REPORTS OF THE PUBLIC ADVISORY TASK FORCES TO THE STATE WATER RESOURCES CONTROL BOARD

REGARDING DEVELOPMENT OF THE INLAND SURFACE WATERS PLAN AND THE ENCLOSED BAYS AND ESTUARIES PLAN

FINAL

October 1995

PREFACE

This document contains the reports produced by the eight public advisory task forces that were formed to address issues related to the development of a new Inland Surface Waters Plans (ISWP) and a new Enclosed Bays and Estuaries Plan (EBEP). These reports are being submitted to the State Water Resources Control Board (SWRCB) and its staff for consideration during the development of the ISWP and EBEP. The eight task forces are: (1) chemical-specific objectives; (2) site-specific objectives; (3) toxicity objectives; (4) agricultural waters; (5) effluent-dependent water bodies; (6) permitting and compliance issues; (7) watershed; and (8) economic considerations. Each of the eight parts of this document corresponds to the respective task forces and consists of a task force roster indicating members and alternate members representing 11 interest categories, an attendance roster, and the task force report. These reports were prepared for presentation to the SWRCB at its November 1, 1995 Board Workshop.

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INTRODUCTION

The Division of Water Quality, State Water Resources Control Board (SWRCB), has responsibility for developing two statewide water quality control plans, an Inland Surface Waters Plan (ISWP) and an Enclosed Bays and Estuaries Plan (EBEP). The purpose of the plans is to apply water quality objectives for toxic chemicals to the waters of the State/United States pursuant to the Porter-Cologne Water Quality Control Act (Porter-Cologne) and the 1987 amendments to the federal Clean Water Act (CWA).

Background

The SWRCB adopted an ISWP and an EBEP on April 11, 1991 (Resolution No. 91-33). These two statewide water quality control plans, which contained narrative, numeric, and toxicity water quality objectives for toxic pollutants, were adopted, in part, to fulfill the requirements of Section 303(c)(2)(B) of the CWA (adoption of water quality objectives for priority pollutants). Since the SWRCB's adoption of the plans, two parallel tracks of activities occurred: (1) U.S. Environmental Protection Agency (USEPA) action regarding California's compliance with the CWA, and (2) litigation against the SWRCB regarding the plans.

Pursuant to the CWA, the SWRCB submitted, on May 10, 1991, the ISWP and the EBEP to the USEPA for review and approval. On November 6, 1991, the USEPA took action on the ISWP and the EBEP which included: (1) disapproval of performance goals for category (a), (b), and (c) water bodies (i.e., reclaimed water-dependent ephemeral streams, natural water bodies dominated by agricultural drainage, and constructed agricultural drains, respectively); (2) deferral of action on the "due diligence" approach to implementing toxicity objectives; and (3) disapproval of the lack of water quality objectives for all priority pollutants. On November 19, 1992, the SWRCB adopted water quality objectives for the priority pollutants that were not included in the initial adoption of the plans. The USEPA and SWRCB staff, among continuing efforts to resolve the remaining issues, held a joint staff workshop on November 23, 1992. Meanwhile, the USEPA had prepared a draft National Toxics Rule (NTR) which included, for California, the promulgation of standards for the priority pollutants not included in the 1991 plans and for category (a), (b), and (c) water bodies. The NTR was promulgated in December 1992 and became effective on February 5, 1993.

Concomitant to the regulatory track of activities to amend the 1991 plans discussed above, the ISWP and the EBEP were challenged in court soon after their adoption. In March 1994, the Sacramento County Superior Court issued a final decision that concluded that the plans were not adopted pursuant to California law. Final judgments from the Court, issued in July 1994, directed the SWRCB to rescind the ISWP and the EBEP. In response to the Court's direction, the SWRCB rescinded the 1991 plans and the subsequent amendments on September 22, 1994 (Resolution No. 94-87). This action leaves California without statewide water quality objectives for toxic pollutants for inland surface waters and enclosed bays and estuaries, except for

those standards promulgated by the USEPA under the December 1992 NTR. California, therefore, is not in compliance with the 1987 amendments to the CWA that requires states to adopt standards for priority pollutants. Consequently, the USEPA is required to promulgate standards to bring California into compliance with the CWA. Accordingly, the USEPA is currently preparing a draft rule to promulgate standards to replace those contained in the now rescinded ISWP and EBEP. The USEPA expects to publish this draft rule in the Federal Register in Spring 1996.

SWRCB staff has begun the process of developing new draft plans and a Functional Equivalent Document (FED). The California Environmental Quality Act (CEQA) provides that a regulatory program of a State agency is exempt from the requirements for preparing Environmental Impact Reports, Negative Declarations, and Initial Studies if the program is certified as "functionally equivalent" to the CEQA process by the Secretary of the Resources Agency. The process used by the SWRCB to develop and adopt the ISWP and the EBEP, including preparation of an FED, has received such certification [Title 14, California Code of Regulations, Section 15251(g)].

As required as part of the settlement for litigants' attorney fees in the lawsuit against the SWRCB regarding the plans, a facilitated public advisory task force process was initiated to consider issues relevant to the development of the new statewide plans and FED. This task force process, discussed below, initiated the public process to develop and adopt the new plans.

Task Force Process

The task force process began with an organizational meeting to formulate the public advisory task forces on December 12, 1994. At the December 1994 organizational task force meeting, meeting participants selected task force members and alternate members to represent eleven interest groups on eight issue-specific task forces. The eleven interest groups are: publicly-owned treatment works, stormwater, industry, agriculture, water supply, environmental, public health, USEPA, fish and wildlife, RWQCBs, and SWRCB. The eight task forces are: chemical-specific objectives, site-specific objectives, toxicity, agricultural waters, effluent-dependent waters, permitting and compliance issues, watershed, and economics issues.

The task forces began addressing issues related to the development of a new ISWP and EBEP at their first monthly meetings in April 1995. In addition to the individual monthly task force meetings, mid-course meetings of all task forces were held on June 1, 1995 and August 1, 1995 to present progress reports of individual task force meetings, and to discuss cross-cutting issues. In September 1995, individual task forces met for the last time to prepare written reports to the SWRCB regarding their findings and recommendations on specific issues. These individual task force reports, which contain consensus recommendations and/or alternatives/options for the issues considered, are included in this document as Parts I-VIII.

This document was distributed to the task force participants for review prior to a final "all task forces" meeting on October 24, 1995. The October 24 meeting was convened to identify inconsistencies between task force reports, and to coordinate task force report presentations to the SWRCB at the Board Workshop on November 1, 1995. Identified inconsistencies and clarifications regarding the task force reports are included in the Addendum following Part VIII.

Part I

Chemical-Specific Objectives Task Force Report

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11-Oct-95

CHEMICAL SPECIFIC OBJECTIVES TASK FORCE
ATTENDANCE ROSTER

Name	Interest Category	M/A	April 20	April 21	May 18	June 26	July 18	Aug 22	Sept 19
William M. Ellgas	POTW	M							
Ing-Yih S. Cheng	POTW	A							
Roger B. James	Stormwater	M							
David Jones	Stormwater	A							
Ray Arnold	Industry	M							
David L. Lutrick	Industry	A							
Robert S. Hedrick	Agriculture	M							
J. Al Driver	Agriculture	A							
Maria Tikkanen	Water Supply	M							
Judy Heath	Water Supply	A							
Roger Gorke	Environmental	M							
Mario Menesini	Environmental	A							
Alexis Milea	Public Health	M							
David Morry	Public Health	A							
Diane Frankel	U.S. EPA	M							
Philip C. Woods	U.S. EPA	A							
Pete Phillips	Fish & Wildlife	M							
Jana Hofius	Fish & Wildlife	A							
Kim Taylor	Regional Boards	M							
Mike Carlin	Regional Boards	M							
Wendy Wyels	Regional Boards	A							
Ling L. Tseng	State Board	M							
Bill Ray	State Board	A							
Cheryl L. Langley	Pesticide Regulation	M							
David C. Carlson	State Board	A*							

M = Member
A = Alternate
A*= Alternate for month of April

= Present
= Absent

CHEMICAL SPECIFIC OBJECTIVES TASK FORCE

TO: Members - State Water Resources Control Board

FROM: Chemical Specific Task Force

DATE: September 19, 1995

We respectfully submit this report consisting of 17 pages including this cover memo for your consideration.

Consensus was achieved on eleven of the twelve recommendations. Unless noted, the rationale also expresses the consensus of the task force.

On the issue of Total vs Dissolved Metals for Ambient Water Quality Criteria, we were unable to reach complete agreement. The recommendations and rationale for and against "Total" and "Dissolved" are presented.

We thank you for this opportunity to assist you in developing a viable plan for the Inland Surface Waters and Enclosed Bays and Estuaries of California.

1. Site Specific Water Quality Objectives

A. The development of site specific WQOs for inorganic and organic chemicals should be allowed where appropriate.

B. The State should develop detailed guidance for the development of site specific objectives similar to the outline being developed by the Site Specific Objectives Task Force.

Rationale

A. In accordance with federal law and regulations, WQOs must be based on sound scientific rationale and protect the designated uses of the receiving water. Under the following conditions, RWQCBs may consider the development of site-specific objectives (SSO) when:

- a statewide objective is not being achieved in the receiving water;
- an NPDES permittee does not meet an anticipated numeric effluent limit based on the statewide objective and cannot be assured of achieving the effluent limit through reasonably achievable pollution prevention measures; and
- a written request for a site-specific study is filed with the Regional Board and funding sources are identified;
- or, the Statewide objective does not adequately protect the beneficial uses of a specific water body.

The need to establish site specific objectives arises because the WQOs established in state plans may not be appropriate for all water bodies in the State. Under certain circumstances, other approaches to achieve the statewide objectives may be more appropriate than development of an SSO. These approaches may include, but are not limited to use-attainability analyses and development of total maximum daily loads/ wasteload allocations.

B. Consistency in the development of SSOs is key to their application in the statewide plans. Guidance should be provided by the SWRCB regarding the policies and procedures for developing SSOs based on scientifically defensible methods.

2. Attainability Assessment

A. In determining attainability, the State should review a statistically based sample set that includes recent data (including stormwater) from as many dischargers as possible, and compare these data against proposed WQOs.

B. In its evaluation where appropriate and practical the State should use risk levels of 10^{-5} and 10^{-6} as part of their attainability analysis for potential carcinogens.

C. The attainability evaluation should be done on a tiered basis that prioritizes chemicals according to their relative threat to the environment (ie. relative toxicity and presence in ambient receiving waters).

D. During the Triannual review, the State should make provisions for ongoing review of attainability of WQOs when new information such as detection limits or toxicity factors become available, and should consider progress in attainment as part of its review process.

E. For WQOs established below the current detection level where attainability cannot be determined, the State should make the attainability analysis a high priority in the next triennial review.

Rationale

A. In developing water quality objectives it almost goes without question that the most current data from as many sources as possible is the best approach. In addition to attainability, an understanding of current technology and the range of analytical detection limits among dischargers is needed to assure that WQOs are both protective and achievable.

B. In order to adequately assess economic impact a range of risk factors should be considered by the State Board. Though this is a policy issue, to meet their legal obligations to review economic impacts, the level of acceptable risk must be weighed in light of the cost of those technologies required to meet the WQOs and the benefits to society by using a particular risk level (recognizing that everything has a certain risk).

C. Because of limited resources and the absence or limited availability of data regarding certain toxicants, a tiered approach addressing constituents of greatest concern first will have the greatest environmental benefit and

economic value to the citizens of the State.

D. During the Triannual review, as new, scientifically-validated information becomes available, it is incumbent upon the State to reevaluate attainability. With that in mind, the Task Force has suggested the following chemicals as most problematic for attainment: aldrin/dieldrin, chlordane, DDT & metabolites, endrin, benzidine, mercury, PCBs, PAHs, dioxin, lindane, heptachlor/heptachlor epoxide and selenium. Although mercury and selenium are not carcinogens, a preliminary attainment analysis should be done for concentrations of:

Mercury	0.012	0.025	0.0018	ug/L
Selenium	2.0	0.2	0.05	ug/L

E. As technological advances provide the capability of analyzing compounds at increasingly lower levels of detection, it is incumbent on the State to use this information to assess attainability for WQOs established at levels below detection limits at the time of their development.

F. SWRCB Staff Comments - The recommendation specifically requests that "recent effluent (including stormwater) data" be reviewed. The CSO task force has engaged in repeated discussions concerning the amount and quality of monitoring data. The entire task force has agreed that the availability of monitoring data will dictate the extent of the attainment analysis. However, in many cases, monitoring data are scarce. For example, the stormwater representative has indicated that only limited monitoring data are available for stormwater discharges. Since the members and alternates of this task force are aware of the limited data available for receiving water as well as effluent monitoring data for all types of discharges, State Board staff will conduct as complete an attainment analysis as the available monitoring data will allow.

Since an attainment analysis will be done for all chemicals targeted for the ISWP/EBEP including those listed in this recommendation, the attainment analysis will not be done on a tier basis. CSO task force is aware that the ISWP/EBEP go through a review process every three years when these statewide plans are updated. SWRCB staff does not intend to conduct an additional attainment analyses outside the triennial review process. It is not clear how the "progress in attainment" would be factored in an attainability analysis.

It is premature to conduct a preliminary attainment analysis for mercury

(Hg) and selenium (Se) with the concentrations listed in this recommendation because these concentrations may not be based on the most current data.

3. Synergistic/Additive Effects

We believe narrative and/or numeric toxicity objectives for ambient waters adequately account for the potential of synergistic/additive effects that cannot be incorporated into the chemical specific objective calculation at this time.

Rationale

There is insufficient information to account for synergistic/additive effects in establishing chemical specific WQOs. It is believed by the Task Force that the use of whole effluent toxicity testing for ambient waters is the best available approach toward addressing this issue at this time, and can adequately account for these effects. Therefore, narrative and/or numeric toxicity objectives for ambient waters adequately protects for this potential since this effect cannot currently be incorporated into the chemical specific objective calculation.

4. Development of Water Quality Objectives

The State should reexamine/recalculate the USEPA National Criteria Guidance (Gold Book) in developing WQOs. This process should include:

For Human Health Criteria:
- Recalculation with new IRIS numbers
- Recalculation with OEHHA and other cancer potency factors

For Aquatic Life Criteria:
- Screen out suspect data, add new data, and recalculate criteria

Prioritize on the basis of attainment and attainability

Rationale

Some members of the Task Force recognize that existing databases often times has information which is outdated. As current technologies permit

better information, it should be substituted for data of a lesser quality. It is the responsibility of the State Board to set WQOs in the context of the best available science. As noted in the discussion under attainability assessment, so as to maximize environmental and economic benefits, recalculation or reexamination of EPA Gold Book criteria should be prioritized based on attainability.

Some members of the Task Force understand that the State is in the process of convening a science advisory committee for the purpose of providing technical evaluation of the many complex issues facing the Board. A worthwhile task which could be assigned to this committee could be the review of the scientific rationale behind the development and use of key calculation factors such as the:

- 10^{-5}, or 10^{-6} risk factor
- 6.5 g/day, 23 g/day, or some other fish consumption rate value
- 70 kg for the average human body weight value, etc.
- bioaccumulation factors
- cancer potency factor (q*)

as they apply to the development of California WQOs.

Fundamental to the development of WQOs is the scientific research used in assessing environmental impacts or toxicity to test species. A committee of technical experts could be used to develop standard criteria such as study design, QA/QC, etc. for objectively evaluating studies for their appropriate use in developing WQOs

State Board staff rationale - The current recommendation is requesting State Board staff to review the entire USEPA Gold Book and to "screen out suspect data". It is unclear to State Board staff what is meant by "suspect data". The State Board does not have the resources to reexamine or recalculate all USEPA Gold Book criteria. Since the USEPA Gold Book was published in 1986, there has been numerous updates of the criteria contained in the Gold Book. For example, the National Toxics Rule (NTR) noticed in the December, 1992 Federal Register, the Great Lakes Initiative (March 23, 1995 Federal Register notice) and the NTR amendments (May 4, 1995 Federal Register notice) contain updates of USEPA Gold Book criteria. State Board staff also intends to use data sources such as IRIS which contains monthly updated information for human health and aquatic life criteria when developing new water quality objectives. Because SWRCB staff will use the most

current data for developing objectives for all chemicals to be included in the ISWP/EBEP, staff will not prioritize on the basis of attainment.

5. Site Specific vs. Default Values

SWRCB or RWQCBs, as appropriate, should consider use of regional and/or site specific data in lieu of default values when there is an issue to be addressed, and when data are available or can be developed.

Rationale

The use of field data reflecting the nuances of an ecosystem is preferable to using default values when assessing environmental impacts. When the efforts have been made to collect data from a defined location or water body to more accurately evaluate a specific condition or assumption, these data should be used in deference to default values in the calculation of site specific WQOs. For example, a state-wide fresh water fish consumption rate of 6.5 g/day may be appropriate for calculating the state objective, however, in some regions, or waterbody types, fresh water fish consumption could be demonstrated to be higher or lower. In those cases where it can be shown that the default assumptions are either over or under protective, the site specific data should be used.

6. Dissolved Oxygen Objectives

The SWRCB should direct the RWQCBs to address consistency in the implementation of dissolved oxygen objectives when developing Basin Plans. Appropriate numerical objectives differ depending on the water body and its beneficial uses. The Task Force recommends that numerical objectives for dissolved oxygen (absolute and/or relative* values) be identified at the Regional level. In order to promote statewide consistency, the SWRCB should consider developing a set of numeric absolute and/or relative objectives for generic water body types that can then be implemented by the Regions.

*absolute = mg/L; relative = 10% change for example.

Rationale is self evident

7. Chemical Speciation

Speciation is an important factor to consider both in terms of effects and the transformation between different chemical species in an aquatic system. At this time, there is insufficient knowledge for most chemicals to fully account for speciation in WQOs. However, as more information becomes available, the Task Force encourages the State Board to refine the objectives to better account for speciation.

Rationale is self evident

8 Total vs Dissolved Metals for Ambient Water Quality Criteria

8 A supported by: Environmental, Public Health, USEPA, Fish & Wildlife, WSRCB

Water quality objectives shall be based upon total recoverable concentrations of inorganic toxicants. Except for mercury and selenium, and other bioaccumulative inorganic toxicants, RWQCBs may adopt site specific objectives based upon the dissolved fraction of inorganic toxicants when total recoverable objectives cannot be attained.

Rationale

Pros:

1. In the absence of sediment or tissue criteria, the use of total recoverable metals in water quality criteria development would help to account for sediment or food chain effects.

2. Total recoverable objectives provide protection for sediment dwelling organisms, organisms impacted by food chain effects and estuaries where particulate metals are likely to accumulate.

3. Total recoverable analyses are less expensive than dissolved analyses at a comparable level of accuracy.

4. Use of total recoverable makes the considerable expense of developing site-specific translators unnecessary.

5. If total recoverable criteria are being attained, then water quality objectives should be based on total recoverable concentrations.

6. There are tested and formally recognized test methods for the determination of total recoverable metals.

Cons submitted by: POTW, Storm Water, Industry, Agriculture, Water Supply

1. No scientific support for the use of total recoverable objectives to address sediments, food chain or other fate-related issues has been provided to, or examined by, the Task Force. We are not aware whether any support exists for this position.

   EPA has devoted significant time and resources to the development of rational sediment criteria and other criteria. EPA has not suggested the use of total recoverable water column criteria as surrogates for sediment, tissue or other criteria and we are not aware of any proposals.

2. The incremental cost of dissolved versus total recoverable analyses is not significant. The cost difference, depending on the filtration step. The cost of reliable, low detection limit metals analyses ranges from $40 to $ 60 per sample, exclusive of charges for filtration.

3. Test protocols for dissolved metal are well recognized and commonly performed by all commercial laboratories. Numerous scientific studies have been preformed over the past 20 years which have involved the measurement of dissolved metals.—

4. The cost for development of translators is not exorbitant. The cost of site-specific translators will be borne by dischargers, at their option.

8B. supported by: POTW, Storm Water, Industry, Agriculture, Water Supply, USEPA, RWQCB

8B.i Setting Objectives. Aquatic life objectives for metals and metalloids shall be based on the dissolved form. Wildlife based objectives for

bioaccumulative substances such as Hg and Se, and human health-based objectives shall be based on the total recoverable form.

Rationale

Pros:

Objectives are intended to represent the amount of a toxicant at or below which there will be no unacceptable impacts on beneficial uses. There are different mechanisms by which aquatic organisms and wildlife are affected by toxicants. In some cases, the primary concern is the amount of a toxicant dissolved in water. In other cases, the primary concern is exposure through the food chain.

Total recoverable metals are determined by the analysis of an unfiltered sample which employs a strong acid digestion. These measurements typically include a significant fraction of the metals associated with particulates in the sample. On the other hand, dissolved metals are determined by analysis of a filtered sample using a similar acid digestion. Dissolved metals typically exclude particulate-associated metals.

Available information supports the use of dissolved objectives when there is concern over toxic levels in the water column because exceedance of these objectives properly indicates imparement of beneficial uses and a need for comprehensive management to improve water quality at those sites. EPA's position is that, ". . . the use of dissolved metals to set and measure compliance with water quality standards is recommended because dissolved metals more closely approximates the bioavailable fraction in the water column than does total recoverable metals. . . EPA recommends that State water quality standards be based on dissolved metal. EPA will also approve a State risk management decision to adopt standards based on total recoverable, if those standards are otherwise approvable as a matter of law." (60FR 86, p 22229, et seq.).

With bioconcentration and/or bioaccumulative metals, this relationship does not hold.

Among the concerns about using total recoverable objectives there is the consideration that under ambient conditions in receiving water bodies, total recoverable values are often highly variable, and

are correlated with suspended solids concentrations which may vary significantly over short time intervals (minutes or hours) depending on a variety of physical factors (depth, flow velocity, sediment grain size, wind conditions, and other factors influencing sediment transport). Dissolved concentrations are much less variable, therefore, grab samples yield data which better represents conditions existing over longer time intervals (days).

Cons to all of 8B are after item 8B.iii

8B.ii Implementation of Metals Objectives. Permits and waste discharge requirements should be written in terms of the total recoverable metals and metalloids. Regional Boards may elect to write and dischargers may propose permit limits in terms of dissolved concentrations when it has been demonstrated that receiving water and sediment quality will not be affected to the point where dissolved objectives are likely to be exceeded and sensitive beneficial uses are protected.

Rationale

Pros:

Current EPA permit regulations require effluent limits to be written in total recoverable. If and when EPA changes the permit regulations to allow the use of dissolved form, the RWQCBs may issue permits with effluent limitations expressed in the dissolved form (40CFR, Part 122, et seq.).

Objectives describe the allowable concentration of a particular toxicant in the water column. That concentration is directly related to toxicants desorbing from and absorbing to particulates entering or already present in the water and bottom sediments. Water quality that results after discharge of waste is dependent on the amount of toxicants already present in each of these three compartments, and the total amount of that toxicant added through discharge activities. At the present time, the dynamics of partitioning between these compartments is not well understood and it is impossible to develop accurate predictions of dissolved concentrations. Regulating waste discharge as total recoverable provides an appropriate degree of protection in light of this uncertainty. It is appropriate to modify discharge limits as better site-specific partitioning information becomes available.

Cons to all of 8B are after item 8B.iii

8B.iii Implementation of Dissolved Objectives Through Permit Limitations is an issue that needs further discussion by interested and affected parties. The Task Force recommends that the State continue meeting with stakeholders to develop alternative mechanisms.

Pro rationale to 8B.iii is self evident.

Cons to 8B.i, 8B.ii, 8B.iii: supported by: SWRCB, Public Health, Environmental, Fish & Wildlife

1. Although USEPA has indicated that dissolved objectives are protective of aquatic life in the water column, other aquatic life compartments are not protected. Water quality objectives based upon dissolved metal concentrations do not account for potential impacts on aquatic organisms and ecosystems due to accumulation of metals in sediments, or due to food chain effects involving benthic organisms. Such objectives also do not protect aquatic life from toxicity due to metals associated with particulates.

2. Additional controls are needed to protect other compartments, e.g. benthic organisms.

3. It is inappropriate to recommend dissolved criteria until EPA defines procedures to develop site-specific translators for determining effluent limits in terms of total recoverable as required by NPDES permit regulations. When total recoverable metals criteria are converted to dissolved metals criteria as shown in the National Toxics Rule amendments published in the May 4, 1995 Federal Register, USEPA uses conversion factors that are equal to or less than 1. When these conversion factors are used, the resulting numerical value for the new dissolved criteria is equal to or less than the original total recoverable value in most cases. Pursuant to current USEPA guidance, in the absence of a site-specific translator, a default translator of "1" is to be used. Therefore, an effluent limit based on a dissolved metal criterion would be equal to or more stringent than an effluent limit based on a total recoverable metal criterion.

4. There are no methods that measure the dissolved fraction of metals. The current practice of filtering a sample prior to analysis is a size exclusion procedure. i.e., dissolved = matter smaller than 0.45 μ. There are no procedures that will eliminate the presence of undissolved, but filterable metals.

5. Development of site-specific translators constitutes an additional expense.

9. Constituents of Concern

The Task Force recommends that the State Board develop water quality objectives for all toxic pollutants which adversely affect beneficial uses adopted within the State of California for inland surface waters and enclosed bays and estuaries, in compliance with the Clean Water Act, Section 303. Toxic pollutants include, but are not limited to, the priority toxic pollutants listed in the Clean Water Act, Section 304.

Rationale

Water quality objectives should be developed as soon as possible for the following pesticides: diazinon, carbofuran, malathion, and chlorpyrifos because monitoring studies have demonstrated that these pesticides have a high potential for adversely affecting beneficial uses in several important watersheds in California. Documentation of these studies include the SWRCB's Report of the Technical Advisory Committee for Pesticide Management, November 1994. These pesticides were detected through toxicity tests, identified through toxicity identification evaluations and confirmed through chemical analyses. In many cases, these pesticides were detected at levels which exceeded 96-hour acute toxicity LC50 values.

Agriculture Stakeholders Qualification -

Support for this recommendation is based on the understanding that it is a restatement of existing law. The support does not extend to any attempt by some members of the Task Force to identify or prioritize candidates for adoption of WQOs.

Identification of specific chemicals and prioritization is a process

which may have significant impacts on the interests of specific groups or individuals. Impacts of this type should not be proposed without adequate notice and opportunity for meaningful participation by all interested parties.

The Task Force is a poor vehicle for such a process in comparison to the alternative avenues available to the SWRCB, RWQCBs and their respective staffs. In fulfilling the obligations under this recommendation the SWRCB and RWQCBs should provide specific notice and opportunity for meaningful participation to ensure fundamental fairness and scientifically sound decision making.

10. Human Health Criteria Equation

SWRCB should consider using distributions as calculated by models, such as the Monte Carlo techniques, for default and other elements of EPA's human health criteria equation as a means of describing objectives and considering economics in the process of selecting an objective.

Rationale

When developing human health water quality objectives, SWRCB should use EPA's equations for calculating human health criteria. SWRCB should consider working with OEHHA in using the Monte Carlo approach based on the available distributions. Distributions for body weights and drinking water consumption are available and should be used as inputs to the Monte Carlo program. Additionally, the SWRCB should examine the effect of the use of the most probable slope of the cancer potency factor. If there are appropriate distributions for California fish/shellfish consumption, they will be used as input to the Monte Carlo program for freshwater fish/shellfish consumption and marine fish/shellfish consumption separately. Otherwise, the input into the Monte Carlo program for fish/shellfish consumption should be either the best available individual point estimates, one for freshwater fish/shellfish consumption and the other for marine fish/shellfish consumption, or an alternative distribution based on best professional judgement.

This recommendation details the most appropriate way to calculate human health objectives. While the distributions for body weights are easily defined because of the ease of measurement resulting in an ideal bell shaped curve, the distributions for drinking water consumption will be a bit difficult to define because of the limited amount of available data and

the controversy over the methods of measurement. Since there may or may not be distributions for California fish/shellfish consumption, the use of the best available pointestimates is the alternative to distributions as input into the Monte Carlo program. The best available point estimates will include a point estimate for freshwater and a point estimate for marine water. The Monte Carlo program has the capability of using distributions and/or estimates in the same program. When distributions are not available, point estimates are an alternative.

11. Detection Limits for Reporting Date

SWRCB should develop guidance for standardized reporting of detection levels and the methodology used to define such levels (ie. detection limits). The Task Force also recommends that the SWRCB continue to meet with stakeholders to develop this guidance.

Rationale

SWRCB/RWQCB Stakeholders -

There is a need for standardization of reportable detection limits. Without standardization, monitoring data reported as "Non Detect (ND)" has no meaning. There are, however, at least two issues that must be addressed prior to the development of these state-wide detection limit values.

First, the computational method must be selected. USEPA has published in the Federal Register (40CFR, Part 136, Appendix B) a method for the computation of detection limits from laboratory data. This method has been criticized as incomplete in its protection from false positive errors. State Board staff would have to investigate other computational methods in order to select one that provides sufficient data quality protection.

Second, computational methods rely on assessment of large data sets. State Board staff will have to examine sufficient quantities of data relevant to state-wide laboratory effort, or will have to resort to state-wide collection of sufficient numbers of individual laboratory values. In either case, State Board staff may need additional resources to acquire and manipulate the data before computing state-wide detection limits.

In light of recent comments and reviews, State Board staff will

assure that there will be consistency across all State Board Plans. The same definitions and computational models are being developed and will be applied to all State Board Plans.

12. Numeric Criteria for Aquatic Life

In developing numeric criteria for Aquatic Life, the following recommendations should be considered by the SWRCB:

1. Where data are sufficient to fulfill protocol requirements use the EPA Tier I approach.

2. Where data are not sufficient to satisfy EPA Tier I protocol requirements, develop a program to obtain sufficient data.

Rationale

One method of fulfilling this recommendation is as follows:

1. Freshwater criteria shall be calculated using toxicity tests conducted on resident North American freshwater species. Saltwater criteria shall be calculated using toxicity tests conducted on resident North American saltwater species.

2. Toxicity studies shall be reviewed for acceptability following CA Department of Fish and Game's (DFG) written protocol (which is based on EPA and ASTM guidelines).

3. Where sufficient acceptable acute and chronic data are available to meet EPA's data requirements, then the EPA Tier I protocol shall be used to calculate criteria. EPA defines "sufficient data" as at least one acceptable acute test for eight different categories of species, and three acute-chronic ratios for at least three different families.

a. The EPA Tier I protocol may still be used if acute data is available for only seven of the eight categories of species, providing that the missing category is not for an acutely sensitive species.

b. The EPA Tier I protocol may still be used if only two acute-chronic ratios exist. In this case, an assumed acute-chronic ratio of

18 (as used in the EPA Tier II* method) will be used in place of the missing acute-chronic ratio (for freshwater).

4. The EPA Tier I protocol may not be used to calculate criteria if acute data exists for less than seven of the required categories, and/or if there are less than two acute-chronic ratios. In this case, the EPA Tier II protocol will be used to calculate an interim criterion. This criterion will remain in place until/if additional studies are undertaken to complete the database required for the EPA Tier I criteria calculations. When new data becomes available, and is found to be acceptable using DFG's guidelines, then the Board may elect to calculate a new criterion using the Tier I approach.

5. Although State Board's Ocean Plan method is an optional method, EPA Tier I and Tier II methods provide more rigorous criteria.

Other methods may be appropriate and may be presented during the public comment period.

Citations for recommendation #12:

Stephen et al, 1985. Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses, USEPA, PB85-227049.

EPA Tier II method. Final water quality guidance for the Great Lakes System. Federal Register, Vol 60, No. 56, p.15366 (23 March 1995). * This guidance applies to the Great Lakes System and has not been adopted nationally.

Ocean Plan method. (a) Klapow and Lewis, 1979. Analysis of toxicity data for California marine water quality standards. J Wat Pol Cont Fed 51(8):2054-2070. (b) Carlson et al, 1980. Sacramento River toxic chemical risk assessment project, final report. SWRCB Report No. 90-11WQ.

Part II

Site-Specific Objectives Task Force Report

SITE SPECIFIC OBJECTIVES TASK FORCE

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SITE-SPECIFIC OBJECTIVES TASK FORCE
ATTENDANCE ROSTER

Interest Category		Name	April-25	April-26	May-08	June-12	July-10	August-14	September-11
POTW	M	Roberta Larson							
POTW	A	Rodney W. Cruze							
Stormwater	M	Dave Brent							
Stormwater	A	Alice Tulloch							
Industry	M	Stephen Hansen							
Industry	A	Larry Smith							
Agriculture	M	Bernoy Bradford							
Agriculture	A	Merlin L. Fagan							
Water Supply	M	Bernard C. Kersy							
Water Supply	A	David L. Tucker							
Environmental	M	Frank Periera							
Environmental	A	Mario Menesini							
Public Health	M	Gary Stephany							
US EPA	M	Adrian Palomino			*	**			
US EPA	M	Alydda Mangelsdorf							
US EPA	A	Maria Rea							
Fish & Wildlife	M	Deborah Johnston							
Fish & Wildlife	A	Dan Welsh							
Regional Bds.	M	Cecile Morris/Bill Winchester							
State Board	M	Stephanie Rose							
State Board	A	David C. Carlson					***		
State Board	A	Gail Linck							
						* Leslie Higgins attended for EPA on 5/8			
	M=Member			= Attendance		** Alydda Mangelsdorf is now EPA representative			
	A=Alternate					*** Gail Linck is now State Board Alternate			

To: **John Caffrey, Chair and Members**
State Water Resources Control Board
From: **Site Specific Objectives Task Force**
Subject: **Recommendations of the Site Specific Objectives Task Force**
Date: **November 1, 1995**

The members of the Site Specific Objectives Task Force are pleased to submit our recommendations to the State Water Resources Control Board. The four documents produced by our task force are presented to you as consensus proposals with which all stakeholder representatives were able to agree. We hope your Board will give serious consideration to the following recommendations:

Draft Language for Inclusion in Statewide Plans:

The task force recognizes the importance of site specific objectives (SSOs) to the water quality plans. Therefore, the task force drafted proposed plan language which provides the framework for development of SSOs. The key element of the plan language is a requirement that, for each SSO study, the regional board enter into a Memorandum of Understanding with interested parties which outlines the budget and cost-sharing plan, the responsibilities of the parties, study work plan, etc. The language also provides a mechanism for separating technical and policy decisions and addresses establishment of permit limits during the time SSOs are being developed.

Decision Tree

While the task force agrees that SSOs should be an integral part of the revised plans, we recognize that other regulatory options may be appropriate in some cases. The Decision Tree and supporting narrative discussion are intended to encourage constructive dialogue among stakeholders attempting to select the most appropriate regulatory option (e.g. Total Maximum Daily Load, Use Attainability Analysis, SSO, or permit relief). The decision tree is designed to guide users through a series of questions which may help to determine: 1) if there is a current or potential water quality issue requiring action; 2) the nature of the identified water quality issue; 3) the most likely regulatory action. The decision tree is intended for guidance only--it is not intended as a prescriptive regulatory tool.

Guidance Outline

The plan language provides only the broad policy outlines which should govern development of SSOs. However, a regional board will need additional guidance in order to conduct SSO studies. Therefore, the task force recommends that the State Board staff be directed to develop a "cookbook" style guidance document to guide the regional boards through the process. A detailed guidance document was beyond the time and resources of the task force; instead, we have provided an outline of what we believe should be included.

Anti-Degradation Policy

In the course of its discussions, the task force became concerned about the potential impacts of the State's anti-degradation policy on the ability to develop and implement SSOs. As a result, the task force recommends that the State Board develop a guidance document to address issues related to the anti-degradation policy, and we have identified a number of the issues we believe need to be considered.

Thank you for the opportunity to participate in the task force process. We are proud of our accomplishments and hope that our recommendations are valuable to the Board in re-drafting the statewide plans.

SITE SPECIFIC OBJECTIVES TASK FORCE
PROPOSED LANGUAGE FOR
STATEWIDE WATER QUALITY PLANS

1. Water quality objectives shall be developed in a manner consistent with the Clean Water Act and the Porter-Cologne Act. In accordance with State law, objectives must provide for the reasonable protection of beneficial uses based on consideration of the factors listed in §13241 of the Porter-Cologne Act. In accordance with federal law and regulations, the objectives must be based on sound scientific rationale and protect the designated beneficial uses of the receiving water.

2. The Regional Water Quality Control Board (Regional Board) may develop site specific objectives whenever it determines, in the exercise of its professional judgment, that it is appropriate to do so. Under certain circumstances, other approaches to achieve the statewide objective may be more appropriate than development of a Site Specific Objective (SSO). These approaches include, but are not limited to, use-attainability analyses and development of total maximum daily loads/wasteload allocations. The Regional Board may investigate and implement other approaches as appropriate in the circumstances.

3. Regardless of action taken by the Regional Board pursuant to number 2 above, the Regional Board shall initiate the development of SSOs if:[1]

   (a) a written request for a site-specific study, accompanied by a preliminary commitment to fund the study, subject to development of a Memorandum of Understanding (MOU), is filed with the Regional Board, and:

   (b) Either:
      (i) an existing or potential statewide objective or beneficial use is not achieved in the receiving waters;

      OR

      (ii) a holder of waste discharge requirements, including an NPDES permittee, does not or may not in the future meet an existing or potential effluent limit based on the statewide objective and cannot be assured of achieving the effluent limit through reasonably achievable pollution prevention measures.

4. In the event there are insufficient data to make the determinations outlined in 3 (b) and there is reasonable likelihood that one or all of these conditions may exist, the source control, effluent, and receiving water data necessary to make these determinations may be collected. The Regional Board shall amend the waste discharge requirements and/or permits in accordance with the relevant compliance schedule provision in the Statewide Water Quality Control Plan

(Plan) if necessary to allow a reasonable time period to collect and analyze the data and report the results.

5. Prior to proceeding with site-specific objectives studies, the Regional Board shall enter into an MOU with interested parties, including, but not limited to, U.S. EPA Region IX, the State Water Quality Control Board (State Board), and the affected dischargers. The MOU shall include the following elements:

    (a) Formation of a project team, including the signatories to the MOU, the State Department of Fish and Game, the U.S. Fish and Wildlife Service, and public interest groups.
    (b) Responsibilities of the parties.
    (c) Budget and cost-sharing plan.
    (d) Administrative policies and procedures to govern oversight of the SSO process.
    (e) Project schedule.
    (f) A process for conflict resolution.
    (g) Development of an SSO work plan.

6. SSOs shall be developed as follows:

    (a) The Regional Board shall utilize guidance to be developed by the State Board to establish one or more scientifically defensible potential objective(s). The scientifically defensible potential objective(s) shall be derived using methods appropriate to the situation. Such methods may include U.S. E. P.A. approved methods, including, but not limited to, Water Effects Ratio (WER) procedure, recalculation procedures, a combination of recalculation and WER procedures, Resident Species Procedure, and/or other methods agreed to by the parties to the MOU. The State Board shall periodically review and update this guidance as new information and methodologies, including a risk-based framework for water quality criteria currently being developed by U.S. E.P.A., become available. In the absence of guidance, these concepts would be incorporated into the MOU.
    (b) If, during the data interpretation phase of technical site-specific studies, the Regional Board, State Board, EPA Region IX, and/or other interested parties have differing opinions with regard to the interpretation of data collected in establishing the scientifically defensible potential objective(s), the Regional Board shall seek the advice of an independent scientific review panel consisting of at least three scientists with expertise in the field of aquatic toxicology and water quality criteria development methodology. The method of selecting the panel and other details regarding the conflict resolution process shall be included in the MOU. The findings of the scientific review panel shall be provided to the parties to the MOU, and made available to the members of the Regional Board in the event a scientific dispute remains unresolved at

the time the scientifically defensible potential objective(s) is presented to the Regional Board for consideration.

(c) Following completion of the scientific studies and data interpretation, the Regional Board staff shall present to the Regional Board scientifically defensible potential objective(s). The Regional Board shall consider the following factors in adopting an SSO(s):

(i) the beneficial uses of the water body;
(ii) environmental characteristics of the water body;
(iii) water quality conditions that can reasonably be achieved through coordinated control of all pollutant sources;
(iv) economic considerations;
(v) the need for housing in the region;
(vi) the need to develop and use recycled water.

To ensure that economic and environmental impacts are adequately addressed, the Regional Board staff shall, as part of the SSO work plan:

(i) Direct the preparation of an economic analysis documenting the economic impacts from one or more of the scientifically defensible potential objective(s) and the projected effluent limits derived from the objective(s) and present the economic analysis to the Regional Board;
(ii) Comply with the California Environmental Quality Act.

(d) If attainment of the potential objective(s) is anticipated to be infeasible (as defined in 40 CFR 131), or if the Regional Board otherwise determines it is appropriate, the Regional Board shall conduct use attainability analyses in accordance with 40 CFR 131. If such analyses conclude that attainment of the designated beneficial uses is infeasible, the Regional Board shall designate alternative beneficial uses or subcategories of beneficial uses and develop appropriate water quality objectives to protect those beneficial uses.

7. During the period when site-specific objectives studies are being conducted, the Regional Board shall place effluent limits based upon the statewide water quality objectives into NPDES permits and waste discharge requirements only in conjunction with an appropriate compliance schedule. The compliance schedule shall allow sufficient time for collection of data, completion of SSO studies, and determination of compliance measures. While SSO studies are being conducted, interim effluent limits may be established by the Regional Board as provided in the Plan. Following final adoption of a site-specific objective, existing effluent limits shall be replaced with effluent limits consistent with the adopted site-specific objective. In the event that, for reasons beyond the control of the permittee, a decision whether or not to adopt site specific objectives has not been made before the end of the compliance schedule, the compliance schedule shall be extended for an additional period to allow time for a decision whether or not to adopt an SSO. However, in no event may a compliance schedule exceed

the time period allowed for compliance with the statewide water quality objectives in the Plan, unless a variance has been granted.

8. A site specific objective may include a compliance schedule.

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1. **The language recommended for paragraph 3 by the Regional Boards is:**

   3. Regardless of action taken by the Regional Board pursuant to number 2 above, the Regional Board shall ***at a public meeting, consider*** initiating the development of SSOs if: *(the rest of paragraph 3 remains the same).*

   Reason for change:
   The Regional Boards are concerned that they may be required (forced) to do an SSO when it may not be appropriate.

   Statement in Support of Proposed Plan Language Establishing "Triggers" for Proceeding with Site Specific Objectives Studies:

   The proposed plan language establishing "triggers" for conducting site specific objectives (SSOs) was agreed to by 10 of the 11 stakeholder representatives. The regional board representative proposed alternative language allowing the regional boards complete discretion over when to proceed with site specific objectives.

   We believe that, in many instances, it is appropriate to allow the regional board discretion in deciding when to conduct site specific studies, and paragraph 2 of the proposed language reflects this. However, in some cases dischargers must have the certainty of knowing that the studies will be done, especially since there is wide agreement that SSOs must be an integral part of the revised water quality plans. SSO development provides the regional boards with a viable option of addressing economic and environmental impacts on a water body by water body basis. Under the old plans, the opportunity to develop SSOs was presented as one answer to attainability problems faced by dischargers. The inclusion of narrow and reasonable triggers helps assure that SSOs will be developed where needed and that the regional board will play an active role in the process.

   The regional board representative has indicated concern that the regional boards will be inundated with requests to perform SSO studies. We believe, on the contrary, several factors significantly limit the number of instances statewide in which a regional board would be required to proceed with SSOs:

   - One of two triggers must be satisfied: either a water quality objective is exceeded in the receiving water or a permittee cannot meet an effluent limit.

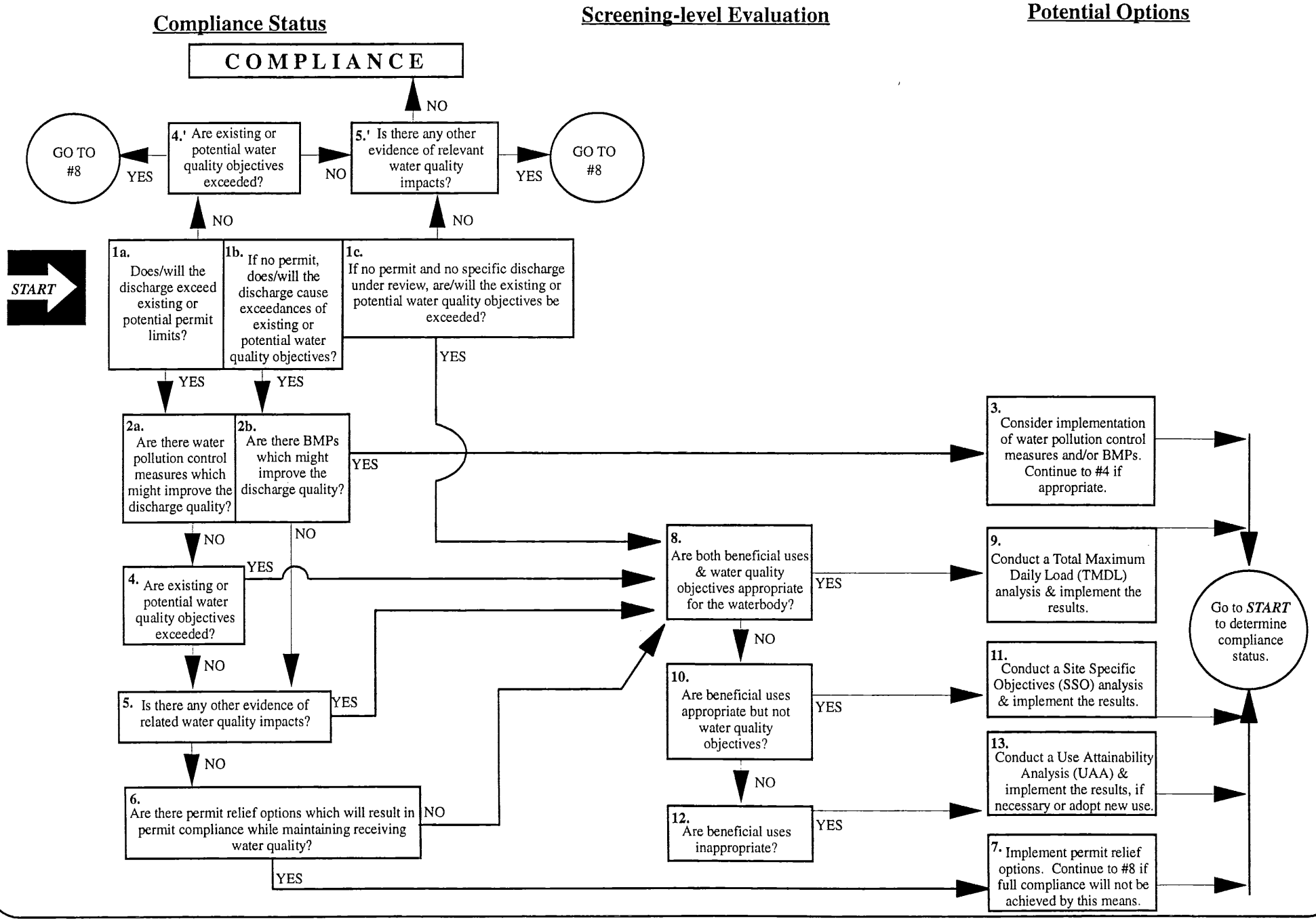
   - The requestor must agree to fund the studies, which represents a significant resource commitment.

- Concerns regarding the responsibilities of parties and resource constraints can be resolved during the development of the memorandum of understanding that will govern the SSO development.

- The Effluent Dependent Water bodies Task Force and the Agricultural Waters Task Force are recommending the establishment of categorical water quality objectives for special types of waters. If the State Board accepts their recommendations, the demand for water body specific objectives will be greatly reduced.

In short, the proposed plan language strikes the proper balance between regional board discretion and the dischargers' need for certainty that SSO studies will be undertaken where needed.

Pre-Evaluation for a Site Specific Study: Decision Tree with attached Narrative Discussion



SITE SPECIFIC OBJECTIVES TASK FORCE
DECISION TREE NARRATIVE DISCUSSION

GENERAL DISCUSSION:

The decision tree and associated narrative discussion are not designed as a prescriptive regulatory tool; but, they are meant to encourage constructive dialogue among stakeholders. The decision tree is designed to guide users through a thought process which may help to determine: 1) if there is a current or potential water quality issue requiring regulatory attention [COMPLIANCE STATUS]; 2) the nature of the identified water quality issue [SCREENING-LEVEL EVALUATION]; and 3) the most likely, appropriate regulatory option [POTENTIAL OPTIONS]. This decision tree is not meant to preclude the exploration of any other set of potential creative regulatory solutions. It is meant as guidance only.

The decision tree is specifically meant to provide a framework for conducting a pre-evaluation from which to determine the scope of any further study, whether it be a Total Maximum Daily Load analysis, Site Specific Objective study, or Use Attainability Analysis. It is meant to help avoid initiation of costly and time consuming studies which are not appropriately designed to resolve the specific issue in question.

As another important note, it is generally the case that Site Specific Objective (SSO) studies have been initiated to address a situation where state-wide or basin-wide objectives appear to be over protective for a given water body. While this decision tree attempts to address such a situation, it also attempts to address a situation where either state-wide objectives for a pollutant of concern do not exist (e.g., sediment) or the objectives appear to be under protective for a given water body.

Further, the decision tree begins with questions regarding a known discharge--point or non-point source--since it is generally the case that site specific objectives will be developed in the context of known discharges. The decision tree also provides guidance, however, even in the absence of known discharges. In particular, questions #4' and #5' should lead a user to an appropriate outcome.

Finally, two specific considerations should be kept in mind when conducting the pre-evaluation suggested by this decision tree. First, a user must be familiar with the quality of the data under review and the potential need to augment data which is not of adequate quality. And second, a user should know what the existing uses are (i.e., uses attained since 1975).

SPECIFIC DISCUSSION:

la. Does/will the discharge exceed existing or potential permit limits? This question applies to discharges regulated by a National Pollutant Discharge Elimination System (NPDES) permit or Waste Discharge Requirement (WDR). If the discharge in question is not regulated by a discharge permit, proceed to #lb. It is assumed that data used to answer this question are reliable.

1b. If no permit, does the discharge cause exceedances of existing or potential water quality objectives? This question primarily applies to non-point discharges, though could conceivably apply to point source discharges which are not currently permitted (e.g., percolation ponds which discharge sporadically during storm events). It is assumed that data used to answer this question are reliable.

1c. If no permit and no specific discharge are under review, are the existing or potential water quality objectives exceeded? It is assumed that data used to answer this question are reliable.

2a. Are there water pollution control measures which might improve the water quality? A water pollution control program should include, as appropriate: pollution control technologies; pretreatment requirements; and pollution prevention, waste minimization, and source control measures. This question is meant to elicit consideration of effluent quality control measures which could be implemented as a full or partial solution to the identified permit noncompliance issue. It is not intended as a barrier to the exploration of other potential forms of regulatory adjustment.

2b. Are there Best Management Practices (BMP) which might improve water quality? Best Management Practices are pollution management measures designed to reduce the water quality impacts, where they exist, associated with non-point sources discharges. As with #2a above, this question is meant to elicit consideration of discharge control measures which could be implemented as a full or partial solution to the identified noncompliance issue. It is not intended as a barrier to the exploration of other potential forms of regulatory adjustment.

3. Consider whether implementation of water pollution control measures and/or BMPs will lead to compliance. Simultaneously continue to #4 if deemed appropriate, considering such questions as whether or not full compliance will be achieved by these means, or whether it would be cost effective. As stated, the simple determination that implementation of pollution control measures and/or BMPs might improve the discharge or water quality should not preclude a discharger from exploring other potential regulatory adjustment options, as well. For clarity, the reviewer should proceed not to box #4', but to box #4.

4. Are existing or potential water quality objectives exceeded? It is assumed that data used to answer this question are reliable and appropriate hardness adjustments have been made.

5. Is there any other evidence of relevant water quality impacts? This question is meant to capture those situations, as discussed above, where either water quality objectives for the pollutant of concern do not exist or appear to be under protective. "Other evidence" might include: bioconcentration or biocriteria data, population studies, food web analyses, etc. Impacts to wildlife should be considered as should impacts to threatened and endangered species. The potential for impacts to be of a seasonal nature should also be considered in this pre-evaluation. "Relevant water quality impacts" are those impacts which have a demonstrable relationship to the pollutant(s) of concern.

6. Are there permit relief options which will result in permit compliance while maintaining receiving water quality? Permit relief options might include, where appropriate: development of a mixing zone, modification of the averaging periods, adoption of a variance, etc. For unpermitted discharges or pre-evaluations involving no specific discharges, the user should continue to box #8.

7. Implement permit relief options. Continue to #8 if full compliance will not be achieved by these means. The development of permit relief options would occur through a request to the Regional Water Quality Control Board.

8. Are both beneficial uses and water quality objectives appropriate for the water body? To answer this question, a screening-level evaluation may be necessary, including an evaluation of the associated regulatory history; the site specific conditions; and the status of current, applicable scientific understanding. It is assumed that data used to answer this question are reliable.

   Further, it is assumed that this question is best answered when a watershed stakeholder group has formed and collectively either: 1) evaluated the condition of the watershed through a watershed management plan, 2) evaluated the condition of the watershed through less formal means, or 3) convened discussions regarding the condition of the watershed. If one does not currently exist, a watershed stakeholder group should be formed for the purpose of developing site specific objectives if it appears to be a useful forum for discussion and review. The following more specific questions may apply:

   * Is the water a unique water (i.e., effluent dominated, agricultural drainage water dominated, intermittent flow, etc)? While not the only candidates, water bodies with such unique characteristics are likely candidates for the appropriate application of regulatory adjustments (e.g., SSO or UAA). The Inland Surface Water Plan and Enclosed Bays and Estuaries Plan will provide further guidance on methods appropriate for addressing the unique characteristics of these kinds of water bodies.

* Were the current beneficial uses applied on a national, state-wide, or region-wide basis or have they been specifically designated for the water body in question? While not the only candidates, water bodies for which beneficial uses have been applied on a national, state-wide, or region-wide basis are likely candidates for the appropriate application of regulatory adjustments (e.g., SSO).

* Are there unique, threatened or endangered species, or ecological conditions which the currently applied beneficial uses do not adequately describe or the water quality objectives do not fully protect?

* Has the beneficial use and the water quality necessary to maintain the beneficial use been attained since 1975?

* How do anti-degradation requirements apply?

* Are elevated constituents the result of 1) natural phenomena or 2)anthropogenic activities ceased prior to 1975?

* Do the currently designated beneficial uses protect all existing and appropriate potential uses?

* Are natural, ephemeral, intermittent or low flow conditions or water levels preventing the attainment of the designated non-existing uses?

* Are there human caused conditions or sources of pollution which prevent attainment of the uses but either cannot be remedied or would cause greater environmental damage if corrected?

* Does the presence of dams, diversion or other types of hydrologic modifications preclude the attainment of designated non-existing beneficial uses?

* Do the physical conditions of the water body preclude attainment of aquatic life protection uses (i.e., lack of proper substrate, cover, flow, depth, pools, riffles, and the like)?

* Does attainment of designated beneficial uses require the application of controls more stringent than those otherwise required by law and regulation? Would such controls result in substantial and widespread economic and social impact?

* Have the appropriate water characteristics (e.g., hardness, pH) been accounted for in the current water quality objectives?

* Has an appropriate set of species been evaluated in setting the water quality objectives?

9. Conduct a Total Maximum Daily Load analysis and implement the results. Conducting a TMDL could result in, among other things, waste load allocations, BMP implementation for non-point dischargers, and/or effluent trading options for point and non-point source dischargers. U.S. EPA's "Guidance for Water Quality-based Decisions: The TMDL Process" dated 1991 (EPA 440/4-91-001) provides guidance for conducting an TMDL. U.S. EPA's "Water Quality Standards Handbook" dated 1994 also provides general guidance in this area.

10. Are beneficial uses appropriate but not water quality objectives?
See #8 above.

11. Conduct a Site Specific Objectives analysis and implement the results. An SSO study will include one or more of the following activities:

    * recalculation of objective
    * water effects ratio or other similar method
    * any scientifically defensible process

    A guidance document on this subject has been proposed for development through the SWRCB.

    U.S. EPA's "Guidelines for Deriving Numerical Aquatic Site Specific Water Quality Criteria by Modifying National Criteria," dated 1984 (EPA-600/3-84-099) provides guidance for conducting an SSO study.

    U.S. EPA's "Water Quality Standards Handbook" dated 1994 also provides general guidance in this area.

12. Are beneficial uses inappropriate? See #8 above.

13. Conduct a Use Attainability Analysis (UAA) and implement the results. When a use is proposed for dedesignation, i.e. removed or replaced with a subcategory requiring less stringent objectives, a UAA is necessary. In a case where a use is proposed to be added, a UAA is not necessary. A new use designation can be added for a water body following the normal public review process. A UAA will determine if physical, chemical, and/or biological factors affect the attainability of a designated use via a water body survey and assessment. An analysis of economic factors can also be included to determine whether substantial and widespread economic and social impacts would be caused by stringent pollution control requirements.

    U.S. EPA's "Technical Support Manual: Water body Survey and Assessment for Conducting Use Attainability Analyses" dated 1983 provides guidance for conducting a UAA as does Region 9's Interim Final "Guidance for Modifying Water Quality Standards

and Protecting Effluent-Dependent Ecosystems" dated 1992. U.S. EPA's "Water Quality Standards Handbook" dated 1994 also provides general guidance in this area.

SITE SPECIFIC OBJECTIVES TASK FORCE
GUIDANCE DOCUMENT OUTLINE

The purpose of this outline is to define a process for performance of site specific objective (SSO) studies and to capture the basic ingredients of SSO studies in a cookbook (step by step) format.

INTRODUCTION
- DEFINITION OF SITE SPECIFIC OBJECTIVE (SSO)
  - SWRCB POLICY REGARDING SITE SPECIFIC OBJECTIVES
- BASIC APPROACH TO SSO DEVELOPMENT
  - DECISION TO DEVELOP SSO
  - ORGANIZATIONAL STRUCTURE FOR SSO PROJECT TEAM
  - WORK PLAN DEVELOPMENT
  - SITE SPECIFIC STUDY APPROACH
  - DATA INTERPRETATION
  - ANTI-DEGRADATION
  - ECONOMIC/CEQA EVALUATION
  - IMPLEMENTATION OF SSO

DECISION TO DEVELOP SSO
- EVALUATION OF AVAILABLE INFORMATION
- PRELIMINARY STUDIES (IF NECESSARY)
- EVALUATION OF ALTERNATIVES TO SSO
  - USE ATTAINABILITY ANALYSIS
  - TMDL/WLA
  - PERMIT RELIEF OPTIONS
- PREPARATION OF DOCUMENTATION SUPPORTING REQUEST FOR SSO STUDY

ORGANIZATIONAL STRUCTURE FOR SSO PROJECT TEAM
- AGENCIES TO BE REPRESENTED
  - USEPA
  - SWRCB
  - REGIONAL BOARD
  - USFWS
  - DF&G
  - DISCHARGER(S)
  - PUBLIC INTERESTS
- MOU
  - RESPONSIBILITIES OF PARTIES
  - COST SHARING PLAN
  - POLICIES AND PROCEDURES

- CONFLICT RESOLUTION
- SCHEDULE

WORKPLAN DEVELOPMENT
- FORMAT
  - INTRODUCTION
    - PURPOSE
    - GOALS AND OBJECTIVES
    - LIMITATIONS
  - BACKGROUND INFORMATION
  - APPROACH
  - DATA PRESENTATION AND ANALYSIS
  - SSO CALCULATION PROCEDURE
  - REPORTING
  - REFERENCES
- PUBLIC INVOLVEMENT
- SCHEDULE

SITE SPECIFIC STUDY APPROACH
- AQUATIC LIFE-BASED OBJECTIVES
  - RECALCULATION
    - PER U.S. EPA WATER QUALITY STANDARDS HANDBOOK (1983)
    - MODIFIED WQS HANDBOOK APPROACH (ARIZONA APPROACH)
    - NATIONAL CRITERION RECALCULATION (NEW YORK HARBOR APPROACH)
  - INDICATOR SPECIES APPROACH
    - WATER EFFECTS RATIO (WER)
    - SITE SPECIFIC ACUTE-TO-CHRONIC RATIO (ACR)
  - TOTAL RECOVERABLE VS. DISSOLVED METALS
  - RESIDENT SPECIES APPROACH
  - OTHERS...
- HUMAN HEALTH-BASED OBJECTIVES
  - SITE SPECIFIC BIOACCUMULATION FACTOR (MERCURY CRITERIA DOCUMENT APPROACH)
  - VERIFICATION OF DEFAULT ASSUMPTIONS
  - OTHERS...
- WILDLIFE-BASED OBJECTIVES
  - SITE SPECIFIC BIOACCUMULATION FACTORS
- ENDANGERED SPECIES-BASED OBJECTIVES
- SEDIMENT QUALITY OBJECTIVES
- INTERMITTENT DISCHARGES

DATA INTERPRETATION
- STANDARD APPROACHES
  - AQUATIC LIFE-BASED OBJECTIVES
  - HUMAN HEALTH-BASED OBJECTIVES
  - WILDLIFE-BASED OBJECTIVES
  - ENDANGERED SPECIES-BASED OBJECTIVES
- CONFLICT RESOLUTION
  - FORMATION OF EXPERT PANEL
  - PRESENTATION OF EVIDENCE
  - FINAL DETERMINATION

ANTI-DEGRADATION

ECONOMIC/CEQA EVALUATION
- ATTAINABILITY ANALYSIS
- ECONOMIC IMPACTS
- ENVIRONMENTAL IMPACTS
- SOCIAL IMPACTS

IMPLEMENTATION OF SSO
- REGIONAL BOARD APPROVAL PROCESS
- SWRCB/EPA APPROVAL PROCESS
- DEPT OF FISH AND GAME/U.S. FISH AND WILDLIFE PROCESS

APPENDICES

- GLOSSARY OF TERMS

- SWRCB SSO "DECISION TREE"

- EPA GUIDANCE DOCUMENTS
  - WATER QUALITY STANDARDS HANDBOOK (EXCERPTS)

  - GUIDELINES FOR DERIVING NATIONAL WATER QUALITY CRITERIA FOR THE PROTECTION OF AQUATIC ORGANISMS AND THEIR USES (STEPHAN, ET. AL., 1985)

  - GUIDELINES FOR DERIVING NUMERICAL AQUATIC SITE-SPECIFIC WATER QUALITY CRITERIA BY MODIFYING NATIONAL CRITERIA (CARLSON, ET. AL., 1984)

- CASE STUDIES

SITE SPECIFIC OBJECTIVES TASK FORCE PROPOSAL REGARDING THE CALIFORNIA ANTI-DEGRADATION POLICY

The Site Specific Objectives Task Force recognizes that the State's anti-degradation policy (Resolution 68-16) may have a significant impact on the implementation of site specific objectives (SSOs). The primary question is, if the SSOs developed under the State Plan are higher (less restrictive) than statewide objectives, will the anti-degradation policy prevent the SSO from being adopted or implemented.

USEPA and State guidance notwithstanding, there is a need for definition of critical terms and for procedures for anti-degradation review to be developed. Also, given the implications, a review of its scope and implementation is warranted.

The Site Specific Objectives Task Force recommends that the State Board develop a guidance document to address issues related to the anti-degradation policy.

The guidance should address or define at a minimum the following issues:

1. How is ambient water quality determined?

2. What minimum number of data points taken over what minimum time frame are necessary to characterize the ambient condition?

3. How should data below analytical limits be evaluated?

4. Should the ambient water be upstream, downstream or in the case of effluent dependent streams, the effluent of the proposed discharge?

5. Does ambient groundwater quality include the vadose and saturated zones?

6. What statistical methods should be used to characterize variations in flow and chemical loading in the receiving waters and the discharge?

7. What water quality is presumed protective for each designated use?

8. For high quality waters, how is the level which exceeds use protection to be calculated?

9. Assuming that uses are protected, what minimum requirements must be met to show that allowing lower water quality is necessary to accommodate important economic or social development in the area? Should the requirement vary depending on the nature of the discharge (i.e. non-toxics, toxics, carcinogens)?

10. Is an anti-degradation review necessary when an existing discharge is removed from a receiving stream?

11. Does an increase in the mass of a discharge require an anti-degradation review even when it results in equal or improved (lower concentration) water quality?

12. Is an anti-degradation review required when a discharge is proposed to a dry wash or ephemeral stream?

13. How do you define a lowering of water quality?

14. How is anti-degradation to be applied to stormwater discharges and to storm event stream flows?

15. Can the scope of anti-degradation reviews for waters that are not "natural" or are impaired due to irreversible causes be limited to require the protection of uses only, as is presently done in Colorado?

Part III

Toxicity Objectives Task Force Report

TOXICITY TASK FORCE

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11-Oct-95

TOXICITY TASK FORCE
ATTENDANCE ROSTER

Interest Category		Name	April-18	April-19	May-17	June-28	July-26	August-23	September-27
POTW	M	Rodger Baird							
POTW	A	Bob Berger							
Stormwater	M	Robert Hale							
Stormwater	A	Jim Scanlin						***	
Industry	M	William R. Gala				**			
Industry	A	Ellen Johnck							
Agriculture	M	Robert S. Hedrick							
Agriculture	A	Norman Blackwell							
Water Supply		Douglas D. Drury							
Water Supply	A	Roger James							
Environmental	M	Victor C. Furtado							
Public Health	M	Nadine M. Feletto	*	*					
US EPA	M	Debra Denton							
US EPA	A	Robyn Stuber							
Fish & Wildlife	M	Robert Fujimura							
Regional Bds.	M	Gordon Anderson							
Regional Bds.	A	Shirley Birosik							
State Board	M	Stephanie Rose							
State Board	A	Victor de Vlaming							
	M=Member			=Attendance		* Peter Rogers & Kim Dinh attended for Public Health			
	A=Alternate					** Andrew Glickman attended for Industry			
						*** Lori Pettegrew attended for Stormwater			

TOXICITY TASK FORCE

TO: Members - State Water Resources Control Board

FROM: Toxicity Task Force

DATE: September 27, 1995

RE: Recommendations

We respectfully submit this report consisting of 18 pages including this cover memo for your consideration.

Consensus was achieved on 6 of the 10 recommendations. Unless noted, the rationale also expresses the consensus of the task force.

One stakeholder objects to #6; two stakeholders object to #8; one stakeholder objects to #9; two stakeholders object to #10 and two stakeholders support a Narrative Objective but suggest different language. The rationale for and against the four recommendations are presented by the interested stakeholders.

We thank you for this opportunity to assist you in developing viable plans for the Inland Surface Waters and Enclosed Bays and Estuaries of California.

TOXICITY TASK FORCE

RECOMMENDATION #1 - TOXICITY TEST VARIABILITY

The SWRCB should consider and take into account both intra-test and inter-test variability in the implementation of toxicity objectives. All available information, including, but not limited to, that from sources such as the Pellston conference and WERF research should be considered.

RATIONALE

Because aquatic toxicity tests involve the responses of living organisms, data derived from conventional chronic and acute toxicity testing may be more variable than routine chemical analysis. This is apparent not only among the replicates that make up a single toxicity determination (intra-test or within-test variability) but also between laboratories testing the same sample or a single laboratory testing a reference sample over time. Several statistical approaches have been suggested and/or developed for dealing with test variability, but no consensus has been reached on the appropriate statistical approach.

RECOMMENDATION #2 - IMPLEMENTING TOXICITY OBJECTIVES

The SWRCB should adopt a process to implement the toxicity objective that includes the following elements:

a) routine monitoring and trigger if there is a "toxic event" then go to
b) accelerated monitoring if there is persistent toxicity then go to
c) a toxicity reduction evaluation (TRE) and if necessary
d) a compliance schedule (which may include Best Management Practices, permit limits, etc.) to reduce toxicity.

RATIONALE

The focus of implementation processes for the toxicity objective is on preventing adverse impacts from toxicity in surface waters. A finding of persistent toxicity in ambient waters or demonstrated toxicity-related impacts on receiving water biota triggers actions to control sources of toxicity to the point that degradation of uses is not occurring.

Components of implementation may include: (1) routine monitoring for toxicity with appropriate standardized (or otherwise Board-accepted) toxicity test

methods; (2) accelerated monitoring if "triggered" by toxicity results; (3) Toxicity reduction and identification (TRE/TIE) if toxicity is persistent; (4) compliance schedule to reduce toxicity where appropriate.

Routine Monitoring

For permitted point source discharges, where a finding of "reasonable potential" has been made, monitoring of effluent and ambient waters for toxicity would be appropriate; if a TIE/TRE is necessitated by persistence of ambient water toxicity, the TIE would appropriately include evaluation of point source as well as other ambient site (including non-point source) contributions.

For currently un-permitted flows to surface waters (includes a variety of non-point and some point sources), ambient water and source water surveys for toxicity would be appropriate on a periodic basis to insure that water quality objectives were being met.

Toxicity Trigger

There is a consensus recommendation that toxicity triggers be used in the Implementation Process. The toxicity trigger value may vary for different waterbodies and points of applications. The following examples are given as possible ways numeric test values might be used quantitatively as triggers. These examples are not presented as consensus recommendations.

Trigger Option #1 [Referred to as the "traditional" no-observable-effect-concentration/ toxicity unit (NOEC/TU) - based trigger.]

A. Example:Median (of 3-5 ?) ambient water tests with > 1.0 TU triggers increased monitoring frequency. [TU could be defined per USEPA's TSD in terms of either hypothesis test or IC_p endpoints].

B. Example: Median (of 3-5 ?) effluent tests with > 1.0 TU triggers increased monitoring frequency [appropriate dilution applied to TU definitions if allowed].

C. Example: Single sample result of xTUs (where x equals a "high" value) triggers "immediate" resample and retest, and examination of any available ambient water or point source observations, chemical data, etc. (see current permit language for typical actions of this type now required by Regional Boards).

Trigger Option #2 [Referred to as the "Average Effect Level" numeric trigger]

This option requires that an effect level for test response be established as a trigger. This effect level can be derived in terms of "biosignificance", empirically in terms of "reliable response level" (RRL) of a protocol/organism/endpoint, or based upon practicality (i.e.,"we may trigger a TIE, so how much effect has to be present to have a successful TIE, so that toxicity can be reduced?").

A. Example: Average effect level, EL_X in (3-5 ?) samples of ambient water exceeding target effect level (EL_T) will trigger increased monitoring frequency [Note: this is basically a testing design featuring only control and ambient water samples].

B. Example: Average effect level EL_X in (3-5 ?) samples of effluent exceeding target effect level (EL_T) will trigger increased monitoring frequency. [Note: this is a classical multiple dose-response testing design to determine the point estimate, EL_X, with robust statistical models].

C. Example: Single sample with $> EL_{50}$ (?) will trigger immediate resample and retest. [See notes under options 2A and 2B regarding test design for effluents and ambient waters.]

Trigger Option #3 [Referred to as the "Probability Based Effect Level" numeric trigger.]

This option requires that an effect level for test response be established as a trigger, as in trigger option #2. Examples given below use the RRL as described in POTW (CASA-Tri-TAC) proposals as target effect levels for probability based comparison. This option could allow selection of different probability levels for various levels of confidence, depending upon designated use and protection scenario, and action being triggered.

A. Example: If the cumulative probability is less than $p = 0.05$ (or other false positive/negative rate) that four consecutive ambient water test results (EL_X) are less than the target effect level (EL_T = RRL of test protocol), then increased sampling frequency is triggered. [See note under option 2A].

B. Example: If the cumulative probability is less than $p = 0.05$ that four

consecutive effluent sample test results (as EL_X) are less than the target effect level (EL_T), then increased sampling frequency is triggered. [See note under option 2B].

C. Example: A single sample with $p < 0.05$ that $EL_X < EL_T$ triggers an "immediate" resample-retest. [See notes under option 1.C.] [EL_T here could either be the RRL or other effect level commensurate with a particular protection strategy, e.g. LC_{50} to identify potential lethality sources.]

Increased Testing Frequency

The consensus recommendation to use numeric triggers in the Implementation Process is worded such that the first action "triggered" after detection of repetitive toxicity is an increased frequency of monitoring; subsequent detection of "persistent" toxicity in the increased monitoring program leads to a TIE/TRE process. The definition of persistent in this context has been remanded to the State Board staff. For the purpose of delineating the Implementation Process here, some examples of how increased monitoring might lead to determination of "persistent" are given, using the numeric trigger options as a guide for internal consistency in logic.

Under Trigger Option # 1: ("Traditional" numeric trigger)
Increase frequency of testing to weekly for four (?) weeks. If 2/4 tests show greater than 1.0 TU, initiate a TIE.

Under Trigger Option # 2: ("Average Effect Level" numeric trigger)
Increase frequency of testing to weekly for four (?) weeks. If average $EL_X > EL_T$, initiate a TIE.

Under Trigger Option # 3: ("Probability Based Effect Level" numeric trigger). Increase frequency of testing to weekly for four weeks. If the cumulative probability is less than $p = 0.05$ (?) that $EL_X < EL_T$ for the four test results, initiate a TIE.

TIE/TRE Process.

The consensus recommendation on the Implementation Process leads to a TIE/TRE if persistent toxicity is found. This section only gives a generic description of what the elements of a TIE/TRE could be, in context of a narrative objective and Implementation Process. As such, this type of detail is

probably outside the scope of language that would appear in the Plans.

The focus of this portion of the implementation process is to reduce toxic effects that may be (or could eventually) causing designated use impairment. If persistent ambient toxicity is detected, an ambient TIE is warranted. An ambient TIE could include review of existing chemical and toxicity data from ambient and point source waters, TIE testing (as prescribed in USEPA TIE guidance) of ambient and source waters, and concerted evaluation of the watershed or stream reach.

A successful TIE would lead to toxicity reduction via TRE steps, source reduction, or other control measures. These may include imposition of permit limits (chemical or toxicity) on point sources, which could require increased treatment measures or pretreatment control steps; compliance schedules may be warranted for specific purposes. Other measures may include public awareness programs to eliminate certain product usage or waste product disposal, watershed credit trading (if allowed within regulations), or other innovative practices.

RECOMMENDATION #3 - VARIANCES

The SWRCB should include the original language allowing for variances found in the former ISWP/EBEP.

RATIONALE

It is possible that the Plans may conflict with other state and federal regulations, such as the Safe Drinking Water Act (the use of copper based herbicides) and the California Health and Safety Codes. In addition, it may be necessary to implement control measures for vector and weed control, pest eradication, or fishery management which are being conducted to fulfill statutory requirements under California's Fish and Game or Food and Agriculture Codes. Therefore, it may be necessary to issue variances to the Plans where conflicts exist. Variances should also be considered for draining water supply reservoirs, canals, pipelines and stormwater detention facilities.

RECOMMENDATION #4 - ADDITIONAL TEST ACCEPTABILITY CRITERIA

The SWRCB should develop additional test acceptability criteria to judge validity of tests.

RATIONALE

Test acceptability criteria (TAC) set minimum requirements for performing toxicity tests. Both effluent and reference toxicant tests must meet these TAC. These minimum requirements are clearly identified in the toxicity testing methods. The development of additional TAC would assist laboratory investigators and permitting authorities in evaluating the acceptability of test results and improving test precision and sensitivity. For example, test sensitivity, control variability, reference toxicant performance, and dose response consistency have been suggested as areas where additional TAC may be appropriate. This recommendation is related to Recommendation #1.

RECOMMENDATION #5 - UNIFORM TOXICITY OBJECTIVE

The SWRCB should adopt one uniform toxicity objective. Implementation provisions (e.g., point of application) may vary.

RATIONALE

Since the physical, chemical and biological characteristics as well as beneficial uses of California waters vary greatly, the question arises whether there should be individual toxicity objectives that address the unique aspects of each situation such as agricultural runoff, effluent dominated streams and ephemeral streams. However, the Task Force concludes that the aquatic life beneficial uses of all waters of the State must be protected and that a single uniform objective is the best approach.

This single objective should be phrased such that it applies to all situations and water body types which have the designated beneficial use of supporting aquatic life. Divergent situations and water body types can be addressed by implementation processes (see Recommendation #2) appropriate to the specific situation or body type. The Task Force agrees that the special concerns of most of the stakeholder groups can be adequately addressed through such specific implementation provisions that recognize the unique characteristics of

effluent releases and/or receiving waterbodies. This consensus recommendation is closely linked to a narrative toxicity objective (Recommendation #10) which is implemented through a process that includes routine toxicity monitoring with appropriate indicator species.

This approach has several advantages. It would ensure state-wide consistency. It would be more easily implemented for both point and non-point sources of pollution. Finally, it would link well with the Task Force's recommendation to use a narrative objective, which is broad enough to encompass all the water bodies to be covered by these Plans.

RECOMMENDATION #6 - ALTERNATIVE TEST METHODS

The SWRCB should consider alternative test methods for toxicity monitoring which meet alternate testing procedure requirements.

RATIONALE - IN SUPPORT (POTW, Agriculture, Water Supply, Environmental, USEPA, Fish & Wildlife, Regional Boards, State Board) (Stormwater abstained)

Federal regulations require permitting authorities to use analytical methods listed at 40 CFR Part 136. Approved toxicity test methods are detailed in USEPA/600/4-90/027F acute test methods for freshwater and marine test species, USEPA/600/4-91/002 chronic test methods for freshwater test species, and USEPA/600/4-91/003 chronic test methods for estuarine and marine test species. Usually the use of indigenous species for toxicity testing is discouraged by USEPA because of the lack of standardized testing procedures, including quality assurance requirements and culturing methods. USEPA is developing alternative testing procedures that will specify minimum requirements for approval of new standardized test methods.

Not withstanding the rationale above, USEPA will stay the application of 40 CFR Part 136, as it applies to measurements of chronic toxicity to west coast marine waters and recommends the use of standardized west coast marine species in USEPA/600/R-95/136.

RATIONALE - IN OPPOSITION (Industry)

SWRCB should not allow new test protocols for toxicity monitoring. Industrial dischargers agree with USEPA's historic policy of discouraging the use of

alternative and/or indigenous species for toxicity monitoring. There are numerous QA/QC problems associated with using indigenous species. Unlike the standard USEPA organisms, most dischargers and testing laboratories will have little experience with indigenous species, thus, finding a quality testing laboratory to perform the toxicity monitoring may be difficult. Indigenous species will also have a poorer selection of suppliers so that year-round availability for routine monitoring may also be problematic. Lastly, because indigenous species will not have published TIE methods, dischargers using indigenous species will be at a great disadvantage when attempting to identify and control sources of effluent toxicity. Too often dischargers have been required to solve these QA/QC problems while attempting to perform routine monitoring of their discharges.

Besides the above QA/QC problems associated with using indigenous species, there is little scientific basis that using indigenous species for toxicity monitoring will provide additional protection of the beneficial uses of receiving waters. The standard USEPA test organisms have been tested against hundreds of toxicants, and have been found to be among the most sensitive species tested in the laboratory. Generally, little will be known regarding an indigenous species' response to different toxicants. Thus, there will be little evidence that the response of an indigenous species to the wide range of toxicants found in industrial and municipal effluents, stormwaters and ambient waters will be protective of other organisms that reside in the receiving water. In addition, because it is unlikely that the response of any indigenous species will represent the most sensitive species in a given receiving water, it is questionable that the selected indigenous species will be any more protective of the receiving water than test results using the standard USEPA species. Industrial dischargers question the need for using indigenous species especially when there is no evidence that their use will result in either a demonstrable improved protection of the beneficial uses of waterbodies or in reduced regulatory costs with equivalent protection of beneficial uses.

RECOMMENDATION #7 - CHLORINE AND AMMONIA TOXICITY

The SWRCB should evaluate alternative approaches to monitoring and controlling chlorine and ammonia toxicity.

RATIONALE

Chlorine

Chlorine is a commonly used disinfectant, largely because it is toxic at very low concentrations. The USEPA "Gold Book" recommends a chlorine concentration of less than 0.019 mg/L to prevent acute toxicity. Chlorine is among the toxicants that readily dissipates with time and organic matter.

Historically, chlorine was not considered a pollutant. More recently, dechlorination has been required. Permit limits for chlorine residual concentrations have been lowered as process control equipment has become more sophisticated. Originally, chlorine residual limits were 0.5 mg/L. Now effluent chlorine residuals of 0.1 mg/L are common and <0.01 mg/L are obtainable. However, not every POTW has the equipment or expertise to achieve a chlorine residual low enough to prevent toxicity.

Because chlorine concentrations will dissipate with time, toxicity from chlorine will vary. As a result chlorine can cause variability in toxicity tests. The chlorine caused variability in the acute toxicity test is eliminated with procedures that allow for the dechlorination of the sample before the test is conducted. The chronic test procedures do not explicitly allow for the dechlorination of sample before the test is conducted.

The State Board staff should consider the costs involved in dechlorinating to a chlorine residual of <0.01 mg/L in developing the proposed ISWP/EBEP.

Ammonia

Ammonia in concentrations typically found in POTW effluents is toxic to some aquatic life. In order to prevent whole effluent toxicity, POTW's would have to nitrify. The cost to provide increased aeration capacity and tankage for nitrification can be significant. Some of the costs of nitrification can be mitigated through the reasonable use of acute and chronic mixing zones.

The State Board staff should consider how best to address ammonia toxicity and the costs of nitrification in developing the ISWP/EBEP.

RECOMMENDATION #8 - MIXING ZONES

The SWRCB should make available acute and chronic mixing zones for determining compliance with toxicity requirements consistent with USEPA guidance.

RATIONALE - IN SUPPORT (POTW, Stormwater, Industry, Agriculture, Water Supply, Environmental, USEPA, State Board)

The implementation of mixing zones for defining the point of application for in-stream water quality, including toxicity, objectives is scientifically sound, environmentally protective and cost-effective. The underlying assumption for allowing mixing zones is that a small area of concentrations in excess of acute and chronic objectives can exist without adversely affecting the overall beneficial uses of a waterbody. The USEPA has historically and does currently allow for the use of mixing zones. The use of mixing zones to specifically implement toxicity objectives is clearly supported by the most recent USEPA whole effluent toxicity (WET) policy - "The permitting authority should evaluate WET water quality criteria attainment for acute WET at the edge of the acute mixing zone and for chronic WET at the edge of the chronic mixing zone..." (see p.4, Whole Effluent Toxicity (WET) Control Policy, USEPA, Office of Water, USEPA 833-B-94-002, 1994).

USEPA's Technical Support Document (TSD) for Water Quality-Based Toxics Control (USEPA/505/2-90-001, 1991) and other USEPA documents provide the basis for implementing mixing zones that are scientifically sound and environmentally protective. The TSD lists the following characteristics for allowable mixing zones: 1) Mixing zones do not impair the integrity of the waterbody as a whole; 2) There is no lethality to organisms passing through the mixing zone; and 3) There are no significant health risks, considering likely pathways of exposure. The TSD provides guidance for analyzing mixing zones to ensure the above characteristics are met. Mixing zones are technically definable through the various detailed reports and textbooks on the hydrodynamics of mixing, through the commonly used USEPA-approved models, and through field measurement techniques (e.g., dye tracer studies). Current technologies related to modeling mixing zones (to determine size of mixing zones), assessing time and exposure of organisms passing through mixing zones (to prevent lethality to passing organisms), and conducting bioassessments in the receiving water (to assess whether beneficial uses are being protected) are sufficient to evaluate whether mixing zones will be protective of the beneficial uses of the waterbody.

Excluding the consideration of mixing zones in developing WET permit limits results in end-of-pipe controls that are technology-based, not water quality-based. The lack of relevance that this type of control results in is highlighted by the situation in which a fresh water effluent is discharged into a saline estuary or bay. Acutely toxic effects will naturally occur, regardless of the quality of the effluent, because marine biota cannot live in the fresh water that will occur in close proximity to the end-of-pipe.

Excluding the consideration of mixing zones in developing WET permit limits is inconsistent with California's commonly accepted practices for controlling the discharge of individual chemicals. In the previous Water Quality Plans, acute and chronic concentration limits for chemicals "shall be imposed such that the water quality objectives established by this plan shall not be exceeded in the receiving water outside any designated mixing zone". Establishing different applications of mixing zones in permits is not justified (i.e., acute mixing zones are allowed for chemical-specific limits but not for WET limits), since there is no evidence that protecting biota from acutely toxic effects would be any less effective when predicted by WET tests than when the prediction is based on chemical analyses.

RATIONALE - IN OPPOSITION (Fish & Wildlife, Regional Boards)

The Regional Boards and California Department of Fish and Game strongly oppose allowing acute toxicity mixing zones in inland waters and enclosed bays and estuaries. Protecting aquatic life from exposure to substances causing acutely toxic effects is a major concern. Acute mixing zones could represent a permanent loss of aquatic habitat or significantly impact the aquatic communities of receiving waters. While some organisms may avoid the affected area, others may be attracted to the area, become entrained in it, or remain in the mixing zone for other reasons (e.g., attached aquatic plants or sessile fauna).

Acute toxicity mixing zones are not currently recognized for inland waters of California. Allowing acute mixing zones would represent a step backward in the protection of aquatic life. Lethality is an extreme response that is often preceded by a range of sublethal responses. Permitting the discharge of acutely toxic substances increases the likelihood that adverse effects may occur in the receiving water and could contradict other water quality protection statutes. Beneficial uses must be protected throughout each water body where they occur. Receiving waters are a public resource and should not be used to treat or dilute wastes to non-toxic levels.

RECOMMENDATION #9 - SINGLE TEST RESULT NOT A VIOLATION

The SWRCB should adopt a provision that: No single test result shall constitute a violation.

RATIONALE - IN SUPPORT (POTW, Stormwater, Industry, Agriculture, Water Supply, Environmental, USEPA, Regional Boards, State Board)

California's Water Quality Control Plans for Enclosed Bays and Estuaries, and Inland Surface Waters contained acute and chronic toxicity objectives, and a process to implement water quality-based toxicity control. One controversial element in the adopted implementation process was the determination of compliance (or violation) with an acute or chronic toxicity permit limitation using whole effluent toxicity (WET) tests. Concern centered on the variability of test results (especially chronic WET tests) and the reliability of these test results in determining permit compliance. In addition single toxicity test results cannot characterize the duration, magnitude or frequency of the toxicity measured in ambient waters or discharge sites.

The above recommendation would use single toxicity test results to initiate an explicit toxicity control response, rather than solely as a means to determine compliance with a toxicity objective. This is an important part of a comprehensive regulatory approach that emphasizes a resolution (i.e., identifying the source or cause) of potential toxicity problems. The recommendation offers the following advantages for successful control of toxicity in California's surface waters:

- **It broadens the use of toxicity monitoring and control to ambient waters and to all point and non-point source discharges.**

Using single toxicity test results to determine permit compliance would only apply to permitted dischargers. On the other hand, using toxicity test results to initiate a standardized investigation and resolution processes (see Recommendation #2) is applicable to ambient waters, as well as to other potential sources of toxicity that may be unregulated.

- **It emphasizes the identification and resolution of toxicity problems.**

The variability associated with toxicity tests may not always allow a clear indication from a single test result that toxicity will adversely impact the designated uses of a water body, nor can single test results characterize effluent

or ambient water toxicity in terms of duration, magnitude or frequency. Equally important, resolution of unacceptable toxicity through the Toxicity Identification/Reduction Evaluation (TI/RE) process requires toxicity to be demonstrated on more than one occasion. USEPA states in its TIE guidance[1] that "TIEs require that toxicity be present frequently enough so that repeated testing can characterize and subsequently identify and confirm the toxicants in Phases II and III. Therefore, enough testing should be done to assure consistent presence of toxicity before TIEs are initiated."

RATIONALE IN OPPOSITION (Fish & Wildlife)

The Department of Fish and Game recommends adopting a policy where the Regional Board staff can use the results of a single toxicity test as a part of enforcement action in extreme circumstances. We feel that to adopt a policy where the Board could use not the results of a single toxicity test would unnecessarily weaken the importance of whole effluent testing and remove an enforcement option from the Regional Boards.

The Department of Fish and Game supports efforts for the prompt resolution of potential and existing toxicity problems though standardized investigation and resolution processes incorporated in discharge permits. In general, no single test result should constitute a violation if the discharger adequately complies with its NPDES permit for prompt identification of the toxicity event and takes appropriate action such as accelerating testing and/or conducting a TRE. Exceptions to this general guideline should include where the toxicity exceedance is of large magnitude or contributed to a significant environmental impact.

Although some stakeholders have concerns about the use and interpretation of certain toxicity test results, it would be unwise to consider diminishing the significance of extreme results for all toxicity tests (e.g., high acute toxicity). Toxicity test results are generally more reliable and less variable in detecting large-scale responses. Extreme responses may signal that significant environmental damage may be occurring. Because routine whole effluent toxicity testing may occur less frequently than other NPDES monitoring requirements and receiving water monitoring generally occurs even less, a single test result may be the only evidence that a serious, deleterious discharge

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[1] U.S. EPA. 1988. Methods for Aquatic Toxicity Identification Evaluations. Phase I Toxicity Characterization Procedures. EPA-600/3-88/034.

has or is occurring. Therefore, the Regional Boards should retain their discretionary power to enforce toxicity permit limits or compliance objectives when they deem it appropriate.

RECOMMENDATION #10 - NARRATIVE OBJECTIVE

#10 A (supported by POTW, Industry, Water Supply, Environmental, USEPA, State Board)

The SWRCB should adopt the following narrative toxicity objective: Surface waters outside of any allowed mixing zones shall be free from lethal or sub-lethal toxicity in amounts which impair designated aquatic resource beneficial uses. Aquatic life community structures and function shall not be degraded by toxic discharges.

#10 B (supported by Agriculture, Stormwater)

The SWRCB should adopt the following narrative toxicity objective: Surface waters outside of any allowed mixing zones shall be free from lethal or sub-lethal toxicity in amounts which impair designated aquatic resource beneficial uses.

RATIONALE IN SUPPORT OF #10 A

A major difference in adopting a narrative rather than numeric objective is the potential flexibility afforded in the implementation of a uniform objective for the wide variety of water quality and use protection situations in California. The underlying reason for this difference is found in 40 CFR 122.44(d)(1)(iv). This provision essentially requires that, where numeric toxicity objectives are in force, numeric permit limits for WET are required if "reasonable potential" is determined: any single exceedance of a permit limit is a NPDES permit violation subject to the full range of State and Federal enforcement actions. However, for a narrative objective, determination of "reasonable potential" does not automatically mandate imposition of numeric limits for effluent toxicity in permits [Section 122.44(d)(1)(v)].

Although a narrative objective does not preclude numeric permit limits, it does allow options in the implementation process for controlling toxicity in ambient waters via permit requirements and other measures besides merely imposing a

numeric effluent limit. These options should facilitate State and Regional Board implementation of toxicity control for a wide variety of surface water protection situations. On the other hand, a numeric objective for toxicity potentially reduces the flexibility that a regulatory authority has to satisfy USEPA's permit regulations (40CFR Part 122), and is seen by many as a more inflexible application of WET test results in regulations.

Much of the opposition to WET testing which has historically come from the discharger community, while based upon a number of technical arguments, was driven largely by the perceived likelihood that WET limits would be imposed in the form of numeric effluent limits. Currently, since a single WET test exceedance could result in a permit violation, the technical debates about test variability and predictiveness are invoked in opposition to use of WET in compliance determinations. In short, the prescriptive nature of a numeric toxicity objective is seen by dischargers as primarily coercive, with focus on effluent limits rather than designated use protection of a waterbody. Although these arguments may or may not be persuasive by themselves in selecting a toxicity objective, there are regulatory issues which should be considered on their own merits, and which potentially help resolve or avoid a number of problems. Much of the remainder of this discussion relies upon comparing or contrasting the narrative and numeric approaches.

Adoption of a single numeric toxicity objective potentially reduces the ability to deal responsively with a variety of site-specific water quality needs and beneficial uses in the State. The numeric objective approach complicates use of a single objective with potentially different implementation provisions (e.g., point of application) as tentatively agreed upon by the Toxicity Task Force. While the single test exceedance/violation problem alluded to above can be lessened by incorporation of averaging periods for toxicity in permit limits, this strategy is arguably not the optimal approach to deal with all point sources, nor the most efficacious way of using toxicity monitoring results to control potential ambient water toxicity from unpermitted sources such as non-point stormwater or agricultural sources, or of handling ephemeral stream and effluent dominated stream issues.

Adoption of a narrative objective with distinct implementation steps potentially increases the array of permitting possibilities and available responsive actions for dealing with specific waterbody needs. The narrative objective approach also provides a mechanism and incentive for major dischargers to monitor beyond the end of their pipes in the watershed.

The State Water Resources Control Board identified watershed management as one of five key elements in its Strategic Plan. Watershed management attempts to resolve water quality problems by comprehensively controlling both point and non-point source discharges. Under a numeric toxicity objective, permitted dischargers will have little or no incentive to extend monitoring beyond attempts to comply with individual permit limits, whereas implementation of narrative objectives to protect surface waters in a given watershed would incorporate monitoring beyond end of pipe. Ambient water TIE requirements will encourage dischargers to evaluate watersheds into which they discharge, possibly prior to permit violations or before toxic events from other possible sources. Adoption of numeric objectives will likely perpetuate the emphasis on permitted point source discharges, and failure to adequately assess other contributions of toxicity in a watershed.

A narrative toxicity objective can facilitate the implementation steps which have been tentatively agreed upon by a majority of the Task Group, which include routine monitoring, accelerated monitoring in the event of a toxicity exceedance, TRE if toxicity is persistent, and a compliance schedule to reduce toxicity. It would be difficult to apply this approach (especially on a watershed basis) if a numeric objective is adopted.

A numeric rather than narrative toxicity objective might be seen as an obstacle to use of toxicity test results in the resolution of water quality problems. Because of the strict liability associated with permit violations, WET tests may not, therefore, be perceived as tools for identifying and resolving toxicity problems in water bodies, but rather as uncompromising permit compliance measures. This was referred to earlier in the discussion as "inflexible"; such usage will probably intensify the emphasis for USEPA to resolve technical concerns with the precision and predictiveness of WET test methods and results before use in numeric limit compliance, rather than using them as a basis for more comprehensive monitoring and control programs.

RATIONALE IN SUPPORT OF 10 B

Two stakeholders (agriculture and Stormwater) believe the second sentence of the objective contained in recommendation #10 A is unnecessary, ambiguous and may be inconsistent with the provisions of the Porter-Cologne Water Quality Control Act.

The language provides no additional protection because aquatic life community structures and functions are reasonably protected within designated beneficial

uses. Accordingly, adding the second sentence is redundant and risks confusion.

Finally, the language may be construed as being absolute and therefore inconsistent with the definition of water quality objectives set forth in Water Code Section 13050(h) which provides for reasonable protection of beneficial uses. See also Water Code Sections 13050 (i) and 13241.

With the above qualification we adopt the rationale given in support of recommendation #10 A, but not recommendation #10 A.

RATIONALE IN OPPOSITION TO #10 A and #10 B (Fish & Wildlife, Regional Boards)

The Department of Fish and Game favors the establishment of a statewide, numeric chronic toxicity objective that would provide adequate, uniform, and consistent protection of aquatic life in California and their beneficial uses that they provide. Unlike chemical specific objectives, toxicity objectives can take into account additive or synergistic effects and better protect fish and wildlife from these effects. Since only a limited number of constituents have chemical specific objectives and many constituents do not, toxicity problems from unregulated pollutants are best addressed by the use of numeric toxicity objectives. In cases where beneficial uses are impaired, it is far easier for the Regional Boards to pursue corrective actions where numeric objectives are in place. Proving a violation of a narrative objective may be more difficult. Therefore, numeric toxicity objectives provide better protection for fish and wildlife.

The adoption of a statewide numeric chronic objective would have several additional benefits. It sets an explicit level where aquatic life and their beneficial uses are affected by pollution. It provides an uniform benchmark on whether a water body is in compliance with the toxicity objective. It would simplify enforcement and compliance procedures and provide guidance for setting toxicity effluent limits. Flexibility could be introduced in implementation of permit limits by the use of average values and/or maximum magnitude levels, by varying the points of application, and by setting compliance procedures to eliminate toxicity. Other incentives could be adopted to encourage dischargers to participate in monitoring programs to identify and reduce toxicity problems in receiving waters. A numeric toxicity objective is also consistent with the chemical objective approach. Protection of California's aquatic resources merit the benefits provided by a numeric objective.