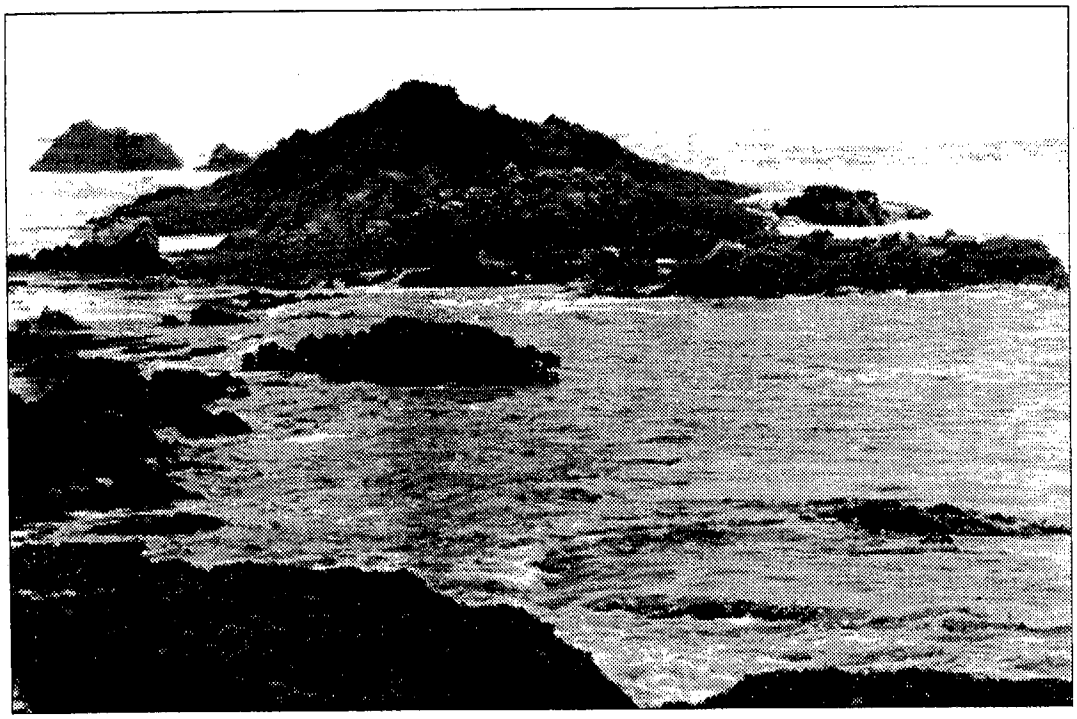
DRAFT
FUNCTIONAL EQUIVALENT DOCUMENT

AMENDMENT OF
THE WATER QUALITY CONTROL PLAN
FOR OCEAN WATERS OF CALIFORNIA

CALIFORNIA OCEAN PLAN



AUGUST 1995
STATE WATER RESOURCES CONTROL BOARD

STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER QUALITY

DRAFT FUNCTIONAL EQUIVALENT DOCUMENT

AMENDMENT OF THE WATER QUALITY CONTROL PLAN FOR OCEAN WATERS OF CALIFORNIA

CALIFORNIA OCEAN PLAN

AUGUST 23, 1995

STATE OF CALIFORNIA - CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

PETE WILSON, *Governor*

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Notice of Public Hearing
Amendment of the Water Quality Control Plan for Ocean Waters of California
Wednesday, August 23, 1995, 10:00 A.M.

State Water Resources Control Board Hearing Room
901 P Street
Sacramento, California

Notice is hereby given that a public hearing will be held by the State Water Resources Control Board (SWRCB) to seek comments on proposed amendments to the Water Quality Control Plan for Ocean Waters of California (Ocean Plan). The Ocean Plan sets water quality objectives and effluent limitations for discharge of wastewater into California's coastal ocean waters. The Ocean Plan was first adopted in 1972 and was revised in 1978, 1983, 1988, and 1990.

In compliance with the California Environmental Quality Act, the SWRCB has prepared a Draft Functional Equivalent Document describing proposed Ocean Plan amendments. Proposed amendments include (1) revision of seven water quality objectives for the protection of human health (Table B), (2) revision of the approved list of critical life stage testing protocols for measuring chronic toxicity of effluents (Appendix II), and (3) changes in Ocean Plan format and terminology.

Persons wishing to comment or make recommendations on the proposed amendments should submit written comments by August 23, 1995. All comments received will be considered by the SWRCB before adopting amendments. **No decision will be made at the hearing regarding whether to adopt the proposed Ocean Plan amendments.** A summary of the hearing record will be presented to the SWRCB at a subsequent Board Workshop. A decision whether to adopt the proposed amendments will be made at a subsequent Board meeting.

Interested persons should submit written comments to Dr. Francis H. Palmer, Division of Water Quality, State Water Resources Control Board, P. O. Box 944213, Sacramento, CA 94244-2130. To receive a copy of the Draft Functional Equivalent Document (which includes the Draft Ocean Plan, a discussion of the proposed amendments, and a progress report on other Ocean Plan-related issues), contact Angelica Yañez at the above address or by telephone at 916/657-1114.

Maureen Marché
Administrative Assistant to the Board

Date: JUL -7 1995

Notice of Filing

To:	Any Interested Person
From:	State Water Resources Control Board P.O.Box 944213 Sacramento, CA 95814
Subject:	Notice of Filing submitted under Section 21080.5 of the Public Resources Code
Project Proponent:	State Water Resources Control Board
Project Title:	Water Quality Control Plan for Ocean Waters of California
Contact Person:	Francis H. Palmer; Telephone No. (916) 657-0797
Project Location:	The Coastal Waters of California

Project Description: This is to advise that amendments to the Water Quality Control Plan for Ocean Waters of California have been filed. Amendments are proposed for (1) revision of seven water quality objectives for the protection of human health (Table B), (2) revision of the approved list of critical life stage testing protocols for measuring chronic toxicity of effluents (Ocean Plan-Appendix II), and (3) changes in Plan format and terminology.

Action on this amendment will be taken in accordance with Section 21080.5 of the Public Resources Code. The State Water Resources Control Board's planning program qualifies as a regulatory program exempt from the requirement to prepare an environmental impact report or negative declaration under the California Environmental Quality Act (Public Resources Code, Section 21000 *et seq.*).

Copies of the Functional Equivalent Document (which includes the Draft Ocean Plan, a discussion of the proposed amendments, and a progress report on other Ocean Plan-related issues) may be obtained from the contact person named above.

D. Cohen — July 14/95

David Cohen
Environmental Program Manager

Date

Draft Functional Equivalent Document
Amendment of the Water Quality Control Plan
for Ocean Waters of California

♦ TABLE OF CONTENTS ♦

LIST OF TABLES

LIST OF ABBREVIATIONS

ADI	Acceptable daily intake
ASTM	American Society for Testing and Materials
ASBS	Areas of Special Biological Significance
BCF	Bioconcentration factor
Cal/EPA	California Environmental Protection Agency
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
CWC	California Water Code
DHS	Department of Health Services
EPA	United States Environmental Protection Agency
HESIS	Hazard Evaluation System Information Service
IRIS	Integrated Risk Information System
kg	kilogram
kg/day	kilograms per day
kg-day/mg	kilogram day per milligram
l/kg	liter per kilogram
MDL	Method detection limit
ug/l	micrograms per liter
mg/kg-day	milligram per kilogram day
NPDES	National Pollutant Discharge Elimination System
OEHHA	Office of Environmental Health Hazard Assessment
PRC	Protocol Review Committee
POTWs	Publicly Owned Treatment Works
q^{1*}	cancer potency factor (estimate of carcinogenic potency derived from animal studies or epidemiological data of human exposure) which is intended to be a conservative upper bound estimate (95% upper bound confidence limit)
RfD	Reference dose
RWQCB	Regional Water Quality Control Board
SCWG	Standards and Criteria Work Group
SWRCB	State Water Resources Control Board
TUc	Toxicity unit chronic

SUMMARY

The State Water Resources Control Board (SWRCB) staff has prepared this draft Functional Equivalent Document to consider three proposed amendments to the California Ocean Plan. The report contains a description of the sections proposed for amendment as well as a progress report on 18 additional issues that the SWRCB directed be given high priority for review when it adopted the Ocean Plan Triennial Review and Workplan, 1991-1994 in October 1992 (Resolution No. 92-88).

Issues Proposed as Amendments

1. Amendments to Table B Objectives for Protection of Human Health: We propose to change the objectives for seven organic compounds.

2. Revision of the List of Critical Life Stage Test Protocols Used to Measure Chronic Toxicity: We propose to change the existing list of protocols to reflect advances in conducting these tests.

3. Changes in Format and Terminology: These proposals are minor changes that are not intended to substantively alter the Plan.

Progress Report on Other Issues:

A progress report on work performed to date in examining a number of additional high priority issues is contained in Appendix D. Topics include acute and chronic toxicity, bacterial standards, stormwater discharges, objectives for dioxins, and regional monitoring.

FUNCTIONAL EQUIVALENT DOCUMENT
AMENDMENT OF THE WATER QUALITY CONTROL PLAN
FOR OCEAN WATERS OF CALIFORNIA

CALIFORNIA OCEAN PLAN
INTRODUCTION

In October 1992 (Resolution 92-88), the State Water Resources Control Board (SWRCB) directed the staff to review a series of high priority issues identified in the triennial review workplan (Triennial Review and Workplan, 1991-1994) (SWRCB 1992) and to make recommendations to the SWRCB for any necessary changes to the Ocean Plan. The SWRCB further resolved that the Plan may be amended annually or as each major issue analysis is completed. The purpose of this report is to present staff recommendations for modification of some parts of the Ocean Plan and to report on progress to date in examination of other priority issues.

Recommendations are made for resolving two major issues raised during triennial review of the Ocean Plan: review of certain Table B water quality objectives and review of the test protocol list used to measure compliance with the Table B water quality objective for chronic toxicity. In addition, several non-substantive changes in Ocean Plan format and terminology are recommended.

The staff evaluation and analysis is continuing for the remainder of the issues identified in the triennial review (SWRCB 1992). A progress report on staff analysis of these issues is included as Appendix D.

The SWRCB must comply with the requirements of the California Environmental Quality Act (CEQA) when adopting a regulatory program, such as the Ocean Plan or Regional Water Quality Control Plan amendments. CEQA provides that a state agency regulatory program is exempt from the requirements for preparing Environmental Impact Reports (EIRs), Negative Declarations, and Initial Studies if certified as functionally equivalent by the Secretary for Resources. The process the SWRCB will use to amend the Ocean Plan has received certification from the Resources Agency to be "functionally equivalent" to the CEQA process [14 California Code of Regulations Section 15251(g)]. The environmental impacts occurring as a result of these proposed amendments are summarized in an Environmental Checklist (Appendix B).

Background

The Ocean Plan establishes water quality objectives for California's ocean waters and the basis for regulation of wastes discharged into the State's coastal waters. It applies to point and nonpoint source discharges. The SWRCB adopts the Ocean Plan, and both the SWRCB and the six coastal Regional Water Quality Control Board (RWQCBs) implement and interpret the Ocean Plan.

The Ocean Plan contains six chapters, which describe beneficial use designations, water quality objectives, requirements for management of wastes, effluent and receiving water requirements, discharge prohibitions, and general provisions for exceptions and monitoring programs. Chapter 1 of the Ocean Plan identifies several uses of marine waters that should be protected. These uses include protection and enhancement of marine life and Areas of Special Biological Significance (ASBS) (SWRCB 1974), fish migration, fish spawning, shellfish harvesting, rare and endangered species, recreation, industrial water supply, commercial and sport fishing, mariculture, aesthetic enjoyment, and navigation. To protect beneficial uses, the SWRCB has established in Chapter II a set of narrative and numerical water quality objectives. These objectives include bacteriological standards for the protection of water-contact recreation as well as objectives for the adequate protection of marine biological communities and their habitat.

The third chapter of the Ocean Plan provides guidance needed to design systems for discharges into marine waters by listing the considerations a discharger must address before a new discharge is permitted. The fourth chapter of the Ocean Plan contains effluent limitations and receiving water quality objectives for the protection of marine waters. The effluent limits (Table A of the Ocean Plan) apply to all publicly owned treatment works (POTWs) and to industries that do not have effluent limitation guidelines established by the U. S. Environmental Protection Agency (USEPA) regulations.

The water quality objectives in Table B apply to all receiving waters under the jurisdiction of the Ocean Plan and are established for protection of aquatic life and for protection of human health from both carcinogens and noncarcinogens. There are 19 objectives for protection of aquatic life, 24 for protection of human health from noncarcinogens, and 34 for protection of human health from exposure to carcinogens. When a discharge permit is written, the water quality objectives for receiving water are converted into effluent limitations that apply to discharges into State ocean waters. These effluent limitations are established on a discharge-specific basis depending on the initial dilution calculated for each outfall from Table B objectives.

The last two chapters of the Ocean Plan contain sections on discharge prohibitions (e.g., municipal or industrial sludges, bypassing, discharge into ASBSs, and others) and general provisions. The provisions mandate RWQCBs to require dischargers to monitor their discharges and provide a mechanism for allowing exceptions to the Ocean Plan under special circumstances, provided that beneficial uses are protected and that the public interest is served.

History of the Ocean Plan

The Ocean Plan was first formulated by the SWRCB as part of the State Policy for Water Quality Control (SWRCB 1972a). Changes in the California Water Code (CWC) in 1972 required the SWRCB to redraft its proposed Policy as a Water Quality Control Plan. At that time, it was the intent of the SWRCB to "...determine...the need for revising the Plan to assure that it reflects current knowledge..." (SWRCB 1972b). The Ocean Plan was reviewed and amended in 1978 to fulfill the intent of the SWRCB and the requirements of State and

Federal law for periodic review. In 1983, a second review and revision was completed (SWRCB 1983a, SWRCB 1983b). Major changes to the Ocean Plan were the addition of several chemicals to the receiving water limitations, modification of the bacterial standards, and incorporation of parts of the 1972 and 1978 guideline documents into the Ocean Plan.

In 1986 the CWC was amended to require the SWRCB to review the Ocean Plan at least once every three years and to develop toxicity bioassays for use in compliance monitoring of toxicity in whole effluents. The next triennial review was performed in 1987 (SWRCB 1987) and resulted in Ocean Plan amendments in 1988 and 1990. The 1988 amendments (SWRCB 1988a, SWRCB 1988b) changed several beneficial use designations to be consistent with the SWRCB's standard list, revised several water quality objectives in Table B, established a uniform procedure for granting exceptions to Ocean Plan objectives, and made several relatively minor changes. The 1990 amendments (SWRCB 1990a, SWRCB 1990b) added an appendix for standard monitoring procedures to implement Plan requirements, added a bacterial monitoring requirement for enterococcus, updated and added a large number of water quality objectives to Table B both for protection of aquatic life and for protection of human health, added definitions of acute and chronic toxicity to replace the previous definition of toxicity concentration, added a chronic toxicity objective to Table B, and added a section on measuring toxicity to the appendix for implementing the acute toxicity requirement in Table A and the chronic toxicity receiving water objective in Table B. A list of seven critical life stage test protocols to be used in measuring chronic toxicity was also added to the appendix.

Major Issues Identified in the 1992 Triennial Review

To begin the 1992 triennial review, the SWRCB held a public hearing to solicit input on Ocean Plan issues for review. The testimony and comments were summarized, and the SWRCB adopted a workplan that identified the high priority issues to be addressed over the following three years (SWRCB 1992). Thirty-five issues were presented by the public at the hearing and in written comments. It was recognized that the level of resources necessary to address all 24 high priority issues concurrently far outstripped what was available so the workplan laid out a phased approach to examining the issues. Two conditions occurred that have extended the review period necessary for a thorough assessment of the issues: (1) several issues are being addressed by external contractors, a process which required securing funding and preparing contracts, and (2) staff resources allotted for the review have been reduced since the SWRCB adopted the workplan.

High priority issues under review fall into seven categories: (1) water quality objectives and regulatory implementation, (2) toxicity objectives and regulatory implementation, (3) bacterial standards, (4) administrative cleanup of Ocean Plan format and terminology, (5) sediment quality objectives, (6) suspended solids regulation, and (7) nonpoint source control. A more detailed description of the issues under review is contained in the 1992 Workplan (SWRCB 1992); an update on work performed in assessing these issues is given in the progress report contained in Appendix D of this document.

Impacts of the Proposed Amendments

We make recommendations on three issues identified during the most recent triennial review. There will be no significant adverse environmental impacts from the proposed Ocean Plan amendments (for the purposes of CEQA, the amendments are considered a "project"). A discussion of the specifics of each proposed change in the Ocean Plan is presented in separate sections below, and the potential environmental effects of the proposed Ocean Plan amendments are addressed in the Environmental Checklist (Appendix B of this report).

If the SWRCB adopts the recommended amendments, there will be no adverse environmental impacts. The purpose of the Ocean Plan is to protect the quality of California's coastal waters for the use of the people of the State. The proposed changes will serve to better protect ocean waters for the identified beneficial uses. Since no significant adverse effects are expected, mitigation measures are not proposed.

Format Used in the Issue Presentations

In the staff analysis of each proposed Ocean Plan amendment, we present a summary of the issue under consideration, present Ocean Plan provisions, a description of the issue (including historical development, if appropriate), a summary of the comments received, responses to comments, alternatives for SWRCB action, staff recommendations, and the proposed Ocean Plan amendment as reflected in Appendix A.

Each issue analysis contains the following sections:

Issue:	A brief description of the issue.
Present Ocean Plan:	A summary of the current Ocean Plan provisions related to the issue.
Issue Description:	A detailed description of the issue, plus the historical development of the current Ocean Plan approach, and, if appropriate, a description of what led the SWRCB to establish the current provisions.
Comments Received:	This section will be completed after the SWRCB hearing on the issues under consideration. All substantial comments raised during the evaluation process will be addressed by staff. Those comments not pertinent to the list of issues being considered will be listed in a separate section. If appropriate, the Environmental Checklist Form will be revised as a result of the review of comments received.
Alternatives for Board Action:	For each issue, staff has provided at least two alternatives for SWRCB action.
Staff Recommendation:	In this section, a suggestion is made for which alternative should be adopted by the SWRCB.
Proposed Ocean Plan Amendment:	If appropriate, the wording of the proposed amendment is provided to indicate the exact change in the Ocean Plan. A draft Ocean Plan with all the proposed amendments is included in this document (Appendix A).

Issue 1: Review of Table B Water Quality Objectives for Protection of Human Health

Present Ocean Plan: Table B regulates the concentration of 24 noncarcinogenic and 34 carcinogenic substances in receiving waters for protection of human health from contaminated fish and shellfish consumption.

Issue Description: Section 303(c)(2)(B) of the Clean Water Act (CWA) requires States to adopt numeric objectives for all priority pollutants with published criteria under Section 304(a) that are expected to impair beneficial uses. In its CWA 304(a) Criteria Chart, updated July 14, 1993, EPA lists 126 priority toxic pollutants which have published criteria for the protection of human health.

In approving the 1990 Ocean Plan, EPA recommended that the State Water Resources Control Board (SWRCB) review all human health-based objectives in Table B which exceed current 304(a) water quality criteria. These objectives are as follows:

	1990 Ocean Plan Table B (ug/l)	304(a) (ug/l)
(1) 1,1-dichloroethylene	7100	3.2
(2) 1,1,2-trichloroethane	43000	42
(3) 1,1,2,2-tetrachloroethane	1200	11
(4) isophorone	150000	2600
(5) 1,2-dichloroethane	130	99
(6) heptachlor and	0.00072	0.00021
(7) heptachlor epoxide		0.00011
(8) N-nitrosodi-n-propylamine		1.4
(9) tetrachloroethylene	99	8.9

The first four chemicals listed above were classified as noncarcinogens in the 1990 Ocean Plan. Since then, new data on human health effects of surface water pollutants have been developed. These chemicals are now considered to be carcinogens, and therefore must be recalculated using the equation for carcinogens. In the 1990 Ocean Plan, 1,2-dichloroethane and tetrachloroethylene were calculated using different factors than those used by EPA. N-nitrosodi-n-propylamine was not included in the 1990 Ocean Plan.

In the 1990 Ocean Plan, the Table B objective for heptachlor is the sum of heptachlor and heptachlor epoxide. Staff initially proposed including separate values for each of these chemicals during the current triennial review. However, during the attainment analysis conducted as part of this

amendment, samples from southern California storm drains were found to exceed the proposed objectives for heptachlor and heptachlor epoxide. This is due to the fact that there is currently no method identified in the Ocean Plan to allow dilution factors for stormwater discharges.

Staff is addressing this shortcoming (see Progress Report For Other Issues Identified in the Triennial Review, Stormwater Discharge Control), but will not propose separate water quality objectives for heptachlor and heptachlor epoxide until the stormwater dilution factor issue is resolved.

Discussion:

Section 304(a) criteria for human health are based on two types of biological endpoints:

1. carcinogenicity
2. systemic toxicity, which is defined as all adverse effects other than cancer.

Carcinogens

EPA's human health guidelines assume that carcinogenicity is a "non-threshold phenomenon"; that there are no "safe" or "no-effect" levels (EPA, 1992). Therefore, EPA's water quality criteria for carcinogens are presented as pollutant concentrations corresponding to increases in the risk of developing cancer.

EPA uses the following formula to calculate water quality criteria for carcinogens:

$$C = \frac{70 \times 10^{-6}}{q^{1*}[(0.0065)(BCF)]}$$

where: C = water quality objective (in mg/l)
q^{1*} = cancer potency factor (in kg-day/mg)
BCF = bioconcentration factor (in l/kg)
70 represents the weight of a standard person (in kg)
0.0065 is an estimate of the average daily seafood consumption (in kg/day)
10^{-6} represents a risk level of 1 excess cancer per 1,000,000 persons (However, EPA will accept cancer risk policies from the States in the range of 10^{-5} to 10^{-7}). The decision to use a 10^{-6} cancer risk level was originally made during the 1990 Ocean Plan Triennial Review. At that time, Table B objectives were calculated using both a 10^{-5} and a 10^{-6} cancer risk level. Effluent data from 32 California ocean dischargers were examined to determine the attainability of each set of proposed objectives. A cancer risk level of 10^{-6} was found to be both generally attainable and reasonably protective.

Values for most variables contained in EPA's water quality objective equation for carcinogens are available in data bases and criteria documents. All of the BCF values were obtained from EPA Region VIII CWA 304(a) Criteria Chart Indicating Published Criteria and Updated Human Health Values, current for the triennium 1994-1996. Since EPA Region IX has not developed a similar criteria chart for BCF values, Region IX staff recommended use of the EPA Region VIII criteria chart. This Criteria Chart also lists q^{1*} values from the Integrated Risk Information System (IRIS) data base. The IRIS is EPA's electronic online data base that provides chemical-specific risk information on the relationship between chemical exposure and estimated human health effects. The term q^{1*} refers to the carcinogenic or cancer slope factor which is defined as an estimate of carcinogenic potency derived from animal studies or epidemiological data of human exposure. It is based on estimates using linear extrapolation models from test exposures of high dose levels over relatively short periods of time to more realistic low dose levels over a lifetime exposure period. The q^{1*} is intended to be a conservative upper bound estimate (95% upper bound confidence limit) of carcinogenic potency.

In developing the 1990 Ocean Plan, the SWRCB also used this equation for calculation of Table B water quality objectives for carcinogens, but used 0.023 kg/day as an estimate of daily seafood consumption. This estimate of daily fish consumption is based on rationale developed by the DHS and submitted to the SWRCB during the previous triennial review (Kizer, 1989). After reviewing literature published between 1971 and 1989, DHS staff concluded that the overall average fish and shellfish consumption rate for California is at least 23 grams per day. This value is equivalent to about six ounces of fish and shellfish a week. With all other factors held constant, California's value for daily seafood consumption results in a more protective water quality objective than that calculated using EPA's consumption estimate of 6.5 grams/day.

The California Environmental Protection Agency (Cal/EPA) has convened a committee, the Standards and Criteria Work Group (SCWG), composed of scientists representing State programs that are involved in human health and ecological risk assessments. The SCWG acts as an advisory group on scientific issues for Cal/EPA, providing advice on toxicity and human and ecological risk assessment to the executive officers and directors of boards and department within Cal/EPA. A goal of the SCWG is to ensure that there is consistency in the approaches and methods used within Cal/EPA for reaching science policy decisions. This group has compiled a list of cancer potency factors developed or approved by the Office of Environmental Health Hazard Assessment (OEHHA), the Department of Toxic Substances Control, or the Department of Pesticide Regulation. The SCWG list does not yet contain q^{1*} values for all of EPA's priority pollutants; this list is

revised periodically when more cancer potency factors are generated. When calculating water quality objectives, SWRCB staff has selected a single q^{1*} value for each chemical, using the following priority order:

1. SCWG
2. IRIS
3. Hazard Evaluation System Information Service (HESIS)

The q^{1*} values from the SCWG were used to calculate the following water quality objectives: 1,2-dichloroethane, N-nitrosodi-n-propylamine, and 1,1,2,2-tetrachloroethane. For the remaining chemicals, IRIS values were used. Values from HESIS were not used for Table B revisions.

Noncarcinogens

For noncarcinogens, EPA calculates the water quality objective (C) using the formula:

$$C = \frac{RfD \times 70}{(0.0065)(BCF)}$$

where: RfD = reference dose (in mg/kg-day)
BCF = Bioconcentration factor (in l/kg)
0.0065 is an estimate of the average daily seafood consumption (in kg/day)
70 represents the weight of a standard person (in kg)

The SWRCB uses this same EPA equation for calculation of Table B water quality objectives for noncarcinogens, but substitutes 0.023 kg/day as an estimate of daily seafood consumption. RfD values were obtained from the EPA Region VIII CWA 304(a) Criteria Chart Indicating Published Criteria and Updated Human Health Values.

For some chemicals, both RfD and q^{1*} values are available from either the SCWG or IRIS. In these cases, ambient water quality objectives are calculated using both the RfD and q^{1*} equations. The calculation which results in the lower value determines if a chemical is listed as a carcinogen or a noncarcinogen.

Comments Received:

This section will be completed after the SWRCB hearing on proposed Ocean Plan amendments.

Alternatives for Board Action:

1. Do not review Table B water quality objectives. If EPA determines that water quality objectives contained within the Ocean Plan are inadequate, the Clean Water Act requires that EPA promulgate appropriate standards. Since, in approving the 1990 Ocean Plan amendments, EPA

had recommended that the SWRCB review all human health-based objectives in Table B which exceed current 304(a) water quality criteria, no action by the SWRCB may cause EPA to promulgate federal standards.

2. Convert EPA's 304(a) criteria to objectives. This option would allow the State the flexibility to decide which carcinogenic risk level to adopt, and would also insure that EPA would approve the changes made to Table B. However, it would not allow the SWRCB to use updated data regarding cancer potency and average daily fish and shellfish consumption rates in calculating water quality objectives.

3. Adopt Updated Table B values using California cancer potency factors and daily seafood consumption rates. This option allows the SWRCB to use cancer potency factors calculated and used by Departments and Boards within Cal/EPA for regulatory actions and risk assessments. The SCWG compiled a list of these cancer potency factors to promote consistency in risk assessment across the state. These potency factors have undergone peer review and rigorous regulatory review. Additionally, this list is revised semiannually as new data becomes available and more cancer potency factors are generated. This alternative also allows the use of a daily seafood consumption value that is more appropriate for California than the 6.5 g/day value recommended by EPA.

   Whenever a chemical has both an RfD and q^{1*} available, water quality objectives were calculated using both the carcinogenic and the noncarcinogenic equations. The lower (most stringent) value was then selected for inclusion in Table B. Since the 1990 Ocean Plan was adopted, q^{1*} values have been derived for four chemicals previously listed as noncarcinogens. These chemicals are now listed as carcinogens.

   Table 1 lists the proposed water quality objectives for seven of the chemicals which EPA recommended that the SWRCB review, as well as the RfD, BCF,and q^{1*} values used for calculation. All Table B values were calculated using the Department of Health Service's fish consumption estimate of 23 grams per day. These proposed objectives have been reviewed by OEHHA staff.

Table 1: Proposed Revised Water Quality Objectives for Table B and Associated RfD, q^{1*}, and BCF Values

Chemical name	IRIS Information RfD (mg/kg-day)	IRIS Information q^{1*} (kg-day/mg)	BCF (l/kg)	Calif. q^{1*}	Current Table B values	Revised Table B values	EPA 304(a) values
1,2-dichloroethane		0.091	1.2	0.07	130	36.2	99
1,1-dichloroethylene	0.009	0.6	5.6		7100	0.9	3.2
isophorone	0.2	0.00095	4.38		150000	731	2600
N-nitrosodi-n-propylamine		7	1.13	7		0.4	1.4
tetrachloroethylene	0.01		30.6	0.051	99	2.0	8.9
1,1,2,2-tetrachloroethane		0.2	5	0.27	1200	2.3	10.8
1,1,2-trichloroethane	0.004	0.057	4.5		43000	11.9	42

[1/] concentration in ug/l unless noted

Expected Attainment of the Revised Table B Human Health Objectives

Section 13241 of the California Water Code requires that a number of factors be considered when establishing water quality objectives.

1. **Impact on past, present, and probable future beneficial uses of water**

   The proposed water quality objectives are more stringent than the current values listed in Table B. Therefore, these revised values will be more protective of all beneficial uses listed in Chapter I of the Ocean Plan.

2. **Environmental characteristics of the hydrographic unit under consideration, including the quality of water available**

   There are no data available to determine the current ambient concentrations of the seven proposed water quality objectives. As discussed in greater detail relative to economic considerations (see 4. Economic considerations), it is anticipated that existing discharges will not result in violations of the proposed water quality objectives. Therefore, existing discharges should not result in ocean waters being out of compliance with these objectives.

3. **Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area**

Since a review of available monitoring data shows that the proposed objectives are currently attained by existing discharges, these discharges will not prevent attainment of the objectives.

4. **Economic considerations**

The attainability of the revised Table B objectives was evaluated for publicly owned treatment works (POTWs), an oil refinery, a desalination plant, and several stormwater drains.

Municipal and Industrial Dischargers

The attainability of the proposed amendments to Table B water quality objectives was evaluated in several ways:

- examination of publicly owned treatment works (POTW)Annual Reports
- requests of Regional Board staff to review Reports of Waste Discharge
- requests of POTW laboratory staff to review their effluent data.

For this analysis, staff from each coastal Regional Board was asked to review the revised objectives and to comment on whether dischargers in their region would have difficulty attaining the lower objectives. In addition, technical representatives from eight dischargers were contacted and asked their opinion as to the attainability of the proposed objectives. Included in the eight dischargers were an oil refinery and seven municipal POTWs of varying sizes, one of which also reviewed attainability for a desalination plant.

Receiving water concentrations were computed using the following formula:

$$Ce = Co + Dm\ (Co-Cs)$$

where: Ce = the effluent concentration limit
Co = the concentration to be met at the completion of initial dilution
Cs = background seawater concentration
Dm = minimum probable initial dilution expressed as parts seawater pe part wastewater

For the chemicals in question, background seawater concentration is assumed to be zero. (Background seawater concentration is assumed to be zero for all Table B chemicals, with the exception of arsenic, copper, mercury, silver and zinc.) Minimum probable initial dilution values were obtained either from NPDES permits or from annual reports based on NPDES permits.

Data analysis showed that six (excluding N-nitrosodi-n-propylamine) of the proposed objectives listed in Table 1 are currently being met in the discharges reviewed. The attainability of N-nitrosodi-n-propylamine is not known (none of the dischargers contacted currently monitors for this chemical), but the Regional Water Board and POTW staff contacted did not think that this chemical would be present in effluent in sufficient amounts to exceed effluent concentration limits calculated from the proposed water quality objective.

Stormwater Discharges

Attainability of proposed changes to Table B is difficult to assess for stormwater discharges for several reasons. First, there is a paucity of data on chemical contamination of stormwater and urban runoff. Second, the Ocean Plan does not contain a method to calculate effluent limitations from Table B objectives for stormwater discharges. Two of the assumptions made for "standard" point source discharges (outfalls) are:

- a site specific dilution factor, dependent on the design of the outfall, can be derived and
- outfall flow is continuous.

Neither of these assumptions can be made for stormwater discharges. For purposes of this attainability analysis, no dilution factor is used. The chemical concentration found during monitoring has been compared directly to Table B objectives.

Attainability analysis of the proposed changes for stormwater discharges is based on data from the report Chemical Contaminant Release into the Santa Monica Bay: A Pilot Study (Suffet et al., 1993). The objective of this study was to identify and quantify the chemicals present in urban runoff during dry weather flow. Five southern California storm drains were sampled over a six month period (June 12 to December 10, 1992). During the course of this study, storm drain water was analyzed for 65 volatile organic compounds, 70 base neutral organic compounds (semi-volatiles), 25 chlorinated pesticides, and 20 polychlorinated biphenylic compounds. Fifty-nine additional volatile and 51 semi-volatile organic chemicals were detected during the analysis

for the targeted chemicals. These non-targeted organic chemicals were not quantified, and were "tentatively identified"(further studies would be needed to confirm their identification and to quantify them using reference standards).

These data show that storm drain water did not exceed the proposed water quality objectives (Table 2).

Table 2: Comparison of Chemical Concentrations Detected in Storm Drains (Suffet et al., 1993) to Proposed Water Quality Objectives

Chemical	MDL[1]	Average value detected (ug/l)	Proposed objective (ug/l)
1,2-dichloroethane	0.12	0.161	36.2
1,1-dichloroethylene	0.14	< 0.14	0.9
isophorone	0.12	0.035	731
N-nitrosodi-n-propylamine	0.33	0.003	0.4
tetrachloroethylene	0.05	0.242	2.0
1,1,2,2-tetrachloroethane	0.04	< 0.04	2.3
1,1;2-trichloroethane	0.06	< 0.06	11.9

[1] Method detection limit (MDL) is expressed in ug/l.

Nonpoint Source Discharges

The attainability of the proposed objectives for nonpoint source discharges is difficult to assess. Unlike point sources of pollution, nonpoint source pollution is highly variable in volume and composition, and poses a difficult control situation. Control measures of choice involve source control, land use planning, and preservation of natural buffers and filters. Nonpoint source pollution requires a number of different management measures suited to local conditions and land use. Land uses have been categorized as follows (SWRCB, Nonpoint Source Section):

1) agriculture
2) abandoned mines
3) urban development
4) forestry

5) grazing
6) confined animal facilities
7) on-site disposal systems
8) roads, highways, and bridges
9) recreational boating and marinas
10) hydromodification
11) wetlands

The seven chemicals under review are volatile and semi-volatile organic compounds, used primarily as industrial solvents. Of these land use categories, urban development would be the primary source of these chemicals. The only monitoring data of urban runoff available for these chemicals is the Suffet et al. study discussed in the Stormwater Discharges section. Although samples collected during this study were from storm drains and are not technically (as defined by the Clean Water Act) nonpoint source samples, the samples are representative of drainage from an urban watershed. These data show that storm drain water monitored during the study did not exceed the proposed water quality objectives.

5. The Need for Developing Housing Within the Region

No change in current waste water treatment technology is needed to meet the proposed objectives. Therefore, adoption of the proposed objectives should not have either a direct or indirect impact on the development of new housing.

6. The Need to Develop and Use Recycled Water

Since the proposed objectives will be attainable using current wastewater treatment technology, the proposed objectives will not limit expanded use of recycled water.

Environmental Impact of Proposed Amendment

Municipal and Industrial Dischargers

Based on the attainability analysis, dischargers will be able to meet the effluent limitations based on the proposed objectives without changes in treatment technology. Therefore, adoption of the proposed objectives should not have either a direct or indirect impact that would adversely affect the environment.

Stormwater Discharges

Based on the attainability analysis, dischargers will be able to meet the proposed objectives for all seven chemicals without changes in treatment technology. Therefore, the proposed objectives should not have either direct or indirect adverse impacts on the environment.

Nonpoint Source Discharges

Based on the data used for the stormwater discharge attainability analysis, it is estimated that nonpoint source discharges will be able to meet the proposed objectives for the seven chemicals.

Staff Recommendation: Adopt alternative 3.

Proposed Ocean Plan Amendment: Revise Table B water quality objectives for the following chemicals:

Chemical	30-day average (ug/l)
OBJECTIVE FOR PROTECTION OF HUMAN HEALTH--CARCINOGENS	
1,2-dichloroethane	36.2
1,1-dichloroethylene	0.9
isophorone	731
N-nitrosodi-n-propylamine	0.4
1,1,2,2-tetrachloroethane	2.3
tetrachloroethylene	2
1,1,2-trichloroethane	11.9

Issue 2: Chronic Toxicity Testing: Review of Protocol Selection Criteria and List of Critical Life Stage Toxicity Tests

Present Ocean Plan: In 1990, the State Water Resources Control Board (SWRCB) adopted a list of seven critical life stage toxicity testing protocols to be used for determining compliance with the chronic toxicity objective.

Issue Description: The Ocean Plan list, adopted in 1990, contains seven critical life stage protocols. These protocols were developed and selected for the list in response to Section 13170.2 (c) of the Porter-Cologne Water Quality Control Act which requires the SWRCB to "develop bioassay protocols to evaluate the effect of municipal and industrial waste discharges on the marine environment."

Each protocol on the current (1990) Ocean Plan list had to meet seven criteria in order to be included on the list:

1. the existence of a detailed written description of the test method;
2. a history of testing with a reference toxicant;
3. interlaboratory comparisons of the method;
4. adequate testing with wastewater;
5. measurement of an effect that is clearly adverse;
6. measurement of at least one nonlethal effect; and
7. use of marine organisms native to or established in California.

The seven critical life stage protocols currently listed in the Ocean Plan are the following:

Plants:

1. *Macrocystis pyrifera* (giant kelp) protocol. Anderson et al. (1988).
2. *Champia parvula* (red alga) protocol. Weber et al. (1988).

Invertebrates:

3. *Mysidopsis bahia* (East Coast mysid shrimp) protocol. Weber et al. (1988).
4. 60:20 Echinoderm (*Strongylocentrotus purpuratus* and *Dendraster excentricus*) fertilization protocol. Dinnel et al. (1987).
5. *Haliotis rufescens* (red abalone) protocol. Hunt et al. (1988).
6. *Crassostrea gigas* and *Mytilus spp.* protocol. American Society for Testing and Materials (ASTM) (1988).

Fish:

7. *Menidia beryllina* (silversides) protocol. Weber et al. (1988).

During the current triennial review, SWRCB staff were asked to review the protocol selection criteria and to consider updating the existing protocol list. To perform this review, staff convened a 10 member external advisory

group known as the Protocol Review Committee (PRC). The PRC is an assemblage of aquatic toxicology experts representing industry, academia, and government.

In October 1994, the PRC recommended to SWRCB staff a revised list of critical life stage protocols acceptable for use in measuring compliance (Bay et al., October 1994). This list is the culmination of four additional years of test method refinement and development since the use of specific toxicity tests was first included in the 1990 Ocean Plan. The list includes four west coast protocols (giant kelp, red abalone, mysid shrimp, and topsmelt fish) that have been developed by the SWRCB's Marine Bioassay Project. Also included are methods that utilize sea urchins, silversides (fish), east coast mysid shrimp, oysters, and mussels that either are or will be included in the U.S. Environmental Protection Agency's (EPA) manuals for estimating chronic toxicity to marine organisms.

As with the 1990 Ocean Plan amendments, the currently proposed list of critical life stage toxicity tests recommended by the PRC had to satisfy several protocol selection criteria. The PRC added two additional criteria to the seven criteria used in compiling the 1990 list:

1. the protocol must have information that documents relative sensitivity to toxic/reference materials and compares it to current Ocean Plan-listed tests; and

2. the organism(s) specified in the protocol must be readily available either by field collection or by laboratory culture.

The critical life stage tests proposed by the PRC for adoption to the Ocean Plan list for use in measuring the chronic toxicity of ocean discharges (TUc) are the following:

Proposed List of Toxicity Tests

Tier	Plant:
1	*Macrocystis pyrifera* (giant kelp) Protocol. Anderson et al. (1994).
	Invertebrates:
1	*Holmesimysis costata* (California mysid shrimp) Protocol. Hunt et al. (1994).
2	*Mysidopsis bahia* (East Coast mysid shrimp) Protocol. Weber et al. (1988).
1	20:20 Echinoderm *(Dendraster excentricus* and *Strongylocentrotus purpuratus*) Fertilization Protocol. Chapman and Denton (1994).
1	*Strongylocentrotus purp atus* Embryo Development Protocol. Bay and Greenstein (1994).

1 *Haliotis rufescens* (red abalone) Protocol. Hunt et al. (1994).
1 *Crassostrea gigas* and *Mytilus spp.* Protocol. Chapman and Denton (1994).

Fishes:

1 *Atherinops affinis* (topsmelt) Protocol. Anderson and Hunt (1994).
2 *Menidia beryllina* (silversides) Protocol. Weber et al. (1988).

The first tier test methods are the preferred toxicity tests for compliance monitoring. The Regional Water Quality Control Boards will allow waste dischargers the option of using second tier test methods as a backup when first tier test organisms are not available. The PRC recommended that the second tier test methods eventually be deleted from the Ocean Plan list of critical life stage protocols.

Additional PRC Recommendations

The PRC submitted additional recommendations regarding the use of critical life stage tests for compliance monitoring. Staff believes these are excellent recommendations and should be incorporated into future Ocean Plan revisions. The recommendations are the following:

1. Review of the Ocean Plan chronic toxicity protocols should be performed annually since widespread use of the protocols rapidly leads to technical refinements. Annual review provides a mechanism for expeditious incorporation of these improvements into protocols.

2. Currently, dischargers are asked to initially screen their effluent with a plant, an invertebrate, and a fish. Routine compliance monitoring can then take place using the most sensitive species. However, the PRC recommends a rotation of all of the test species listed in the Ocean Plan over a three year period. The rationale for this recommendation is that the proposed Ocean Plan list covers a broader taxonomic range as well as different physiologic endpoints. Information generated from these comparisons will be used in subsequent evaluations of the Ocean Plan toxicity protocols.

3. Future efforts in protocol development should focus on underrepresented taxa (i.e., plants, polychaetes) and more sensitive species (fish species more sensitive than the estuarine silversides Menidia spp and topsmelt) or life history stages. Other tests could be added to the list once they have satisfied all of the nine protocol selection criteria. The one critical life stage protocol close to meeting these criteria is listed below:

   Polychaete *(Neanthes spp.)* Protocol. Reish et al. (1994)

As currently drafted, the protocol is incomplete for the following reasons:

a. a written protocol is not available,
b. there has been inadequate testing with wastewater, and
c. there is insufficient intra- and interlaboratory testing.

Comments Received:

This section will be completed after SWRCB hearing on the Ocean Plan amendments.

Alternatives for Board Action:

1. Make no change in Ocean Plan provisions dealing with critical life stage protocols. This alternative would be inconsistent with Water Code Section 13170.2(c), which states "the State Board shall develop bioassay protocols to evaluate the effect of municipal and industrial waste discharges on the marine environment"; and Section 13170.2(d) which requires the SWRCB to adopt these protocols for use in monitoring complex effluents discharged to ocean waters.

2. Adopt the recommendations of the PRC and revise the current Ocean Plan list of critical life stage protocols. This alternative would revise the Ocean Plan list of critical life stage protocols. The revisions are (1) deleting one protocol (the Red Alga [*Champia parvula*] protocol), (2) updating four currently listed protocols (Pacific Oyster [*Crassostrea gigas*] and Mussel [*Mytilus spp.*] protocol, Sea Urchin [*Strongylocentrotus purpuratus*] and Sand Dollar [*Dendraster excentricus*] protocol, Giant Kelp [*Macrocystis pyrifera*] protocol, and Red Abalone [*Haliotis rufescens*] protocol), and (3) adopting three new protocols (Topsmelt [*Atherinops affinis*] protocol, Mysid Shrimp *[Holmesimysis costata]* protocol, and Purple Sea Urchin [*Strongylocentrotus purpuratus*] Embryo Development protocol). The Silversides (*Menidia beryllina*) protocol and the *Mysidopsis bahia* protocol will remain on the Ocean Plan list as tier two toxicity methods.

The red alga test method was deleted for the following three reasons: (1) *Champia* is barely indigenous to California, (2) the method has not been used in California since its adoption to the Ocean Plan list in 1990, and (3) the current Ocean Plan has a plant protocol (giant kelp) that is widely used throughout the state and is acceptable to both regulators and dischargers.

The revised toxicity test methods (Pacific Oyster [*Crassostrea gigas*] and Mussel [*Mytilus spp.*] protocol, Sea Urchin [*Strongylocentrotus purpuratus*] and Sand Dollar [*Dendraster excentricus*] protocol, Giant Kelp [*Macrocystis pyrifera*] protocol, and Red Abalone [*Haliotis rufescens*] protocol) were recommended for adoption because they contain more detail which will help

laboratory personnel conducting the test, and also reflect the latest advancements in aquatic toxicity testing. The new toxicity protocols (mysid shrimp, [*Holmesimysis costata]* protocol, Topsmelt [*Atherinops affinis*] protocol, and Purple Sea Urchin Embryo Development protocol) were recommended for adoption because they are indigenous organisms and, as with the revised test methods, reflect recent developments in the field of aquatic toxicology.

Attainment Analysis: Cost comparison of currently listed versus newly proposed Critical Life Stage Tests

Although an attainment analysis for this issue is not required by relevant statutes, SWRCB staff contacted representatives from publicly owned treatment works, research institutions, and private laboratories and asked the following questions:

1. What does it cost to conduct the currently listed Ocean Plan critical life stage protocols?

2. Will the newly proposed critical life stage protocols be more expensive?

All six respondents stated that there will be no cost increase for running the newly proposed critical life stage protocols (in comparison to the costs of conducting currently listed toxicity test methods).

Table 3: Cost Comparison of Currently Listed Ocean Plan Toxicity Test Protocols Versus Newly Proposed Protocols (telephone poll).

	Number of Respondents	Amount - Price Range for Currently listed protocols	Cost Increase for Newly Proposed Protocols?
Research Institution	1	$600-$2000	No
Private Consulting Laboratories	3	$600-$1600	No
Waste Discharging Facilities	2	$800-$1500	No

Environmental Impact Analysis

There are no significant adverse environmental impacts associated with the adoption of newly proposed critical life stage protocols to the Ocean Plan list. Because the changes will not substantively alter laboratory methods and procedures, the new protocols are not expected to create hazards to health and safety. The proposed changes specified in this issue will serve to better protect ocean waters for identified beneficial uses, because the new protocols are expected to be more precise in measuring chronic toxicity of discharges to ocean waters. Since no significant adverse effects are expected, mitigation measures are not proposed.

Staff Recommendation: Adopt Alternative 2.

Proposed Ocean Plan Amendment: Revise Chapter IV, Appendix II, Ocean Plan list of critical life stage toxicity tests, by deleting the existing list and adding the following:

Species	Effect	Tier	Reference
giant kelp, *Macrocystis pyrifera*	percent germination; germ tube length	1	1
red abalone, *Haliotis rufescens*	abnormal shell development	1	1
oyster, *Crassostrea gigas;* mussels, *Mytilus spp.*	abnormal shell development; percent survival	1	1
urchin, *Strongylocentrotus purpuratus*	percent normal development	1	1
urchin, *Strongylocentrotus purpuratus;* sand dollar, *Dendraster excentricus*	percent fertilization	1	1
shrimp, *Holmesimysis costata*	percent survival; growth	1	1
shrimp, *Mysidopsis bahia*	percent survival; growth; fecundity	2	2

topsmelt, *Atherinops affinis*	larval growth rate; percent survival	1	1
silversides, *Menidia beryllina*	larval growth rate; percent survival	2	2

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

Protocol References

1. Bay et al., 1994. Proposed California Ocean Plan Protocols for Critical Life Stage Tests and Examination of Toxicity Test Variability. Recommendations by the Ocean Plan Protocol Review Committee to the State Water Resources Control Board. (Appendix to Recommendations)

2. 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.

Issue 3: Administrative Cleanup: Ocean Plan Clarification

Present Ocean Plan: The Ocean Plan's format and organization need to be improved so that interpretation and use of the Ocean Plan will be easier. Also, the Ocean Plan contains some terms which need clarification.

Issue Description: Staff has proposed conducting a thorough review of the organization and clarity of the Ocean Plan during Phase Two of the Triennial Review, which tentatively is scheduled for completion in January 1997.

In the interim, staff proposes that the following minor changes be made in Ocean Plan terminology:

1. In Chapter I, Beneficial Uses, the term *mariculture* be changed to *aquaculture*. The standard definition used in water quality control plans for aquaculture will be added to Appendix 1 (Definition of Terms).

2. The titles of Table A and Table B in Chapter IV be changed to more accurately describe the contents of these tables as follows:

   Table A: Effluent Limitations
   Table B: Water Quality Objectives

3. In Chapter II, Water Quality Objectives, the term *Effluent Quality Requirements* will be changed to *Effluent Limitations*.

4. All Table B objectives (except radioactivity and chronic toxicity) will be listed as micrograms/liter (ug/l).

5. Several terminology changes are proposed for Chapter IV, Quality Requirements For Waste Discharges (Effluent Quality Requirements):

   a. The Chapter title will be changed from *Quality Requirements for Waste Discharges (Effluent Quality Requirements)* to *Quality Requirements for Waste Discharges (Effluent Limitations)*.

   b. The phrase *parameters identified in Table B* will be changed to *water quality objectives listed in Table B*.

   c. The term *effluent concentration limit* will be deleted in the sentences describing six-month median sample concentrations and daily maximum sample concentrations to reflect that Table B does not list effluent limitations.

d. Several sentences which contain the phrase *Table B limitations* will be changed to *Table B objectives.*

e. The definition of the term Co used to calculate effluent limitations will be changed to indicate that Co represents the Table B water quality objective.

f. The terms *effluent requirements* and *effluent quality requirements* will be changed to *effluent limitations.*

6. In Chapter VI, General Provisions, Section B . Waste Discharge Requirements:

   a. Change the term *effluent quality requirements* to *effluent limitations* in the opening paragraph.

   b. In footnote b. of Table D, change ... *of these compounds is increased above the limitations in Table B (6-Month median = 31 ng/l, Daily Maximum = 62 ng/l, and Instantaneous Maximum = 93ng/l)* to ... *of these compounds is increased above the objectives in Table B.*

7. Appendix I, p. 17: change the definition of chronic toxicity from ... *the acceptability of for waters* ... to *the acceptability of waters for* ....

8. Appendix II, Chapter IV: Change the title from *Compliance with Toxicity Objectives* to *Compliance with Toxicity Limitations and Objectives*:
   Line 1: Change acute toxicity *objective* to acute toxicity *limitation.*

The following eight comments refer to the eight numbered changes listed above.

1. The current Ocean Plan includes mariculture as a beneficial use, and defines mariculture as the culturing of plants and animals in marine waters independent of any pollution source. In the interest of statewide consistency, the State and Regional Boards recently standardized a list of beneficial uses. Aquaculture, but not mariculture, is present on the standardized list. Aquaculture is a broader term which includes mariculture in its definition. Staff proposes that the broader term *aquaculture* be included in the Ocean Plan as a beneficial use in place of mariculture.

2. The titles of Table A and Table B do not accurately describe the purpose of these tables. Staff proposes that the title of Table A be

changed from Major Wastewater Constituents and Properties to Effluent Limitations, and that of Table B be changed from Toxic Materials Limitations to Water Quality Objectives. These changes would also be made in all sections of the Ocean Plan where the tables are referenced, as described in items number 5 and 6 of the issue description.

3. Necessary because of the change in the title of Table A.

4. Table B objectives are currently expressed in several different units, ranging from picograms/liter to milligrams/liter. This was done to avoid listing the objectives as very small numbers. However, having the objectives expressed in the same units would make Table B easier to use. Staff proposes to express all Table B objectives as ug/l.

5 & 6. Necessary because of changes in the titles of Table A and Table B. (See item 2 above.) For clarification, the definition of the term Co used in the calculation of effluent limitations is being changed to indicate that Co represents the Table B water quality objective.

7. This change in the definition of chronic toxicity corrects a typographical error made in transcribing from the 1990 Ocean Plan Function Equivalent Document to the 1990 Ocean Plan.

8. Since acute toxicity is part of the Table A effluent limitations, it should be referred to as a limitation rather than an objective.

Comments Received:

This section will be completed after the State Board hearing on the proposed Ocean Plan Amendments.

Alternatives for Board Action

1. Make no changes in Ocean Plan terminology. The minor changes listed in this issue intended to clarify the Ocean Plan would not be made. One effect of not making these changes would be continuing confusion arising from the existing titles for Table A and Table B.

2. Adopt the changes outlined in the issue description. These changes will clarify the Ocean Plan and will result in a document that is easier to understand and implement.

Environmental Impact Analysis

These changes are non-substantive; thus, they will not result in adverse environmental impacts.

Staff Recommendation:

Adopt Alternative 2.

Proposed Ocean Plan Amendment:

1. Chapter I: Beneficial Uses, page 1, line 3:
   delete ~~mariculture~~ and, in its place, add aquaculture.

2. Chapter II: Water Quality Objectives, page 1, last paragraph: Change Effluent ~~Quality Requirements~~ to Effluent Limitations.

3. Chapter IV: Quality Requirements for Water Discharges (Effluent Quality Requirements).

   a. Chapter title: Change (Effluent ~~Quality Requirements~~) to (Effluent Limitations).

   b. Page 5; paragraphs 2, 3, 4, 5: Change references from Table A limitations to Table A effluent limitations. Change effluent ~~requirements~~ to effluent limitations. Change references from Table B ~~limitations~~ to Table B water quality objectives.

   c. Page 6: Change title of Table A from ~~MAJOR WASTEWATER CONSTITUENTS AND PROPERTIES~~ to EFFLUENT LIMITATIONS.

   d. Page 7: Change title of Table B from ~~TOXIC MATERIALS LIMITATIONS~~ to WATER QUALITY OBJECTIVES.

   e. Page 7-9: Change all units of chemical concentration in Table B to ug/l.

TABLE B
~~TOXIC MATERIALS LIMITATION~~
WATER QUALITY OBJECTIVES

Chemical	Units of Measurement	Limiting Concentrations 6-Month Median	Daily Maximum	Instantaneous Maximum
OBJECTIVES FOR PROTECTION OF MARINE AQUATIC LIFE				
Arsenic	ug/l	8	32	80
Cadmium	ug/l	1	4	10
Chromium (Hexavalent) (see below, a)	ug/l	2	8	20
Copper	ug/l	3	12	30
Lead	ug/l	2	8	20
Mercury	ug/l	0.04	0.16	0.4
Nickel	ug/l	5	20	50
Selenium	ug/l	15	60	150
Silver	ug/l	0.7	2.8	7
Zinc	ug/l	20	80	200
Cyanide (see below, b)	ug/l	1	4	10
Total Chlorine Residual (For intermittent chlorine sources, see below, c)	ug/l	2	8	60
Ammonia (expressed as nitrogen)	ug/l	600	2400	6000
Chronic* Toxicity	TUc		1	
Phenolic Compounds (non-chlorinated)	ug/l	30	120	300
Chlorinated Phenolics	ug/l	1	4	10
Endosulfan	~~ng/l~~ ug/l	~~9~~ 0.009	~~18~~ 0.018	~~27~~ 0.027
Endrin	~~ng/l~~ ug/l	~~2~~ 0.002	4 0.004	6 0.006
HCH*	~~ng/l~~ ug/l	~~4~~ 0.004	~~8~~ 0.008	~~12~~ 0.012

Radioactivity — Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3 of the California Code of Regulations.

Table B Continued

Chemical	~~Units of Measurement~~	30-day Average (ug/l)	
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH -- NONCARCINOGENS			
acrolein	~~ug/l~~	220	
antimony	~~mg/l~~	~~1.2~~	1200
bis(2-chloroethoxy) methane	~~ug/l~~	4.4	
bis(2-chloroisopropyl) ether	~~mg/l~~	~~1.2~~	1200
chlorobenzene	~~ug/l~~	570	
chromium (III)	~~mg/l~~	~~190~~	1.9×10^{5}
di-n-butyl phthalate	~~mg/l~~	~~3.5~~	3500
dichlorobenzenes*	~~mg/l~~	~~5.1~~	5100
~~1,1-dichloroethylene~~	~~mg/l~~	~~7.1~~	
diethyl phthalate	~~mg/l~~	~~33~~	3.3×10^{4}
dimethyl phthalate	~~mg/l~~	~~820~~	8.2×10^{5}
4,6-dinitro-2-methylphenol	~~ug/l~~	220	
2,4-dinitrophenol	~~ug/l~~	4.0	
ethylbenzene	~~mg/l~~	~~4.1~~	4100
fluoranthene	~~ug/l~~	15	
hexachlorocyclopentadiene	~~ug/l~~	58	
~~isophorone~~	~~mg/l~~	~~150~~	
nitrobenzene	~~ug/l~~	4.9	
thallium	~~ug/l~~	14	
toluene	~~mg/l~~	~~85~~	8.5×10^{4}
~~1,1,2,2-tetrachloroethane~~	~~mg/l~~	~~1.2~~	
tributyltin	~~ng/l~~	~~1.4~~	1.4×10^{3}
1,1,1-trichloroethane	~~mg/l~~	~~540~~	5.4×10^{5}
~~1,1,2-trichloroethane~~	~~mg/l~~	~~43~~	
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH -- CARCINOGENS			
acrylonitrile	~~ug/l~~	0.10	
aldrin	~~ng/l~~	~~0.022~~	2.2×10^{3}
benzene	~~ug/l~~	5.9	
benzidine	~~ng/l~~	0.069	6.9×10^{3}
beryllium	~~ng/l~~	~~33~~	0.033
bis(2-chloroethyl) ether	~~ug/l~~	0.045	
bis(2-ethylhexyl) phthalate	~~ug/l~~	3.5	
carbon tetrachloride	~~ug/l~~	0.90	
chlordane*	~~ng/l~~	~~0.023~~	2.3×10^{3}
chloroform	~~mg/l~~	~~0.13~~	130
DDT*	~~ng/l~~	~~0.17~~	1.7×10^{4}
1,4-dichlorobenzene	~~ug/l~~	18	
3,3'-dichlorobenzidine	~~ng/l~~	~~8.1~~	8.1×10^{3}

1,2-dichloroethane	~~mg/l~~	~~0.13~~	36.2
1,1-dichloroethylene			0.9
dichloromethane	~~mg/l~~	~~0.45~~	450
1,3-dichloropropene	~~ug/l~~	8.9	
dieldrin	~~ng/l~~	~~0.040~~	4.0×10^{-5}
2,4-dinitrotoluene	~~ug/l~~	2.6	
1,2-diphenylhydrazine	~~ug/l~~	0.16	
halomethanes*	~~mg/l~~	~~0.13~~	130
heptachlor*	~~ng/l~~	~~0.72~~	7.2×10^{-4}
hexachlorobenzene	~~ng/l~~	~~0.21~~	2.1×10^{-4}
hexachlorobutadiene	~~ug/l~~	14	
hexachloroethane	~~ug/l~~	2.5	
isophorone		731	
N-nitrosodimethylamine	~~ug/l~~	7.3	
N-nitrosodi-n-propylamine		0.4	
N-nitrosodiphenylamine	~~ug/l~~	2.5	
PAHs*	~~ng/l~~	~~8.8~~	8.8×10^{-3}
PCBs*	~~ng/l~~	~~0.019~~	1.9×10^{-5}
TCDD equivalents*	~~pg/l~~	~~0.0039~~	3.9×10^{-9}
1,1,2,2-tetrachloroethane		2.3	
tetrachloroethylene	~~ug/l~~	~~99~~	2.0
1,1,2-trichloroethane		11.9	
toxaphene	~~ng/l~~	~~0.21~~	2.1×10^{-4}
trichloroethylene		27	
2,4,6-trichlorophenol	~~ug/l~~	0.29	
vinyl chloride	~~ug/l~~	36	

f. Footnote a) of Table B: Change ... this ~~limitation~~ as a total chromium ~~limitation~~. to ... this objective as a total chromium objective.

g. Page 10: Under the Section titled Implementation Provisions for Table B: A. Calculation of Effluent Limitations
Change Effluent limitations for ~~parameters identified~~ in Table B with the exception of ~~R~~adioactivity, ... to Effluent limitations for water quality objectives listed in Table B, with the exception of ~~r~~adioactivity, ...

Add (water quality objective) to the definition of C_o:
C_o = the concentration (water quality objective) to be met at the completion of initial dilution.

h. Table C: Change the first paragraph below Table C from The six-month median ~~effluent concentration limit~~ shall apply.... to The six-month median shall apply ....

Change the second paragraph below Table C from The daily maximum ~~effluent concentration limit~~ shall apply .... to The daily maximum shall apply ....

Change the fifth paragraph below Table C from ... effluent ~~requirements~~ ... to ... effluent limitations ....

Change the seventh paragraph below Table C from ... effluent quality ~~requirements~~ ... to effluent limitations ....

i. B. Compliance Determination, page 12, make the following changes in paragraph four, dealing with power plant cooling discharges:

Due to the large total volume of powerplant and other heat exchange discharges, special procedures must be applied for determining compliance with Table B ~~limitations~~ 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 2. The mass emission limits will then serve as requirements applied to all inplant waste* streams taken together which discharge into the cooling water flow, except that ~~limitations~~ limits ~~on~~ for total chlorine residual, chronic* toxicity and instantaneous maximum ~~limitations~~ concentrations ~~on~~ in Table B ~~toxic materials~~ shall apply to, and be measured in, the combined final effluent, as adjusted for dilution with ocean water. The Table B ~~limitation~~ objective ~~on~~ for radioactivity shall apply to the undiluted combined final effluent.

4. Chapter VI: General Provisions, B. Waste Discharge Requirements.
Page 14, line 2: Change effluent ~~quality~~ ~~requirements~~ to effluent limitations.
Page 14, b): Change to A receiving water quality toxicity objective ...
Page 15, Table D, footnote b., change limitations in Table B (6-Month Median = 31 ng/l, Daily Maximum = 62 ng/l, and Instantaneous Maximum = 93 ng/l) to objectives in Table B.
Page 15, D. Monitoring Program: Paragraph 2, line 7, change ~~limitations~~ of Table B to objectives of Table B.

5. Appendix I: Definition of Terms

a. Add the State and Regional Water Board's standardized definition of aquaculture:

AQUACULTURE: Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance or harvesting of aquatic plants and animals for human consumption or bait purposes.

b. Correct the definition of chronic toxicity:
Chronic toxicity: This parameter shall be used to measure the acceptability of ~~for~~ waters for supporting a healthy marine biota until improved methods are developed to evaluate biological response.

c. Delete the definition of mariculture:
~~Mariculture is the culture of plants and animals in marine waters independent of any pollution source~~.

6. Appendix II: Standard Monitoring Procedures

a. Chapter IV. Table B. Compliance with Table B Objectives:
Paragraph 3, change ~~requirement~~ to limitation.

b. Chapter IV. Compliance with Toxicity Objectives:
Change title to Chapter IV. Compliance with Toxicity Limitations and Objectives:
Change ... acute toxicity ~~objective~~ (TUa) ... to ... acute toxicity limitation (TUa) ...

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Appendix A

Draft Ocean Plan

State of California

STATE WATER RESOURCES CONTROL BOARD

~~1990~~

CALIFORNIA OCEAN PLAN

WATER QUALITY CONTROL PLAN

OCEAN WATERS OF CALIFORNIA

Adopted and Effective

~~March 22, 1990~~

Table of Contents

CALIFORNIA OCEAN PLAN

WATER QUALITY CONTROL PLAN FOR OCEAN WATERS OF CALIFORNIA

INTRODUCTION

In furtherance of legislative policy set forth in Section 13000 of Division 7 of the California Water Code (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 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 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.

This plan is applicable, it 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. Chapter III -General Requirements, Chapter IV - Table B (wherein compliance with water quality objectives shall, in all cases, be determined by direct measurements in the receiving waters) and Chapter V - Discharge Prohibitions.

This plan is not applicable to discharges to enclosed* bays and estuaries* or inland waters nor is it applicable to vessel wastes, or the control of dredging spoil.

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.

Chapter I
BENEFICIAL USES

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~~ aquaculture*, preservation and enhancement of Areas of Special Biological Significance, rare and endangered species, marine habitat, fish migration, fish spawning and shellfish* harvesting.

Chapter II
WATER QUALITY OBJECTIVES

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.

The Water Quality Objectives and Effluent ~~Quality Requirements~~ 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.

*See Appendix I for definition of terms.

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.

A. Bacterial Characteristics

1. Water-Contact Standards

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, but including all kelp* beds, the following bacterial objectives shall be maintained throughout the water column:

a. Samples of water from each sampling station shall have a density of total coliform organisms less than 1,000 per 100 ml (10 per ml); provided that not more than 20 percent of the samples at any sampling station, in any 30-day period, may exceed 1,000 per 100 ml (10 per ml), and provided further that no single sample when verified by a repeat sample taken within 48 hours shall exceed 10,000 per 100 ml (100 per ml).

b. The fecal coliform density based on a minimum of not less than five samples for any 30-day period, shall not exceed a geometric mean of 200 per 100 ml nor shall more than 10 percent of the total samples during any 60-day period exceed 400 per 100 ml.

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 Board (for consideration under Chapter VI.F.). Adventitious assemblages of kelp plants on waste discharge structures (e.g., outfall pipes and diffusers) do not constitute kelp* beds for purposes of bacterial standards.

2. Shellfish* Harvesting Standards

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:

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.

B. Bacterial Assessment and Remedial Action Requirements

The requirements listed below shall be used to 1) determine the occurrence and extent of any impairment of a beneficial use due to bacterial contamination; 2) generate information which can be used in the development of an enterococcus standard; and 3) provide the basis for remedial actions necessary to minimize or eliminate any impairment of a beneficial use.

*See Appendix I for definition of terms.

Measurement of enterococcus density shall be conducted at all stations where measurement of total and fecal coliforms are required. In addition to the requirements of Section II.A.1., if a shore station consistently exceeds a coliform objective or exceeds a geometric mean enterococcus density of 24 organisms per 100 ml for a 30-day period or 12 organisms per 100 ml for a six-month period, the Regional Board shall require the appropriate agency to conduct a survey to determine if that agency's discharge is the source of the contamination. The geometric mean shall be a moving average based on no less than five samples per month, spaced evenly over the time interval. When a sanitary survey identifies a controllable source of indicator organisms associated with a discharge of sewage, the Regional Board shall take action to control the source.

Waste discharge requirements shall require the discharger to conduct sanitary surveys when so directed by the Regional Board. Waste discharge requirements shall contain provisions requiring the discharger to control any controllable discharges identified in a sanitary survey.

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*.

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 IV, Table B, 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 which would degrade* marine life.

6. Nutrient materials shall not cause objectionable aquatic growths or degrade* indigenous biota.

*See Appendix I for definition of terms.

E. Biological Characteristics

1. Marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded*.

2. The natural taste, odor, and color of fish, shellfish*, or other marine resources used for human consumption shall not be altered.

3. The concentration of organic materials 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.

Chapter III
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.

*See Appendix I for definition of terms.

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.

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.

Chapter IV
QUALITY REQUIREMENTS FOR WASTE* DISCHARGES
(EFFLUENT ~~QUALITY REQUIREMENTS~~ LIMITATIONS)

This chapter sets forth the quality requirements for waste* discharge to the ocean*.

Table A 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.

Table B ~~limitations~~ water quality objectives apply to all discharges within the jurisdiction of this plan.

Table A effluent limitations, and effluent concentrations calculated from Table B ~~limitations~~ 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.

The State Board is authorized to administer and enforce effluent ~~requirements~~ 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 A 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.

*See Appendix I for definition of terms.

TABLE A
~~MAJOR WASTEWATER CONSTITUENTS AND PROPERTIES~~
EFFLUENT LIMITATIONS

	Unit of measurement	Limiting Concentrations: 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 limits of 6.0 to 9.0 at all times		
Acute* Toxicity	TUa	1.5	2.0	2.5

+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 Board (Chapter VI.F.), 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 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.

Effluent limitations shall be imposed in a manner prescribed by the State 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 ~~limitations~~ objectives indicated for radioactivity shall apply directly to the undiluted waste* effluent.

*See Appendix I for definition of terms.

TABLE B
~~TOXIC MATERIALS LIMITATION~~
WATER QUALITY OBJECTIVES

Chemical	Units of Measurement	Limiting Concentrations 6-Month Median	Daily Maximum	Instantaneous Maximum
OBJECTIVES FOR PROTECTION OF MARINE AQUATIC LIFE				
Arsenic	ug/l	8	32	80
Cadmium	ug/l	1	4	10
Chromium (Hexavalent) (see below, a)	ug/l	2	8	20
Copper	ug/l	3	12	30
Lead	ug/l	2	8	20
Mercury	ug/l	0.04	0.16	0.4
Nickel	ug/l	5	20	50
Selenium	ug/l	15	60	150
Silver	ug/l	0.7	2.8	7
Zinc	ug/l	20	80	200
Cyanide (see below, b)	ug/l	1	4	10
Total Chlorine Residual (For intermittent chlorine sources, see below, c)	ug/l	2	8	60
Ammonia (expressed as nitrogen)	ug/l	600	2400	6000
Chronic* Toxicity	TUc		1	
Phenolic Compounds (non-chlorinated)	ug/l	30	120	300
Chlorinated Phenolics	ug/l	1	4	10
Endosulfan	~~ng/l~~ ug/l	~~9~~ 0.009	~~18~~ 0.018	~~27~~ 0.027
Endrin	~~ng/l~~ ug/l	~~2~~ 0.002	~~4~~ 0.004	~~6~~ 0.006
HCH*	~~ng/l~~ ug/l	~~4~~ 0.004	~~8~~ 0.008	~~12~~ 0.012

Radioactivity — Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3 of the California Code of Regulations.

*See Appendix I for definition of terms.

Table B Continued

Chemical	~~Units of Measurement~~	30-day Average (ug/l)	
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH -- NONCARCINOGENS			
acrolein	~~ug/l~~	220	
antimony	~~mg/l~~	~~1.2~~	1200
bis(2-chloroethoxy) methane	~~ug/l~~	4.4	
bis(2-chloroisopropyl) ether	~~mg/l~~	~~1.2~~	1200
chlorobenzene	~~ug/l~~	570	
chromium (III)	~~mg/l~~	~~190~~	1.9×10^{3}
di-n-butyl phthalate	~~mg/l~~	~~3.5~~	3500
dichlorobenzenes*	~~mg/l~~	~~5.1~~	5100
~~1,1-dichloroethylene~~	~~mg/l~~	~~7.1~~	
diethyl phthalate	~~mg/l~~	~~33~~	3.3×10^{4}
dimethyl phthalate	~~mg/l~~	~~820~~	8.2×10^{5}
4,6-dinitro-2-methylphenol	~~ug/l~~	220	
2,4-dinitrophenol	~~ug/l~~	4.0	
ethylbenzene	~~mg/l~~	~~4.1~~	4100
fluoranthene	~~ug/l~~	15	
hexachlorocyclopentadiene	~~ug/l~~	58	
~~isophorone~~	~~mg/l~~	~~150~~	
nitrobenzene	~~ug/l~~	4.9	
thallium	~~ug/l~~	14	
toluene	~~mg/l~~	~~85~~	8.5×10^{4}
~~1,1,2,2-tetrachloroethane~~	~~mg/l~~	~~1.2~~	
tributyltin	~~ng/l~~	~~1.4~~	1.4×10^{-3}
1,1,1-trichloroethane	~~mg/l~~	~~540~~	5.4×10^{5}
~~1,1,2-trichloroethane~~	~~mg/l~~	~~43~~	
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH -- CARCINOGENS			
acrylonitrile	~~ug/l~~	~~0.10~~	0.10
aldrin	~~ng/l~~	~~0.022~~	2.2×10^{-3}
benzene	~~ug/l~~	5.9	
benzidine	~~ng/l~~	0.069	6.9×10^{-3}
beryllium	~~ng/l~~	~~33~~	0.033
bis(2-chloroethyl) ether	~~ug/l~~	0.045	
bis(2-ethylhexyl) phthalate	~~ug/l~~	3.5	
carbon tetrachloride	~~ug/l~~	0.90	
chlordane*	~~ng/l~~	~~0.023~~	2.3×10^{-3}
chloroform	~~mg/l~~	~~0.13~~	130
DDT*	~~ng/l~~	~~0.17~~	1.7×10^{-4}
1,4-dichlorobenzene	~~u~~ l	18	
3,3'-dichlorobenzidine	~~ng/l~~	~~8.1~~	8.1×10^{-3}

*See Appendix I for definition of terms.

Table B Continued

Chemical	~~Units of Measurement~~	30-day Average (ug/l)	
1,2-dichloroethane	~~mg/l~~	~~0.13~~	36.2
1,1-dichloroethylene			0.9
dichloromethane	~~mg/l~~	~~0.45~~	450
1,3-dichloropropene	~~ug/l~~	8.9	
dieldrin	~~ng/l~~	~~0.040~~	4.0×10^{-5}
2,4-dinitrotoluene	~~ug/l~~	2.6	
1,2-diphenylhydrazine	~~ug/l~~	0.16	
halomethanes*	~~mg/l~~	~~0.13~~	130
heptachlor*	~~ng/l~~	~~0.72~~	7.2×10^{-4}
hexachlorobenzene	~~ng/l~~	~~0.21~~	2.1×10^{-4}
hexachlorobutadiene	~~ug/l~~	14	
hexachloroethane	~~ug/l~~	2.5	
isophorone			731
N-nitrosodimethylamine	~~ug/l~~	7.3	
N-nitrosodi-n-propylamine			0.4
N-nitrosodiphenylamine	~~ug/l~~	2.5	
PAHs*	~~ng/l~~	~~8.8~~	8.8×10^{-3}
PCBs*	~~ng/l~~	~~0.019~~	1.9×10^{-5}
TCDD equivalents*	~~pg/l~~	~~0.0039~~	3.9×10^{-9}
1,1,2,2-tetrachloroethane			2.3
tetrachloroethylene	~~ug/l~~	~~99~~	2.0
1,1,2-trichloroethane			11.9
toxaphene	~~ng/l~~	~~0.21~~	2.1×10^{-4}
trichloroethylene		27	
2,4,6-trichlorophenol	~~ug/l~~	0.29	
vinyl chloride	~~ug/l~~	36	

a) Dischargers may at their option meet this ~~limitation~~ objective as a total chromium ~~limitation~~ objective.

b) If a discharger can demonstrate to the satisfaction of the Regional 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 Standard Methods 412F, G, and H (Standard Methods for the Examination of Water and Wastewater. Joint Editorial Board, American Public Health Association, American Water Works Association, and Water Pollution Control Federation. Most recent edition.).

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:

*See Appendix I for definition of terms.

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

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

*See Appendix I for definition of terms.

Implementation Provisions for Table B

A. Calculation of Effluent Limitations

Effluent limitations for ~~parameters identified~~ water quality objectives listed in Table B, with the exception of ~~R~~radioactivity, shall be determined through the use of the following equation:

$$Ce = Co + Dm (Co - Cs) \quad (1)$$

where:

Ce = the effluent concentration limit,
Co = the concentration (water quality objective) to be met at the completion of initial* dilution,
Cs = background seawater concentration (see Table C below),
Dm = minimum probable initial* dilution expressed as parts seawater per part wastewater.

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 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.

The Executive Director of the State Board shall identify standard dilution models for use in determining Dm, and shall assist the Regional Board in evaluating Dm for specific waste discharger. Dischargers may propose alternative methods of calculating Dm, and the Regional Board may accept such method upon verification of its accuracy and applicability.

TABLE C
BACKGROUND SEAWATER CONCENTRATIONS (Cs)

Waste Constituent	Cs (ug/l)
Arsenic	3
Copper	2
Mercury	0.0005
Silver	0.16
Zinc	8

For all other Table B parameters, Cs = 0.

The six-month median ~~effluent concentration limit~~ shall apply as a moving median of daily values for any 180 day period in which daily values represent flow weighted

*See Appendix I for definition of terms.

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.

The daily maximum ~~effluent concentration limit~~ shall apply to flow weighted 24 hour composite samples.

The instantaneous maximum shall apply to grab sample determinations.

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.

Discharge requirements shall also specify effluent ~~requirements~~ limitations in terms of mass emission rate limits utilizing the general formula:

$$lbs/day = 8.34 \times Ce \times Q \quad (2)$$

The six-month median limit on daily mass emissions shall be determined using the six-month median effluent concentration as Ce 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 Ce and the observed flow rate Q in millions of gallons per day.

Any significant change in waste* flow shall be cause for reevaluating effluent ~~quality requirements~~ limitations.

B. Compliance Determination

All analytical data shall be reported uncensored with detection limits and quantitation limits identified. For any effluent limitation, compliance shall be determined using appropriate statistical methods to evaluate multiple samples. Compliance based on a single sample analysis should be determined where appropriate as described below.

When a calculated effluent limitation is greater than or equal to the PQL*, compliance shall be determined based on the calculated effluent limitation and either single or multiple sample analyses.

When the calculated effluent limitation is below the PQL*, compliance determinations based on analysis of a single sample shall only be undertaken if the concentration of the constituent of concern in the sample is greater than or equal to the PQL*.

When the calculated effluent limitation is below the PQL*, and recurrent analytical responses between the PQL* and the calculated limit occur, compliance shall be determined by statistical analysis of multiple samples. Sufficient sampling and analysis shall be required to determine compliance.

Published values for MDL*s and PQL*s should be used except where revised MDL*s and PQL*s are available from recent laboratory performance evaluations, in which case the

*See Appendix I for definition of terms.

revised MDL*s and PQL*s should be used. Where published values are not available the Regional Boards should determine appropriate values based on available information.

If a discharger believes the sample matrix under consideration in the waste discharge requirements is sufficiently different from that used for an established MDL* value, the discharger may demonstrate to the satisfaction of the Regional Board what the appropriate MDL* should be for the discharger's matrix. In this case the PQL* shall be established at the limit of quantitation (equal to 10 standard deviations above the average measured blank used for development of the MDL* in the discharger's matrix).

When determining compliance based on a single sample, with a single effluent limitation which applies to a group of chemicals (e.g., PCBs) concentrations of individual members of the group may be considered to be zero if the analytical response for individual chemicals falls below the MDL* for that parameter.

Due to the large total volume of powerplant and other heat exchange discharges, special procedures must be applied for determining compliance with Table B ~~limitations~~ 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 2. The mass emission limits will then serve as requirements applied to all inplant waste* streams taken together which discharge into the cooling water flow, except that ~~limitations on~~ limits for total chlorine residual, chronic* toxicity and instantaneous maximum ~~limitations on~~ concentrations in Table B ~~toxic materials~~ shall apply to, and be measured in, the combined final effluent, as adjusted for dilution with ocean water. The Table B ~~limitation on~~ objective for radioactivity shall apply to the undiluted combined final effluent.

C. Toxicity Reduction Requirements

If a discharge consistently exceeds an effluent limitation based on a toxicity objective in Table B, 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.

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.

*See Appendix I for definition of terms.

Chapter V
DISCHARGE PROHIBITIONS

A. Hazardous Substances

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

B. Areas of Special Biological Significance

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.

C. Sludge

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.

It is the policy of the State 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 Board may consider requests for exceptions to this section under Chapter VI, F. 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.

D. By-Passing

The by-passing of untreated wastes* containing concentrations of pollutants in excess of those of Table A or Table B to the ocean* is prohibited.

Chapter VI
GENERAL PROVISIONS

A. Effective Date

This Plan is in effect as of the date of adoption by the State Water Resources Control Board.

*See Appendix I for definition of terms.

B. Waste Discharge Requirements

The Regional Boards may establish more restrictive water quality objectives and effluent ~~quality requirements~~ limitations than those set forth in this Plan as necessary for the protection of beneficial uses of ocean* waters.

Regional Boards may impose alternative less restrictive provisions than those contained within Table B of the Plan, provided an applicant can demonstrate that:

Reasonable control technologies (including source control, material substitution. treatment and dispersion) will not provide for complete compliance; or

Any less stringent provisions would encourage water* reclamation;

Provided further that:

a) Any alternative water quality objectives shall be below the conservative estimate of chronic toxicity, as given in Table D below, 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

c) The State Board grants an exception (Chapter VI.F.) to the Table B limits as established in the Regional Board findings and alternative limits.

TABLE D
CONSERVATIVE ESTIMATES OF CHRONIC TOXICITY

Constituent	Estimate of ChronicToxicity (ug/l)
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)

*See Appendix I for definition of terms.

a) There is 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 ~~limitations~~ objectives in Table B. ~~(6-Month Median = 31 ng/l, Daily Maximum = 62 ng/l, and Instantaneous Maximum = 93 ng/l)~~

C. Revision of Waste* Discharge Requirements

The Regional Board shall revise the waste* discharge requirements for existing discharges as necessary to achieve compliance with this Plan and shall also establish a time schedule for such compliance.

D. Monitoring Program

The Regional 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 Board to provide monitoring reports. Monitoring provisions contained in waste discharge requirements shall be in accordance with the Monitoring Procedures provided in Appendix II.

Where the Regional Board is satisfied that any substance(s) of Table B will not significantly occur in a discharger's effluent, the Regional Board may elect not to require monitoring for such substance(s), provided the discharger submits periodic certification that such substance(s) are not added to the waste* stream, and that no change has occurred in activities that could cause such substance(s) to be present in the waste* stream. Such election does not relieve the discharger from the requirement to meet the ~~limitations~~ objectives of Table B.

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

E. Areas of Special Biological Significance

Areas of special biological significance shall be designated by the State Board after a public hearing by the Regional Board and review of its recommendations.

F. State Board Exceptions to Plan Requirements

The State 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:

*See Appendix I for definition of terms.

1. The exception will not compromise protection of ocean* waters for beneficial uses, and

2. The public interest will be served.

*See Appendix I for definition of terms.

APPENDIX I
DEFINITION OF TERMS

ACUTE TOXICITY

a. Acute Toxicity (TUa)

Expressed in Toxic Units Acute (TUa)

TUa = 100/96-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 test species. 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:

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

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

AQUACULTURE: Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance or harvesting of aquatic plants and animals for human consumption or bait purposes.

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 ~~for~~ 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 = 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 II.

*See Appendix I for definition of terms.

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 characteristics 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.

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

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 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 which serveas mixing zones for fresh and ocean waters during a major portion of the year. Mouths of streams which 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.

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

HEPTACHLOR shall mean the sum of heptachlor and heptachlor epoxide.

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

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

*See Appendix I for definition of terms.

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 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.

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

MDL (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 136 Appendix B.

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.

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.

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.

PQL (Practical Quantitation Level) is the lowest concentration of a substance which can beconsistently determined within +/- 20% of the true concentration by 75% of the labs tested in a performance evaluation study. Alternatively, if performance data are not available, the PQL* for carcinogens is the MDL* x 5, and for noncarcinogens is the MDL* x 10.

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

*See Appendix I for definition of terms.

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

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.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8-tetra CDD	1.0
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

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.

*See Appendix I for definition of terms.

APPENDIX II

STANDARD MONITORING PROCEDURES

The purpose of this appendix is to provide direction to the Regional Boards on the implementation of the California Ocean Plan and to ensure the reporting of useful information. It is not feasible to cover all circumstances and conditions that could be encountered by all dischargers. Therefore, this appendix should be considered as the basic components of any discharger monitoring program. Regional Boards can deviate from the procedures required in the appendix only with the approval of the State Water Resources Control Board unless the Ocean Plan allows for the selection of alternate protocols by the Regional Boards. If no direction is given in this appendix for a specific provision of the Ocean Plan, it is within the discretion of the Regional Board to establish the monitoring requirements for the provision.

The appendix is organized in the same manner as the Ocean Plan.

Chapter II. A. Bacterial Standards:

For all bacterial analyses, sample dilutions should be performed so the range of values extends from 2 to 16,000. The detection methods used for each analysis shall be reported with the results of the analysis.

Detection methods used for coliforms (total and fecal) shall be those presented in the most recent edition of Standard Methods for the Examination of Water and Wastewater or any improved method determined by the Regional Board (and approved by EPA) to be appropriate.

Detection methods used for enterococcus shall be those presented in EPA publication EPA 600/4-85/076, Test Methods for Escherichia coli and Enterococci in Water By Membrane Filter Procedure or any improved method determined by the Regional Board to be appropriate.

Chapter IV. Table B. Compliance with Table B ~~o~~Objectives:

Procedures, calibration techniques, and instrument/reagent specifications used to determine compliance with Table B shall conform to the requirements of federal regulations (40 CFR 136). All methods shall be specified in the monitoring requirement section of waste discharge requirements.

Where methods are not available in 40 CFR 136, the Regional Boards shall specify suitable analytical methods in waste discharge requirements. Acceptance of data should be predicated on demonstrated laboratory performance.

The State or Regional Board may, subject to EPA approval, specify test methods which are more sensitive than those specified in 40 CFR 136. Total chlorine residual is likely to be a method detection limit effluent ~~requirement~~ limitation in many cases. The limit of detection of total chlorine residual in standard test methods is less than or equal to 20 ug/l.

*See Appendix I for definition of terms.

Monitoring for the substances in Table B shall be required periodically. For discharges less than 1 MGD (million gallons per day), the monitoring of all the Table B parameters should consist of at least one complete scan of the Table B constituents one time in the life of the waste discharge requirements. For discharges between 1 and 10 MGD, the monitoring frequency shall be at least one complete scan of the Table B substances annually. Discharges greater than 10 MGD shall be required to monitor at least semiannually.

Chapter IV. Compliance with Toxicity ~~Limitations and~~ Objectives:

Compliance with the acute toxicity ~~objective~~ ~~limitation~~ (TUa) in Table A shall be determined using an established protocol, e.g., American Society for Testing Materials (ASTM), EPA, American Public Health Association, or State Board.

The Regional Board shall require the use of critical life stage toxicity tests specified in this Appendix to measure TUc. Other species or protocols will be added to the list after State Board review and approval. 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. 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 discharge requirements as a monitoring requirement for all discharges greater than 100 MGD by January 1, 1991 at the latest. For other major dischargers, critical life stage bioassay testing shall be included as a monitoring requirement one year before the waste discharge requirement is scheduled for renewal. For major dischargers scheduled for waste discharge requirements renewal less than one year after the adoption of the toxicity objective, critical life stage bioassay testing shall be included as a monitoring requirement at the same time as the chronic toxicity effluent limits is established in the waste discharge requirements.

The following tests shall be used to measure TUc. Other tests may be added to the list when approved by the State Board.

~~Species~~	~~Effect~~	~~Test Duration~~	~~Reference~~
~~red alga, *Champia parvula*~~	~~number of cystocarps~~	~~7-9 days~~	~~1~~
~~giant kelp, *Macrocystis pyrifera*~~	~~percent germination; germ tube length~~	~~48 hours~~	~~2~~
~~abalone, *Haliotis rufescens*~~	~~abnormal shell development~~	~~48 hours~~	~~2~~

*See Appendix I for definition of terms.

oyster, *Crassostrea gigas* mussel, *Mytilus edulis*	abnormal shell development; percent survival	48 hours	3
urchins, *Strongylocentrotus purpuratus, S. Franciscanus* sand dollar, *Dendraster excentricus*	percent fertilization	1 hour	4
shrimp, *Mysidopsis bahia*	percent survival; growth; fecundity	7 days	1
silversides, *Menidia beryllina*	larval growth rate; percent survival	7 days	1

Bioassay References

1. Weber, C.I., W.B. Horning, II, D.J. Klemm, T.W. Neiheisel, P.A. Lewis, E.L. Robinson, J.Menkedick, and F. Kessler (eds.) 1988. Short term methods for stimating the chronic toxicity of effluents and receiving waters to marine and estuarine organisms. EPA 600/4 87/028. National Techinical Information Service, Springfield, VA.

2. Hunt, J.W., B.S. Anderson, S.L. Turpin, A.R. Conlon, M. Martin, F.H. Palmer, and J.J. Janik. 1989. Experimental Evaluation of Effluent Toxicity Testing Protocols with Giant Kelp, Mysids, Red Abalone, and Topsmelt. Marine Bioassay Project, Fourth Report. California State Water Resources Control Board, Sacramento.

3. American Society for Testing and Materials (ASTM). 1987. Standard Practice for conducting static acute toxicity tests with larvae of four species of bivalve molluscs. Procedure E 724 80. ASTM, Philadelphia, PA.

4. Dinnel, P.J., J. Link, and Q. Stober. 1987. Improved methodology for sea urchin sperm cell bioassay for marine waters. Archives of Environmental Contamination and Toxicology 16: 23 32

Species	Effect	Tier	Reference
giant kelp, *Macrocystis pyrifera*	percent germination; germ tube length	1	1
red abalone, *Haliotis rufescens*	abnormal shell development	1	1

*See Appendix I for definition of terms.

oyster, *Crassostrea gigas*; mussels, *Mytilus spp*	abnormal shell development; percent survival	1	1
urchin, *Strongylocentrotus purpuratus*	percent normal development	1	1
urchin, *Strongylocentrotus purpuratus*; sand dollar, *Dendraster excentricus*	percent fertilization	1	1
shrimp, *Holmesimysis costata*	percent survival; growth	1	1
shrimp, *Mysidopsis bahia*	percent survival; growth; fecundity	2	2
topsmelt, *Atherinops affinis*	larval growth rate; percent survival	1	1
silversides, *Menidia beryllina*	larval growth rate; percent survival	2	2

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

Protocol References

1. Bay, S. et al. 1994. *Proposed California Ocean Plan Protocols for Critical Life Stage Tests and Examination of Toxicity Test Variability.* Recommendations by the Ocean Plan Protocol Review Committee to the State Water Resources Control Board. (Appendix to Recommendations).

2. Weber, C.I., W.B. Horning II, 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.* U. S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Office of Research and Development. Cinncinnatti, OH. EPA-600/4-87/028.

*See Appendix I for definition of terms.

Appendix B

Environmental Checklist Form

Environmental Checklist Form

1. Project title:
   Amendment of the Water Quality Control Plan for Ocean Waters of California (California Ocean Plan)

2. Lead Agency Name and Address:
   State Water Resources Control Board
   Division of Water Quality
   901 P Street, Sacramento, CA 95814

3. Contact Person and Phone Number:
   Francis H. Palmer, Ocean Standards Unit Chief (916) 657-0797

4. Project Location:
   The coastal waters of California

5. Project Sponsor's Name and Address:
   (Not Applicable)

6. General Plan Designation:
   (Not Applicable)

7. Zoning:
   (Not Applicable)

8. Description of Project:
   This project, if approved by the State Water Board, will amend the 1990 California Ocean Plan. Amendments are proposed for (1) revision of seven receiving water objectives for the protection of human health (Table B of the Ocean Plan), (2) revision of the approved list of critical life stage testing protocols for measuring chronic toxicity of effluents (Appendix II of the Ocean Plan), and (3) changes in format and terminology of the Plan.

9. Surrounding Land Uses and Setting:
   The Ocean Plan regulates waste discharges to ocean waters of California. Ocean waters, as defined in the 1990 Ocean Plan, are territorial marine waters of the State as defined by California law.

10. Other public agencies whose approval is required:
    California Office of Administrative Law, United States Environmental Protection Agency.

Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages. (None of the factors are checked because no significant impacts are identified in the following environmental checklist.)

☐ Land Use and Planning	☐ Transportation/Circulation	☐ Public Services
☐ Population and Housing	☐ Biological Resources	☐ Utilities and Service Systems
☐ Geological Problems	☐ Energy and Mineral Resources	☐ Aesthetics
☐ Water	☐ Hazards	☐ Cultural Resources
☐ Air Quality	☐ Noise	☐ Recreation
	☐ Mandatory Findings of Significance	

Determination

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a *document functionally equivalent to* a NEGATIVE DECLARATION will be prepared. X

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION will be prepared. ___

I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. ___

I find that the proposed project MAY have a significant effect(s) on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets, if the effect is a "potentially significant impact" or "potentially significant unless mitigated." An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed. ___

I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project.

Signature	Date 7/14/95
Jesse M. Diaz	State Water Resources Control Board
Printed Name	For

Evaluation of Environmental Impacts:

Each environmental checklist question is answered using one of the following abbreviations:

Significant	Potentially significant impact.
Mitigated	Potentially significant impact unless mitigation incorporated.
Less than Significant	Less than significant impact.
No Impact	No Impact.

A supporting explanation will follow the abbreviated answer. A page citation from the accompanying Functional Equivalent Document (FED) may also be cited to support a checklist answer (eg., FED p. 32).

1. LAND USE AND PLANNING. Would the proposal:

a) Conflict with General Plan designation or zoning?

Answer: *No Impact*
The area affected by this project includes only coastal waters of California. This project will revise seven existing water quality objectives for ocean wastewater discharges and establish new toxicity testing protocols for testing wastewater discharges. In addition, this project will make changes in the format and terminology of the California Ocean Plan; these format and terminology changes are merely intended to clarify the existing Plan and should have no substantive effect on discharges subject to this Plan.

The seven revised water quality objectives will be more stringent than the existing water quality objectives for these pollutants.

A survey of point source wastewater dischargers potentially affected by this project was conducted by State Water Board Staff (FED pp. 23, 40). The dischargers surveyed stated that their current discharges meet the proposed revised water quality objectives. An analysis of urban stormwater discharges in Southern California (FED p. 26) showed that dischargers will be able to meet the proposed water quality objectives without changes in their treatment technology. Non-point pollution sources most likely to contain the pollutants regulated by these objectives are from urban development (FED p. 26). Data from comparable urban stormwater discharges show compliance with the objectives. Therefore, this project should not require the construction of any new facilities, require modification of existing facilities, or alter the capacity of existing facilities. Thus, this project is not anticipated to conflict

with general plans, zoning areas, existing environmental plans or policies, existing land uses, agricultural operations, or the physical arrangement of an established community.

b) Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project?

Answer: *No Impact*
No new construction is anticipated by this project; thus, this project is not anticipated to conflict with existing environmental plans or policies.

c) Be incompatible with existing land use in the vicinity?

Answer: *No Impact*
(See explanation 1a)

d) Affect agricultural resources or operations (e.g., impacts to soils or farmlands, or impacts from incompatible land uses)?

Answer: *No Impact*
(See explanation 1a)

e) Disrupt or divide the physical arrangement of an established community (including a low-income or minority community)?

Answer: *No Impact*
(See explanation 1a)

2. POPULATION AND HOUSING. Would the proposal:

a) Cumulatively exceed official regional or local population projections?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, require modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 28). Thus, this project is not anticipated to generate a population increase, induce growth in any area, or displace housing.

b) Induce substantial growth in an area either directly or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure)?

Answer: *No Impact*
(See explanation 2a)

c) Displace existing housing, especially affordable housing?

Answer: *No Impact*
(See explanation 2a)

3. **GEOLOGIC PROBLEMS.** Would the proposal result in or expose people to potential impacts involving:

a) Fault rupture?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 40). No new construction is anticipated as a result of this project. Thus, this project is not anticipated to alter the geologic characteristics of the coastal waters of California.

b) Seismic ground shaking

Answer: *No Impact*
(See explanation 3a)

c) Seismic ground failure, including liquefaction?

Answer: *No Impact*
(See explanation 3a)

d) Seiche, tsunami, or volcanic hazard?

Answer: *No Impact*
(See explanation 3a)

e) Landslides or mudflows?

Answer: *No Impact*
(See explanation 3a)

f) Erosion, changes in topography or unstable soil conditions from excavation, grading, or fill?

Answer: *No Impact*
(See explanation 3a)

g) Subsidence of the land?

Answer: *No Impact*
(See explanation 3a)

h) Expansive soils?

Answer: *No Impact*
(See explanation 3a)

i) Unique geologic or physical features?

Answer: *No Impact*
(See explanation 3a)

4. WATER. Would the proposal result in:

a) Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, require modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 23, 25, 40). No new construction is anticipated as a result of this project. Thus, this project is not anticipated to alter the amount of naturally occurring surface runoff.

b) Exposure of people or property to water related hazards such as flooding?

Answer: *No Impact*
The project will not expose people or property to water-related hazards. The quantity of discharge water emitted from wastewater treatment plants or storm drains is not expected to change as a result of this project (FED pp. 28, 40). This project will revise seven water quality objectives to increase protection of human health from consumption of contaminated aquatic organisms living in marine waters (FED p. 20).

c) Discharge into surface waters or other alteration of surface water quality (e.g., temperature, dissolved oxygen or turbidity)?

Answer: *No Impact*
The water quality objectives proposed in this project are more restrictive than the water quality objectives in the existing (1990) Ocean Plan (FED p. 20). Thus, this project is not anticipated to result in an adverse change in any water quality parameter. This project is expected to beneficially affect water quality.

d) Changes in the amount of surface water in any water body?

Answer: *No Impact*
The quantity of discharge water emitted from wastewater treatment plants is not expected to change as a result of this project (FED pp. 28, 40).

e) Changes in currents, or the course or direction of water movements?

Answer: *No Impact*
The quantity of discharge water emitted from wastewater treatment plants or storm drains is not expected to change as a result of this project (FED pp. 28, 40). Thus, this project is not expected to affect coastal currents or other coastal water movements.

f) Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations or through substantial loss of groundwater recharge capability?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, require modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 28, 40). No new construction is anticipated as a result of this project. Thus, this project is not anticipated to alter the dynamics of groundwater recharging or groundwater availability in any way.

g) Altered direction or rate of flow of groundwater?

Answer: *No Impact*
(See explanation 4f)

h) Impacts to groundwater quality?

Answer: *No Impact*
Because the water quality objectives proposed in this project are more restrictive than the water quality objectives in the existing (1990) Ocean Plan (FED p. 20), this project is not anticipated to result in an adverse change in any water quality parameter. Thus, to the extent ocean waters might impact adjacent groundwater, this project is not anticipated to substantially change groundwater quality.

i) Substantial reduction in the amount of groundwater otherwise available for public water supplies?

Answer: *No Impact*
(See explanation 4f)

5. **AIR QUALITY.** Would the proposal:

a) Violate any air quality standard or contribute to an existing or projected air quality violation?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, the modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 40). No new construction is anticipated as a result of this project. Thus, this project is not anticipated to violate air quality standards, contribute to air pollution, alter the dynamics of air mass movements, change climates, or create objectionable odors.

b) Expose sensitive receptors to pollutants?

Answer: *No Impact*
(See explanation 5a)

c) Alter air movement, moisture, or temperature, or cause any change in climate?

Answer: *No Impact*
(See explanation 5a)

d) Create objectionable odors?

Answer: *No Impact*
(See explanation 5a)

6. **TRANSPORTATION/CIRCULATION.** Would the proposal result in:

a) Increased vehicle trips or traffic congestion?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, the modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 40). No new construction is anticipated as a result of this project. Thus, this project is not anticipated to affect transportation or circulation in any way.

b) Hazards to safety from design features (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Answer: *No Impact*
(See explanation 6a)

c) Inadequate emergency access or access to nearby uses?

Answer: *No Impact*
(See explanation 6a)

d) Insufficient parking capacity on-site or off-site?

Answer: *No Impact*
(See explanation 6a)

e) Hazards or barriers for pedestrian or bicyclists?

Answer: *No Impact*
(See explanation 6a)

f) Conflicts with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

Answer: *No Impact*
(See explanation 6a)

g) Rail, waterborne or air traffic impacts?

Answer: *No Impact*
(See explanation 6a)

7. **BIOLOGICAL RESOURCES.** Would the proposal result in impacts to:

a) Endangered, threatened or rare species or their habitats (including but not limited to plants, fish, insects, animals, and birds)?

Answer: *No Impact*
This project is not expected to require construction any new wastewater or stormwater treatment facilities, the modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 40). No new construction is anticipated as a result of this project. Thus, this project is not anticipated to adversely affect plant and animal species or their habitats. The project is expected to improve water quality in the coastal waters of California (FED p. 20).

b) Locally designated species (e.g., heritage trees)?

Answer: *No Impact*
(See explanation 7a)

c) Locally designated natural communities (e.g., oak forest, coastal habitat, etc.)?

Answer: *No Impact*
(See explanation 7a)

d) Wetland habitat (e.g. marsh, riparian and vernal pool)?

Answer: *No Impact*
(See explanation 7a)

e) Wildlife dispersal or migration corridors?

Answer: *No Impact*
(See explanation 7a)

8. **ENERGY AND MINERAL RESOURCES.** Would the proposal:

a) Conflict with adopted energy conservation plans?

Answer: *No Impact*
This project is not expected to require construction any new wastewater or stormwater treatment facilities, the modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 40). No new construction is anticipated as a result of this project. Thus, this project is not anticipated to alter the existing energy requirements of waste dischargers or increase any long-term energy demands.

b) Use non-renewable resources in a wasteful and inefficient manner?

Answer: *No Impact*
No additional uses of non-renewable resources are expected from this project. (See explanation 8a)

c) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?

Answer: *No Impact*
No changes in the use of mineral resources are expected from this project. (See explanation 8a)

9. **HAZARDS.** Would the proposal involve:

a) A risk of accidental explosion or release of hazardous substances (including, but not limited to: oil, pesticides, chemicals or radiation)?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, require the modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 40). No new construction is anticipated as a result of this project. Thus, this project is not anticipated to increase in any of the hazards associated with construction or transportation of hazardous substances.

b) Possible interference with an emergency response plan or emergency evacuation plan?

Answer: *No Impact*
This project is not expected to alter existing operations (including safety procedures) at wastewater treatment plants (FED pp. 28, 40).

c) The creation of any health hazard or potential health hazard?

Answer: *No Impact*
The project is not expected to create any health hazards. The quantity of discharge water emitted from wastewater treatment plants or storm drains is not expected to change as a result of this project (FED pp. 25, 28, 40). This project will revise seven water quality objectives to increase protection of human health from consumption of contaminated aquatic organisms living in marine waters. (FED p. 20)

d) Exposure of people to existing sources of potential health hazards?

Answer: *No Impact*
(See explanation 9c)

e) Increased fire hazard in areas with flammable brush, grass, or trees?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, require modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 40). No new construction is anticipated as a result of this project. Thus, this project is not anticipated to have an affect on fire hazards in any coastal waters of California.

10. **NOISE.** Would the proposal result in:

a) Increases in existing noise levels?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or

stormwater treatment facilities, require modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 40). No new construction is anticipated as a result of this project. Thus, noise levels and human exposure to noise are not expected to increase due to this project.

b) Exposure of people to severe noise levels?

Answer: *No Impact*
(See explanation 10a)

11. **PUBLIC SERVICES.** Would the proposal have an effect upon, or result in a need for new or altered government services in any of the following areas:

a) Fire protection?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, require modification of existing facilities, or affect the capacity of existing facilities in California (FED 21, 25, 40). No new construction is anticipated as a result of this project. In addition, this project is not anticipated to generate a population increase (See explanation 2a). Thus, this project is not expected to require an increase in public services, including police and fire protection, and schools.

b) Police protection?

Answer: *No Impact*
(See explanation 11a)

c) Schools?

Answer: *No Impact*
(See explanation 11a)

d) Maintenance of public facilities, including roads?

Answer: *No Impact*
If this Plan is approved, point-source wastewater dischargers will have to meet effluent limitations based on water quality objectives established in this project. However, this project is not expected to result in the construction of any new treatment facilities or the expansion of existing facilities (FED pp. 21, 40) because existing facilities are already meeting the proposed objectives. Thus, this project would not increase the amount of maintenance required at the waste treatment facilities.

e) Other governmental services?

Answer: *No Impact*
(See explanation 11d)

12. **UTILITIES AND SERVICE SYSTEMS.** Would the proposal result in a need for new systems or supplies, or substantial alterations to the following utilities:

a) Power or natural gas?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, require modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 40). No new construction is anticipated as a result of this project. Thus, this project is not anticipated to have an affect on power or natural gas systems, communication systems, water treatment systems, solid waste disposal, or water supplies.

b) Communications systems?

Answer: *No Impact*
(See explanation 12a)

c) Local or regional water treatment or distribution facilities?

Answer: *No Impact*
The water quality objectives proposed for revision in this Plan do not apply to drinking water supplies.

d) Sewer or septic tanks?

Answer: *No Impact*
This project will not affect the construction or use of sewer or septic lines. This project is not expected to affect the future expansion of waste treatment plants as a result of expanded sewage lines (FED p. 28).

e) Stormwater drainage?

Answer: *No Impact*
Stormwater discharges cannot result in receiving water violations of water quality objectives established by this project. Little information exists on the concentration of pollutants in stormwater runoff. However, a study of the chemical constituents of storm drain runoff into the Santa Monica Bay revealed that the water quality objectives proposed in this project would not be exceeded by stormwater

drainage (FED p. 26--Table 2). Thus, this project is not expected to affect stormwater drainage (FED p. 29).

f) Solid waste disposal?

Answer: *No Impact*
This project will not affect solid waste disposal. Land-based sludge disposal from water treatment plants is not expected to increase as a result of this project (FED p. 21).

g) Local or regional water supplies?

Answer: *No Impact*
(See explanation 12a and 12c)

13. AESTHETICS. Would the proposal:

a) Affect a scenic vista or scenic highway?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, require modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 40). No new construction is anticipated as a result of this project. Thus, this project is not expected to affect scenic areas, aesthetics, or light glare.

b) Have a demonstrable negative aesthetic effect?

Answer: *No Impact*
(See explanation 13a)

c) Create light or glare?

Answer: *No Impact*
(See explanation 13a)

14. CULTURAL RESOURCES. Would the proposal:

a) Disturb paleontological resources?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, require modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 40). No new

construction is anticipated as a result of this project. Thus, this project is not expected to affect archaeological, historical, or culturally valued areas.

b) Disturb archaeological resources?

Answer: *No Impact*
(See explanation 14a)

c) Affect historical resources?

Answer: *No Impact*
(See explanation 14a)

d) Have the potential to cause a physical change which would affect unique ethnic cultural values?

Answer: *No Impact*
(See explanation 14a)

e) Restrict existing religious or sacred uses within the potential impact area?

Answer: *No Impact*
(See explanation 14a)

15. RECREATION. Would the proposal:

a) Increase the demand for neighborhood or regional parks or other recreational facilities?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, require modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 40). No new construction is anticipated as a result of this project. Thus, this project is not expected to increase the demand for recreational facilities or adversely affect existing recreational opportunities.

b) Affect existing recreational opportunities?

Answer: *No Impact*
(See explanation 15a)

16. MANDATORY FINDINGS OF SIGNIFICANCE.

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Answer: *No Impact*
This project is not expected to require construction of any new wastewater or stormwater treatment facilities, require modification of existing facilities, or affect the capacity of existing facilities in California (FED pp. 21, 25, 40). No new construction is anticipated as a result of this project. Thus, this project is not expected to have the potential to degrade the quality of the environment. In fact, this project is expected to improve the quality of the near-coast ocean environment by adopting more stringent water quality objectives (FED pp. 20). Although monitoring data indicate that existing discharges are not resulting in violation of these objectives, adoption of the objectives will help to ensure that existing high quality ocean waters are maintained in the future.

b) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?

Answer: *No Impact*
This project is intended to provide long-term protection to the coastal waters of California. The short-term environmental goals of this project are the same as the long-term goals--namely, protection of the quality of California's coastal waters.

c) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Answer: *No Impact*
This project is not expected to result in any adverse cumulative effects. The cumulative effects of this project are expected to improve the quality of the coastal environment by regulation of ocean discharges (FED pp. 20).

d) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Answer: *No Impact*
This project is not expected to cause any substantial adverse effects on humans. The seven water quality objectives proposed in this project are for the protection of human health (FED pp. 20).

Appendix C

List of Preparers

FED APPENDIX C.

List Of Preparers

This Functional Equivalent Document was prepared by the following staff members at the State Water Resources Control Board:

Division of Water Quality -- Ocean Standards Unit

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Appendix D

Progress Report for Other Issues Identified in the 1991 Triennial Review

PROGRESS REPORT FOR OTHER ISSUES IDENTIFIED IN THE TRIENNIAL REVIEW

Several issues raised in the Ocean Plan Triennial Review are complex and require comprehensive evaluation before possible amendments can be considered. This progress report provides updates on a number of issues being examined that were categorized as high priority during the Triennial Review.

Acute Toxicity Requirements in Table A

The acute toxicity limitation in Table A is intended to prevent lethal toxicity within the zone of initial dilution. In contrast to the chronic toxicity objective which is water quality-based, the acute toxicity requirements in the Ocean Plan are technology-based. The values in Table A are derived from a study conducted in the early 1970s which evaluated the efficiency of a well run advanced primary waste treatment facility.

Acute toxicity tests of ocean discharges in California are conducted on the undiluted effluent. Most whole effluent discharges have three chemical and physical characteristics which make them highly toxic to marine life within the immediate vicinity of an ocean outfall. These features are elevated ammonia concentrations, low salinity levels, and a high discharge velocity. However, these potentially harmful components (turbulence and toxicity) of the effluent significantly decrease once adequate mixing with ocean water has occurred. One possible approach to provide a more accurate estimate of ecologically significant acute toxic effects of ocean discharges could be allowing an acute toxicity mixing zone to account for a relatively small turbulent freshwater-influenced region of the discharge.

The EPA has recently published a revised acute toxicity methods manual (Fourth Edition, 1993) which recommends using younger test organisms and more rigorously defined test methods than earlier edition manuals. The use of younger test organisms for these protocols may result in more sensitive tests which would further demonstrate the toxic effects of freshwater and ammonia to marine organisms in the ocean environment.

The Ocean Standards Unit held a roundtable for State Water Resources Control Board (SWRCB) and Regional Water Quality Control Board (RWQCB) staff members on June 30, 1994, to address acute toxicity and other issues listed in the October 1992 California Ocean Plan Triennial Review and Workplan (SWRCB 1992). Comments forwarded by the Southern California Toxicity Assessment Group (SCTAG) and meeting attendees (on the acute toxicity issue) were discussed at length. The SWRCB staff intends to review the acute toxicity issue in detail in the near future.

Bacterial Standard, Shellfish Harvesting Waters: Establish a Fecal Coliform Standard for Shellfish Harvesting Areas and for Shellfish Tissue

The Interstate Shellfish Sanitation Conference (ISSC) is composed of state shellfish industry and regulatory officials, the Food and Drug Administration (FDA), and other federal agencies. This organization permits State regulatory officials to establish uniform guidelines for the safe

commercial production and harvest of shellfish. In 1983, the ISSC adopted the National Shellfish Sanitation Program (NSSP) manual (U.S. Department of Health & Human Services, 1988), which prevents harvest from waters that may contain pathogenic organisms. The NSSP standard for approved waters is either a median or geometric mean total coliform bacteria concentration of less than 70 Most Probable Number (MPN) of organisms per 100 mL water, with no more than 10 percent of the samples exceeding 230 MPN per 100 mL; or a fecal coliform standard of 14 MPN per 100 mL, with no more than 10 percent of the samples exceeding 43 MPN per 100 mL (U.S. Department of Health & Human Services, 1988). MPN is a statistical test for determining number of bacteria. The California Department of Health Services (DHS), as a participant in the NSSP, uses fecal coliform densities in water samples as the primary regulatory tool for all commercial shellfish growing areas.

The Ocean Plan currently contains a total coliform standard of 70 organisms per 100 mL for waters of all areas where shellfish may be harvested for human consumption. DHS has suggested adding a fecal coliform standard of 14 organisms per 100 mL. The addition of a fecal coliform requirement to the existing shellfish harvesting standard would make the Ocean Plan consistent with the NSSP guidelines for commercial shellfish growing areas.

The use of coliforms as indicator organisms is based on the assumption that a relationship exists between pathogenic organisms which may be present in human sewage and the indicator organism. The existence of this relationship is questionable, particularly with respect to viral pathogens. This uncertainty led to the initiation in 1989 of the National Indicator Study (NIS). The goal of NIS is to improve the current water quality-based management system used to evaluate the safety of raw molluscan shellfish. The NIS has been funding work nationally for the development of laboratory methods to identify, isolate and enumerate new indicators of public health risks associated with fecal contamination of molluscan shellfish harvest areas. Future work will include field testing to evaluate the reliability of current and new indicators in detecting the presence and magnitude of human and non-human pollution sources, as well as an epidemiological feeding study designed to evaluate the relationship between illness in volunteers ingesting raw shellfish and the quality of harvest waters as measured by traditional and new indicators of fecal pollution. NIS will use the information gained to form the basis for improved risk management and to improve the existing shellfish sanitation programs.

Shellfish harvesting waters have received increased attention since the passing of the Shellfish Protection Act of 1993, signed by the Governor in October 1993 and incorporated into the California Water Code (Division 7, Chapter 24, Section 14950). The Shellfish Protection Act acknowledges shellfish harvesting as a beneficial use of the State's waters and notes that pollution from point and nonpoint sources is currently threatening many of the State's commercial shellfish growing areas. Whenever a shellfish growing area is identified as threatened under the terms of the act, the RWQCB is directed to form a technical advisory committee to investigate the problem and suggest remedial action.

As part of the Shellfish Protection Act requirements, SWRCB and RWQCB staff, in conjunction with DHS, Department of Fish and Game (DFG), California State University at

Hayward, and the FDA, have developed a study protocol to identify pollution sources impacting shellfish growing areas in Tomales Bay, using indicator organisms which the NIS views as promising. This study is scheduled to begin during the fall of 1995, and continue through 1996.

Staff will be actively involved in the Tomales Bay study, and will not propose a change in the shellfish harvesting standard until the completion of this study.

Bacterial Standard, Water Contact: Choice of Indicator Organism for Water-Contact Bacterial Standard and Increased Stringency of the Water-Contact Fecal Coliform Standard

The first part of this issue deals with the choice of an indicator organism. In 1986, EPA recommended that states adopt an enterococcus standard for marine waters, based on epidemiological studies conducted in east coast waters. These studies supported enterococcus as a superior indicator to total and fecal coliform bacteria. However, there is concern that the correlations developed in the EPA studies may not be applicable to the cooler California waters.

To resolve the issue of which bacterial group would be a better indicator organism, the Ocean Plan was amended in 1990 to require dischargers, if ordered by RWQCBs, to do the following: (1) monitor for both coliform and enterococcus organisms, and (2) conduct sanitary surveys when either the coliform standards or a specified enterococcus level was exceeded. It was felt that these surveys would illustrate which indicator organism, along with its associated numerical level, was superior for California use. This approach has resulted in some controversy because dischargers are being required to bear the expense of monitoring for an additional indicator organism. There is also concern that the discharger-generated data were not being reviewed or used by SWRCB or RWQCB staff.

An independent technical group, the Microbiological Advisory Committee (MAC), was formed in November 1992 to advise SWRCB staff on how to investigate this issue. A study design was agreed upon, and a contract was initiated with the University of California, Berkeley in May 1993. The contract allows for data from two major ocean dischargers (City of San Diego and the City and County of San Francisco) to be analyzed using two approaches:

a. at each monitoring station, for each month and for each individual indicator organism, the number of times the measured level exceeded the allowable value contained in the Ocean Plan will be determined.
b. for each monitoring station, the monthly levels of indicator organisms will be compared against each other and to physical parameters.

Analysis of the data from the City of San Diego is complete; the preliminary report has been reviewed and accepted by the MAC. Analysis of the second data set began in early 1995. A third data set may be analyzed (City of Los Angeles, Hyperion Plant) if money is available within the contract.

The Santa Monica Restoration Project (SMBRP) has identified several research needs which relate to the indicator organism issue. The SMBRP has proposed an epidemiologic study to assess the health risk associated with swimming in waters contaminated with storm drain runoff. An important component of this study would be testing a variety of indicator organisms. This epidemiologic study is scheduled for the summer of 1995. Staff will evaluate the results of the Santa Monica Bay epidemiologic study, as well as the dischargers' data, before recommending a change in Ocean Plan requirements.

The second part of this issue, raised by DHS, deals with amending the fecal coliform standard for water-contact recreation from 200 organisms per 100 ml to 110 per 100 ml. This recommendation was based on an update of the 1968 Report of National Technical Advisory Committee to the Secretary of the Interior. Recent communication with DHS staff has indicated that DHS may be revaluating its position on the fecal coliform criterion. Staff has determined that any modifications to water contact fecal coliform standards should await the resolution of the most appropriate indicator organism; no change should be made until the indicator organism question has been resolved.

Biological Objectives

Chapter II of the 1990 Ocean Plan states "marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded." This constitutes a narrative biological objective intended to maintain the "biological integrity" of the coastal ecosystem. However, no specific ecological measurements are detailed in the Ocean Plan for compliance with this narrative objective. EPA policy (EPA 1991) recommends the adoption of both numeric and narrative biocriteria in water quality control plans.

The Triennial Review and Workplan (SWRCB 1992) called for refining the current narrative biocriteria. No new language for biological objectives is proposed for the Ocean Plan. Many indices of biological diversity are described in the literature. A major problem area is knowing how to determine if a biological index measurement is significantly different from a control area. Also problematic is how to determine if a biological index measurement changes due to naturally occurring phenomena as opposed to human-caused events. Staff is continuing to research this subject:

1. Staff is examining regulation in other states, such as Florida, North Carolina, and Maine, where biocriteria are currently in place.

2. Staff has met on an *ad hoc* basis to discuss bioassessment and ways that biological criteria could be implemented into statewide water quality control plans. Staff consensus is that biocriteria monitoring may work on a local watershed level, but a statewide criterion will require much additional work (if at all possible).

Chronic Toxicity Testing: Standardized Reporting Requirements

Standard Monitoring Procedures were included as Appendix II of the 1990 Ocean Plan in order to provide direction to RWQCBs in implementing the Plan. Additional standardization

of chronic toxicity test results will enable RWQCB staff to uniformly assess effluent toxicity. Furthermore, standardization of the chronic toxicity test results will ensure that a common set of information is submitted by dischargers.

The following efforts have been pursued in order to establish the toxicity database:

1. Chronic toxicity testing information is being stored in a computer database. This database, called the California Effluent Toxicity Database (CETD), is continually being enlarged as more toxicity tests are received from RWQCB staff. Staff have developed a standardized computer format for collecting the toxicity data. RWQCB staff are beginning to contact dischargers that have a chronic toxicity objective in their permit to request that toxicity data be submitted on a floppy disk along with the regular discharge monitoring report. Each RWQCB office has a computer program that can accept the toxicity data and allow easy manipulation of this data. Compliance with the chronic toxicity objective (TU_c) objective may then be assessed. The toxicity test data will periodically be sent to SWRCB staff for incorporation into the CETD.

2. Staff completed workshops at several RWQCB offices. These workshops described the CETD and the associated computer software. A description of these workshops and other events in the development of the database are outlined in two progress reports covering the periods September 1993 through August 1994, and September 1994 through December 1994 (Saiz 1994a, Saiz 1994b).

3. The computerized format for submitting toxicity test results was standardized. A revised document, *Standardized Electronic Reporting Format for Monitoring Effluent Toxicity--October 1994 Format*, is now available and will be sent to each RWQCB. This new standard format allows the transfer of acute or chronic data, or both, and is compatible with similar formats established in other West Coast states.

The Triennial Review and Workplan, 1991-1994 (SWRCB 1992), called for an expansion of the database so that ambient water quality test results and Toxicity Identification Evaluation (TIE) test results could be incorporated. The database software was revised in October 1994 to accept acute toxicity test results. No expansion of the software, however, is planned for incorporating ambient water quality test results or TIE test results.

Chronic Toxicity: Statistical Interpretation of Chronic Toxicity Data

Toxicologists commonly summarize the end points of toxicity tests using either of two approaches: (1) *hypothesis testing,* or (2) *point estimation* of an Effective Concentration (EC_p). In the hypothesis testing approach, the **N**o-**O**bserved-**E**ffect-**C**oncentration (NOEC) and the **L**owest-**O**bserved-**E**ffect-**C**oncentration (LOEC) are determined by statistical comparison of the treatment response with the control response (Weber et al. 1989). In the point estimate approach, a concentration-response curve is created by plotting predetermined percentile response levels (P-Levels) against the *effective concentrations* (EC_p) of the toxicant (Norberg-King 1993). The type of measurement associated with the endpoint will determine the actual point estimate procedure to follow. Toxicological endpoints measured in

proportions or frequencies (e.g. percent survival, embryo density) use the Probit method to calculate the EC_p, whereas endpoints measured in fixed units (e.g. number of young per female, organism growth) use the Inhibition Concentration method to calculate IC_p.

Table B of the 1990 Ocean Plan lists water quality objectives for protection of aquatic life. The Ocean Plan requires chronic toxicity to be measured by exposing aquatic organisms to varying concentrations of effluent according to specific test protocols as listed in Appendix II of the Ocean Plan. Chronic toxicity is measured in chronic toxicity units (TU_c). The water quality objective for chronic toxicity is 1 TU_c. The Ocean Plan defines TU_c as 100/NOEC. Thus, the Ocean Plan follows the hypothesis testing approach to measure chronic toxicity.

The Triennial Review and Workplan (SWRCB 1992) called for a comparison of the precision of the hypothesis testing approach versus the point estimate approach. The following efforts were pursued in order to improve general knowledge of toxicity test precision:

1. SWRCB staff collected reference toxicant test results from marine and freshwater tests in order to examine the test precision. The analysis of this data showed that marine tests, in general, are more sensitive than freshwater tests. A precision criterion was suggested for each of the test protocols examined. These protocol-specific criteria will ensure that tests are conducted with an acceptable degree of precision.

2. An analysis of the reference toxicant dataset was conducted by staff in order to determine which point estimate value most closely approximates a NOEC value. This analysis showed that NOEC measurements are most closely approximated by point estimates in the IC_{10} to IC_{15} range. This finding, however, was limited to *Ceriodaphnia* (a freshwater species) data sets only. Moreover, this analysis did not compare the precision of the point estimates and the NOEC estimates.

3. Staff contracted with private consultants in order to better describe the relationship between the precision of toxicological tests (as measured by *power*) and the value of the minimum significant difference (MSD). This analysis is now complete (Smith and Johnson 1994).

4. A SWRCB task force was formed, the Toxicity Technical Advisory Group (TOXTAG), to address the complexity of this issue. Currently, members of the task force are examining both approaches to measuring chronic toxicity.

<u>Desalination Discharges: Feasibility of Meeting Ocean Plan Water Quality Objectives When Waste Discharges are from Desalination Plants</u>

There are several desalination facilities currently in operation along the California coast. This number will increase as additional facilities currently in the planning stage are constructed. The ecological effects of brine waste discharged from these facilities into the ocean have not been sufficiently evaluated. In addition, an EPA computer dilution model for predicting the negatively buoyant characteristics of brine waste in the ocean is still in the developmental stage. As a result, a comprehensive review of the ramifications of applying water quality

objectives specified in the Ocean Plan to brine waste discharges will be delayed until additional information is available.

The feasibility of meeting Ocean Plan provisions when waste discharges are from desalination plants is tentatively scheduled for review in 1997.

Dioxins: Review of the Water Quality Objective for 2,3,7,8-TCDD and Related Compounds (TCDD Equivalents)

The water quality objective for TCDD equivalents was adopted by the SWRCB with the 1990 amendments to the Ocean Plan. In adopting the amendments, the SWRCB members specifically instructed staff to review the TCDD Equivalents objective as soon as possible within the next triennial review period to ensure that the objective reflects the most current scientific information. SWRCB staff has been monitoring a major assessment by the federal EPA of estimated risk from exposure to TCDD and TCDD Equivalents and has proposed basing the SWRCB reassessment of the water quality objective on EPA's reassessment.

In April 1991, EPA Administrator William K. Reilly requested that EPA's Office of Research and Development review the Agency's existing TCDD risk assessment, including human toxicity and exposure along with ecological risks. In September 1994, EPA released for external review a draft summary of findings from over 100 scientists from both within and outside the Agency. Focusing on risks to human health, the report noted revised estimates showing a substantial increase in non-carcinogenic effects and a slight decrease in cancer risk. The draft review requires approval by the Agency's Science Advisory Board, which is scheduled to review the issue and provide a final assessment in the fall of 1995. It should be noted that the assessment performed to date does not address regulatory approaches: for example, it does not propose a possible change in EPA's existing water quality criteria for TCDD.

Dredging: Applicability of the Ocean Plan to Water Quality Certification and Waste Discharge Requirements for Dredging Activity

The current Ocean Plan states that it is not applicable to control of dredging spoil. However, SWRCB and RWQCBs have authority under both Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act to regulate the discharge of waste from dredging activities. The RWQCBs may issue waste discharge requirements, which are equivalent to the Section 401 permits as provided by Section 13370 et seq. of the Porter-Cologne Act.

In addition, dredging activities in navigable waters require a permit from the Corps of Engineers as provided in Section 404 of the Clean Water Act. All applications for such permits must be reviewed by the RWQCBs. The RWQCBs may certify that the activity will not violate water quality standards, and include conditions which ensure compliance, or waive certification. In most cases, the Corps permit will contain the RWQCB conditions and may include other conditions which developed in the public hearing process.

The SWRCB staff will continue to review the need for including the control of dredge and fill activities in the Ocean Plan.

Format and Terminology

It is anticipated that changes in the format and clarification of terminology in the Ocean Plan will be proposed to the SWRCB either on an annual basis or as the need arises.

Marine Sanctuaries: Special Protection for National Marine Sanctuaries

Monterey Bay was recently added as the eleventh National Marine Sanctuary by the National Oceanic and Administration (NOAA). Chapter V of the Ocean Plan recognizes Areas of Special Biological Significance (ASBS). Waste discharges must be located a sufficient distance from an ASBS so that water quality will be maintained. Similar protection for National Marine Sanctuaries has been suggested.

The Triennial Review and the Workplan (SWRCB 1992) called for working with RWQCB and NOAA staff to determine the appropriate wording in the Ocean Plan so that National Marine Sanctuaries will be afforded special protection. In August 1994, staff received detailed comments on the Ocean Plan from the Monterey National Marine Sanctuary staff. Staff will consider these comments during assessment of the marine sanctuaries issue. Staff has not developed specific language for establishing a special protection status to National Marine Sanctuaries.

Mass Emission Regulation

The Ocean Plan limits most pollutants in wastewater discharges on a concentration basis, with effluent concentrations calculated from Table B water quality objectives. Little information is available on whether this approach has consistently achieved Table B objectives in coastal waters. In areas of high-volume waste discharge, regulating emission on the basis of mass would complement the existing concentration-based system. To date, efforts to establish a mass emission approach have focused on setting interim discharger performance goals. These goals would initially be based on cost-effective and technically feasible measures, and later be based on sediment quality objectives. Regulatory agencies would first have to establish a reasonable estimate of mass loading from each pollutant's major pathways/sources, and have some knowledge or available management measures.

Several RWQCBs have taken the initiative on this issue. The San Francisco RWQCB has begun a mass emissions monitoring program for copper in San Francisco Bay. The Los Angeles RWQCB's Santa Monica Bay Restoration Project (SMBRP) has proposed that a mass emissions approach be developed and implemented as a means to comprehensively manage a limited number of pollutants.

Staff is following the development of the mass emissions monitoring approach, as well as the development of sediment quality objectives by EPA and the SWRCB (in conjunction with the Office of Environmental Health and Hazard Assessment [OEHHA]).

Nonpoint Source Control

Nonpoint source pollution originates from many diffuse discharges other than specifically permitted point sources. While the Ocean Plan applies to nonpoint sources, it does not contain a detailed program of implementation. The SWRCB's Nonpoint Source Section has convened a number of technical advisory committees focused on watershed approaches to examining control of specific types of nonpoint source pollution. For example, the Recreational Boating and Marinas Technical Advisory Committee (TAC) developed recommendations for implementing best management practices to control pollution from recreational boating and boating marinas. Staff of the Ocean Standards Unit will monitor work of the Nonpoint Source Section to determine if specific coastal portions of the watershed management approach should be included in the Ocean Plan.

Regional Monitoring

The current Ocean Plan contains an appendix titled Standard Monitoring Procedures which references analytical methods required for compliance with the bacterial, chemical, and acute and chronic toxicity requirements of the Ocean Plan. Monitoring and reporting requirements have been left to the discretion of each Regional Water Quality Control Board (RWQCB). Regional monitoring would coordinate existing National Pollutant Discharge Elimination System (NPDES) compliance monitoring programs of ocean-discharging municipal and industrial facilities, allowing scientists and regulators to assess the health of the ecosystem.

The Santa Monica Bay Restoration Project (SMBRP) is developing the framework for a pilot regional monitoring program. As a part of this pilot program, Los Angeles RWQCB staff convened a committee to discuss the current state of bacteriological monitoring within the Bay, with dischargers agreeing to modify their shoreline and nearshore sample collection sites and sampling schedules to provide better assessment of potential bacterial hazards. The Los Angeles RWQCB has recently begun a similar effort in Ventura County.

State Water Resources Control Board (SWRCB) staff is participating on the bacteriological committee, and will continue monitoring the progress of this and all regional monitoring projects.

Sediment Quality Objectives

The Ocean Plan presently contains only narrative sediment quality objectives. Because there are no numerical sediment objectives, it is difficult to define unacceptable levels of pollutants in sediments beyond "no toxics in toxic amounts".

Establishing numerical sediment quality objectives became a high priority issue in the SWRCB's 1987 review of Ocean Plan issues. In 1989 two bills (SB 475 and AB 41) were enacted by the California State Legislature, adding Sections 13390-13396 to the California Water Code. This legislation requires the SWRCB to perform several tasks leading to the development of sediment quality objectives for enclosed marine bays and estuaries.

The Bay and Estuaries Unit of the SWRCB, DFG, and OEHHA have taken the lead on this issue by establishing the Bay Protection and Toxic Cleanup Program (BPTCP). The three primary goals of the program are to:

1. Monitor and identify toxic hot spots in the benthos,
2. Establish sediment quality objectives for Clean Water Act Section 307 (a) listed chemicals and priority pollutants, and
3. Establish human health standards for ingestion of fish and shellfish.

Currently, the BPTCP is in the monitoring phase of the study, focusing on the identification of toxic hotspots. Recognizing that numerical sediment quality objectives will not be available in the near future, the Bay and Estuaries Unit is currently writing a guidance document based on narrative sediment quality objectives. The narrative sediment quality objectives proposed by the BPTCP are the following:

1. The concentration of chemical substances in enclosed bay and estuaries sediments shall not impact beneficial uses,
2. The concentration of chemical substances (both metals and organic substances) in enclosed bay and estuarine sediments shall not increase to levels that would degrade aquatic life, and
3. The concentration of chemical substances (both metals and organic substances) in fish, shellfish, or other enclosed bay or estuarine resources used for human consumption shall not bioaccumulate from sediments to levels in edible organisms that are potentially harmful to human health.

The Ocean Standards Unit will continue to monitor the progress of the BPTCP.

Stormwater Discharge Control

Several environmental groups have stated that numerical limits should be developed and included in the stormwater NPDES requirements.

Under Ocean Standards Unit staff direction, a UCLA graduate student conducted a research program to investigate the feasibility of developing numerical effluent limitations for a selected stormwater discharge. The project identified storm water conveyances and streams in the Los Angeles Basin which discharge to ocean waters, reviewed existing sources of water quality data for these streams, and evaluated whether existing data are adequate to develop numerical standards. The project also attempted to design and apply a methodology for developing numerical standards using existing data, and to identify the limitations of each method. The Los Angeles basin was chosen for study because a substantial amount of data has been generated from this area. This report is still in draft form. In addition, staff has been following the progress of the SWRCB's Stormwater Unit, as well as the American Public Works Association/SWRCB Storm Water Task Force.

Suspended Solids and Chlorination By-Products Regulation

Table A of the Ocean Plan contains effluent quality requirements for suspended solids and applies to publicly owned treatment works and to certain industrial dischargers. This limitation (75 percent removal) reflects "advanced primary" treatment, a requirement somewhat less stringent than the full secondary treatment (85 percent removal) required by the Clean Water Act. EPA requested that staff address this discrepancy. Staff analysis of this issue will address the following questions:

- Is the intent of this regulation to remove solids, or to remove toxic substances associated with suspended solids?
- What should be done with the additional sludge that will result from more advanced treatment?
- Would a reduction in the concentration of suspended solids in effluent result in less available organic material, with a corresponding decrease in the formation of trihalomethanes (THMs)?

A second issue, the formation of byproducts from wastewater chlorination, was inadvertently overlooked when staff developed the triennial review and workplan. Several studies have found chlorine to be a very toxic constituent of sewage effluent. Approximately 99% of chlorine in solution is consumed in oxidation-reduction reactions. The other 1% is incorporated into organic compounds, forming halogenated organic compounds as by-products. Typical chlorination by-products include THMs, trichloroethylene, chlorophenols, and chlorobenzenes. Dechlorination reduces the discharge of chlorine residuals, but not of by-products. Environmental groups have suggested that publicly owned treatment works (POTWs) should chlorinate discharges on a case-by-case basis, with monitoring required for chlorination by-products and marine toxicity. EPA's current disinfection policy supports this position.

Staff analysis of this issue will include a literature review of the effects of wastewater chlorination on the marine environment, as well as a review of the disinfection requirements of all ocean dischargers.

Toxicity Reduction Evaluations (TREs)

The Ocean Plan provides a narrative description that a discharger is responsible for conducting a TRE when an effluent limitation toxicity objective is consistently exceeded in Table B. However, issues such as determining the exact trigger necessitating a TRE and determining the extent of a TIE are still unresolved. Additionally, the development of TIE aquatic toxicity test methods using marine organisms is incomplete.

Numerical criteria to be used in triggering a TRE have not been established. In the absence of more substantial criteria, RWQCBs are given significant leeway in deciding what justifies a TRE trigger and what the discharger is required to do in conducting a TIE.

The issue of which criteria are to be used in triggering a TRE is being investigated by members of both the TOXTAG and the SCTAG Policy Committee. TOXTAG is comprised of staff from the SWRCB, the RWQCBs, and EPA Region 9. TOXTAG has not yet reached a consensus on this issue, though a number of proposals have been reviewed. The final TOXTAG report is expected in 1995.

The SCTAG Policy Committee, comprised of representatives from the waste discharger community, consultant laboratories, and government has investigated the policy component of the TRE process through the use of a questionnaire aimed at TRE experts nationwide. The report findings were published in a report titled "TRE/TIE Background Paper". Though the primary emphasis of the report was to inform members of SCTAG about this issue, the report does provide a number of approaches in establishing TRE/TIE triggers.

In the future, SWRCB staff will continue to work with representatives from industry, academia, and government via the TOXTAG and SCTAG committees to establish TRE/TIE trigger criteria.

LIST OF ABBREVIATIONS (Progress Report)

ASBS	Areas of Special Biological Significance
BPTCP	Bay Protection and Toxic Cleanup Program
CETD	California Effluent Toxicity Database
DFG	Department of Fish and Game
DHS	Department of Health Services
ECp	Effective Concentration
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
FDA	Food and Drug Administration
ICp	Inhibition Concentration
ISSC	Interstate Shellfish Sanitation Conference
l	liter
LOEC	Lowest Observed Effect Concentration
MAC	Microbiological Advisory Committee
mg	milligram
mg/l	milligrams per liter
ml	milliliter
ml/l	milliliter per liter
MPN	Most Probable Number
MSD	Minimum Significant Difference
NIS	National Indicator Study
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observed Effect Concentration
NPDES	National Pollutant Discharge Elimination System
NSSP	National Shellfish Sanitation Program
OEHHA	Office of Environmental Health and Hazard Assessment
P-Level	Percentile Response Levels
RWQCB	Regional Water Quality Control Board
SCTAG	Southern California Toxicity Assessment Group
SMBRP	Santa Monica Bay Restoration Project
spp	species
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
TCCD	2,3,7,8-Tetrachlorodibenzo-p-dioxin
THM	Trihalomethane
TIE	Toxicity Identification Evaluation
TOXTAG	Toxicity Technical Advisory Group
TRE	Toxicity Reduction Evaluation
TU	Toxicity unit
TUa	Toxicity unit acute
TUc	Toxicity unit chronic
UCLA	University of California at Los Angeles
US	United States

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