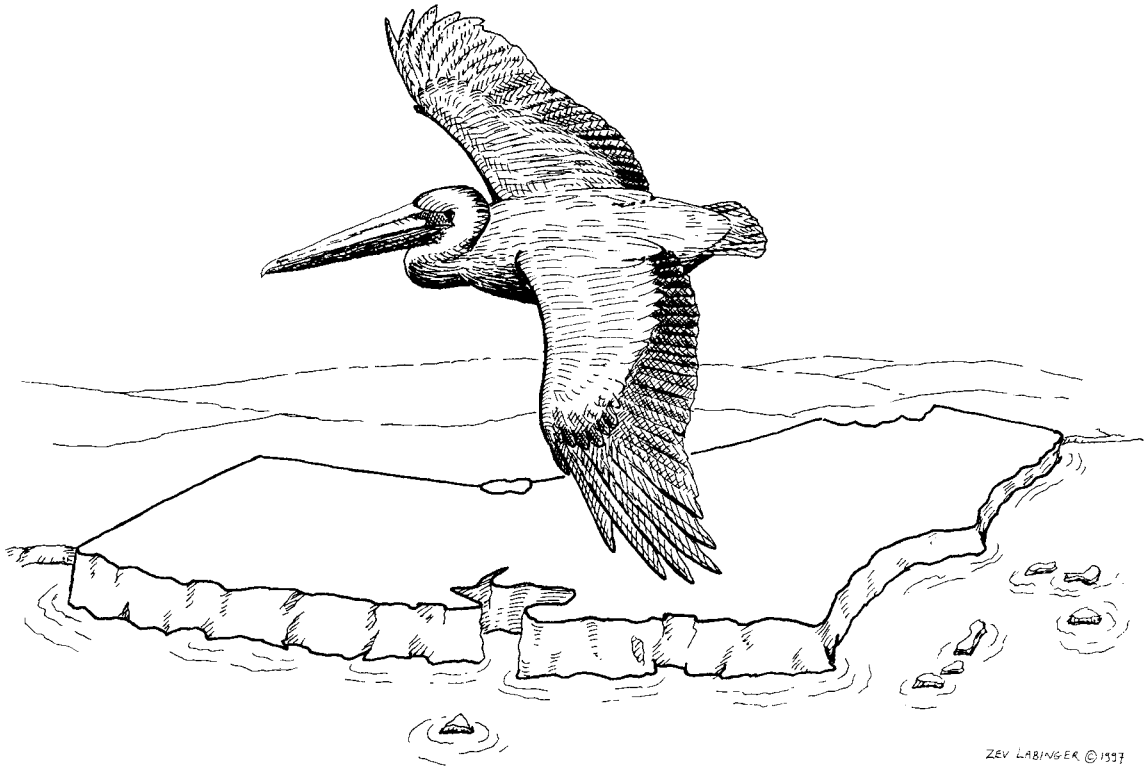
FINAL

FUNCTIONAL EQUIVALENT DOCUMENT

AMENDMENT OF
THE WATER QUALITY CONTROL PLAN
OCEAN WATERS OF CALIFORNIA

CALIFORNIA OCEAN PLAN



March 2005
Amended April 22, 2005

STATE WATER RESOURCES CONTROL BOARD
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

STATE OF CALIFORNIA
Arnold Schwarzenegger, Governor

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
Alan C. Lloyd, Ph.D., Secretary

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STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER QUALITY

FINAL FUNCTIONAL EQUIVALENT DOCUMENT

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

CALIFORNIA OCEAN PLAN

MARCH 2005
Amended April 22, 2005

State Water Resources Control Board

Division of Water Quality

Alan C. Lloyd, Ph.D.
Agency Secretary

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Arnold Schwarzenegger
Governor

NOTICE OF FILING

To: Any Interested Person

From: State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

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: Frank Roddy; Telephone: (916) 341-5379
Email: froddy@waterboards.ca.gov

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) Reasonable Potential: Determining when California Ocean Plan water quality-based effluent limitations are required, and (2) Minor changes to the Areas of Special Biological Significance (ASBS) and exception provisions: Classification of ASBS as State Water Quality Protection Areas (SWQPAs), rename certain ASBS to coincide with name changes corresponding to Marine Protected Areas, and clarification that all exceptions are subject to Triennial Review.

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

Copies of the Functional Equivalent Document (which includes the draft California Ocean Plan and discussion of the proposed amendments) may be obtained from the contact person above or on the internet at http://www.waterboards.ca.gov/plnspols/oplans/.

Stan Martinson

Stan Martinson, Chief
Division of Water Quality

3/4/05
Date

State Water Resources Control Board

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Alan C. Lloyd, Ph.D.
Agency Secretary

Arnold Schwarzenegger
Governor

NOTICE OF PUBLIC HEARING

CALIFORNIA OCEAN PLAN – AMENDMENTS

Wednesday, April 6, 2005 – 10:00 am
Sierra Hearing Room – Second Floor
Joe Serna, Jr. Cal/EPA Headquarters Building
1001 "I" Street, Sacramento, CA 95814

NOTICE IS HEREBY GIVEN that the State Water Resources Control Board (State Water Board) will hold a public hearing during its regularly scheduled April Board Workshop to receive comments on proposed revisions to the California Ocean Plan (Ocean Plan). The revisions address reasonable potential and Areas of Special Biological Significance (ASBS). An audio broadcast will be available at http://www.calepa.ca.gov/broadcast/.

BACKGROUND
The State Water Board held a public scoping meeting regarding four potential Ocean Plan amendments on January 23, 2004. The scoping meeting was continued on February 3, 2004 at the State Water Board workshop at the request of the Board. Staff identified four issues, in part from the 1999-2002 Triennial Review process for the Ocean Plan amendments: 1) Choice of Indicator Organisms for Water-Contact Bacterial Standards; 2) Establishing a Fecal Coliform Standard for Shellfish Harvesting Areas; 3) Reclassifying ASBS to "State Water Quality Protection Areas (SWQPA)" and establishing implementation provisions for discharges into SWQPA; and 4) "Reasonable Potential:" Determining the likelihood that the concentration of a pollutant would cause or contribute to an exceedance of water quality standards.

During the State Water Board workshop, the Board directed staff to conduct a new Triennial Review to determine if there are additional issues that should be reviewed for potential revision of the Ocean Plan. The State Water Board held a hearing for the Triennial Review of the Ocean Plan on May 24, 2004. Written comments were received from 10 entities, the majority of which generally encouraged the State Water Board to continue with the proposed amendments.

On August 6, 2004, the State Water Board circulated a Draft Functional Equivalent Document (DFED), which included recommendations for resolving the following two issues: Choice of Indicator Organisms for Water-Contact Bacterial Standards; and Reasonable Potential: Determining when California Ocean Plan Water Quality-based Effluent Limitations are Required.

Written comments on the DFED were received from 13 organizations. On October 6, 2004, the State Water Board held a hearing to receive testimony on the DFED and the proposed amendments. Three people provided oral testimony. At the hearing, staff informed the Board members that the reasonable potential issue needed to undergo external scientific review and would be brought back before the Board following that review. The Board adopted the amendment for water-contact indicator bacteria on January 20, 2005 (Resolution 2005-0013).

The reasonable potential issue and comments received are addressed in the Draft Final Functional Equivalent Document (DFFED). After careful consideration of public comments and recent

legislation, the ASBS amendments have been revised to include only minor changes to the ASBS and exception provisions of the Ocean Plan (Classification of ASBS as SWQPAs, renaming certain ASBS to be consistent with names of Marine Protected Areas, and a clarification that all ocean plan exceptions are subject to Triennial Review) and has been included in this DFFED as well.

AVAILABLILITY OF DOCUMENTS
The DFFED may be obtained on the State Water Board web site at http://www.waterboards.ca.gov/plnspols/oplans/. You may also receive copies by writing or calling: Jan Hisao, Division of Water Quality, State Water Resources Control Board, P.O. Box 100, Sacramento, CA 95812-0100; (916) 341-5568, FAX (916) 341-5584; or by email at jhisao@waterboards.ca.gov.

SUBMISSION OF COMMENTS
The State Water Board will accept both written and oral comments on the proposed amendments. Individuals who commented on the prior version of the proposed Reasonable Potential procedures are requested to limit their comments to the changes that have been made. **Written comments are due by 5:00 p.m., April 6, 2005** and should be submitted directly to the Clerk to the Board for processing:

Debbie Irvin
Executive Office
Water Resources Control Board
1001 "I" Street, 24th Floor
Sacramento, CA 95814
FAX: (916) 341-5620
email: dirvin@waterboards.ca.gov

PARKING AND ACCESSIBILITY
There is a parking garage across from the Joe Serna, Jr. Cal/EPA Building with entrances on 10th and 11th Streets between "I" and "J" Streets, and metered parking spaces are in the vicinity of the building. For a map, see our web site at http://www.calepa.ca.gov/EPABldg/location.htm. The facilities are accessible to persons with disabilities. Individuals who require special accommodations are requested to contact Adrian Perez at (916) 341-5880 at least five working days prior to the public hearing date. Persons with hearing or speech impairments can contact us by using the California Relay Service Telecommunications Device for the Deaf (TDD). TDD is reachable only from phones equipped with a TDD Device. HEARING IMPAIRED RELAY SERVICE: TDD to voice 1-800-735-2929, Voice to TDD 1-800-735-2922.

All visitors are required to sign in and receive a badge prior to attending any meeting in the building. The Visitor and Environmental Services Center is located just inside and to the left of the Cal/EPA Building's public entrance. Valid picture identification may be required due to the security level. Please allow up to 15 minutes for this process.

Debbie Irvin
Clerk to the Board

March 4, 2005

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LIST OF ABBREVIATIONS

AB	Assembly Bill
ASBS	Areas of Special Biological Significance
BMP	best management practices
BPJ	best professional judgment
CAO	cleanup and abatement order
CAWD	Carmel Area Wastewater District
CCA	Critical Coastal Area
CCC	California Coastal Commission
CCR	California Code of Regulations
CDO	cease and desist order
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CV	coefficient of variance
CWA	Clean Water Act
CWC	California Water Code
DFED	Draft Functional Equivalent Document
DNQ	detected but not quantified
EIR	Environmental Impact Report
FED	Functional Equivalent Document
FFED	Final Functional Equivalent Document
GLS	Great Lakes System
HSU	Humboldt State University
MDL	method detection limit
ML	minimum level
MLE	maximum likelihood estimator
MMA	Marine Managed Area
MPA	Marine Protected Area
MS4	Municipal Separate Storm Sewer System
ND	non-detect
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NPS	Nonpoint Source
NPS Policy	Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program
NPS Program Plan	Plan for California's Nonpoint Source Pollution Control Program
POTW	publicly-owned treatment works
PRC	Pubic Resources Code
ROS	regression on order statistics
RPA	reasonable potential assessment
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCCWRP	Southern California Coastal Water Research Project
SIP	Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California

SWQPAs	State Water Quality Protection Areas
SWRCB	State Water Resources Control Board
TMDL	Total Maximum Daily Load
TSD	Technical Support Document for Water Quality-based Toxics Control
UC	University of California
UCB	upper confidence bound
UCBN	Upper Confidence Bound for a population percentile when the data are Normally distributed
UCLB	Upper Confidence Bound for a population percentile when the data are Lognormally distributed
USC	University of Southern California
USEPA	United States Environmental Protection Agency
WDRs	waste discharge requirements
WQBELs	Water Quality-Based Effluent Limits

SUMMARY

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

Issue 1: Reasonable Potential: Determining when California Ocean Plan Water Quality-based Effluent Limitations are Required

Remove existing language that allows dischargers to certify that Table B pollutants are not present in their effluent *in lieu* of monitoring, and add general "reasonable potential" language to Chapter III (Program of Implementation) of the California Ocean Plan. Additional reasonable potential procedures will be added in the new Appendix VI of the California Ocean Plan.

Issue 2: Classification of Areas of Special Biological Significance (ASBS) as State Water Quality Protection Areas (SWQPAs), rename certain ASBS to coincide with name changes corresponding to Marine Protected Areas, and clarification that all exceptions are subject to Triennial Review.

Change the names of specific ASBS and incorporate the classification of ASBS as SWQPAs per the Public Resources Code. In addition, amend the California Ocean Plan to state that exceptions (including non-ASBS related exceptions) would be reviewed during the Triennial Review and an appendix added listing all current exceptions to the California Ocean Plan.

INTRODUCTION

In July 1999, the State Water Resources Control Board (State Water Board) adopted Resolution No. 99-073 directing staff to review a series of high priority issues identified in the 1999-2002 Triennial Review Workplan (SWRCB 1999). Staff was further authorized to make recommendations to the State Water Board for any necessary changes to the California Ocean Plan. The State Water Board further resolved that the California 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 California Ocean Plan.

The State Water Board held a public scoping meeting, pursuant to Section 21083.9 of the Public Resources Code, on January 23, 2004 seeking input on the scope and content of the environmental information which should be included in the Draft Functional Equivalent Document (DFED). The following four issues were presented for discussion at the scoping meeting:

- Choice of Indicator Organisms for Water-Contact Bacterial Standards
- Establishing a Fecal Coliform Standard for Shellfish Harvesting Areas
- Reclassifying "Areas of Special Biological Significance (ASBS)" to "State Water Quality Protection Areas (SWQPAs)" and establishing implementation provisions for discharges into SWQPAs
- "Reasonable Potential:" Determining the likelihood that the concentration of a pollutant would cause or contribute to an exceedance of water quality standards

Fifteen written comments were received dealing predominately with agreement or disagreement with the proposals rather than discussing the environmental information which should be included in the DFED. Approximately 50 people attended the scoping meeting of which 18 gave oral testimony reiterating the written comments received.

At the request of Board members, the scoping meeting was continued at the February State Water Board Workshop on February 3, 2004. Eight people presented oral testimony. At the workshop, the State Water Board directed staff to suspend work on the proposed amendments and conduct a triennial review of the California Ocean Plan.

The State Water Board held a hearing for the triennial review of the California Ocean Plan on May 24, 2004. Written comments were received from 10 entities, the majority of which generally encouraged the State Water Board to continue with the proposed amendments. Based on the specific comments received and time constraints, the shellfish issue will be addressed in a future amendment. The ASBS issue has been amended to include only minor changes to ASBS and exception provisions and has been included in this Final Functional Equivalent Document (FFED).

On August 6, 2004, the State Water Board circulated a DFED (SWRCB 2004a) which included recommendations for resolving the following two issues:

- Choice of Indicator Organisms for Water-Contact Bacterial Standards; and
- Reasonable Potential: Determining when California Ocean Plan Water Quality-based Effluent Limitations are Required.

Written comments on the DFED were received from 13 organizations. On October 6, 2004, the State Water Board held a hearing to receive testimony on the DFED and the proposed amendments. Three people provided oral testimony. At the hearing, staff informed the Board members that the reasonable potential issue needed to undergo external scientific review. Therefore, the water-contact bacterial indicator issue and its corresponding comments were addressed in a previous FFED (SWRCB 2005). The reasonable potential issue and comments received are addressed in this FFED.

Background

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

Currently, the 2001 California Ocean Plan contains three chapters that describe beneficial uses to be protected, water quality objectives, and a program of implementation needed for achieving water quality objectives (SWRCB 2001).

Chapter One of the California Ocean Plan identifies the applicable beneficial uses of marine waters. These uses include preservation and enhancement of designated ASBS, rare and endangered species, marine habitat, fish migration, fish spawning, shellfish harvesting, recreation, commercial and sport fishing, mariculture, industrial water supply, aesthetic enjoyment, and navigation.

Chapter Two establishes a set of narrative and numerical water quality objectives designed to protect beneficial uses. These objectives are based on bacterial, physical, chemical, and biological characteristics as well as radioactivity. The water quality objectives in Table B apply to all receiving waters under the jurisdiction of the California Ocean Plan and are established for protection of aquatic life and for protection of human health from both carcinogens and noncarcinogens. Within Table B there are 21 objectives for protecting aquatic life, 20 for protecting human health from noncarcinogens, and 42 for protecting human health from exposure to carcinogens.

Chapter Three is divided into nine sections: (A) General Provisions; (B) Table A Effluent Limitations; (C) Implementation Provisions for Table B; (D) Implementation Provisions for Bacterial Assessment and Remedial Action Requirements; (E) Implementation Provisions for ASBS; (F) Revision of Waste Discharge Requirements; (G) Monitoring Program; (H) Discharge Prohibitions; and, (I) State Board Exceptions to Plan Requirements. Section A provides the guidance needed to design systems for discharges into marine waters by listing the considerations a discharger must address before a new discharge is permitted. Section A also identifies how ASBS

are designated and the application of U.S. Environmental Protection Agency's (USEPA's) Combined Sewer Overflow Policy.

Section B contains effluent limitations for the protection of marine waters. The effluent limitations listed in Table A apply to all publicly owned treatment works (POTWs) and to industries that do not have effluent limitation guidelines established by the USEPA.

When a discharge permit is written, the water quality objectives for the 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 and the Table B objectives. Section C describes how Table B is to be implemented, including: calculation of effluent limitations; determination of mixing zones for acute toxicity objectives; toxicity testing requirements; selection of, deviations from, and use of minimum levels; sample reporting protocols; compliance determination; pollutant minimization program; and, toxicity reduction requirements.

Section D provides implementation provisions for bacterial assessment and remedial action requirements. The requirements provide a basis for determining the occurrence and extent of any impairment of beneficial use due to bacterial contamination, generating information which can be used to develop an enterococcus standard, and providing the basis for remedial actions necessary to minimize or eliminate any impairment of a beneficial use.

Sections E includes provisions concerning ASBS. It clearly states that waste shall not be discharged to ASBS and that such discharges shall be located a sufficient distance from ASBS to assure maintenance of natural water quality conditions in these areas. It also provides that Regional Water Boards may approve waste discharge requirements or recommend certification for limited-term (*i.e.*, weeks or months) activities in ASBS.

Sections F through I contain general provisions and sections on discharge prohibitions (*e.g.*, municipal or industrial sludges, bypassing, discharges into ASBS, and others). The provisions mandate that the Regional Water Boards require dischargers to monitor their discharges. Section I describes provisions for allowing exceptions to the California Ocean Plan under special circumstances, provided that beneficial uses are protected and that the public interest is served.

History of the California Ocean Plan

The California Ocean Plan was first formulated by the State Water Board as part of the State Policy for Water Quality Control. Changes in the California Water Code (CWC) in 1972 required the State Water Board to redraft its proposed Policy as a Water Quality Control Plan. At that time, it was the intent of the State Water Board to "…determine…the need for revising the Plan to assure that it reflects current knowledge…" (SWRCB 1972). The California Ocean Plan was reviewed and amended in 1978 to fulfill the intent of the State Water Board and the requirements of State and federal law for periodic review (SWRCB 1978). In 1983, a second review and revision were completed (SWRCB 1983a). Major changes to the California Ocean Plan in 1983 included 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.

In 1986, the CWC was amended to require the State Water Board to review the California 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 and resulted in California Ocean Plan amendments in 1988 and 1990. The 1988 amendments (SWRCB 1988) changed several beneficial use designations to be consistent with the State Water Board's standard list, revised water quality objectives in Table B, established a uniform procedure for granting exceptions to California Ocean Plan objectives, and made several relatively minor changes.

The 1990 amendments (SWRCB 1990a; 1990b) added the following: (1) an appendix for standard monitoring procedures to implement California Ocean Plan requirements; (2) a bacterial monitoring requirement for enterococcus; (3) now and/or revised water quality objectives to Table B for protection of aquatic life and human health; (4) definitions of acute and chronic toxicity to replace previous definitions; (5) a chronic toxicity objective to Table B; (6) 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; and (7) a list of seven critical life stage test protocols for use in measuring chronic toxicity.

Based on the 1992 Triennial Review, the State Water Board adopted a workplan that identified 24 high priority issues to be addressed (SWRCB 1992). The high priority issues fall into seven categories: (1) water quality objectives and regulatory implementation; (2) toxicity objectives and regulatory implementation; (3) bacterial standards; (4) administrative cleanup of California Ocean Plan format and terminology; (5) sediment quality objectives; (6) suspended solids regulation; and (7) nonpoint source control. A detailed description of the issues is contained in the 1992 document *California Ocean Plan: Triennial Review and Workplan 1991-1994*.

In 1997, the State Water Board adopted two California Ocean Plan amendments relating to issues raised during the 1992 Triennial Review: (1) the list in Appendix II of test protocols used to measure compliance with 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 (SWRCB 1997a; 1997b).

Staff analysis and evaluation of the remaining high priority issues from the 1992 Triennial Review were carried over into the 1998-1999 Triennial Review, which also incorporated other issues. The State Water Board completed the 1998-1999 Triennial Review upon approval of the *California Ocean Plan 1999-2000 Triennial Review Workplan*. The 1999-2000 Triennial Review identified 22 high priority issues to be addressed, which fall into five categories: (1) applicability of the California Ocean Plan; (2) beneficial uses; (3) water quality objectives; (4) implementation; and (5) format and organization of the California Ocean Plan (SWRCB 1999).

In 2000, the State Water Board adopted six California Ocean Plan amendments relating to issues raised during the 1999-2000 Triennial Review and incorporated them into the 2001 California Ocean Plan (SWRCB 2001). These issues included: (1) replacement of the acute toxicity effluent limit 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 the format of the California Ocean Plan; (5) development of

special protection for water quality and designated uses in ocean waters of California; and (6) administrative changes to the California Ocean Plan (SWRCB 2000; 2001). The 2001 California Ocean Plan became effective December 3, 2001 when it was approved by the USEPA (USEPA 2001).

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 external scientific peer review of the scientific basis for any rule proposed by any board, office, or department within California Environmental Protection Agency (Cal/EPA). Scientific peer review also helps strengthen regulatory activities, establishes credibility with stakeholders, and ensures that public resources are managed effectively.

The State Water Board utilized the services of the University of California – Berkeley (Department of Civil and Environmental Engineering) to perform the required scientific peer review of the proposed reasonable potential issue. Peer review suggestions and comments have been incorporated into the description of the issue. The ASBS issue is not scientifically based and is not subject to the peer review process.

California Environmental Quality Act (CEQA) Analysis and Impact of the Proposed Amendments

State agencies are subject to the environmental impact assessment requirements of CEQA (Public Resources Code, §21000 *et seq*.). However, CEQA authorizes the Secretary of the Resources Agency to exempt specific State regulatory programs from the requirements to prepare Environmental Impact Reports (EIRs), Negative Declarations, and Initial Studies, if certain conditions are met (Public Resources Code, §21080.5). The Water Quality Control (Basin)/208 Planning Program of the State Water Board has been certified by the Secretary for Resources [California Code of Regulations (CCR), Title 14, §15251(g)]. As such, the plan, with supporting documentation, may be submitted in lieu of an EIR as long as the appropriate environmental information is contained therein (Public Resources Code, §21080.5(a)). Accordingly, the SWRCB prepares Functional Equivalent Documents (FEDs) in lieu of the more commonly used EIR. A DFED is prepared by the agency and circulated for public review and comment. Responses to comments and consequent revisions to the information in the DFED are subsequently presented in a draft FFED for consideration by the State Water Board. After the State Water Board has certified the document as adequate, the title of the document becomes the FFED.

If the State Water Board adopts the recommended California Ocean Plan amendments, there will be no significant adverse environmental impacts. The purpose of the California Ocean Plan is to protect the quality of California's coastal waters for the use of the people of the State. Since no significant adverse effects are expected, mitigation measures are not warranted.

The proposed California Ocean Plan amendments do not alter the State's existing regulatory framework for controlling storm water and nonpoint sources of discharge. National Pollutant Discharge Elimination System (NPDES) permits for storm water dischargers issued by the State Water Board and Regional Water Boards have not included numeric effluent limits. 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 the implemented BMPs do not result in the attainment of water quality standards, dischargers are required to utilize additional BMPs to achieve the standards.

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

Nonpoint source dischargers are regulated by the State under the Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (NPS Policy) (SWRCB 2004b) adopted by the State Water Board on May 20, 2004. The policy clarifies that all nonpoint source discharges must be regulated through waste discharge requirements, waivers, or prohibitions.

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 California Ocean Plan water quality objectives.

Project Description

The CWC (§13170.2) requires that the California 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 Board, will amend the 2001 California Ocean Plan. The following amendments are proposed for adoption:

Issue 1: Reasonable Potential: Determining when California Ocean Plan Water Quality-based Effluent Limitations are Required; and,

Issue 2: Classification of Areas of Special Biological Significance (ASBS) as State Water Quality Protection Areas (SWQPAs), rename certain ASBS to coincide with name changes corresponding to Marine Protected Areas, and clarification that <u>all</u> exceptions are subject to Triennial Review.

Statement of Goals

To amend the California Ocean Plan by addressing certain high priority concerns introduced to the State Water Board in the 1999-2002 Triennial Review Workplan of the California Ocean Plan;

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

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 Project

The proposed project is the State Water Board adoption of the proposed amendments to the California Ocean Plan listed (above) in the Project Description.

Format Used in Issue Presentation

Each issue description and analysis contains the following sections:

Issue: A brief description of the issue.

Present California Ocean Plan: A summary of the current California Ocean Plan provisions related to the issue.

Issue Description: A detailed description of the issue, plus the historical development of the current California Ocean Plan approach, and, if appropriate, a description of what led the State Water Board to establish the current provisions.

Comments Received: Comments received on the DFED are identified in this FFED by issue. When multiple comments were received addressing the same concern, SWRCB staff prepared a "combined comment" that paraphrases the individual comments. Commenters are identified by number at the end of the comment. Responses prepared by State Water Board staff are presented following each comment.

Alternatives for State Water Board Action and Staff Recommendation: For each issue, staff has prepared at least two alternatives for State Water Board action and a suggestion is made for which alternative should be adopted by the State Water Board.

Proposed California Ocean Plan: If appropriate, the wording of the proposed amendment is provided to indicate the exact change to the 2001 California Ocean Plan.

Commenters and Affiliations

Individuals or organizations who submitted written comments on the DFED or who gave testimony at the October 2004 public hearing, regarding the reasonable potential issue, are listed below. Each of the commenters is referred to by number when referenced in the issue. When an agency or individual submitted written comments, staff has relied on that source to characterize these comments. All comments presented at the hearing pertaining to proposed amendments have been addressed.

Written Comments

No. 1
Los Angeles Department of Water and Power. 111 North Hope Street, Los Angeles, CA 90012
Susan M. Damron

No. 2
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Issue 1: Reasonable Potential: Determining when California Ocean Plan Water Quality-based Effluent Limitations are Required

I. Summary of Proposed California Ocean Plan Amendment

Remove existing language that allows dischargers to certify that Table B pollutants are not present in their effluent *in lieu* of monitoring, and add general "reasonable potential" language to Chapter III (Program of Implementation) of the California Ocean Plan. Additional reasonable potential procedures will be added in the new Appendix VI of the California Ocean Plan.

II. Present California Ocean Plan

Dischargers are currently allowed to certify that Table B pollutants are not present in their effluent *in lieu* of monitoring. The California Ocean Plan does not currently contain language for determining which Table B pollutants should be translated into numeric effluent limits.

III. Issue Description

A. Regulatory Background

1. California Ocean Plan

Table B of the 2001 California Ocean Plan contains numeric water quality objectives for the protection of beneficial uses in receiving waters. These water quality objectives are used to derive effluent limitations in National Pollutant Discharge Elimination System (NPDES) permits.

The California Ocean Plan also contains Implementation Provisions in Chapter III for the management of wastes discharged to the ocean. The following paragraph (G2) appears on p. 21 of the California Ocean Plan (SWRCB 2001) under the Monitoring Program:

> Where the Regional Board is satisfied that any substance(s) of Table B will not significantly occur in a discharger's effluent, the Regional Board may elect not to require monitoring for such substance(s), provided the discharger submits periodic certification that such substance(s) is 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.

This language first appeared in the 1983 California Ocean Plan (SWRCB 1983a). The Final Environmental Impact Report (EIR) for the 1983 California Ocean Plan (Volume 1, Section II, p. 31-32) explained the rationale for the addition (SWRCB 1983b). Comments received in 1983 expressed the view that "there should be a mechanism in the Ocean Plan for reducing or removing limits and monitoring requirements when the discharger either does not discharge a substance or consistently meets Table B requirements." The EIR further explains that "allowing dischargers relief in these instances would reduce unnecessary monitoring

costs." This 1983 addition to the California Ocean Plan was expected to reduce monitoring requirements for such dischargers as marine aquaria or aquaculture operations and was "not expected to apply to municipal dischargers."

The underlying motive for this language, therefore, was to reduce monitoring costs when discharges have a high likelihood of being free of Table B pollutants. The language was not intended to allow the removal of effluent limitations. The original comments were valid in that the California Ocean Plan, then as now, does not contain guidance for determining which Table B pollutants should be translated into numeric effluent limits.

A literal reading of the 2001 California Ocean Plan would lead one to believe that effluent limitations are required for all Table B pollutants. Indeed, many existing ocean discharge permits routinely contain effluent limits for *every* pollutant listed in Table B. For example, p. 12 of the 2001 California Ocean Plan reads as follows (emphasis added):

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

$$C_e = C_o + D_m (C_o - C_s) \qquad \text{(Equation 1)}$$

where C_e = the effluent concentration limitation in μg/L,
C_o = the concentration in μg/L to be met at the completion of initial dilution (*i.e.*, the Table B Water Quality Objective),
C_s = the background seawater concentration in μg/L [from the Ocean Plan Table C],
D_m = minimum probable initial dilution expressed as parts seawater per part wastewater.

Equation 1 was derived by consideration of mass balance relationships.

The periodic discharger certification effectively replaces actual analytical monitoring. Appendix III of the California Ocean Plan, however, requires periodic monitoring of Table B pollutants, the monitoring frequency being based on the discharger's flow rate.

The net effect of using the 1983 "relaxation of monitoring" language is the possibility of having effluent limitations in ocean discharge permits without adequately monitoring for the regulated pollutant. The G2 certification language prevents the determination of compliance with effluent limitations as required by the California Ocean Plan (Section III, C7 and Section III G1) and Federal NPDES regulations (40 CFR 122.44 (i)(1)).

Lastly, the G2 certification language precludes the determination of compliance with Table B water quality objectives through sampling of the waste field as required by the California Ocean Plan (Section II, A3). The G2 certification language and the resulting lack of monitoring data makes it difficult to assess the attainability of revised Table B water quality objectives. For example, during the 2001 revision of the California Ocean Plan, two out of

seven randomly selected NPDES facilities did have monitoring data for 12 pollutants which staff had recalculated water quality objectives, even though these two facilities were previously given effluent limitations for the 12 pollutants (SAIC 1999).

The California Ocean Plan would be amended by deleting the 1983 language.

2. NPDES Federal Regulations

In contrast, NPDES Federal Regulations provide procedures for permitting authorities to determine when water quality-based effluent limitations are needed [40 Code of Federal Regulations (CFR) 122.44 (d)(1)(ii)]:

> When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of effluent in the receiving water.

Note that water quality *criteria* in federal regulations are equivalent to water quality *objectives* in the California Ocean Plan. In addition, 40 CFR 122.44 (d)(1)(iii) reads (emphasis added):

> When the permitting authority determines, using the procedures in paragraph (d)(1)(ii) of this section, that a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a State numeric criteria within a State water quality standard for an individual pollutant, **the permit must contain effluent limits for that pollutant**.

Because effluent limitations are developed for those pollutants actually exceeding or having a "reasonable potential" to exceed or contribute to an exceedance of a water quality criterion, the net effect of a reasonable potential analysis (RPA) may be a reduction in the number of effluent limitations incorporated into a permit.

The U.S. Environmental Protection Agency's (USEPA) promulgation of the 40 CFR 122.44 reasonable potential language was in the June 2, 1989 Federal Register (pp. 23868-23899). USEPA recognized that the permitting authority would routinely need to provide a basis for concluding that a discharge has the reasonable potential to cause excursions above a water quality criterion: Page 23873 of the June 2, 1989 Federal Register reads as follows:

> Some commenters suggested that all discharges would be required to have limits under this language. EPA does not expect this will be the case. However, EPA expects that with few exceptions, all major POTWs and major industrial discharges will need to be evaluated to determine whether they have a

> reasonable potential to cause excursions. Before requiring a water quality-based effluent limit, the permitting authority must have a basis for finding that discharges have the reasonable potential to cause excursions above the water quality criteria. When EPA is the permitting authority, the Technical Support Document will normally provide the basis for such a finding.

The NPDES discharger, however, is responsible for attaining, monitoring, and maintaining compliance with those effluent limitations in the NPDES permit. Under California Water Code (CWC) section 13383, dischargers are required to sample effluents and make monitoring reports to determine, in part, any violations of effluent limitations or to assist in the development of effluent limitations. (See also 40 CFR 122.44(i) and 122.48)

In summary, NPDES Federal Regulations require that NPDES permits contain water quality-based effluent limitations for those pollutants that cause, or may cause or contribute to, an excursion of State water quality criteria. Accordingly, effluent monitoring is required to ensure compliance with those effluent limitations given.

3. California Water Code

A recent amendment to the CWC includes reasonable potential language, but this language applies specifically to publicly owned treatment works (POTW). CWC Section 13263.6 (a) reads as follows:

> §13263.6 Effluent limitations
>
> (a) The regional board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) indicate as discharged into the POTW, for which the state board or the regional board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective.

This language is similar in effect to 40 CFR 122.44 (d)(1)(iii) and reinforces the need to add similar language to the California Ocean Plan.

B. Statistical Procedures to Determine the Need for an Effluent Limitation

Various procedures are used to assist NPDES permit writers when deciding whether a water quality-based effluent limitation is needed. Conceptually, this is a yes-or-no dichotomous decision. Statistical methods of data analysis are often employed in order to produce a scientifically defensible decision. All statistical procedures, however, require representative effluent samples and an examination of the assumptions underlying the statistical model

employed. Presented below are procedures that are currently being used, or could be used, to determine the need for an effluent limitation.

1. USEPA's Technical Support Document (TSD) Reasonable Potential Procedure

In 1991, the USEPA published the *Technical Support Document for Water Quality-based Toxics Control* (USEPA 1991). This document, abbreviated as TSD, contains guidance for characterizing an effluent discharge and for conducting a RPA (TSD, Chapter 3, Effluent Characterization). The USEPA developed this statistical approach to characterize effluent variability and reduce uncertainty when deciding whether to require an effluent limit:

> EPA recommends finding that a permittee has "reasonable potential" to exceed a receiving water quality standard if it cannot be demonstrated with a high confidence level that the upper bound of the lognormal distribution of effluent concentrations is below the receiving water criteria at specified low-flow conditions (TSD Box 3-2, p.53).

The TSD procedure estimates an upper one-sided confidence bound for an upper percentile of the pollutant distribution under a lognormal distribution assumption.

The TSD procedure multiplies an order statistic $X_{(n)}$, the maximum observed sample value, by a reasonable potential multiplying factor k. The USEPA derived these multiplying factors by consideration, initially, of non-parametric tolerance interval theory (Murphy 1948), then subsequently applying the non-parametric theory to a parametric lognormal model (Aitchison and Brown 1957). The TSD procedure, thus, produces a semi-parametric one-sided upper c100 percent confidence bound for the p100th percentile:

$$\mathrm{TSD}_{(c,\,p)} = X_{(n)}\ k_{(c,\,p,\,n,\,\sigma\mathrm{L})},$$

where $X_{(n)}$ is the observed sample maximum and $k_{(c,\,p,\,n,\,\sigma\mathrm{L})}$ is the reasonable potential multiplying factor for the 100pth percentile calculated with c100 percent confidence for n samples randomly drawn from a lognormal distribution with shape parameter σ_L.

The USEPA reasonable potential multiplying factors are calculated using the following equation:

$$k_{(c,\,p,\,n,\,\sigma\mathrm{L})} = \exp(\sigma_L \left\{\Phi^{-1}[p] - \Phi^{-1}\left[(1-c)^{1/n}\right]\right\}),$$

Where, σ_L is the lognormal distribution shape parameter, $\Phi^{-1}[\ ]$ indicates the Z-score obtained from a percentile of the standard normal distribution (for example, $\Phi^{-1}[0.95]$ = 1.645), and n is the sample size. The quantity $f_n = \left\{\Phi^{-1}[0.95] - \Phi^{-1}\left[(1-0.95)^{1/n}\right]\right\}$ is less than zero for $n > 59$ and is tabulated in Table 1 for $1 \leq n \leq 35$.

A "method of moments" estimate of the shape parameter σ_L is obtained by using the sample standard deviation divided by the sample arithmetic mean to find the sample coefficient of variation *CV* and applying the following equation (Aitchison and Brown 1957):

$$\sigma_L = \sqrt{\ln\left(CV^2 + 1\right)}.$$

The TSD procedure does not require a minimum sample size, but for small data sets ($n \leq 9$) the USEPA advises to use a default *CV* value of 0.6 which corresponds to $\sigma_L = 0.5545$. This allows upper bound estimates with as little as one effluent measurement!

Two tables of Reasonable Potential Multiplying Factors are given in the TSD: the 99 percent confidence level with 99 percent probability basis and the 95 percent confidence level with 95 percent probability basis. For example $k_{(.95, .95, 10, 0.5545)} = 1.7$. The guidance allows for other probability basis percentiles to be selected by regulatory agencies but is silent on other acceptable upper confidence levels.

If the discharger is allowed a mixing zone, then the upper bound effluent concentration is adjusted to the upper bound concentration expected at the edge of the mixing zone after complete mixing. Solving the mass balance Equation 1 for C_o produces an estimate of the effluent concentration after mixing. An effluent limitation is required if the upper bound concentration, upon complete mixing, is greater than the water quality objective.

An example of effluent limitations established using the TSD reasonable potential procedure is the 1996 City of San Francisco Westside wastewater treatment plant NPDES permit (City and County of San Francisco 1996).

2. <u>USEPA's Great Lakes Reasonable Potential Procedure</u>

In 1995, the USEPA promulgated the Final Water Quality Guidance for the Great Lakes System (GLS) in the Federal Register (USEPA 1995). This guidance was added to the Code of Federal Regulations at 40 CFR Part 132. The GLS reasonable potential procedure, Procedure 5, is found in Appendix F of the GLS and is very similar to the reasonable potential procedures found in the TSD. The *projected effluent quality* is specified as...

> the 95 percent confidence level of the 95th percentile based on a lognormal distribution <u>or</u> the maximum observed effluent concentration, whichever is greater.

Alternatively, the permit writer may define the *projected effluent quality* as...

> the 95th percentile of the distribution of the projected population of daily [weekly or monthly] values of the facility-specific effluent monitoring data projected using a scientifically defensible statistical method that accounts for and captures the long-term daily [weekly or monthly] variability of the effluent quality, accounts for limitations associated with sparse data sets and, unless otherwise shown by the

effluent data set, assumes a lognormal distribution of the facility-specific effluent data.

The GLS also requires the calculation of a *preliminary effluent limitation*, which incorporates the water quality criterion, effluent dilution, and background pollutant concentrations. Mixing zones for bioaccumulative chemicals are not allowed for some GLS dischargers.

A water quality-based effluent limitation is required if the *projected effluent quality* exceeds the *preliminary effluent limitation*.

3. Ohio's Reasonable Potential Procedure

The alternative GLS reasonable potential definition above allows Great Lakes States more flexibility when determining the need for effluent limits. For example, the State of Ohio has recommended comparing the *projected effluent quality* with 75 percent of the *preliminary effluent limitation*. This revised definition results in a reasonable potential procedure that is more protective than the GLS and was thought to provide a necessary buffer against inaccurate reasonable potential determinations (Ohio 1996).

4. Colorado's Reasonable Potential Procedure

The State of Colorado recently issued guidance for determining reasonable potential (Colorado 2003). Colorado's procedure is similar to the USEPA TSD procedure. The 99th percentile of the effluent distribution (calculated with 99 percent confidence) or the sample maximum, whichever is higher, is compared to the numeric water quality criterion.

At least ten effluent samples collected over a period of one year are required for reasonable potential assessments. Finally, the procedure provides guidance for estimating the effluent variability when some of the observations are below the analytical detection limit or suspected of being statistical outliers.

5. Procedures Using a Statistical Confidence Interval for a Distribution Percentile

In certain regulatory situations, a one-sided, upper confidence bound on an upper percentile is used to compare a set of environmental samples to a fixed regulatory standard (Gibbons and Coleman 2001, Chapter 19, *Corrective Action Monitoring*). When applied to a RPA, the null hypothesis is that the true upper percentile is greater than or equal to the water quality objective. We reject this null hypothesis if sufficient evidence is provided through the discharger's pollutant monitoring program; in other words, we reject the null hypothesis if the one-sided, upper confidence bound on the upper percentile is below the water quality objective. If we cannot reject this null hypothesis then we conclude that the pollutant discharge has the reasonable potential to exceed the water quality objective and an effluent limitation is required.

All of the above procedures are similar in that they use the maximum observed sample value and a reasonable potential multiplying factor *k*. Standard statistical methods, however, are

readily available to estimate the upper percentile of a statistical distribution with a given high level of confidence; statisticians call this a *tolerance interval* and the resulting estimate is called an *upper confidence bound*, UCB (Hahn and Meeker 1991; Gibbons and Coleman 2001). Upper confidence bounds can be calculated for data believed to come from a normal distribution, a lognormal distribution, or any distribution (*i.e.*, a distribution-free tolerance interval).

Parametric Normal Assumption

Hahn and Meeker (1991) tabulated parametric normal tolerance factors for the construction of an Upper Confidence Bound for a population percentile when the data are Normally distributed:

$$UCBN_{(c,p)} = M + S\ g'_{(c,p,n)},$$

where, M is the sample mean, S is the sample standard deviation and g' is the normal tolerance factor for the one-sided upper *c*100 percent confidence bound of the *p*100th percentile for a sample of size *n*. Table 2 lists 95 percent tolerance factors obtained from Hahn and Meeker (1991, Table 12d, p.315) for the 95th percentile.

This statistical confidence interval for percentiles accounts for long-term variability; highly variable data produce a larger upper confidence bound. In addition, this method produces larger confidence bounds when increased uncertainty is present due to small sample sizes (sparse data sets). As the sample size increases the upper confidence bound decreases and ultimately converges on the true population percentile.

Parametric Lognormal Assumption

The same normal tolerance factors can be applied to lognormal distributions by a logarithmic transformation of the effluent data. Ott (1990) demonstrated that lognormal distributions of concentrations of environmental pollutants can arise naturally from certain physical processes, especially after a series of independent random dilutions. Along these lines, USEPA suggests that "a lognormal distribution is generally more appropriate as a default statistical model than the normal distribution" (USEPA 1992, p.2).

The Upper Confidence Bound for a population percentile when the data are Lognormally distributed (Gibbons and Coleman 2001, p.244) is obtained from the following equation:

$$UCBL_{(c,p)} = \exp(M_L + S_L\ g'_{(c,p,n)}),$$

where, M_L and S_L are the mean and standard deviation of the natural logarithm transformed data, respectively (i.e., maximum likelihood estimates), and g' is the normal tolerance factor for the one-sided upper *c*100 percent confidence bound of the *p*100th percentile for a sample of size *n* (Table 2).

A minimum sample size of two is required to construct confidence intervals on a percentile of a normal or lognormal distribution.

Nonparametric Tolerance Interval Procedure

In situations where no assumption can be made about the effluent distribution, non-parametric methods are available to construct confidence intervals on the upper percentile of any continuous statistical distribution (Hahn and Meeker 1991, Sec. 5.3.3). These non-parametric estimates of a percentile are based on the larger observed values (i.e., order statistics) in the data set and generally require a large number of observations when estimating extreme percentiles with high confidence levels. For example, at least 59 samples are required in order to construct the upper 95 percent confidence bound on the 95th percentile of a distribution. This non-parametric test, based on the binomial probability distribution, is considered a *fixed alpha test* because the alpha error, although varying with sample size, is always at or below the nominal desired value of 5%. Some texts call this a *Quantile* test or, when testing the 50th percentile, a Sign Test.

Alpha errors, in this context, are defined as the probability of incorrectly rejecting the null hypothesis, thereby failing to conclude that a reasonable potential exists. In contrast, beta errors are committed when the regulatory authority fails to reject a false null hypothesis, thereby concluding that a reasonable potential exists when this conclusion is unwarranted. Both alpha and beta errors are undesirable, but a fixed alpha test only controls the alpha error rate.

6. <u>Nonparametric Procedure with Decision Error Balancing</u>

A non-parametric binomial distribution approach that seeks a balance between alpha and beta statistical decision making errors is possible (Lehmann 1958; Mapstone 1995; Saiz 2004a). This approach was applied in the recent State Water Resources Control Board (State Water Board) policy for CWA Section 303(d) listing (SWRCB 2004c) and uses a simple count of the number of exceedances of the water quality objective in a random sample of sufficient size. The statistical error probabilities associated with the regulatory decision to remove a water segment from the Section 303(d) list for toxicants is directly analogous to a reasonable potential decision.

If the tested null hypothesis is that the actual exceedance proportion is greater than or equal to 18 percent and the alternative hypothesis is that the actual exceedance proportion is less than 3 percent, then at least 16 samples are required to keep both alpha and beta decision errors below 20 percent. This alternative hypothesis includes a 15 percent effect size. Beta errors are measured when the true exceedance rate is below 3 percent. The absolute difference between alpha and beta error rates $|\alpha - \beta|$ is minimized while $\alpha \leq 0.2$ and $\beta \leq 0.2$, where α = Excel® Function BINOMDIST(k, n, 0.18, TRUE), β = Excel® Function BINOMDIST(n-k-1, n, 1-0.03), TRUE) and k = the number of exceedances required to reject the null hypothesis.

This non-parametric balanced error approach allows a reasonable potential decision to be made without calculating summary statistics and without assuming a particular parametric distribution: any effluent sample of 16 or more observations having one or more exceedance of the water quality objective is sufficient evidence to demonstrate a reasonable potential (with at least 80 percent confidence) to cause an excursion of the water quality standard. Similarly, a sample of 16 or more observations having no exceedances of the water quality objective is sufficient evidence to demonstrate (with at least 80 percent confidence) that no reasonable potential exists to cause an excursion of the standard.

For sample sizes below 16, no definitive reasonable potential decision can be made using this approach because the confidence level is below 80 percent. However, any exceedance of a water quality objective, regardless of sample size, can be a basis to determine that the discharge causes or contributes to an excursion of the water quality standard.

7. Censored Data Statistical Considerations

Any reasonable potential assessment (RPA) will be complicated by the presence of monitoring data below the analytical detection or quantification limit. Gibbons and Coleman (2001, Chapter 13) presented an extensive review of statistical techniques useful for analyzing environmental data that include results not completely quantified. Such data are *censored* by a limit of detection or by a limit of quantification, or both, usually on the left tail of the population distribution.

Sample results below the limit of detection (*i.e.*, the USEPA Method Detection Limit) are *non-detects* (ND). Monitoring samples at or above the limit of detection but below the limit of quantification (i.e., the California Ocean Plan Minimum Level) are *detected but not quantified* (DNQ). Various combinations of data types (NDs, DNQs, or quantified) are theoretically possible depending on the effluent distribution, the limit of detection, and the limit of quantification.

Gibbons and Coleman (2001) suggest applying Cohen's Maximum Likelihood Estimator, MLE (Cohen 1961) for censored data sets. Cohen's MLE technique adjusts the uncensored sample mean and uncensored sample standard deviation by a factor derived from the proportion of NDs below a single censoring point. Cohen (1961) provided a lookup table for the appropriate factor. Cohen's MLE "appears to work best for small normally distributed samples, and lognormal versions of the estimator can be obtained simply by taking natural logarithms of the data and censoring point" (Gibbons and Coleman 2001). Cohen's MLE is also recommended by the USEPA when 15 - 50 percent of the samples are censored (USEPA 1992; USEPA 1998). Use of Cohen's MLE requires at least two quantified sample measurements (Gibbons and Coleman 2001, Sec 13.4). Modern statistical software allows accurate MLE for censored data without the use of a lookup table and can account for multiple censoring points (Helsel 2005).

The TSD presented a *delta lognormal* technique to account for effluent data censored by a single detection limit (USEPA 1991, Appendix E). Hinton (1993) concluded, however, that

this technique vastly overestimates the mean compared to Cohen's MLE technique, especially when censoring is >60 percent.

Recent water quality data simulations by Shumway *et al*. (2002) indicate that the *Regression on Order Statistics* technique (ROS) of Helsel and Gilliom (1986) is robust, unbiased, and has a smaller variance than the MLE technique under the lognormal distribution.

The majority of censored data statistical techniques assume that only one detection limit or censoring level is present in the data; however, effluent data often contain several analytical detection limit thresholds within the same data set. A refinement of the ROS technique is available for water quality data having multiple detection limits or censoring levels (Helsel and Cohn 1988). This robust ROS method is the recommended technique of choice for estimating summary statistics for censored environmental data, especially for smaller sample sizes ($n < 50$) with more than 50 percent censoring (Helsel 2005). The robust ROS technique is most reliably used with at least three measured (uncensored) data values and no more than 80 percent censoring (D. Helsel, personal communication to S. Saiz, email of 10/11/04.)

With highly censored data (>80 percent censored) or completely (100 percent) censored data, a non-parametric binomial distribution statistical method can often still be used to compare a data set of sufficient size to a water quality criterion. Each observation in the data set is individually compared to the criterion. Any quantified value greater than the criterion counts as an exceedance. ND results are not counted as an exceedance when the limit of detection is at or below the water quality criterion. If the limit of detection is above the water quality criterion then the sample is considered to be tie, neither exceeding nor not exceeding the criterion. The usual recommendation in non-parametric statistical tests is to ignore ties and reduce the sample size accordingly (Gibbons 1976, p108).

In a similar manner, DNQ results are not counted as an exceedance when the limit of quantification (i.e., the Minimum Level) is at or below the water quality criterion. DNQ results having a limit of quantification greater than the criterion and a limit of detection at or below the criterion is considered to be a tie. DNQ results having both the limit of detection and the limit of quantification above the criterion should be considered a tie, since DNQ values are not quantified with an acceptable amount of precision. If the sample size is reduced, because of extensive ties, to less than 16 samples, then no definitive reasonable potential decision can be made using this approach because the confidence level is below 80% (*i.e*., an inconclusive RP analysis, see Section 6 above).

8. <u>Comparison of Reasonable Potential Procedures</u>

State Water Board staff developed a set of criteria for comparing reasonable potential procedures by adopting essential elements from the NPDES Federal Regulations and desirable elements from other State's reasonable potential procedures. Table 3 compares the TSD procedure with the lognormal tolerance bound procedure in relation to these desirable criteria.

In addition, State Water Board staff examined empirical alpha and beta statistical error rates achieved through several simulations (Saiz 2004b). Uncensored effluent data was simulated from lognormal distributions and other probability distributions in order to compare the decision error rates associated with the TSD procedure and the UCBL procedure. When the lognormal distribution assumption is correct, the UCBL procedure effectively controlled the alpha error rate at or below 5.3 percent for sample sizes between five and 120. In contrast, the TSD procedure produced alpha error rates as high as 20 percent, especially when $n \leq 30$. In addition, the UCBL procedure is robust to misspecifications of the lognormal distribution, since the alpha level remains less than 5 percent when random sampling from gamma or truncated normal distributions. In contrast, the alpha error rate associated with the TSD procedure increases rapidly above 5 percent when 60 or more samples are obtained from a gamma or truncated normal distribution.

C. Determining the Need for an Effluent Limitation with Insufficient Monitoring Data

A scientifically defensible, statistically based, reasonable potential procedure allows an objective characterization of effluent discharges and is to be preferred. A statistical analysis of actual facility-specific monitoring data will lead to a more objective reasonable potential decision. In most cases, a minimum of two quantified samples above the limit of quantification are required to use these statistical methods.

If facility-specific monitoring data are insufficient to use the statistical procedures, then permit writers must use professional judgments similar to situations where effluent monitoring data are lacking, that is, a non-statistically-based reasonable potential decision. These situations include facilities having no effluent data or a single effluent sample or a highly censored effluent data set having two or less quantified samples, thereby precluding the use of censored data statistical techniques.

In the absence of facility-specific monitoring data or if insufficient facility-specific monitoring data exists to use statistical procedures, the permit writer must provide adequate justification for any effluent limits included in the permit. The TSD lists several factors to consider in addition to effluent monitoring data when determining whether a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a State water quality criterion. These factors include facility dilution, type of industry or publicly-owned treatment works (POTW), other existing data (including the NPDES application), history of compliance, and type of receiving water.

If the permit writer is unable to decide whether the discharge would exceed the water quality criterion (*i.e.*, an inconclusive RPA), the TSD recommends that whole effluent toxicity testing or additional chemical-specific testing be added as a permit condition. This includes 100 percent censored data sets when all limits of detection or quantification are greater than the water quality criterion. Furthermore, an inconclusive RPA should serve as a basis to conservatively retain an existing effluent limitation for a pollutant, if present, during a permit renewal. In this situation, the history of compliance for the facility does not definitively demonstrate that the discharge has no reasonable potential cause an excursion of the water quality criterion.

IV. Peer Reviewer Comments

The University of California selected two external peer reviewers for this proposal, Dr. Kenneth H. Reckhow (along with Dr. Song Qian) at Duke University and Dr. George Sugihara at Scripps Institution of Oceanography. The proposal submitted for their review was the modified proposal presented in the draft FFED and not the original proposal presented in the DFED. Generally, the reviewers agree with the proposed statistical methods for determining reasonable potential, although they have concerns about the nonparametric binomial approach for comparing severely truncated or sparse data sets with a regulatory standard. Dr. Sugihara stated: "…I believe these methods, as they stand as narrowly defined statistical questions, are scientifically sound and reasonably represent the state of the art. I believe the composite method proposed here by the Ocean Unit staff is superior to the existing EPA water quality protocol (the TSD procedure). I would encourage that these methods be adopted promptly."

Specific comments of the reviewers are presented below, along with staff's responses. Minor changes to the amendment have been made based on these comments, where noted in the responses.

<u>Responses to scientific peer review comments of Dr. Kenneth H. Reckhow and Dr. Song Qian, Duke University</u>

Comment 1: The proposed method has the tendency to overestimate the potential risk.

Response: The proposed California Ocean Plan methodology is not intended to be a point estimate of the true 95th percentile for the underlying lognormal distribution. Rather, the methodology is designed to give the upper confidence bound for the true 95th percentile of the population. Since in practice, we can never know the value of the true 95th percentile, the confidence interval approach allows us to place an upper bound on the true, but unknown, percentile. Because of this, the estimated concentration bound tends to be higher than the true 95th percentile. This is not a weakness, but rather, an inherent property of the statistical tolerance bound methodology. Moreover, the Type I decision error rates associated with the methodology are arguably of more importance than the actual estimated concentration.

Comment 2: We performed a Monte Carlo simulation to illustrate this weakness of the proposed method. We randomly drew concentration samples of size n = (5, 10, 20, 50, 120) from a lognormal distribution with log mean 0 and log standard deviation 1. For each set of samples, we estimated the upper confidence bound equation for a lognormal distribution using the proposed UCBL methodology. This process was repeated 150,000 times, and we calculated the frequency of the estimated 95th-percentile exceeding 2 (and 3) times the true 95th-percentile, along with the mean and median of the estimated 95th-percentile (Table 3). For the usual sample sizes (≤ 20), the chance of substantially overestimating (estimated 95th-percentile exceeding 3 times the true value) is not small.

Response: The magnitude of the overshoots and gross overshoots in Table 3 are heavily dependent on the skew of the lognormal distribution used in the Monte Carlo simulation; less skewed distributions would show smaller overshoots. More importantly, the last column in Table 1, Pr[$\hat{C}_{95} < C_{95}$], demonstrates the ability of the proposed California Ocean Plan procedure to maintain the

Type I error (i.e., alpha error) at the nominal level of 5 percent. The last column of Table 3 is an estimate of the empirical Type I error rates associated with the California Ocean Plan methodology.

As an illustration, staff replicated the simulations in Table 3 using a lognormal distribution with less skew, having a log standard deviation of 0.5 (instead of 1.0). The log mean remained at 0, and 10,000 iterations were simulated (Table 3A). As expected, the overshoots and gross overshoots of the true 95th percentile are lower for all sample sizes, and this is simply because the samples came from a less skewed lognormal distribution. Again, the proposed California Ocean Plan procedure maintained the Type I error rate at a level very close to the nominal level of 5 percent.

Curiously, the proposed California Ocean Plan parametric RPA procedure, based on lognormal tolerance intervals, is exactly the same procedure derived and recommended as an alternative to the USEPA TSD reasonable potential methodology by Dr. Wolpert of Duke University (Wolpert 2002).

Comment 3: Because the proposed method is based on an assumed lognormal distribution for individual concentration measurements, it will give misleading results if this assumption fails.

Response: Staff used computer simulations to test the proposed reasonable potential methodology to mis-specifications of the lognormal distribution. As discussed in Section III(B)(8) above, the UCBL procedure is conservatively robust to mis-specifications of the lognormal distribution since the Type I error rate remained less than 5 percent when sampling from other positively skewed (gamma or truncated normal) distributions.

Comment 4: The lognormal distribution assumption could fail, for example, if there is a small chance of a data entry mistake. The proposed method will be applied to data sets with small sample sizes, so the method's robustness can be an issue. The log-scale sample standard deviation used is relatively robust, but the log-scale sample mean is not. One may consider using the sample median, instead of the sample mean.

Response: Any statistical methodology used must assume the data analyzed is accurate and entered correctly. We should not develop a procedure that anticipates and corrects for data entry mistakes.

Comment 5: On average, the proposed method yields much higher than a 95th-percentile for concentration measurements, closer to a 97th or 99th-percentile -- at the high cost of substantially overstating the concentrations. Less extreme bounds would still meet the conservative concern of ensuring that the "projected maximum concentration" would be at an acceptable level, without unnecessary overestimates. For example, the estimated 98th-percentile $\hat{C}_{98} = \exp(\hat{\mu} + 2.054\hat{\sigma})$ gives more than a 95th-percentile on average for sample sizes over 10. A Monte Carlo simulation (150,000 iterations) provided average percentiles when estimating the 96, 97, 98, 99, and 99.5 percentiles assuming the log concentration follows a normal distribution and using the sample mean and sample standard deviation as known (Table 4). According to these simulation results, we may be able to find these less extreme bounds for selected sample sizes. For example, under our simulation, we can use the rough estimator to estimate the 96th-percentile and ensure coverage of at least 95.5% when the sample size is above 50.

Our simulation also indicated that alternative methods, with the same level of protection and without substantially overestimating the potential risk, are available.

Response: The proposed alternative simple method would require a unique log standard deviation multiplier for each sample size. This multiplier is simply the z-score obtained from the cumulative standard normal distribution, Φ (p), for the recommended percentile, p. Based on the results present in Table 4, estimating the true 95th population percentile could be achieved by a point estimate of the 99, 98, 97, 96, and 96th percentiles for sample sizes of 5, 10, 20, 50, and 120, respectively. Staff replicated the simulation results presented in Table 4 while additionally keeping track of the associated Type I errors (Table 4A). The proposed alternative simple method is about equivalent to a one sided, upper 75% confidence bound on a lognormal 95th percentile distribution. As such, the proposed multipliers compare favorably with one-sided, 75% tolerance factors to contain 95% of a normal distribution g'(0.75, 0.95, n) obtained from Table I of Leiberman (1958).

These multipliers and the alternative simple method are not appropriate because the intent of the California Ocean Plan procedure is to obtain a Type I error level of 5 percent or less when using a parametric test, whereas the simple alternative would increase the Type I error to around 25 percent.

Comment 6: Our simulation indicated that the proposed method is adequate in that it ensures the estimated 95th-percentile is rarely below (less than 5% of the time) the true 95th-percentile of the underlying concentration distribution.

Response: Comment noted.

Comment 7: The second method is the regression on order statistics (ROS) approach for estimating the mean and variance of the underlying distribution when there are censored values. The ROS method for censored data is well documented. It has been shown that the ROS method is robust against the departure from the log-normality assumption. For a small sample size, the ROS method is less flexible when there are ties in the uncensored data, yet the California Ocean Plan proposes to reduce the sample size when there are ties in the data. This is a weakness in the approach.

Response: The California Ocean Plan procedure will reduce the sample size for ties only when using the non-parametric reasonable potential analysis, i.e., when severe censoring precludes the estimation of summary statistics using the ROS technique.

Comment 8: In addition, it is our understanding that the ROS method is less efficient than the traditional MLE when the underlying distribution is known to be lognormal, especially when there are multiple detection limits. In practice, uncertainty associated with the ROS estimates is rarely discussed in literature (and not in the California Ocean plan). If the estimated lognormal mean and variance are to be used for estimating the 95% upper bound of the 95th-percentile, it is difficult to claim that the estimated upper bound will be 95% confident to be larger than the true 95th-percentile.

Response: Section III(B)(7) above, cited the recent work by Shumway, et al. (2002) which concludes that the ROS technique is robust, unbiased and has smaller variance as compared to the MLE technique under the lognormal distribution. The California Ocean Plan proposal adhered to the recommendations in the recent book "Nondetects and Data Analysis" by Dr. Helsel (Helsel

2005). For data with 50-80 percent censoring, the robust ROS technique is the recommended data analysis method for sample sizes under 50. In contrast, the MLE technique is recommended only with sample sizes greater than 50.

Comment 9: The third statistical method is hypothesis testing. The test is poorly presented and may be mischaracterized. For example, the California Ocean Plan suggests that the null hypothesis of the test is the exceedance rate being larger than 18% and the alternative is the exceedance rate being less than 3%. This is a misrepresentation of the test. The alternative hypothesis should be that the exceedance rate is less than 18%. The value 3% represents an effect size of 15%, that is, the test will have a small type II error rate (< 20%) when the true exceedance rate is below 3%.

Response: The reviewer is correct that an effect size of 15% was used when calculating the Type II errors. A detailed explanation of the error balancing approach developed by staff was cited in Section III(B)(6) above: SWRCB 2004c and Saiz 2004a. This approach received much review and acclaim during the development of the CWA 303(d) listing policy by Dr. Gary Lorden, Professor of Mathematical Statistics at CalTech University. Section III(B)(6) has be expanded to include a discussion of the effect size used to develop the sampling plan.

Comment 10: The objective of this arrangement is the balance of the type I and type II error rates. A traditional hypothesis test will only ensure a small type I error rate, and the type II error rate is usually associated with the sample size and the unknown true exceedance rate. It is important that the concept of effect size be interpreted correctly. The current presentation would mislead people to believe that the proposed test procedure will keep both the type I and type II errors in check. This can be only conditionally true, and the condition is not spelled out explicitly. When we fail to reject the null hypothesis, we conclude only that the exceedance rate is most likely to be larger than 18%. The type II error (failure to reject the null when the null is wrong) rate will not be reduced to the claimed 20% unless the true exceedance rate is below 3%. The type II error rate will be larger when the true exceeding rate is between 3 and 18%.

Response: Staff agree with all of these statements. These details were explicitly developed in the cited documents, Saiz 2004a and SWRCB 2004c.

Comment 11: The small type II error rate is almost meaningless because the odds of having a higher than 20% type II error rate is 5 to 1.

Response: Staff do not understand this statement.

Comment 12: The high exceedance rate of the null (18%) is not explained at all. We suspect that the number is used such that a reasonable type I and type II error rate can be used for a small sample size of 16.

Response: The default null exceedance rate of 18 % or greater is a policy decision selected to be used along with the 15% effect size, also a policy decision. When these policy rates are used in the algorithm shown in Section III(B)(6) above, which minimizes the absolute difference between alpha and beta error rates, we obtain the plot of error rates as a function of sample size (Figure 1). The

critical sample size of 16 was read off this plot as the smallest sample size that will simultaneously keep both alpha and beta errors below 20%.

Comment 13: Curiously, the hypothesis testing approach is designed for data with large (> 80%) censorship. It is unclear why a binary transformation is particularly useful for this situation. For effluent from a given facility, it is likely that the same lab is used for analyzing all samples. Therefore, it is likely that there will be only one detection limit. If the detection limit is above the water quality criterion, it is impossible to carry out the binary transformation. If the detection limit is below the water quality criterion, given the data set has at least 80% censored values, it is almost impossible not to reject the null hypothesis. It will be helpful if an example can be presented to illustrate a typical situation where such hypothesis testing is useful.

Response: Data censoring greater than 80% or data with less than three detected values precludes the use of most parametric censored data analysis methods. Staff examined real effluent data from dischargers. This data indicated that detection and quantitation levels cannot be assumed to be constant over time. For example, five consecutive monthly lead measurements in a California ocean discharge effluent were <1, <1, 1.4, <5, 2.8 ug/L, respectively. Using the non-parametric approach, we make separate comparisons of each of the reported values with the California Ocean Plan water quality objective of 2 ug/L. This results in three non-exceedances, one tie, and one exceedance. In this example, the single exceedance is evidence to show an excursion of the water quality objective.

Comment 14: When evaluated separately, the first two methods are reasonable and well presented. The third method (nonparametric binomial approach) is, however, questionable. We feel that the document did not present the connection between the third method and the other two methods. A flow chart would be helpful.

Response: A flow chart is part of the proposed amendment of the California Ocean Plan as Appendix VI.

Comment 15: Because the Plan limits water quality assessment to effluent from a particular facility, the effectiveness of any assessment will often be limited by small sample size and high censorship. The state should consider developing a metadata set to pool information from similar facilities. Pooling information can provide a better estimate of the between and within facility variances for better quantifying the reasonable potential. In addition, when evaluating facilities with few data points or high censorship, decisions can be made based on information from similar facilities with adequate information. We recommend a Bayesian hierarchical modeling approach similar to the model developed for USEPA's six-year drinking water regulatory review (Qian, et al. 2004, which also addresses the censored data problem). The Bayesian approach was shown to be more efficient than the system-by-system approach. Perhaps the most notable advantage of the Bayesian approach is its capability of better handling censored data.

Response: A reasonable potential analysis is intended to be a facility-specific assessment. Although the pooling of data from similar facilities may be a better way to estimate summary statistics, pooling of data is not appropriate for an NPDES permit-based reasonable potential assessment. Barring general permits, only individual dischargers will be subject to an NPDES permit. The proposed California Ocean Plan procedure uses facility-specific data and avoids

estimating summary statistics when dealing with small data sets having many censored data values. Staff will investigate the merits of the recommended Bayesian approach.

Responses to scientific peer review comments of Dr. George Sugihara, Scripps Institution of Oceanograph

Comment 16: The UCBL method advocated here involves calculating an upper one-sided confidence bound for a completely unveiled distribution of values, as opposed to the TSD procedure which involves setting an acceptance threshold as a multiple (k) relative to a maximum observed value (X). Both methods involve the underlying assumption of lognormality, however it appears that TSD is inferior to UCBL in statistical power in that it depends critically on a single observed maximum value. The expected maximum value X in TSD obviously increases with sample size, and as a single value it will be less reliable as a sample statistic (in terms of higher variance in the estimates) in small sample sizes than UCBL (computes summary statistics). Indeed, in very small sample sizes TSD advises the use of a somewhat arbitrary recipe for computing the multiplicative TSD factor, k. I think UCBL is superior to TSB at all sample sizes.

Response: Comment noted.

Comment 17: In general, with moderately small sample sizes, TSD provides a less conservative estimate except when large outliers are detected. However, as I understand it, provided such extreme (fat-tailed) events are not measurement artifacts, they are probably important for the policy objectives, and should not be averaged out as in UCBL, but should probably be taken into account. This is apparently the rationale behind the GSL [Great Lakes States] protocol, and I am pleased to see that this was explicitly taken into account in the decision tree protocol of Figure VI-1.

Response: Comment noted. The comment reiterates the importance of Step 5 where a single detected effluent measurement above the water quality objective can trigger the need for an effluent limit.

Comment 18: It might be useful to have some specific guideline as to the precise sample sizes required to invoke specific procedures. General guidelines are given, and perhaps it is problematic (or even misleading) to be more precise.

Response: Staff did not include a minimum sample size in order to accommodate as many monitoring situations as possible. Staff recommends, however, that dischargers monitor their effluents more than three times and more than the minimum monitoring requirements specified in Appendix III of the California Ocean Plan, whenever possible. The lognormal upper confidence bound methodology is designed to hold the uncertainty level (i.e., the Type I statistical error) at or below 5% regardless of sample size. Our simulations (Saiz 2004b) using lognormal effluent data having a CV of 0.6 or less suggest that about 18 samples will protect against erroneous findings of reasonable potential (i.e., keep the Type II statistical error below 20%).

Other factors in the reasonable potential analysis will also affect the sufficiency of the sample size. For example, three actual nickel measurements {2.8, 3.0, 3.3 μg/L}from an ocean discharger having

a dilution ratio of 76:1 would be sufficient to demonstrate no reasonable potential to exceed the California Ocean Plan nickel objective of 5 μg/L, since the after mixing $UCBL_{(.95, .95)}$ is 0.074 μg/L.

Comment 19: I was pleased that the authors showed that the UCBL is robust to several different underlying distributions (all of which have the same skew). I think the ones chosen are adequate and appropriate given the generic property that the data are generally skewed and look lognormal, however it might be nice window dressing if these distributions represented extremes that imply generality in the way that Tukey has suggested (triangular, U-shaped and uniform). Again this is just a cosmetic suggestion, and I am happy with the current spectrum of distributions chosen to verify robustness as they are close to the ones that are observed.

Response: Comment noted.

Comment 20: This next comment is not intended as a fair criticism of UCBL. It goes beyond the current perspective of water quality standards, and should be thought of as grist for future research. The rationale for genesis of the observed lognormal distribution of effluent concentration values has to do with sequential dilutions. This appears similar in motivation to sequential breakage (Sugihara et. al. 2003. PNAS) with each dilution event effectively acting like a multiplier ($e_t < 1$) that is independent of effluent concentration at time t. It is the same rationale that Kolmogorff invoked to explain lognormality in particle size distributions resulting from sequential breakages. Such mechanisms suggest an interesting canonical coupling between the mean and variance of the resulting lognormal (Seigel and Sugihara 1982 J.Appl. Stat). This would mean that the variance in effluent concentration might be sensitive to distance from source or to the complexity of the cascade of dilution events. If this is true, then it seems likely that the interpretation given to 95% confidence limits or indeed any statistical procedure involving first and second moments might be modified to take this into account. Again, I see this as a second order problem that would be interesting to pursue as a future research project that may or may not change the UCBL procedure. UCBL is clearly better than anything else currently in place.

Response: Comment noted.

Comment 21: The use of Helsel and Cohn's (1988) robust regression on order statistics when data are not too severely truncated appears straightforward. I am pleased that Clifford Cohen's early work in Technometrica is getting attention in this problem (I have an stack of old computer cards from graduate school with his estimation algorithm written in Fortran!). I commend the authors for recognizing the importance of data truncation in estimating the parameters for the underlying distribution.

Response: Comment noted.

Comment 22: The problem of small sample sizes (especially with truncation) remains my major concern, however, I believe that the simple binomial test as described is a reasonable and technically sound thing to try. The bottom line however, is I would not place a bet on it. There is large unavoidable uncertainty in any statistics that one tries to do with small sample sizes. Thus, for example, although the statistical rationale is clear, from a policy objective point of view I remain

uncomfortable (e.g. with the 80%, n=16 recommendation). Granted, a more stringent recommendation might not be feasible. This is not a technical criticism so much as a logical one.

Response: Staff agree that decision making with small, possibly censored, data sets is difficult. In many cases this data condition will lead to Endpoint 3, which requires continued monitoring for the pollutant. The binomial test was included as a reasonable way to exit the "continued monitoring" loop. Although the requirement of sixteen definitive non-exceedances was based on probability theory, it is, in reality, a policy decision. Dischargers may choose to use this exit loop by lowering their analytical detection limits during monitoring.

Comment 23: Table 4 overstates its case in that it suggests that UCBL gives a (credible) estimate of effluent variability at ALL sample sizes (not n=1 at least).

Response: This overstatement has been corrected.

Comment 24: Seeing statistics as a tool for achieving more rationality in decisions, it seems that more attention should be focused on the protocol for data collection. I am sure you agree that conclusions from particular statistical procedures are only as powerful as the quality of the raw data to begin with. Insuring there is an accurate (low measurement error) sufficient (n-large) sample of some putative universe of values is key. In the case of highly censored data, if possible it would make sense to collect it in such a way that there is less truncation (e.g., closer to the source, or with a more sensitive assay). Statistical creations can amplify the meaningful signal in these data, but ultimately when the data are excessively meager or unreliable they might promise far more than they can deliver. Nevertheless, I would encourage rapid adoption of the methods proposed here, as a clear step in the right direction.

Response: Specific monitoring requirements are part of each NPDES permit and the protocol for data collection relies on the judgment of the permit writer. Staff agree that monitoring should use the most sensitive analytical methods necessary to demonstrate compliance with effluent limitations. The California Ocean Plan (Chapter III, Section C4a) provides direction for permit writers in the selection of appropriate minimum levels. Some of the points addressed in this comment will be explored in an upcoming, State Water Board sponsored, Ocean Discharge Monitoring Workshop. This meeting will be held in Sacramento at the Cal/EPA Building on May 5, 2005. (For more details see http://www.waterboards.ca.gov/plnspols/oplans/index.html).

V. Public Comment and State Water Board Staff Response

Comment 1: The proposed procedure for conducting the Reasonable Potential analysis with limited data should be deleted (Appendix VI, Steps 9-12, Sparse-data analysis). This includes monitoring data sets having one detected value or one detected value with one or more non-detected values. In these situations, continued monitoring is needed instead of effluent limits. (1, 2, 3, 7, 8, 9)

Response: Staff agrees that this section needs revision. In these limited data situations, a definitive reasonable potential decision is difficult to make unless a measured sample actually exceeds the water quality objective. Staff has revised the "sparse data" portion of the Appendix VI reasonable potential decision tree. The new steps in the decision tree include a procedure that does not assume

any particular parametric distribution or default CV for effluent data, i.e., a non-parametric RPA. When sample sizes are very small or highly censored by non-detects the only outcomes in the revised decision tree for a non-parametric RPA are continued monitoring (Endpoint 3) or no effluent limit (Endpoint 2).

Comment 2: The California Ocean Plan amendment does not specify to which dischargers the Reasonable Potential approach applies. The State Water Board should indicate that the reasonable potential analysis procedure does not apply to storm water and other forms of run off, as the State Water Board has consistently determined that it is not technically feasible to specify numeric effluent limits for such discharges. Numeric limits are also not applicable to wet weather flows from controlled combined sewer systems. (7, 9, 10)

Response: In response to this comment, staff has added the following sentence to the introductory paragraph of Appendix VI: "This appendix does not apply to permits that are based on best management practices (BMP) and contain no numeric effluent limitations." Combined sewer systems are already addressed in Section III.A.4 of the California Ocean Plan, which declares that combined sewer systems are subject to the USEPA's Combined Sewer Overflow Policy.

Comment 3: The California Ocean Plan should specify that California Ocean Plan criteria are to be evaluated using the appropriate averaging periods when conducting a Reasonable Potential analysis. (7)

Response: Staff agrees that effluent data should be converted to the averaging period specific to the water quality objective (*e.g.*, 30-d average concentration, six-month median concentration). However, sufficient data are frequently not available to do this. In these cases, the available data should be used to represent the averaging period. Staff have added “accounts for the averaging period of the water quality objective” in the introductory paragraph of the reasonable potential Appendix VI language.

Comment 4: The environmental impact analysis made unsupported conclusions as to the lack of impacts. However, there may be substantial indirect effects from the amendment. The FFED should address potential indirect effects. (7)

Response: The proposed amendment would establish a procedure for determining whether a discharge will have a reasonable potential of discharging Table B constituents. If a reasonable potential exists, then effluent limits will need to be established for the discharge. Staff has concluded that this new requirement will not have any adverse effects on the environment, neither directly nor indirectly. The proposal does not create nor change any water quality objectives and no physical modifications to the environment are required.

Comment 5: Effluent limits based on Table B of the California Ocean Plan apply to gross discharges, not net discharges. The California Ocean Plan has never contained provisions for this “gross, not net discharge” requirement. This issue must be addressed and modifications made to the Reasonable Potential procedure to account for the presence of intake pollutants. A Reasonable Potential determination should not be triggered where the pollutant exists in the discharge solely because of its presence in intake water. Effluent limits must be based on what the discharger adds to

the effluent. The State Water Board must determine how it will deal with ambient background concentrations, concentrations of legacy pollutants, ubiquitous pollutants, and naturally occurring constituents such as radioactivity. (1, 2)

Response: Staff does not agree that new provisions for the California Ocean Plan's definition of a waste discharge (*i.e*., gross, not net) must be addressed before the reasonable potential amendment can be added to the California Ocean Plan. Opening up the issue of Gross vs. Net is a major and *differen*t issue that could be addressed during a later Triennial Review.

The CWA requirement to protect and enhance water quality, however, is not conditioned on factors such as intake water quality, and it would be inappropriate for the California Ocean Plan to impose such a condition. Use of intake water as cooling water by an industrial facility and the subsequent discharge of that cooling water is an "addition" subject to CWA regulation. The simple fact that the pollutants were withdrawn by the facility so that they were no longer in waters of the United States means that the subsequent release of those pollutants into the receiving water is an addition of pollutants from the facility. Dischargers do not have a right to discharge intake water pollutants since the discharge of intake pollutants by a point source constitutes an "addition." Intake pollutant relief cannot be reconciled with the requirement to establish limits that implement water quality standards, even if the pollutant of concern can be characterized as ubiquitous.

Comment 6: The Ocean Plan should be revised to allow for intake credits as in the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP). (1, 2)

Response: As discussed above, intake pollutant relief cannot be reconciled with the requirement to establish limits that implement water quality standards. The SIP allows the consideration of intake credits *during the calculation of effluent limitations*, but not *during a reasonable potential analysis*. The SIP intake credit procedure for effluent limit calculations was patterned after the Great Lakes Initiative's *temporary* intake credit allowance. Intake credits are no longer allowed in the Great Lakes States and the SIP should follow suit.

If the results of the reasonable potential analysis are driven by high intake pollutant concentrations, a permit writer has the authority to establish effluent limitations using waste load allocations established through a TMDL, if one exists.

Comment 7: Rather than entirely deleting the language of Section G2 in the California Ocean Plan, the Central Coast Water Board recommends retaining G2 and modifying it by adding the following: "*The Regional Board shall not apply this provision to discharges from publicly-owned treatment works, or other waste streams* subject to pollutant sources not under the direct control of the discharger.*" Dischargers should not be required to sample for Table B pollutants that are almost certainly not present. Staff have not proposed reducing monitoring frequencies for pollutants with no reasonable potential. (4, 5) Heal the Bay believes that the State Water Board would be better served to deal with the certification issue through more stringent certification procedures that use state of the art analytical instrumentations with MDLs and MLs that are as low as practicable. (11)

Response: The alternative G2 language offered by the Central Coast Water Board attempts to relieve low threat dischargers from the monitoring requirements in Appendix III of the California Ocean Plan. This approach would establish effluent limitations for "low threat" facilities, then use the alternative G2 language to allow the discharger to certify that Table B pollutants are not present or added to their waste stream. This alternative language is not acceptable since it would continue to establish effluent limitations without a sufficient program to monitor compliance with those effluent limitations as required by the California Ocean Plan (Section III - C7, Section III – G1) and Federal NPDES Regulations (40 CFR 122 (i)(1)). The previously cited Federal Regulation requires monitoring to assure compliance with a permit limitation. The past practice of issuing effluent limitations and subsequently allowing dischargers to certify that those pollutants are not present does not fulfill 40 CFR 122 (i)(1), no matter how stringent the certification procedure is.

Based on these comments, the reasonable potential Appendix VI procedure was modified to specifically incorporate the Appendix III monitoring requirements. For example, if the result of a reasonable potential analysis is that no limit is required for a specific pollutant (Endpoint 2 in Appendix VI), then the discharger will also be relieved from the Appendix III monitoring for that pollutant. If, on the other hand, the result of a reasonable potential analysis is inconclusive for a specific pollutant (Endpoint 3), then the discharger will continue to be required to monitor for the pollutant according to Appendix III and an existing limitation, if present, will remain intact.

This approach treats all dischargers fairly; "low threat" facilities, or any facility in general, can be relieved of Appendix III monitoring after a reasonable potential analysis demonstrates that the discharge is not likely to cause an excursion of the specific water quality objective. A discharger assertion that the pollutant is "almost certainly not present" must be substantiated with monitoring data.

Comment 8: Page 30 of the DFED misinterprets 40 CFR 122.44, which says that permits must contain effluent limitations for pollutants with a reasonable potential to exceed water quality objectives. 40 CFR 122.44 does not preclude Regional Water Boards from including effluent limitations in permits for constituents with no potential to exceed a water quality objective. (5)

Response: The Central Coast Water Board has mistakenly interpreted the reasonable potential amendment intent. The amendment does not intend to prevent a permit writer from using best professional judgment to decide if effluent limitations are needed in permits. The word "only" in the summary paragraph on p. 30 caused this confusion and will be removed. The intent of the reasonable potential amendment is to ensure that an effluent limitation is given *when needed* and that adequate monitoring is conducted for all permit effluent limitations given.

Step 2 of the Appendix VI procedure allows the permit writer the flexibility to perform an RP assessment based on best professional judgment. Staff asserts, however, that the past practice of establishing *de facto* effluent limitations for all Table B water quality objectives does not constitute an adequate reasonable potential analysis.

This was addressed in the 1989 Federal Register (June 6, 1989, p. 23873) during the original promulgation of 40 CFR 122.44: "Some commenters suggested that all discharges would be required to have limits under this language. EPA does not expect this will be the case. However,

EPA expects that with few exceptions, all major POTWs and major industrial discharges will need to be evaluated to determine whether they have a reasonable potential to cause excursions. Before requiring a water quality-based effluent limit, the permitting authority must have a basis for finding that discharges have the reasonable potential to cause excursions above the water quality criteria. When EPA is the permitting authority, the Technical Support Document will normally provide the basis for such a finding." Accordingly, staff has added the following sentence to Appendix VI: "The permit fact sheet or statement of basis will document the justification or basis for the conclusions of the reasonable potential assessment."

Comment 9: We support the proposed alternatives to the TSD reasonable potential methodology, including the lognormal tolerance bound approach. We support the Helsel and Cohn method for accounting for data below the detection limit. We support the use of the latest mathematical techniques for addressing data below the detection limit. (4, 6, 10)

Response: Comment noted.

Comment 10: Discrepancies in the reasonable potential package should be clarified or corrected, including the terminology used in Step 7, the meaning of the *n* sample size term, and the term "detected." (6)

Response: These discrepancies have been addressed in the revised Appendix VI.

Comment 11: We advise that California Ocean Plan Appendix II minimum level values be updated at least every three years. (6) The reasonable potential amendment does not contain an assessment of the adequacy of Appendix II minimum levels for the purpose of minimizing problems with censored data. (11)

Response: The State Water Board, in Resolution 2000-108, has agreed to reassess and modify the minimum levels in Appendix II during triennial reviews. Minimum levels are used primarily for compliance determination. The Appendix VI procedure treats non-detects and "detected, but not quantified" values as an inevitable consequence of real world effluent monitoring data.

Comment 12: We believe that reports of adjusted DNQ effluent values greater than a water quality objective signal the potential for water quality exceedances. We recommend the addition of a provision specifying that such information may be used by the permitting authority to determine reasonable potential and establish WQBELs and that the rational for such decisions shall be documented in the fact sheet or statement of basis. (6)

Response: Staff has incorporated the analysis of ND and DNQ data into the revised Appendix VI procedure. DNQ results having both the limit of detection (*i.e.*, the MDL) and the limit of quantification (*i.e.*, the ML) above the water quality objective are now interpreted as a tie (i.e., an inconclusive censored value result). See response to Comment 6 in the Responses to Comments on the draft FFED section.

Comment 13: Step 4 of the reasonable potential procedure should specify how "non-detects" are to be used to determine pollutant concentrations after mixing. (3, 7, 8, 9) The State Water Board does

not explain how to deal with "non-detects" and "detected, but not quantified" during the reasonable potential analysis.

Response: Step 4 of Appendix VI now includes direction for adjusting non-detect observations using the dilution factor and background seawater concentration. For example, a non-detect effluent measurement of copper of <5 μg/L for a discharger having a 100:1 dilution would be converted to <2.03 μg/L after complete mixing, $X < (C_e + D_m C_s) / (D_m + 1) = (5 + 100 \times 2) / 101 = 2.03$. Similar direction is given for adjusting "detected, but not quantified" data.

Comment 14: The reasonable potential procedure should specify the minimum number of detected values that must be present for the reasonable potential calculation. We recommend that Step 6 be revised to require that at least 20% of the data are quantified (or, alternately, that a minimum number of data points are quantified. (3, 7, 8, 9)

Response: Staff agrees. As little as one detected observation is enough evidence to establish the need for an effluent limit -- if the single sample exceeds the water quality objective. Step 6 has been revised to require at least three detected values in order to calculate a lognormal tolerance bound. Additionally, at least 20 percent of the data must be quantified in order to apply the Helsel & Cohn method to account for non-detects in estimating summary statistics.

Comment 15: The reasonable potential procedure should provide specific conditions under which best professional judgment would be appropriate (e.g., when there is direct evidence linking a discharge to an excursion of water quality standards). (3, 7, 8, 9) The State Water Board must provide better guidance for the Regional Water Board's use of best professional judgment in determining if WQBELs should be included in permits. (11)

Response: Step 13 of the revised reasonable potential procedure provides factors to consider when using best professional judgment in a reasonable potential analysis. These factors are sufficient and consistent with Section 1.3 of the SIP, consistent with the factors enumerated in 40 CFR 122.44 (d) (1) (ii), and consistent with factors listed in the TSD guidance (Section 3.3). In addition, the permit fact sheet will document the rationale for any effluent limitations given. Overly prescriptive guidance in the California Ocean Plan on the use best professional judgment during a reasonable potential analysis will serve to restrict the permit writer's use of best professional judgment.

Comment 16: We recommend that when water quality based effluent limits are included using best professional judgment, they should not be limited to numeric limitations. (3, 8, 9)

Response: Adopting this suggestion would make the California Ocean Plan inconsistent with the SIP. When a reasonable potential analysis shows that an effluent limit is required, the permit writer should develop a *numeric* effluent limit.

Comment 17: We strongly object to references in the reasonable potential proposal to "minimum probable initial dilution." The phrase should simply be "appropriate dilution." (10)

Response: Redefining the longstanding California Ocean Plan definition of dilution is beyond the scope of the reasonable potential amendment. Dilution ratios and dilution credits are findings in a permit.

Comment 18: Heal the Bay strongly opposes the use of a reasonable potential approach to determine if ocean dischargers need water quality-based effluent limits (WQBELs) because the approach can greatly reduce the number of WQBELs in an NPDES permit. Do not eliminate WQBELs based on inadequate data. When using best professional judgement, instead of eliminating WQBELs, an effluent limitation should be given *in addition to* chemical-specific testing or whole effluent toxicity testing. (11)

Response: The use of a reasonable potential analysis to determine the need for NPDES effluent limitations is not voluntary; it is required by Federal Regulation (40 CFR 122.44 (d)(1)(ii)) and is used nationally during the NPDES permitting process. Non-ocean California dischargers are currently subject to the SIP reasonable potential procedure. Adding a reasonable potential statement to the California Ocean Plan will increase consistency in the statewide permitting process and ensure that California ocean discharge permits are consistent with the national NPDES program. It is true that the result of a reasonable potential analysis may be a reduced number of effluent limitations. The regulatory decision to not give an effluent limit for a pollutant, however, will be based on a statistical analysis of actual effluent data for that pollutant.

Partly in response to this comment, the procedure in Appendix VI was modified to enable the permit writer to require monitoring for a pollutant not having a permit effluent limitation, if needed (Endpoint 2). In addition, if the result of a reasonable potential analysis is inconclusive (Endpoint 3), the revised Appendix VI procedure requires an existing effluent limit to remain intact. If the permit does not currently contain an effluent limit for the pollutant in question, a reopener clause is required in the permit to allow a subsequent effluent limitation to be installed based on new monitoring data.

Comment 19: The proposed reasonable potential amendment does not clarify what happens in the event the effluent has pollutant concentrations that exceed the dilution factor multiplied by the Table B limit. (11)

Response: Step 4 of the Appendix VI procedure requires the conversion of end-of-pipe effluent data concentrations to concentrations expected after complete mixing using a steady-state dilution model. The after dilution effluent concentration is compared to the Table B water quality objective. The commenter is referring to an alternate and equivalent approach: converting the water quality objective to an end-of-pipe effluent limitation and comparing this to the effluent data.

Comment 20: 303(d) listed impaired waters should have WQBELs for all the listed constituents, regardless of the detection frequencies in their effluents. (11)

Response: Staff agrees that an effluent limitation should be given for 303(d) constituents in most cases. Step 2 and 13 of the revised reasonable potential procedure allow the permit writer to use best professional judgment in a reasonable potential analysis for this type of situation. A 303(d) listing is

one of the factors expressly listed in Step 13. Furthermore, permit writers have the authority to establish effluent limitations using waste load allocations established through a TMDL, if one exists.

Comment 21: The reasonable potential amendment does not justify the final recommendation, including the use of lognormal tolerance interval-based procedure. Has the State Water Board conducted an analysis of the effluent distribution of pollutant concentrations? Explain how the recommended procedure will not minimize the importance of maximum effluent concentrations. (11)

Response: Staff has extensively researched the recommended lognormal tolerance interval approach using both actual effluent discharge data and computer simulations of normal, lognormal, and gamma distributed data. The FED includes a detailed rationale for the default lognormal distribution assumption; see the expanded "Comparison of Reasonable Potential Procedures" section of the FED. The lognormal tolerance bound approach effectively controls the Type I decision error rate at or below 5.3 percent. In this context a Type I error occurs when the regulator erroneously fails to issue an effluent limit when the true discharge 95th percentile exceeds the water quality objective. Under the revised Appendix VI approach, any after-dilution observation that exceeds the water quality objective, including the maximum observation, will trigger the need for an effluent limitation.

Comment 22: The proposed amendment does not provide the actual "scientifically defensible statistical method" for conducting a reasonable potential analysis. (11)

Response: The proposed addition of Appendix VI to the California Ocean Plan constitutes the scientifically defensible statistical method. Specifically, Steps 6-10 describe the parametric statistical method and Steps 11-12 describe the non-parametric statistical method.

VI. Summary of Changes Resulting from Comments

The following proposed changes have been made since the August 2004 draft FED, all changes relate to proposed Appendix VI procedures:

1. The RP procedure now accounts for the averaging period of the water quality objective.

2. An introductory paragraph was added that cites 40 CFR 122.44, allows permit writers to use an alternative reasonable potential approach, and requires the permit fact sheet to document the reasonable potential assessment.

3. The three possible endpoints of a reasonable potential analysis have been integrated with the monitoring requirements of the Ocean Plan Appendix III. *Endpoint 1* will require an effluent limit and Appendix III monitoring. *Endpoint 2* will not require an effluent limit and Appendix III is not usually required. *Endpoint 3* is an inconclusive reasonable potential analysis and Appendix III monitoring will be required; existing limits will remain intact.

4. Step 4 was expanded to provide direction for adjusting data for background concentrations and dilution, including direction for adjusting censored data.

5. The lognormal tolerance bound using order statistics methodology was eliminated.

6. The "sparse-data" terminology was eliminated.

7. Steps 6 through 10 now provide direction for conducting a parametric statistical lognormal reasonable potential assessment using three or more quantified data points. Censored data up to 80 percent requires the use of the Helsel and Cohn (1988) robust regression on order statistics technique to estimate the sample mean and standard deviation.

8. Steps 11 and 12 now provide direction for conducting a non-parametric statistical reasonable potential assessment using sample sizes of two or less or data censored from 80 percent to 100 percent. Sixteen or more individual non-exceedances of the water quality objective will lead to *Endpoint 2*; all other situations will lead to *Endpoint 3*.

9. A reasonable potential assessment using best professional judgment can now lead to any endpoint.

10. The Appendix VI flow chart was revised to be consistent with the step-by-step procedure.

VII. Alternatives for Board Action and Staff Recommendations

Because a tolerance bound procedure more appropriately utilizes facility-specific effluent data, State Water Board staff recommend the primary use of a lognormal tolerance interval-based procedure for reasonable potential determinations rather than the TSD-based procedure. When using a parametric statistical approach, the water quality objective should be compared to the one sided, upper 95 percent confidence bound of the 95th percentile of a lognormal distribution. Furthermore, when dilution is allowed, the one-sided upper confidence bound on the upper percentile should be adjusted by the mass balance equation (Equation 1 solved for C_o) prior to comparison with the water quality objective. In addition, the monitoring data should be adjusted for the averaging period expressed by the Table B objective (*e.g*. six-month median, 30-day average) when possible.

State Water Board staff further recommend the Helsel and Cohn (1988) method as a general approach for accounting for censored data (ND or DNQ values) when assessing reasonable potential. This technique is also recommended in the Colorado Reasonable Potential Procedure (2003). More extreme censoring can be accommodated by using a nonparametic statistical procedure with error balancing that uses a simple count of exceedances of the water quality criterion.

Eventually, data censoring may be so severe that a statistically based decision of reasonable potential cannot be made. This may happen when the water quality objective is far below the limit of quantification or when the sample size is small. Under these conditions, the permit writer must use guidance for determining the need for an effluent limit using insufficient monitoring data (see Determining the Need for an Effluent Limitation with Insufficient Monitoring Data above).

Based on the preceding sections and the criteria in Table 3, State Water Board staff composed the reasonable potential language in the proposed amendment. A general reasonable potential paragraph will be added to Chapter III of the California Ocean Plan. Additional clarifying language will be

added to a new appendix of the California Ocean Plan. This new appendix will cover factors to consider when assessing the need for an effluent limitation, the recommended statistically-based analysis procedure, and how to account for uncertainty produced by small sample sizes and censored data values. The endpoints of the reasonable potential procedure are summarized in Figure 2.

Staff in the Ocean Standards Unit, have simultaneously developed a computer software program (RPCalc) that will perform the statistically based reasonable potential calculations recommended and presented in this section (Saiz 2003). This reasonable potential "calculator" can be used as a tool by permit writers to easily compare an effluent data set with the California Ocean Plan Table B water quality objective using the procedures identified in the proposed amendment. The software will follow the procedures specified in the new California Ocean Plan Reasonable Potential Appendix.

VIII. Environmental Impact Analyses

No adverse environmental effects are expected from the proposed amendment. The amendment provides a method for determining when effluent limits are required and there is no change to the water quality objectives of the California Ocean Plan.

IX. Compliance with Sections 13241 and 13242 of the CWC

State Water Board staff is not proposing the adoption of water quality objectives; therefore, we are not required to consider Section 13241 of the CWC for this proposed amendment to the California Ocean Plan. Additionally, the amendment complies with Section 13242 of the CWC as it relates to monitoring for compliance.

X. Proposed California Ocean Plan Amendment

Presented below are the proposed changes to the 2001 California Ocean Plan that will result if the changes proposed in Issue 1 are approved.

1. Chapter III, G. Monitoring Program, 2, page 21, add reference to appendix VI to subsection 1, delete subsection 2 and renumber subsection 3.

G. Monitoring Program

1. The Regional Water Boards shall require dischargers to conduct self-monitoring programs and submit reports necessary to determine compliance with the waste* discharge requirements, and may require dischargers to contract with agencies or persons acceptable to the Regional Water Board to provide monitoring reports. Monitoring provisions contained in waste discharge requirements shall be in accordance with the Monitoring Procedures provided in ~~Appendix~~ Appendices III and VI.

2. ~~Where the Regional Board is satisfied that any substance(s) of Table B will not significantly occur in a discharger's effluent, the Regional Board may elect not to require monitoring for such substance(s), provided the discharger submits periodic certification that such substance(s) is 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.~~

~~3~~2. The Regional Water Board may require monitoring of bioaccumulation of toxicants in the discharge zone. Organisms and techniques for such monitoring shall be chosen by the Regional Water Board on the basis of demonstrated value in waste* discharge monitoring.

2. Chapter III, C. Implementation Provisions for Table B, page 12, add new subsection 2 on reasonable potential and renumber subsequent subsections.

C. Implementation Provisions for Table B

2. If the Regional Water Board determines, using the procedures in Appendix VI, that a pollutant is discharged into Ocean Waters at levels which will cause, have the reasonable potential to cause, or contribute to an excursion above a Table B water quality objective, the Regional Water Board shall incorporate a water quality-based effluent limitation in the Waste Discharge Requirement for the discharge of that pollutant.

~~2~~3. Effluent limitations shall be imposed in a manner prescribed by the ~~SWRCB~~ State Water Board such that the concentrations set forth below as water quality objectives shall not be exceeded in the receiving water upon completion of initial* dilution, except that objectives indicated for radioactivity shall apply directly to the undiluted waste* effluent.

~~3~~4. Calculation of Effluent Limitations

~~4~~5. Minimum* Levels

~~5~~6. Use of Minimum* Levels

~~6~~7. Sample Reporting Protocols

~~7~~8. Compliance Determination

~~8~~9. Pollutant Minimization Program

~~9~~10. Toxicity Reduction Requirements

3. Add Appendix VI to the California Ocean Plan to provide RPA procedures

Appendix VI

Reasonable Potential Analysis Procedure for determining which Table B Objectives require effluent limitations

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

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

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

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

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

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

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

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

Step 6: Does the effluent monitoring data contain three or more detected observations ($d > 3$)? If yes, proceed to *Step 7* to conduct a parametric RPA. Otherwise, go to *Step11* to conduct a nonparametric RPA.

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

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

Otherwise, proceed to *Step 8*.

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

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

Otherwise, go to *Step 11*.

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

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

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

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

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

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

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

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

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

Appendix VI References:

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

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

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

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

Figure VI-1: Reasonable potential analysis flow chart

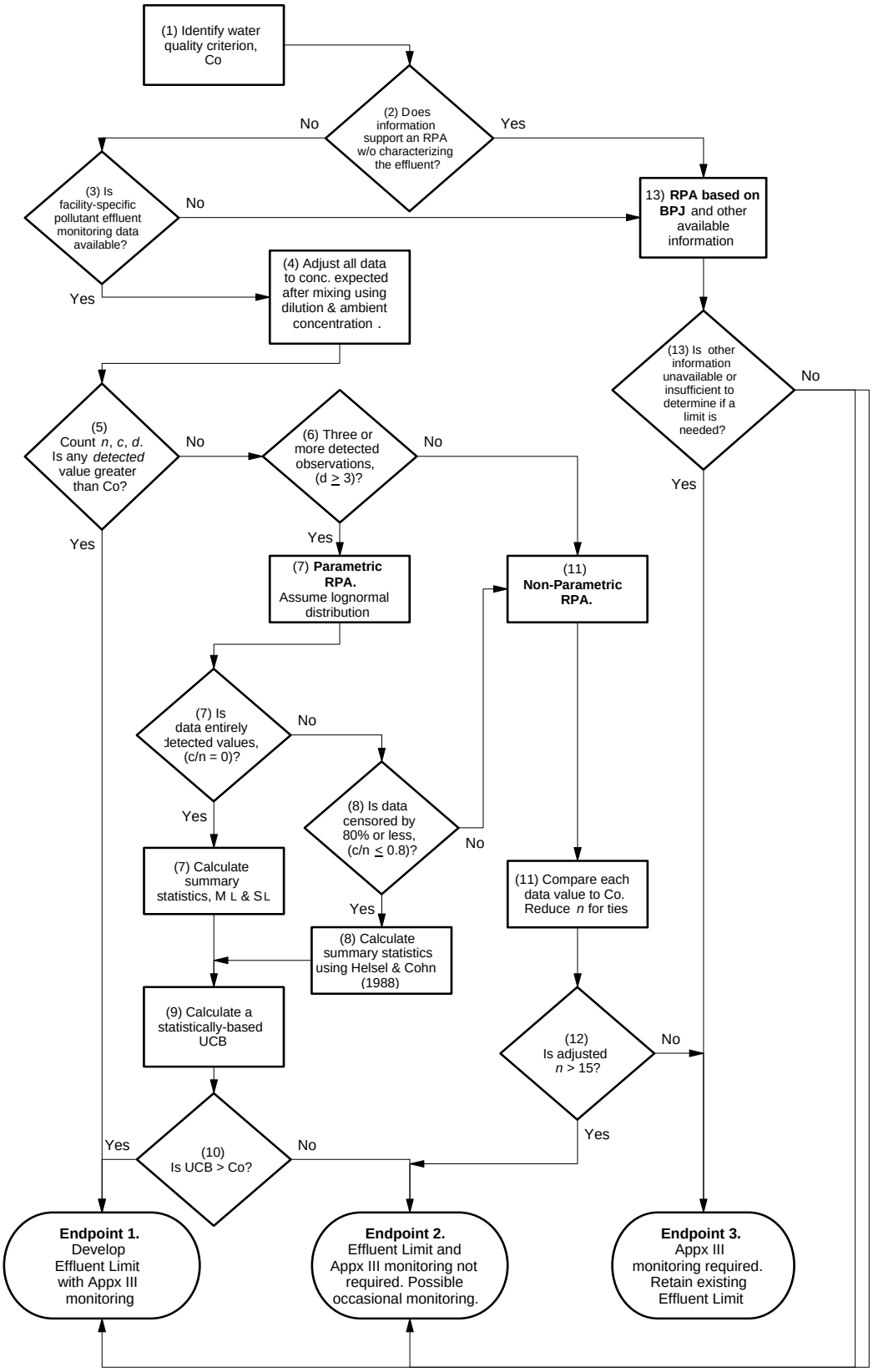

Figure 1: Statistical decision-making error rates (Type I = ALPHA, Type II = BETA) associated with a non-parametric binomial test having an effect size of 15 percent. The null hypothesis is that the true exceedance rate is greater than or equal to 18 percent.

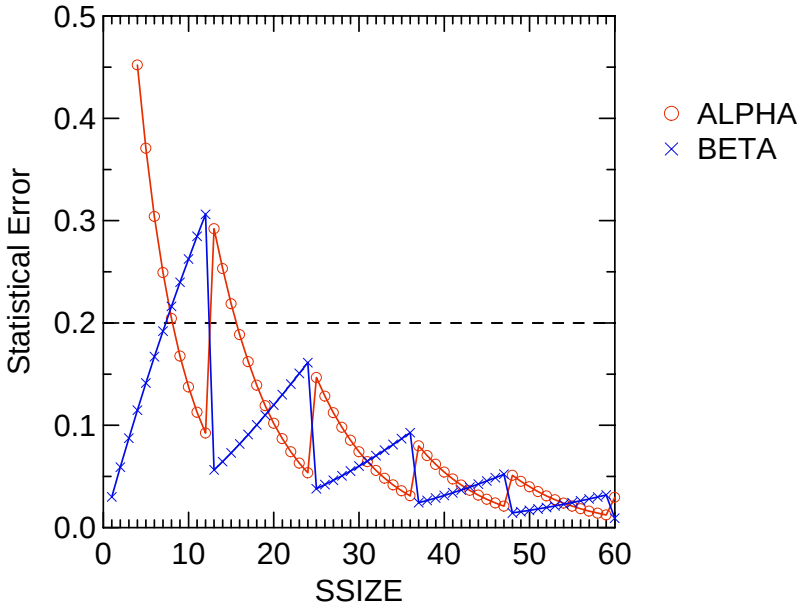

Figure 2: Potential endpoints of the reasonable potential procedure.

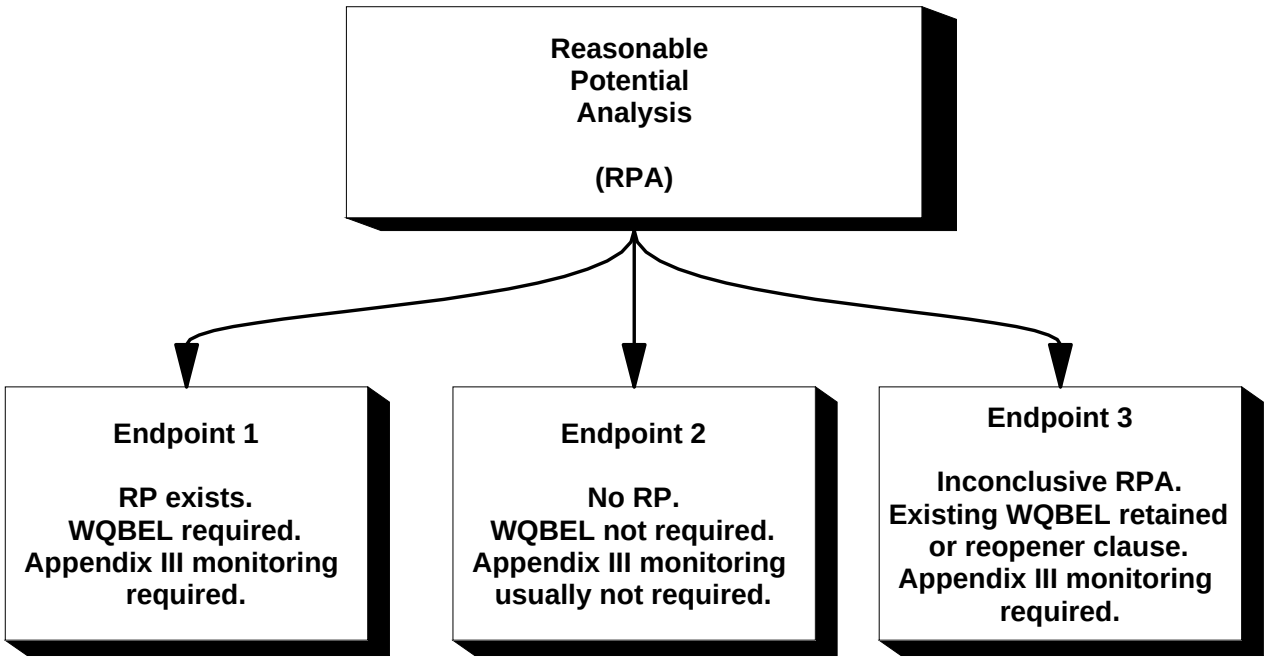

Table 1. USEPA TSD Reasonable Potential Procedure to calculate the upper 95 percent confidence bound for the 95th percentile of a lognormal distribution using the equation: $TSD_{(.95,\ .95)} = X_{(n)} \exp(\sigma_L f_n)$

where, $X_{(n)}$ = maximum value of n observed samples,
σ_L = Standard Deviation for the natural logarithm transformed data
(If $n \leq 9$, use $\sigma_L = 0.5545$ for the TSD procedure)
f_n = selected from table below based on sample size.

Number of Samples, n	TSD semi-parametric lognormal procedure, $f_n = \left\{\Phi^{-1}[0.95] - \Phi^{-1}\left[(1-0.95)^{1/n}\right]\right\}$
1	3.290
2	2.405
3	1.981
4	1.713
5	1.521
6	1.373
7	1.255
8	1.156
9	1.071
10	0.998
11	0.933
12	0.876
13	0.824
14	0.777
15	0.733
16	0.694
17	0.657
18	0.623
19	0.591
20	0.561
21	0.532
22	0.506
23	0.480
24	0.456
25	0.434
26	0.412
27	0.391
28	0.372
29	0.353
30	0.334
31	0.317
32	0.300
33	0.284
34	0.268
35	0.253
36	0.239
37	0.225
38	0.211

Table 2. Tolerance factors $g'_{.95,.95,n}$ for calculating normal distribution one-sided upper 95 percent tolerance bounds for the 95th percentile (from Hahn & Meeker 1991, Table A.12d).

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

Table 3: Performance of the MLE method on synthetic data with σ^2 unknown.

n	Pr[$\hat{C}_{95} > 2 \cdot C_{95}$] (Overshoot)	Pr[$\hat{C}_{95} > 3 \cdot C_{95}$] (Gross Overshoot)	E[$\hat{C}_{95}$] (Mean)	Md[$\hat{C}_{95}$] (Median)	Pr[$\hat{C}_{95} < C_{95}$] (Should be 0.05)
5	0.856	0.777	201.852	47.027	0.0516
10	0.738	0.534	22.797	16.570	0.0505
20	0.519	0.197	11.775	10.572	0.0496
50	0.128	0.004	8.044	7.770	0.0507
120	0.002	0.000	6.728	6.642	0.0503
Exact	0.000	0.000	5.18	5.18	0.050

Note: $\hat{C}_{95}$ is the estimated upper bound of the 95-percentile, C_{95} is the true 95-percentile, Pr[] represents probability, E is the mean, and Md is the median.

Table 3A: Performance of the California Ocean Plan Lognormal Tolerance Interval Method when sampling from a lognormal distribution having logmean=0 and logSD = 0.5.

n	Pr[$\hat{C}_{95} > 2 \cdot C_{95}$] (Overshoot)	Pr[$\hat{C}_{95} > 3 \cdot C_{95}$] (Gross Overshoot)	E[$\hat{C}_{95}$] (Mean)	Md[$\hat{C}_{95}$] (Median)	Pr[$\hat{C}_{95} < \cdot C_{95}$] (Should be 0.05)
5	0.7143	0.5132	9.783	6.995	0.0522
10	0.3945	0.0997	4.480	4.110	0.0475
20	0.0686	0.0008	3.361	3.269	0.0492
50	0.0001	0.0000	2.831	2.804	0.0434
120	0.0000	0.0000	2.605	2.597	0.0417
Exact	0	0	2.276	2.276	0.05

Table 4: Comparison of the performance of proposed method and the simple alternative.

N	$Pr[X \leq \hat{C}_{96}]$	$Pr[X \leq \hat{C}_{97}]$	$Pr[X \leq \hat{C}_{98}]$	$Pr[X \leq \hat{C}_{99}]$	$Pr[X \leq \hat{C}_{99.5}]$	$Pr[X \leq \hat{C}_{95}]$
5	0.9077646	0.9197998	0.9322928	**0.9489302**	0.9602513	0.9904869
10	0.9355184	0.9469408	**0.9589702**	0.9730578	0.9817357	0.9891722
20	0.9480749	**0.9589307**	0.9702955	0.9825327	0.9894728	0.9848082
50	**0.9552819**	0.9656643	0.9762082	0.9871804	0.9929998	0.9767864
120	0.9581336	0.9682813	0.9784544	0.9888671	0.9942109	0.9694472

Note: $Pr[X \leq \hat{C}_q]$ represents the probability of a concentration less than the estimated *q*-percentile. The numbers in the table, thus, represent the true percentiles of the estimated $\hat{C}_q$.

Table 4A: Type I Errors associated with the recommended simple alternative.

N	Recommended Percentile, *p*	Recommended multiplier, $\Phi(p)$	Simulated Type I Error, $Pr[\hat{C}p < \cdot C_{95}]$	*Normal Tolerance Factor, g'(0.75, 0.95 ,N)*
5	0.99	2.326	0.2784	2.463
10	0.98	2.054	0.2670	2.103
20	0.97	1.881	0.2811	1.933
50	0.96	1.75	0.3134	1.811
120	0.96	1.75	0.2185	1.743

Table 5. Comparison of lognormal reasonable potential procedures in relation to desirable criteria.

Desirable Criterion	TSD Procedure, $TSD_{(c,p)}$	Lognormal Tolerance Bound Procedure, $UCBL_{(c,p)}$
Incorporates a scientifically defensible statistical method.	True. An upper percentile estimated with high confidence is compared to the Water Quality Objective. The actual confidence level is less than 95 percent with small sample sizes.	True. The 95th percentile estimated with 95 percent confidence is compared to the Water Quality Objective.
Accounts for and captures the variability of the pollutant in the effluent.	True for 10 or more samples. False for less than 10 samples.	True. Effluent variability is estimated from the samples for all sample sizes of two or more.
Accounts for limitations associated with censored data sets.	True, if the USEPA Delta technique is used. Delta lognormal technique assumes one censoring threshold.	True. The Helsel and Cohn (1988) technique accounts for multiple censoring thresholds with censoring up to 80 percent and performs better than the Delta lognormal technique.
Accounts for limitations associated with sparse data sets.	True. Small data sets produce a larger upper confidence bound. Large data sets converge on the true population percentile.	True. Small data sets produce a larger upper confidence bound. Large data sets converge on the true population percentile faster than the TSD procedure.
Incorporates dilution of the effluent in the receiving water.	True.	True.
Is not unduly affected by outliers or extreme data values.	False. Sample maximum will be a prime outlier suspect.	True. Sample mean and standard deviation are derived from all data and are not unduly influenced by a single observation as much as the TSD procedure.
Assumes effluent data is lognormally distributed, unless otherwise shown by the data	True.	True.

Issue 2: Classification of Areas of Special Biological Significance (ASBS) as State Water Quality Protection Areas (SWQPAs), rename certain ASBS to coincide with name changes corresponding to Marine Protected Areas, and clarification that all exceptions are subject to Triennial Review.

I. Summary of Proposed California Ocean Plan Amendment

The proposed amendment to the California Ocean Plan would incorporate the classification of ASBS as SWQPAs per the Public Resources Code and would change the names of specific ASBS. In addition, the California Ocean Plan would be amended to state that exceptions would be reviewed during the Triennial Review, and an appendix would be added listing all current exceptions to the California Ocean Plan.

II. Present California Ocean Plan

The California Ocean Plan prohibits the discharge of waste into ASBS, except under certain temporary situations having the approval of the Regional Water Quality Control Board (Regional Water Board).

III. Issue Description

A. Historical Background

Since the State Water Resources Control Board's (State Water Board's) approach to regulating discharges to ASBS has evolved over time, a review of the pertinent history is provided below.

The 1972 California Ocean Plan states: "Waste shall be discharged a sufficient distance from areas designated as being of special biological significance to assure maintenance of natural water quality conditions in these areas" (SWRCB 1972). No ASBS had yet been designated in 1972.

The State Water Board decided that: "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 Control Plan, recognizing that the California Ocean Plan is not applicable to vessel wastes, the control of dredging, or the disposal of dredging spoil" (SWRCB 1974a). Thirty one ASBS were designated at that time and, in a related action, as directed by the State Water Board (SWRCB 1974b), the Executive Director revised Section XI of the Water Quality Administrative Procedures Manual. Included were the following provisions developed by the Executive Director in 1974 regarding discharges to ASBS:

"a. Discharge of elevated temperature wastes in a manner that would alter water quality conditions from those occurring naturally will be prohibited.

b. Discharge of discrete, point source sewage or industrial process wastes in a manner that would alter water quality conditions from those occurring naturally will be prohibited.

> c. Discharge of waste from nonpoint sources, including but not limited to storm water runoff, silt and urban runoff, will be controlled to the extent practicable. In control programs for waste from nonpoint sources, Regional Boards will give high priority to areas tributary to ASBS." (SWRCB 1974c)

Later in 1974, two more ASBS were designated (SWRCB 1974d), and another in 1975 (SWRCB 1975). There are currently a total of 34 ASBS.

The 1978 California Ocean Plan did not change the ASBS language in the discharge prohibitions chapter. It did, however, clarify the applicability of the California Ocean Plan. The 1978 version stated that it was applicable in its entirety to point source discharges to the ocean. Nonpoint source discharges were subject only to specified chapters, including the discharge prohibitions chapter.

In 1983 the State Water Board made the discharge provisions related to the ASBS more specific, prohibiting discharges within the ASBS, in contrast to the 1972 requirement that "Waste shall be discharged a sufficient distance from" ASBS. Therefore the 1983 California Ocean Plan was amended to read: "Waste shall not be discharged to areas designated as being of special biological significance. Discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas" (SWRCB 1983a)

It appears that the original intent of absolutely prohibiting discharges into ASBS was aimed at thermal discharges (under the Thermal Plan), sewage treatment facilities, and industrial point sources. In 1974, urban storm water runoff was considered a form of nonpoint source pollution to be controlled to the extent practicable. The 1978 and 1983 California Ocean Plan amendments, in effect, prohibited all discharges, both point and nonpoint source, to ASBS.

In 1987 the U.S. Clean Water Act (CWA) was amended to specifically address permit requirements for storm water discharges. Since 1987, the State Water Board has also considered urban storm water runoff, subject to National Pollutant Discharge Elimination System (NPDES) permit requirements, to be a point source discharge.

The 2001 California Ocean Plan retains the same prohibition on discharges as in the 1983 and subsequent versions of the California Ocean Plan. However, a new provision was added to address temporary discharges, as follows:

> "Regional Boards may approve waste discharge requirements or recommend certification for limited-term (*i.e.*, weeks or months) activities in ASBS*. Limited-term activities include, but are not limited to, activities such as maintenance/repair of existing boat facilities, restoration of sea walls, repair of existing storm water pipes, and replacement/repair of existing bridges. Limited-term activities may result in temporary and short-term changes in existing water quality. Water quality degradation shall be limited to the shortest possible time. The activities must not permanently degrade water quality or result in water quality lower than that necessary to protect existing uses, and all practical means of minimizing such degradation shall be implemented" (SWRCB 2001)

Over the years, the State Water Board has authorized five discharges to ASBS, pursuant to the State Water Board's exception authority in the current and prior California Ocean Plans. The 2001 California Ocean Plan, for example, allows the State Water Board to grant exceptions to the plan's provisions, including the ASBS discharge prohibition, provided that the exception will not compromise protection of ocean waters for beneficial uses and the public interest will be served.

B. Recent State Legislation

Assembly Bill 2800 (Chapter 385, Statutes of 2000), the Marine Managed Areas Improvement Act, was approved by Governor Grey Davis on September 8, 2000. This law added sections to the Public Resources Code (PRC) that are relevant to ASBS. Section 36700 (f) of the PRC defines a state water quality protection area as "a nonterrestrial marine or estuarine area designated to protect marine species or biological communities from an undesirable alteration in natural water quality, including, but not limited to, areas of special biological significance that have been designated by the State Water Resources Control Board through its water quality control planning process." Section 36710 (f) of the PRC stated: "In a state water quality protection area point source waste and thermal discharges shall be prohibited or limited by special conditions. Nonpoint source pollution shall be controlled to the extent practicable. No other use is restricted." The classification of ASBS as SWQPAs went into effect on January 1, 2003 (without State Water Board action) pursuant to Section 36750 of the PRC.

Senate Bill 512 (Chapter 854, Statutes of 2004) amended the marine managed areas portion of the PRC, effective January 1, 2005, to clarify that ASBS are a subset of SWQPAs and require special protection as determined by the State Water Board pursuant to the California Ocean Plan and the California Thermal Plan. Specifically, SB 512 amended the PRC section 36700 (f) definition of state water quality protection area to add the following: ""Areas of special biological significance" are a subset of state water quality protection areas, and require special protection as determined by the State Water Resources Control Board pursuant to the California Ocean Plan adopted and reviewed pursuant to Article 4 (commencing with Section 13160) of Chapter 3 of Division 7 of the Water Code and pursuant to the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan) adopted by the state board."

Section 36710(f) of the PRC was also amended as follows: "In a state water quality protection area, waste discharges shall be prohibited or limited by the imposition of special conditions in accordance with the Porter-Cologne Water Quality Control Act (Division 7 (commencing with Section 13000) of the Water Code) and implementing regulations, including, but not limited to, the California Ocean Plan adopted and reviewed pursuant to Article 4 (commencing with Section 13160) of Chapter 3 of Division 7 of the Water Code and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan) adopted by the state board. No other use is restricted." This language replaced the prior wording stating that point sources into ASBS must be prohibited or limited by special conditions and that nonpoint sources must be controlled to the extent

practicable. In other words, the absolute discharge prohibition in the California Ocean Plan stands, unless of course an exception is granted.

The classification of ASBS as a subset of SWQPAs does not change the ASBS designated use for these areas. Practically speaking, this means that waste discharges to ASBS are prohibited under the California Ocean Plan and California Thermal Plan unless an exception (with special mitigating conditions) is granted.

C. State Water Board Order WQ 2001-08, Irvine Coast ASBS (Crystal Cove)

On November 16, 2000, the Santa Ana Water Board issued a cease and desist order (CDO) to the Irvine Company, the California Department of Transportation (Caltrans), and the California Department of Parks and Recreation. The CDO contains findings that the dischargers were violating or threatening to violate the discharge prohibition contained in the California Ocean Plan against discharges to the Irvine Coast ASBS. Caltrans petitioned the State Water Board to review the CDO. On April 26, 2001, the State Water Board decided Caltrans was in violation of the California Ocean Plan ASBS discharge prohibition in that:

- there are waste discharges from Pacific Coast Highway,
- discharges on the beach above the high tide line do constitute discharges to the ASBS,
- the California Ocean Plan does in fact regulate the discharge of wastes through storm water conveyances, and
- coverage under Caltrans' statewide NPDES permit for storm water discharges does not relieve the discharger from complying with the California Ocean Plan prohibitions on discharges into the ASBS.

The State Water Board did amend the CDO to allow submission of a discharge elimination plan by May 16, 2002 and to require the cessation of discharges by November 16, 2003.

D. Discharges into ASBS/SWQPAs

State Water Board hearings on California Ocean Plan amendments and the Caltrans petition brought to light the fact that there are storm water and nonpoint source discharges into ASBS/SWQPAs, despite the California Ocean Plan prohibition. The State Water Board decided in 2001 to fund a study to assess the extent of storm water and nonpoint source discharges into ASBS/SWQPAs. The State Water Board contracted with the Southern California Coastal Water Research Project (SCCWRP) to conduct a pilot project survey of the ASBS/SWQPAs in southern California. Upon completion of that work, the State Water Board again contracted with SCCWRP to expand the survey to all ASBS/SWQPAs in California. This statewide survey was completed and in July 2003 SCCWRP issued its *Final Report: Discharges into State Water Quality Protection Areas* (SCCWRP 2003). Information gained from the study was to be used to guide future action on these discharges.

For the purposes of this survey, all drainages were divided into outlets and discharges. Outlets were defined as naturally occurring water bodies (*e.g.*, perennial or ephemeral streams and

naturally occurring gullies) that drain to an ASBS/SWQPA. Discharges were defined as anthropogenic sources that drain to an ASBS/SWQPA. Statewide, there were 1658 direct discharges into ASBS/SWQPAs. These discharges were further classified into 31 wastewater discharge points, 391 municipal/industrial storm drains, 1012 small storm drains (*e.g.*, from individual properties), and 224 nonpoint sources. In addition, 182 seeps were also identified as draining into ASBS/SWQPAs. Of these, SCCWRP identified 66 that were potential nonpoint sources of pollutants.

The survey was originally designed to identify storm water and nonpoint source discharges, which collectively represent about 98 percent of the discharges identified. However, one side benefit of this survey was that several wastewater point source discharges to ASBS/SWQPAs were identified that either are not permitted or are permitted without a California Ocean Plan exception. Thirty-one wastewater discharge points were identified. Some facilities have multiple discharge points, and subsequently staff has identified 13 facilities that discharge wastewater to ASBS/SWQPAs. Of these, only five are now properly covered by permits and exceptions. The remaining eight facilities are in violation of the California Ocean Plan. Two of these do have current permits (but not exceptions), and six are lacking NPDES permits.

The following briefly describes some of the results of the survey on a regional basis and also provides information concerning the water quality status of the ASBS/SWQPAs in those regions.

In the North Coast Region, seven of the eight ASBS/SWQPAs are located at or near the mouths of streams that are located in watersheds which do not meet water quality standards. For one example, Redwood Creek and the Klamath River flow into Redwood National Park ASBS/SWQPA. The Klamath River is 303(d) listed for nutrients and organic enrichment/low dissolved oxygen from both point source (including storm water) and nonpoint sources, and temperature from non-point sources. Redwood Creek is 303(d) listed for sedimentation/siltation from nonpoint sources. Redwood National Park ASBS/SWQPA also has a total of 41 direct discharges. The National Park Service wastewater treatment plant at Requa discharges onto a steep slope immediately above the Redwood National Park ASBS/SWQPA; this discharge operates under a waste discharge requirement (WDR) but does not have an NPDES permit, nor does it have an exception from the California Ocean Plan. There are 17 direct discharges into the Kings Range National Conservation Area ASBS/SWQPA. The community of Shelter Cove's wastewater treatment plant discharges into the Kings Range National Conservation Area ASBS/SWQPA under an NPDES permit and an exception from the California Ocean Plan.

Also in the North Coast Region, the Bodega Marine Laboratory discharges treated return seawater into the Bodega Marine Life Reserve ASBS/SWQPA under an NPDES permit but without the benefit of an exception from the California Ocean Plan. The Humboldt State University (HSU) Marine Laboratory discharges combined storm water and seawater into the ASBS/SWQPA at Trinidad Head; this discharge is currently not permitted, nor does it have an exception from the California Ocean Plan. The City of Trinidad's storm water system also discharges to the ASBS/SWQPA at the same point as the discharge from HSU Lab. The base of the bluffs at Trinidad has 29 groundwater seeps, many of which drain as rivulets across the beach and into the ASBS/SWQPA; the residents and businesses in Trinidad are currently entirely on septic systems, which may be contributing pollutants to those groundwater seeps. A seasonal

mooring field located at Trinidad has nonpoint source impacts, and a fish cleaning station on the Trinidad pier discharges untreated fish offal into the ASBS/SWQPA.

In the San Francisco Bay Region, there are 28 direct discharges and 3 natural outlets draining into the James V. Fitzgerald Marine Reserve ASBS/SWQPA, located immediately north of and bordering Half Moon Bay. This ASBS/SWQPA is 303(d) listed due to high coliform bacteria levels. One of the natural outlets into the James V. Fitzgerald Marine Reserve ASBS/SWQPA is San Vicente Creek, which is also 303(d) listed due to high coliform bacteria counts from nonpoint sources. The sparsely manned research facility at the Farallon Islands ASBS/SWQPA discharges raw liquid human waste without an NPDES permit or an exception from the California Ocean Plan. Bird Rock ASBS/SWQPA is located approximately one half mile from the mouth of Tomales Bay, which is 303(d) listed for metals, nutrients, pathogens and sediment, all from nonpoint sources.

In the Central Coast Region, a cove in the Julia Pfeiffer Burns Underwater Park ASBS/SWQPA has been completely filled with sediment, resulting from a landslide onto Highway 1 and likely accelerated by associated Caltrans road clearance work during the 1980s. Two small wastewater dischargers are south of and relatively close in proximity to the Point Lobos Ecological Reserve ASBS/SWQPA. Specific data about these discharges were not included in the SCCWRP Discharge Survey since they were greater than 100 meters outside of the ASBS/SWQPA boundary. However, these dischargers have historically had trouble in complying with their permit conditions and efforts are currently underway to divert their flows into the Carmel/Pebble Beach wastewater treatment plant. There are 348 direct discharges into the Carmel Bay ASBS/SWQPA. The Carmel Area Wastewater District (CAWD) plant discharges secondary treated wastewater into the Carmel Bay ASBS/SWQPA, but this discharge has an NPDES permit and an exception from the California Ocean Plan. There are 246 direct discharges into the Pacific Grove/Hopkins Marine Life Refuge ASBS/SWQPA; this ASBS/SWQPA is located in the southern portion of Monterey Bay, which is 303(d) listed for metals. The Hopkins Marine Laboratory discharges seawater into the ASBS/SWQPA following use in the laboratory; this discharge is currently not permitted, nor does it have an exception from the California Ocean Plan. The Monterey Bay Aquarium also discharges its return seawater just outside of but immediately to the north of the Pacific Grove/Hopkins ASBS/SWQPA. Año Nuevo Point and Island ASBS/SWQPA is located immediately adjacent to agricultural operations that apply pesticides, some of which may enter the ASBS/SWQPA through runoff or aerial deposition. The Central Coast Water Board has issued a Cleanup and Abatement Order (CAO) to the National Park Service (NPS) on Santa Rosa Island, which is surrounded by an ASBS/SWQPA. The CAO was issued in 1996 and requires the NPS to implement a road management plan (to reduce erosion and related sediment discharges). The NPS has not yet complied with the CAO.

In the Los Angeles Region, SCCWRP identified 410 direct discharges and 31 outlets into the Mugu Lagoon to Latigo Point ASBS/SWQPA, the largest number for any of the ASBS/SWQPAs. Since then staff has identified additional drainages, for a total of 538 direct discharges and outlets into that ASBS/SWQPA, of which 358 are small "storm drains" from homes, 120 are likely municipal storm drains and 21 are other nonpoint sources. The eastern portion of this ASBS/SWQPA is in the greater Santa Monica Bay, which is 303(d) listed for a variety of pollutants from both point sources (including storm water) and nonpoint sources.

Specific beaches at this ASBS/SWQPA are also 303(d) listed for high coliform count and beach closures related to nonpoint source pollution. This ASBS/SWQPA receives storm water and non-storm water runoff discharged under the Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit. In Ventura County, Calleguas Creek (including its estuary, Mugu Lagoon), a 303(d) listed water body, flows through the mouth of Mugu Lagoon into the west end of the Mugu Lagoon to Latigo Point ASBS/SWQPA. The U.S. Navy also discharges under the general industrial storm water NPDES permit into Mugu Lagoon, which in turn flows into the ASBS/SWQPA.

Two other U.S. Navy facilities, also in the Los Angeles Region, have permitted wastewater point source discharges (with exceptions) and permitted industrial storm water discharges (under the general permit). These are located at San Nicolas and San Clemente Islands. The University of Southern California (USC) Wrigley Institute on Santa Catalina Island discharges return seawater into the ASBS/SWQPA under an NPDES permit, currently without the benefit of an exception from the California Ocean Plan. Nearby, the town of Two Harbors on Santa Catalina Island discharges storm water into the ASBS/SWQPA; a pier and mooring facilities at Two Harbors potentially contribute nonpoint source pollutants as well. Also on Santa Catalina Island, a large coastal rock quarry discharges runoff into the ASBS/SWQPA under the industrial storm water general permit but without an exception.

In the Santa Ana Region, there are a total of 18 discharge points and three natural outlets identified along the coast of the Newport Beach Marine Life Refuge ASBS/SWQPA. One of those outlets is Buck Gully Creek, which is 303(d) listed because it does not meet standards for fecal or total coliform bacteria. SCCWRP identified a total of 16 discharge points and 16 natural outlets identified in the Irvine Coast Marine Life Refuge ASBS/SWQPA, which is partially in the Santa Ana Region (northern portion) and partially in the San Diego Region (southern portion). The Irvine Coast Marine Life Refuge ASBS/SWQPA is inclusive of the coast of Crystal Cove State Park. One of the streams draining into the Irvine Coast Marine Life Refuge ASBS/SWQPA, Los Trancos Creek, is 303(d) listed because it does not meet fecal coliform bacteria standards.

In the San Diego Region, 14 discharges and one natural outlet drain into the Heisler Park Ecological Reserve ASBS/SWQPA; the shoreline at Heisler Park Ecological Reserve ASBS/SWQPA is 303(d) listed because it does not meet water quality standards for bacterial indicators. There are 184 discharges into the San Diego-La Jolla Ecological Reserve ASBS/SWQPA. The shorelines of the San Diego Marine Life Refuge ASBS/SWQPA and the San Diego-La Jolla Ecological Reserve ASBS/SWQPA are also 303(d) listed because they do not meet water quality standards for bacterial indicators. SCCWRP and State Water Board staff have identified 93 discharges into the contiguous San Diego Marine Life Refuge ASBS/SWQPA. Staff has determined that these are associated with the Scripps Institution of Oceanography (Scripps). Scripps and its Stephen Birch Aquarium discharge return seawater through five of these outfalls under an NPDES permit. On July 22, 2004, Scripps was granted an exception by the State Water Board covering all these discharges. This exception included the strictest conditions, including comprehensive monitoring requirements, of any other exception to date. The San Diego Water Board recently re-issued the NPDES permit to Scripps which incorporates these strict conditions, covering waste seawater and storm water discharges.

Considering all of this information five general types of drainages are evident:

1. *Perennial and ephemeral streams, and estuaries, that may carry point and nonpoint source pollutants and flow into an ASBS/SWQPA.*

   Upstream discharges into natural streams and estuaries are subject to regulation by Regional Water Boards under the applicable Water Quality Control Plans (Basin Plans), through WDRs, waivers of WDRs, or prohibitions. Impaired natural streams and their estuaries will be addressed through Total Maximum Daily Loads (TMDLs) developed by the Regional Water Boards. In regulating these upstream discharges, the Regional Water Boards must ensure that downstream water quality standards are met. Downstream standards include the 2001 California Ocean Plan prohibition on discharges to ASBS/SWQPAs. (SWRCB 2001)

2. *Permitted storm water discharges.*

   SCCWRP identified 391 municipal or industrial storm drains that empty directly into ASBS/SWQPAs statewide. Except for storm drains covered under the recent Scripps exception in the San Diego Marine Life Refuge ASBS/SWQPA, none of the other municipal or industrial storm drains are covered under an exception from the 2001 California Ocean Plan's ASBS discharge prohibition. Storm water discharges from Phase I and Phase II Municipal Separate Storm Sewer Systems (MS4s), industrial facilities, and certain construction activities are considered point source wastes and are therefore issued NPDES permits. Various Phase I MS4 permittees have discharges directly into all mainland ASBS/SWQPAs in coastal southern California (Los Angeles, Santa Ana, and San Diego Regions), and in San Mateo County (San Francisco Bay Region) as well. There are Phase II MS4 discharges into certain ASBS/SWQPAs in Monterey County (Carmel and Pacific Grove, both in the Central Coast Region) and, depending on the applicability of the Permit, in Marin County (Bolinas in the San Francisco Bay Region), Mendocino County (Sea Ranch in the North Coast Region) and Humboldt County (Shelter Cove and Trinidad, also in the North Coast Region). State Highway 1 and US Highway 101, operated by Caltrans under a statewide NPDES storm water permit, are located adjacent to and discharge into many of the ASBS/SWQPAs. Statewide general permits also are currently in effect for industrial and construction related storm water discharges. For example, the US Navy discharges under the statewide industrial storm water NPDES permit into ASBS/SWQPAs at San Nicolas Island and San Clemente Island in the Los Angeles Region.

   Under the California Ocean Plan, all waste discharges to ASBS/SWQPAs are prohibited unless an exception is granted. These provisions are consistent with PRC Section 36710(f), which states that waste discharges into SWQPAs "shall be prohibited or limited by the imposition of special conditions in accordance with the Porter-Cologne Water Quality Control Act (Division 7 (commencing with Section 13000) of the Water Code) and implementing regulations, including, but not limited to, the California Ocean Plan…" Case-by-case exceptions under the California Ocean Plan establish "special conditions" to assure adequate protection to ASBS/SWQPAs. Those storm drain discharges that do not meet the

exception requirements of Section III(I)(1) of the California Ocean Plan would need to be eliminated.

3. *Point source discharges that are not strictly storm water-related but are covered by permits and exceptions.*

   Under the 2001 California Ocean Plan, point source discharges to ASBS/SWQPAs are allowed only if the State Water Board grants an exception to the discharge prohibition. Of the 13 point source dischargers that are not strictly storm water-related, currently only five dischargers have NPDES permits and have been granted California Ocean Plan exceptions contingent upon compliance with permit conditions. Four of these were issued prior to 1991 and included exceptions for the US Navy (San Clemente Island ASBS, Los Angeles Region) and (San Nicolas Island, Los Angeles Region), the Carmel Sanitary District (Carmel Bay ASBS, Central Coast Region), and the Humboldt County Resort Improvement District No.1 at Shelter Cove (Kings Range National Conservation Area ASBS, North Coast Region).

   On July 22, 2004, Scripps was granted the fifth exception (Resolution 2004-052) covering all its discharges (storm water and waste seawater) into the San Diego Marine Life Refuge ASBS (San Diego Region). This exception included the strictest conditions, including comprehensive monitoring requirements, of any other exception to date, assuring the protection of beneficial uses in the ASBS/SWQPA.

   The California Ocean Plan's provisions on ASBS are consistent with PRC Section 36710(f), which states that waste discharged into SWQPAs "shall be prohibited or limited by the imposition of special conditions..." The conditions in the exceptions issued by the State Water Board assure adequate protection to ASBS/SWQPAs.

4. *Point source discharges that are not strictly storm water-related and that lack exceptions from the California Ocean Plan prohibition, and, in some cases, permits.*

   Eight facilities have been identified that discharge wastewater to ASBS/SWQPAs without the benefit of an exception. These eight facilities are in violation of the California Ocean Plan. Of these, there are two waste seawater discharges from marine laboratories that have been issued permits but do not possess exceptions from the State Water Board. Both of these facilities have requested exceptions. These are:

   - UC Davis Bodega Marine Lab (North Coast Region);
   - USC Wrigley Institute on Santa Catalina Island (Los Angeles Region).

   Six other discharges into (or immediately adjacent to) ASBS/SWQPAs have neither a permit nor an exception. All of these facilities have requested exceptions. These are:

   - National Park Service wastewater treatment discharge at Requa (North Coast Region);
   - HSU Marine Laboratory combined storm water and waste seawater at Trinidad (North Coast Region);

- Fish cleaning station on Trinidad Pier (North Coast Region);
- US Fish and Wildlife Service untreated liquid human waste and gray water at the Farallon Islands (San Francisco Bay Region);
- Hopkins Marine Lab waste seawater (Central Coast Region); and
- Monterey Bay Aquarium waste seawater, discharging immediately adjacent to an ASBS/SWQPA (Central Coast Region).

Specifically for marine laboratories and public aquaria, there are really three concerns associated with their discharges. The first has to do with the chemical quality of their wastewater, and its potentially toxic or bioaccumulative effect on marine species in an ASBS/SWQPA. The second is less obvious and has to do with the potential for these discharges to introduce pathogens or exotic species into an ASBS/SWQPA. For example, the UC Bodega Marine Laboratory includes a pathology laboratory. For this reason, the wastewater is disinfected prior to discharge. This is the only marine laboratory at a ASBS/SWQPA that disinfects its wastewater on a regular, controlled basis. Finally, a third consideration is the discharge of storm water runoff from these laboratories/aquariums, which may be co-mingled with waste seawater.

The Central Coast Water Board has plans to include the Hopkins Laboratory and the Monterey Bay Aquarium discharge under its general NPDES permit for aquaculture facilities. State Water Board staff is currently working with other Regional Water Board staff and the dischargers to bring the marine research facilities into compliance.

Again, the California Ocean Plan prohibits all waste discharges to ASBS unless an exception is granted. This is consistent with PRC Section 36710(f), which states that waste discharged into SWQPAs "shall be prohibited or limited by the imposition of special conditions in accordance with the Porter-Cologne Water Quality Control Act (Division 7 (commencing with Section 13000) of the Water Code) and implementing regulations, including, but not limited to, the California Ocean Plan…" Case-by-case exceptions establish special conditions which should assure adequate protection to ASBS/SWQPAs. Those point source discharges that do not meet the exception requirements of Section III(I)(1) of the California Ocean Plan would need to be eliminated.

In addition, discharges into ocean waters in proximity to an ASBS/SWQPA must "be located a sufficient distance from such designated areas [ASBS/SWQPAs] to assure maintenance of natural water quality conditions in these areas" (SWRCB 2001). Hence, permits for discharges to ocean waters outside of, but in proximity to, a ASBS/SWQPA must also ensure that standards are met within that ASBS/SWQPA. There are two NPDES permitted discharges for treated wastewater located in the Highlands area south of Carmel, in close proximity but outside the Point Lobos Ecological Reserve ASBS/SWQPA in the Central Coast Region. These discharges at times have been in violation of their permits and may have impacted water quality within the Point Lobos ASBS/SWQPA.

Work is in progress to reduce pollution by diverting the Highlands waste streams to the Carmel wastewater treatment plant. The Carmel treatment plant has a larger capacity and is a

well maintained full secondary facility; much of the treated wastewater from the Carmel plant is tertiary treated and recycled as irrigation water. The diverted Highlands waste streams are rather small in comparison to the flows handled by the Carmel plant. By diverting the smaller Highlands waste streams to the Carmel treatment plant, the overall pollutant levels in the Carmel and Point Lobos ASBS/SWQPAs will be reduced. If these plans are fully implemented and these discharges are eliminated, then no additional action would be necessary for these two discharges.

5. *Nonpoint source discharges.*

224 nonpoint sources have been identified by SCCWRP as draining into (or immediately adjacent to) ASBS/SWQPAs statewide. These were found to be from a variety of activities, including agriculture, grazing, parking lots and roads, boat yards, boat moorings, piers, runoff from leach fields, potentially faulty septic systems, and other activities. Additionally, 66 seeps were identified that were also potential nonpoint sources of pollutants.

Statewide, SCCWRP identified a total of 1012 “small” storm drains not covered under a permit that discharge to an ASBS/SWQPA. These were identified as urban/residential surface runoff drains from individual homes, and clusters of homes or structures (and associated landscaped areas) that are not subject to regulation under an MS4 NPDES Permit. While staff has subsequently determined that some of these small storm drains are in fact municipal in nature, it is still true that the majority of the small storm drains are from individual properties.

The State Water Board and the California Coastal Commission’s (CCC) (2000) *Plan for California’s Nonpoint Source Pollution Control Program* (NPS Program Plan) identifies pollutant source categories and applicable management measures. The State is committed to implementing these management measures by 2013. In September 2004, the State Water Board approved its *Policy For Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (NPS Policy). The information provided in the NPS Policy is designed to assist all responsible and/or interested parties in understanding how the State’s NPS water quality control requirements will be implemented and enforced. According to the NPS Policy, NPS control programs will be implemented through the issuance of WDRs, a waiver of WDRs for individual discharges or a category of NPS discharges, or prohibitions in orders or Basin Plan amendments that address nonpoint pollution sources (SWRCB 2004b).

The NPS Program Plan, through the Critical Coastal Area (CCA) designation, directs its attention to “Coastal Areas of Special Biological Significance” when addressing management measure implementation. In accordance with the NPS Program Plan, State and Regional Water Board staff participate in the CCA Committee, chaired by the staff of the CCC. The purpose of the CCA Committee is to identify critical coastal areas needing protection from nonpoint source pollution and to encourage the implementation of watershed management plans in those areas on a priority basis. All of the shoreline, and tributary watersheds within the coastal zone, of the ASBS/SWQPAs have been included on the list of CCAs by that committee. For purposes of the CCA program, the coastal environment has been divided into

four zones as follows: 1) north coast; 2) San Francisco Bay and adjacent nearshore ocean coast; 3) central coast; and 4) south coast. The CCA Committee, during June and July 2003, conducted several public meetings, titled Information Exchange Forums, in each of these zones to determine the priorities for developing watershed management plans in CCAs.

Section 36710(f) of the PRC states that waste discharges to SWQPAs "shall be prohibited or limited by the imposition of special conditions..." There is no differentiation between point and nonpoint sources of wastes, and both are equally prohibited. Further, the California Ocean Plan prohibits all waste discharges to ASBS unless an exception is granted. Nonpoint source dischargers, like point source dischargers, must comply with all requirements of applicable water quality control plans, including the California Ocean Plan's ASBS discharge prohibition. For direct discharges of nonpoint source pollution, including storm water runoff not subject to an NPDES permit, the conditions in an exception issued by the State Water Board would assure adequate protection to ASBS/SWQPAs. Those nonpoint source and small storm drain discharges that do not meet the exception requirements of Section III(I)(1) of the California Ocean Plan would need to be eliminated.

E. Letters to Dischargers

On October 18, 2004, the State Water Board issued letters to 29 dischargers notifying them to cease discharging into ASBS or apply for an exception. To date, 25 letters have been received from dischargers requesting exceptions. A stakeholder meeting was held in La Jolla on January 13, 2005 to discuss the exception requirements. Staff is currently prioritizing the processing of these requests according to permit re-issuance schedules and the magnitude of the discharges.

F. Summary

The 2001 California Ocean Plan prohibits discharges into ASBS. According to the PRC as amended by AB 2800 and SB 512, ASBS have now also been classified as a subset of SWQPAs. The SCCWRP survey of discharges into ASBS/SWQPAs has documented a large number of direct point source and nonpoint source discharges. Case-by-case exceptions, granted by the State Water Board in accordance with Section III(I)(1) of the California Ocean Plan have established special conditions for five dischargers into ASBS which were intended to protect ASBS/SWQPAs. Four of these five exceptions are more than fourteen years old and should be reviewed to determine if adequate protections are in place by today's standards. Additional case-by-case exceptions may be necessary for other dischargers, which should assure adequate protection to ASBS/SWQPAs. Those discharges that do not meet the exception requirements of Section III(I)(1) of the California Ocean Plan will need to be eliminated.

IV. Alternatives for Board Actions and Staff Recommendations

A. Incorporation of the classification of ASBS as State Water Quality Protection Areas per the PRC

1. *Present State Policy:*

The State Water Board, in 1974 and 1975, designated 34 ASBS. Since 1983, the California Ocean Plan has prohibited waste discharges to ASBS (SWRCB 1983a). Similar to previous versions of the California Ocean Plan, the 2001 California Ocean Plan (SWRCB 2001) states: "Waste shall not be discharged to areas designated as being of special biological significance. Discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas."

According to Section 36700 (f) of the PRC "A "state water quality protection area" is a nonterrestrial marine or estuarine area designated to protect marine species or biological communities from an undesirable alteration in natural water quality, including, but not limited to, areas of special biological significance that have been designated by the State Water Resources Control Board through its water quality control planning process. "Areas of special biological significance" are a subset of state water quality protection areas, and require special protection as determined by the State Water Resources Control Board pursuant to the California Ocean Plan adopted and reviewed pursuant to Article 4 (commencing with Section 13160) of Chapter 3 of Division 7 of the Water Code and pursuant to the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan) adopted by the state board." Effective on January 1, 2003, all ASBS were included within the SWQPAs category without State Water Board action pursuant to Section 36750 of the PRC.

2. *Issue Description:*

Since January 2003, all ASBS have been classified as a subset of SWQPAs under state law. This classification relates to the geographic nature and management of the ASBS/SWQPAs within the context of the State's Marine Managed Areas (MMAs), and not the ASBS beneficial use term. Furthermore, the AB 2800 State Interagency Coordinating Committee has already acted, under authority of the PRC, to rename certain ASBS/SWQPAs to be consistent with the entire system of Marine Managed and Protected Areas in the State's ocean and estuarine waters. Furthermore, the State Fish and Game Commission has adopted these name changes for certain Marine Protected Areas (MPAs). It is therefore important to change the names of those ASBS that physically coincide with those MMA/MPAs with name changes. Thus the amended California Ocean Plan would acknowledge and be consistent with the PRC and the classification system of other state agencies.

3. *Alternatives:*

Alternative 1 (Staff recommendation) - Staff recommends incorporating the term State Water Quality Protection Areas into the California Ocean Plan in order to conform to the PRC and to change the names of certain ASBS to be consistent with the name changes made

by the AB 2800 State Interagency Coordinating Committee and acknowledged by the State Fish and Game Commission and the Resources Agency.

Alternative 2 - Status quo. Do not change the California Ocean Plan to acknowledge the PRC. This is not recommended as it disregards State law and, it will cause confusion within the management and coordination of issues relative to the State's MMA program.

4. *Staff Recommendation – Alternative 1:*

This alternative is considered to be of an administrative nature. It will not influence the protection of water quality afforded to the ASBS under the California Ocean Plan. It will not change the ASBS as a beneficial use, and it will not eliminate the absolute prohibition of waste discharges into ASBS. There are three changes that staff considers appropriate: a) Modify the definition of ASBS in Appendix 1 to state that as of January 2003 all ASBS are classified as a subset of State Water Quality Protection Areas, b) include a definition of State Water Quality Protection Areas in Appendix 1, and c) modify Table V-1 to include the term "State Water Quality Protection Areas" and to rename those ASBS that have already been renamed by the AB 2800 State Interagency Coordinating Committee.

B. <u>Clarification that all Ocean Plan Exceptions are subject to Triennial Review</u>

1. *Present State Policy:*

There are five exceptions to the California Ocean Plan. Four of these five are rather dated, the last being issued in 1990. The fifth is new, just issued in 2004. The four older exceptions have not been consistently reviewed by the State Water Board since being issued. The newest exception does state that it will be reviewed during the Triennial Review of the California Ocean Plan. There is a great likelihood that there will be more exceptions in the future due to the large number of discharges that the State Water Board has recently been made aware of.

2. *Issue Description:*

The California Ocean Plan includes the exception process as an implementation procedure. Under both federal and state law, the California Ocean Plan must be reviewed triennially. The State Water Board has not routinely reviewed exceptions, however. Generally, all NPDES permits, WDRs and waivers are subject to periodic review (5 years or less for permits and waivers). If the State Water Board issues the permit or WDRs, the State Water Board also has the opportunity to review an exception related to the permit/WDRs. If not, the exception action doesn't automatically come to the State Water Board's attention. Therefore, adding a list of exception actions to the California Ocean Plan ensures that the exceptions are triennially reviewed along with the rest of the plan.

Periodic review would implement federal and state law and, more importantly, would better protect water quality in ASBS/SWQPAs. For example, it has come to staff's attention that there are a great deal of discrepancies in terms of protections and monitoring between the older four California Ocean Plan exceptions, which are all relevant to the prohibition of

waste discharges into ASBS. Such discrepancies could be considered and possibly be corrected during the triennial review.

3. *Alternatives:*

   Alternative 1 (Staff recommendation) - Staff recommends to add a statement to the Implementation Section of the California Ocean Plan that all exceptions will be reviewed during the Triennial Review for the California Ocean Plan, and to include a list of all exceptions in a new Appendix VII.

   Alternative 2 - Status quo. Do not list the exceptions in the California Ocean Plan and do not review the exceptions during the Triennial Review. This is not recommended since existing out-of-date exceptions may not come to the State Water Board's attention.

4. *Staff Recommendation – Alternative 1:*

   We are proposing to amend Section III(I) of the California Ocean Plan to add a requirement for the State Water Board to review and consider re-opening all exceptions during each Triennial Review and to add an Appendix VII to include references to all exceptions in the California Ocean Plan. The requirement for periodic review is consistent with existing State law which requires that the California Ocean Plan be triennially reviewed. It is also consistent with the State Water Board's existing authority to re-open or rescind exceptions for cause. Periodic review also ensures that all dischargers with exceptions are treated consistently. Currently, the Scripps' exception is the strictest to date, while some older exceptions (*e.g.*, Shelter Cove and the US Navy at San Nicolas Island) have minimal requirements, and the relevant permits are less protective than the Scripps NPDES permit.

V. Environmental Impact Analyses

These amendments will not adversely impact the environment. The inclusion of the term State Water Quality Protection Area is strictly administrative because the change has already been made by the Legislature. The addition of a requirement to review all exceptions does not change existing law and has the potential to significantly improve environmental conditions by placing everyone on notice that exceptions are subject to triennial review. Older exceptions will be reviewed to ensure that controls and monitoring requirements are upgraded to provide additional environmental protections for the ASBS.

VI. Compliance with Sections 13241 and 13242 of the CWC

Staff is not proposing the adoption of water quality objectives; therefore, we are not required to consider Section 13241 of the CWC for these proposed amendments to the California Ocean Plan. Furthermore, the clarification that all exceptions to the California Ocean Plan are subject to State Water Board review complies with Section 13242 of the CWC as it relates to determining compliance with objectives.

VII. Proposed California Ocean Plan Amendment

1. Chapter III, I. State Board Exceptions to Plan Requirements, page 22, add new subsection 2 on Triennial Review of all exceptions.

I. State Water Board Exceptions to Plan Requirements

1. The State Water Board may, in compliance with the California Environmental Quality Act, subsequent to a public hearing, and with the concurrence of the Environmental Protection Agency, grant exceptions where the State Water Board determines:

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

   b. The public interest will be served.

2. All exceptions issued by the State Water Board and in effect at the time of the Triennial Review will be reviewed at that time. If there is sufficient cause to re-open or revoke any exception, the State Water Board may direct staff to prepare a report and to schedule a public hearing. If after the public hearing the State Water Board decides to re-open, revoke, or re-issue a particular exception, it may do so at that time.

2. Appendix I, Definition of Terms, pages 23 through 26, modify the definition for "Areas of Special Biological Significance" and add a definition for the term "State Water Quality Protection Areas."

AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS) are those areas designated by the ~~SWRCB~~ State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of STATE* WATER QUALITY PROTECTION AREAS.

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

3. Appendix V, Areas* of Special Biological Significance, pages 38 and 39, modify Table V-1 to incorporate the classification of ASBS as a subset of SWQPAs and to modify the names of specific ASBS.

APPENDIX V

STATE* WATER QUALITY PROTECTION AREAS
AREAS* OF SPECIAL BIOLOGICAL SIGNIFICANCE

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

No.	ASBS Name	Date Designated	SWRCB Resolution No.	Region No.
1.	~~Pygmy Forest Ecological Staircase~~ Jughandle Cove	March 21, 1974	74-28	1
2.	Del Mar Landing ~~Ecological Reserve~~	March 21, 1974	74-28	1
3.	Gerstle Cove	March 21, 1974	74-28	1
4.	Bodega ~~Marine Life Refuge~~	March 21, 1974	74-28	1
5.	~~Kelp Beds at~~ Saunders Reef	March 21, 1974	74-28	1
6.	~~Kelp Beds at~~ Trinidad Head	March 21, 1974	74-28	1
7.	King~~s~~ Range ~~National Conservation Area~~	March 21, 1974	74-28	1
8.	Redwood National Park	March 21, 1974	74-28	1
9.	James V. Fitzgerald ~~Marine Reserve~~	March 21, 1974	74-28	2
10.	Farallon Islands	March 21, 1974	74-28	2
11.	Duxbury Reef ~~Reserve and Extension~~	March 21, 1974	74-28	2
12.	Point Reyes Headlands ~~Reserve and Extension~~	March 21, 1974	74-28	2
13.	Double Point	March 21, 1974	74-28	2
14.	Bird Rock	March 21, 1974	74-28	2
15.	Año Nuevo ~~Point and Island~~	March 21, 1974	74-28	3
16.	Point Lobos ~~Ecological Reserve~~	March 21, 1974	74-28	3
17.	San Miguel, Santa Rosa, and Santa Cruz Islands	March 21, 1974	74-28	~~4~~3
18.	Julia Pfeiffer Burns ~~Underwater Park~~	March 21, 1974	74-28	3
19.	Pacific Grove ~~Marine Gardens Fish Refuge and Hopkins Marine Life Refuge~~	March 21, 1974	74-28	3
20.	~~Ocean Area Surrounding the Mouth of~~ Salmon Creek Coast	March 21, 1974	74-28	3

21.	San Nicolas Island and Begg Rock	March 21, 1974	74-28	4
22.	Santa Barbara ~~Island, Santa Barbara County~~ and Anacapa Islands	March 21, 1974	74-28	4
23.	San Clemente Island	March 21, 1974	74-28	4
24.	~~Mugu Lagoon~~ Laguna Point to Latigo Point	March 21, 1974	74-28	4
25.	Northwest Santa Catalina Island ~~– Subarea One, Isthmus Cove to Catalina Head~~	March 21, 1974	74-28	4
26.	Western Santa Catalina Island ~~– Subarea Two, North End of Little Harbor to Ben Weston Point~~	March 21, 1974	74-28	4
27.	~~Santa Catalina Island Subarea Three,~~ Farnsworth Bank ~~Ecological Reserve~~	March 21, 1974	74-28	4
28.	Southeast Santa Catalina Island ~~Subarea Four, Binnacle Rock to Jewfish Point~~	March 21, 1974	74-28	4
29.	~~San Diego~~ La Jolla ~~Ecological Reserve~~	March 21, 1974	74-28	9
30.	Heisler Park ~~Ecological Reserve~~	March 21, 1974	74-28	9
31.	San Diego-Scripps ~~Marine Life Refuge~~	March 21, 1974	74-28	9
32.	Robert E. Badham ~~Newport Beach Marine Life Refuge~~	April 18, 1974	74-32	8
33.	Irvine Coast ~~Marine Life Refuge~~	April 18, 1974	74-32	8, 9
34.	Carmel Bay	June 19, 1975	75-61	3

4. Appendix VII, Exceptions to the California Ocean Plan, add a new Appendix VII and Table VII-1 listing California Ocean Plan exceptions that are currently in effect.

APPENDIX VII

EXCEPTIONS TO THE CALIOFRNIA OCEAN PLAN

TABLE VII-1
EXCEPTIONS TO THE CALIFORNIA OCEAN PLAN

(GRANTED BY THE STATE WATER RESOURCES CONTROL BOARD)

Year	Resolution	Applicable Provision	Discharger
1977	77-11	Discharge Prohibition, ASBS #23	US Navy San Clemente Island
1983	83-78	Discharge Prohibition, ASBS #7	Humboldt County Resort Improvement District No.1
1984	84-78	Discharge Prohibition, ASBS #34	Carmel Sanitary District
1990	90-105	Discharge Prohibition, ASBS #21	US Navy San Nicolas Island
2004	2004-0052	Discharge Prohibition, ASBS #31	UC Scripps Institution of Oceanography

CALIFORNIA ENVIRONMENTAL QUALITY ACT

Introduction

In California, protection of the quality of waters of the State is entrusted by law to the State Water Resources Control Board (State Water Board) and the nine Regional Water Quality Control Boards (Regional Water Boards). As authorized by the California Water Code (CWC), the State Water Board has adopted statewide water quality control plans, such as the California Ocean Plan and the California Thermal Plan. Consistent with and complementary to these statewide plans, each Regional Water Board has adopted a regional water quality control plan (basin plan) that contains specific water quality standards and implementation provisions for its region. (Water quality standards consist of a water body's designated uses and water quality objectives to protect those uses and antidegradation.) Basin plans must be approved by the State Water Board and by the State Office of Administrative Law (OAL). The Regional Water Boards are primarily responsible for implementing both statewide water quality control plans and basin plans.

Both the federal Clean Water Act (CWA) and the CWC require periodic review of the State's water quality standards. The purpose of such review is to determine, with public input, whether any changes are needed in the standards. Follow-up actions by the State or Regional Water Boards ensure that needed changes identified in the review process will be made as amendments to the water quality control plan under review.

Under provisions of the California Environmental Quality Act (CEQA), certified State regulatory programs are exempt from certain aspects of the CEQA process. As noted below:

> *Section 21080.5 of the Public Resources Code provides that a regulatory program of a state agency shall be certified by the Secretary for Resources as being exempt from the requirements for preparing EIRs, Negative Declarations, and Initial Studies if the Secretary finds that the program meets the criteria contained in that code section. A certified program remains subject to other provisions in CEQA such as the policy of avoiding significant adverse effects on the environment where feasible. This article provides information concerning certified programs.* [California Code of Regulations (CCR), Title 14, §15250]

The water quality planning process of the State and Regional Water Boards, by which the boards prepare, adopt, review, and amend the statewide and basin plans, is certified by the Secretary for Resources as "functionally equivalent" to the CEQA process. This means that the State and Regional Water Boards' process of public hearings, responsiveness to public comments, preparation of environmental documentation, and public decision-making serves as an approved alternative to the CEQA process, substituting this "functionally equivalent" procedure for some CEQA requirements. The current review process for the California Ocean Plan follows the approved procedure for review of basin plans.

This section summarizes the CEQA compliance provided by the State Water Board through preparation and circulation of this draft Functional Equivalent Document (FED) and the following Final FED, including the growth inducing and cumulative impact descriptions.

Growth-Inducing Impacts

The CEQA Guidelines (CCR, Title 14, Chapter 3) provide the following direction for the examination of growth-inducing impacts:

> *(d) Growth-Inducing Impact of the Proposed Project. Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a waste water treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.* (CCR, Title 14, §15126.2(d))

The proposed actions contemplated by this FED include:

Issue 1: Reasonable Potential: Determining when California Ocean Plan Water Quality-based Effluent Limitations are Required, and

Issue 2: Classification of Areas of Special Biological Significance (ASBS) as State Water Quality Protection Areas (SWQPAs), rename certain ASBS to coincide with name changes corresponding to Marine Protected Areas, and clarification that <u>all</u> exceptions are subject to Triennial Review.

Implementation of either issue is not expected to induce additional growth as a result of perceived lessening of water quality protection requirements.

Cumulative Impacts

The CEQA Guidelines provide the following definition of cumulative impacts:

> *"Cumulative impacts" refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.*
>
> *(a) The individual effects may be changes resulting from a single project or a number of separate projects.*
>
> *(b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.* (CCR, Title 14, §15355)

The fundamental purpose of the cumulative impact analysis is to ensure that the potential environmental impacts of any individual project are not considered in isolation. Impacts that are individually less than significant on a project-by-project basis, could pose a potentially significant impact when considered with the impacts of other projects. The cumulative impact analysis need not be performed at the same level of detail as a "project level" analysis but must be sufficient to disclose potential combined effects that could constitute a significant adverse impact.

Implementation of the proposed amendments to the California Ocean Plan would alter the manner in which water quality is assessed and monitored. However, the required frequency of sampling and the number of analyses would not be substantially changed from existing requirements, and consequently the proposed changes would not require a significant change in sampling personnel, vehicle trips, field equipment, or other parameters of the sampling process. Further, implementation of the proposed amendments is not expected to contribute to a significant environmental impact.

Resolution of Environmental Checklist Items

Pursuant to Section 3777(a), Title 23, CCR, an environmental checklist (see Appendix A) was completed for evaluating potential environmental effects due to implementation of the proposed amendments. Staff found that there would be no adverse environmental impacts resulting from the actions proposed in the amendments.

RESPONSES TO COMMENTS ON THE DRAFT FFED

Commenters and Affiliations

Individuals or organizations who submitted written comments on the draft FFED or who gave testimony at the April 6, 2005 public hearing are listed below. Each of the commenters is referred to by number when referenced in this section. When an agency or individual submitted written comments, staff has relied on that source to characterize these comments. All comments presented at the hearing pertaining to the proposed amendments have been addressed.

Written Comments

No. 1
The Ocean Conservancy (TOC), Natural Resources Defense Council (NRDC), California Coastkeeper Alliance (CCA) and Defenders of Wildlife (DOW). dbeckman@nrdc.org, lsheehan@cacoastkeeper.org, snewkirk@oceanconservacny.org, jcurland@defenders.org. March 30, 2005
David Beckman, Senior Attorney, NRDC; Linda Sheehan, Executive Director, CCA; Sarah Newkirk, Pollution Programs Manager, TOC; and Jim Curland, Marine Program Associate, DOW

No. 2
City of Monterey. City Hall, Monterey, CA 93940. March 31, 2005
Dan Albert, Mayor

No. 3
Connolly-Pacific Co. 1925 Pier D Street, Long Beach, CA 90802-1089. April 5, 2005
Ralph Larison, President

No. 4
County of Los Angeles, Department of Public Works. 900 South Fremont Avenue, Alhambra, CA 91803-1331. April 5, 2005
Donald L. Wolfe, Acting Director, and Rod H. Kubomoto, Assistant Deputy Director

No. 5
Native American Heritage Commission. 915 Capitol Mall, Room 364, Sacramento, CA 95814. April 5, 2005
Carol Gaubatz, Program Analyst

No. 6
Latham & Watkins, LLP. 600 West Broadway, Suite 1800, San Diego, CA 92101-3375. On behalf of the Pebble Beach Company and the City of Carmel-by-the-Sea. April 5 and 6, 2005
Kelly E. Richardson and Neal Maguire

No. 7
City of Pacific Grove. 300 Forest Avenue, Pacific Grove, CA 93950. April 6, 2005
Ross G. Hubbard, City Manager

No. 8
Tri-TAC, California Association of Sanitation Agencies (CASA), and Southern California Alliance of Publicly Owned Treatment Works (SCAP). 1955 Workman Mill Road, Whittier, CA 90601. April 6, 2005
Roberta L. Larson, Director, CASA and Sharon N. Green, Chair, Tri-TAC

No. 9
Procopio, Cory, Hargreaves & Savitch, LLP. 530 B Street, Suite 2100, San Diego, CA 92101-4469. On behalf of Scripps Institution of Oceanography (Scripps). April 6, 2005
John J. Lormon

Public Hearing Commenters and Affiliation

No. 10
Melissa Miller-Henson, Resource Agency

No. 8
Martha Rincon, Los Angeles County Sanitation District and CASA/Tri-TAC

No. 11
David Arietta, Western States Petroleum Association
Klaus Suverkrop, Larry Walker Assoicates

No. 12
Paul Beasuf (for Karen Ashby) California Stormwater Quality Association

No. 6
Kelly Richardson, Latham & Watkins

No. 4
Daniel Lafferty, County of Los Angeles, Department of Public Works

No. 13
Michael Flake, California Department of Transportation

No. 7
Steve Leiker, City of Pacific Grove

No. 2
Deborah Mahl, City of Monterey

General Comments

Comment 1: The State Water Board should consult with Native American tribes whose cultural resources and traditions may be impacted by potential changes in water quality from the proposed amendments. (5)

Response: The proposed amendments to the California Ocean Plan involving the addition of Reasonable Potential, and the minor changes regarding ASBS and related exception provisions, will

not result in any impacts to cultural resources or traditions. These amendments may even result in a net water quality benefit to California's near coastal ocean waters. Nevertheless, we appreciate the need to consult with Native American tribes if the State Water Board considers any further actions or changes to water quality plans or policies that may impact cultural resources and traditions. We will be sure to contact the Native American Heritage Commission and the appropriate Native American tribes if such situations arise.

Comments on Reasonable Potential – Issue 1

Comment 2: Currently the last sentence in the second paragraph of proposed Appendix VI reads: "This appendix does not apply to permits that are based on best management practices (BMP) and contain no numeric effluent limitations." The sentence is confusing and somewhat contradictory. The following revision is proposed:

"The appendix does not apply to storm water permits and non-point source waste discharge requirements, waivers, or prohibitions." (12)

Response: Staff believe that the suggested revision is not appropriate because it would categorically prevent the Appendix VI reasonable potential procedure from being used during the permitting of storm water discharges. Section C of the Introduction of the California Ocean plan already describes the applicability of the California Ocean Plan for non-point sources of waste.

Comment 3: Scripps now has a permit that contains both storm water BMPs and numeric effluent limits for combined industrial and storm water discharges. It appears that the last sentence in the second paragraph of Appendix V1 did not anticipate such a situation. The following revision is proposed:

"This appendix does not apply to permits or any portion of a permit where the discharge is based on best management practices (BMP) unless such discharge is also subject to numeric effluent limitations." (9)

Response: Staff agree with the revision and will incorporate it into Appendix VI.

Comment 4: Commenters support the inclusion of reasonable potential in the California Ocean Plan as it provide a clear methodology for the Regional Water Boards to use in the determination of when effluents are needed and when effluent monitoring is required to ensure the compliance with the limitations. The statistically based approach that's being proposed by staff appears to be robust, comprehensive and a reasonable choice that tries to take into account effluent variability, the use of censored data in a manner that tries to account for the variance, and the differences you'll find in effluent quality. (8, 11)

Response: Comments noted.

Comment 5: Copies of the peer reviews and the RP calculator program should be made available as soon as possible. (8, 11)

Response: These items were posted on the Ocean Standards Unit website after the April 6, 2005 hearing (http://www.waterboards.ca.gov/plnspols/oplans/index.html).

Comment 6: In regards to the non-parametric RPA, the steps shown on pages 33 and 35 of the draft FFED need to clarify some of the terms and basically identify some of the assumptions that would need to be made in order to conduct this non-parametric RPA. For example, Step 11 on page 34 indicates that adjusted data (i.e., concentration after mixing) are to be compared to the water quality objective and the sample size is to be reduced by 1 for each "tie." A "tie" is not clearly defined in this step and may lead to ambiguity as to how the censored data (i.e., ND and DNQ values) are to be used. (8)

Response: In contrast to the parametric portions of Appendix VI, the non-parametric RPA does not require *a priori* assumptions about the underlying effluent data distribution and does not attempt to estimate location or dispersion (i.e., summary) statistics from the data. The only assumption is that the data consists of independent, random samples collected from the population, and this is required for most statistical inference tests.

The terms needed to apply the non-parametric RPA are defined within the steps of the Appendix VI procedure. A possible cause for confusion may have come from the discussion in section III(B)(7) of Issue 1 in the draft FFED which differed from the Appendix VI procedure in regard to whether DNQ values count as an exceedance. Staff has revised that section as well as the response to comment 12.

DNQ data values, as defined in the California Ocean Plan, represent data values that cannot be quantified with precision because the concentration is below the lowest calibration standard (i.e., the minimum level, ML) used in the laboratory analysis procedure. DNQ values represent *interval censored* data, since these values are between two thresholds, the MDL on the low end and the ML on the high end. Helsel (2005) describes a non-parametric method for handling interval censored data by assigning tied ranks for all data between the two thresholds. This concept is applied in Step 11 of the RPA procedure.

Step 11 attempts to enumerate the number of definitive non-exceedances of the water quality objective, Co, in a highly censored data set. Sixteen or more definitive non-exceedances is the required evidence to demonstrate that no reasonable potential exists to cause an excursion of Co. Three situations may arise depending on where Co is in relation to the adjusted MDL and ML. If MDL < ML < Co then NDs are definitive nonexceedances and DNQs are also definitive nonexceedances. If MDL < Co $\leq$ ML then NDs are definitive nonexceedances and DNQs are ties because the DNQ interval is both below and above the water quality objective. Ties are defined in Step 11 as an "inconclusive censored value result." If Co $\leq$ MDL < ML then NDs are ties and DNQs are ties as well.

Although the DNQ interval in this last situation is above the water quality objective, the DNQ value cannot be considered an exceedance because the sample is not quantified with an acceptable amount of precision. This is consistent with the California Ocean Plan use of DNQs for assessing compliance with effluent limitations (California Ocean Plan, Chapter III, Section C(7)(a)) and is also consistent with section 6.1.5.5 of the State Water Board's Water Quality Control Policy for

Developing California's Clean Water Act Section 303(d) List (SWRCB 2004c). Neither can a DNQ in the last situation be considered a non-exceedance.

Comment 7: The RPA procedure should clearly state in Step 4 or Step 7 that DNQs are to be considered "not detected at the ML or <ML" for the purpose of performing the parametric procedures with censored data, if this is the State Water Boards's intent. (8)

Response: This is staff's intent. As discussed above, DNQ values present a challenge because they are a form of interval censored data. Although parametric maximum likelihood estimation methods are available to use with interval censored data, these methods generally require about 30 quantified values (Helsel 2005) and sophisticated software. Staff extended the robust ROS method for use with DNQ data by expanding the lower end of the DNQ interval to zero. The summary statistics obtained are still reliable in comparison to the variable and arbitrary substitution methods. The last line of Step 4 will be modified to include the less than signs as follows: For ND values, Ce is replaced with "< MDL"; for DNQ values, Ce is replaced with "<ML."

Comment 8: There should be an increased minimum sample size for the number of effluent data used to implement the parametric procedure. This would have the benefit of reducing the uncertainty of the analysis. (8, 11)

Response: See response to comment 18 from the peer reviewers on page 28.

Comment 9: The one exceedance trigger for reasonable potential is appropriately conservative when used with small sample sizes. When you have a lot of data, the single exceedance trigger is overly conservative and actually discourages people from doing the additional monitoring that you would want, to adequately characterize the problem, if there is one. (11)

Response: The one exceedance trigger in Step 5 is literally based on the federal NPDES regulation requirement at 40 CFR 122.44 (d) (1) (iii). A single exceedance is direct evidence that a "discharge causes an excursion" above the water quality objective as stated in the federal regulation. The remainder of the Appendix VI procedure pertains to a statistical test to determine if the "discharge has the reasonable potential to cause an excursion" when no direct exceedances are present. Staff recognize that the single exceedance trigger will likely affect reasonable potential assessments when the sample size is 60 or more.

Comment 10: Step 13 should be revised to prevent inconsistencies in permit writing. (8)

Response: Staff has previously responded to the same comment and suggested revision offered by Tri-TAC in Comment 15 within the RP issue section of the FFED.

Comments on ASBS and Exemptions – Issue 2

Comment 11: The State Water Board should modifying section III.E.1 in the Ocean Plan to include the following statement: "The SWQPA classification of ASBSs does not alter or affect these provisions." (1)

Response: The SWQPA classification of ASBS definitely does not alter or affect these ASBS waste discharge prohibition in the California Ocean Plan. In fact, none of the proposed ASBS or exception amendments alter or affect the discharge prohibition. The discussion in the FFED regarding Issue #2 makes this abundantly clear. Therefore we believe that the inclusion of the statement would be duplicative and unnecessary. Furthermore, the addition of this statement does not meet the necessity standard under the Administrative Procedure Act.

Comment 12: With the understanding that the name changes for certain ASBS are purely administrative, will not alter any protections afforded ASBS, and will probably mitigate some confusion (1), the proposed changes to classify ASBS as SWQPAs and to rename certain ASBS, as is required by AB 2800, is supported. (1, 10, 12)

Response: The name changes for certain ASBS are purely administrative, and will not alter any protections afforded ASBS. The classification of ASBS as SWQPAs and the renaming of certain ASBS to be consistent with name changes for other marine managed areas is indeed required by AB 2800. State Water Board staff participated with the other state agencies on the California State Interagency Coordinating Committee (CalSICC) for Marine Managed Areas that was chaired by Ms. Miller-Henson of the Resources Agency. All of the name changes to ASBS are a result of the commonly agreed to name changes and re-classifications for all marine managed areas as a result of CalSICC's work. We appreciate the support for these amendments.

Comment 13: The amendments would provide that all California Ocean Plan exceptions are subject to Triennial Review. There are currently five exceptions to the California Ocean Plan's ASBS provisions. Of these, only the most recent - issued to the Scripps Institution of Oceanography - is adequately protective of the ASBS beneficial use. This amendment would permit the State Water Board to review the older, less protective exceptions and revise or revoke them if necessary. The amendment would also permit the State Water Board to review more recent exceptions and consider whether the exceptions' conditions are working to maintain natural water quality. It is important that exceptions be reconsidered periodically, and this amendment would provide for this reconsideration. (1)

Response: The State Water Board is already permitted under the California Water Code to review, re-open, or revoke any exception if the State Water Board determines that there is just cause. We agree strongly that it is important that exceptions be reconsidered periodically; the proposed amendment would provide the Triennial Review as the most convenient and appropriate time to consider any such revisions that may be necessary in response to information supplied at that time. We appreciate the support for these amendments.

Comment 14: The State Water Board should re-consider the previously proposed California Ocean Plan amendments described in the State Water Board staff's Informational Document from December 2003 and considered in the scoping meetings during January and February of 2004. These amendments would have established implementation provisions for discharges into SWQPAs. (2, 6, 7, 13)

Response: Only minor changes to the ASBS provisions are currently being considered. The previous more extensive proposed changes to the ASBS discharge prohibition for storm water and nonpoint

source discharges including the definition of "controlled to the extent practicable" and "limited by special conditions," as originally mentioned in the Public Resources Code (and described in the State Board staff's December 2003 Informational Document for the 2004 Scoping Meetings), have been withdrawn and are no longer being considered. SB 512 has eliminated the need to pursue those extensive changes. Furthermore, these comments are outside of the scope of the proposed amendments, the FFED, and the public hearing held on April 6, 2005.

Comment 15: Commenters questioned how the prohibition of storm water discharges to ASBS was developed. The 1978 and 1983 California Ocean Plan amendments in effect prohibited both point and nonpoint sources to ASBS, but commenters question whether the State Water Board fully understood and considered the implications of such prohibitions at the time of the adoption. Commenters' fundamental concern is that the State has never fully evaluated the implications of the prohibition consistent with CEQA and the Porter-Cologne Act (specifically Water Code sections 13241 and 13242). (2, 7, 12, 13)

Response: These comments are not relevant to the minor changes to the ASBS definitions, name changes and exception provisions of the California Ocean Plan. The discharge prohibition is not proposed but has been in effect for over twenty years. Furthermore, these comments are outside of the scope of the proposed amendments, the FFED, and the public hearing held on April 6, 2005.

Comment 16: The proposed amendments fail to comply with the applicable requirements of the Public Resources Code. The State Water Board should hold a public hearing to consider whether the California Ocean Plan is consistent with the Public Resources Code, and direct all Regional Water Boards to refrain from taking any enforcement against storm water dischargers until the State Water Board has conclusively resolved whether the California Ocean Plan is being applied appropriately. Furthermore, the State Water Board should continue the hearing on April 6,2005, for at least 30 days to provide time for the State Water Board to thoroughly evaluate the petition. (2, 3, 6)

Response: We strongly disagree. Senate Bill 512 (Chapter 854, Statutes of 2004) amended the marine managed areas portion of the PRC, effective January 1, 2005, as follows: ""Areas of special biological significance" are a subset of state water quality protection areas, and require special protection as determined by the State Water Resources Control Board pursuant to the California Ocean Plan adopted and reviewed pursuant to Article 4 (commencing with Section 13160) of Chapter 3 of Division 7 of the Water Code and pursuant to the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan) adopted by the state board." The proposed amendment, to the California Ocean Plan's definitions in Appendix I, is completely consistent with this definition in the Public Resources Code.

Section 36710(f) of the PRC was also amended as follows: "In a state water quality protection area, waste discharges shall be prohibited or limited by the imposition of special conditions in accordance with the Porter-Cologne Water Quality Control Act (Division 7 (commencing with Section 13000) of the Water Code) and implementing regulations, including, but not limited to, the California Ocean Plan adopted and reviewed pursuant to Article 4 (commencing with Section 13160) of Chapter 3 of Division 7 of the Water Code and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal

Plan) adopted by the state board. No other use is restricted." This language replaced the prior wording stating that point sources into ASBS must be prohibited or limited by special conditions and that nonpoint sources must be controlled to the extent practicable. The California Ocean Plan's ASBS discharge prohibition for all sources, both point and nonpoint, stands unless an exception is granted.

Finally, the petition for a hearing is not authorized under the Administrative Procedure Act (see Gov. Code sec. 11353(a)) and a continuance of the April 6, 2005 hearing is unwarranted since the subject of the petition is outside the scope of the proposed amendments and the FFED.

Comment 17: Since the State Water Board is currently initiating efforts to address storm water management and achieving water quality standards through the development of a statewide storm water policy, any amendment to the California Ocean Plan should be used as an opportunity to recognize, as does the State Implementation Policy (for the California Toxics Rule in bays and inland waters), that storm water discharges are not directly addressed within the California Ocean Plan but that they will be addressed within a statewide policy. Until such time that the statewide policy is established, the California Ocean Plan should hold in reserve a section that addresses storm water discharges. (12)

Staff Response: The ASBS discharge prohibition applies to all discharges, both point and nonpoint sources. Only minor changes to the ASBS provisions are currently being considered, and these amendments do not alter the discharge prohibition that has been effect for over twenty years. Furthermore, these comments are outside of the scope of the proposed amendments, the FFED, and the public hearing held on April 6, 2005.

Comment 18: The amendment clarifies that all California Ocean Plan exceptions are subject to Triennial Review, the State Water Board should consider instead using the re-issuance of an NPDES permit as the time for considering an exception. (12)

Response: The staff of the State Water Board is limited in size and cannot possibly consider every exception at the end of each permit period, since these are quite different in terms of re-issuance dates for each relevant permit considered by the State Water Board and the six coastal Regional Water Boards. However, the State Water Board staff is capable of collecting relevant information regarding the effectiveness of the exception and related permit over time, with the intention of bringing this information to the State Water Board during the Triennial Review.

If information is available at the Triennial Review that would support the State Water Board's consideration of re-opening an exception, and if that information actually supports only the need for minor changes, then staff would recommend that such minor changes be applied to the next permit re-issuance. In other words it is not staff's intent to re-open permits that are only partly through their permit cycle for only very minor changes to an exception.

It is possible that the Triennial Review may result in major changes to an exception if there is just cause to protect beneficial uses. If this occurred at the beginning of a permit cycle then the permit would then be re-opened relevant to State Water Board action on the exception. If this occurred at or

near the end of a permit cycle, and depending on the significance of the need, the new exception requirements may be applied to the re-issued permit at the end of its five year cycle.

In certain cases where significant harm is occurring to beneficial uses under an exception and its related permit, and that information comes to the attention of staff and the State Water Board, then the State Water Board may review, re-open, or revoke any exception regardless of when that falls within the permit's lifetime. In other words the State Water Board does not need to wait for a Triennial Review in such cases.

Comment 19: The State Water Board should extend the Triennial Review period of the California Ocean Plan. The many issues raised by the recent emphasis of the State Water Board on municipal discharges to ASBS, and subsequent understanding by the municipal discharges of the State Water Board's intent and scope of regulation of those discharges, justify extending the review period. (4)

Staff Response: The comment period for the Triennial Review of the Ocean Plan was closed on May 24, 2004. Furthermore, these comments are outside of the scope of the proposed amendments, the FFED, and the public hearing held on April 6, 2005.

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Appendix A
Environmental Checklist

STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER QUALITY
P.O. BOX 100
SACRAMENTO, CA 95812-0100

Environmental Checklist

I. Background

Project Title: Proposed Amendments for the California Ocean Plan

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Project Description: The California Water Code (§13170.2) requires that the California 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, will amend the 2001 California Ocean Plan. The following amendments are proposed for adoption:

Issue 1: Reasonable Potential: Determining When California Ocean Plan Water Quality-based Effluent Limitations are Required

Issue 2: Classification of Areas of Special Biological Significance (ASBS) as State Water Quality Protection Areas (SWQPAs), rename certain ASBS to coincide with name changes corresponding to Marine Protected Areas, and clarification that all exceptions are subject to Triennial Review.

II. Environmental Impacts

The environmental factors checked below could be potentially affected by this project. See the checklist on the following pages for more details.

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

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
1. AESTHETICS. Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☑
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☑
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☐	☑
2. AGRICULTURAL RESOURCES. In determining whether impacts to agricultural resources are significant environmental impacts, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping & Monitoring Program of the California Resources Agency, to non-agricultural uses?	☐	☐	☐	☑
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	☐	☐	☐	☑
3. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☑
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☑
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☑
d) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☑
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☑
4. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☑

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☑
c) Have a substantial adverse effect on federally-protected wetlands as defined by Section 404 of the federal Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, *etc.*) through direct removal, filling, hydrological interruption or other means?	☐	☐	☐	☑
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☑
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑
5. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☑
b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	☐	☐	☐	☑
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☑
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☑
6. GEOLOGY and SOILS. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☑
i) Rupture of a known earthquake fault, as delineated in the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines & Geology Special Publication 42.	☐	☐	☐	☑
ii) Strong seismic ground shaking?	☐	☐	☐	☑
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☑
iv) Landslides?	☐	☐	☐	☑
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☑
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☑
d) Be located on expansive soils, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☑

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternate wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☑
7. HAZARDS and HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☑
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☑
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?	☐	☐	☐	☑
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or to the environment?	☐	☐	☐	☑
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or a public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☑
8. HYDROLOGY and WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☑
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (*e.g.*, the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☑
c) Substantially alter the existing drainage pattern of the site, including through alteration of the course of a stream or river, or substantially increase the rate or volume of surface runoff in a manner that would:				
i) result in flooding on- or off-site	☐	☐	☐	☑
ii) create or contribute runoff water that would exceed the capacity of existing or planned stormwater discharge	☐	☐	☐	☑
iii) provide substantial additional sources of polluted runoff	☐	☐	☐	☑
iv) result in substantial erosion or siltation on-or off-site?	☐	☐	☐	☑

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Otherwise substantially degrade water quality?	☐	☐	☐	☑
e) Place housing or other structures which would impede or re-direct flood flows within a 100-yr. flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☑
f) Would the change in the water volume and/or the pattern of seasonal flows in the affected watercourse result in:				
i) a significant cumulative reduction in the water supply downstream of the diversion?	☐	☐	☐	☑
ii) a significant reduction in water supply, either on an annual or seasonal basis, to senior water right holders downstream of the diversion?	☐	☐	☐	☑
iii) a significant reduction in the available aquatic habitat or riparian habitat for native species of plants and animals?	☐	☐	☐	☑
iv) a significant change in seasonal water temperatures due to changes in the patterns of water flow in the stream?	☐	☐	☐	☑
v) a substantial increase or threat from invasive, non-native plants and wildlife	☐	☐	☐	☑
g) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☑
h) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☑
i) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☑
9. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☑
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☑
10. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?	☐	☐	☐	☑
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☑
11. NOISE. Would the project result in:				
a) Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☑

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☑
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☑
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☑
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing in or working in the project area to excessive noise levels?	☐	☐	☐	☑
f) For a project within the vicinity of a private airstrip, would the project expose people residing in or working in the project area to excessive noise levels?	☐	☐	☐	☑
12. POPULATION AND HOUSING. Would the project:				
a) Induce substantial population growth in an area either directly (*e.g.*, by proposing new homes and businesses) or indirectly (*e.g.*, through extension of roads or other infrastructure)?	☐	☐	☐	☑
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑
13. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service rations, response times or other performance objectives for any of the public services:				
a) Fire protection?	☐	☐	☐	☑
b) Police protection?	☐	☐	☐	☑
c) Schools?	☐	☐	☐	☑
d) Parks?	☐	☐	☐	☑
e) Other public facilities?	☐	☐	☐	☑
14. RECREATION. Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☑
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☑
15. TRANSPORTATION / CIRCULATION. Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (*i.e.*, result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	☐	☐	☐	☑

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Exceed, either individually or cumulatively, a level-of-service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☑
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☑
d) Substantially increase hazards due to a design feature (*e.g.*, sharp curves or dangerous intersections) or incompatible uses (*e.g.*, farm equipment)?	☐	☐	☐	☑
e) Result in inadequate emergency access?	☐	☐	☐	☑
f) Result in inadequate parking capacity?	☐	☐	☐	☑
g) Conflict with adopted policies supporting alternative transportation (*e.g.*, bus turnouts, bicycle racks)?	☐	☐	☐	☑
16. UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☑
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☐	☑
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☐	☑
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☑
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☑
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☑
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☑
17. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☑
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)	☐	☐	☐	☑

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☑

III. Determination

On the basis of this initial evaluation, I find that the proposed project COULD NOT have a significant effect on the environment.

Prepared By:

1/7/05

Frank Roddy — Date

Staff Environmental Scientist

(Form updated 3/28/00)

Authority: Public Resources Code Sections 21083, 21084, 21084.1, and 21087.

Reference: Public Resources Code Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 21083.1 through 21083.3, 21083.6 through 21083.9, 21084.1, 21093, 21094, 21151; *Sundstrom v. County of Mendocino*, 202 Cal. App. 3d 296 (1988); *Leonoff v. Monterey Board of Supervisors*, 222 Cal. App. 3d 1337 (1990).

Appendix B
List of Preparers

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

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