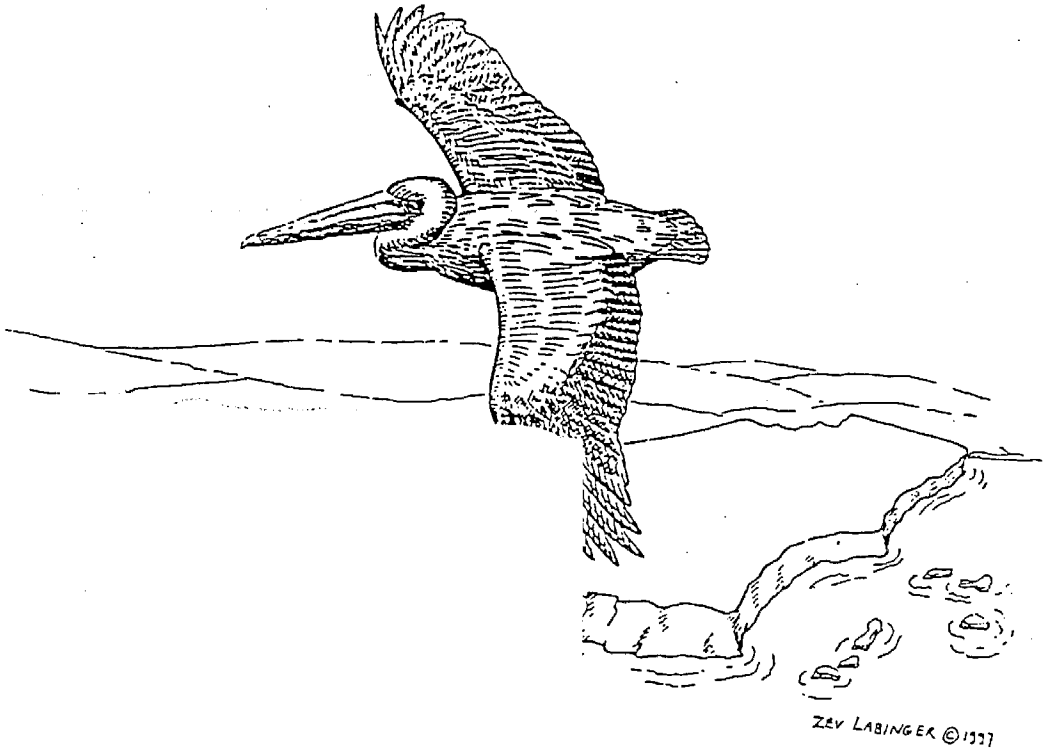
DRAFT

FUNCTIONAL EQUIVALENT DOCUMENT

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

CALIFORNIA OCEAN PLAN



OCTOBER 1998

STATE WATER RESOURCES CONTROL BOARD
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

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

STAFF REVIEW DRAFT

OCTOBER 1998

Peter M. Rooney
Secretary for Environmental Protection

State Water Resources Control Board

John P. Caffrey, Chairman

Executive Office
901 P Street • Sacramento, California 95814 • (916) 657-0941 FAX (916) 657-0932
Mailing Address: P.O. Box 100 • Sacramento, California • 95812-0100
Internet Address: http://www.swrcb.ca.gov

Pete Wilson
Governor

NOTICE OF PUBLIC HEARINGS
Amendment of the Water Quality Control Plan for Ocean Waters of California

Tuesday, November 17, 1998 -- 10:00 a.m.

First Floor Hearing Room
Paul R. Bonderson Building
901 P Street, Sacramento, California

Thursday, December 3, 1998 -- 10:00 a.m.

Irvine City Hall City Council Chambers
1 Civic Center Plaza, Irvine, California

Friday, December 11, 1998 -- 9:30 a.m.

Monterey City Council Chambers
at the corner of Madison Avenue and Pacific Avenue,
Monterey, California

NOTICE IS HEREBY GIVEN that three public hearings 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 for protection of beneficial uses of California's near coastal waters. Based on these water quality objectives, effluent limitations are established for the discharge of waste into these waters. The Ocean Plan was first adopted in 1972 and revised 1978, 1983, 1988, 1990 and 1997.

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) replacement of the acute toxicity effluent limitation in Table A with an acute toxicity water quality objective, (2) revision of 12 chemical water quality objectives for protection of marine life and human health, (3) revision of the methods for compliance determination for chemical water quality objectives, (4) changes in format and organization of the Ocean Plan, (5) development of special protection for National Marine Sanctuaries, and (6) administrative changes to the Ocean Plan.

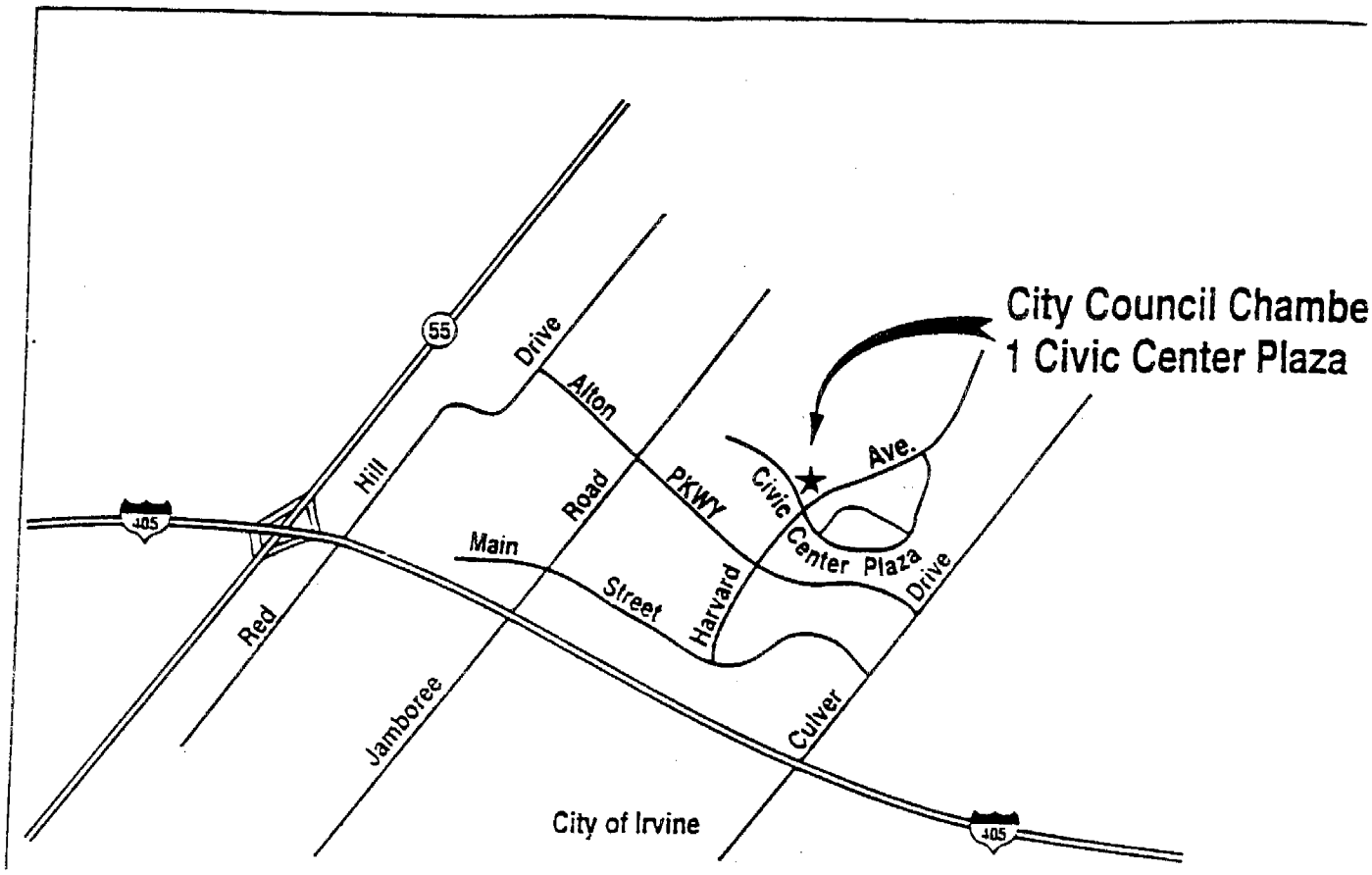
Persons wishing to comment or make recommendations on the proposed amendments at one of the public hearings should submit written comments, or a summary of their comments, in advance of the hearing. The final date for receiving written comments or recommendations will be December 28, 1998. All comments and recommendations received will be considered by the SWRCB before taking action on the proposed amendments. No decision will be made at the public hearings 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 SWRCB meeting. SWRCB Workshops and meetings are open to the public.

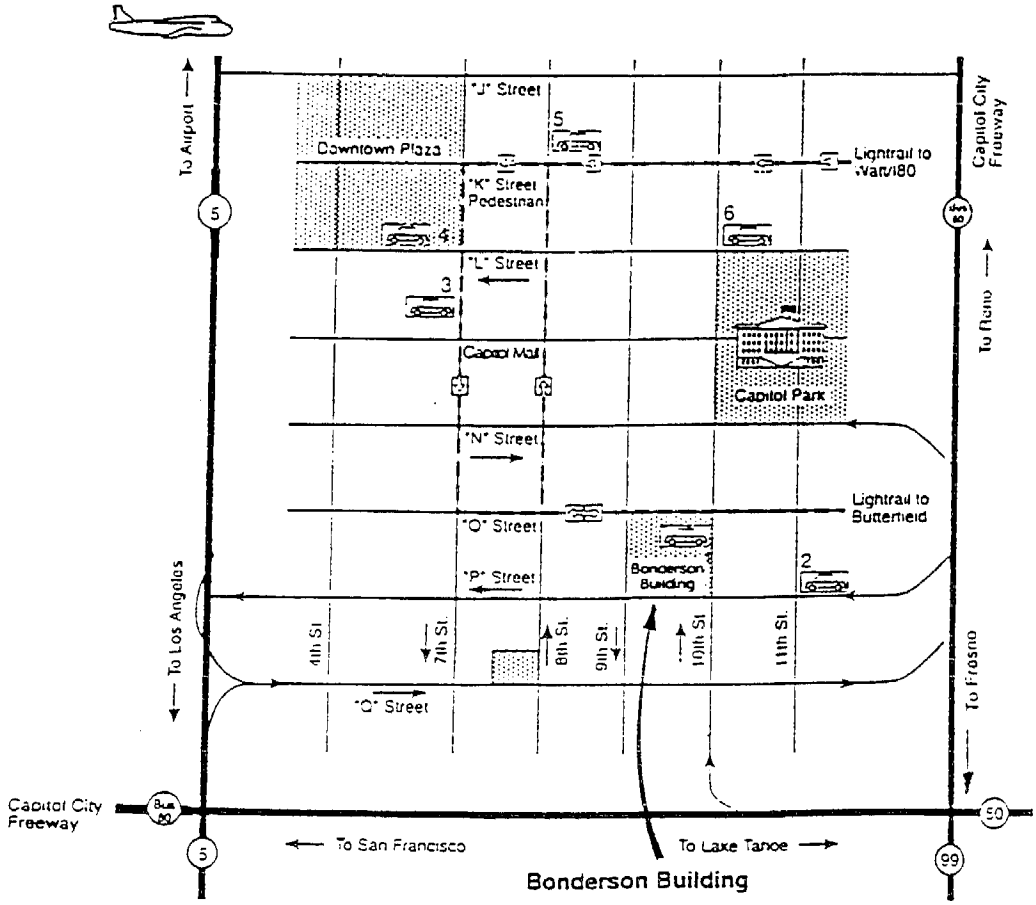
Interested persons should submit written comments to Dr. Francis H. Palmer, Division of Water Quality, State Water Resources Control Board, P.O. Box 944213, Sacramento, CA 94244-2130. To receive a copy of the Draft Functional Equivalent Document (which includes the Draft Ocean Plan and a discussion of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

Maureen Marché

Maureen Marché
Administrative Assistant to the Board

Dated: Sepember 30. 1998

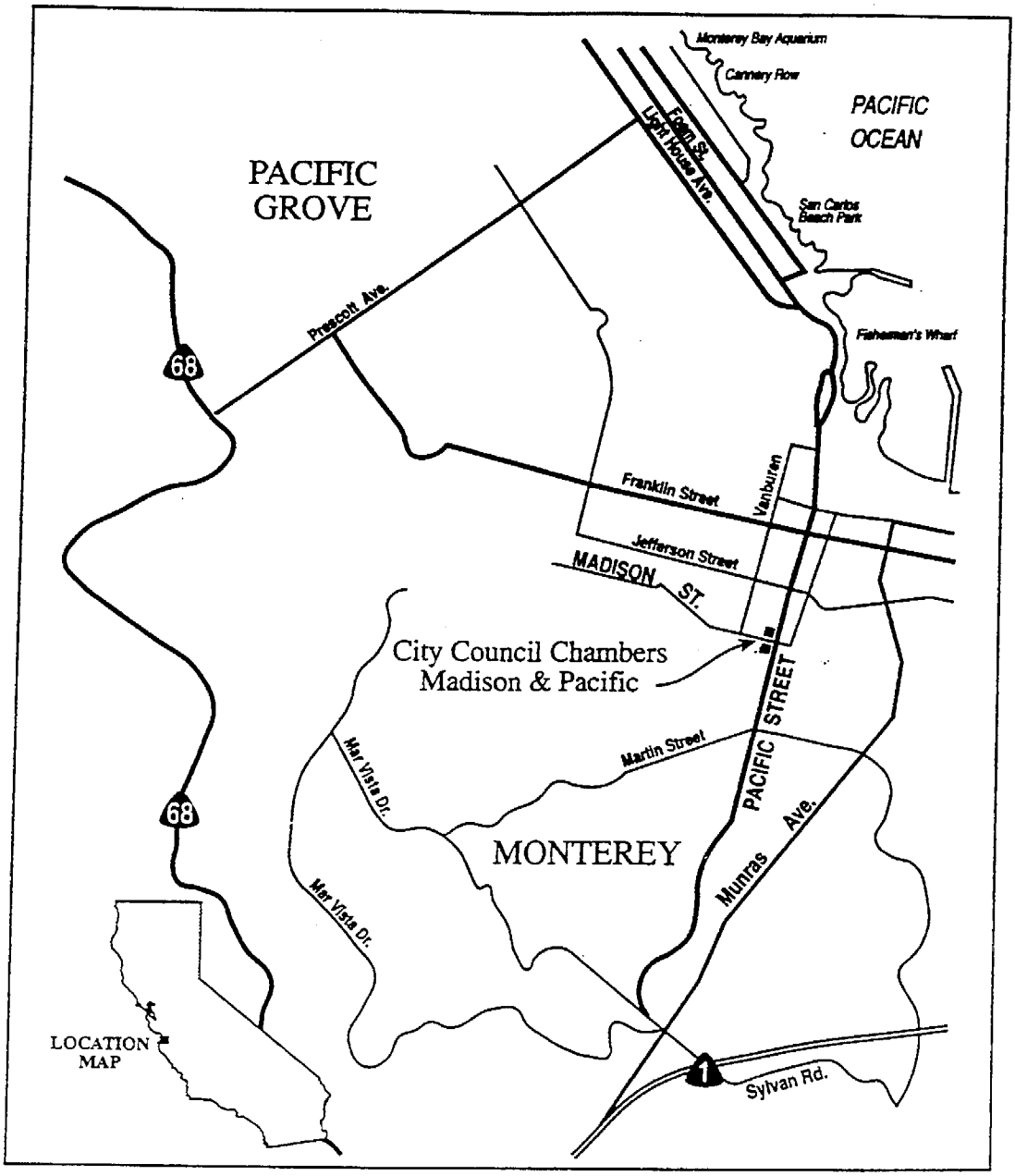




Parking:

1. State Garage
   $0.75 per half hour
2. State Garage
   $0.75 per half hour
3. $6.00 per day max
4. $6.00 per day max
5. $5.50 per day max
6. $6.00 per day max

Bonderson Building
901 P Street
Sacramento


Monterey Bay Aquarium
Cannery Row
PACIFIC OCEAN
Foam St.
Light House Ave.
PACIFIC GROVE
San Carlos Beach Park
Prescott Ave.
68
Fisherman's Wharf
Franklin Street
Van Buren
Jefferson Street
MADISON ST.
City Council Chambers
Madison & Pacific
PACIFIC STREET
Martin Street
Mar Vista Dr.
MONTEREY
Munras Ave.
Mar Vista Dr.
LOCATION MAP
1
Sylvan Rd.

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) replacement of an acute toxicity effluent limitation in Table A with an acute toxicity water quality objective, (2) revision of 12 chemical water quality objectives for protection of marine life and human health, (3) revision of the methods for compliance determination for chemical water quality objectives, (4) changes in format and organization of the Ocean Plan, (5) development of special protection for National Marine Sanctuaries, and (6) administrative changes to the Ocean Plan.

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 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) may be obtained from the contact person above.

_____ _____

Stan Martinson, Chief — Date
Division of Water Quality

Division of Water Quality Standards

Draft Functional Equivalent Document

Amendment of the Water Quality Control Plan

for Ocean Waters of California

◆ TABLE OF CONTENTS ◆

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ASBS	Areas of Special Biological Significance
ATEL	Acute Toxicity Effluent Limitation
BCF	Bioconcentration Factor
BMPs	Best Management Practices
BOD	Biological Oxygen Demand
BWT	Body Weight
Cal/EPA	California Environmental Protection Agency
CAS	Chemical Abstracts Service
CEQA	California Environmental Quality Act
CPF	Cancer Potency Factor
CV	Coefficient of Variation
CWC	California Water Code
CWA	Clean Water Act
Dm	Minimum Probable Initial Dilution
DNQ	Detected, But Not Quantified
FCR	Fish and Shellfish Consumption Rate
IRIS	Integrated Risk Information System
LC 50	Lethal Concentration 50
MDL	Method Detection Limit
ug/l	micrograms per liter
ML	Minimum Level
ng/l	nanograms per liter
ND	Not Detected
NMS	National Marine Sanctuaries
NPDES	National Pollutant Discharge Elimination System
ONRW	Outstanding National Resource Water
OSRW	Outstanding State Resource Water
PCB's	Polychlorinated Biphenyls
PMP	Pollutant Minimization Program
POTWs	Publicly Owned Treatment Works
PQL	Practical Quantitation Level
Rfd	Reference Dose
RL	Risk Level
RWQCB	Regional Water Quality Control Board
SCTAG	Southern California Toxicity Assessment Group
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SWRCB	State Water Resources Control Board
TIE	Toxicity Identification Evaluation
TRE	Toxicity Reduction Evaluation
TUa	Toxicity Unit Acute
U.S. EPA	United States Environmental Protection Agency
WET	Whole Effluent Toxicity
WQBEL	Water Quality Based Effluent Limit
WQO	Water Quality Objective
WQPP	Water Quality Protection Plan
ZID	Zone of Initial Dilution

SUMMARY

The State Water Resources Control Board (SWRCB) staff has prepared this draft Functional Equivalent Document to consider six amendments to the California Ocean Plan. The report contains a description of the sections proposed for amendment.

Issues proposed as Amendments

1. Replacement of the Acute Toxicity Effluent Limitation in Table A with an acute toxicity water quality objective: Staff proposes to replace the current technology-based Acute Toxicity Effluent Limitations with an acute water quality objective.

2. Review of Water Quality Objectives for the Protection of Human Health in Table B: Staff proposes to change the objectives for 12 compounds, using Cal/EPA-recommended cancer potency factors and a California-specific fish consumption rate in their recalculations.

3. Compliance Determination for Chemical Objectives: Staff proposes to revise the Compliance Determination section of the Ocean Plan using the Minimum Level concept, and to adopt statewide Minimum Levels to be included as an appendix to the Ocean Plan.

4. Change Format of the California Ocean Plan: Staff proposes to change the format of the Ocean Plan to make it consistent in format with that used for the other statewide water quality control plans.

5. Development of Special Protection for National Marine Sanctuaries: Staff proposes to amend the Ocean Plan to include definitions and procedures for the designation and implementation of Outstanding National Resource Waters and for Outstanding State Resource Waters.

6. Administrative Changes in the California Plan: Staff proposes administrative changes to the Ocean Plan. These would include:

a) updating references to various laws and regulations;

b) explanation of the relationship of the Ocean Plan to other statewide plans and policies;

c) clarification of confusing or redundant terminology.

FUNCTIONAL EQUIVALENT DOCUMENT

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

CALIFORNIA OCEAN PLAN
INTRODUCTION

In October 1992, the State Water Resources Control Board (SWRCB) adopted Resolution 92-88 directing staff to review a series of high priority issues identified in the 1992 Triennial Review and Workplan (SWRCB 1992). Staff was further authorized to make recommendations to the SWRCB for any necessary changes to the Ocean Plan (see Appendix "D"). The SWRCB further resolved that the Ocean 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.

Recommendations are made for resolving the following five "higher priority" issues raised during the 1992 Triennial Review of the Ocean Plan (for reference purposes, the applicable issue identification number from the 1992 Workplan is also included in parentheses):

Issue 1- Replacement of the acute toxicity effluent limitation in Table "A" with an acute toxicity water quality objective (Issue A.2.f);

Issue 2 - Review of chemical water quality objectives for protection of marine life and human health (Issue A.1.b);

Issue 3 - Compliance determination for chemical water quality objectives (Issue A.1.g);

Issue 4 - Format and organization of the Ocean Plan (Issue A.4.c).

Issue 5 - Development of special protection for National Marine Sanctuaries (Issue A.1.h);

Issue 6 - Administrative Changes to the California Ocean Plan

Staff evaluation and analysis is continuing for the remainder of the issues identified in the 1992 Triennial Review (SWRCB 1992). They will be addressed in the 1998 Triennial Review which is scheduled to begin with the release of a Staff Report in August 1998 and Public Hearings in September 1998.

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 Boards (RWQCBs) implement and interpret the Ocean Plan.

Currently, the 1997 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 One of the Ocean Plan identifies the applicable beneficial uses of marine waters. 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 and shellfish harvesting as well as objectives for protection of marine biological communities and their habitat.

Chapter three 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.

Chapter four contains effluent limitations and receiving water quality objectives for the protection of marine waters. The effluent limitations (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 (U.S. EPA).

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 20 objectives for protecting aquatic life, 24 for protecting human health from noncarcinogens, and 34 for protecting 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.

Chapters five and six contain sections on discharge prohibitions (e.g., municipal or industrial sludges, bypassing, discharge into ASBSs, and others) and general provisions. The provisions mandate that the RWQCBs require dischargers to monitor their discharges. The provisions also 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.

Staff is recommending changes in the 1997 Ocean Plan format to be consistent with Section 13050 (j) of the Porter-Cologne Act which specifies the content of water quality control plans. The proposed format would reorganize the Plan into the following three Sections:

Chapter 1 - Beneficial uses to be protected;

Chapter 2 - Water quality objectives; and

Chapter 3 - Program of implementation needed for achieving water quality objectives.

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 were 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 Ocean 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 potential Ocean Plan issues. Thirty-five issues were presented by the public at the hearing and in written comments. The testimony and comments were summarized, and the SWRCB adopted a workplan that identified 24 high priority issues to be addressed over the following three years

(SWRCB 1992). 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.

In 1997, the SWRCB adopted two Ocean Plan amendments relating to issues raised during the 1992 Triennial Review: (1) the list in Appendix II test protocols used to measure compliance with the chronic toxicity objective was revised to reflect advances in conducting these tests, and (2) a number of minor changes were made to clarify and standardize terminology referring to water quality objectives and effluent limitations.

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 document, "California Ocean Plan: Triennial Review and Workplan" (SWRCB 1992).

Two conditions occurred which 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 were reduced after the SWRCB adopted the workplan (although most resources were restored in July 1997). As a result, Staff is presenting recommendations to resolve six issues at this time, with the remaining issues to be addressed during the 1998 Triennial Review process.

Scientific Peer Review of the Proposed Amendments

In 1997, Section 57004 was added to the California Health and Safety Code (Senate Bill 1320-Sher) which calls for an external scientific peer review of the scientific basis for any rule proposed by any board, office or department within Cal/EPA. Scientific peer review is a mechanism for ensuring that regulatory decisions and initiatives are based on sound science.

Scientific peer review also helps strengthen regulatory activities, establishes credibility with stakeholders, and ensures that public resources are managed effectively.

The State Water Resources Control Board utilized the services of the University of California - Berkeley (Department of Civil and Environmental Engineering) to perform the required scientific peer review of proposed Amendments 1, 2, and 3. Peer review suggestions and comments have been incorporated into the issue descriptions for these issues. Proposed Amendments 4, 5, and 6 are administrative in nature and are not subject to the peer review process.

CEQA Analysis and Impact of the Proposed Amendments

The SWRCB must comply with the requirements of the California Environmental Quality Act (CEQA) when adopting amendments to a water quality control plan such as amendments to the Ocean Plan. CEQA authorizes the Secretary of the Resources Agency to certify a regulatory program of a State agency as exempt from the requirements for preparing Environmental Impact Reports (EIRs), Negative Declarations, and Initial Studies if certain conditions are met. The process that the SWRCB is using to adopt the proposed amendments to the Ocean Plan has received certification from the Resources Agency to be "functionally equivalent" to the CEQA process [Title 22, C.C.R. Sec. 15251(g)]. A discussion of the specifics of each proposed amendment to the Ocean Plan is presented in separate sections below. Comments on the potential environmental impacts which might occur as a result of these proposed amendments are summarized in an Environmental Checklist Form (Appendix B).

SWRCB staff has made recommendations on six issues identified during the current Triennial Review process. If the SWRCB adopts the recommended amendments, there will be no significant adverse environmental impacts from the proposed Ocean Plan amendments (for the purposes of CEQA, three of the amendments are not considered to be a "project"). 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.

The proposed Ocean Plan amendments do not alter the State's existing regulatory framework for controlling storm water and nonpoint sources of discharge.

In general, for storm water discharges, the U.S. Environmental Protection Agency and the State Water Resources Control Board have determined that numeric effluent limits are infeasible for storm water permits. Municipal storm water dischargers are required to reduce the discharge of pollutants "to the maximum extent practicable" utilizing "best management practices" (BMPs) in lieu of numeric limits. If these BMPs do not result in the attainment of water quality standards, the dischargers are required to implement additional BMPs to achieve standards.

Industrial storm water dischargers are required to control discharges using "best available technology" and "best conventional pollutant control technology" in lieu of numeric limits. Like the municipal storm water discharges, industrial storm water dischargers must implement additional BMPs if the technology-based controls are not adequate to achieve water quality standards.

Nonpoint discharges are regulated by the State according to the three-tiered management approach listed below (in order of increasing stringency):

1. Voluntary implementation of BMPs;
2. Regulatory-based encouragement of BMPs;
3. Establishment of effluent limitations in waste discharge requirements.

The scarcity of monitoring activities in downstream ocean receiving waters has not permitted a comprehensive analysis of the degree to which the implementation of BMPs are effective in attaining Ocean Plan water quality objectives.

PROJECT DESCRIPTION

Project Description

The Porter-Cologne Water Quality Control Act (Sec. 13170.2) requires that the Ocean Plan be reviewed at least every three years to guarantee that the current standards are adequate and are not allowing degradation to indigenous marine species or posing a threat to human health.

This project, if approved by the State Water Resources Control Board (SWRCB), will amend the 1997 California Ocean Plan. The following amendments are proposed for adoption:

1. Replacement of the Acute Toxicity Effluent Limitations in Table A with an Acute Toxicity Water Quality Objective;

2. Revision of Chemical Water quality Objectives for Protection of Marine Life and Human Health;

3. Compliance Determination for Chemical Water Quality Objectives;

4. Change Format of the California Ocean Plan;

5. Development of Special Protection for National Marine Sanctuaries.

6. Administrative Changes to the California Ocean Plan.

Statement of Goals

1. To amend the California Ocean Plan by addressing certain high priority concerns introduced to the SWRCB in the 1992 Triennial Review of the California Ocean Plan;

2. To update the California Ocean Plan based on a review of currently used methods and the best available scientific information;

3. To improve the California Ocean Plan by providing added clarification in definitions and terminology, without proposing changes in water quality objectives or waste discharge requirements.

Proposed Action

The proposed action is the SWRCB adoption of the proposed amendments to the California Ocean Plan listed (above) in the Project Description.

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 B.

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 lead 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 B).

Issue 1: Replacement of the Acute Toxicity Effluent Limitations in Table A with an Acute Toxicity Water Quality Objective

Present Ocean Plan: In 1972, the Acute Toxicity Effluent Limitations (ATEL) were adopted by the State Water Resources Control Board (SWRCB) to prevent lethal toxicity within the Zone of Initial Dilution for ocean waste discharges. The ATEL are technology-based, in contrast to the chronic toxicity objective which is water quality-based.

Issue Description: Public Comments on the ATEL

SWRCB staff have consulted with the Southern California Toxicity Assessment Group (SCTAG) for several years on issues concerning acute and chronic toxicity, particularly issues regarding whole effluent toxicity (WET) testing. WET is defined as the total toxic effect of an effluent on the receiving water, measured directly with a toxicity test (U.S. EPA, 1991). An acute WET test is a comparative study in which organisms that are subjected to different treatments, such as different amounts of effluent, are observed for short periods; typically acute tests are run for less than 96 hours and are evaluated using measures of mortality (U.S. EPA, 1995). SCTAG is comprised of representatives from the waste discharger community, consulting laboratories, and regulatory agencies who meet on a voluntary basis to discuss toxicity testing issues and to propose recommendations for improvement. The organization has been an active participant in review of the ATEL issue and has forwarded several written recommendations to SWRCB staff in letters dated June 27, 1994, and October 10, 1997 (SCTAG, 1994, 1997). A summary of SCTAG's comments and proposals for the ATEL issue are listed below:

1. The acute requirement should be water quality-based similar to the Ocean Plan's chronic toxicity objective. Waste treatment plant technology (other than its effect on bioassay organisms) should not form the basis for acute toxicity testing. The ATEL was developed in the early 1970's, when there were different approaches to aquatic toxicology.

2. The protocols used to test acute toxicity in discharges to seawater should utilize marine organisms.

3. This water quality-based acute toxicity requirement should incorporate a mixing zone based on the fact that freshwater discharges to the ocean are by their nature toxic to marine organisms. The acute mixing zone would include a smaller volume than the existing Zone of Initial Dilution (ZID); consequently, the translation of the acute water quality objective into an acute effluent permit limitation would utilize a smaller dilution factor than used to convert other Ocean Plan water quality objectives to effluent limitations. Several acute mixing zone models are available in the United States Environmental Protection Agency (U.S. EPA) Technical Support Document for Water Quality-based Toxics Control (U.S. EPA, 1991).

Current Requirements for Use of Toxicity Protocols

Federal regulations (40 CFR 136) issued under the Clean Water Act require use of U.S. EPA approved toxicity test protocols for NPDES permit compliance monitoring. In August 1993, the U.S. EPA published the fourth edition of "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (U.S. EPA, 1993). This revised manual uses younger life stage test organisms than previous versions. In contrast, the ATEL in Table A were based on earlier acute toxicity tests using adult test

organisms. The use of earlier life stage test organisms in these protocols has resulted in more sensitive tests than were previously used to assess mortality.

The Origin of the ATEL

The ATEL originally were developed as part of a statewide policy for water quality control in 1971 to satisfy federal requirements for water quality standards. Federal regulations adopted in the early 1970's required that sewage treatment works meet minimum criteria in order to receive federal grants. The criteria were the following:

1. Substantially complete removal of all floatable and settleable materials;
2. removal of not less than 85 percent of five day biochemical oxygen demand (BOD);
3. substantially complete reduction of pathogenic microorganisms; and
4. such additional treatment as may be necessary to meet applicable water quality standards.

U.S. EPA did allow for a waiver of the 85 percent BOD criterion if it could be shown that the ocean discharge would not adversely affect the environment. BOD is a measurement of the amount of dissolved oxygen utilized by microorganisms in the biochemical oxidation of organic materials (Metcalf & Eddy, Inc., 1972). In the absence of a waiver, the existing permitted ocean discharging facilities would have to be upgraded, and all future municipal waste treatment plants would need biological secondary treatment technology to comply with the 85 percent BOD requirement.

The SWRCB responded to the federal regulations by developing a comprehensive policy for the protection of water quality along the entire California coast. The policy was used in the development of basin plans and

more specifically, ocean waste discharge requirements, such as acute toxicity. The policy later became the Water Quality Control Plan for Ocean Waters of California in 1972. The 1972 Ocean Plan established advanced primary as the minimum allowable level of treatment for sewage treatment plants.

The original 1972 Ocean Plan contained two Tables, A and B, that listed effluent limitations for waste discharges, with the ATEL included in Table B. When the Ocean Plan was revised in 1978, Table A was retained for effluent limitations and Table B was converted to a list of water quality objectives to be met in the receiving water upon the completion of initial dilution. Since the ATEL is an effluent limitation, it was moved to Table A.

The 1.5, 2.0, and 2.5 toxic units acute (TUa) of the ATEL currently provided in Table A are waste discharge limitations derived from a study conducted in the early 1970's to determine what level of wastewater treatment performance was attainable for a well run, advanced primary waste treatment plant. Because there was no environmental component (assessment of aquatic community responses to the effluent discharge) included in determining the TUa effluent limitations, the TUa are technology-based instead of water quality-based.

The Southern California Toxicity Assessment Group recommended that the acute toxicity requirement should be water quality-based rather than technology-based. This water quality-based approach would require several changes in the Ocean Plan. These involve establishment of an acute toxicity water quality objective and creation of an acute toxicity mixing zone. The acute zone would be located inside the Ocean Plan's ZID where existing water quality objectives must be met. The proposed acute toxicity water quality objective would be met at the edge of the acute toxicity mixing zone.

Acute Toxicity Mixing Zones

Currently, California tests ocean discharges for acute toxicity by exposing freshwater organisms to undiluted effluent. This testing is supposed to provide an estimate of mortality to resident species within the immediate vicinity of the discharge. However, while a freshwater discharge may not be toxic to freshwater organisms, it will be highly toxic to marine organisms. Additionally, the turbulence and presence of ammonia in many ocean discharges may be lethal in the immediate vicinity of the discharge pipe, but not cause adverse impacts on marine communities a relatively short distance away. These three particular discharge characteristics (ammonia, freshwater, and turbulent flow) are rapidly diluted, and thus less toxic to marine organisms, once adequate mixing with the receiving water has occurred. SCTAG recommended that the acute toxicity tests should be based on conditions outside this immediate area of turbulent mixing where these three factors do not create lethal conditions for marine life.

Creation of an acute toxicity mixing zone would provide a more accurate estimate of ecologically significant acute effects of ocean discharges by accounting for the relatively small turbulent, freshwater-influenced region of the discharge (U.S. EPA, 1991 and State of Washington, 1994). The State of Washington, which introduced use of an acute mixing zone in 1994, provides a model for California. The size of the acute mixing zone used by Washington is ten percent of the distance from the edge of the outfall structure to the edge of the chronic mixing zone (pp.VI-8,VI-15 of reference 4). The dilution factor for the acute mixing zone is assumed to be linearly related and also 10% of the chronic mixing zone. Washington based its 10 percent acute dimension on U.S. EPA recommendations for determining the size of acute mixing zones that would produce negligible or no measurable effects on populations of critical species in the receiving water (U.S. EPA, 1991). If the Washington approach is

adopted, acute toxicity monitoring requirements in permits prepared by Regional Boards would use marine test species instead of freshwater organisms for measuring compliance.

Acute Toxicity Water Quality Objective

The proposed TUa of 0.3 has been recommended by U.S. EPA in their Technical Support Document for Water Quality-based Toxics Control. It is derived from a multiple year study which evaluated 496 effluent toxicity tests of both industrial and municipal sources with over 100 chemicals and species from several families (U.S. EPA, 1991). According to study results, U.S. EPA has determined that at least 90% of the species subjected to an acute whole effluent toxicity test would have survival rates of 99% if exposed to 0.3 TUa (U.S. EPA, 1995).

A 0.3 TUa is intended for situations providing a mixing zone that allows a minimum 3:1 dilution of receiving water to effluent. For example, an NPDES permittee required to comply with the 0.3 TUa without a mixing zone would have a calculated Lethal Concentration50 (LC50) of 333% effluent[1], which is impossible (U.S. EPA, 1996). LC50 is defined as the concentration of effluent which is lethal to 50% of the test organisms.

If an acute mixing zone is adopted, calculation of an acute toxicity effluent limitation would require a specific equation to derive the limitation from the proposed acute toxicity objective. The acute toxicity equation modifies the existing effluent limitation equation used for other parameters in the Ocean Plan by providing that the acute effluent concentration limit (Ce) will be met at the edge of the acute mixing zone (one tenth of chronic mixing zone) as expressed in the following equation:

[1] 0.3 TUa = 100/LC50
LC50 = 333% effluent

b. The effluent limitation for the acute toxicity objective listed in Table B shall be determined through the use of the following equation:

Ce = Ca + (0.1) Dm (Ca - Cs) (2)

Ce = the effluent concentration limit,

Ca = the concentration (water quality objective) to be met at the edge of the acute mixing zone,

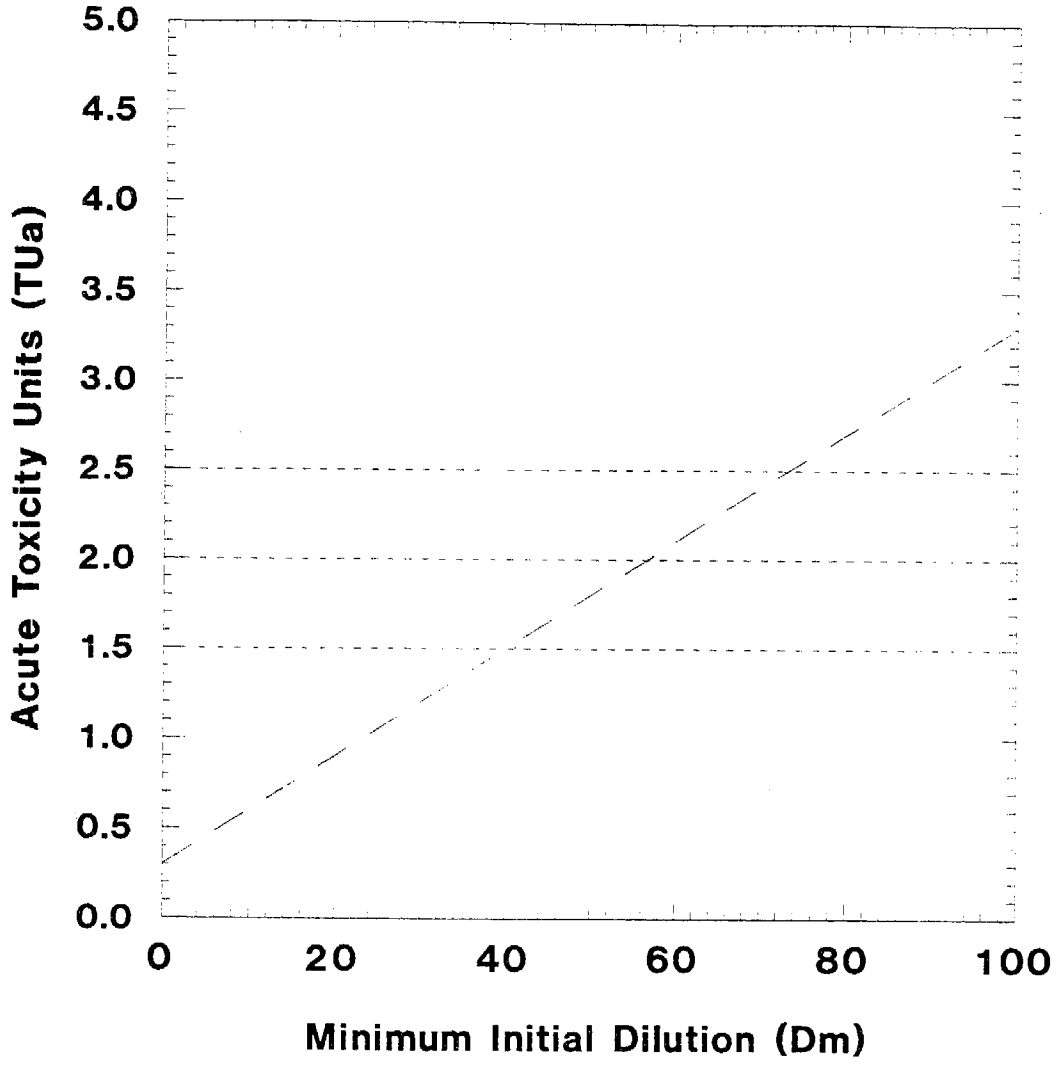
Cs = background seawater concentration (see Table C),

Dm = minimum probable initial* dilution expressed as parts seawater per wastewater.

A minimum initial dilution of 40 would be used in the proposed equation (2) to calculate effluent limitations for all waste discharges which have minimum initial dilution less than or equal to 40. Calculation of the acute toxicity effluent limitation based on a minimum dilution of 40:1 would provide a limit of 1.5 TUa. Since 1.5 TUa is the limit in the current Ocean Plan, use of the recommended value of 40 for the minimum initial dilution would not result in a lowering of water quality. A 1.5 TUa is the existing limitation in Table A of the current Ocean Plan and it is attainable.

The following figure displays the mathematical relationship between Acute Toxicity Units and Minimum Initial Dilution (Dm). The 1.5, 2.0, and 2.5 TUa values are the current effluent limitations in Table A of the Ocean Plan. The proposed Dm of 40:1 for all waste discharges which have a minimum dilution of less than or equal to 40 would result in a TUa of 1.5.

Figure 1. Acute Toxicity Units versus Minimum Initial Dilution



Comments Received: This section will be completed after SWRCB hearings on the proposed Ocean Plan amendments.

Alternatives for Board Action:

1. Make no change in the ATEL listed in Table A of the California Ocean Plan. This alternative would: (1) keep the effluent limitation technology-based rather than water quality-based and (2) not provide a mixing zone for acute toxicity testing.

2. Delete the ATEL from Table A of the Ocean Plan.

   This alternative would delete the acute toxicity component of waste discharge limitations for permitted ocean dischargers. The chronic toxicity water quality objective in Table B would be the primary estimate of aquatic community responses to ocean waste discharges.

3. Replace the ATEL with an acute water quality objective.

   This alternative will require the adoption of a mixing zone for acute toxicity testing. The mixing zone would be smaller than that allowed for chronic toxicity testing and would be determined on a site specific basis. The revisions would require: (1) deleting the ATEL from Table A , Effluent Limitations, (2) adding acute toxicity (TUa value of 0.3) to Table B, Water Quality Objectives, (3) exempting the acute toxicity objective from the equation used to calculate effluent concentration limitations, (4) adding an effluent limit concentration equation for the acute toxicity objective, (5) adding a section for determining an acute mixing zone for the acute toxicity objective, and (6) adding a section for determining compliance with the acute toxicity objective for power plant and other heat exchange discharges, and (7) adding a sample calculation to the definition for TUa in Appendix 1, DEFINITION OF TERMS.

Dr. Alex J. Horne, scientific peer reviewer for Issue 1, commented that alternative 3 (replacing the ATEL with an acute water quality objective) is scientifically defensible and "a definite step in the direction of better protection of the environment". However, he has a "long term concern that the type of land-based thinking and toxicity testing currently used has reached its limits. It is time to consider using the actual biotic environment as the measure of toxic

effects in situ but in conjunction with indirect inferences from laboratory studies of pure cultures of organisms or the concentration of chemicals in the environment." (Horne, 1998)

Attainment Analysis:

The recommendations proposed by SWRCB staff for replacing the technology-based ATEL with a water quality-based acute toxicity objective would provide a more accurate estimate of ecologically significant acute effects of ocean discharges. Creation of an acute mixing zone will allow for the use of marine test species which are more appropriate for ocean waste discharges. For these reasons, the proposed acute toxicity objective is more environmentally protective than the current ATEL in Table A of the Ocean Plan.

Staff have reviewed the minimal dilution factors for 30 NPDES permits (out of a total of 93) representing all six RWQCBs along the California coast. Twenty-four of the 30 permits have dilution factors of 50 or higher (up to 200). Entering these 24 dilution factors into the proposed effluent limitation equation (2) results in TUa values ranging from 1.8 to 6.3, all of which are more attainable than the 1.5 TUa in Table A of the current Ocean Plan.

The six remaining NPDES permits are power plants which have very low dilution factors ranging from 10 to 15.5. Power plant discharges tend to have shallow outfalls and a high discharge rate. The effluent consists of heated seawater which has been used to cool the condensers in the power plant. Inputting these values into the proposed effluent limitation equation (2) would result in calculated TUa values ranging from 0.6 to 0.75. These values cannot be attained because the LC50 values calculated from the TUa equation require an effluent concentration greater than 100 percent, which is impossible. This occurs because use of the 0.3 TUa water quality objective requires that a minimum dilution of 3.33:1 be present. However, by requiring that all NPDES

permittees with minimum initial dilutions (Dm) less than or equal to 40 use an assumed Dm of 40, a TUa of 1.5 is calculated, as shown in the following example:

Ce = Ca + (0.1) Dm (Ca - Cs)

Ce = 0.3 + (0.1) 40 (0.3-0)

Ce = 1.5 = TUa

TUa = 100/LC50

1.5 = 100/LC50

66% effluent = LC50

If the assumed Dm of 40 is used, the proposed acute toxicity objective of 0.3 TUa would be attainable for all 30 of the permitted dischargers.

The following table summarizes a survey of private consulting laboratories and waste discharging facilities to determine if the costs of conducting toxicity tests will increase by adding a dilution (determined by the size of the acute mixing zone) to the toxicity testing regime. Currently, acute toxicity tests are conducted with 100 percent (%) effluent.

Table 1: Cost comparison of conducting acute toxicity tests without dilution (100 percent effluent) versus with dilution.

Number of Respondents		Cost Increase for dilution allowance?
Private Consulting Laboratories	2	No
Waste Discharging Facilities	6	5 No, 1 Yes*

* The City of San Francisco conducts flow through instead of static renewal acute toxicity tests. If they were required to dilute the 100 percent (%) effluent for toxicity testing purposes, a dilutor may have to be purchased for a one-time cost of approximately $5,000.00 to $10,000.00.

Currently, the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) requires all larger permitted dischargers (greater than 1 million gallons per day) to conduct flow-through acute toxicity tests. SFBRWQCB is, however, considering a proposal to amend the acute toxicity test requirements in their Basin Plan because of the more rigorous (younger life stage test organisms, etc.) test requirements recommended by the U.S. EPA in their fourth edition acute toxicity testing manual.

Environmental Impact Analysis

There would be no significant adverse environmental impacts associated with the proposed amendment to revise the ATEL from a technology-based limitation to a water quality-based acute toxicity objective. Since the proposed amendment is attainable by existing waste dischargers using existing waste treatment technology, it would not be necessary to upgrade existing facilities. Thus, the proposed amendment would not result in land-use changes or construction impacts. Because the changes will not substantively alter laboratory methods and procedures, the amendment is 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 water quality-based acute toxicity objective will more accurately assess aquatic community responses to ocean waste discharges. Since no significant adverse effects are expected, mitigation measures are not proposed.

Compliance with Section 13241 of the Porter-Cologne Water Quality Control Act

Section 13241 of the Porter-Cologne Water Quality Act requires that the following factors be considered when new or revised water quality objectives are proposed:

- Past, present, and probable future beneficial uses of water;

- Environmental characteristics of the hydrographic unit under consideration, including the quality of water thereto;

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

- Economic Considerations;

- The need for developing housing within the region;

- The need to develop and use recycled water.

There factors are addressed below within the context of the recommended alternative.

Past, present, and probable future beneficial uses of water.

The proposed water quality-based acute toxicity objective is more environmentally protective than the current technology-based ATEL in Table A of the Ocean Plan. Therefore, the acute toxicity objective would also be more protective of the beneficial uses listed in Chapter 1 of the Ocean Plan.

Environmental characteristics of the hydrographic unit under consideration, including the quality of water thereto.

The proposed objective, if adopted, would be used to monitor the acute toxicity of waste discharges into the ocean. Each permit is issued with consideration to the specifics of the hydrogeographic area where the discharge is located. This objective is expected to result in better water quality of the ocean than under the current effluent limitation.

Economic Considerations.

Staff have reviewed the minimal initial dilution (Dm) values for 30 NPDES permits (out of a total of 93) representing all six RWQCBs along the California coast. The Dm for all of these permits are determined using computer models

approved for use by U.S. EPA. Twenty-four of the 30 permits have dilution values ranging from 50 to 200. TUa values calculated from the effluent limitation equation (2) in turn, range from 1.8 to 6.3. All of these TUa values are more attainable than the current TUa values of 1.5, 2.0, and 2.5, in Table A of the Ocean Plan.

The six remaining NPDES permits are power plants which have very low dilutions ranging from 10.0 to 15.5. Inputting these values into effluent limitation equation (2) and TUa equation result in impossible values (over 100% effluent for the LC50 values) because the dilution factors were below the minimum required for the equation to work. However, by utilizing the proposed minimum initial dilution ratio of 40:1 for all permittees with minimal initial dilutions of 40 or lower, a realistic TUa of 1.5 is calculated. Therefore, the proposed acute toxicity objective for all 30 of the permittees would be attainable.

The need for developing housing within the region.

No change in current waste water treatment will be needed to meet the proposed acute toxicity objective. Therefore, adoption of the proposed acute toxicity objective should not have either a direct or indirect impact on the development of new housing.

The need to develop and use recycled water.

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

Staff Recommendation: Adopt Alternative 3.

Proposed Ocean Plan Amendment:

1. Chapter IV, Table A Effluent limitations, page 7, delete the current Acute Toxicity Effluent Limitation:

~~Acute* Toxicity TUa 1.5 2.0 2.5~~

2. Chapter IV, TABLE B, WATER QUALITY OBJECTIVES, page 8, add an acute toxicity objective:

Chronic* Toxicity	TUc	1
Acute* Toxicity	TUa	0.3

3. Chapter IV, Implementation Provisions for Table B , A. Calculation of Effluent Limitations, page 11, exempt the acute toxicity objective from the effluent concentration limit equation:

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

a. Effluent limitations for water quality objectives listed in Table B, with the exception of radioactivity and the acute toxicity objective, shall be determined through the use of the following equation:

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

4. Chapter IV, Implementation Provisions for Table B , A. Calculation of Effluent Limitations, page 11, add an equation for determining the effluent limitation for the acute toxicity objective:

a. Effluent limitations for water quality objectives listed in Table B, with the exception of radioactivity and the acute toxicity objective, shall be determined through the use of the following equation:

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

The effluent limitation for the acute toxicity objective listed in Table B shall be determined through the use of the following equation:

$$Ce = Ca + (0.1)\ Dm\ (Ca - Cs) \qquad (2)$$

where:

Ca = the concentration (water quality objective) to be met at the edge of the acute mixing zone,

Ce = the effluent concentration limit,

Cs = background seawater concentration (see Table C below),

Dm = minimum probable initial* dilution expressed as parts seawater per wastewater.

5. Chapter IV, A. Calculation of Effluent Limitations, page 11, add a section on the determination of an acute mixing zone:

b. Determining a Mixing Zone for the Acute Toxicity Objective

The mixing zone for the acute toxicity objective shall be ten percent (10%) of the distance from the edge of the outfall structure to the edge of the chronic mixing zone (zone of initial dilution). There is no vertical limitation on this zone.

When establishing waste discharge requirements for point source discharges having minimal initial dilutions (Dm) less than or equal to 40, a Dm of 40 shall be used for determining the acute toxicity objective in Table B (equation 2).

6. Chapter IV, Implementation Provisions for Table B,A. Calculation of Effluent Limitations, page 13, fourth paragraph, add a sentence explaining how the acute toxicity objective is determined for power plant and other heat exchange discharges.

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 limits for total chlorine residual, chronic* toxicity and instantaneous maximum concentrations in Table B shall apply to, and be measured in, the combined final effluent, as adjusted for dilution with ocean water. The effluent limitation for the acute* toxicity objective in Table B shall be determined using equation 2. The Table B objective for radioactivity shall apply to the undiluted combined final effluent.

7. Appendix 1, DEFINITION OF TERMS , ACUTE TOXICITY, page 18, revise the definition for acute toxicity by adding a calculation example and deleting the second existing paragraph and the expression that follows.

ACUTE TOXICITY

b. Lethal Concentration 50% (LC50)

LC50 (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 LC50 may be determined after the test samples are adjusted to remove the influence of those substances.

~~When 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 = log(100 S)~~

~~1.7~~

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

Example for the Acute Toxicity Objective:

1. Assumptions:

a. National Pollution Discharge Elimination System (NPDES) permittee has 100 dilution credits for the minimum probable initial dilution based on observed waste flow characteristics, observed receiving water density structure, and the assumption that no currents, of sufficient strength to influence initial dilution process, flow across the discharge structure.

b. The data (TUa value of 0.3, 100 dilution credits for the minimum probable initial dilution, and a value of 0 for the background seawater concentration) are added to the equation:

Ce = Ca + (0.1)Dm (Ca - Cs) (2)

Ce = 0.3 + (0.1)(100) (0.3 - 0) (2)

Ce = 0.3 + 10 (0.3)

Ce = 3.3

c. The TUa effluent limitation value is 3.3

3.3TUa = 100/LC50

LC50 = 30% effluent

2. Calculation of dilution series for testing:

A. Need five concentrations and a control

B. Bracket the LC50 - 30% effluent

C. 7.5%, 15%, 30%, 60%, 90% effluent (0.5 dilution series)

NPDES permittee now performs the toxicity tests to determine if compliance is met.

Issue References

Horne, Alex J. 1998. Scientific Peer Review letter addressed to Francis H. Palmer, Chief, Ocean Standards Unit, SWRCB

Metcalf & Eddy, Inc. 1972. Wastewater Engineering

SCTAG. 1994. Memorandum addressed to Francis Palmer, Chief, Ocean Standards Unit, SWRCB.

SCTAG. 1997. Memorandum addressed to Matthew Reeve, Ocean Standards Unit, SWRCB.

U.S. EPA. 1991. Technical Support Document for Water Quality-based Toxics Control. U.S. EPA/505/2-90-001.

U.S. EPA. 1993. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms (Fourth Edition). EPA/600/4-90/027F. Office of Research and Development, Cincinnati, OH.

U.S. EPA. 1995. Water Quality Guidance for the Great Lakes System: Supplementary Information Document (SID). EPA-820-B-95-001.

U.S. EPA. 1996. Regions 9 and 10 Guidance for Implementing Whole Effluent Toxicity Testing Programs (Final).

Washington State Department of Ecology. 1994. Permit Writer's Manual, Publication No. 92-109.

Issue 2: Review of Water Quality Objectives for the Protection of Human Health in Table B

Present Ocean Plan: Table B of the 1997 Ocean Plan contains numeric water quality objectives for the protection of marine aquatic life and for the protection of human health. These water quality objectives apply to all discharges within the jurisdiction of the Plan. Permit effluent limitations are derived using Table B objectives, background seawater concentrations, and the minimum initial dilution of the waste discharge.

Issue Description: Background

The Clean Water Act (CWA, Section 303(c)(2)(B)) requires States to adopt numeric criteria for toxic pollutants which could impair designated uses and for which U.S. EPA has developed criteria guidance under Section 304(a). CWA Section 304(a) requires the U.S. EPA to develop and publish criteria guidance for water quality accurately reflecting the latest scientific knowledge. In California, water quality objectives are equivalent to CWA Section 303 criteria.

In June 1990, the U.S. EPA Regional Administrator approved the 1990 California Ocean Plan. The 1990 Ocean plan added numeric water quality objectives to Table B for the protection of human health from the consumption of contaminated seafood. The water quality objectives added at this time were priority pollutants for which Section 304(a) criteria guidance were available.

The development of water quality objectives, however, is an ongoing process. New scientific data describing the effects of pollutants on aquatic life and human health are constantly being developed. In approving the 1990 Ocean Plan, the U.S. EPA Regional Administrator recommended that the State Water Board Resources Control Board (SWRCB) re-evaluate nine objectives during the next Ocean Plan triennial review to ensure consistency with current scientific information (Table 2).

Table 2. Reproduction of the U.S. EPA Administrator's list of objectives requiring re-evaluation (U.S. EPA 1990). The original title read: "We recommend that the objectives for the toxic pollutants listed here be re-evaluated in the next triennial review to ensure consistency with current scientific information."

Priority Pollutant	U.S. EPA Gold Book (ug/L)	Ocean Plan, 1990 (ug/L)
dichlorobenzenes	2600	5100
1,1-dichloroethylene	1.85	7100
heptachlor (including heptachlor epoxide)	0.00029	0.00072
N-nitrosodi-N-propylamine	1.24	none
1,1,2,2-tetrachloroethane	10.7	1200
tetrachloroethylene	8.85	99
1,1,1-trichloroethane	1030	540000
1,1,2-trichloroethane	41.8	43000

The Ocean Plan objectives listed in the above table were selected for re-evaluation by the U.S. EPA Administrator because these objectives exceeded the water quality criteria guidance levels found in the U.S. EPA Gold Book (U.S. EPA 1986) or the Gold Book update (U.S. EPA 1987). The current Ocean Plan Table B list does not contain a water quality objective for N-nitrosodi-N-propylamine.

Since approving the 1990 Ocean Plan, however, U.S. EPA has periodically updated their CWA Section 304(a) criteria guidance. The National Toxics Rule

(NTR, U.S. EPA 1992) promulgated water quality criteria for 126 priority pollutants for States that were not in compliance with CWA Section 303(c)(2)(B). More recently, U.S. EPA proposed numeric criteria under the California Toxic Rule (CTR) (U.S. EPA 1997a). Additionally, U.S. EPA Region VIII established a CWA 304(a) Numeric Criteria Chart on July 14, 1993 (U.S. EPA 1993). This chart was updated April 1, 1997 (U.S. EPA 1997b). The criteria contained in these charts (although very similar to NTR criteria) were derived using the most current scientific information.

In addition to the objectives identified for re-evaluation by U.S. EPA, SWRCB staff compared existing Ocean Plan objectives with criteria listed in both the NTR and the (proposed) CTR. Five existing Ocean Plan human health objectives were found to exceed the NTR criteria. These same five human health objectives also exceeded the proposed CTR criteria.

Based on this comparison, SWRCB staff decided to re-evaluate a total of 14 water quality objectives for the protection of human health (nine objectives recommended by U.S. EPA plus five that exceed NTR and CTR criteria) (Table 3).

Four of the 14 pollutants were formerly regulated as non-carcinogens in Table B of the Ocean Plan: 1,1-dichloroethylene, isophorone, 1,1,2,2-tetrachloroethane, and 1,1,2-trichloroethane.

Table 3. State water quality objectives selected for re-evaluation. These Ocean Plan objectives exceed U.S. EPA water quality criteria for the protection of human health.

Chemical Name	Ocean Plan Chemical Group	CAS Number	Human Health Criteria & Objectives (ug/L)			Notes
			Gold Book Criteria (U.S. EPA 1987)	Existing CA Ocean Plan Objective (SWRCB 1990)	Nat. Toxics Rule Criteria (U.S. EPA 1992)	
1. chlorodibromomethane	halomethanes	124-48-1	none	130	34	b
2. 1,3-dichlorobenzene	dichlorobenzenes	541-73-1	2600	5100	2600	a, b
3. dichlorobromomethane	halomethanes	75-27-4	15.7	130	22	b, c
4. 1,2-dichloroethane		107-06-2	243	130	99	b
5. 1,1-dichloroethylene		75-35-4	1.85	7100	3.2	a, b
6. heptachlor	heptachlor	76-44-8	0.00029	0.00072	0.00021	a, b
7. heptachlor epoxide	heptachlor	1024-57-3	0.00029	0.00072	0.00011	a, b
8. isophorone		78-59-1	520000	150000	600	b, d
9. N- nitrosodi-N-propylamine		621-64-7	1.24	none	1.4	a
10. 1,1,2,2-tetrachloroethane		97-34-5	10.7	1200	11	a, b
11. tetrachloroethylene		127-18-4	8.85	99	8.85	a, b
12. thallium		7440-28-0	48	14	6.3	b
13. 1,1,1-trichloroethane		71-55-6	1030	540000	none	a
14. 1,1,2-trichloroethane		79-00-5	41.8	43000	42	a, b

a = Chemical identified in 1990 by U.S. EPA for reevaluation
b = Ocean plan objective exceeds National Toxics Rule criteria
c = CA Toxics Rule proposed criterion for dichlorobromomethane is 46 ug/L (U.S. EPA 1997a)
d = U.S. EPA Region VIII 304(a) criterion for isophorone is 2600 ug/L (U.S. EPA 1997b)

Methodology used to develop water quality objectives for the protection of human health

SWRCB staff used the U.S. EPA methodology for calculating water quality criteria for the protection of human health (U.S. EPA 1980, U.S. EPA 1994). The goal of this methodology is to estimate ambient water concentrations that do not represent a significant risk to the public. Assumptions related to this methodology were previously described in the 1990 Ocean Plan Functional Equivalent Document (SWRCB 1990).

Essentially, this method estimates a protective water concentration (objective) for a pollutant of concern by considering three areas:

- toxicological evaluation of the pollutant,
- human exposure to the pollutant, and
- bioconcentration potential of the pollutant.

Toxicological Evaluation of the Pollutant

The toxicological evaluation of a pollutant incorporates two steps. First, the health hazards associated with the pollutants are identified. This includes an examination of the types of health effects that can be caused by exposure to the chemical (e.g., reduced organ weights, tumor formation, or impaired nervous system). Next, the levels of exposure required to produce these health effects are measured in animal toxicity tests (i.e., dose-response studies). Two toxicological measurements of the pollutant are useful in calculating water quality objectives: the reference dose (RfD) and the cancer potency factor (CPF).

The RfD is an estimate of a daily exposure to humans that is likely to be without deleterious, non-carcinogenic effects during a lifetime. RfDs were obtained

from U.S. EPAs Integrated Risk Information System (IRIS) database (Office of Health and Environmental Assessment). The IRIS database contains up-to-date, scientifically defensible values for toxicological effects of pollutants.

The CPF (also called q_1* or cancer slope factor) is a measure of the probability of a pollutant to induce cancer at low doses. CPFs are conservative, upper 95% confidence limits of risk associated with the pollutant. The "actual" risk from exposure to the pollutant may be lower or even zero; however, it is unlikely that the actual risk is higher than the risk predicted by the CPF. To calculate objectives for carcinogenic pollutants, the CPF was obtained from the IRIS database and from Cal/EPA's Standards and Criteria Workgroup *Criteria for Carcinogens* list (Cal/EPA 1994), if present. When cancer potency factors were obtained from both Cal/EPA and IRIS, the Cal/EPA value was used. This resulted in a more protective (lower) water quality objective.

Human Exposure to the Pollutant

General Exposure Assumptions. Chronic human exposure to the pollutant was assumed to be primarily from ingestion of contaminated seafood over a 70 year lifetime. Seafood includes fish, shellfish, or other marine resources used for human consumption. Other routes of exposure such as recreational and occupational contact or drinking water intake are not considered for saline water quality objectives. SWRCB staff used the default U.S. EPA human body weight value of 70 kg.

Seafood Consumption Rate. The U.S. EPA consumption rate for fish and shellfish obtained from estuarine and freshwaters (6.5 g/day) was not used in the calculations. Rather, a more protective seafood consumption rate of 23 g/day was used based on a recommendation from the CA Department of Health

Services (DHS 1989) during the 1990 Ocean Plan triennial review. SWRCB staff determined that the 23 g/day seafood consumption rate is consistent with recent California seafood consumption estimates (OEHHA 1997).

Cancer Risk Level. Deriving objectives for carcinogens requires the selection of an acceptable risk level (RL). The selected RL is separate from and additive to the naturally occurring cancer risk level. Maximum protection of human health (i.e., absence of all increased carcinogenic risks) would require a water quality objective of zero for carcinogenic pollutants. However, a publicly acceptable level of safety does not require the absence of all risks. RL is defined as the number of new cancers that may result in a population of specified size due to an increase in pollutant exposure.

Selection of an appropriate risk level is, essentially, a policy decision. Risk levels of 10^{-5}, 10^{-6}, and 10^{-7} are often used by other States in developing their objectives. The NTR carcinogen criteria were calculated at the 10^{-6} risk level. Moreover, the water quality objectives in the present Ocean Plan were adopted at the 10^{-6} risk level. For the current evaluation, SWRCB staff calculated the 14 water quality objectives using risk levels of 10^{-5} (one excess cancer per 100,000 persons) and 10^{-6} (one excess cancer per million persons).

Bioconcentration Potential of the Pollutant

The bioconcentration factor (BCF) is used to relate pollutant residues in aquatic organisms to the ambient pollutant concentration where the organism resides. BCF is defined as the ratio of the pollutant concentrations in fish tissue versus the pollutant concentration in water. All BCFs used in the re-evaluated water quality objectives were obtained from the U.S. EPA Region VIII 304(a) criteria chart (U.S. EPA 1993). U.S. EPA developed most of these BCFs by laboratory measurements of the partition coefficient of the pollutant in a solution of octanol and water.

Many of the compounds in Table 3 are volatile or semi-volatile. Because of this, a major fraction of the pollutant would be expected to volatilize into the atmosphere from the water surface before being absorbed by aquatic organisms. The magnitude of the BCF will account for the potential to be absorbed by aquatic organisms. In general, highly volatile compounds have low BCFs.

Formulae used to calculate water quality objectives

The equation for deriving water quality objectives for pollutants having **Non-Carcinogenic** effects is,

$$WQO = \frac{(RfD)(BWT)}{(FCR)(BCF)}$$

Where:

WQO = Water Quality Objective in mg of toxicant per liter of ambient water, (mg/L);

RfD = Reference Dose for a chronic oral exposure in mg toxicant per kg of human body weight per day, (mg/kg/day);

BWT = Body Weight in kg of an average adult human, (kg). A value of 70 kg used in all calculations;

FCR = Fish and Shellfish Consumption Rate in kg fish and shellfish per day, (kg/day). A value of 0.023 kg/day was used in all calculations;

BCF = Bioconcentration Factor in mg toxicant per kg fish divided by mg toxicant per liter of ambient water, (L/kg).

The equation for deriving water quality objectives for pollutants having **Carcinogenic** effects is,

$$WQO = \frac{(RL)(BWT)}{(CPF)(FCR)(BCF)}$$

Where:

WQO = Water Quality Objective in mg of toxicant per liter of ambient water, (mg/L);

RL = Cancer Risk Level is the number of new cancers resulting from an increase in toxicant exposure within a population of specified size;

BWT = Body Weight in kg of an average adult human, (kg). A value of 70 kg was used in all calculations;

CPF = Cancer Potency Factor in units of cancer development probability (a unitless number) per mg toxicant per kg body weight per day. Often expressed as $(mg/kg/day)^{-1}$;

FCR = Fish and Shellfish Consumption Rate in kg seafood consumed per day, (kg/d). A value of 0.023 kg/d was used in all calculations;

BCF = Bioconcentration Factor in mg toxicant per kg fish divided by mg toxicant per liter of ambient water, (L/kg).

Proposed Water Quality Objectives

SWRCB staff calculated new proposed water quality objectives using two cancer risk levels: 10^{-5} and 10^{-6} (Table 4). Of the 14 pollutants being re-evaluated, two pollutants (1,3-dichlorobenzene and 1,1,1-trichloroethane) lacked sufficient information needed to calculate new water quality objectives at this time. Therefore, we propose new water quality objectives for 12 pollutants.

All of the 12 proposed Ocean Plan objectives calculated at the 10^{-6} risk level are lower than the comparable NTR values except for isophorone. This is because the current CPF for isophorone in the IRIS database is higher than the CPF value used to develop the NTR criteria.

Table 4. Risk assessment information and the resulting proposed Ocean Plan objectives. Shaded boxes indicate risk assessment values that were used in the calculation of new Ocean Plan objectives. Proposed objectives for chemicals in Carcinogen Category "D" do not change with different risk levels. "n/a" indicates data not available.

Chemical Name	Carcino-gen Category[1]	Cancer Potency Factor, Oral (mg/kg/day)$^{-1}$		Reference Dose, Oral (mg/kg/day)	Bioconcen-tration Factor (L/kg)	Proposed Ocean Plan Objective (ug/L)	
	IRIS 1997	Cal/EPA 1994	IRIS 1997	IRIS 1997	U.S. EPA 1993	10^{-6} Risk Level for Carcinogens	10^{-5} Risk Level for Carcinogens
1. chlorodibromomethane	C	0.094	0.084	0.02	3.75	8.6	86
2. 1,3-dichlorobenzene	D	n/a	n/a	n/a	55.6	no change	no change
3. dichlorobromomethane	B2	0.13	0.062	0.02	3.75	6.2	62
4. 1,2-dichloroethane	B2	0.07 (inhalation)	0.091	n/a	1.2	28	280
5. 1,1-dichloroethylene	C	n/a	0.6	0.009	5.6	0.9	9
6. heptachlor	B2	5.7	4.5	0.0005	11200	0.00005	0.0005
7. heptachlor epoxide	B2	13	9.1	0.000013	11200	0.00002	0.0002
8. isophorone	C	n/a	0.00095	0.2	4.38	730	7300
9. N- nitrosodi-N-propylamine	B2	7.0	7.0	n/a	1.13	0.38	3.8
10. 1,1,2,2-tetrachloroethane	C	0.27	0.20	n/a	5.0	2.3	23
11. tetrachloroethylene	n/a	0.051	n/a	0.01	30.6	2.0	20
12. thallium[2]	D	n/a	n/a	0.00008	119	2	2
13. 1,1,1-trichloroethane	D	n/a	n/a	withdrawn 8/91	5.6	no change	no change
14. 1,1,2-trichloroethane	C	0.072	0.057	0.004	4.5	9.4	94.

[1] U.S. EPA Carcinogen Categories: A = human carcinogen, B1 & B2 = probable human carcinogen, C = possible human carcinogen, D = not classifiable as to human carcinogenicity. Chemicals classified by U.S. EPA as carcinogens for an oral exposure include category A, B1, B2, and C (U.S. EPA 1997b).

[2] Carcinogen Category and Reference Dose are for Thallium (I) Sulfate, CAS # 7446-18-6

Alternatives for Board Action:

Alternative 1:

Do not revise Table B water quality objectives for the protection of human health.

The Clean Water Act requires the U.S. EPA to promulgate water quality standards for states having inadequate standards for priority pollutants. Since the U.S. EPA specifically recommended that certain water quality objectives be re-evaluated, failure to do so may result in U.S. EPA promulgation of water quality criteria for California ocean waters.

Alternative 2:

Adopt Table B water quality objectives for the protection of human health using U.S. EPAs CWA Section 304(a) water quality criteria guidance.

This option would directly adopt the Section 304(a) criteria as listed in Table 3 (above) for NTR pollutants. This option would facilitate U.S. EPA approval of the revised Table B objectives while allowing the SWRCB flexibility to decide which risk level for carcinogens to adopt. This option, however, would not allow the SWRCB to use Cal/EPA-recommended cancer potency factors or the California-specific seafood consumption rate.

Alternative 3:

Adopt Table B objectives calculated using the California-specific fish consumption rate. For carcinogenic pollutants, use Cal/EPA-recommended cancer potency factors at the 10^{-6} risk level.

Objectives calculated under this alternative would maintain the methodology used in the 1990 Ocean Plan when objectives for the protection of human health were first established. This option would establish 12 water quality objectives for the protection of human health from the consumption of contaminated seafood using exposure assessment information specific to California, when available. Objectives calculated under this option would use the California seafood consumption rate of 23 g/day and a cancer risk level of 10^{-6}. For carcinogenic pollutants, the Cal/EPA-recommended cancer potency factors will be used, if present. This option results in revised objectives lower than current criteria in the NTR--except for isophorone (Table 5). We believe the proposed isophorone objective is more appropriate than the NTR isophorone criteria since we used the most up-to-date cancer potency factor available from IRIS. The proposed objective for isophorone (730 ug/L) is lower than the U.S. EPA Region VIII Section 304(a) criteria for isophorone (2600 ug/L).

Table 5. Comparison of National Toxics Rule criteria with existing and proposed Ocean Plan objectives calculated using a 10^{-6} risk level.

Chemical Name	Human Health Criteria (ug/L)		
	Nat. Toxics Rule Criteria (U.S. EPA 1992)	**Existing CA Ocean Plan Objective**	**Proposed CA Ocean Plan Objective (10^{-6} risk for carcinogens)**
1. chlorodibromomethane	34	130	8.6
2. dichlorobromomethane	22	130	6.2
3. 1,2-dichloroethane	99	130	28
4. 1,1-dichloroethylene	3.2	7100	0.9
5. heptachlor	0.00021	0.00072	0.00005
6. heptachlor epoxide	0.00011	0.00072	0.00002
7. isophorone	600	150000	730
8. N- nitrosodi-N-propylamine	1.4	none	0.38
9. 1,1,2,2-tetrachloroethane	11	1200	2.3
10. tetrachloroethylene	8.85	99	2.0
11. thallium	6.3	14	2
12. 1,1,2-trichloroethane	42	43000	9.4

Alternative 4:

Adopt Table B objectives calculated using the California-specific fish consumption rate. For carcinogenic pollutants, use Cal/EPA-recommended cancer potency factors at the 10^{-5} risk level.

This alternative is similar to Alternative 3 except that objectives for carcinogens would be adopted at the 10^{-5} risk level. Using this risk level would be inconsistent with the risk level used to derive the 58 existing Ocean Plan objectives for the protection of human health. Moreover, using this risk level will result in the objective being ten times higher than those resulting from Alternative 3. Under this alternative, 11 of the 12 proposed objectives would be higher than current 304 (a) criteria in the NTR (Table 6), and three proposed objectives (1,2-dichloroethane, heptachlor, and heptachlor epoxide) would be higher than their existing Ocean plan objectives.

Table 6. Comparison of National Toxics Rule criteria with existing and proposed Ocean Plan objectives calculated using a 10^{-5} risk level.

Chemical Name	Human Health Criteria & Objectives (ug/L)		
	Nat. Toxics Rule Criteria (U.S. EPA 1992)	**Existing CA Ocean Plan Objective**	**Proposed CA Ocean Plan Objective (10^{-5} risk for carcinogens)**
1. chlorodibromomethane	34	130	86
2. dichlorobromomethane	22	130	62
3. 1,2-dichloroethane	99	130	280
4. 1,1-dichloroethylene	3.2	7100	9
5. heptachlor	0.00021	0.00072	0.0005
6. heptachlor epoxide	0.00011	0.00072	0.0002
7. isophorone	600	150000	7300
8. N- nitrosodi-N-propylamine	1.4	none	3.8
9. 1,1,2,2-tetrachloroethane	11	1200	23
10. tetrachloroethylene	8.85	99	20
11. thallium	6.3	14	2
12. 1,1,2-trichloroethane	42	43000	94

Staff Recommendation:

Adopt Alternative 3.

Adopt Table B objectives calculated using the California-specific fish consumption rate. For carcinogenic pollutants, use Cal/EPA-recommended cancer potency factors at the 10^{-6} risk level.

Water Code Considerations

Section 13241 of the California Water Code requires that several factors are considered when new or revised water quality objectives are proposed. These factors include:

- Past, present, and probable future beneficial uses of water;
- Environmental characteristics of the hydrographic unit under consideration, including the quality of water thereto;
- Water quality conditions that could reasonably be achieved through the coordinated control of all the factors which affect water quality in the area;
- Economic Considerations;
- The need for developing housing within the region;
- The need to develop and use recycled water.

These factors are addressed below within the context of the recommended alternative.

Past, present, and probable future beneficial uses of water.

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

Environmental characteristics of the hydrographic unit under consideration, including the quality of water thereto.

The proposed objectives, if adopted, will be used to develop numeric effluent limits in NPDES permits that discharge to the Pacific Ocean. Each permit is issued with consideration to the specifics of the hydrogeographic area where the discharge is to be. These objectives are expected to enhance the water quality of the ocean.

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

Permitted discharges are a part of the overall control strategy for maintaining water quality in the coastal environment. Permitted discharges that use the proposed Ocean Plan objectives to derive effluent limits will help to improve water quality.

Economic Considerations

In order to assess the economic impacts of the proposed objective, DWQ staff consulted with Scientific Applications International Corporation (SAIC). In February 1998, we obtained a list of the active NPDES permittees that discharge to the Pacific Ocean from the State Board's Waste Discharger System. This list identified 93 ocean dischargers and provided general information such as RWQCB, Waste Discharger Identification Number, NPDES Number, Address, Facility Type, Waste Type, Standard Industrial Classification (SIC) Code, Major/Minor Status, and Baseline Flow Rate in millions of gallons per day (MGD). Staff determined that assessing the impact of the proposed objectives to all 93 dischargers by the direct examination of monitoring data would be time-consuming and costly. The total baseline flow to the Pacific Ocean for these discharges is 11.8 billion gallons per day.

To overcome these constraints, a stratified random sample of the dischargers was conducted. Examination of the list revealed that one baseline flow rate was zero; this facility was eliminated. Of the 92 facilities that remained, 50 (54%) were designated as Major discharges and 42 (46%) were designated as Minor discharges. A stratified random sampling scheme was used to select a total of seven facilities from the list of 92 ocean dischargers: five Majors facilities (representing 10% of the "universe" of Major facilities) and two Minor facilities (representing 5% of the "universe" of Minor facilities).

Sorting the list of Major facilities on baseline flow rate revealed three natural subgroupings of the facilities: 20 facilities discharge in the range of 0.05 - 8.5 MGD, 14 facilities discharge in the range of 8.8 - 23 MGD, and 16 facilities discharge in the range of 219 - 2541 MGD. We randomly selected one facility from the first subgroup, one facility from the second subgroup, and three facilities from the third subgroup for a total of five Major dischargers.

A similar sorting for the Minor facilities did not reveal any natural subgroups since all Minor discharges are less than 1 MGD. Sorting by facility type, however, revealed 23 industrial dischargers and 19 "other" dischargers (including municipal and agricultural). We randomly selected one industrial facility and one "other" facility for a total of two Minor dischargers.

General information for the seven randomly selected facilities are listed in Table 7. Existing permit limitations for the selected facilities are listed in Table 8. In May 1998, RWQCBs from Regions 1, 3, and 4 were asked to assemble three to five years of discharge monitoring data from the randomly selected facilities for the twelve pollutants undergoing reevaluation. These monitoring data along with the NPDES permits were sent to SAIC for analysis. Using the minimum initial dilution specific to the selected facilities, we predicted new effluent limitations based on the proposed lowered objectives (Table 9).

In examining the discharge monitoring data for the seven facilities, we discovered that some permits contain effluent limitations for pollutants, yet the monitoring portion of the permit does not require actual monitoring for that pollutant. Of the seven facilities selected, only three (the wastewater treatment plants) are required by the permit to monitor for the pollutants being reevaluated. The monitoring programs in the other four facilities have a clause that allows for the relaxation of monitoring when the pollutant is not expected to be present in the effluent in significant amounts. Authority for the relaxation of monitoring requirements is granted in Chapter V of the Ocean Plan:

> Where the Regional Board is satisfied that any substance(s) of Table B will be 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 objectives of Table B.

As a result of this practice, we assumed that the absence of monitoring data reflects the fact that the Regional Board believed that the pollutant was not in the discharge in significant amounts. Because of the initial lack of data for these four facilities, we subsequently requested that the RWQCBs send any effluent monitoring data contained in the original NPDES application (U.S. EPA Form 2C -- Application for Permit to Discharge Wastewater) for use in the economic analysis. Monitoring data was found in three of the four NPDES applications examined.

A comparison of the predicted effluent limitations and the historical discharge monitoring data is listed in Table 10. Examination of this table shows that the monitoring data is lower than the predicted effluent limitation for all the pollutants except heptachlor and heptachlor epoxide (in five permits), N-nitrosodi-N-propylamine (in one permit), and thallium (in two permits). The

monitoring results for these exceptions were "not detected," and the analytical methods used were not sensitive enough to allow for a definitive determination of compliance (i.e., the MDL is greater than the proposed effluent limit). However, the monitoring data for heptachlor, heptachlor epoxide, N-nitrosodi-N-propylamine, and thallium are all less than the Minimum Level as described in Issue 3.

Attainment of the predicted effluent limits for the randomly selected facilities was used to predict discharger costs associated with the new water quality objectives. When discharge monitoring data were *not* available the facility was assumed to be in compliance with the proposed effluent limitation and did not incur any costs. When monitoring data were available the facility was predicted to be in compliance and did not incur costs if the data were less than the effluent limit or less than the Minimum Level for that pollutant. Using these decision rules, we determined that all of the randomly selected facilities would be able to achieve compliance with limitations derived from the revised water quality objectives. Thus, we have determined that the selected facilities can comply with the revised water quality objectives without additional costs or treatment.

The conclusion observed for the randomly selected facilities was extrapolated to the entire universe of California ocean dischargers; *we expect that ocean dischargers can comply with the twelve proposed water quality objectives without additional costs or treatment processes.*

Table 7. Facilities discharging to the Pacific Ocean that were randomly selected for estimation of economic impacts of revised Ocean Plan water quality objectives

RWQCB	WDID # NPDES #	Agency Name & Address	Facility Name & Address	Agency Type	Facility Type	Waste Type	SIC Code	Base line Flow (MGD)	Major/ Minor Desig-nation
1	1B84089OMEN CA0005304	GEORGIA PACIFIC CORPORATION 90 WEST REDWOOD AVENUE FORT BRAGG, CA, 95437	GP-FORT BRAGG 90 REDWOOD AVENUE FORT BRAGG, CA, 95437 Mendocino County	Private	Industrial	Hazardous Process Waste	2421 4013	5.7	MIN
1	1B83129OMEN CA0022870	MENDOCINO CITY CSD P.O. BOX 1029 MENDOCINO, CA, 95460	MENDOCINO CITY CSD 10500 KELLY STREET MENDOCINO, CA, 95460 Mendocino County	Special District	Municipal/ Domestic	Designated Domestic Sewage	4952	0.142	MIN
3	3 272006001 CA0007005	NATIONAL REFRACTORIES P. O. BOX 30 MOSS LANDING, CA, 95039	NAT. REFRACTORIES HIGHWAY ONE MOSS LANDING, CA, 95039 Monterey County	Private	Industrial	Designated Process Waste	1450	10.	MAJ
3	3 402003002 CA0003743	PACIFIC GAS & ELECTRIC COMPANY P. O. BOX 1617 MORRO BAY, CA, 934431617	PG&E MORRO BAY POWER PLANT 1290 EMBARCADERO ROAD MORRO BAY, CA, 93442 San Luis Obispo County	Private	Industrial	Designated Non-Contact Cooling Water	4911	725.	MAJ
3	3 272011001 CA0006254	PACIFIC GAS & ELECTRIC COMPANY P.O. BOX 27 MOSS LANDING, CA, 950390027	PG&E MOSS LANDING POWER PLANT HIGHWAY 1 AND DOLAN ROAD MOSS LANDING, CA, 95039 Monterey County	Private	Industrial	Designated Non-Contact Cooling Water	4911	983.	MAJ
3	3 420108001 CA0048143	SANTA BARBARA CITY DPW P.O. BOX 1990 SANTA BARBARA, CA, 931021990	EL ESTERO WWTP NPDES 520 E. YANONALI SANTA BARBARA, CA, 93103 Santa Barbara County	City	Municipal/ Domestic	Designated Domestic Sewage & Industrial Waste	4952	8.5	MAJ
4	CA0109991	LOS ANGELES CITY OF DPW 200 N. MAIN ST. ROOM 1400 LOS ANGELES, CA, 90012	HYPERION WWRP, NPDES 12000 VISTA DEL MAR PLAYA DEL REY, CA, 90293 Los Angeles County	City	Municipal/ Domestic	Designated Domestic Sewage & Industrial Waste	4952	330.	MAJ

Table 8. Existing effluent limitations for the randomly selected facilities.

Chemical Name	1990 CA Ocean Plan Objective (ug/L)	Existing Permit[c] Effluent Limitations (ug/L)						
		Permit 1 No Dilution	Permit 2 $D_m = 100$	Permit 3 $D_m = 33$	Permit 4 $D_m = 10.4$	Permit 5 $D_m = 10.8$ site 002	Permit 6 $D_m = 120$	Permit 7 $D_m = 84$ site 002
chlorodibromomethane	130[a]	130	130	4400	1500	1560	15730	none
dichlorobromomethane	130[a]	130	130	4400	1500	1560	15730	none
1,2-dichloroethane	130	130	130	4400	1500	1560	15730	none
1,1-dichloroethylene	7100	7100	7100	240000	81000	90000	860000	none
heptachlor	0.00072[b]	0.00072	0.00072	0.024	none	none	0.08	0.061
heptachlor epoxide	0.00072[b]	0.00072	0.00072	0.024	none	none	0.08	0.061
isophorone	150000	150000	150000	5100000	1700000	1800000	18150000	none
N- nitrosodi-N-propylamine	none	none	none	none	none	none	none	none
1,1,2,2-tetrachloroethane	1200	1200	1200	41000	490000	10000	150000	none
tetrachloroethylene	99	99000	99	3400	1100	1190	11980	none
thallium	14	14000	14	480	160	170	1690	1190
1,1,2-trichloroethane	43000	43000	43000	1500000	490000	520000	5200000	none

Footnotes:

a) The objective is applicable to the sum of "halomethanes" defined in the Ocean Plan as bromoform, methyl bromide, methyl chloride, chlorodibromomethane, and dichlorodibromomethane.

b) The objective is applicable to the sum of "heptachlor" defined in the Ocean Plan as heptachlor and heptachlor epoxide.

c) Permit 1 = CA0005304 (Georgia Pacific Corporation); Permit 2 = CA0022870 (Mendocino City CSD); Permit 3 = CA0007005 (National Refractories); Permit 4 = CA0003743 (PG&E Morro Bay); Permit 5 = CA0006254 (PG&E Moss Landing); Permit 6 = CA0048143 (Santa Barbara City DPW); Permit 7 = CA0109991(Los Angeles City of DPW Hyperion WWTP)

Table 9. Predicted Effluent Limitations based on the proposed Ocean Plan objectives

Chemical Name	Proposed CA Ocean Plan Objective (ug/L)	Predicted Permit Effluent Limitations based on Proposed Ocean Plan Objectives[a] (ug/L)						
		Permit 1 No Dilution	Permit 2 $D_m = 100$	Permit 3 $D_m = 33$	Permit 4 $D_m = 10.4$	Permit 5 $D_m = 10.8$ site 002	Permit 6 $D_m = 120$	Permit 7 $D_m = 84$ site 002
chlorodibromomethane	8.6	8.6	870	290	98	100	1040	730
dichlorobromomethane	6.2	6.2	630	210	71	73	750	530
1,2-dichloroethane	28	28	2800	950	320	330	3400	2400
1,1-dichloroethylene	0.9	0.9	90	30	10	11	110	80
heptachlor	0.000050	0.0000	0.0051	0.0017	0.00057	0.00059	0.0061	0.0043
heptachlor epoxide	0.000020	0.0000	0.0020	0.00068	0.00023	0.00024	0.0024	0.0017
isophorone	730	730	74000	25000	8300	8600	88000	62000
N- nitrosodi-N-propylamine	0.38	0.38	38	13	4.3	4.5	46	32
1,1,2,2-tetrachloroethane	2.3	2.3	230	78	26	27	280	200
tetrachloroethylene	2.0	2.0	200	68	23	24	240	170
thallium	2	2	200	70	20	20	200	200
1,1,2-trichloroethane	9.4	9.4	950	320	110	110	1100	800

Footnotes:

a) Predicted effluent limits were calculated using the Ocean Plan equation, $C_e = C_o + D_m (C_o - C_s)$, where C_e is the effluent limit in ug/L, C_o is the water quality objective in ug/L, D_m is the minimum initial dilution seawater to wastewater ratio, and C_s is the background seawater concentration in ug/L. For the proposed objectives, Cs = 0, and the equation takes the form $C_e = C_o (D_m + 1)$.

Table 10. Predicted Permit Effluent Limitations (Limit) and Historical Discharge Monitoring Data (DMR) from the Randomly Selected Facilities. Notes: All units are ug/L. "ML" indicates the Minimum Level range. The Median value of data is shown when there are more than two observations; the number of observations is shown in parentheses. Monitoring data with a less than sign, "<", indicates the Method Detection Limit for an analytical result reported as "not detected." "--" indicates No Data Available.

Chemical Name	ML	Permit 1		Permit 2		Permit 3		Permit 4		Permit 5		Permit 6		Permit 7	
		Limit	DMR	Limit	DMR	Limit	DMR	Limit	DMR	Limit	DMR	Limit	DMR	Limit	DMR
chlorodibromomethane	0.5 - 2	8.6	(a)	870	5.2	290	(b)	98	<10, <2	100	<0.5	1040	<0.5	730	0.69 (36)
dichlorobromomethane	0.5 - 2	6.2	(a)	630	10	210	(b)	71	<10, <2	73	<0.5	750	<0.5	530	<1.34 (36)
1,2-dichloroethane	0.5 - 2	28	(a)	2800	<5.0	950	(b)	320	<500, <2	330	<0.5	3400	<0.5 (3)	2400	<0.58 (32)
1,1-dichloroethylene	0.5 - 2	0.9	(a)	90	<5.0	30	(b)	10	<2, <5	11	<0.5	110	<0.5 (4)	80	<0.17 (32)
heptachlor	1	0.00005	(a)	0.0051	<0.05, <0.05	0.0017	<0.005	0.00057	<0.005	0.00059	--	0.0061	< 0.03 (4)	0.0043	<0.006 (31)
heptachlor epoxide	1	0.00002	(a)	0.0020	<0.05, <0.05	0.00068	<0.005	0.00023	<0.005	0.00024	--	0.0024	<0.03	0.0017	<0.003 (31)
isophorone	1000 - 10000	730	(a)	74000	<10	25000	(b)	8300	<10, <2	8600	<10	88000	<5 (4)	62000	<8 (40)
N- nitrosodi-N-propylamine	5000 - 10000	0.38	(a)	38	<10	13	(b)	4.3	<2	4.5	<10	46	<10	32	<2.0 (40)
1,1,2,2-tetrachloroethane	0.5 - 1	2.3	(a)	230	<5.0	78	(b)	26	<5, <2	27	<0.5	280	<0.5 (4)	200	< 0.26 (32)
tetrachloroethylene	0.5 - 2	2.0	(a)	200	<5.0	68	(b)	23	<5, <2	24	<0.5	240	<0.5 (4)	170	6.6 (32)
thallium	1 - 1000	2	<10	200	--	70	(b)	20	<4	20	<50	200	<5 (4)	200	<5 (44)
1,1,2-trichloroethane	0.5 - 2	9.4	(a)	950	<5.0	320	(b)	110	<5, <2	110	<0.5	1100	<0.5 (3)	800	<0.24 (32)

Footnotes:

(a) No data available. The NPDES permit applicant marked "believed to be absent" for this compound.

(b) No data available. The permit only requires monitoring of Table B constituents if the "three month average of maximum daily flow do not exceed 10 MGD for 12 consecutive months prior to December, each year."

The need for developing housing within the region.

No change in current waste water treatment 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.

The need to develop and use recycled water.

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

Environmental Impacts

The proposed objectives are more protective than the existing Ocean Plan objectives. Because of this, we do not expect any adverse environmental impacts as a result of the lowered objectives. On the contrary we believe that these proposed water quality objectives will better protect the marine environment.

We expect that NPDES dischargers will be able to comply with permit effluent limitations that are derived using the proposed objectives. Further, we do not expect that dischargers will need to modify their existing treatment technologies in order to comply. Therefore, adoption of the proposed objectives should not have a direct or indirect adverse impact on the environment.

Proposed

Ocean Plan

Amendment: **Amendment 1. Revise water quality objectives in Table B for the following chemicals:**

TABLE B
WATER QUALITY OBJECTIVES

Chemical	30-day Average (mg/l) Decimal Notation	Scientific Notation
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH -- NONCARCINOGENS		
~~1,1-dichloroethylene~~	~~7,100~~	~~7.1×10^{3}~~
~~isophorone~~	~~150,000~~	~~1.5×10^{5}~~
thallium	~~14~~2	2×10^{0}
~~1,1,2,2-tetrachloroethane~~	~~1,200~~	~~1.2×10^{3}~~
~~1,1,2-trichloroethane~~	~~43,000~~	~~4.3×10^{4}~~
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH -- CARCINOGENS		
chlorodibromomethane	8.6	8.6×10^{0}
1,2-dichloroethane	~~130~~28	2.8×10^{1}
1,1-dichloroethylene	0.9	9×10^{-1}
dichlorobromomethane	6.2	6.2×10^{0}
~~heptachlor*~~	~~0.00072~~	~~7.2×10^{-4}~~
heptachlor	0.00005	5×10^{-5}
heptachlor epoxide	0.00002	2×10^{-5}
isophorone	730	7.3×10^{2}
N-nitrosodi-N-propylamine	0.38	3.8×10^{-1}
1,1,2,2-tetrachloroethane	2.3	2.3×10^{0}
tetrachloroethylene	~~99~~2.0	2.0×10^{0}
1,1,2-trichlorethane	9.4	9.4×10^{0}

Amendment 2. Modify the Ocean Plan Appendix I for pollutants formerly regulated by chemical groupings:

APPENDIX I

DEFINITION OF TERMS

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

~~HEPTACHLOR shall mean the sum of heptachlor and heptachlor epoxide.~~

References:

Cal/EPA 1994. Criteria for Carcinogens. Standards and Criteria Work Group of the California Environmental Protection Agency. Available from the Office of Environmental Health Hazards Assessment, Hazardous Waste Toxicology Section.

DHS 1989. Memorandum from Kenneth Kaiser, Director CA Department of Health Services to James W. Baetge, Executive Director State Water Resources Control Board. Subject: SWRCB request for DHS recommendations. September 28, 1989.

OEHHA 1997. Consumption of fish and shellfish in California and the United States. Final draft report, July 1997. Cal/EPA Office of Environmental Health Hazard Assessment, Pesticide and Environmental Toxicology Section.

SWRCB 1990. California Ocean Plan: Functional Equivalent Document. Amendment for the water quality control plan for ocean waters of California -- Final. State Water Resources Control Board, Division of Water Quality. March 22, 1990.

U.S. EPA 1980. Water Quality Criteria Documents; Availability. Appendix B — Guidelines and methodology used in the preparation of health effect assessment chapters of the consent decree water criteria documents. U.S. EPA. Federal Register 45 (231) 79318-79379. Nov. 28, 1980.

U.S. EPA 1986. Quality criteria for water, 1986. "Gold Book." United States Environmental Protection Agency, Office of Water Regulation and Standards. May 1, 1986. EPA 440/5-86-001.

U.S. EPA 1987. Quality criteria for water, 1986. "Gold Book." Update #2. United States Environmental Protection Agency, Office of Water Regulation and Standards. May 1, 1987.

U.S. EPA 1990. Letter from Daniel W. McGovern, Regional Administrator United State Environmental Protection Agency, Region 9, San Francisco CA to W. Don Maughan, Chair, State Water Resources Control Board. Subject: EPA approves Water Quality Control Plan for Ocean Waters of California. Dated June 28, 1990.

U.S. EPA 1992. Water quality standards; establishment of numeric criteria for priority toxic pollutants; state's compliance -- final rule. U.S. EPA.. Federal Register 57 (246): 60848-60923. December 22, 1992.

U.S. EPA 1993. Letter from Dale Vodehnal, Chief, Water Quality Branch, United States Environmental Protection Agency Region VIII to "Colleague." Subject: Updated version of Region's CWA § 304 (a) Criteria Chart. July 14, 1993. Ref: 8WM-WQ.

U.S. EPA 1994. Water Quality Standards Handbook: Second Edition. United States Environmental Protection Agency, Office of Water. August 1994. EPA-823-B-94-005a.

U.S. EPA 1997a. Water quality standards; establishment of numeric criteria for priority toxic pollutants for the state of California; proposed rule. U.S. EPA. Federal Register 62 (150): 42160-42208. August 5, 1997.

U.S. EPA 1997b. Letter from David Mood, Planning and Technical Unit, United States Environmental Protection Agency Region VIII to Bill Moellmer, Utah Dept. of Environmental Quality. Subject: Numeric Criteria. April 1, 1997. Ref: 8EPR-EP.

Issue 3: Compliance Determination for Chemical Objectives

Present Ocean Plan:

Table B of the California Ocean Plan (Ocean Plan) contains numeric water quality objectives for the protection of two beneficial uses (aquatic life and public health) in receiving waters. These water quality objectives are used to derive effluent limitations in National Pollutant Discharge Elimination System (NPDES) permits. Most NPDES permits contain monitoring requirements to ensure that pollutant concentrations in effluent discharges do not exceed permit effluent limitations. The present Ocean Plan contains provisions for determining compliance with effluent limitations that are below a "Practical Quantification Level (PQL)." The Ocean Plan describes when compliance should be determined by comparing the results of single or multiple monitoring samples with published PQLs and the calculated effluent limitation.

In addition, provisions are made for the statistical analysis of multiple samples when monitoring shows recurrent analytical responses between the PQL and the effluent limitation.

Issue Description:

Background

Effluent limitations for pollutants are occasionally set at levels that are too low to be detected by routine analytical chemistry methods. This often occurs when the pollutant is highly toxic or has a tendency to bioaccumulate in the environment. Since the ultimate goal of the effluent limitation is to protect water quality, the U.S. Environmental Protection Agency (U.S. EPA) recommends that permit limitations are set without regard to the existing

analytical detection levels (U.S. EPA 1991). Although this may create a difficult situation for determining compliance with permit limitations, a numeric effluent limit establishes a clear standard of conduct for the permitted discharger. Additionally, it is reasonable to expect that analytical detection levels will become more sensitive over time.

As an initial attempt to resolve the problem of effluent limitations set lower than analytical detection limits, a Compliance Determination section was added to the Ocean Plan in 1990. Method Detection Limits (MDL) and the Practical Quantification Level (PQL) were defined in the Plan, and a procedure was established to assist Regional Water Quality Control Board (RWQCB) staff in assessing when to determine compliance with permit limitations. The MDL, as defined in the Ocean Plan is as follows:

> 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.

The procedure described in 40 CFR 136, Appendix B establishes MDLs statistically by requiring analysis of seven or more samples of a laboratory standard solution.

The PQL, as defined in the Ocean Plan, is as follows:

> Practical Quantification Level is the lowest concentration of a substance which can be consistently 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 MDLx5, and for noncarcinogens is the MDL x 10.

The existing Ocean Plan language, however, does not adequately describe whether a monitoring sample is in compliance with the calculated effluent limitations. The existing language focuses on when compliance determinations should be made, not if compliance is achieved. For example, when the calculated effluent limitation is below the PQL and a single monitoring sample exceeds the PQL, the present language states that compliance determination shall be undertaken. In fact, such a sample is out of compliance since it is greater than both the effluent limit and the PQL.

In approving the 1990 Ocean Plan, the U.S. EPA Regional Administrator identified certain ambiguities in the Compliance Determination section that could compromise enforcement actions. The Administrator recommended that the State Water Resources Control Board (SWRCB) improve this section and "maintain a current list of published values for PQLs." Unfortunately, the SWRCB has not assembled such a list of PQLs for use in compliance determination.

The lack of published PQLs has led to several different policies among the RWQCBs. For example, the Santa Ana Regional Board has independently developed its own list of PQLs for 44 priority pollutants, while the other RWQCBs have no policy regarding detection limits. Some RWQCBs assume compliance with permit effluent limitations if monitoring results are "not detected" regardless of the Method Detection Limit. At least one RWQCB only evaluates situations of non-compliance that are identified by the discharger in their self-monitoring reports.

U.S. EPA is actively reevaluating the use of PQLs. Since approving the 1990 Ocean Plan, the U.S. EPA has de-emphasized the use of PQLs (and other analytical measurements derived from the MDL) for the purpose of compliance determination. The U.S. EPA Technical Support Document (U.S. EPA 1991, p. 112) states:

> Because the PQL has no one definition, EPA is not recommending its use in NPDES permitting.

Minimum Levels

For most NPDES permitting situations, U.S. EPA now recommends that the compliance level be defined in the permit as the Minimum Level (ML).

The Minimum Level is defined (U.S. EPA 1991, p. 111) as:

> the level at which the entire analytical system gives recognizable mass spectra and acceptable calibration points when analyzing for pollutants of concern. This level corresponds to the lowest point at which the calibration curve is determined.

The ML concept provides a reliable and reproducible lower limit to analytical determinations by using the lowest standard in the laboratory calibration curve for a particular analytical method. The U.S. EPA's Water Quality Guidance for the Great Lakes requires the use of MLs when water-quality based effluent limitations are below the quantification level (U.S. EPA 1995).

During the scientific peer review of this issue, the reviewer suggested that the above ML definition should be expanded to include a wide range of analytical techniques, rather than only mass spectral analyses (SWRCB 1998). The following operational ML definition is proposed:

> MINIMUM LEVEL is the lowest point at which the calibration curve can be determined with an acceptable level of precision and corresponds to the concentration at which the entire analytical system gives acceptable calibration points for the pollutant of concern. For gas chromatography/mass spectrometry, recognizable mass spectra are also required.

Analytical laboratories in California that measure pollutant levels in wastewater for regulatory purposes generally use the approved U.S. EPA methods described in the Code of Federal Regulations (40 CFR 136)[1]. These methods require each laboratory to establish calibration curves. As a result, each laboratory develops their own, unique, ML for each pollutant/method combination.

Derivation of Statewide Minimum Levels

A single ML value for statewide use can be derived for each pollutant/method combination. The statewide ML for each pollutant could be derived from the individual MLs obtained from the large group of California laboratories that are certified to conduct analyses for NPDES compliance; this would approximate the "entire analytical system" of California-certified laboratories. These statewide MLs could then be used to determine compliance with permit limits.

Staff in the Division of Water Quality's Quality Assurance Unit requested chemistry results in 1997 and 1998 from 160 state certified laboratories to derive suitable statewide MLs. The laboratories were asked to provide the concentration of the lowest standard routinely used in calibration curves for the determination of the 126 priority pollutants. The laboratories were also asked to provide the method reference and any appropriate concentration or dilution ratios applicable to the calibration standards. Fifty-nine laboratories voluntarily responded to the ML data request.

[1] In some cases the analytical method appearing in 40 CFR 136 is modified by the laboratory to enhance the analytical performance of the method. All modifications to the analytical methods are made with Regional Water Quality Control Board approval.

Staff then derived pollutant-specific ML values by finding the 20th percentile of the laboratory ML data for each pollutant. The computed MLs thus obtained were rounded to the closest multiples of 1, 2, 5, or 10. These multiples represent common ratios used in analytical chemistry, and laboratories commonly choose standards having these multiples. For example, 67 laboratories submitted cyanide data developed using the Colorimetric Method. The 20th percentile of this group of cyanide data was 5.4 ug/L (Figure 2). The 20th percentile value was adjusted to the closest multiple for a final derived ML value of 5 ug/L.

Although the peer reviewer commented that rounding the ML to the closest multiple will introduce bias into the final ML (SWRCB 1998), the overall effect of rounding towards a lower number will tend to cancel the effect of rounding towards a higher number. The practical basis for rounding the ML to these multiples is to simplify instrument calibrations and to reduce errors when preparing volumetric calibration solutions.

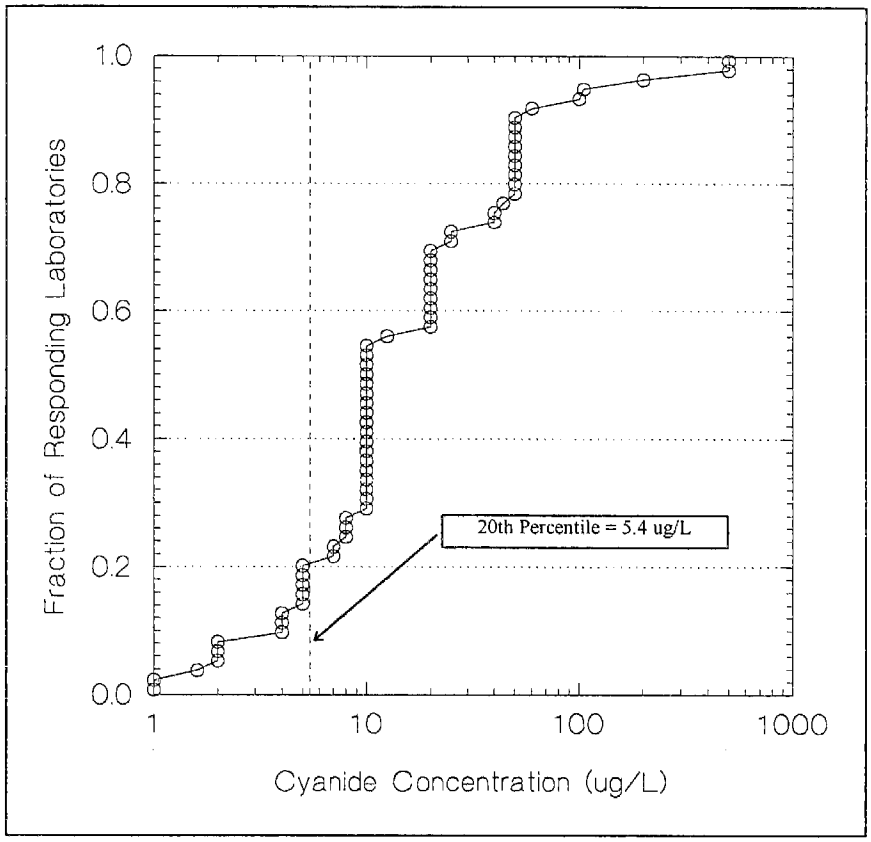


Fig. 2. Cumulative frequency distribution of the lowest cyanide calibration point for 67 responding laboratories using the Colorimetric method.

Staff selected the 20th percentile for MLs as an acceptable compromise point. Selecting the ML from the lowest percentiles would give increased analytical sensitivity, whereas selecting the ML from the highest percentiles would guarantee that most laboratories could measure the pollutant at the required level without changes to their current practices. Setting the statewide ML at the 20th percentile means that 20% of the responding laboratories can detect the pollutant at the Minimum Level using their current equipment and practices.

Many laboratory personnel, however, indicated that their lowest calibration point is often set arbitrarily, based on personal preference, client or regulatory demands, or historical influences. This indicates that many laboratories could

set their lowest calibration point towards a lower chemical concentration without a major change in analytical equipment. State Board staff acknowledges that the subjectivity involved in a laboratory's selection of the lowest calibration standard could lead to unintended biases in the derived statewide ML. However, we believe that the statewide 20th percentile MLs are currently achievable by most laboratories performing analyses for NPDES regulatory work in California. Furthermore, the MLs are expected to be adjusted to smaller magnitudes as laboratories having the highest calibration standards begin using lower calibration standards. Presumably, even lower MLs could be obtained by laboratories intent on lowering their calibration standard concentrations or through a controlled inter-laboratory study of pre-defined calibration standards.

Statewide Minimum Levels

Tables 11A through 11E present the results of the SWRCB Minimum Level Survey for all compounds regulated by Table B of the Ocean Plan except ammonia, total residual chlorine, chromium (III) , tributyltin, and the 2,4'isomers of DDT, DDD, and DDE. The present list of MLs represents the current state of performance in analytical chemistry methods. The SWRCB staff intend to update this list as existing methods are improved and as new methods are promulgated.

Note that the Minimum Levels presented in the Tables are based on the actual lowest analytical standards used by laboratories. Actual concentrations detectable in water samples using these standards will depend on the sample preparation procedures. Often, a water sample is concentrated 100 to 1,000 times before detection by the analytical instrument. The calibration standard, however, is not concentrated before detection by the instrument, but mixed directly from a reference solution. Samples analyzed for semi-volatiles and dioxins/furans, in the statewide survey, are routinely concentrated 1,000 times

prior to detection, whereas, samples analyzed for pesticides are concentrated 100 times prior to detection. These sample preparation procedures are noted as footnotes in Tables 11B, 11D, and 11E.

Minimum Levels

Tables 11A — 11E. Twentieth percentile Minimum Levels (MLs) derived from data provided by state certified analytical laboratories in 1997 and 1998 for 132 pollutants regulated by the California Ocean Plan. This list is current as of March 31, 1998. These MLs shall be used until new values are adopted by the SWRCB. There are five major chemical groupings: volatile chemicals, semi-volatile chemicals, inorganics, pesticides & PCB's, and dioxins & furans. "No Data" is indicated by "--".

Table 11A Volatile Chemicals	Minimum Level (ug/L)	
	GC Method [a]	GCMS Method [b]
Acrolein	2	5
Acrylonitrile	2	2
Benzene	0.5	2
Bromoform	0.5	2
Carbon Tetrachloride	0.5	2
Chlorobenzene	0.5	2
Chlorodibromomethane	0.5	2
Chloroform	0.5	2
1,2-Dichlorobenzene (volatile)	0.5	2
1,3-Dichlorobenzene (volatile)	0.5	2
1,4-Dichlorobenzene (volatile)	0.5	2
Dichlorobromomethane	0.5	2
1,1-Dichloroethane	0.5	1
1,2-Dichloroethane	0.5	2
1,1-Dichloroethylene	0.5	2
Dichloromethane	0.5	2
1,3-Dichloropropene (volatile)	0.5	2
Ethyl benzene	0.5	2
Methyl Bromide	1	2
Methyl Chloride	0.5	2
1,1,2,2-Tetrachloroethane	0.5	1
Tetrachloroethylene	0.5	2
Toluene	0.5	2
1,1,1-Trichloroethane	0.5	2
1,1,2-Trichloroethane	0.5	2
Trichloroethylene	0.5	2
Vinyl Chloride	0.5	2

a) GC Method = Gas Chromatography
b) GCMS Method = Gas Chromatography / Mass Spectrometry

Table 11B Semi-Volatile Chemicals	Minimum Level (ug/L)*			
	GC Method [a]	GCMS Method [b]	HPLC Method [c]	COLOR Method [d]
Acenapthylene	--	10000	200	--
Anthracene	--	10000	2000	--
Benzidine	--	5000	--	--
Benzo(a)anthracene	10000	5000	--	--
Benzo(a)pyrene	--	10000	2000	--
Benzo(b)fluoranthene	--	10000	10000	--
Benzo(g,h,i)perylene	--	5000	100	--
Benzo(k)floranthene	--	10000	2000	--
Bis 2-(1-Chloroethoxyl) methane	--	5000	--	--
Bis(2-Chloroethyl)ether	10000	1000	--	--
Bis(2-Chloroisopropyl)ether	10000	2000	--	--
Bis(2-Ethylhexyl) phthalate	10000	5000	--	--
2-Chlorophenol	2000	5000	--	--
Chrysene	--	10000	5000	--
Di-n-butyl phthalate	--	10000	--	--
Dibenzo(a,h)anthracene	--	10000	100	--
1,2-Dichlorobenzene (semivolatile)	2000	2000	--	--
1,3-Dichlorobenzene (semivolatile)	2000	1000	--	--
1,4-Dichlorobenzene (semivolatile)	2000	1000	--	--
3,3-Dichlorobenzidine	--	5000	--	--
2,4-Dichlorophenol	1000	5000	--	--
1,3-Dichloropropene (semivolatile)	--	10	--	--
Diethyl phthalate	10000	2000	--	--
Dimethyl phthalate	10000	2000	--	--
2,4-Dimethylphenol	1000	2000	--	--
2,4-Dinitrophenol	5000	5000	--	--
2,4-Dinitrotoluene	10000	5000	--	--
1,2-Diphenylhydrazine	--	1000	--	--
Fluoranthene	10000	1000	50	--
Fluorene	--	10000	100	--
Hexachlorobenzene	5000	1000	--	--
Hexachlorobutadiene	5000	1000	--	--
Hexachlorocyclopentadiene	5000	5000	--	--
Hexachloroethane	5000	1000	--	--
Indeno(1,2,3-cd)pyrene	--	10000	50	--
Isophorone	10000	1000	--	--
2-methyl-4,6-dinitrophenol	10000	5000	--	--
3-methyl-4-chlorophenol	5000	1000	--	--
N-nitrosodi-n-propylamine	10000	5000	--	--
N-nitrosodimethylamine	10000	5000	--	--
N-nitrosodiphenylamine	10000	1000	--	--
Nitrobenzene	10000	1000	--	--
2-Nitrophenol	--	10000	--	--
4-Nitrophenol	5000	10000	--	--
Pentachlorophenol	1000	5000	--	--
Phenanthrene	--	5000	50	--
Phenol	1000	1000	--	50
Pyrene	--	10000	50	--
2,4,6-Trinitrophenol	10000	10000	--	--

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

* Actual chemical concentrations in water samples are expected to be approximately 1,000 times less than the ML listed here due to concentrating the sample.

Table 11C Inorganic Substances	Minimum Level (ug/L)								
	COLOR Method [a]	DCP Method [b]	FAA Method [c]	GFAA Method [d]	HYDRIDE Method [e]	ICP Method [f]	ICPMS Method [g]	SPGFAA Method [h]	CVAA Method [i]
Antimony	--	1000	10	5	0.5	50	0.5	5	--
Arsenic	25	1000	--	2	1	10	2	2	--
Beryllium	--	1000	20	0.5	--	2	0.5	1	--
Cadmium	--	1000	10	0.5	--	10	0.25	0.5	--
Chromium (total)	--	1000	50	2	--	10	0.5	1	--
Chromium (VI)	10	--	5	--	--	--	--	--	--
Copper	--	1000	25	5	--	10	0.5	2	--
Cyanide	5	--	--	--	--	--	--	--	--
Lead	--	10000	20	5	--	5	0.5	2	--
Mercury	--	--	--	--	--	--	0.5	--	0.2
Nickel	--	1000	50	5	--	20	1	5	--
Selenium	--	1000	--	5	1	10	2	5	--
Silver	--	1000	10	1	--	10	0.25	2	--
Thallium	--	1000	10	2	--	10	1	5	--
Zinc	--	1000	20	--	--	20	1	10	--

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

Table 11D Pesticides - PCB's	Minimum Level (ug/L)* GC Method[a]
Aldrin	0.5
Chlordane	10
4,4'-DDD	5
4,4'-DDE	5
4,4'-DDT	1
Dieldrin	1
a-Endosulfan	2
b-Endosulfan	1
Endosulfan Sulfate	5
Endrin	1
Heptachlor	1
Heptachlor Epoxide	1
a-Hexachlorocyclohexane	1
b-Hexachlorocyclohexane	0.5
d-Hexachlorocyclohexane	0.5
g-Hexachlorocyclohexane (Lindane)	2
PCB 1016	50
PCB 1221	50
PCB 1232	50
PCB 1242	50
PCB 1248	50
PCB 1254	50
PCB 1260	50
Toxaphene	50

a) GC Method = Gas Chromatography

* Actual chemical concentrations in water samples are expected to be approximately 100 times less than the ML listed here due to concentrating the sample.

Table 11E Dioxins - Furans	Minimum Level (ug/L)* HRGCMS Method[a]
1,2,3,4,6,7,8-HpCDD	0.000025
1,2,3,4,6,7,8-HpCDF	0.000025
1,2,3,4,7,8,9-HpCDF	0.000025
1,2,3,4,7,8-HxCDD	0.000025
1,2,3,6,7,8-HxCDD	0.000025
1,2,3,7,8,9-HxCDD	0.000025
1,2,3,4,7,8-HxCDF	0.000025
1,2,3,6,7,8-HxCDF	0.000025
1,2,3,7,8,9-HxCDF	0.000025
2,3,4,6,7,8-HxCDF	0.000025
OCDD	0.000050
OCDF	0.000050
1,2,3,7,8-PeCDD	0.000025
1,2,3,7,8-PeCDF	0.000025
2,3,4,7,8-PeCDF	0.000025
2,3,7,8-TCDD	0.000005
2,3,7,8-TCDF	0.000005

a) HRGCMS Method = High Resolution Gas Chromatography / Mass Spectrometry (i.e., U.S. EPA 1613)

* Actual chemical concentrations in water samples are expected to be approximately 1,000 times less than the ML listed here due to concentrating the sample.

Permit Compliance using Minimum Levels

The certainty associated with accurately quantifying a sample's pollutant concentration decreases as the pollutant concentration decreases towards the Method Detection Limit. Conversely, there is a high degree of certainty in concluding that a monitoring sample is out of compliance when the pollutant concentration is greater than both the effluent limitation and the statewide Minimum Level.

Compliance should be based on the situation having the higher degree of certainty. Using this approach, a discharger would be deemed out of compliance when the pollutant concentration in the sample exceeds the effluent limitation and is greater than or equal to the ML. In all other situations the discharger will be deemed in compliance with the permit effluent limits. Although this strategy will give the benefit of the doubt to the discharger, this will eliminate out of compliance determinations based on unreliable or poorly quantified analytical data (e.g., some pollutant concentrations lower than the statewide ML). Additionally, this strategy will provide certainty whenever a sample is found to be out of compliance.

To reiterate, compliance with calculated effluent limits using MLs can be determined by considering this general rule:

> Dischargers shall be out of compliance with the calculated effluent limitation if the concentration of the constituent of concern in the monitoring sample is greater than the calculated effluent limitation and greater than or equal to the statewide Minimum Level.

Reporting Levels for Compliance Monitoring

Results of compliance monitoring can be reported based on where the sample concentration is relative to the statewide ML and the laboratory's Method Detection Limit. Three reporting levels are possible:

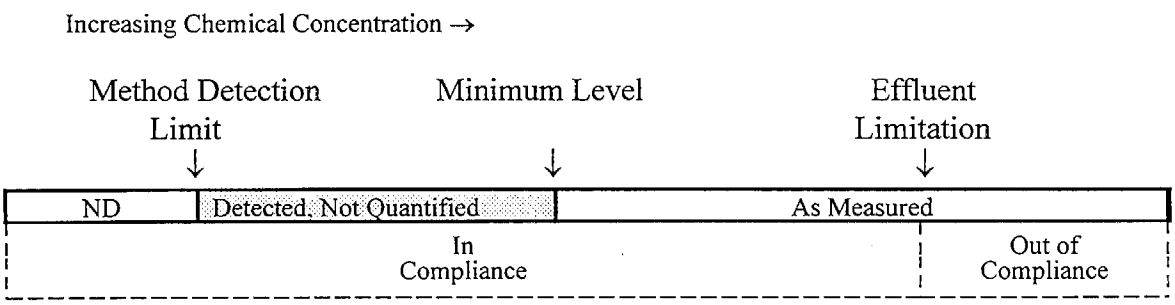
1) Sample results greater than or equal to the ML could be reported as measured by the laboratory (i.e., the measured pollutant concentration in the sample),

2) Sample results less than the ML but greater than or equal to the laboratory's MDL (as defined in the Ocean Plan) could be reported as Detected, But Not Quantified, or DNQ. The Method Detection Limit should still be reported. This designation readily emphasizes that a sample detected within this range of concentrations, although detectable, is unreliable for compliance determination.

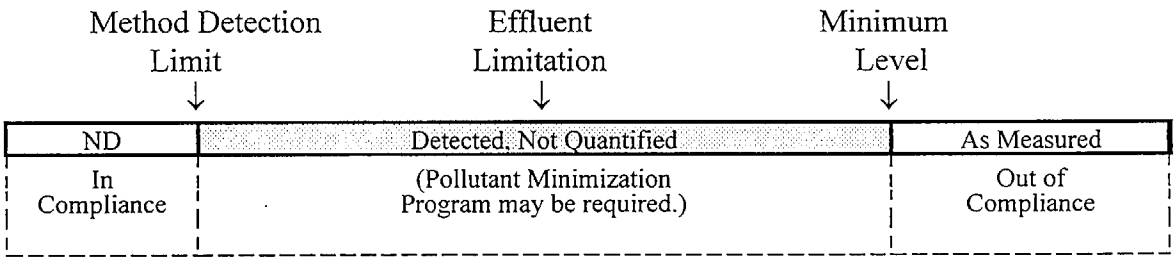
3) Sample results less than the laboratory MDL could be reported as Not Detected, or ND. The Method Detection Limit would continue to be reported.

The following figure (Fig. 3) displays the compliance determination rule and reporting level categories for the three possible regulatory situations:

Situation 1: Effluent Limitation set at or above the Minimum Level



Situation 2: Effluent Limitation set between the Minimum Level and the Method Detection Limit



Situation 3: Effluent Limitation set below the Method Detection Limit

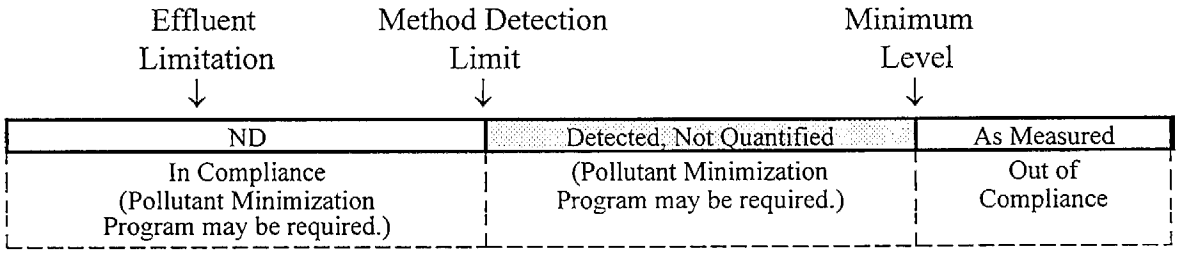


Fig 3. Reporting Levels (dark borders) and Compliance Determination (dashed borders) for three situations based on the magnitude of the Effluent Limitation, the Method Detection Limit, and the Minimum Level.

Pollutant Minimization Programs

The Water Quality Guidance for the Great Lakes (U.S. EPA 1995) requires the discharger to "develop and conduct a Pollutant Minimization Program for each pollutant with a WQBEL [water quality-based effluent limitation] below the quantification level" (i.e., the Minimum Level). U.S. EPA maintains that such a program is necessary because monitoring data may not always be sufficient to ensure that effluent limitations set below the Minimum Level are being attained. Section 5.73 of the U.S. EPA Technical Support Document for Water Quality-Based Toxics Control (1992) reads:

> Where water quality-based limits below analytical detection levels are placed in permits, EPA recommends that special conditions also be included in the permit to help ensure that the limits are being met and that excursions above water quality standards are not occurring.

However, a Pollutant Minimization Program should not necessarily be incorporated into the permit, by default, when the effluent limit is set below the ML. When evidence exists that the pollutant is present in the effluent above the calculated effluent limitation and the effluent limitation is lower than the Minimum Level, a Pollutant Minimization Program should be initiated. Evidence may include fish consumption advisories for the receiving waters, sample results from more sensitive methods, the presence of whole effluent toxicity, and benthic and aquatic organism tissue sampling results.

The fundamental problem is that Method Detection Limits and the statewide Minimum Levels are, for some pollutants, high in magnitude relative to water quality objectives for some pollutants, especially carcinogens. Federal Regulations at 40 CFR 122.44(d)(1)(iii), however, require that any discharge that has the "reasonable potential" to exceed the State water quality objective must contain an effluent limitation for that pollutant. The Clean Water Act makes no exception to this, even when technological limits prevent the quantification of the pollutant.

ML-based Compliance Determination using Multiple Samples

Ocean discharge monitoring programs often collect and measure a single sample during the compliance monitoring period. This is the least costly monitoring strategy. However, effluent discharges are inherently variable in their pollutant concentrations over time. Multiple samples may provide a better understanding of this variability. Some permits require an increased sampling frequency when a single sample shows an Out of Compliance condition.

Multiple samples collected during an allowable averaging period (e.g., a 30-day average limitation) may include sample results reported as ND or DNQ. These unquantified reporting levels are not easily incorporated into an overall average value since the left side of the true distribution is "censored"; it is usually "not appropriate" to calculate the arithmetic mean for such "ordinal" data (Zar 1984). Data on an ordinal scale of measurement may be ordered or ranked using relative, rather than quantitative, differences.

Many methods have been developed to estimate the mean of data that includes results reported as ND (Clark 1998). A commonly used method is to substitute zero, or the MDL, or one-half the MDL whenever the sample result is ND. These substitution methods attempt to assign a real number to the ND result in order to allow the mean to be calculated. The substituted number, however, may be arbitrarily chosen and could unduly influence the determination of compliance.

A different approach is possible. Since the three reporting levels can objectively be ranked from lowest to highest concentration (ND, DNQ, and "as measured,") a more appropriate measure of central tendency for this type of data is the median. The median is the middle measurement in a set of data (Zar 1984) and can be used for data on the ordinal measurement scale. Therefore, the median could be used to estimate the concentration of the constituent of concern if a set of multiple samples contained results reported as ND or DNQ. This approach would avoid the need to substitute a numeric value for censored data. Finding

the median value for a set of samples is straightforward when there is an odd number of samples. For example, if three measurements are reported as {ND, 12.5, 25} the median would be the second result of 12.5 ug/L. Finding the median with an even number of samples that could include ordinal data requires an averaging of the two middle values. For example, if one additional sample was collected and found to be 20 ug/L, the median of {ND, 12.5, 20, 25} would be ½(12.5 + 20) or 16.3. However, if the additional sample was ND, the median of {ND, ND, 12.5, 25} is not readily apparent. We must, in this case, set up a logic rule as follows: If, in an even number of samples, one of the middle values is ND or DNQ, the discharger shall be in compliance. For compliance determination purposes, the primary concern is to determine when compliance with the effluent limitations is achieved rather than to estimate the actual mean of the data set.

If all of the samples are reported in the quantifiable range (i.e., greater than or equal to the Minimum Level) other appropriate measures of central tendency (arithmetic mean, geometric mean, etc.) may be compared to the effluent limitation to assess compliance.

Compliance determination of pollutants regulated as chemical groups

The Ocean Plan contains water quality objectives for chemical groups as well as individual chemical compounds. Chemical groups in Table B are noted with an asterisk, and the individual compounds of the group are defined in Appendix I. An objective that regulates a group of closely related compounds applies to the sum of the individual concentrations. For example, the six-month median objective for the endosulfan group is 0.009 ug/L. This means that the individual concentrations of alpha-endosulfan, beta endosulfan, and endosulfan sulfate cannot be more than 0.009 ug/L. The following chemical groups are regulated

by the Ocean Plan, with the actual number of individual compounds within the group in parenthesis: endosulfans (3), hexachlorocyclohexanes (4), chlorinated phenolics (4), non-chlorinated phenolics (although not defined in Appendix I, there are 4 in the list of priority pollutants), dichlorobenzenes (2), dioxins/furans (17), DDT-related compounds (6), heptachlors (2), PCBs (7), polyaromatic hydrocarbons (13), and halmethanes (5).

In contrast, the U.S. EPA individually regulates the 126 priority pollutants in the 1992 National Toxics Rule. The use of chemical groupings makes determinations of compliance more difficult. Problems arise when one or more of the individual chemicals is reported as ND. Because the water quality objective applies to the sum of the individual concentrations, it is again necessary to convert the ND result to a real number that can be summed. The above method of using the median does not apply to estimating a sum. The situation is further complicated by the additional unquantified reporting level of DNQ. We must convert all NDs and DNQs to real numbers in order to make the summation. Consequently, we are forced to provide a substitution number that will not artificially influence the determination of compliance.

Presently, the Ocean Plan allows the concentration of individual compounds of a group to be zero if the analytical result is ND. This arbitrary substitution method uses a real number from the low end of the possible concentration continuum (i.e., from zero, at the low end, to the Method Detection Limit, at the high end). In a similar manner, a substitution value for reporting levels of DNQ should use the concentration at the low end of the concentration continuum (i.e., from the Method Detection Limit, at the low end, to the Minimum Level, at the high end). Thus, the MDL could be substituted for analyses reported as DNQ when summations are made to assess compliance with objectives regulated as chemical groups. SWRCB staff will consider the long-term solution to this problem -- namely, regulating each chemical constituent individually -- at a later Triennial Review.

Alternatives for Board Action:

Alternative 1:

Do not change the existing method of determining compliance with effluent limitations.

This alternative would maintain the present compliance determination language in the Ocean Plan. This alternative would maintain continuity in existing NPDES permits that include the PQL concept for determining compliance. Since there currently is no statewide list of PQLs, each RWQCB would continue to independently develop their own PQLs until developed by U.S. EPA or the SWRCB.

Alternative 2:

Revise the Compliance Determination section using the Minimum Level concept and adopt statewide Minimum Levels.

This alternative would eliminate the use of PQLs in determining compliance with effluent limitations. Rather, the statewide MLs assembled by SWRCB staff would be used for compliance determinations. Compliance would be made by comparing monitoring data with effluent limitations and Minimum Levels.

The list of MLs would be added to Appendix III of the Ocean Plan and would not change until modified by a subsequent amendment to the Plan. Using the list of MLs, compliance will be determined by the general rule:

> The discharger would be out of compliance with the permit limitation only if the pollutant concentration in the monitoring sample is greater than the calculated effluent limitation and greater than or equal to the Minimum Level.

If the calculated effluent limitation is less than the Minimum Level and sample results are reported as DNQ (or ND, in Situation 3), the discharger shall be required to conduct a Pollutant Minimization Program to characterize the effluent when there is evidence that the constituent is present in the effluent above the calculated effluent limitation (Figure 3). The goal of the Pollutant Minimization Program shall be to identify whether the pollutant is in the effluent at levels above the effluent limitation and may incorporate more sensitive analytical methods than those cited in the permit. The Regional Board may consider cost-effectiveness when establishing the requirements of the Pollutant Minimization Program.

Additionally, the procedures discussed above for determining compliance using multiple samples would be incorporated under this alternative.

Alternative 3:

Revise the Compliance Determination section using the Minimum Level concept and adopt U.S. EPA Minimum Levels.

Minimum Levels for two highly sensitive methods (1624 and 1625) are currently listed in the Code of Federal Regulations (40 CFR 136). For all other analytical methods, U.S. EPA recommends the use of "interim MLs." The Draft National Guidance for the Permitting, Monitoring, and Enforcement of Water Quality-based Effluent Limitations set below Analytical Detection Limits (U.S. EPA 1994) defines interim MLs as:

> The interim ML is calculated when a method specified ML does not exist. It is equal to 3.18 times the method-specified MDL rounded to the nearest multiple of 1, 2, 5, 10, 20, 50, etc. The interim ML should be used until an analytically developed ML can be established.

Staff in the Division of Water Quality have determined that the methods for which MLs are published in the Federal Regulations are <u>not</u> being used by most laboratories in California for wastewater analysis. Thus, in adopting the MLs for these methods, laboratories would need to invest a great amount of time and

expenses. In contrast, the statewide MLs derived by DWQ staff are representative of the conditions and methods currently used in California for wastewater analysis.

Alternative 4:

Revise the Compliance Determination section using the Minimum Level concept and develop Minimum Levels based on a controlled interlaboratory study.

This alternative involves conducting an in-depth performance study of laboratories in California. The objective of such a study would be to develop an interlaboratory quantification level. State Water Board staff would need to provide laboratory standards for 126 priority pollutants to approximately 160 laboratories qualified for wastewater analysis using many different analytical methods. Staff in the DWQ believe that the time and financial costs of such a study would be large. A study of this magnitude would be best conducted by a joint effort of other concerned groups such as the American Chemical Society, American Society for Testing and Materials, and the U.S. EPA.

Staff Recommendation:

Adopt Alternative 2.

Revise the Compliance Determination section using the Minimum Level concept and adopt statewide Minimum Levels in Appendix III.

Water Code Considerations

Section 13241 of the California Water Code requires that several factors are considered when new or revised water quality objectives are proposed. These factors include:

- Past, present, and probable future beneficial uses of water;

The proposed statewide MLs will be used in conjunction with the effluent limitations in assessing compliance. The purpose of assessing compliance is to protect beneficial uses of water. Therefore, this proposal is not expected to negatively affect the beneficial uses of water.

- Environmental characteristics of the hydrographic unit under consideration, including the quality of water thereto;

  Waste Discharge Permits are issued with consideration to the specific hydrogeographic area where the discharge is to be. The use of MLs in compliance determination is not expected to affect the environmental characteristics of water.

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

  The use of MLs is not expected to adversely affect water quality conditions.

- Economic Considerations;

  The use of MLs in determining compliance is not expected to economically affect analytical laboratories. By setting the statewide ML at the 20th percentile, we expect that roughly 80% of the 100 analytical laboratories in California will need to adjust their calibration standard to a smaller concentration within the next three years. However, laboratory personnel responded that a lower analytical standard could easily be used without compromising data quality.

  Moreover, the use of MLs in compliance determination is not expected to economically affect the regulated wastewater dischargers. Table 7 contains MLs for 132 compounds. Approximately half of these MLs are expected to be lower than the numeric effluent limits, and, thus, will not affect the determination of compliance or costs associated with compliance. For effluent limits set below the ML, the procedures established by the

recommended alternative will apply. We do not expect that dischargers will be found out of compliance more often by implementing the ML concept as compared to existing compliance determination procedures. Because of this, we do not expect the use of MLs in compliance determination to cause increased economic costs. As an example, the monitoring data obtained for evaluation of economic costs associated with establishing lower water quality objectives (Issue 2) showed that the ML was a consideration in the determination of compliance for 3 of the 12 proposed objectives.

- The need for developing housing within the region;

  The use of MLs in determining compliance is not expected to affect the need for developed housing.

- The need to develop and use recycled water.

  The use of MLs in determining compliance is not expected to affect the need to develop and use recycled water.

Environmental Impacts

The use of MLs is not expected to have any adverse environmental impacts. Effluent limitations are incorporated into waste discharge permits in order to protect aquatic life and human health. The proposed alternative will provide a framework to determine when a discharger is out of compliance with the effluent limitations in the waster discharge permit, thereby protecting aquatic life or human health. When technological factors do not allow a definitive determination of compliance, the proposed changes to the Ocean Plan will require that a Pollutant Minimization Program be started if evidence suggests that the discharge is in excess of the effluent limitation.

Proposed

Ocean Plan

Amendment: Modify Chapter IV as follows:

~~**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 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 individuals chemicals falls below the MDL* for that parameter.~~

B. Reporting Levels

The discharger shall report the results of analytical determinations for the presence of chemical constituents using the following reporting levels:

1. Sample results greater than or equal to the Minimum Level* in Appendix III will be reported "as measured" by the laboratory (i.e., the measured chemical concentration in the sample).

2. Sample results less than the Minimum Level* in Appendix III but greater than or equal to the laboratory's MDL* will be reported as "Detected, but Not Quantified", or DNQ. The estimated chemical concentration of the sample shall also be reported.

3. Sample results less than the laboratory MDL* will be reported as "Not Detected", or ND.

The MDL* and the Minimum Level* shall be reported with each sample result.

C. Compliance Determination

Sufficient sampling and analysis shall be required to determine compliance with effluent limitations in the Waste* Discharge Requirement.

Dischargers shall be out of compliance with the calculated effluent limitation if the concentration of the constituent of concern in the monitoring sample is greater than the calculated effluent limitation and greater than or equal to the Minimum Levels* listed in Appendix III or in 40 CFR 136, Appendix B (revised July 1, 1996).

If sample results are reported as DNQ and the calculated effluent limitation is less than the Minimum Level*, the discharger shall be required to develop and conduct a Pollutant Minimization Program whenever there is evidence (e.g., health advisories for fish consumption, sample results from more sensitive analytical methods, presence of whole effluent toxicity, results of benthic or aquatic organism tissue sampling) that the constituent of concern is present in the effluent above the calculated effluent limitation. Regional Boards may include special provisions in the Waste Discharge Requirement to require the gathering of such evidence to determine whether the constituent of concern is present in the effluent at levels above the calculated effluent limitation.

If sample results are reported as ND and the calculated effluent limitation is less than the Method Detection Limit*, the discharger shall also be required to develop and conduct a Pollutant Minimization Program whenever there is evidence (as above) that the constituent of concern is present in the effluent above the calculated effluent limitation.

The goal of the Pollutant Minimization Program shall be to reduce all potential sources of the pollutant to maintain the effluent at or below the calculated effluent limitation. The Regional Board may consider cost-effectiveness when establishing the requirements of a pollutant minimization program. The program shall include, but not be limited to, the following:

1. An annual review and semi-annual monitoring of potential sources of the reportable substance, which may include fish tissue monitoring and other bio-uptake sampling.

2. Quarterly monitoring for the pollutant in the influent to the wastewater treatment system;

3. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable substance in the effluent at or below the calculated effluent limitation;

4. When the sources of the reportable substance are discovered, appropriate cost-effective control measures shall be implemented, consistent with the control strategy; and

5. An annual status report that shall be sent to the RWQCB including:

    a. All minimization program monitoring results for the previous year.

b. A list potential sources of the reportable substance; and

c. A summary of all action taken to reduce or eliminate the identified sources of the reportable substance.

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

When determining compliance with an effluent limitation which applies to the sum of a group of chemicals (e.g., PCB's), the individual constituent of the group shall be considered to have a concentration of zero if the constituent is reported as ND. Individual constituents of a group shall be considered to have a concentration equal to the MDL* if the sample constituent is reported as DNQ.

When more than one Minimum Level* is listed for a given chemical constituent, the Regional Board shall select the appropriate Minimum Level* for use in compliance determination. If the calculated effluent limitation is lower than all Minimum Levels* listed in Appendix III for a particular constituent, the Regional Board shall select the lowest Minimum Level* in Appendix III for compliance determination. Dischargers may develop and use Minimum Levels lower than those listed in Appendix III and 40 CFR 136 after approval by the Regional Board and the State Water Board's Quality Assurance Program.

The Regional Board shall determine the appropriate Minimum Level* for chemical constituents not listed in Appendix III. If a discharger believes the sample matrix in their waste discharge is sufficiently different from that used to establish the Minimum Level*, the discharger may demonstrate to the satisfaction of the Regional Board what the appropriate Minimum Level* should be for the discharger's matrix.

Due to the large total volume of powerplant and other heat exchange discharges, special procedures must be applied for determining compliance with Table B 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 limits for total chlorine residual, chronic* toxicity and instantaneous maximum concentrations in Table B shall apply to, and be measured in, the combined final effluent, as adjusted for dilution with ocean water.

The Table B objective for radioactivity shall apply to the undiluted combined final effluent.

Appendix I changes

MINIMUM LEVEL is the lowest point at which the calibration curve can be determined with an acceptable level of precision and corresponds to the concentration at which the entire analytical system given acceptable calibration points for the pollutant of concern. For gas chromatography/mass spectrometry, recognizable mass spectra are also required.

~~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.~~

References:

Clark, J. U. 1998. Evaluation of censored data methods to allow statistical comparisons among very small samples with below detection limit observations. Environ. Sci. Technol. 32: 177-183.

State Water Resources Control Board . 1998. Letter from Steven G. Saiz, Ocean Standards Unit to Professor David Sedlak, University of California, Berkeley. Subject: Incorporation of peer review comments into the California Ocean Plan Functional Equivalent Document, September 18, 1998.

U.S. EPA. 1991. Technical Support Document for Water Quality-based Toxics Control. United States Environmental Protection Agency, Office of Water. EPA/505/2-90-001.

U.S. EPA. 1994. Draft. National Guidance for the Permitting, Monitoring, and Enforcement of Water-Quality Based Effluent Limitations Set Below Analytical Detection/Quantification Levels. Office of Wastewater Enforcement and Compliance, Washington, D.C.

U.S. EPA. 1995. Final Water Quality Guidance for the Great Lakes System -- final rule. U.S. EPA.. Federal Register 60 (56): 15366-15425. March 23, 1995.

Zar, Jerrold H. 1984. Biostatistical Analysis, 2nd Ed. Prentice-Hall, NJ.

Issue 4: Change Format of the California Ocean Plan

Present Ocean Plan: The 1997 California Ocean Plan (Ocean Plan) is arranged into six chapters which do not correspond with the three elements in the definition of a water quality control plan in section 13050(j) of the Porter-Cologne Act (PCA). The format of other water quality control plans recently adopted by the State Board corresponds to the definition.

Issue Description: Section 13050(j) of the PCA defines a water quality control plan as follows: "Water quality control plan" consists of a designation or establishment for the waters within a specified area of all of the following:

(1) Beneficial uses to be protected.
(2) Water quality objectives.
(3) A program of implementation needed for achieving water quality objectives.

The Ocean Plan includes chapters for the first two elements in the above definition so they are easy for people to identify. There is no single chapter which can be identified as a "program of implementation."

At the time the Ocean Plan was circulated to the public for the 1991 Triennial Review, other plans adopted or proposed for adoption by the State Board were available. The format of these other plans corresponded to the above definition. It was evident that the Ocean Plan would be easier for people to use and interpret if it followed the same format as other plans. Revision of the format of the Ocean Plan was identified as Issue 4C in the Triennial Review Workplan adopted by the State Board in 1992.

Staff is proposing to arrange the provisions of the 1997 Ocean Plan in outline form similar to that used for other water quality control plans. A comment received on this issue pointed out that the existing format was inconsistent in the different chapters and subsections. It was difficult to refer to many of the subsections because they were not identified, and this could lead to confusion among persons attempting to discuss Ocean Plan provisions. Therefore, the staff is proposing to identify every paragraph of the Ocean Plan in the outline format for easy reference.

Discussion: The proposed change in format does not change the wording or intent of existing policies, beneficial uses, water quality objectives or implementation measures in the 1997 Ocean Plan. The material in Chapters II, III and IV of the existing Ocean Plan was grouped as Chapter II WATER QUALITY OBJECTIVES in the proposed Ocean Plan. The material in Chapters V and VI of the 1997 Ocean Plan was grouped under Chapter III PROGRAM OF IMPLEMENTATION in the proposed Ocean Plan. The existing paragraphs in Chapter II, WATER QUALITY OBJECTIVES, B. Bacterial Assessment and Remedial Action Requirements were moved to Chapter III PROGRAM OF IMPLEMENTATION, at B.

Because the current Ocean Plan format has been in use for many years, some objections to changing it have been mentioned. Regional Board staff members and the "regulated public" are familiar with the location and relationship of Ocean Plan provisions, and many may not wish to have it changed. The ability to identify the individual sections of the Ocean Plan may seem convenient but not worth the effort to amend the Ocean Plan.

Comments Received: This section will be completed after the State Board hearing on proposed Ocean Plan amendments.

Alternatives for Board Action:

1. Change the format of the Ocean Plan to clearly identify the three elements specified in Section 13050(j) of the PCA, and number all sections of the Ocean Plan for easy identification.

2. Do not change the format but number or otherwise identify all sections of the Ocean Plan for identification and reference.

3. Make no changes in format and do not number all sections of the Ocean Plan.

ENVIRONMENTAL IMPACT ANALYSIS

These changes are non-substantive and they are not considered a "project" for purposes of the California Environmental Quality Act.

Staff Recommen-dation: Adopt Alternative 1.

Proposed Ocean Plan Amendment: See proposed Amended Ocean Plan in APPENDIX A .

Issue 5: Development of Special Protection for National Marine Sanctuaries.

Present Ocean Plan: The 1997 Ocean Plan does not refer to National Marine Sanctuaries (NMS) and there are no special provisions for water quality protection within NMS.

Issue Description: This was Issue A.1.h in the SWRCB Triennial Review and Workplan of 1992.

DEVELOPMENT OF SPECIAL PROTECTION FOR NATIONAL MARINE SANCTUARIES

There are four NMS along the coast of California: the Cordell Banks NMS southwest of Bodega Bay; the Point Reyes/Farallon Islands NMS (a.k.a. Gulf of the Farallones NMS) west of Marin County; the Monterey Bay NMS extending from near the Golden Gate to Cambria; and the Channel Islands NMS surrounding five of the offshore islands west of Ventura and Los Angeles counties. The NMS are designated pursuant to the authority of Section 302(a) of Title III of the Marine Protection, Research and Sanctuaries Act of 1972, 16 U.S.C. 1431 through 1434. Regulations for their administration are included in 15 CFR Ch.IX, Parts 935, 936, 942 and 944.

The managers of the four NMS requested that the SWRCB designate the four NMS as "Outstanding National Resource Waters" (ONRW) in order to provide the highest level of water quality protection defined by the federal Environmental Protection Agency (US EPA)for state water quality standards (letter of 10/18/95). ONRWs and the level of protection to be afforded them are defined in 40 CFR 131.12(a)(3). Initially, the SWRCB staff responded that they would work with the staff members of the four NMS to develop alternatives for consideration by the SWRCB. Upon review of the issue, it became apparent

that the Cordell Banks NMS was outside of "waters of the state" and was unlikely to need special water quality protection. The waters surrounding the individual islands in the Channel Islands NMS, to a distance of one nautical mile offshore or to the 300 foot isobath, whichever is the greater distance, have been designated as Areas of Special Biological Significance (ASBS) by the SWRCB. The Ocean Plan prohibits the discharge of waste into ASBS. Therefore, it did not appear that additional water quality protection by the SWRCB would be required for the Channel Islands NMS at this time.

The Point Reyes/Farallon Islands NMS and the Monterey Bay NMS border a developed coastline where the risk of water quality problems is greater. In particular, the Monterey Bay NMS borders Marin, San Francisco, San Mateo, Santa Cruz and Monterey counties where there are a number of municipal waste discharges and there are tributary streams which bring agricultural and urban runoff into the sanctuary. The City and County of San Francisco combined sewer overflows to a buffer zone created in the NMS, and this zone is exempt from the Marine Protection, Research and Sanctuaries Act and its implementing regulations.

The staff of the Monterey Bay NMS initiated the development of a Water Quality Protection Program (WQPP), in cooperation with federal, state and local agencies, to establish the most appropriate water quality protection for the NMS and tributary watersheds. The state and federal agencies, including the SWRCB, the San Francisco Bay Regional Water Quality Control Board and the Central Coast Regional Water Quality Control Board, are signatories to a Memorandum of Agreement (MOA) which defines the authority of each agency and provides, in part, that the parties will work together to review proposed permits and plans in parallel to avoid delays in issuance of a permit or plan, and will work together to develop a WQPP. It is understood the WQPP will be the guiding document among the parties for future revision, adoption or establishment of water quality control activities within the Monterey Bay NMS

by the individual agencies. Thus, if the agencies develop a WQPP which includes changing certain water quality criteria to protect beneficial uses, the SWRCB would be expected to carry out the actions necessary to make the change. The MOA includes procedures to elevate disagreements among the parties.

It became apparent that it would not be appropriate for the SWRCB individually to adopt changes in water quality protection for the NMS. On 2/11/97, Terry Jackson, manager of the Monterey Bay NMS, wrote to the SWRCB on behalf of the other NMS managers to request that the SWRCB suspend any action to designate the NMS as ONRWs so the matter could be considered by all the parties to the MOA. The SWRCB agreed with the request and expressed a willingness to participate in the continued development of a WQPP.

In subsequent discussions between staff members of the SWRCB and NMS, it was recognized that it could be beneficial for the SWRCB to adopt policies and procedures for nominating and designating ONRWs so that the MOA parties, and anyone else, could understand the impacts of such a designation when proposing to nominate an area.

The State Board has authority, pursuant to Section 13243 CWC to specify certain conditions or areas where discharge of waste, or certain types of waste, will not be permitted. However, if the State Board does specify, or designate, an area and specify that the discharge of certain wastes or types of waste will be prohibited, the result of the action must become a part of the state water quality standards, and must be approved by U.S. EPA as consistent with 40 CFR Part 131 and the Clean Water Act. Therefore, staff has reviewed the federal regulations and guidelines to determine the type of action or conditions that U.S. EPA could approve.

CONSIDERATIONS IN THE DEVELOPMENT OF PROCEDURES FOR THE DESIGNATION OF OUTSTANDING NATIONAL RESOURCE WATERS.

40 CFR Part 131 requires each state to adopt water quality standards. Section 131.12(a) requires the state to develop and adopt a statewide "antidegradation policy" and identify the methods for implementing such policy pursuant to Subpart B of Part 131. The SWRCB adopted Resolution No. 68-16 on October 28, 1968 to satisfy the requirement for a policy. Resolution No. 68-16 is incorporated in each regional water quality control plan, and is implemented by the SWRCB and regional boards in their actions to protect water quality and beneficial uses.

Section 131.12 establishes three levels, or "tiers", of water quality protection:

Tier 1 (40 CFR 131.12(a)(1)) provides that existing instream water uses and the level of water quality necessary to protect the beneficial uses shall be maintained and protected. "Existing uses" are defined by Section 131.3 as those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in water quality standards.

Tier 2 (40 CFR 131.12(a)(2)) provides that where the quality of waters exceeds the levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the state finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further,

the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

Tier 3 (40 CFR 131.12(a)(3)) provides that where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected. This is the source of the term "Outstanding National Resource Waters".

Some states have designated ONRWs but others did not wish to do so unless they could retain the ability to consider "de-designation" of the ONRW if situations should arise where that seemed to be in the best public interest. This gave rise to the concept of a Tier 2 ½ level of protection. U.S. EPA has accepted standards of several states which include this concept, but it has not been defined in federal regulations. However, the concept is described in the U.S. EPA Water Quality Standards Handbook, Second Edition, on page 4-2.

U.S. EPA has disapproved the standards of several states and, pursuant to 40 CFR 131.5, has promulgated water quality standards which supersede the state standards. The federal standards can be withdrawn if, and when, a state subsequently adopts standards which are then approved by U.S. EPA. Review of the recently approved state standards and the federally promulgated standards provides the best current understanding of antidegradation concepts and implementation procedures which are likely to gain U.S. EPA approval in the near future.

Staff review of U.S. EPA guidance materials, recently approved state standards and federally promulgated standards has resulted in the following principles which should guide the development of policy and procedures for the designation of ONRWs:

- In "high quality" waters that are designated as ONRWs, the lowering of water quality is prohibited. US EPA has stated the belief that the best way to ensure that water quality is not lowered is to prohibit new or increased discharges to ONRWs, and to tributaries to ONRWs, that would result in lower water quality in the ONRWs[1].

- The only exception to the above interpretation is that states may allow some limited activities that result in temporary and short-term changes in water quality in the ONRW. Such activities must not permanently degrade water quality or result in water quality lower than that necessary to protect the existing uses of the ONRW[1].

- The ONRW designation also offers protection for "waters of exceptional ecological significance" whose water quality, as measured by the traditional parameters such as dissolved oxygen or pH, may not be particularly high or whose characteristics cannot be adequately described by these parameters (such as wetlands)[1]. Changes in water quality should not impact existing uses or alter the essential character or special use that makes the water an ONRW[2].

- Discharges into an ONRW at the time of its designation, termed "existing discharges", should have their NPDES permits reviewed at the next scheduled review to provide assurance that the discharge will comply with applicable water quality standards.

---

[1] "Water Quality Standards Handbook-Second edition", US EPA. EPA-823-B-93-002, Sept. 1993. Page 4-8. See also, Federal Register page 64819, December 9, 1996.

[2] ibid. Page 4-2.

- Designation procedures must provide full opportunity for public participation and intergovernmental coordination in accordance with state and federal law. See 40 CFR Part 25.

- Those waters designated as ONRWs should have their quality described, on a parameter by parameter basis, to serve as a benchmark of the quality to be maintained and protected[3].

- A category of waters may be designated in order to provide more stringent water quality protection than the Tier 2 level afforded to "high quality waters", but provide some flexibility to make changes consistent with important social and economic development on, or upstream of, ONRWs. This category has been called a "Tier 2½" level of protection[4]. Such waters have been given various names to differentiate them from ONRWs, such as "Outstanding State Resource Waters" (OSRWs).

The State Board designated Lake Tahoe as an ONRW at the time the Water Quality Control Plan for the Lake Tahoe Basin was adopted. Mono Lake was designated as an ONRW with the adoption of a water right decision related to the diversion of water from tributary streams. No ocean waters have been designated as ONRWs. The State Board has no specific procedures for nominating or designating ONRWs, but it is recognized that information developed for a water quality control plan or a water right decision could lead to a finding that a particular water should be designated when the plan or decision is adopted by the SWRCB. If the designation occurs as part of a water right decision, the appropriate basin water quality control plan is amended to include the ONRW. Upon approval of the basin plan by the SWRCB and U.S. EPA, the designated ONRW becomes a part of the state water quality standards.

---

3 "Water Quality Standards Handbook-Second Edition", Page 4-7. Also 40 CFR Part 132, Appendix E, II.

4 "Water Quality Standards Handbook-Second Edition", US EPA. EPA-823-B-93-002, Sept. 1993. Page 4-2.

It is apparent that it will be confusing to some people if the SWRCB does not distinguish ONRWs and ASBS. The State Board has designated 34 Areas of Special Biological Significance (ASBS) along the coast of California. The Ocean Plan provides that waste discharges are prohibited to ASBS, and that discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas (Chapter V B). With respect to the prohibition of discharge, ASBSs are similar to the ONRW concept. However, the ASBS concept limits water quality protection to biological communities which depend on natural water quality conditions.

The federal ONRW concept is interpreted to afford water quality protection to a broader range of uses of the ocean. While one individual NMS, or portion of one, might be considered for designation as an ASBS, others might be more suitable for the ONRW designation. Therefore, it appears that both types of designations should be available.

ASBS have been included as a beneficial use of ocean waters. If the Ocean Plan is amended to include the definitions and procedures for ONRWs, it would be consistent to include ONRWs and OSRWs as beneficial uses. However, it would not be necessary to include them because the values which are recognized as requiring special protection are already listed as beneficial uses. Staff proposes to add both types of waters as beneficial uses for consistency.

CONSIDERATIONS IN THE DEVELOPMENT OF PROCEDURES FOR THE DESIGNATION OF ASBS

The SWRCB adopted Resolution No. 74-27 to clarify the ASBS concept. The procedures adopted in Res. No. 74-27 were for inclusion in the SWRCB Administrative Procedures Manual which guides staff of the SWRCB and RWQCBs. The following is taken from Res. No. 74-27:

"DESIGNATION OF AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE

1. Authorization

The Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California establishes the concept of "Areas of Special Biological Significance" for the waters of California and requires regional boards to recommend to the State Board areas suitable for this designation.

2. Definition

Areas of Special Biological Significance are those areas designated by the State Water Resources Control Board in order to afford the maximum protection from possible damage caused by waste discharges controlled under the authority of the Temperature Plan[1/] and the Ocean Plan[2/] to species or biological communities of extraordinary even though unquantifiable value.

[1/] Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California, May 18, 1972.

[2/] Water Quality Control Plan for Ocean Waters of California, July 6, 1972.

3. Applicability

Since most beneficial uses are to some degree mutually antagonistic, waste discharge requirements can at best provide relative protection for all beneficial uses. The concept of "special biological significance" recognizes that certain biological communities because of their value or fragility deserve special protection consisting of preservation and maintenance of natural water quality conditions. This concept should be considered a

special tool not to be used generally or extensively since waste discharge requirements will ordinarily provide adequate protection to the aquatic environment.

4. Impact

   a. Natural water quality conditions shall not be altered in areas designated as being of special biological significance.

   b. Maintenance of natural water quality conditions will generally necessitate the prohibition of discharge within areas of special biological significance.

   c. Where existing waste discharges occur to areas of special biological significance which could alter the natural water quality conditions, such discharges shall be phased out as promptly as possible.

   d. No new discharge will be permitted where it could alter the natural water quality conditions in the area of special biological significance.

   e. The list of Areas of Special Biological Significance will be used to identify for planning purposes, those areas where the regional water quality control boards will prohibit waste discharges from all sources controlled within the authority of the Temperature Plan and the Ocean Plan. The Ocean Plan is not applicable to vessel wastes, the control of dredging, or the disposal of dredging spoil.

   f. The staff should advise other agencies to whom the list of designated areas is to be provided that the basis for this action by the Board is limited to considerations related to protection of marine life from wastewater discharges."

The SWRCB Administrative Procedures Manual is not easily accessible to the public. If procedures are to be included in the Ocean Plan for ONRWs, it would be desirable to include procedures for the designation and protection of ASBS in the Ocean Plan. The above material from Res. No. 74-27 would serve as the basis for such procedures.

At the time RWQCBs were requested to conduct hearings and provide the SWRCB with a list of candidate ASBS, they were advised that each candidate ASBS would be required to satisfy four criteria as follows:

1. Candidate areas are located in ocean waters as defined in the "Temperature Plan" and the "Ocean Plan".

   The "Ocean Plan" defines ocean waters as those waters of the Pacific Ocean adjacent to the California coast outside of enclosed bays, estuaries, and coastal lagoons. Section 3A(1) under Specific Water Quality Objectives of the "Temperature Plan" mentions ASBS in relation to existing and new discharges into coastal waters. Coastal waters are defined in the "Temperature Plan" as follows: waters of the Pacific Ocean outside of enclosed bays and estuaries which are within the territorial limits of California.

2. Candidate areas are intrinsically valuable or have recognized value to man for scientific study, commercial use, recreational use, or esthetic reasons.

   The definition of ASBS found in Administrative Procedures Section XI B(2) states the areas must contain biological communities of such extraordinary value that no risk of unnatural stresses due to water quality alterations can be entertained. The biological community

becomes a resource to the recipients of the scientific, recreational, commercial, and esthetic values it represents. Recognition of the value of a candidate ASBS could be established by previous or imminent designation of the area by a federal, state or local governmental agency for scientific study, commercial or recreation use by the public. Recognition may also be indicated by a significant use of the area established for one of the above purposes by an institution, public agency or citizens' group.

3. Candidate areas need protection beyond that offered by waste discharge restrictions or other administrative and statutory mechanisms.

The fragility of the biological community must be such that its tolerance for change is very small. The possible contamination of the areas from unexpected malfunctions of waste control facilities could prove detrimental to the community. The highest quality effluent may still be adverse to the biological community. The intrusion of pollutants from adjacent areas also may be an impairment to the viability of the biota. The "Ocean Plan" requires ASBS water quality conditions not to be altered from natural. This is to ensure the biological community will face only natural stresses.

4. Candidate areas must have faced public review through hearings on its consideration as an ASBS.

The "Ocean Plan" sets forth the designation of ASBS by the State Board after a public hearing by the regional board and a review of the regional board's recommendation.

The SWRCB held public hearings to review the RWQCB recommendations. Candidate ASBS which did not meet the above criteria were rejected prior to the public hearings. The candidacy of certain areas, as related to the above criteria, was argued during the hearings. Therefore, the above criteria have been an important consideration in the designation of ASBS. It is appropriate that they continue to be used in the future.

Comments Received: This section will be completed after the State Board hearing on the proposed Ocean Plan amendments.

Alternatives for Board Action:

1. Do not amend the Ocean Plan to include definitions and procedures for the designation and implementation of ONRWs, OSRWs and ASBS and make no reference to ONRWs and OSRWs in the Plan. This alternative would permit interested agencies or public groups who are interested in the special protection of water quality in specific areas to make their own proposals to the State Board. The type of protection measures and their implementation in the proposal would be based on the interpretation of state and federal laws by the nominating agency or group. If the nominating agency or group included supporting information on the environmental and economic impacts of the proposal, it would also be based on their interpretation of state and federal law. The State Board review of the nomination and supporting information might result in protracted arguments which would result in a lengthy process. If the nomination resulted in the designation of an ONRW, and implementation measures were included in the Ocean Plan, the actions would require approval of the U.S. EPA. Since the State Board's interpretations and procedures had not been "pre-approved" by U.S. EPA, the risk of disapproval could be substantial.

2. Amend the Ocean Plan to include definitions and procedures for the designation and implementation of ONRWs, OSRWs and ASBS. This alternative would provide information to interested parties on the adopted policies and procedures of the State Board related to the designation of special areas for the protection of water quality. Any interested party, including Regional Boards and other state agencies, would have the confidence that the policies and procedures had been approved in advance by the State Board and U.S. EPA. A nomination and supporting information could be developed with a greater likelihood that it could be considered by the State Board on its merits, rather than become delayed or disapproved because of differences in the interpretation of state and federal law. An action by the State Board to designate an area would be more likely to receive approval by U.S. EPA.

Staff Recommendation:

Adopt Alternative 2. Specifically, it is recommended that:

1. Include ONRWs and OSRWs as beneficial uses.

Chapter I. A. of the Ocean Plan would be amended as follows:

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

2. Define ONRWs, OSRWs and ASBS.

The definition of ONRWs and OSRWs would be derived from 40 CFR 131.12(a) (3) and the U.S. EPA Water Quality Standards Handbook.

OUTSTANDING NATIONAL RESOURCE WATERS (ONRWs):
High quality waters which constitute an outstanding national resource, such as waters of National and State parks, wildlife refuges and waters of exceptional recreational or ecological significance. Waters of exceptional ecological significance may include water bodies that are important, unique, or sensitive ecologically, but whose water quality, as measured by the traditional parameters such as dissolved oxygen, or pH, may not be particularly high or whose characteristics cannot be adequately described by these parameters (such as wetlands).

OUTSTANDING STATE RESOURCE WATERS (OSRWs):
High quality waters which constitute an outstanding state resource, such as waters of National and State parks, wildlife refuges and waters of exceptional recreational or ecological significance. Waters of exceptional ecological significance may include water bodies that are important, unique, or sensitive ecologically, but whose water quality, as measured by the traditional parameters such as dissolved oxygen, or pH, may not be particularly high or whose characteristics cannot be adequately described by these parameters (such as wetlands).

The definition of ASBS would be taken from SWRCB Resolution 74-27.

AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS):
Areas of Special Biological Significance are those areas designated by the State Water Resources Control Board in order to afford the maximum protection from possible damage caused by waste discharges controlled

under the authority of the Temperature Plan[1/] and the Ocean Plan[2/] to species or biological communities of extraordinary even though unquantifiable value.

3. Provide that the location of waste discharges must be determined after a detailed assessment of the oceanographic characteristics and current patterns to assure that water quality conditions existing in ONRWs and OSRWs, at the time of their designation, are not lowered except as provided by a specific provision which will allow limited-term activities in ONRWs and OSRWs, or which will allow modifications in an OSRW in response to a petition.

Ch II.G.4. c. Water quality conditions existing in ONRWs or OSRWs, at the time of their designation, are not lowered except as provided in III.C.3. and III.C.4.

4. Provide procedures in an Appendix to the Ocean Plan for the nomination and designation of ASBS.

The procedures will retain the criteria and follow the original procedures required by the SWRCB in the selection of the existing ASBS, as follows:

APPENDIX V

A. NOMINATION AND DESIGNATION OF AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS).

1. Any person may nominate areas of ocean waters for designation as ASBS by the SWRCB. Nominations shall be made to the appropriate RWQCB and shall be accompanied by the following:

(a) Information such as maps, reports, data, statements, photographs, etc. to show that:

(1). Candidate areas are located in ocean waters as defined in the "Temperature Plan" and the "Ocean Plan".

(2). Candidate areas are intrinsically valuable or have recognized value to man for scientific study, commercial use, recreational use, or esthetic reasons.

(3). Candidate areas need protection beyond that offered by waste discharge restrictions or other administrative and statutory mechanisms.

2. A RWQCB may nominate a water for designation as an ASBS. A RWQCB may develop the information in (a) (1), (2) and (3) above to support its nomination or invite other persons to provide or supplement such information during a public hearing.

3. A RWQCB may decide to (a) consider individual ASBS nominations upon receipt, (b) consider several nominations in the same proceedings, or (c) consider any ASBS nominations in the periodic update of its Basin Water Quality Control Plan (Basin Plan).

4. Any consideration of an ASBS nomination shall satisfy the public participation requirements of Section 13244 CWC and 40 CFR 131.20(b).

5. Following consideration of an ASBS nomination, the RWQCB shall forward its recommendation or amended Basin Water Quality Control Plan to the SWRCB.

6. The SWRCB may approve the RWQCB recommendation, or return it to the RWQCB for further consideration and resubmission to the SWRCB. Upon resubmission, the SWRCB may either approve or, after a public hearing in the affected region, revise and approve the RWQCB recommendation.

7. Upon approval of an ASBS adoption action by the state Office of Administrative Law, implementation provisions of the California Ocean Plan and the appropriate Basin Plan shall be effective immediately. A record of the approval action will be forwarded to the U.S. EPA as an amendment to the California Ocean Plan and the appropriate Basin Plan.

8. SWRCB staff will advise other agencies to whom the list of designated areas is to be provided that the basis for this action by the SWRCB is limited to considerations related to protection of marine life from wastewater discharges.

5. Provide procedures for the nomination and designation of ONRWs and OSRWs in an appendix to the Ocean Plan.

The procedures will reflect that the SWRCB or a RWQCB may find that a specific water body, or portion thereof, qualifies for designation as an ONRW or OSRW when (a) developing a water quality control plan, (b) considering a decision which will affect water quality, or (c) considering a candidate ONRW or OSRW.

APPENDIX VI

A. NOMINATION AND DESIGNATION OF OUTSTANDING* NATIONAL RESOURCE WATERS AND OUTSTANDING* STATE RESOURCE WATERS.

1. Any person may nominate an area of ocean waters for designation as an ONRW* or an OSRW*. Nominations may be made to the SWRCB or to the appropriate RWQCB, and shall be accompanied by the following information:

(a) Maps, reports, data, statements, photographs, etc. to show that:

(1) The candidate area is within ocean waters as defined by the Ocean Plan,

(2) The candidate area satisfies the definition of the designation sought,

(3) It is in the public interest to provide the special water quality protection afforded by the designation rather than the protection afforded by waste discharge requirements.

2. During the (a) development of a water quality control plan, (b) consideration of a decision affecting water quality, or (c) consideration of a candidate ONRW* or OSRW*, a RWQCB or the SWRCB may determine that a water body, or portion thereof, satisfies the definition of an ONRW* or OSRW* and that the specific water deserves the protection afforded by the

designation. If a specific designation is proposed, it shall be considered as an amendment to the appropriate water quality control plan.

3. Consideration of the designation of an ONRW* or OSRW* shall satisfy the public participation requirements for a water quality control plan amendment.

4. Upon approval of the designated ONRW* or OSRW* by the SWRCB and the state Office of Administrative Law, implementation provisions of the California Ocean Plan and the appropriate Basin Plan shall be effective immediately.

5. A record of the designation action and the water quality plan amendment shall be submitted to the U.S. EPA for approval.

6. Include implementation procedures in Chapter III of the Ocean Plan for ASBS, ONRWs and OSRWs as follows:

C. Implementation Provisions For Areas* of Special Biological Significance and Outstanding* National and State Resource Waters.

1. A primary purpose of ASBS*, ONRWs* and OSRWs* is to protect the water quality existing at the time of designation. No degradation of water quality is to be permitted, notwithstanding any other provision of this Plan that may allow water quality to be lowered, other than that provided for limited-term activities in C.3. below, and for Outstanding* State Resource Waters in C.4 below.

2. Existing* discharges of waste into designated waters administered by this Plan, or affecting such waters, shall be controlled by the appropriate Regional Boards to ensure that they receive the level of treatment required to prevent degradation of water quality in the designated waters. Waste discharge requirements or permits for such existing* waste discharges shall be reviewed as soon as reasonably possible following the designation, and at each regularly scheduled review, to determine if there is a reasonable potential for the discharge to cause or contribute to a lowering of water quality in the designated area.

(a) If there is a finding that the discharge will not lower water quality, the discharge may continue until the next regularly scheduled review.

(b) If there is a finding that the discharge has the potential to cause or contribute to a lowering of water quality in the designated area, the Regional Board may modify the waste discharge requirements or take other actions necessary to ensure that water quality is not lowered in the designated area. Modifications to waste discharge requirements may include (1) appropriate conditions and a schedule of compliance to ensure that reasonable progress is made toward attaining water quality standards for the designated area, and (2) a provision that allows the permitting authority to reopen and modify the permit in order to obtain compliance with water quality standards.

3. Regional Boards may approve waste discharge requirements or recommend certification for limited-term activities in ONRWs*,

OSRWs* and ASBS* which may result in temporary and short-term changes in water quality, including but not limited to activities such as, maintenance/repair of existing boat facilities, restoration of sea walls, repair of existing storm water pipes, and replacement/repair of existing bridges. Waste discharge requirements or certifications for such activities shall be limited to a reasonable period, considering risk of adverse impacts to beneficial uses, risk of significant lowering of water quality outside the boundaries of a mixing* zone defined by the Regional Board, and the time and resources necessary for project completion.

4. Any person may file a petition with the State Board or a Regional Board to modify the boundary or lower the water quality of a designated OSRW*, or to have the designation removed. The petition shall include:

(a) The specific boundary change that would be modified or the specific water quality parameters that would be lowered;

(b) A description of any proposed activity which could take place if the petition is granted, including a list of the other approvals needed and an estimate of the time required for the approvals;

(c) An analysis of alternatives to the proposed activity, or enhanced treatment alternatives, which could eliminate the need to modify the boundary, or significantly reduce the need to lower the water quality of the OSRW*;

(d) An antidegradation analysis sufficient to meet the requirements of state and federal regulations, including SWRCB Resolution No. 68-16;

The provisions in Chapter III F. Discharge Prohibitions would be amended as follows:

a. New* or increased sources of W~~w~~aste* shall not be discharged to ~~areas~~ designated ~~as being~~ Areas* of ~~s~~Special ~~b~~Biological ~~s~~Significance or Outstanding* National Resource Waters. Discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas.

b. New or increased source of waste shall not be discharged to Outstanding* State Waters unless an exception is granted by the State Board as provided in Chapter III.C.4.

In Chapter III G., provision 2.a. would be amended as follows:

a. ASBS ~~Areas of special biological significance~~ shall be designated by the SWRCB as provided in the procedures in Appendix V ~~after a public hearing by the Regional Board and review of its recommendations.~~ A list of ASBS shall be available in Appendix VII.

A new provision would be added to Chapter III.G as follows:

3. Outstanding* National and State Resource Waters.

a. ONRWs* and OSRWs* shall be designated by the SWRCB or a RWQCB as provided in the procedures included in Appendix VI . A list ONRWs* and OSRWs* shall be available in Appendix .

7. Define the term, "existing", for waste discharges being regulated at the time amendments to the Ocean Plan are approved.

Chapter II.D.1 of the current Ocean Plan provides:

"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."

Staff proposes to add a definition for the term, "existing" to ensure consistency among RWQCBs, and to clarify implementation of proposed provision C.2. above.

EXISTING, as related to waste discharges, means waste discharges to ocean waters which are being regulated by waste discharge requirements, including NPDES Permits, prior to the date of approval of a water quality control plan or designation of an ONRW*, OSRW* or ASBS*. Changes in (a) the design of a waste discharge facility, (b) volume of the discharge or (c) treatment of the waste will be considered an existing waste discharge to the extent provisions for such changes are included in the waste discharge requirements prior to the date of approval of the water quality control plan or designated area.

8. Lists of designated ASBS, ONRWs and OSRWs would be made available in an appendix to the Ocean Plan.

Staff recommends that a list of designated areas be included in an appendix to the Ocean Plan. ASBS are listed and described in a pamphlet published by the SWRCB in July 1976 and revised in August 1998. Many persons are not aware they exist, or that descriptions and maps of their boundaries are available. Including definitions and nomination procedures in the cean Plan for the three types of designated areas will create interest in them.

APPENDIX VII

A. AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE

Designated March 21, 1974, April 18, 1974, and June 19, 1975

1. Pygmy Forest Ecological Staircase
2. Del Mar Landing Ecological Reserve
3. Gerstle Cove
4. Bodega Marine Life Refuge
5. Kelp Beds at Saunders Reef
6. Kelp Beds at Trinidad Head
7. Kings Range National Conservation Area
8. Redwoods National Park
9. James V. Fitzgerald Marine Reserve
10. Farallon Island
11. Duxbury Reef Reserve and Extension
12. Point Reyes Headland Reserve and Extension
13. Double Point
14. Bird Rock
15. Ano Nuevo Point and Island
16. Point Lobos Ecological Reserve
17. San Miguel, Santa Rosa, and Santa Cruz Islands
18. Julia Pfeiffer Burns Underwater Park
19. Pacific Grove Marine Gardens Fish Refuge and Hopkins Marine Life Refuge
20. Ocean Area Surrounding the Mouth of Salmon Creek
21. San Nicolas Island and Begg Rock
22. Santa Barbara Island, Santa Barbara County and Anacapa Island
23. San Clemente Island
24. Mugu Lagoon to Latigo Point
25. Santa Catalina Island - Subarea One, Isthmus Cove to Catalina Head
26. Santa Catalina Island - Subarea Two, North End of Little Harbor to Ben Weston Point
27. Santa Catalina Island - Subarea Three, Farnsworth Bank Ecological Reserve
28. Santa Catalina Island - Subarea Four, Binnacle Rock to Jewfish Point
29. San Diego-La Jolla Ecological Reserve
30. Heisler Park Ecological Reserve
31. San Diego Marine Life Refuge
32. Newport Beach Marine Life Refuge
33. Irvine Coast Marine Life Refuge
34. Carmel Bay

B. OUTSTANDING NATIONAL RESOURCE WATERS

Designated

C. OUTSTANDING STATE RESOURCE WATERS

Designated

Environmental and Economic Considerations

The proposed amendments relating to ASBS provide no new authority for the SWRCB or the RWQCBs. The proposed procedures and implementation measures have been in effect for many years. No new ASBS are proposed or solicited. The proposed amendments would put all the procedures in one document where they would be available to anyone.

The proposed amendments relating to ONRWs would provide no new authority for the SWRCB or the RWQCBs. No designation of ONRWs is proposed or solicited. The proposed amendments would make known the concepts of tiered water quality protection and antidegradation to more people. These concepts have been a part of federal and state law for many years. Establishing formal procedures for nominating and designating waters for water quality protection does not expand the authority of the SWRCB or the RWQCBs.

The primary effect of the proposed amendments will be to create public awareness of the concepts of protected waters and the open public procedures for having the SWRCB and the RWQCBs consider nominations. It may be assumed that this increased awareness will result in nominations by the public for some form of water quality protection in specific areas. Whether any nominations will result in the designation of

ASBS, ONRWs or OSRWs is speculative at this time. It should be noted that since the original 34 ASBS were designated in 1974, no new nominations have been made.

The proposed amendments would add ONRWs and OSRWs to the list of beneficial uses in the Ocean Plan. These uses will be for specific areas determined at the time of designation. The designation process and the Ocean Plan implementation measures will ensure that the uses are attainable and that water quality standards can be maintained.

The proposed amendments relating to OSRWs would introduce a new concept to the RWQCBs and the public. The concept has not been included formally in U.S. EPA regulations, even though it is discussed in U.S. EPA guidelines, and it has been approved as a part of the standards of several states. U.S. EPA has invited comments on the possibility of including the concept in regulations in its "Advance Notice of Proposed Rulemaking" (Federal Register for July 7, 1998).

Staff believes adoption of the OSRW category is justified because of the potential for population growth and infrastructure development in Southern California, and the need to resolve conflicts between resource conservation and development. Population growth often causes people to seek ways to protect and maintain natural areas. It is very likely areas in Southern California will be nominated for designation by the SWRCB to protect water quality. If the only choices for designation are ASBS and ONRWs, the SWRCB may find it difficult to designate a specific area because it can be seen that predicted population growth in the watershed will lead to conflicts that may be very difficult to resolve. If the SWRCB has the OSRW designation available, it may be willing to use that designation because it has more flexibility for considering changes in the future.

Section 13241 CWC requires that the following factors be considered in the establishment of water quality objectives:

(a) Past, present and probable future beneficial uses of water.

The proposed objective would provide the highest form of water quality protection within designated areas. No new discharges would be allowed to lower water quality within a designated area, and existing waste discharges which could not comply with waste discharge requirements would be upgraded or phased out. If any past beneficial uses of the area were reduced by existing waste discharges, it is possible they could be restored to their full potential with the upgrading of the waste discharge. Because the designation is intended to provide permanent protection of water quality, present and future beneficial uses of the designated area should be assured.

(b) Environmental characteristics of the hydrographic unit under consideration, including the quality of water thereto.

The California has approximately 1,100 miles of coastline. The waters of the Pacific Coast are among the richest in biological diversity, or biodiversity, in United States coastal waters (1). California's ocean ecosystem supports a wide assemblage of ocean and coastal life that includes plants, invertebrates, fish, birds and mammals. This biological diversity is due, in part, to the variety of physical features, including rocky outcrops, sandy beaches, tidal mudflats, bays, estuaries, lagoons, offshore islands and continental shelves. In addition, the differences in water temperature, climate, tidal influence and ocean currents between the opposite ends of the coastline are important factors affecting species diversity.

The biodiversity of the California coast is influenced also by the migrations of many species of animals, including fish, birds and whales. Some of the migratory species stop briefly to feed while others may spend a significant part of their life in California.

The California coast is also a rich environment which produces large quantities of some plant and animal species. This richness is influenced by the areas of up-welling where cold, nutrient-bearing water is brought from the ocean depths to the surface along the coast at particular times of the year. The nutrients support plankton organisms and their abundance is related to the abundance of other organisms in the food chain.

The abundance of resources in the ocean and on the lands adjacent to the California coastal area have attracted development to the area for many years. The natural beauty of the coast and the many opportunities for recreation and employment have attracted many people who wish to live and work there, or visit temporarily. The presence of fine harbors has encouraged the development of commerce and transportation centers. The population of the coastal counties is about 70% of the total population of the state. As shown in Table 12, the total population of the coastal counties increased by 10%, from 20,866,892 to 22,970,200, in the period 4/1/90 to 1/1/98 (2).

Table 12: POPULATION GROWTH AND PERCENT OF STATE POPULATION IN COASTAL COUNTIES

REGION	COUNTY	4/1/90	1/1/98	% GROWTH
1	Del Norte	23,460	28,900	23%
1	Humboldt	119,118	127,700	7%
1	Mendocino	80,345	86,900	8%
1	Sonoma	388,222	437,100	13%
2	Marin	230,096	245,900	7%
2	Napa	110,765	123,300	11%
2	Contra Costa	803,732	900,700	12%
2	Alameda	1,276,702	1,408,100	10%
2	Santa Clara	1,497,577	1,689,900	13%
2	San Francisco	723,959	789,600	9%
2	San Mateo	649,623	715,400	10%
3	Santa Cruz	229,734	250,200	9%
3	Monterey	355,660	386,200	9%
3	San Luis Obispo	217,162	239,000	10%
3	Santa Barbara	369,608	405,500	10%
4	Ventura	669,016	730,800	9%
4	Los Angeles	8,863,052	9,603,300	8%
8,9	Orange	2,410,668	2,722,300	13%
9	San Diego	2,498,016	2,794,800	12%
	TOTAL	21,516,515	23,685,600	10%
	State Total	29,758,213	33,252,000	12%
	Coastal Population			
	As Percent of State	72%	71%	
NOTES				

From: Table 1: Historical County/State Population Estimates, 1991-1998, with Census
Counts, California Dept. of Finance, 7/28/98

Region refers to a Regional Water Quality Control Board. The Orange County coast is
shared by RWQCBs 8 and 9.

There are 34 ASBS which were designated by SWRCB Resolution No. 74-28 on March 21, 1974. The designation is specifically intended to protect natural water quality for the benefit of marine life. There are other types of marine protected areas (MPA) which have been created for a variety of purposes by other federal, state and local agencies. A recent publication lists 103 MPA (3). Some MPA overlap others. For example, an ecological preserve, marine life refuge or underwater park created by another agency

may have been designated as an ASBS by the SWRCB to add water quality protection to the other forms of protection for an area. After the SWRCB designated the waters around the offshore islands near Southern California as ASBS, the areas were included in the Channel Islands National Marine Sanctuary.

The proposed amendments are not expected to affect the existing environment. If areas are designated in the future as a result of the interest in this form of water quality protection, it may be necessary to upgrade waste treatment at a specific facility. This possibility would be considered at the time a nomination is considered. A proposed nomination may not be approved because of such considerations. If an ONRW is designated with existing discharges that must be upgraded, the potential impacts of physical improvements, if any, cannot be known at this time. If an area is designated, future waste discharges may be required to be constructed in a different location because of the provisions in the Ocean Plan. The potential impacts of one location cannot be compared with alternate locations until specific designations are made. It seems reasonable to assume that if an area is designated near a major development, that the SWRCB would make the OSRW designation so future social and economic needs of the area could be considered.

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

Water quality of the coastal waters is generally considered good north of San Francisco. However, from San Francisco southward, water quality deteriorates with the increase in population. On May 27, 1998 the SWRCB adopted Resolution No. 98-055 approving the 1998 California Section 303(d) list of waters not meeting California's water quality standards. This

list was prepared by the RWQCBs and adopted by the SWRCB for transmittal to the U.S. EPA. The list names each impaired water by reach, the pollutant/stressor, the source of the pollutant/stressor, the size of the reach, and the priority for remediation.

In RWQCBs 1 and 2, no ocean waters were listed. RWQCB 3 listed portions of Monterey Bay, Morro Bay and the Pacific Ocean at Point Rincon. Pollutant/stressors included metals, pathogens, pesticides and sediment. RWQCB 4 listed various waters within Los Angeles Harbor, the Channel Islands Harbor, numerous other harbors, San Pedro Bay, Santa Monica Bay, many beaches, Malibu Lagoon, Mugu Lagoon, and the Ballona Creek, San Gabriel River and Ventura River estuaries. The pollutant/stressors included trash, metal, pesticides, pathogens, nutrients, and other organic and inorganic chemicals originating as industrial waste and storm water runoff. RWQCB 8 listed Huntington Harbor and Mission Bay for metals, pesticides and nutrients. RWQCB 9 listed numerous localized reaches of the Pacific Ocean because of high coliform counts due to nonpoint source runoff. Several coastal lagoons were listed because of nutrients, high coliform counts and sedimentation.

The 303(d) list serves to emphasize the deterioration of coastal water quality with increased population density. Population density is expected to increase along the California coast over the next few years. Many of the reaches of ocean waters named on the list are rated as low-priority problems so it is unlikely they will be resolved in the near future. Some of the problems which are not resolved may intensify. However, some of the problems, such as high coliform counts, may not directly impact marine life. If areas of coast are nominated to protect marine life at a specific location, the action may serve to raise the priority of actions to improve water quality. If a designated area has existing waste discharges, the RWQCB would be required to determine if the waste discharge is meeting

water quality standards and, if not, determine if there are reasonable actions which can be taken to upgrade the discharge. If new discharges are proposed, studies would be required to determine if the outfall could be located where it would not lower water quality within the designated area.

In summary, the proposed amendments may create interest in the concepts of special water quality protection for designated areas. Specific areas may be nominated for a particular type of designation. If areas are designated, it can be expected that water quality would not be reduced in the area, and it is possible it would be improved. The designation of specific areas may provide a way to protect natural water quality from deterioration and thereby protect the area for the greatest possible range of uses.

(d) Economic considerations

The Resources Agency requested the California Research Bureau to estimate the contribution selected ocean-dependent industries make to the California economy (1). The Bureau analyzed seven ocean-dependent industries which they estimated contributed $17.3 billion to the economy in 1992, including both direct and indirect effects. Direct effects alone contributed over $10 billion. The ocean-dependent industries studied accounted for 370,000 jobs in California, including multiplier spending effects. Of the $17.3 billion, the Bureau attributed $9.9 billion to coastal tourism spending, and 7.4 billion to such industries as sea ports and ship building, commercial fishing, and oil and gas production. This finding was stated to be consistent with a national survey by D.K. Shifflet and Associates in 1994 which showed that approximately 14% of California tourism includes a primary activity at beach or waterfront areas. This does not include tourists who also visit the coast as a secondary activity to their travels, or California residents traveling less than 50 miles to the coast.

The above study did not attempt to include some types of activities such as local coastal recreation, leisure travel, the manufacture of recreational equipment, the cost of developing the public infrastructure necessary to support ocean and coastal activities, or the cost of developing inland markets and restaurants specializing in fish products. In addition, the estimated value for ocean-dependent tourism is market value, the amount consumers actually pay for goods and services, not the total value of the ocean to consumers.

The conclusions of the analyses included the following statements:

"... People enjoy the California coast for aesthetic, spiritual and recreational purposes such as fishing, scuba diving, sun bathing, surfing, picnicking, hiking. wildlife viewing and sightseeing. Conducted properly, such activities have minimal impacts upon the environment while contributing substantially to the economy. The activities themselves may not have direct commercial value, but they result in significant consumer expenditures on food, transportation, accommodations and other related goods and services. Most importantly, coastal tourism is dependent upon a clean and healthy ocean ecosystem..." (emphasis added).

If areas of the coast are nominated and designated at some future time, their presence would ensure maintenance of the clean and healthy ecosystem which encourages coastal tourism.

(e) The need for developing housing within the region.

The primary effects of any designated protected areas would be to (a) cause future waste discharge outfalls to be planned so they could not affect water quality in the designated area, and (b) require future enlargements of existing waste outfalls to meet existing water quality requirements.

As shown previously in Table 12, population in the coastal counties has increased about 10% since 1990. The California Department of Finance has estimated a 43% increase in the population of the coastal counties by the year 2020, a span of about 22 years (4). As shown in Table 13, this projected population increase could result in a 24% increase in housing units, if it can be assumed that there will be the same mix of housing types and persons per household. These assumptions may not be appropriate because land suitable for housing will be in limited supply in southern California, and prices for single family dwellings will be very high. This may cause a shift to more multiple housing units and a lower vacancy rate than was used in the Department of Finance projections. However, given their projections for population, it is obvious there must be a significant increase in housing units in the coastal counties.

Table 13: Estimates of Population and Housing in 1998 and 2020

	JANUARY 1998 ESTIMATED TOTAL			JULY 2020 ESTIMATED TOTAL		PERCENT INCREASE
COASTAL COUNTY	POPULATION	HOUSING UNITS	PERSONS PER HOUSEHOLD	POPULATION	HOUSING	IN HOUSING
Del Norte	28,893	10,588	2.645	51,300	19,395	83%
Humboldt	127,708	56,085	2.44	156,500	64,139	14%
Mendocino	86,938	36,886	2.547	129,000	50,648	37%
Sonoma	388,222	178,394	2.559	568,800	222,274	25%
Marin	245,929	103,884	2.425	239,600	98,804	-5%
Napa	123,340	47,978	2.633	148,800	56,513	18%
Contra Costa	900,688	346,695	2.706	1,188,300	439,135	27%
Alameda	1,408,073	525,417	2.758	1,660,200	601,958	15%
Santa Clara	1,497,577	573,593	2.998	2,016,800	672,715	17%
San Francisco	723,959	336,264	2.467	816,300	330,888	-2%
San Mateo	649,623	259,983	2.816	827,400	293,821	13%
Santa Cruz	229,734	96,127	2.771	326,700	117,900	23%
Monterey	386,229	129,759	3.159	539,000	170,624	31%
San Luis Obispo	217,162	98,512	2.555	336,000	131,507	33%
Santa Barbara	369,608	144,300	2.874	521,200	181,350	26%
Ventura	669,016	246,075	3.076	1,023,100	332,607	35%
Los Angeles	9,603,291	3,254,772	3.067	12,795,100	4,171,862	28%
Orange	2,722,291	945,034	3.006	3,282,300	1,091,916	16%
San Diego	2,498,016	1, 014,859	2.833	3,851,100	1,359,372	34%
TOTAL	22,876,297	8,405,205	,,,	30,477,500	10,407,428	24%
AVERAGE			2.754			
CALIFORNIA	33,251,809	12,016,217	2.917	47,507,000		
Data Sources	1	1	1	2	3	

1. Table 1: County/State Population and Housing Estimates, January 1, 1998
   Official State Estimates; California Dept. of Finance, Demographic Unit

2. INTERIM COUNTY PROJECTIONS
   Estimated July 1, 1996 and Projections for 2000, 2010 and 2020
   California Dept of Finance, Demographic Research Unit, April 1997.

3. Derived by staff making the assumption that POPULATION PER HOUSEHOLD in 1998 would be the same in the year 2020.

It is expected that future population increases in the counties north of San Francisco will be near the existing metropolitan centers primarily. This is because most future jobs are expected to be in those centers. Traditional jobs in the unincorporated areas, such as timber harvest, ranching, mining and crop harvest, are not likely to increase significantly in

the next 20 years. In addition, water supply and sewage disposal services are in place for existing communities, and they will be more difficult to locate for future communities or subdivisions.

Population density and coastal land development is greatest in the counties south of Santa Barbara County and, as shown in Table 13, this will continue to be the case in 2020. As the population increases, there will be a greater need for treatment and disposal of municipal waste. If protected areas are designated along the coast, it is unlikely their existence would reduce the projected population because they protect water quality for the characteristics which attract people to the area.

If areas are nominated for designation in northern or southern California, it is unlikely the SWRCB would designate an ASBS or ONRW where it could be foreseen there would be a conflict with a municipal outfall in the future. If areas are nominated for protected status in southern California, it is most likely the SWRCB would consider designating them as OSRWs rather than ASBS or ONRWs. The OSRW designation provides a very high level of water quality protection without precluding unforeseen future economic and social development considerations.

Considering the above factors, it is concluded that adoption of the amendment would not have a significant effect on the need for developing housing within the coastal region.

(f) The need to develop and use recycled water.

Adoption of the proposed amendment would not affect the need to develop and use recycled water. The designation of areas will require the prohibition of new discharges in or near the protected area. This may result in higher costs for the discharge of waste in the future, and provide incentive for recycling more wastewater.

Proposed Ocean Plan Amendment: A draft of the Ocean Plan with the proposed amendments is contained in Appendix B.

References:

Wilson, Pete and Douglas P. Wheeler. 1997. California's Ocean Resources: An Agenda for the Future. The Resources Agency of California.

California Department of Finance. 1998. Table 1: Historical County/State Population Estimates, 1991-1998, with Census Counts.

McArdle, Deborah A. 1997. California Marine Protected Areas. California Sea Grant College System, Univ. of California, LaJolla, California. Publication No. T-039.

California Department of Finance. 1998. Interim County Projections. Estimated July 1, 1996 and Projections for 2000, 2010 and 2020. California Department of Finance, Demographic Unit, Sacramento, California.

Issue 6 Administrative Changes in the California Ocean Plan

Present Ocean Plan:

The 1997 Ocean Plan includes references to various sections of law or implementing regulations. As these laws or regulations change, it is necessary to consider updating the references in the Ocean Plan. Occasionally, it is recognized that the meaning of words, phrases or definitions in the current Ocean Plan are not clear to the regulated community. When this occurs, it is desirable to consider changes to make the meaning more clear, without changing or increasing the authority of the SWRCB.

Issue Description:

1. The Ocean Plan contains a number of different terms used to refer to various agencies. Sometimes these terms are confusing to the reader. It is proposed to add a paragraph to the Introduction section which will explain the meaning of the terms used to refer to the State Board, a Regional Board, and the federal Environmental Protection Agency.

2. Paragraph 3 of the Ocean Plan states the Plan is not applicable to vessel wastes, or the control of dredging spoil. When the Ocean Plan was adopted in 1972, the Congress was considering proposals to change federal law and there were concerns that the final action could preempt state law in the control of vessel waste and the disposal of dredging spoil. These concerns led to the statement that the Ocean Plan was not applicable to vessel wastes and the disposal of dredging spoil.

Section 402 of the Federal Water Pollution Control Act (FWPCA) allowed the states to apply to administer a program to issue permits for the discharge of wastes into navigable waters. California applied for and was delegated

authority to administer the National Pollutant Discharge Elimination System (NPDES). However, it was understood that vessel wastes were not regulated under the NPDES program. Federal regulations exclude certain vessel wastes, and the disposal of dredged or fill material which is regulated under Section 404 CWA from the requirement to have an NPDES permit (40 CFR 122.3). However, this does not prevent the state from controlling such wastes pursuant to the authority in the Porter-Cologne Act (PCA).

The SWRCB does not have a program for the control of vessel wastes, so the staff does not propose amendment of the Ocean Plan to make it applicable to vessel wastes. The SWRCB and the RWQCBs actively control the disposal of dredging spoil, but the SWRCB is not able to adopt a standard test for sediment toxicity, or a method for determining sediment suitability for unconfined disposal. Therefore, the staff is unable to propose amendments to the Ocean Plan making it applicable to the control of dredging spoil at this time.

Section 13390 *et seq.* CWC provides for the Bay Protection and Toxic Cleanup Program. This program provided for the development of sediment quality objectives for toxic pollutants (Sections 13392.6 and 13393 CWC) but the work was not funded. However, the SWRCB adopted a policy on July 8, 1998 to guide the RWQCBs in the development of toxic hot spot plans. This policy provides guidance on defining toxic hot spots, criteria for ranking toxic hot spots, and other issues to be considered in developing regional cleanup plans and the final consolidated cleanup plan. The experience gained from this program is expected to provide the basis for adoption of sediment objectives not related to toxic hot spots.

After toxic hot spots have been identified and ranked by the RWQCBs, Sections 13395, 13395.5 and 13396 CWC provide guidance relating to the reevaluation of waste discharge requirements for dischargers who have

contributed to the toxic hot spots, and the review and certification of U. S. Army Corps of Engineers (U.S. ACE) "404 permit" applications which may result in disturbance of toxic hot spots.

Section 404 of the FWPCA allowed states to apply to administer a permit program for the discharge of dredged or fill material into navigable waters. California has not applied for such a program, and such permits are issued by the U.S. ACE. However, the RWQCBs review permit applications following procedures in Title 23, Subchapter 17, Article 4 of the California Code of Regulations. The RWQCBs may decide to control the activity with waste discharge requirements, or recommend that the SWRCB (a) certify that the activity will not violate water quality standards, (b) recommend conditions necessary for inclusion in the U.S. ACE permit to prevent violation of water quality standards, or (c) deny certification and recommend denial of the permit. If the conditions are forwarded by the SWRCB to the U.S. ACE, the conditions will, in most cases, be added to the permits. If the SWRCB recommends denial, the U.S. ACE may deny the permit or work with the State and the project sponsor to modify the project.

In addition to controlling the disposal of dredging material by waste discharge requirements and actions relating to "404 permit" certifications, it should be noted that RWQCBs and the SWRCB are authorized by Section 13240 *et seq.* to adopt Basin Water Quality Control Plans (Basin Plans). See also Section 13170 *et seq.* A Basin Plan may prohibit the discharge of waste, including dredged material, in specific waters for water quality control purposes pursuant to Section 13243 CWC.

It is proposed to change the word "spoil" to "material". The word "spoil" has fallen into disuse for dredging activities and the word "material" is used commonly in federal and state law (33 U.S.C. Sections 1344 and 1413; 33 CFR

PARTS 335, 336, 337 and 338; 40 CFR PART 233; Sections 13370, 13376, 13377 and 13378 Calif. Water Code). The term "dredging material" will be defined consistent with the definition in 33 U.S.C. 1402(i).

3. The rescinded Inland Surface Waters Plan and the rescinded Enclosed Bays and Estuaries Plan included information in the Introduction section which explained the relationship between the plan at hand and other statewide plans or policies. Staff believes it is beneficial to add similar information to the Ocean Plan to explain it is the intent of the SWRCB that the following principles continue to be implemented:

   - Each water quality control plan will provide for the attainment and maintenance of the water quality standards of downstream waters.

     This principle is from 40 CFR 131.10(b) of the federal regulations which require each state to adopt water quality standards.

   - To the extent there is a conflict between a provision of the Ocean Plan and a provision of another statewide plan or policy, including a regional water quality control plan (basin plan), the more stringent provision shall apply except that the provisions of the Ocean Plan shall apply in the case of any conflict with the provision in basin plans which states that, as a general rule, downstream objectives apply to upstream tributaries.

     This principle is derived, in part, from 40 CFR 131.10(b) and Section 13170 PCA. It includes the interpretation agreed upon by U.S. EPA and the State Board in the August 10, 1978 letter to Paul De Falco, Regional Administrator EPA, from John E. Bryson, Chairman SWRCB; Subject: EPA INTERPRETATIONS OF THE STATE'S OCEAN PLAN.

- Pursuant to Section 13140 PCA, the Ocean Plan is intended to conform to any state policy for water quality control, including the provisions of Section 13142.5 PCA.

Amending the Ocean Plan to include the above principles would not increase the authority of the State Board.

4. Table B WATER QUALITY OBJECTIVES includes the term "Radioactivity". It was intended to reference Title 17 Section 30269 of the California Code of Regulations which is administered by the state Department of Health Services (DHS). However, Section 30269 was repealed as an emergency action by DHS in 1994. Section 30253, which makes reference to federal radiological standards, will be substituted in the reference. The reference will be made prospective to include future changes to the incorporated provisions as the changes take effect.

5. Appendix II of the 1997 Ocean Plan includes references to specific publications in Chapters II A Bacterial Standards and Chapter IV Compliance with Toxicity Limitations and Objectives as sources of biological testing methods. Staff proposes to delete the reference to the specific publication for total and fecal coliform in Chapter II A, and for acute toxicity in Chapter IV. Both chapters would contain a reference to the EPA approved methods in Table 1 A of 40 CFR PART 136, as revised July 1, 1997. At this time, the EPA approved methods for total and fecal coliform, and for acute toxicity are in the referenced publications. However, 40 CFR 136.1 specifically requires use of the tests in 40 CFR PART 136 so staff considers it best to use that reference when possible. The reference in Chapter II. A. to a specific publication for the enterococcus test method would not be changed.

6. Appendix II of the 1997 Ocean Plan includes Chapter IV Compliance with Toxicity Limitations and Objectives. It is proposed to delete the term, "Limitations" since the limitations are water quality objectives and the use of both terms in the title is redundant.

Chapter IV specifies that compliance with the acute toxicity limitation (TUa) shall be determined using an established protocol. Federal regulations (40 CFR PART 136) require the use of EPA approved toxicity test protocols for NPDES permit compliance monitoring unless an alternate protocol has been approved in advance. The only approved toxicity test protocol is listed in Table 1A of 40 CFR PART 136, as revised July 1, 1997.

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

Alternatives for Board Action:

1. Include proposed amendments numbered 1 through 6 above in the Ocean Plan.

2. Include proposed amendments 1, 2, 4, 5 and 6 but do not include proposed amendment 3 in the Ocean Plan.

3. Do not include proposed amendments numbered 1 through 5 in the Ocean Plan.

ENVIRONMENTAL IMPACT ANALYSIS

These changes are non-substantive and they would not increase the authority of the State Board. The proposed changes are not considered to be a "project" for purposes of the California Environmental Quality Act.

Staff Recommendation: Adopt Alternative 1.

Proposed Ocean Plan Amendments:

Proposed Amendment 1.

F. Within this Plan, references to the State board or SWRCB shall mean the State Water Resources Control Board. References to a Regional Board or RWQCB shall mean a California Regional Water Quality Control Board. References to the Environmental Protection Agency, US EPA or EPA shall mean the federal Environmental Protection Agency.

Proposed Amendment 2.

C. This plan is applicable, in its entirety, to point source discharges to the ocean*. Nonpoint sources of waste* discharges to the ocean* are subject to Chapter I Beneficial Uses, Chapter II - WATER QUALITY OBJECTIVES, Part G, ~~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 III - PROGRAM OF IMPLEMENTATION ~~V Discharge Prohibitions~~.

D. 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~~ material.

DREDGING MATERIALS: Any material excavated or dredged from the navigable waters of the United States, including material otherwise referred to as "spoil".

Proposed Amendment 3.

B. Principles

1. Harmony Among Water Quality Control Plans and Policies.

a. In the adoption and amendment of water quality plans, it is the intent of this Board that each plan will provide for the attainment and maintenance of the water quality standards of downstream waters.

b. To the extent there is a conflict between a provision of this plan and a provision of another statewide plan or policy, or a regional water quality control plan (basin plan), the more stringent provision shall apply except that the provisions of this plan shall apply in the case of any conflict between this plan and the provision in basin plans which states that, as a general rule, downstream objectives apply to upstream tributaries.

c. Pursuant to Section 13140 CWC, this plan is intended to conform to any state policy for water quality control. In particular, the provisions of Section 13142.5 CWC and the statewide policies included in Appendix II.

APPENDIX II

1. "STATEMENT OF POLICY WITH RESPECT TO MAINTAINING HIGH QUALITY OF WATERS IN CALIFORNIA". Resolution No. 68-16 adopted by the State Water Resources Control Board, October 28, 1968.

2. "STATE POLICY FOR WATER QUALITY CONTROL", adopted by motion of the State Water Resources Control Board on July 6, 1972.

3. "WATER QUALITY CONTROL POLICY FOR THE ENCLOSED BAYS AND ESTUARIES OF CALIFORNIA". Resolution No. 74-43 adopted by the State Water Resources Control Board, May 16, 1974.

4. "WATER QUALITY CONTROL POLICY ON THE USE AND DISPOSAL OF INLAND WATERS USED FOR POWER PLANT COOLING". Resolution No. 75-58 adopted by the State Water Resources Control Board, June 19, 1975.

5. "POLICY WITH RESPECT TO WATER RECLAMATION IN CALIFORNIA". Resolution No. 77-1 adopted by the State Water Resources Control Board, January 6, 1977.

Proposed Amendment 4.

TABLE B

WATER QUALITY OBJECTIVES

(contents of table omitted)

Radioactivity**

** Not to exceed limits specified in Title 17, Division 1, Chapter 5,

Subchapter 4, Group 3, Article 3, Section ~~30269~~ 30253 of the California Code of Regulations. Reference to Section 30253 is prospective, including future changes to any incorporated provisions of federal law, as the changes take effect.

Proposed Amendment 5.

APPENDIX II

STANDARD MONITORING PROCEDURES

(Paragraph omitted.)

The appendix is organized in the same manner as the Ocean Plan. All references to 40 CFR PART 136 are to the revised edition of July 1, 1997.

Chapter II. B.~~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 determine by the Regional Board (and approved by EPA) to be appropriate.~~ Table 1A of 40 CFR PART 136, unless alternate methods have been approved in advance by EPA pursuant to 40 CFR PART 136.

Detection methods used for enterococcus shall be those presented in EPA publication EPA 600/4-85/076, Test Methods of Escherichia coli and

Enterococci in Water By Membrane Filter Procedure or any improved method determined by the Regional Board to be appropriate.

Chapter III.~~IV.~~ Table B. Compliance with Table B 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 PART 136). All methods shall be specified in the monitoring requirement section of waste discharge requirements.

Where methods are not available in 40 CFR PART 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 PART 136. Total chlorine residual is likely to be a method detection limit effluent limitation in many cases. The limit of detection of total chlorine residual in standard test methods is less than or equal to 20 mg/l.

(Paragraph omitted.)

Proposed Amendment 6.

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

Compliance with the acute toxicity objective (TUa) in Table B shall be determined using an ~~established~~ EPA approved protocol~~, e.g., American Society for Testing Materials (ASTM), EPA, American Public Health Association, or State Board.~~ as provided in 40 CFR PART 136.