and operation of a desalination facility\* after minimizing intake and mortality of all forms of marine life\* through best available site, design, and technology. The regional water board shall ensure an owner or operator fully mitigates for the operational lifetime of the facility and uses the best available mitigation measures feasible\* to minimize intake and mortality of all forms of marine life.\* The owner or operator may choose whether to satisfy a facility's mitigation measures pursuant to chapter III.M.2.e.(3) or, if available, M.2.e.(4), or a combination of the two.

(1) *Marine Life Mortality Report.* The owner or operator of a facility shall submit a report to the regional water board estimating the marine life mortality resulting from construction and operation of

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\* See Appendix I for definition of terms.

the facility after implementation of the facility's required site, design, and technology measures.

(a) For operational mortality related to intakes, the report shall include a detailed entrainment study. The entrainment study period shall be at least 12 consecutive months and sampling shall be designed to account for variation in oceanographic or hydrologic conditions and larval abundance and diversity such that abundance estimates are reasonably accurate. At their discretion, the regional water boards may permit the use of existing entrainment data from the facility to meet this requirement. Samples must be collected using a mesh size no larger than 335 microns and individuals collected shall be identified to the lowest taxonomical level practicable. The ETM/APF analysis\* shall be representative of the entrained species collected using the 335 micron net. The APF\* shall be calculated using a one-sided, upper 95 percent confidence bound for the 95th percentile of the APF distribution.

**[\*\*NOTE: This language is optional additional language for the board members to consider at the May 5, 2015 board meeting: An owner or operator may use an alternative mitigation assessment method if the method assesses intake and mortality of all forms of marine life\* and can be used to determine the number of mitigation acres needed to fully mitigate for the impacts. The method must be peer reviewed by a neutral third party expert review panel and then approved by the regional water board in consultation with the State Water Board staff.]**

An owner or operator with subsurface intakes\* is not required to do an ETM/APF analysis\* for their intakes and is not required to mitigate for intake-related operational mortality. The regional water board may apply a one percent reduction to the APF\* acreage calculated in the Marine Life Mortality Report to account for the reduction in entrainment of all forms of marine life\* when using a 1.0 mm slot size screen.

(b) For operational mortality related to discharges, the report shall estimate the area in which salinity\* exceeds 2.0 parts per thousand above natural background salinity\* or a

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\* See Appendix I for definition of terms.

facility-specific alternative receiving water limitation (see § L.3). The area in excess of the receiving water limitation for salinity\* shall be determined by modeling and confirmed with monitoring. The report shall use any acceptable approach approved by the regional water board for evaluating mortality that occurs due to shearing stress resulting from the facility's discharge, including any incremental increase in mortality resulting from a commingled discharge.

(c) For construction-related mortality, the report shall use any acceptable approach approved by the regional water board for evaluating the mortality that occurs within the area disturbed by the facility's construction. The regional water board may determine that the construction-related disturbance does not require mitigation because the disturbance is temporary and the habitat is naturally restored.

(d) Upon approval of the report by the regional water board in consultation with State Water Board staff, the calculated marine life mortality shall form the basis for the mitigation provided pursuant to this section.

(2) The owner or operator shall mitigate for the mortality of all forms of marine life\* determined in the report above by choosing to either complete a mitigation project as described in chapter III.M.2.e.(3) or, if an appropriate fee-based mitigation program is available, provide funding for the program as described in chapter III.M.2.e.(4). The mitigation project or the use of a fee-based mitigation program and the amount of the fee that the owner or operator must pay is subject to regional water board approval.

(3) *Mitigation Option 1: Complete a Mitigation Project.* The mitigation project must satisfy the following provisions:

(a) The owner or operator shall submit a Mitigation Plan. Mitigation Plans shall include: project objectives, site selection, site protection instrument (the legal arrangement or instrument that will be used to ensure the long-term protection of the compensatory mitigation project site).

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\* See Appendix I for definition of terms.

baseline site conditions, a mitigation work plan, a maintenance plan, a long-term management plan, an adaptive management plan, performance standards and success criteria, monitoring requirements, and financial assurances.

(b) The mitigation project must meet the following requirements:

- i. Mitigation shall be accomplished through expansion, restoration or creation of one or more of the following: kelp beds, estuaries, coastal wetlands, natural reefs, MPAs, or other projects approved by the regional water board that will mitigate for intake and mortality of all forms of marine life\* associated with the facility.
- ii. The owner or operator shall demonstrate that the project fully mitigates for intake-related marine life mortality by including expansion, restoration, or creation of habitat based on the APF\* acreage calculated in the Marine Life Mortality Report above. The owner or operator using surface water intakes shall do modeling to evaluate the areal extent of the mitigation project's production area to confirm that it overlaps the facility's source water body.\* Impacts on the mitigation project due to entrainment by the facility must be offset by adding compensatory acreage to the mitigation project.
- iii. The owner or operator shall demonstrate that the project also fully mitigates for the discharge-related marine life mortality projected in the Marine Life Mortality Report above.
- iv. The owner or operator shall demonstrate that the project also fully mitigates for the construction-related marine life mortality identified in the Marine Life Mortality Report above.
- v. The regional water board may permit out-of-kind mitigation\* for mitigation of open water or soft-bottom

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\* See Appendix I for definition of terms.

species. In-kind mitigation\* shall be done for all other species whenever feasible.\*

- vi. For out-of-kind mitigation,\* an owner or operator shall evaluate the biological productivity of the impacted open water or soft-bottom habitat calculated in the Marine Life Mortality Report and the proposed mitigation habitat. If the mitigation habitat is a more biologically productive habitat (e.g. wetlands, estuaries, rocky reefs, kelp beds, eelgrass beds, surfgrass beds), the regional water boards may apply a mitigation ratio based on the relative biological productivity of the impacted open water or soft-bottom habitat and the mitigation habitat. The mitigation ratio shall not be less than one acre of mitigation habitat for every ten acres of impacted open water or soft-bottom habitat.
- vii. For in-kind mitigation,\* the mitigation ratio shall not be less than one acre of mitigation habitat for every one acre of impacted habitat.
- viii. For both in-kind\* and out-of-kind mitigation,\* the regional water boards may increase the required mitigation ratio for any species and impacted natural habitat calculated in the Marine Life Mortality Report when appropriate to account for imprecisions associated with mitigation, including but not limited to, the likelihood of success, temporal delays in productivity, and the difficulty of restoring or establishing the desired productivity functions.
- ix. The rationale for the mitigation ratios must be documented in the administrative record for the permit action.

(c) The Mitigation Plan is subject to approval by the regional water board in consultation with State Water Board staff and with other agencies having authority to condition approval of the project and require mitigation.

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\* See Appendix I for definition of terms.

(4) Mitigation Option 2: Fee-based Mitigation Program. If the regional water board determines that an appropriate fee-based mitigation program has been established by a public agency, and that payment of a fee to the mitigation program will result in the creation and ongoing implementation of a mitigation project that meets the requirements of section L.2.e.(3), the owner or operator may pay a fee to the mitigation program in lieu of completing a mitigation project.

(a) The agency that manages the fee-based mitigation program must have legal and budgetary authority to accept and spend mitigation funds, a history of successful mitigation projects documented by having set and met performance standards for past projects, and stable financial backing in order to manage mitigation sites for the operational life of the facility.

(b) The amount of the fee shall be based on the cost of the mitigation project, or if the project is designed to mitigate cumulative impacts from multiple desalination facilities or other development projects, the amount of the fee shall be based on the desalination facility's fair share of the cost of the mitigation project.

(c) The manager of the fee-based mitigation program must consult with the California Department of Fish and Wildlife, Ocean Protection Council, Coastal Commission, State Lands Commission, and State and regional water boards to develop mitigation projects that will best compensate for intake and mortality of all forms of marine life\* caused by the desalination facility.\* Mitigation projects that increase or enhance the viability and sustainability of all forms of marine life\* in Marine Protected Areas are preferred, if feasible.\*

(5) California Department of Fish and Wildlife, the regional water board, and State Water Board may perform audits or site inspections of any mitigation project.

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\* See Appendix I for definition of terms.

(6) An owner or operator, or a manager of a fee-based mitigation program, must submit a mitigation project performance report to the regional water board 180 days prior to the expiration date of their NPDES permit.

(7) For conditionally permitted facilities or expanded facilities, the regional water boards may:

(a) Account for previously-approved mitigation projects associated with a facility when making a new Water Code section 13142.5(b) determination.

(b) Require additional mitigation when making a new Water Code section 13142.5(b) determination for any additional mortality of all forms of marine life resulting from the occurrence of the conditional event or the expansion of the facility. The additional mitigation must be to compensate for any additional construction, discharge, or other increases in intake or impacts or an increase in intake and mortality of all forms of marine life.\*

### 3. Receiving Water Limitation for Salinity\*

a. Chapter III.M.3 is applicable to all desalination facilities discharging brine\* into ocean waters,\* including facilities that commingle brine\* and wastewater.

b. The receiving water limitation for salinity\* shall be established as described below:

(1) Discharges shall not exceed a daily maximum of 2.0 parts per thousand (ppt) above natural background salinity\* measured no further than 100 meters (328 ft) horizontally from the discharge. There is no vertical limit to this zone.

(2) In determining an effluent limit necessary to meet this receiving water limitation, permit writers shall use the formula in chapter III.C.4 that has been modified for brine\* discharges as follows:

$$\text{Equation 1: } C_e = C_o + D_m(2.0 \text{ ppt})$$

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\* See Appendix I for definition of terms.

$$C_e = (2.0 \text{ ppt} + C_s) + D_m(2.0 \text{ ppt})$$

Where:

C<sub>e</sub> = the effluent concentration limit, ppt

C<sub>o</sub> = the salinity\* concentration to be met at the completion of

initial\* dilution = 2.0 ppt + C<sub>s</sub>

C<sub>s</sub> = the natural background salinity, \* ppt

D<sub>m</sub> = minimum probable initial dilution\* expressed as parts seawater\* per part brine\* discharge

- (a) The fixed distance referenced in the initial dilution\* definition shall be no more than 100 meters (328 feet).
- (b) In addition, the owner or operator shall develop a dilution factor (D<sub>m</sub>) based on the distance of 100 meters (328 feet) or initial dilution,\* whichever is smaller. The dilution factor (D<sub>m</sub>) shall be developed within the brine mixing zone\* using applicable water quality models that have been approved by the regional water boards in consultation with State Water Board staff.
- (c) The value 2.0 ppt in Equation 1 is the maximum incremental increase above natural background salinity\* (C<sub>s</sub>) allowed at the edge of the brine mixing zone.\* A regional water board may substitute an alternative numeric value for 2.0 ppt in Equation 1 based upon the results of a facility-specific alternative salinity\* receiving water limitation study, as described in chapter III.M.3.c below.
- c. An owner or operator may submit a proposal to the regional water board for approval of an alternative (other than 2 ppt) salinity\* receiving water limitation to be met no further than 100 meters horizontally from the discharge. There is no vertical limit to this zone.
- (1) To determine whether a proposed facility-specific alternative receiving water limitation is adequately protective of beneficial uses, an owner or operator shall:
- (a) Establish baseline biological conditions at the discharge location and at reference locations over a 12-month

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\* See Appendix I for definition of terms.

period prior to commencing brine\* discharge. The biologic surveys must characterize the ecologic composition of habitat and marine life using measures established by the regional water board. At their discretion, the regional water boards may permit the use of existing data to meet this requirement.

(b) Conduct at least the following chronic toxicity\* Whole Effluent Toxicity (WET) tests: germination and growth for giant kelp (*Macrocystis pyrifera*); development for red abalone (*Haliotis refescens*); development and fertilization for purple urchin (*Strongylocentrotus purpuratus*); development and fertilization for sand dollar (*Dendraster excentricus*); larval growth rate for topsmelt (*Atheriniops affinis*). WET tests shall be performed by an Environmental Laboratory Accreditation Program (ELAP) certified laboratory.

(c) The regional water board in consultation with State Water Board staff may require an owner or operator to do additional toxicity studies if needed.

(2) The regional water board in consultation with the State Water Board staff may require an owner or operator to provide additional studies or information in order to approve a facility-specific alternative receiving water limitation for salinity.\*

(3) The facility-specific alternative receiving water limitation shall be based on the lowest observed effect concentration (LOEC) for the most sensitive species and toxicity endpoint as determined in the chronic toxicity\* studies. The regional water board in consultation with State Water Board staff has discretion to approve the proposed facility-specific alternative receiving water limitation for salinity.\*

(4) The regional water board shall review a facility's monitoring data, the studies as required in chapter III.M.4 below, or any other information that the regional water board deems to be relevant to periodically assess whether the facility-specific alternative receiving water limitation for salinity is adequately

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\* See Appendix I for definition of terms.

protective of beneficial uses. The regional water board may eliminate or revise a facility-specific alternative receiving water limitation for salinity\* based on its assessment of the data.

d. Existing facilities that do not meet the receiving water limitation at the edge of the brine mixing zone\* and throughout the water column by [the effective date of this plan] must either: 1) establish a facility-specific alternative receiving water limitation for salinity\* as described in chapter III.M.3.c; or, 2) upgrade the facility's brine\* discharge method in order to meet the receiving water limitation in chapter III.M.3.b in accordance with the State Water Board's Compliance Schedule Policy, as set forth in (e) below. An owner or operator that chooses to upgrade the facility's method of brine\* disposal:

(1) Must demonstrate to the regional water board that the brine\* discharge does not negatively impact sensitive habitats,\* sensitive species, MPAs, or SWQPAs.

(2) Is subject to the Considerations for Brine\* Discharge Technology described in chapter III.M.2.d.(2).

e. The regional water board may grant compliance schedules for the requirements for brine\* waste discharges for desalination facilities.\* All compliance schedules shall be in accordance with the State Water Board's Compliance Schedule Policy, except that the salinity\* receiving water limitation set forth in chapters III.M.3.b and III.M.3.c. shall be considered to be a "new water quality objective" as used in the Compliance Schedule Policy.

f. The regional water board in consultation with the State Water Board staff may require an owner or operator to provide additional studies or information if needed. All studies and models are subject to the approval of the regional water board in consultation with State Water Board staff. The regional water board may require an owner or operator to hire a neutral third party entity to review studies and models and make recommendations to the regional water board.

#### 4. Monitoring and Reporting Programs

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\* See Appendix I for definition of terms.

a. The owner or operator of a desalination facility\* must submit a Monitoring and Reporting Plan to the regional water board for approval. The Monitoring and Reporting Plan shall include monitoring of effluent and receiving water characteristics and impacts to all forms of marine life.\* The Monitoring and Reporting Plan shall, at a minimum, include monitoring for benthic community health, aquatic life toxicity, hypoxia, and receiving water characteristics consistent with Appendix III of this Plan and for compliance with the receiving water limitation in chapter III.M.3. Receiving water monitoring for salinity\* shall be conducted at times when the monitoring locations are most likely affected by the discharge. For new or expanded facilities the following additional requirements apply:

(1) An owner or operator must perform facility-specific monitoring to demonstrate compliance with the receiving water limitation for salinity,\* and evaluate the potential effects of the discharge within the water column, bottom sediments, and the benthic communities. Facility-specific monitoring is required until the regional water board determines that a regional monitoring program is adequate to ensure compliance with the receiving water limitation. The monitoring and reporting plan shall be reviewed, and revised if necessary, upon NPDES permit renewal.

(2) Baseline biological conditions shall be established at the discharge location and at a reference location prior to commencement of construction. The owner or operator is required to conduct biological surveys (e.g., Before-After Control-Impact study), that will evaluate the differences between biological communities at a reference site and at the discharge location before and after the discharge commences. The regional water board will use the data and results from the surveys and any other applicable data for evaluating and renewing the requirements set forth in a facility's NPDES permit.

## **APPENDIX I DEFINITION OF TERMS**

### ACUTE TOXICITY

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\* See Appendix I for definition of terms.

a. Acute Toxicity (TUa)

Expressed in Toxic Units Acute (TUa)

$$TUa = \frac{100}{96\text{-hr LC } 50\%}$$

b. Lethal Concentration 50% (LC 50)

LC 50 (percent waste giving 50% survival of test organisms) shall be determined by static or continuous flow bioassay techniques using standard marine test species as specified in Appendix III. If specific identifiable substances in wastewater can be demonstrated by the discharger as being rapidly rendered harmless upon discharge to the marine environment, but not as a result of dilution, the LC 50 may be determined after the test samples are adjusted to remove the influence of those substances.

When it is not possible to measure the 96-hour LC 50 due to greater than 50 percent survival of the test species in 100 percent waste, the toxicity concentration shall be calculated by the expression:

$$TUa = \frac{\log (100 - S)}{1.7}$$

where:

S = percentage survival in 100% waste. If S > 99, TUa shall be reported as zero.

[ALL FORMS OF MARINE LIFE includes all life stages of all marine species.](#)

[AREA PRODUCTION FOREGONE \(APF\), also known as habitat production foregone, is an estimate of the area that is required to produce \(replace\) the same amount of larvae or propagules\\* that are removed via entrainment at a desalination facilities\\* intakes. APF is calculated by multiplying the proportional mortality\\* by the source water body,\\* which are both determined using an empirical transport model.\\*](#)

[AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE \(ASBS\) are those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that maintenance of natural water quality is assured. All Areas of Special Biological Significance are also classified as a subset of STATE WATER QUALITY PROTECTION AREAS.\\* ASBS are also referred to as State Water Quality Protection Areas\\* – Areas of Special Biological Significance \(SWQPA-ASBS\).](#)

[BRINE is the byproduct of desalinated\\* water having a salinity\\* concentration greater than a desalination facility's\\* intake source water.](#)

[BRINE MIXING ZONE is the area where salinity\\* exceeds 2.0 parts per thousand above natural background salinity,\\* or the concentration of salinity approved as part of an alternative receiving water limitation. The brine mixing zone shall not exceed 100 meters \(328 feet\) laterally from the points of discharge and throughout the water column. The brine mixing zone is an allocated impact zone where there may be toxic effects on marine life due to elevated salinity.](#)

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\* See Appendix I for definition of terms.

CHLORDANE shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

CHRONIC TOXICITY: This parameter shall be used to measure the acceptability of waters for supporting a healthy marine biota until improved methods are developed to evaluate biological response.

a. Chronic Toxicity (TUc)

Expressed as Toxic Units Chronic (TUc)

$$TUc = \frac{100}{NOEL}$$

b. No Observed Effect Level (NOEL)

The NOEL is expressed as the maximum percent effluent or receiving water\* that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test listed in Appendix III, Table III-1.

DDT shall mean the sum of 4,4'DDT, 2,4'DDT, 4,4'DDE, 2,4'DDE, 4,4'DDD, and 2,4'DDD.

DEGRADE: Degradation shall be determined by comparison of the waste field and reference site(s) for characteristic species diversity, population density, contamination, growth anomalies, debility, or supplanting of normal species by undesirable plant and animal species. Degradation occurs if there are significant\* differences in any of three major biotic groups, namely, demersal fish, benthic invertebrates, or attached algae. Other groups may be evaluated where benthic species are not affected, or are not the only ones affected.

DESALINATION FACILITY is an industrial facility that processes water to remove salts and other components from the source water to produce water that is less saline than the source water.

DICHLOROBENZENES shall mean the sum of 1,2- and 1,3-dichlorobenzene.

DOWNSTREAM OCEAN WATERS shall mean waters downstream with respect to ocean currents.

DREDGED MATERIAL: Any material\* excavated or dredged from the navigable waters of the United States, including material\* otherwise referred to as "spoil".

EELGRASS BEDS are aggregations of the aquatic plant species of the genus *Zostera*.

EMPIRICAL TRANSPORT MODEL (ETM) is a methodology for determining the spatial area known as the source water body\* that contains the source water population, which are the organisms that are at risk of entrainment as determined by factors that may include but are not limited to biological, hydrodynamic, and oceanographic data. ETM can also be used to estimate proportional mortality,\*  $P_m$ .

ENCLOSED BAYS are indentations along the coast which enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the

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\* See Appendix I for definition of terms.

narrowest distance between headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. This definition includes but is not limited to: Humboldt Bay, Bodega Harbor, Tomales Bay, Drakes Estero, San Francisco Bay, Morro Bay, Los Angeles Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay.

ENDOSULFAN shall mean the sum of endosulfan-alpha and -beta and endosulfan sulfate.

ESTUARIES AND COASTAL LAGOONS are waters at the mouths of streams that serve as mixing zones for fresh and ocean\* waters during a major portion of the year. Mouths of streams that are temporarily separated from the ocean by sandbars shall be considered as estuaries. Estuarine waters will generally be considered to extend from a bay or the open ocean to the upstream limit of tidal action but may be considered to extend seaward if significant\* mixing of fresh and salt water occurs in the open coastal waters. The waters described by this definition include but are not limited to the Sacramento-San Joaquin Delta as defined by Section 12220 of the California Water Code, Suisun Bay, Carquinez Strait downstream to Carquinez Bridge, and appropriate areas of the Smith, Klamath, Mad, Eel, Noyo, and Russian Rivers.

ETM/APF APPROACH or ANALYSIS. [For guidance on how to perform an ETM/APF analysis please see Appendix E of the Staff Report for Amendment to the Water Quality Control Plan For Ocean Waters of California Addressing Desalination Facility Intakes, Brine Discharges, And The Incorporation Of Other Non-substantive Changes.](#)

FEASIBLE, for the purposes of chapter III.M, shall mean [capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.](#)

FLOW AUGMENTATION is a [type of in-plant dilution and occurs when a desalination facility\\* withdraws additional source water for the specific purpose of diluting brine\\* prior to discharge.](#)

GRAYWATER is drainage from galley, dishwasher, shower, laundry, bath, and lavatory wash basin sinks, and water fountains, but does not include drainage from toilets, urinals, hospitals, or cargo spaces.

HALOMETHANES shall mean the sum of bromoform, bromomethane (methyl bromide) and chloromethane (methyl chloride).

HCH shall mean the sum of the alpha, beta, gamma (lindane) and delta isomers of hexachlorocyclohexane.

INDICATOR BACTERIA includes total coliform bacteria, fecal coliform bacteria (or *E. coli*), and/or Enterococcus bacteria.

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\* See Appendix I for definition of terms.

IN-KIND MITIGATION is when the habitat or species lost is the same as what is replaced through mitigation.

INITIAL DILUTION is the process which results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge.

For a submerged buoyant discharge, characteristic of most municipal and industrial wastes that are released from the submarine outfalls, the momentum of the discharge and its initial buoyancy act together to produce turbulent mixing. Initial dilution in this case is completed when the diluting wastewater ceases to rise in the water column and first begins to spread horizontally.

For shallow water submerged discharges, surface discharges, and nonbuoyant discharges, characteristic of cooling water wastes and some individual discharges, turbulent mixing results primarily from the momentum of discharge. Initial dilution, in these cases, is considered to be completed when the momentum induced velocity of the discharge ceases to produce significant\* mixing of the waste, or the diluting plume reaches a fixed distance from the discharge to be specified by the Regional Board, whichever results in the lower estimate for initial dilution.

KELP BEDS, for purposes of the bacteriological standards of this plan, are aggregations of marine algae of the order Laminariales, including species in the genera *Macrocystis*, *Nereocystis*, and *Pelagophycus*. Kelp beds include the total foliage canopy throughout the water column. ~~are significant aggregations of marine algae of the genera *Macrocystis* and *Nereocystis*. Kelp beds include the total foliage canopy of *Macrocystis* and *Nereocystis* plants throughout the water column.~~

LARGE PASSENGER VESSELS are vessels of 300 gross registered tons or greater engaged in carrying passengers for hire. The following vessels are not large passenger vessels:

- (1) Vessels without berths or overnight accommodations for passengers;
- (2) Noncommercial vessels, warships, vessels operated by nonprofit entities as determined by the Internal Revenue Service, and vessels operated by the state, the United States, or a foreign government;
- (3) Oceangoing vessels,\* as defined below (e.g. those used to transport cargo).

LOEC is the lowest observed effect concentration or the lowest concentration of effluent that causes observable adverse effects in exposed test organisms.

MARICULTURE is the culture of algae, plants, and animals in marine waters independent of any pollution source.

MARINE MANAGED AREAS are named, discrete geographic marine or estuarine areas along the California coast designated by law or administrative action, and intended to protect, conserve, or otherwise manage a variety of resources and their uses. According to the California Public Resources Code (sections §§ 36600 et. seq.) there are six classifications of marine managed areas, including State Marine Reserves, State Marine Parks and State Marine Conservation Areas, State Marine Cultural Preservation Areas, State Marine Recreational Management Areas, and State Water Quality Protection Areas.\*

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\* See Appendix I for definition of terms.

MARKET SQUID NURSURIES are comprised of numerous egg capsules, each containing approximately 200 developing embryos, attached in clusters or mops to sandy substrate with moderate water flow. Market squid (*Doryteuthis opalescens*) nurseries occur at a wide range of depths; however, mop densities are greatest in shallow, nearshore waters between ten and 100 meters (328 feet) deep.

MATERIAL: (a) In common usage: (1) the substance or substances of which a thing is made or composed (2) substantial; (b) For purposes of this Ocean Plan relating to waste disposal, dredging and the disposal of dredged material\* and fill, MATERIAL means matter of any kind or description which is subject to regulation as waste, or any material dredged from the navigable waters of the United States. See also, DREDGED MATERIAL.\* For the purposes of chapter III.M.2.d, materials relates to the common usage in (a).

METHOD DETECTION LIMIT (Method Detection Limit) is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, as defined in 40 CFR PART 136 Appendix B.

MINIMUM LEVEL (ML) is the concentrations at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specified sample weights, volumes and processing steps have been followed.

MULTIPOINT DIFFUSERS are linear structures consisting of spaced ports or nozzles that are installed on submerged marine outfalls. For the purposes of chapter III.M, multipoint diffusers discharge brine\* waste into an ambient receiving water body and enable rapid mixing, dispersal, and dilution of brine\* within a relatively small area.

NATURAL BACKGROUND SALINITY is the salinity\* at a location that results from naturally occurring processes and is without apparent human influence. For purposes of determining natural background salinity, the mean monthly natural salinity shall be used. Mean monthly natural background salinity shall be determined by averaging 20 years of historical salinity\* data in the proximity of the proposed discharge location and at the depth of the proposed discharge, when feasible.\* For historical data not recorded in parts per thousand, the regional water boards may accept converted data at their discretion. When historical data are not available, natural background salinity shall be determined by measuring salinity\* at depth of proposed discharge for three years, on a weekly basis prior to a desalination facility\* discharging brine,\* and the mean monthly natural salinity\* shall be used to determine natural background salinity. Facilities shall establish a reference location with similar natural background salinity to be used for comparison in ongoing monitoring of brine\* discharges.

NATURAL LIGHT: Reduction of natural light may be determined by the Regional Board by measurement of light transmissivity or total irradiance, or both, according to the monitoring needs of the Regional Board.

NO DISCHARGE ZONE (NDZ) is an area in which both treated and untreated sewage discharges from vessels are prohibited. Within NDZ boundaries, vessel operators are required to retain their sewage discharges onboard for disposal at sea (beyond three miles from shore) or onshore at a pump-out facility.

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\* See Appendix I for definition of terms.

NON-STORM WATER DISCHARGE is any runoff that is not the result of a precipitation event. This is often referred to as “dry weather flow.”

OCEAN WATERS are the territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays,\* estuaries, and coastal lagoons.\* If a discharge outside the territorial waters of the State could affect the quality of the waters of the State, the discharge may be regulated to assure no violation of the Ocean Plan will occur in ocean waters.

OCEANGOING VESSELS (i.e., oceangoing ships) means commercial vessels of 300 gross registered tons or more calling on California ports or places, excluding active military vessels.

OILY BILGE WATER includes bilge water that contains used lubrication oils, oil sludge and slops, fuel and oil sludge, used oil, used fuel and fuel filters, and oily waste.

OUT-OF-KIND MITIGATION is [when the habitat or species lost is different than what is replaced through mitigation.](#)

PAHs (polynuclear aromatic hydrocarbons) shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene.

PCBs (polychlorinated biphenyls) shall mean the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260.

PERMITTING AUTHORITY means the State Water Board or Regional Water Board, whichever issues the permit.

PROPAGULES are [structures that are capable of propagating an organism to the next stage in its life cycle via dispersal. Dispersal is the movement of individuals from their birth site to their reproductive grounds.](#)

PROPORTIONAL MORTALITY, Pm, is [percentage of larval organisms or propagules\\* in the source water body\\* that is expected to be entrained at a desalination facility's\\* intake. It is assumed that all entrained larvae or propagules\\* die as a result of entrainment.](#)

RECEIVING WATER, for permitted storm water discharges and nonpoint sources, should be measured at the point of discharge(s), in the surf zone immediately where runoff from an outfall meets the ocean water (a.k.a., at point zero).

SALINITY is [a measure of the dissolved salts in a volume of water. For the purposes of this Plan, salinity shall be measured using a standard method approved by the regional water board \(e.g. Standard Method 2520 B, EPA Method 120.1, EPA Method 160.1\) and reported in parts per thousand \(ppt\). For historical salinity data not recorded in parts per thousand, the regional water boards may accept converted data at their discretion.](#)

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\* See Appendix I for definition of terms.

SEAWATER is salt water that is in or from the ocean. For the purposes chapter III.M, seawater includes tidally influenced waters in coastal estuaries and coastal lagoons\* and underground salt water beneath the seafloor, beach, or other contiguous land with hydrologic connectivity to the ocean.

SENSITIVE HABITATS, for the purposes of this Plan, are kelp beds,\* rocky substrate, surfgrass beds,\* eelgrass beds,\* oyster beds, spawning grounds for state or federally managed species, market squid nurseries,\* or other habitats in need of special protection as determined by the Water Boards.

SHELLFISH are organisms identified by the California Department of Public Health as shellfish for public health purposes (i.e., mussels, clams and oysters).

SIGNIFICANT difference is defined as a statistically significant difference in the means of two distributions of sampling results at the 95 percent confidence level.

SOURCE WATER BODY is the spatial area that contains the organisms that are at risk of entrainment at a desalination facility\* as determined by factors that may include but are not limited to biological, hydrodynamic, and oceanographic data.

STATE WATER QUALITY PROTECTION AREAS (SWQPAs) are nonterrestrial marine or estuarine areas designated to protect marine species or biological communities from an undesirable alteration in natural water quality. All Areas of Special Biological Significance (ASBS)\* that were previously designated by the State Water Board in Resolutions 74-28, 74-32, and 75-61 are now also classified as a subset of State Water Quality Protection Areas and require special protections afforded by this Plan.

STATE WATER QUALITY PROTECTION AREAS – GENERAL PROTECTION (SWQPA-GP) designated by the State Water Board to protect marine species and biological communities from an undesirable alteration in natural water quality within State Marine Parks and State Marine Conservation Areas.

SUBSURFACE INTAKE, for the purposes of chapter III.M, is an intake withdrawing seawater\* from the area beneath the ocean floor or beneath the surface of the earth inland from the ocean.

SURFGRASS BEDS are aggregations of marine flowering plants of the genus *Phyllospadix*.

TCDD EQUIVALENTS shall mean the sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown in the table below.

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\* See Appendix I for definition of terms.

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<u>Isomer Group</u>	<u>Toxicity Equivalence Factor</u>
	1.0
2,3,7,8-tetra CDD	
2,3,7,8-penta CDD	0.5
2,3,7,8-hexa CDDs	0.1
2,3,7,8-hepta CDD	0.01
octa CDD	0.001
2,3,7,8 tetra CDF	0.1
1,2,3,7,8 penta CDF	0.05
2,3,4,7,8 penta CDF	0.5
2,3,7,8 hexa CDFs	0.1
2,3,7,8 hepta CDFs	0.01
octa CDF	0.001

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WASTE: As used in this Plan, waste includes a discharger's total discharge, of whatever origin, i.e., gross, not net, discharge.

WATER RECLAMATION: The treatment of wastewater to render it suitable for reuse, the transportation of treated wastewater to the place of use, and the actual use of treated wastewater for a direct beneficial use or controlled use that would not otherwise occur.

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\* See Appendix I for definition of terms.

## APPENDIX II MINIMUM\* LEVELS

The Minimum\* Levels identified in this appendix represent the lowest concentration of a pollutant that can be quantitatively measured in a sample given the current state of performance in analytical chemistry methods in California. These Minimum\* Levels were derived from data provided by state-certified analytical laboratories in 1997 and 1998 for pollutants regulated by the California Ocean Plan and shall be used until new values are adopted by the State Water Board. There are four major chemical groupings: volatile chemicals, semi-volatile chemicals, inorganics, pesticides & PCB's.\* "No Data" is indicated by "--".

**TABLE II-1  
MINIMUM\* LEVELS – VOLATILE CHEMICALS**

Volatile Chemicals	CAS Number	Minimum* Level (µg/L)	
		GC Method <sup>a</sup>	GCMS Method <sup>b</sup>
Acrolein	107028	2.	5
Acrylonitrile	107131	2.	2
Benzene	71432	0.5	2
Bromoform	75252	0.5	2
Carbon Tetrachloride	56235	0.5	2
Chlorobenzene	108907	0.5	2
Chlorodibromomethane	124481	0.5	2
Chloroform	67663	0.5	2
1,2-Dichlorobenzene (volatile)	95501	0.5	2
1,3-Dichlorobenzene (volatile)	541731	0.5	2
1,4-Dichlorobenzene (volatile)	106467	0.5	2
Dichlorobromomethane	75274	0.5	2
1,1-Dichloroethane	75343	0.5	1
1,2-Dichloroethane	107062	0.5	2
1,1-Dichloroethylene	75354	0.5	2
Dichloromethane	75092	0.5	2
1,3-Dichloropropene (volatile)	542756	0.5	2
Ethyl benzene	100414	0.5	2
Methyl Bromide	74839	1.	2
Methyl Chloride	74873	0.5	2
1,1,2,2-Tetrachloroethane	79345	0.5	2
Tetrachloroethylene	127184	0.5	2
Toluene	108883	0.5	2
1,1,1-Trichloroethane	71556	0.5	2
1,1,2-Trichloroethane	79005	0.5	2
Trichloroethylene	79016	0.5	2
Vinyl Chloride	75014	0.5	2

### Table II-1 Notes

a) GC Method = Gas Chromatography

b) GCMS Method = Gas Chromatography / Mass Spectrometry

\* To determine the lowest standard concentration in an instrument calibration curve for these techniques, use the given ML\* (see [Chapter III](#), "Use of Minimum\* Levels").

\* See Appendix I for definition of terms.

**TABLE II-2**  
**MINIMUM\* LEVELS – SEMI VOLATILE CHEMICALS**  
 Minimum\* Level (µg/L)

Semi-Volatile Chemicals	CAS Number	Minimum* Level (µg/L)			
		GC Method <sup>a,*</sup>	GCMS Method <sup>b,*</sup>	HPLC Method <sup>c,*</sup>	COLOR Method <sup>d</sup>
Acenaphthylene	208968	--	10	0.2	--
Anthracene	120127	--	10	2	--
Benidine	92875	--	5	--	--
Benzo(a)anthracene	56553	--	10	2	--
Benzo(a)pyrene	50328	--	10	2	--
Benzo(b)fluoranthene	205992	--	10	10	--
Benzo(g,h,i)perylene	191242	--	5	0.1	--
Benzo(k)floranthene	207089	--	10	2	--
Bis 2-(1-Chloroethoxy) methane	111911	--	5	--	--
Bis(2-Chloroethyl)ether	111444	10	1	--	--
Bis(2-Chloroisopropyl)ether	39638329	10	2	--	--
Bis(2-Ethylhexyl) phthalate	117817	10	5	--	--
2-Chlorophenol	95578	2	5	--	--
Chrysene	218019	--	10	5	--
Di-n-butyl phthalate	84742	--	10	--	--
Dibenzo(a,h)anthracene	53703	--	10	0.1	--
1,2-Dichlorobenzene (semivolatile)	95504	2	2	--	--
1,3-Dichlorobenzene (semivolatile)	541731	2	1	--	--
1,4-Dichlorobenzene (semivolatile)	106467	2	1	--	--
3,3-Dichlorobenzidine	91941	--	5	--	--
2,4-Dichlorophenol	120832	1	5	--	--
1,3-Dichloropropene	542756	--	5	--	--
Diethyl phthalate	84662	10	2	--	--
Dimethyl phthalate	131113	10	2	--	--
2,4-Dimethylphenol	105679	1	2	--	--
2,4-Dinitrophenol	51285	5	5	--	--
2,4-Dinitrotoluene	121142	10	5	--	--
1,2-Diphenylhydrazine	122667	--	1	--	--
Fluoranthene	206440	10	1	0.05	--
Fluorene	86737	--	10	0.1	--
Hexachlorobenzene	118741	5	1	--	--
Hexachlorobutadiene	87683	5	1	--	--
Hexachlorocyclopentadiene	77474	5	5	--	--

**Table II-2 continued on next page...**

\* See Appendix I for definition of terms.

**Table II-2 (Continued)**  
**Minimum\* Levels – Semi Volatile Chemicals**

Semi-Volatile Chemicals	CAS Number	Minimum* Level (µg/L)			
		GC Method <sup>a,*</sup>	GCMS Method <sup>b,*</sup>	HPLC Method <sup>c,*</sup>	COLOR Method <sup>d</sup>
Hexachloroethane	67721	5	1	--	--
Indeno(1,2,3-cd)pyrene	193395	--	10	0.05	--
Isophorone	78591	10	1	--	--
2-methyl-4,6-dinitrophenol	534521	10	5	--	--
3-methyl-4-chlorophenol	59507	5	1	--	--
N-nitrosodi-n-propylamine	621647	10	5	--	--
N-nitrosodimethylamine	62759	10	5	--	--
N-nitrosodiphenylamine	86306	10	1	--	--
Nitrobenzene	98953	10	1	--	--
2-Nitrophenol	88755	--	10	--	--
4-Nitrophenol	100027	5	10	--	--
Pentachlorophenol	87865	1	5	--	--
Phenanthrene	85018	--	5	0.05	--
Phenol	108952	1	1	--	50
Pyrene	129000	--	10	0.05	--
2,4,6-Trichlorophenol	88062	10	10	--	--

**Table II-2 Notes:**

- a) GC Method = Gas Chromatography
- b) GCMS Method = Gas Chromatography / Mass Spectrometry
- c) HPLC Method = High Pressure Liquid Chromatography
- d) COLOR Method= Colorimetric

\* To determine the lowest standard concentration in an instrument calibration curve for this technique, multiply the given ML<sub>50</sub>\* by 1000 (see [Chapter III](#), "Use of Minimum\* Levels").

\* See Appendix I for definition of terms.



**TABLE II-3  
MINIMUM\* LEVELS - INORGANICS**

Minimum\* Level (µg/L)

Inorganic Substances	CAS Number	COLOR Method <sup>a</sup>	DCP Method <sup>b</sup>	FAA Method <sup>c</sup>	GFAA Method <sup>d</sup>	HYDRIDE Method <sup>e</sup>	ICP Method <sup>f</sup>	ICPMS Method <sup>g</sup>	SPGFAA Method <sup>h</sup>	CVAA Method <sup>i</sup>
Antimony	7440360	--	1000.	10.	5.	0.5	50.	0.5	5.	--
Arsenic	7440382	20.	1000.	--	2.	1.	10.	2.	2.	--
Beryllium	7440417	--	1000.	20.	0.5	--	2.	0.5	1.	--
Cadmium	7440439	--	1000.	10.	0.5	--	10.	0.2	0.5	--
Chromium (total)	--	--	1000.	50.	2.	--	10.	0.5	1.	--
Chromium (VI)	18540299	10.	--	5.	--	--	--	--	--	--
Copper	7440508	--	1000.	20.	5.	--	10.	0.5	2.	--
Cyanide	57125	5.	--	--	--	--	--	--	--	--
Lead	7439921	--	10000.	20.	5.	--	5.	0.5	2.	--
Mercury	7439976	--	--	--	--	--	--	0.5	--	0.2
Nickel	7440020	--	1000.	50.	5.	--	20.	1.	5.	--
Selenium	7782492	--	1000.	--	5.	1.	10.	2.	5.	--
Silver	7440224	--	1000.	10.	1.	--	10.	0.2	2.	--
Thallium	7440280	--	1000.	10.	2.	--	10.	1.	5.	--
Zinc	7440666	--	1000.	20.	--	--	20.	1.	10.	--

**Table II-3 Notes**

- a) COLOR Method = Colorimetric
- b) DCP Method = Direct Current Plasma
- c) FAA Method = Flame Atomic Absorption
- d) GFAA Method = Graphite Furnace Atomic Absorption
- e) HYDRIDE Method = Gaseous Hydride Atomic Absorption
- f) ICP Method = Inductively Coupled Plasma
- g) ICPMS Method = Inductively Coupled Plasma / Mass Spectrometry
- h) SPGFAA Method = Stabilized Platform Graphite Furnace Atomic Absorption (i.e., US EPA 200.9)
- i) CVAA Method = Cold Vapor Atomic Absorption

\* To determine the lowest standard concentration in an instrument calibration curve for these techniques, use the given ML\* (see [E](#)chapter III, "Use of Minimum\* Levels").

\* See Appendix I for definition of terms.

**TABLE II-4**  
**MINIMUM\* LEVELS – PESTICIDES AND PCBs\***

Pesticides – PCBs	CAS Number	Minimum* Level (µg/L)
		GC Method <sup>a,*</sup>
Aldrin	309002	0.005
Chlordane <sub>=</sub> *	57749	0.1
4,4'-DDD	72548	0.05
4,4'-DDE	72559	0.05
4,4'-DDT	50293	0.01
Dieldrin	60571	0.01
a-Endosulfan	959988	0.02
b-Endosulfan	33213659	0.01
Endosulfan Sulfate	1031078	0.05
Endrin	72208	0.01
Heptachlor	76448	0.01
Heptachlor Epoxide	1024573	0.01
a-Hexachlorocyclohexane	319846	0.01
b-Hexachlorocyclohexane	319857	0.005
d-Hexachlorocyclohexane	319868	0.005
g-Hexachlorocyclohexane (Lindane)	58899	0.02
PCB 1016	--	0.5
PCB 1221	--	0.5
PCB 1232	--	0.5
PCB 1242	--	0.5
PCB 1248	--	0.5
PCB 1254	--	0.5
PCB 1260	--	0.5
Toxaphene	8001352	0.5

**Table II-4 Notes**

a) GC Method- = Gas Chromatography

\* To determine the lowest standard concentration in an instrument calibration curve for this technique, multiply the given ML<sub>=</sub>\* by 100 (see [Chapter III](#), “Use of Minimum\* Levels”).

\* See Appendix I for definition of terms.

## APPENDIX III STANDARD MONITORING PROCEDURES

### 1. INTRODUCTION

The purpose of this appendix is to provide guidance to the Regional Water Boards on implementing the Ocean Plan and to ensure the reporting of useful information. Monitoring should be question driven rather than just gathering data and should be focused on assuring compliance with narrative and numeric water quality standards, the status and attainment of beneficial uses, and identifying sources of pollution.

It is not feasible to prescribe requirements in the Ocean Plan that encompass all circumstances and conditions that could be encountered by all dischargers, nor is it desirable to limit the flexibility of the Regional Water Boards in the monitoring of ocean\* waters. This appendix should therefore be considered the basic framework for the design of an ocean discharger monitoring program. The Regional Water Boards are responsible for issuing monitoring and reporting programs (MRPs) that will implement this monitoring guidance. Regional Water Boards can deviate from the procedures required in the appendix only with the approval of the State Water Resources Control Board.

This monitoring guidance utilizes a model monitoring framework. The model monitoring framework has three components that comprise a range of spatial and temporal scales: (1) core monitoring, (2) regional monitoring, and (3) special studies.

1) Core monitoring consists of the basic site-specific monitoring necessary to measure compliance with individual effluent limits and/or impacts to receiving water\* quality. Core monitoring is typically conducted in the immediate vicinity of the discharge by examining local scale spatial effects.

2) Regional monitoring provides information necessary to make assessments over large areas and serves to evaluate cumulative effects of all anthropogenic inputs. Regional monitoring data also assists in the interpretation of core monitoring studies. It is recommended that the Regional Water Boards require participation by the discharger in an approved regional monitoring program, if available, for the receiving water\*.\* In the event that a regional monitoring effort takes place during a permit cycle in which the MRP does not specifically address regional monitoring, a Regional Water Board may allow relief from aspects of core monitoring components in order to encourage participation.

3) Special studies are directed monitoring efforts designed in response to specific management or research questions identified through either core or regional monitoring programs. Often they are used to help understand core or regional monitoring results, where a specific environmental process is not well understood, or to address unique issues of local importance. Regional Water Boards may require special studies as appropriate. Special studies are not addressed further in this guidance because they are beyond its scope.

The Ocean Plan does not address all site-specific monitoring issues and allows the Regional Water Boards to select alternative protocols with the approval of the State Water Board. If no direction is given in this appendix for a specific provision of the Ocean Plan, it is within the

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\* See Appendix I for definition of terms.

discretion of the Regional Water Boards to establish the monitoring requirements for that provision.

## 2. QUALITY ASSURANCE

All receiving\* and ambient water monitoring conducted in compliance with MRPs must be comparable with the Quality Assurance requirements of the Surface Water Ambient Monitoring Program (SWAMP).

SWAMP comparable means all sample collection and analyses shall meet or exceed the measurement quality objectives (MQOs) – including all sample types, frequencies, control limits and holding time requirements – as specified in the SWAMP Quality Assurance Project Plan (QAPrP)

The SWAMP QAPrP is located at:

[http://www.waterboards.ca.gov/water\\_issues/programs/swamp/tools.shtml#qa](http://www.waterboards.ca.gov/water_issues/programs/swamp/tools.shtml#qa).

For those measurements that do not have SWAMP MQOs available, then MQOs shall be at the discretion of the Regional Water Board. Refer to the USEPA guidance document (EPA QA/G-4) for selecting data quality objectives, located at <http://www.epa.gov/quality/qs-docs/g4-final.pdf>.

Water Quality data must be reported according to the California Environmental Data Exchange Network (CEDEN) “Data Template” format for all constituents that are monitored in receiving and ambient water. CEDEN Data Template are available at: <http://ceden.org>.

## 3. TYPE OF WASTE DISCHARGE SOURCES

Discharges to ocean waters\* are highly diverse and variable, exhibiting a wide range of constituents, effluent quality and quantity, location and frequency of discharge. Different types of discharges will require different approaches. This Appendix provides specific direction for three broad types of discharges: (1) Point Sources, (2) Storm Water Point Sources and (3) Non-point Sources.

### 3.1. Point Sources

Industrial, municipal, marine laboratory and other traditional point sources of pollution that discharge wastewater directly to surface waters and are required to obtain NPDES permits.

### 3.2. Storm Water Point Sources

Storm Water Point Sources, hereafter referred to as Storm Water Sources, are those NPDES permitted discharges regulated by Construction or Industrial Storm Water General Permits or municipal separate storm sewer system (MS4s) Permits. MS4 Permits are further divided into Phase I and II Permits. A Phase I MS4 Permit is issued by a Regional Water Board for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 or more people) municipalities. A Phase II MS4 General Permit is issued by the State Water Resources Control Board for the discharge of storm water for smaller municipalities, and includes nontraditional Small MS4s, which are governmental facilities such as military bases, public campuses, prison and hospital complexes.

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\* See Appendix I for definition of terms.

### 3.3. Non-point Sources

A Non-point Source is any source of pollutants that is not a Point Source described in [Section 3.1](#) or a Storm Water Point Source as described in [Section 3.2](#). Land use categories contributing to non-point sources include but are not limited to:

- a. Agriculture
- b. Grazing
- c. Forestry/timber harvest
- d. Urban not covered under an NPDES permit
- e. Marinas and mooring fields
- f. Golf Courses not covered under an NPDES Permit

Only agricultural and golf course related non-point source discharge monitoring is addressed in this Appendix, but Regional Water Boards may issue MRPs for other non-point sources at their discretion. Agriculture includes irrigated lands. Irrigated lands are where water is applied for the purpose of producing crops, including, but not limited to, row and field crop, orchards, vineyard, rice production, nurseries, irrigated pastures, and managed wetlands.

## 4. INDICATOR BACTERIA\*

### 4.1. Point Sources

Primary questions to be addressed:

1. Does the effluent comply with the water quality standards in the receiving water\*?
2. Does the sewage effluent reach water contact zones or commercial shellfish\* beds?

To answer these questions, core monitoring shall be conducted in receiving water\* on the shoreline for the indicator bacteria\* at a minimum weekly for any point sources discharging treated sewage effluent:

- a. within one nautical mile of shore, or
- b. within one nautical mile of a commercial shellfish\* bed, or
- c. if the discharge is in excess of 10 million gallons per day (MGD).

Alternatively, these requirements may be met through participation in a regional monitoring program to assess the status of marine contact recreation water quality. If the permittee participates in a regional monitoring program, in conjunction with local health organization(s), core monitoring may be suspended for that period at the discretion of the Regional Water Board. Regional monitoring should be used to answer the above questions, and may be used to answer additional questions. These additional questions may include, but are not limited to, questions regarding the extent and magnitude of current or potential receiving water\* indicator bacteria\* problems, or the sources of indicator bacteria\*.

### 4.2. Storm Water

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\* See Appendix I for definition of terms.

Primary questions to be addressed:

1. Does the receiving water\* comply with water quality standards?
2. Is the condition of the receiving water\* protective of contact recreation and shellfish\* harvesting beneficial uses?
3. Are the indicator bacteria\* levels in receiving water\* getting better or worse?
4. What is the relative contribution of indicator bacteria\* to the receiving water\* from storm water runoff?

To answer these questions, core monitoring for indicator bacteria\* shall be required periodically for storm water discharges representative of the area of concern. At a minimum, for municipal storm water discharges, all receiving water\* at outfalls greater than 36 inches in diameter or width must be monitored (ankle depth, point zero) at the following frequencies:

- a. During wet weather with a minimum of three storms per year, and
- b. When non-storm water discharges\* occur (flowing during dry weather), and if located at an AB 411 beach, at least weekly. (An AB 411 Beach is defined as a beach visited by more than 50,000 people annually and located on an area adjacent to a storm drain that flows in the summer. (Health & Saf. Code § 115880.)).

Regional Water Boards may waive monitoring once structural best management practices have been installed, evaluated and determined to have successfully controlled indicator bacteria.\*

Alternatively, these requirements may be met through participation in a regional monitoring program to assess the status of marine contact recreation water quality. If the permittee participates in a regional monitoring program, in conjunction with local health organization(s), core monitoring may be suspended for that period at the discretion of the Regional Water Board. Regional monitoring should be used to answer the above questions, and may be used to answer additional questions. These additional questions may include, but are not limited to, questions regarding the extent and magnitude of current or potential receiving water\* indicator bacteria\* problems, or the sources of indicator bacteria\*.\*

#### 4.3. Non-point Sources

Primary questions to be addressed:

1. Does the receiving water\* comply with water quality standards?
2. Do agricultural and golf course non-point source discharges reach water contact or shellfish\* harvesting zones?
3. Are the indicator bacteria\* levels in receiving water\* getting better or worse?
4. What is the relative contribution of indicator bacteria\* to the receiving water\* from agricultural and golf course non-point sources?

To answer these questions, core monitoring of representative agricultural irrigation tail water and storm water runoff, at a minimum, will be conducted in receiving water\* (ankle depth, point zero) for indicator bacteria\*:

- a. During wet weather, at a minimum of two storm events per year, and
- b. When non-storm water discharges\* occur (flowing during dry weather), and if located at an AB 411 beach or within one nautical mile of shellfish\* bed, at least weekly.

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\* See Appendix I for definition of terms.

Alternatively, these requirements may be met through participation in a regional monitoring program to assess the status of marine contact recreation water quality. If the discharger participates in a regional monitoring program, in conjunction with local health organization(s), core monitoring may be suspended for that period at the discretion of the Regional Water Board. Regional monitoring should be used to answer the above questions, and may be used to answer additional questions. These additional questions may include, but are not limited to, questions regarding the extent and magnitude of current or potential receiving water\* indicator bacteria\* problems, or the sources of indicator bacteria\*.

## 5. CHEMICAL CONSTITUENTS

### 5.1. Point Sources

Primary questions addressed:

1. Does the effluent meet permit effluent limits thereby ensuring that water quality standards are achieved in the receiving water\*?
2. What is the mass of the constituents that are discharged annually?
3. Is the effluent concentration or mass changing over time?

Consistent with Appendix VI, the core monitoring for the substances in Table 1 and Table 2 shall be required periodically. For discharges less than 10 MGD, the monitoring frequency shall be at least one complete scan of the Table 1 substances annually. Discharges greater than 10 MGD shall be required to monitor at least semiannually.

### 5.2. Storm Water

Primary questions addressed:

1. Does the receiving water\* meet the water quality standards?
2. Are the conditions in receiving water\* getting better or worse?
3. What is the relative runoff contribution to pollution in the receiving water\*?

For Phase I and Phase II MS4 dischargers, core receiving water\* monitoring will be required at a minimum for 10 percent of all outfalls greater than 36 inches in diameter or width once per year. If a discharger has less than five outfalls exceeding 36 inches in diameter or width, they shall conduct monitoring at a minimum of only once per outfall during a five year period. Monitoring shall be for total suspended solids, oil & grease, total organic carbon, pH, temperature, biochemical oxygen demand, turbidity, Table 1 metals, PAHs\* and pesticides determined by the Regional Water Boards. Regional Water Boards may waive monitoring once structural best management practices have been installed, evaluated and determined to have successfully controlled pollutants.

For industrial storm water discharges, runoff monitoring must be conducted at all outfalls at least two storm events per year. In addition, at least one representative receiving water\* sample must be collected per industrial storm water permittee during two storm events per year. Monitoring shall be conducted for total suspended solids, oil & grease, total organic carbon, pH, temperature, biochemical oxygen demand, turbidity, and Table 1 metals and PAHs\*.

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\* See Appendix I for definition of terms.

The requirements for individual core monitoring for Table 1 metals, PAHs\* and pesticides may be waived at the discretion of the Regional Water Board, if the permittee participates in a regional program for monitoring runoff and/or receiving water\* to answer the above questions as well as additional questions. Additional questions may include, but are not limited to, questions regarding the extent and magnitude of current or potential receiving water\* problems from storm water runoff, or sources of any runoff pollutants.

### 5.3. Non-point Sources

The primary questions are:

1. Does the agricultural or golf course runoff meet water quality standards in the receiving water\*?
2. Are nutrients present that would contribute to objectionable aquatic algal blooms or degrade\* indigenous biota?
3. Are the conditions in receiving water\* getting better or worse?
4. What is the relative agricultural runoff or golf course contribution to pollution in the receiving water\*?

To answer these questions, a statistically representative sample (determined by the Regional Water Board) of receiving water\* at the sites of agricultural irrigation tail water and storm water runoff, and golf course runoff in each watershed will be monitored for Ocean Plan Table 1 metals, ammonia as N, nitrate as N, phosphate as P, and pesticides determined by the Regional Board:

- a. During wet weather, at a minimum of two storm events per year, and
- b. During dry weather, when flowing, at a frequency determined by the Regional Boards.

This requirement may be satisfied by core monitoring individually, or through participation in a regional program for monitoring runoff and receiving water\* at the discretion of the Regional Water Board to answer the above questions as well as additional questions. Additional questions may include, but are not limited to, questions regarding the sources of agricultural pollutants.

## 6. SEDIMENT MONITORING

All Sources:

1. Is the dissolved sulfide concentration of waters in sediments significantly\* increased above that present under natural conditions?
2. Is the concentration of substances set forth in Table 1, for protection of marine aquatic life, in marine sediments at levels which would degrade\* the benthic community?
3. Is the concentration of organic pollutants in marine sediments at levels that would degrade\* the benthic community?

### 6.1. Point Sources

For discharges greater than 10 MGD, acid volatile sulfides, OP Pesticides, Table 1 metals, ammonia N, PAHs\* and chlorinated hydrocarbons will be measured in sediments annually in a core monitoring program approved by the Regional Water Board. Sediment sample locations will be determined by the Regional Water Board. If sufficient data exists from previous water

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\* See Appendix I for definition of terms.

column monitoring for these parameters, the Regional Water Board at its discretion may reduce the frequency of monitoring, or may allow this requirement to be satisfied through participation in a regional monitoring program.

## 6.2. Storm Water

For Phase I MS4 permittees, discharges greater than 72 inches in diameter or width discharging to low energy coastal environments with the likelihood of sediment deposition, acid volatile sulfides, OP Pesticides, Ocean Plan Table 1 metals, ammonia N, PAHs<sub>16</sub><sup>\*</sup> and chlorinated hydrocarbons will be measured in sediments once per permit cycle.

Regional Water Boards may waive monitoring once structural best management practices have been installed, evaluated and determined to have successfully controlled pollutants.

This requirement may be satisfied by core monitoring individually or through participation in a regional monitoring program at the discretion of the Regional Water Board. Sediment sample locations will be determined by the Regional Water Board.

## 7. AQUATIC LIFE TOXICITY

Toxicity tests are another method used to assess risk to aquatic life. These tests assess the overall toxicity of the effluent, including the toxicity of unmeasured constituents and/or synergistic effects of multiple constituents.

### 7.1. Point Sources

1. Does the effluent meet permit effluent limits for toxicity thereby ensuring that water quality standards are achieved in the receiving water\*?
2. If not:
  - a. Are unmeasured pollutants causing risk to aquatic life?
  - b. Are pollutants in combinations causing risk to aquatic life?

Core monitoring for Table 1 effluent toxicity shall be required periodically. For discharges less than 0.1 MGD the monitoring frequency for acute and/or chronic toxicity<sub>16</sub><sup>\*</sup> shall be twice per permit cycle. For discharges between 0.1 and 10 MGD, the monitoring frequency for acute and/or chronic toxicity<sub>16</sub><sup>\*</sup> of the effluent should be at least annually. For discharges greater than 10 MGD, the monitoring frequency for acute and/or chronic toxicity<sub>16</sub><sup>\*</sup> of the effluent should be at least semiannually.

For discharges greater than 10 MGD in a low energy coastal environment with the likelihood of sediment deposition, Core monitoring for acute sediment toxicity is required and will utilize alternative amphipod species (*Eohaustorius estuarius*, *Leptocheirus plumulosus*, *Rhepoxynius abronius*).

If an exceedance is detected, six additional toxicity tests are required within a 12-week period. If an additional exceedance is detected within the 12-week period, a toxicity reduction evaluation (TRE) is required, consistent with [chapter Section III.C.10](#) ~~which that~~ requires a TRE if a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table 1.

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\* See Appendix I for definition of terms.

## 7.2. Storm Water

1. Does the runoff meet objectives for toxicity in the receiving water\*?
2. Are the conditions in receiving water\* getting better or worse with regard to toxicity?
3. What is the relative runoff contribution to the receiving water\* toxicity?
4. What are the causes of the toxicity and the sources of the constituents responsible?

For Phase I MS4, Phase II MS4, and industrial storm water discharges, core toxicity monitoring will be required at a minimum for 10 percent of all outfalls greater than 36 inches in diameter or width at a minimum of once per year. Receiving water\* monitoring shall be for Table 1 critical life stage chronic toxicity\* for a minimum of one invertebrate species.

For storm water discharges greater than 72 inches in diameter or width in a low energy coastal environment with the likelihood of sediment deposition, core sediment monitoring for acute sediment toxicity is required and will utilize alternative amphipod species (*Eohaustorius estuarius*, *Leptocheirus plumulosus*, *Rhepoxynius abronius*).

Regional Water Boards may waive monitoring once structural best management practices have been installed, evaluated and determined to have successfully controlled toxicity.

If an exceedance is detected, an additional toxicity test is required during the subsequent storm event. If an additional exceedance is detected at that time, a TRE is required, consistent with [chapter Section III.C.10- which that](#) requires a TRE if a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table 1. A sufficient volume must be collected to conduct a TIE, if necessary, as a part of a TRE.

The requirement for core toxicity monitoring may be waived at the discretion of the Regional Water Board, if the permittee participates in a regional monitoring program to answer the above questions, as well as any other additional questions that may be developed by the regional monitoring program.

## 7.3. Non-point Sources

1. Does the agricultural and golf course runoff meet water quality standards for toxicity in the receiving water\*?
2. Are the conditions in receiving water\* getting better or worse with regard to toxicity?
3. What is the relative agricultural and golf course runoff contribution to receiving water\* toxicity?
4. What are the causes of the toxicity, and the sources of the constituents responsible?

To answer these questions, a statistically representative sample (determined by the Regional Water Board) of receiving water\* at the sites of agricultural irrigation tail water and storm water runoff, and golf course runoff, in each watershed will be monitored:

- a. During wet weather, at a minimum of two storm events per year, and
- b. During dry weather, when flowing, at a frequency determined by the Regional Boards.

Core receiving water\* monitoring shall include Table 1 critical life stage chronic toxicity\* for a minimum of one invertebrate species.

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\* See Appendix I for definition of terms.

For runoff in a low energy coastal environment with the likelihood of sediment deposition, core sediment monitoring shall include acute sediment toxicity utilizing alternative amphipod species (*Eohaustorius estuarius*, *Leptocheirus plumulosus*, *Rhepoxynius abronius*) at a minimum once per year.

If an exceedance is detected, an additional toxicity test is required during the subsequent storm event. If an additional exceedance is detected, a TRE is required, consistent with [chapter Section III.C.10](#) which ~~that~~ requires a TRE if a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table 1. A sufficient volume must be collected to conduct a TIE, if necessary, as a part of a TRE.

The requirement for core monitoring may be waived at the discretion of the Regional Water Board, if the permittee participates in a regional monitoring program to answer the above questions, as well as any other additional questions that may be developed by the regional monitoring program.

## 8. BENTHIC COMMUNITY HEALTH

### 8.1. Point Sources

1. Are benthic communities degraded<sup>\*</sup> as a result of the discharge?

To answer this question, benthic community monitoring shall be conducted

- a. for all discharges greater than 10 MGD, or
- b. those discharges greater than 0.1 MGD and one nautical mile or less from shore, or
- c. discharges greater than 0.1 MGD and one nautical mile or less from a State Water Quality Protection Area<sup>\*</sup> or a State Marine Reserve.

The minimum frequency shall be once per permit cycle, except for discharges greater than 100 MGD the minimum frequency shall be at least twice per permit cycle.

This requirement may be satisfied by core monitoring individually or through participation in a regional monitoring program at the discretion of the Regional Board.

## 9. BIOACCUMULATION

### 9.1. Point Sources

1. Does the concentration of pollutants in fish, shellfish<sup>\*</sup>, or other marine resources used for human consumption bioaccumulate to levels that are harmful to human health?
2. Does the concentration of pollutants in marine life bioaccumulate to levels that degrade<sup>\*</sup> marine communities?

To answer these questions, bioaccumulation monitoring shall be conducted, at a minimum, once per permit cycle for:

- a. discharges greater than 10 MGD, or
- b. those discharges greater than 0.1 MGD and one nautical mile or less from shore, or
- c. discharges greater than 0.1 MGD and one nautical mile or less from a State Water Quality Protection Area<sup>\*</sup> or a State Marine Reserve, Park or Conservation Area.

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\* See Appendix I for definition of terms.

Constituents to be monitored must include pesticides (at the discretion of the Regional Board), Table 1 metals, and PAHs\*. Bioaccumulation may be monitored by a mussel watch program or a fish tissue program. Resident mussels are preferred over transplanted mussels. Sand crabs and/or fish may be added or substituted for mussels at the discretion of the Regional Water Board.

This requirement may be satisfied individually as core monitoring or through participation in a regional monitoring program at the discretion of the Regional Water Board.

## 9.2. Storm Water

1. Does the concentration of pollutants in fish, shellfish\*, or other marine resources used for human consumption bioaccumulate to levels that are harmful to human health?
2. Does the concentration of pollutants in marine life bioaccumulate to levels that degrade\* marine communities?

For Phase I MS4 dischargers, bioaccumulation monitoring shall be conducted, at a minimum, once per permit cycle. Constituents to be monitored must include OP Pesticides, Ocean Plan Table 1 metals, Table 1 PAHs\*, Table 1 chlorinated hydrocarbons, and pyrethroids. Bioaccumulation may be monitored by a mussel watch program or a fish tissue program. Sand crabs, fish, and/or Solid Phase Microextraction may be added or substituted for mussels at the discretion of the Regional Water Board.

This requirement may be satisfied individually as core monitoring or through participation in a regional monitoring program at the discretion of the Regional Water Board.

## 10. RECEIVING WATER\* CHARACTERISTICS

All Sources:

1. Is natural light\* significantly\* reduced at any point outside the zone of initial dilution\* as the result of the discharge of waste\*?
2. Does the discharge of waste\* cause a discoloration of the ocean surface?
3. Does the discharge of oxygen demanding waste\* cause the dissolved oxygen concentration to be depressed at any time more than 10 percent from that which occurs naturally, as the result of the discharge of oxygen demanding\* waste\* materials\*?
4. Does the discharge of waste\* cause the pH to change at any time more than 0.2 units from that which occurs naturally?
5. Does the discharge of waste\* cause the salinity\* to become elevated in the receiving water\*?
6. Do nutrients cause objectionable aquatic growth or degrade\* indigenous biota?

### 10.1. Point Sources

For discharges greater than 10 MGD, turbidity (alternatively light transmissivity or surface water transparency), color [Chlorophyll-A and/or color dissolved organic matter (CDOM)], dissolved oxygen and pH shall be measured in the receiving water\* seasonally, at a minimum, in a core monitoring program approved by the Regional Water Board. If sufficient data exists from previous water column monitoring for these parameters, the Regional Water Board, at its

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\* See Appendix I for definition of terms.

discretion, may reduce the frequency of water column monitoring, or may allow this requirement to be satisfied through participation in a regional monitoring program. Use of regional ocean observing programs, such as the Southern California Coastal Ocean Observing System (SCCOOS) and the Central and Northern California Ocean Observing System (CeNCCOOS) is encouraged.

Salinity<sub>2</sub>\* must also be monitored by all point sources discharging desalination brine<sub>2</sub>\* as part of their core monitoring program. Seawater desalination facilities\* discharging brine\* into ocean waters\* and wastewater facilities that receive brine from seawater desalination facilities and discharge into ocean waters shall monitor salinity as described in chapter III.M.4.

## 10.2. Storm Water

At a minimum, at 10 percent of Phase I MS4 discharges greater than 36 inches in diameter or width, receiving water\* turbidity, color, dissolved oxygen, pH, nitrate, phosphate, and ammonia shall be measured annually in a core monitoring program approved by the Regional Water Board.

Regional Water Boards may waive monitoring once structural best management practices have been installed, evaluated and determined to have successfully controlled pollutants. The Regional Water Board, at its discretion, may also allow this requirement to be satisfied through participation in a regional monitoring program.

## 10.3. Non-point Sources

Representative agricultural and golf course discharges shall be measured, at a minimum twice annually (during the storm season and irrigation season) for receiving water\* turbidity, color, dissolved oxygen, pH, nitrate, phosphate, ammonia in a core monitoring program approved by the Regional Water Board. The Regional Water Board, at its discretion, may allow this requirement to be satisfied through participation in a regional monitoring program.

## 11. ANALYTICAL REQUIREMENTS

Procedures, calibration techniques, and instrument/reagent specifications shall conform to the requirements of 40 CFR PART 136. Compliance monitoring shall be determined using an U.S. EPA approved protocol as provided in 40 CFR PART 136. All methods shall be specified in the monitoring requirement section of waste<sub>2</sub>\* discharge requirements.

Where methods are not available in 40 CFR PART 136, the Regional Water Boards shall specify suitable analytical test methods in waste<sub>2</sub>\* discharge requirements. Acceptance of data should be predicated on demonstrated laboratory performance.

Laboratories analyzing monitoring data shall be certified by the California Department of Public Health, in accordance with the provisions of Water Code section 13176, and must include quality assurance quality control data with their reports.

Sample dilutions for total and fecal coliform bacterial analyses shall range from 2 to 16,000. Sample dilutions for enterococcus bacterial analyses shall range from 1 to 10,000 per 100 mL. Each test method number or name (e.g., EPA 600/4-85/076, Test Methods for *Escherichia coli*

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\* See Appendix I for definition of terms.

and *Enterococci* in Water by Membrane Filter Procedure) used for each analysis shall be specified and reported with the results.

Test methods used for coliforms (total and fecal) shall be those presented in Table 1A of 40 CFR PART 136, unless alternate test methods have been approved in advance by U.S. EPA pursuant to 40 CFR PART 136.

Test methods used for enterococcus shall be those presented in U.S. EPA publication EPA 600/4-85/076, Test Methods for *Escherichia coli* and *Enterococci* in Water by Membrane Filter Procedure or any improved test method determined by the Regional Board to be appropriate. The Regional Water Board may allow analysis for *Escherichia coli* (*E. coli*) by approved test methods to be substituted for fecal coliforms if sufficient information exists to support comparability with approved test methods and substitute the existing test methods.

The State or Regional Water Board may, subject to U.S. EPA approval, specify test methods which are more sensitive than those specified in 40 CFR PART 136. Because storm water and non-point sources are not assigned a dilution factor, sufficient sampling and analysis shall be required to determine compliance with Table 1 Water Quality Objectives. Total chlorine residual is likely to be a test method detection limit effluent limitation in many cases. The limit of detection of total chlorine residual in standard test methods is less than or equal to 20 µg/L.

Toxicity monitoring requirements in permits prepared by the Regional Water Boards shall use marine test species instead of freshwater species when measuring compliance. The Regional Water Board shall require the use of critical life stage toxicity tests specified in this Appendix to measure TUc. For Point Sources, a minimum of three test species with approved test protocols shall be used to measure compliance with the toxicity objective. If possible, the test species shall include a fish, an invertebrate, and an aquatic plant. After a screening period, monitoring can be reduced to the most sensitive species.

Dilution and control water should be obtained from an unaffected area of the receiving waters<sup>\*,\*</sup>. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay test and reported with the test results.

Use of critical life stage bioassay testing shall be included in waste<sup>\*</sup> discharge requirements as a monitoring requirement for all Point Source discharges greater than 100 MGD.

Procedures and test methods used to determine compliance with benthic monitoring should use the following federal guidelines when applicable: Macroinvertebrate Field and Laboratory Methods for Evaluating the Biological Integrity of Surface Waters (1990) -- EPA/600/4-90/030 (PB91-171363). This manual describes guidelines and standardized procedures for the use of macroinvertebrates in evaluating the biological integrity of surface waters.

Procedures used to determine compliance with bioaccumulation monitoring should use the U.S. EPA. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories (November 2000, EPA 823-B-00-007), NOAA Technical Memorandum NOS ORCA 130, Sampling and Analytical Methods of the National Status and Trends Program Mussel Watch Project (1998 update), and/or State Mussel Watch Program, 1987-1993 Data Report, State Water Resources Control Board 94-1WQ.

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\* See Appendix I for definition of terms.

**TABLE III-1  
APPROVED TESTS – CHRONIC TOXICITY\* (TUc)**

<u>Species</u>	<u>Effect</u>	<u>Tier</u>	<u>Reference</u>
giant kelp, <i>Macrocystis pyrifera</i>	percent germination; germ tube length	1	1,3
red abalone, <i>Haliotis rufescens</i>	Abnormal shell development	1	1,3
oyster, <i>Crassostrea gigas</i> ; mussels, <i>Mytilus spp.</i>	Abnormal shell development; percent survival	1	1,3
urchin, <i>Strongylocentrotus purpuratus</i> ; sand dollar, <i>Dendraster excentricus</i>	Percent normal development	1	1,3
urchin, <i>Strongylocentrotus purpuratus</i> ; sand dollar, <i>Dendraster excentricus</i>	Percent fertilization	1	1,3
shrimp, <i>Holmesimysis costata</i>	Percent survival; growth	1	1,3
shrimp, <i>Mysidopsis bahia</i>	Percent survival; growth; fecundity	2	2,4
topsmelt, <i>Atherinops affinis</i>	Larval growth rate; percent survival	1	1,3
Silversides, <i>Menidia beryllina</i>	Larval growth rate; percent survival	2	2,4

**Table III-1 Notes**

The first tier test methods are the preferred toxicity tests for compliance monitoring. A Regional Water Board can approve the use of a second tier test method for waste\* discharges if first tier organisms are not available.

\* See Appendix I for definition of terms.

Protocol References

1. Chapman, G.A., D.L. Denton, and J.M. Lazorchak. 1995. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to west coast marine and estuarine organisms. U.S. EPA Report No. EPA/600/R-95/136.
2. Klemm, D.J., G.E. Morrison, T.J. Norberg-King, W.J. Peltier, and M.A. Heber. 1994. Short-term methods for estimating the chronic toxicity of effluents and receiving water to marine and estuarine organisms. U.S. EPA Report No. EPA-600-4-91-003.
3. SWRCB 1996. Procedures Manual for Conducting Toxicity Tests Developed by the Marine Bioassay Project. 96-1WQ.
4. Weber, C.I., W.B. Horning, I.I., D.J. Klemm, T.W. Nieheisel, P.A. Lewis, E.L. Robinson, J. Menkedick and F. Kessler (eds). 1988. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms. EPA/600/4-87/028. National Information Service, Springfield, VA.

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\* See Appendix I for definition of terms.

**APPENDIX IV  
PROCEDURES FOR THE NOMINATION AND DESIGNATION OF  
STATE WATER QUALITY PROTECTION AREAS<sup>\*,\*</sup>**

1. Any person may nominate areas of ocean<sup>\*</sup> waters for designation as SWQPA-ASBS or SWQPA-GP by the State Water Board. Nominations shall be made to the appropriate Regional Water Board and shall include:
  - (a) Information such as maps, reports, data, statements, and photographs to show that:
    - (1) Candidate areas are located in ocean<sup>\*</sup> waters as defined in the "Ocean Plan".
    - (2) Candidate areas are intrinsically valuable or have recognized value to man for scientific study, commercial use, recreational use, or esthetic reasons.
    - (3) Candidate areas need protection beyond that offered by waste<sup>\*</sup> discharge restrictions or other administrative and statutory mechanisms.
  - (b) Data and information to indicate whether the proposed designation may have a significant<sup>\*</sup> effect on the environment.
    - (1) If the data or information indicate that the proposed designation will have a significant<sup>\*</sup> effect on the environment, the nominee must submit sufficient information and data to identify feasible changes in the designation that will mitigate or avoid the significant<sup>\*</sup> environmental effects.
2. The State Water Board or a Regional Water Board may also nominate areas for designation as SWQPA-ASBS or SWQPA-GP on their own motion.
3. A Regional Water Board may decide to (a) consider individual SWQPA-ASBS or SWQPA-GP nominations upon receipt, (b) consider several nominations in a consolidated proceeding, or (c) consider nominations in the triennial review of its water quality control plan (basin plan). A nomination that meets the requirements of 1. above may be considered at any time but not later than the next scheduled triennial review of the appropriate basin plan or Ocean Plan.
4. After determining that a nomination meets the requirements of paragraph 1. above, the Executive Officer of the affected Regional Water Board shall prepare a Draft Nomination Report containing the following:
  - (a) The area or areas nominated for designation as SWQPA-ASBS or SWQPA-GP.
  - (b) A description of each area including a map delineating the boundaries of each proposed area.
  - (c) A recommendation for action on the nomination(s) and the rationale for the recommendation. If the Draft Nomination Report recommends approval of the proposed designation, the Draft Nomination Report shall comply with the CEQA documentation requirements for a water quality control plan amendment in [Section 3777](#), [Title 23](#), California Code of Regulations.

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\* See Appendix I for definition of terms.

5. The Executive Officer shall, at a minimum, seek informal comment on the Draft Nomination Report from the State Water Board, Department of Fish and Game, other interested state and federal agencies, conservation groups, affected waste dischargers, and other interested parties. Upon incorporation of responses from the consulted agencies, the Draft Nomination Report shall become the Final Nomination Report.
6.
  - (a) If the Final Nomination Report recommends approval of the proposed designation, the Executive Officer shall ensure that processing of the nomination complies with the CEQA consultation requirements in [Section 3778](#), Title 23, California Code of Regulations and proceed to step 7 below.
  - (b) If the Final Nomination Report recommends against approval of the proposed designation, the Executive Officer shall notify interested parties of the decision. No further action need be taken. The nominating party may seek reconsideration of the decision by the Regional Water Board itself.
7. The Regional Water Board shall conduct a public hearing to receive testimony on the proposed designation. Notice of the hearing shall be published three times in a newspaper of general circulation in the vicinity of the proposed area or areas and shall be distributed to all known interested parties 45 days in advance of the hearing. The notice shall describe the location, boundaries, and extent of the area or areas under consideration, as well as proposed restrictions on waste\* discharges within the area.
8. The Regional Water Board shall respond to comments as required in [Section 3779](#), Title 23, California Code of Regulations, and 40 C.F.R. Part 25 (July 1, 1999).
9. The Regional Water Board shall consider the nomination after completing the required public review processes required by CEQA.
  - (a) If the Regional Water Board supports the recommendation for designation, the board shall forward to the State Water Board its recommendation for approving designation of the proposed area or areas and the supporting rationale. The Regional Water Board submittal shall include a copy of the staff report, hearing transcript, comments, and responses to comments.
  - (b) If the Regional Water Board does not support the recommendation for designation, the Executive Officer shall notify interested parties of the decision, and no further action need be taken.
10. After considering the Regional Water Board recommendation and hearing record, the State Water Board may approve or deny the recommendation, refer the matter to the Regional Water Board for appropriate action, or conduct further hearing itself. If the State Water Board acts to approve a recommended designation, the State Water Board shall amend Appendix V, Table V-1, of this Plan. The amendment will go into effect after approval by the Office of Administrative Law and US EPA. In addition, after the effective date of a designation, the affected Regional Water Board shall revise its water quality control plan in the next triennial review to include the designation.

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\* See Appendix I for definition of terms.

12. The State Water Board Executive Director shall advise other agencies to whom the list of designated areas is to be provided that the basis for an SWQPA-ASBS or SWQPA-GP designation is limited to protection of marine life from waste<sup>\*</sup> discharges.

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\* See Appendix I for definition of terms.

**APPENDIX V**  
**STATE WATER QUALITY PROTECTION AREAS\***  
**AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE\***

**TABLE V-1**  
**STATE WATER QUALITY PROTECTION AREAS\***  
**AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE\***  
**(DESIGNATED OR APPROVED BY THE STATE WATER RESOURCES CONTROL BOARD)**

No.	ASBS Name	Date Designated	State Water Board Resolution No.	Region No.
1.	Jughandle Cove	March 21, 1974,	74-28	1
2.	Del Mar Landing	March 21, 1974,	74-28	1
3.	Gerstle Cove	March 21, 1974,	74-28	1
4.	Bodega	March 21, 1974,	74-28	1
5.	Saunders Reef	March 21, 1974,	74-28	1
6.	Trinidad Head	March 21, 1974,	74-28	1
7.	King Range	March 21, 1974,	74-28	1
8.	Redwoods National Park	March 21, 1974,	74-28	1
9.	James V. Fitzgerald	March 21, 1974,	74-28	2
10.	Farallon Islands	March 21, 1974,	74-28	2
11.	Duxbury Reef	March 21, 1974,	74-28	2
12.	Point Reyes Headlands	March 21, 1974,	74-28	2
13.	Double Point	March 21, 1974,	74-28	2
14.	Bird Rock	March 21, 1974,	74-28	2
15.	Año Nuevo	March 21, 1974,	74-28	3
16.	Point Lobos	March 21, 1974,	74-28	3
17.	San Miguel, Santa Rosa, and Santa Cruz Islands	March 21, 1974,	74-28	3
18.	Julia Pfeiffer Burns	March 21, 1974,	74-28	3
19.	Pacific Grove	March 21, 1974,	74-28	3
20.	Salmon Creek Coast	March 21, 1974,	74-28	3
21.	San Nicolas Island and Begg Rock	March 21, 1974,	74-28	4
22.	Santa Barbara and Anacapa Islands	March 21, 1974,	74-28	4
23.	San Clemente Island	March 21, 1974,	74-28	4

**Table V-1 Continued on next page...**

\* See Appendix I for definition of terms.

**Table V-1 (Continued)**  
**Areas of Special Biological Significance\***  
**(Designated or Approved by the State Water Resources Control Board)**

<b>No.</b>	<b>ASBS Name</b>	<b>Date Designated</b>	<b>State Water Board Resolution No.</b>	<b>Region No.</b>
24.	Laguna Point to Latigo Point	March 21, 1974,	74-28	4
25.	Northwest Santa Catalina Island	March 21, 1974,	74-28	4
26.	Western Santa Catalina Island	March 21, 1974,	74-28	4
27.	Farnsworth Bank	March 21, 1974,	74-28	4
28.	Southeast Santa Catalina	March 21, 1974,	74-28	4
29.	La Jolla	March 21, 1974,	74-28	9
30.	Heisler Park	March 21, 1974,	74-28	9
31.	San Diego-Scripps	March 21, 1974,	74-28	9
32.	Robert E. Badham	April 18, 1974	74-32	8
33.	Irvine Coast	April 18, 1974	74-32	8,9
34.	Carmel Bay	June 19, 1975	75-61	3

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\* See Appendix I for definition of terms.

## APPENDIX VI

### REASONABLE POTENTIAL ANALYSIS PROCEDURE FOR DETERMINING WHICH TABLE 1 OBJECTIVES REQUIRE EFFLUENT LIMITATIONS

In determining the need for an effluent limitation, the Regional Water Board shall use all representative information to characterize the pollutant discharge using a scientifically defensible statistical method that accounts for the averaging period of the water quality objective, accounts for and captures the long-term variability of the pollutant in the effluent, accounts for limitations associated with sparse data sets, accounts for uncertainty associated with censored data sets, and (unless otherwise demonstrated) assumes a lognormal distribution of the facility-specific effluent data.

The purpose of the following procedure (see also Figure VI-1) is to provide direction to the Regional Water Boards for determining if a pollutant discharge causes, has the reasonable potential to cause, or contributes to an excursion above Table 1 water quality objectives in accordance with 40 CFR 122.44 (d)(1)(iii). The Regional Water Board may use an alternative approach for assessing reasonable potential such as an appropriate stochastic dilution model that incorporates both ambient and effluent variability. The permit fact sheet or statement of basis will document the justification or basis for the conclusions of the reasonable potential assessment. This appendix does not apply to permits or any portion of a permit where the discharge is regulated through best management practices (BMP) unless such discharge is also subject to numeric effluent limitations.

Step 1: Identify  $C_o$ , the applicable water quality objective from Table 1 for the pollutant.

Step 2: Does information about the receiving water\* body or the discharge support a reasonable potential assessment (RPA) without characterizing facility-specific effluent monitoring data? If yes, go to Step 13 to conduct an RPA based on best professional judgment (BPJ). Otherwise, proceed to Step 3.

Step 3: Is facility-specific effluent monitoring data available? If yes, proceed to Step 4. Otherwise, go to Step 13.

Step 4: Adjust all effluent monitoring data  $C_e$ , including censored (ND or DNQ) values to the concentration  $X$  expected after complete mixing. For Table 1 pollutants use  $X = (C_e + D_m C_s) / (D_m + 1)$ ; for acute toxicity\* use  $X = C_e / (0.1 D_m + 1)$ ; where  $D_m$  is the minimum probable initial dilution\* expressed as parts seawater\* per part wastewater and  $C_s$  is the background seawater\* concentration from Table 3. For ND values,  $C_e$  is replaced with "<MDL\*," for DNQ values  $C_e$  is replaced with "<ML.\*" Go to Step 5.

Step 5: Count the total number of samples  $n$ , the number of censored (ND or DNQ) values,  $c$  and the number of detected values,  $d$ , such that  $n = c + d$ .

Is any *detected* pollutant concentration after complete mixing greater than  $C_o$ ? If yes, the discharge causes an excursion of  $C_o$ ; go to Endpoint 1. Otherwise, proceed to Step 6.

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\* See Appendix I for definition of terms.

Step 6: Does the effluent monitoring data contain three or more detected observations ( $d \geq 3$ )? If yes, proceed to *Step 7* to conduct a parametric RPA. Otherwise, go to *Step 11* to conduct a nonparametric RPA.

Step 7: Conduct a parametric RPA. Assume data are lognormally distributed, unless otherwise demonstrated. Does the data consist entirely of detected values ( $c/n = 0$ )? If yes,

- calculate summary statistics  $M_L$  and  $S_L$ , the mean and standard deviation of the natural logarithm transformed effluent data expected after complete mixing,  $\ln(X)$ ,
- go to *Step 9*.

Otherwise, proceed to *Step 8*.

Step 8: Is the data censored by 80% or less ( $c/n \leq 0.8$ )? If yes,

- calculate summary statistics  $M_L$  and  $S_L$  using the censored data analysis method of Helsel and Cohn (1988),
- go to *Step 9*.

Otherwise, go to *Step 11*.

Step 9: Calculate the UCB i.e., the one-sided, upper 95 percent confidence bound for the 95<sup>th</sup> percentile of the effluent distribution after complete mixing. For lognormal distributions, use  $UCBL_{(.95,.95)} = \exp(M_L + S_L g'_{(.95,.95,n)})$ , where  $g'$  is a normal tolerance factor obtained from the table below (Table VI-1). Proceed to *Step 10*.

Step 10: Is the UCB greater than  $C_o$ ? If yes, the discharge has a reasonable potential to cause an excursion of  $C_o$ ; go to *Endpoint 1*. Otherwise, the discharge has no reasonable potential to cause an excursion of  $C_o$ ; go to *Endpoint 2*.

Step 11: Conduct a non-parametric RPA. Compare each data value  $X$  to  $C_o$ . Reduce the sample size  $n$  by 1 for each tie (i.e., inconclusive censored value result) present. An adjusted ND value having  $C_o < MDL_{\underline{\underline{*}}}$  is a tie. An adjusted DNQ value having  $C_o < ML_{\underline{\underline{*}}}$  is also a tie.

Step 12: Is the adjusted  $n > 15$ ? If yes, the discharge has no reasonable potential to cause an excursion of  $C_o$ ; go to *Endpoint 2*. Otherwise, go to *Endpoint 3*.

Step 13: Conduct an RPA based on BPJ. Review all available information to determine if a water quality-based effluent limitation is required, notwithstanding the above analysis in *Steps 1* through *12*, to protect beneficial uses. Information that may be used includes: the facility type, the discharge type, solids loading analysis, lack of dilution, history of compliance problems, potential toxic impact of discharge, fish tissue residue data, water quality and beneficial uses of the receiving water<sup>\*,\*</sup>, CWA 303(d) listing for the pollutant, the presence of endangered or threatened species or critical habitat, and other information.

Is data or other information unavailable or insufficient to determine if a water quality-based effluent limitation is required? If yes, go to *Endpoint 3*. Otherwise, go to either *Endpoint 1* or *Endpoint 2* based on BPJ.

Endpoint 1: An effluent limitation must be developed for the pollutant. Effluent monitoring for the pollutant, consistent with the monitoring frequency in Appendix III, is required.

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\* See Appendix I for definition of terms.

Endpoint 2: An effluent limitation is not required for the pollutant. Appendix III effluent monitoring is not required for the pollutant; the Regional Board, however, may require occasional monitoring for the pollutant or for whole effluent toxicity as appropriate.

Endpoint 3: The RPA is inconclusive. Monitoring for the pollutant or whole effluent toxicity testing, consistent with the monitoring frequency in Appendix III, is required. An existing effluent limitation for the pollutant shall remain in the permit, otherwise the permit shall include a reopener clause to allow for subsequent modification of the permit to include an effluent limitation if the monitoring establishes that the discharge causes, has the reasonable potential to cause, or contributes to an excursion above a Table 1 water quality objective.

Appendix VI References:

Helsel D. R. and T. A. Cohn. 1988. Estimation of descriptive statistics for multiply censored water quality data. Water Resources Research, Vol 24(12):1977-2004.

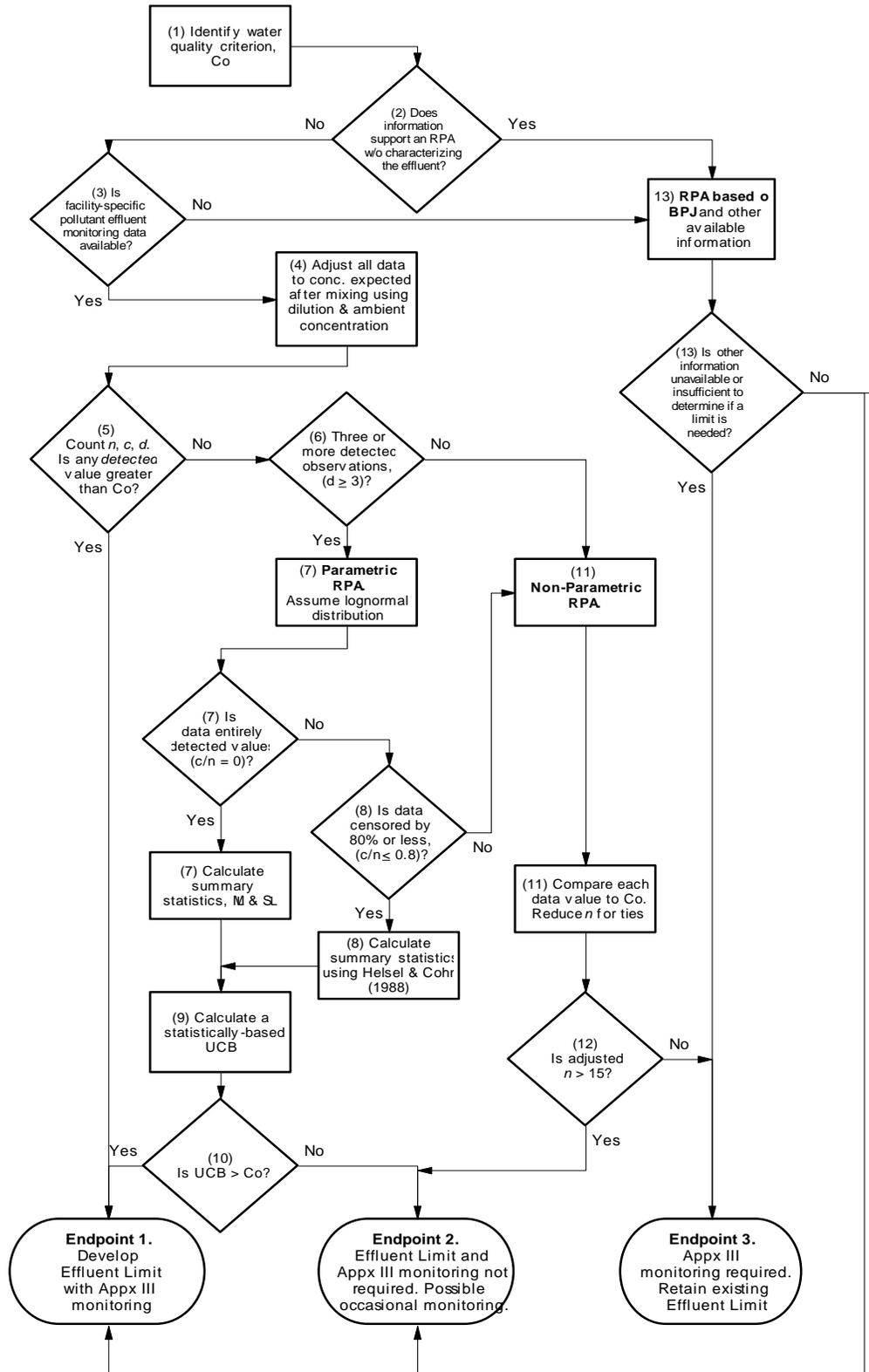
Hahn J. H. and W. Q. Meeker. 1991. Statistical Intervals, A guide for practitioners. J. Wiley & Sons, NY.

**TABLE VI-1: Tolerance factors  $g'_{(95,95,n)}$  for calculating normal distribution one-sided upper 95 percent tolerance bounds for the 95th percentile (Hahn & Meeker 1991)**

<i>n</i>	$g'_{(95,95,n)}$	<i>n</i>	$g'_{(95,95,n)}$
2	26.260	21	2.371
3	7.656	22	2.349
4	5.144	23	2.328
5	4.203	24	2.309
6	3.708	25	2.292
7	3.399	26	2.275
8	3.187	27	2.260
9	3.031	28	2.246
10	2.911	29	2.232
11	2.815	30	2.220
12	2.736	35	2.167
13	2.671	40	2.125
14	2.614	50	2.065
15	2.566	60	2.022
16	2.524	120	1.899
17	2.486	240	1.819
18	2.453	480	1.766
19	2.423	∞	1.645
20	2.396		

\* See Appendix I for definition of terms.

Figure VI-1. Reasonable potential analysis flow chart



\* See Appendix I for definition of terms.

**APPENDIX VII**

**EXCEPTIONS TO THE CALIFORNIA OCEAN PLAN**

**TABLE VII-1  
EXCEPTIONS TO THE OCEAN PLAN**

**(GRANTED BY THE STATE WATER RESOURCES CONTROL BOARD)**

Year	Resolution	Applicable Provision	Discharger
1977	77-11	Discharge Prohibition, ASBS #23	US Navy San Clemente Island
1979	79-16	Discharge Prohibition for wet weather discharges from combined storm and wastewater collection system.	The City and County of San Francisco
1983	83-78	Discharge Prohibition, ASBS #7	Humboldt County Resort Improvement District No.1
1984	84-78	Discharge Prohibition, ASBS #34	Carmel Sanitary District
1988	88-80	Total Chlorine Residual Limitation	Haynes Power Plant Harbor Power Plant Scattergood Power Plant Alamitos Power Plant El Segundo Power Plant Long Beach Power Plant Mandalay Power Plant Ormond Beach Power Plant Redondo Power Plant
1990	90-105	Discharge Prohibition, ASBS #21	US Navy San Nicolas Island
2004	2004-0052	Discharge Prohibition, ASBS #31	UC Scripps Institution of Oceanography
2006	2006-0013	Discharge Prohibition, ASBS #25	USC Wrigley Marine Science Center
2007	2007-0058	Discharge Prohibition, ASBS #4	UC Davis Bodega Marine Laboratory
2011	2011-0049	Discharge Prohibition, ASBS #6	HSU Telonicher Marine lab
2011	2011-0050	Discharge Prohibition, ASBS #19	Monterey Bay Aquarium
2011	2011-0051	Discharge Prohibition, ASBS #19	Stanford Hopkins Marine Station
2012	2012-0012, as amended on June 19	ASBS Discharge Prohibition, General Exception for Storm Water and Nonpoint Sources	27 applicants for the General Exception

\* See Appendix I for definition of terms.

	2012; in 2012-0031		
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\* See Appendix I for definition of terms.

### APPENDIX VIII MAPS OF THE OCEAN, COAST, AND ISLANDS

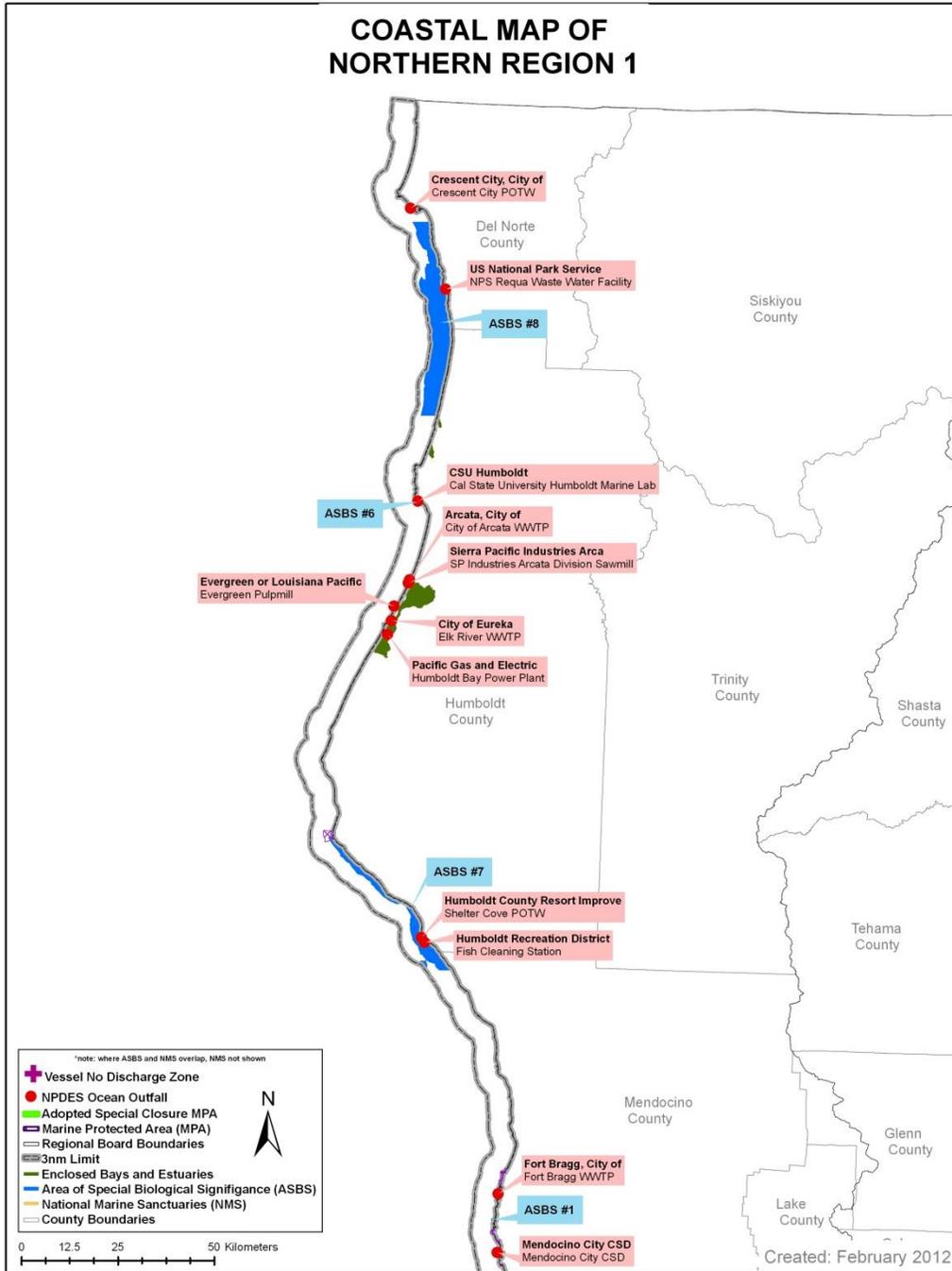


Figure VIII-1. ASBS Boundaries, MPA Boundaries, Wastewater Outfall Points, Marine Sanctuary Boundaries, and Enclosed Bays in northern Region 1.

\* See Appendix I for definition of terms.

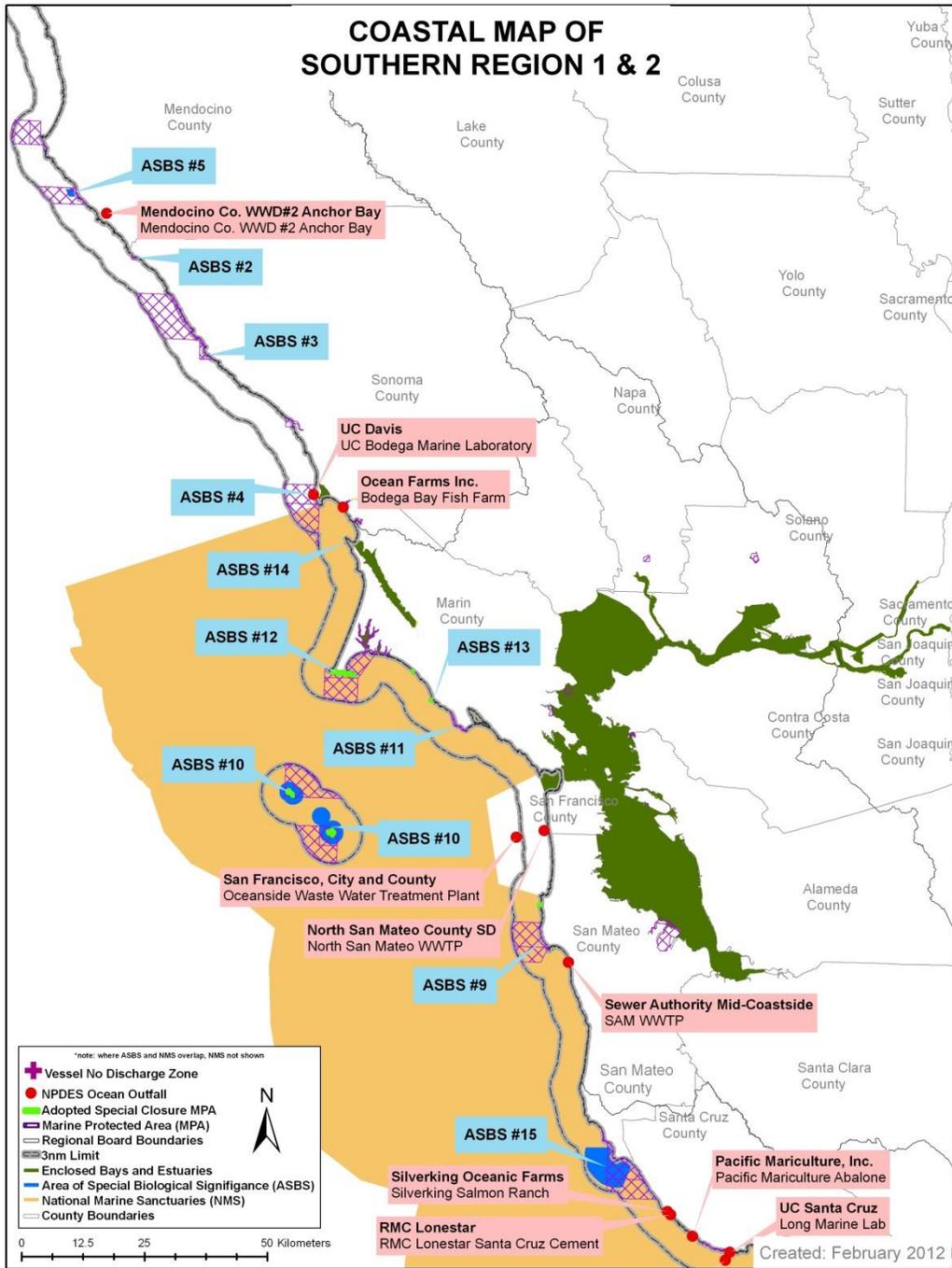


Figure VIII-2. ASBS Boundaries, MPA Boundaries, Wastewater Outfall Points, Marine Sanctuary Boundaries, and Enclosed Bays in southern Region 1 and Region 2.

\* See Appendix I for definition of terms.

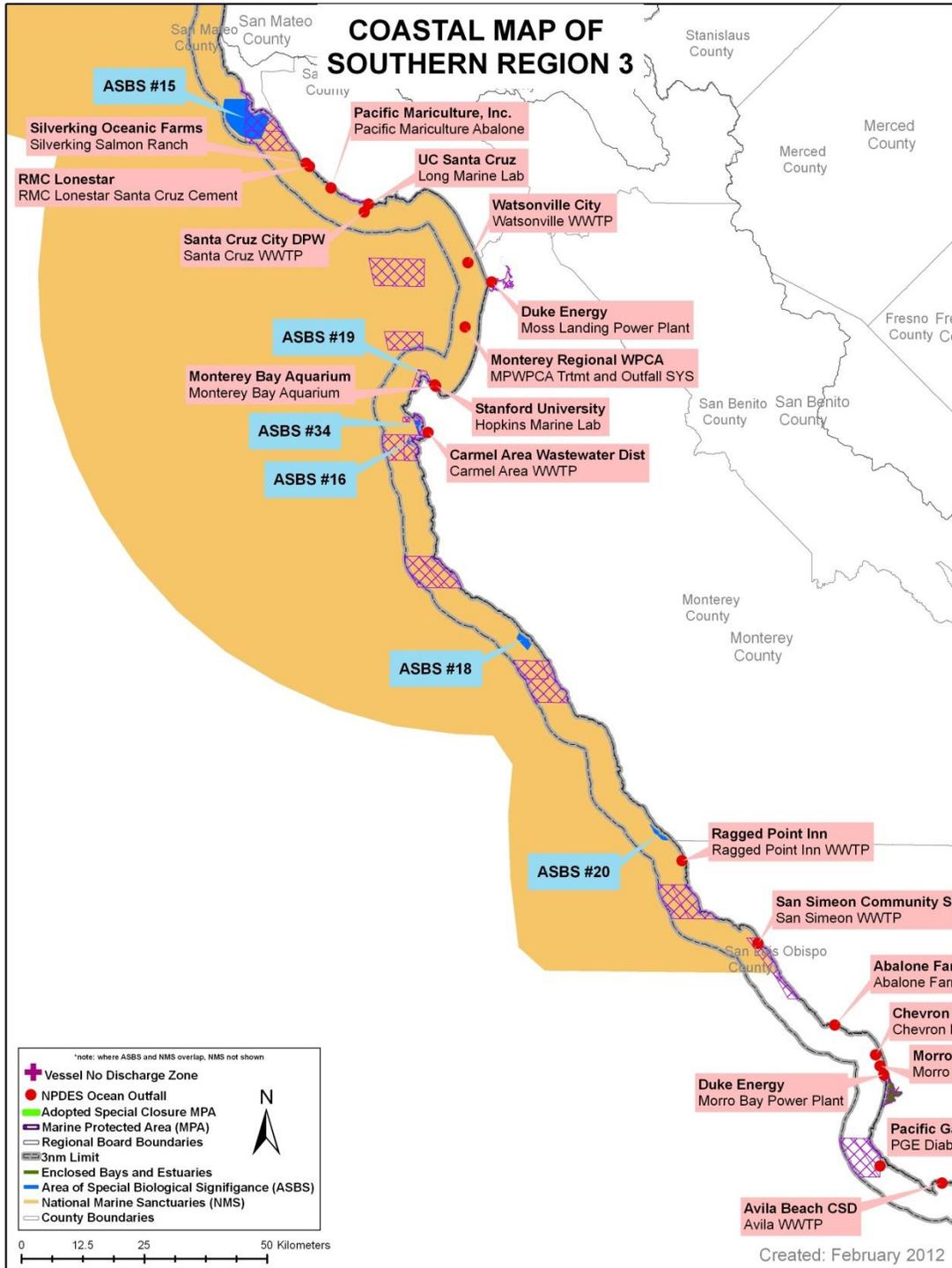
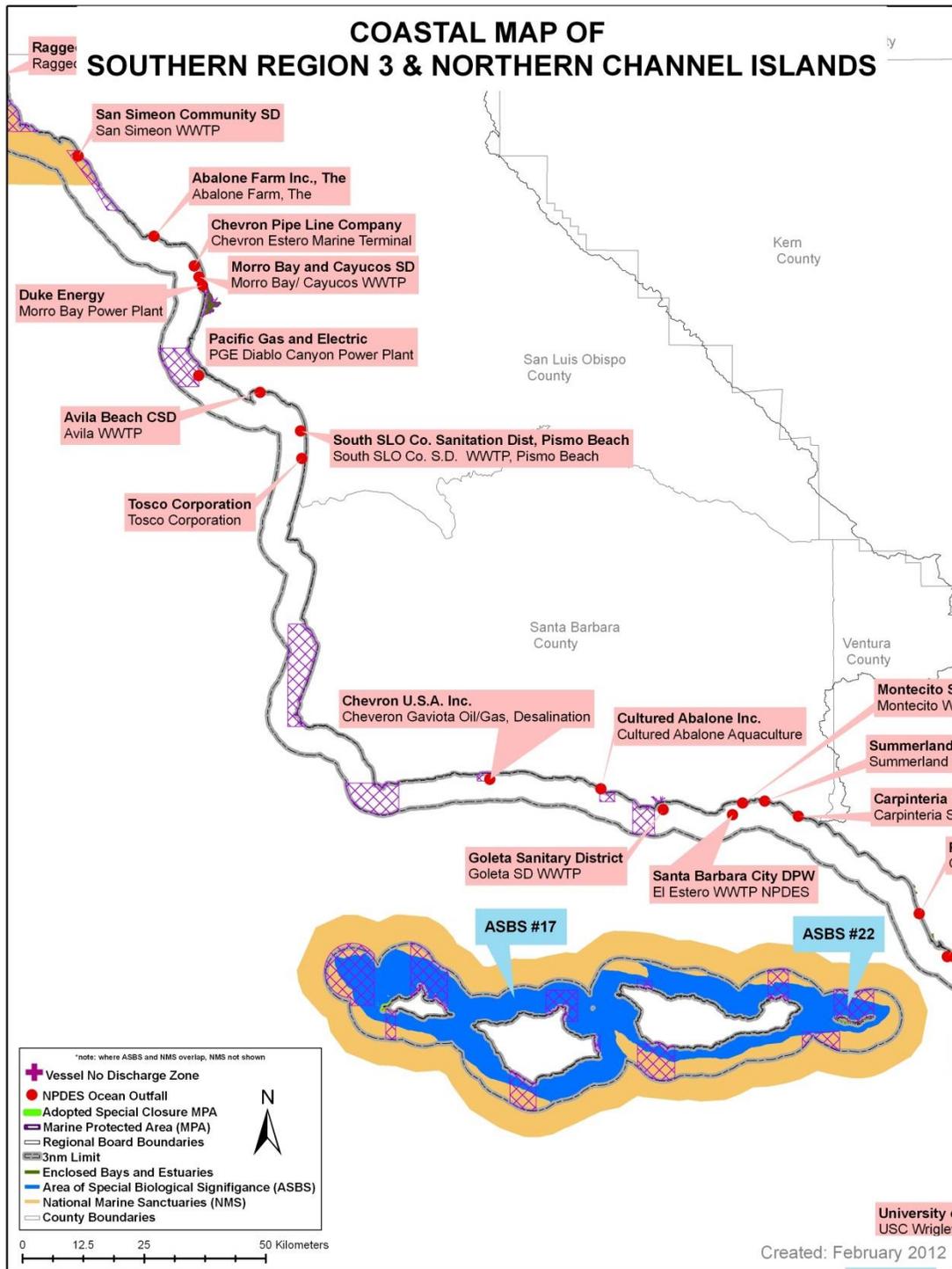


Figure VIII-3. ASBS Boundaries, MPA Boundaries, Wastewater Outfall Points, Marine Sanctuary Boundaries, and Enclosed Bays in northern Region 3.

\* See Appendix I for definition of terms.

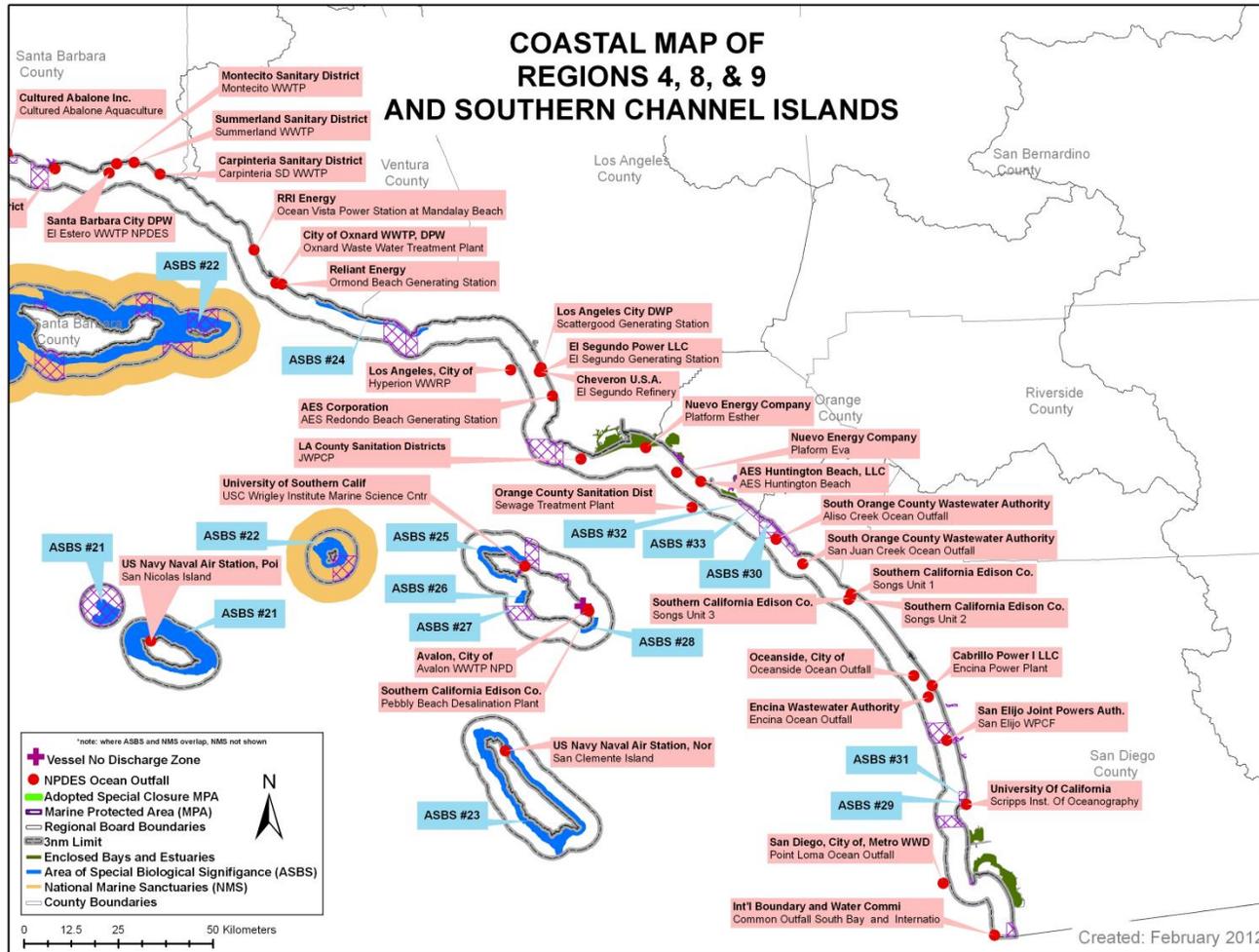


**Figure VIII-4. ASBS Boundaries, MPA Boundaries, Wastewater Outfall Points, Marine Sanctuary Boundaries, and Enclosed Bays in southern Region 3 and northern Channel Islands.**

\* See Appendix I for definition of terms.

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\* See Appendix I for definition of terms.



**Figure VIII-5. ASBS Boundaries, MPA Boundaries, Wastewater Outfall Points, Marine Sanctuary Boundaries, and Enclosed Bays in southern Channel Islands and Regions 4, 8 and 9.**

\* See Appendix I for definition of terms.