

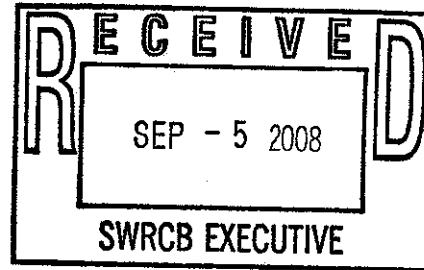
HUMBOLDT



BAYKEEPER®

September 5, 2008

Ms. Tam Doduc, Chair, and Board Members
State Water Resources Control Board
1001 I Street,
P.O. Box 100
Sacramento, CA
95814



Submitted via electronic mail to commentletters@waterboards.ca.gov.

Re: Comment Letter regarding Draft Plan Sediment Quality Objectives

Dear Chair Doduc and State Board Members:

Humboldt Baykeeper appreciates the opportunity to provide comments on the Water Quality Control Plan for Enclosed Bays and Estuaries, Phase II Sediment Quality Objectives ("SQO Plan" or "Plan"). Humboldt Baykeeper understands the complexity of developing such objectives for the enclosed bays and estuaries of the State, especially considering the diversity of impacts faced by each waterbody in each region. We commend the staff of the State Water Resources Control Board ("State Board") for the work they have done in this area to date, and look forward to later developments in this area of significant environmental concern.

Although we are excited to see the State Board working towards enacting appropriate protections for sediments found within the enclosed bays and estuaries of California, we do have concerns regarding the SQO Plan as currently designed. These concerns are discussed below.

1. California Water Code Section 13390

California Water Code¹ ("CWC") Section 13390 establishes the intent of the legislature in requiring the State Board to design and implement the sediment quality objectives that are the subject of this Plan. The intent of the legislature was to "provide maximum protection for *existing and future* beneficial uses of bay and estuarine waters..." CWC Section 13390 (emphasis added). Instead of providing

¹ The Bay Protection and Toxic Cleanup portion of the California Water Code is found at Sections 13390 through 13396.9. All references to the California Water Code can be found in these sections unless otherwise noted.

protection for all existing and future beneficial uses of California's bays and estuaries, the SQO Plan as currently written only provides protection for a limited subset of currently identified beneficial uses.² Other beneficial uses are removed from the protections of the SQO Plan although they may clearly be impacted by the quality of sediments.

The following list of beneficial uses³ for Humboldt Bay, for example, that may be impacted by sediment quality are currently excluded from protection:

1. Water Contact Recreation
2. Cold Freshwater Habitat
3. Wildlife Habitat
4. Rare, Threatened, or Endangered Species
5. Migration of Aquatic Organisms
6. Spawning, Reproduction, and/or Early Development

These beneficial uses must be protected under the SQO Plan as required by Section 13390 of the California Water Code.

Furthermore, the SQO Plan states that it applies only to "assess the risk to sediment dwelling organisms from direct effects within estuarine habitats and also (to develop) a framework and indicators to assess indirect effects to human health..."⁴ The Legislative intent directing the development of these SQOs says nothing about protecting only sediment dwelling organisms from direct effects while ignoring indirect effects completely, nor does the legislature limit the protections that must be afforded to only sediment dwelling organisms or human health. Instead the legislature clearly intended protections to be afforded to all organisms from both direct and indirect effects.⁵ This failing of the SQO Plan as currently written must be corrected.

2. California Water Code Section 13393

Water Code Section 13393 states that the "sediment quality objectives shall be based on scientific information, including, but not limited to, chemical monitoring, bioassays, or established modeling procedures, and shall provide adequate protection for the most *sensitive aquatic organisms*." The SQO Plan is currently written to address impacts to benthic communities, not all benthic organisms. Specifically, section IV. A. states "Pollutants in sediments shall not be present in

² See Water Quality Control Plan for Enclosed Bays and Estuaries, Phase II Sediment Quality Objectives Table 1, page 6.

³ Water Quality Control Plan for the North Coast Region Table 2-1.

⁴ Staff Report, State Water Board Preliminary Draft Phase II Sediment Quality Objectives Proposal at p. 1.

⁵ See CWC Section 13390.

quantities that, alone or in combination, are toxic to *benthic communities* in bays and estuaries of California.”⁶

The language difference between what is mandated by statute and what is proposed by the State Board creates an obvious inconsistency. Protection of benthic communities will only protect a small segment of the populations that were intended to be covered by the statute. Limiting protection to organisms on a community wide basis will delay protection and recovery until harms faced by our bays and estuaries has progressed beyond the level indicated by impacts to sensitive individual organisms. By doing this the recovery of the health of our bays and estuaries will be significantly delayed – possibly to the point of no recovery, and at the least to a point where recovery will be significantly more difficult and the efforts required much more extensive.

If narrative objectives are to be used for protecting benthic species, they need to clearly state the level of protection for all benthic species, not simply provide for protection at the community level. As Dr. Schaffner stated in her peer review, protecting at the community level and protecting all species are different.⁷ To try to rectify the differences, state board staff have greatly exaggerated the sensitivity of the benthic metrics making unsubstantiated claims that are misleading at best. Even if the appropriate reference conditions were used (unimpacted conditions, not least impacted) the levels of sensitivity of these metrics would require impacts to numerous sensitive species before the metrics would show any level of impact. Benthic studies should be used appropriately to show when there are severe impacts unidentified by other lines of evidence, but not to justify existing toxicity and chemical contamination as they would under the SQO Plan. Unfortunately SWRCB staff and the science team built the entire approach around the goal of only protecting at the community level. This does not meet the requirements of section 13393 of the CWC and must be changed before the SQO Plan can be adopted.

3. Application of the SQO Plan to Bays and Estuaries Without Existing Data

Section II. B. of the SQO Plan states that the Plan “supersedes all applicable narrative water quality objectives and related implementation provisions in water quality control plans to the extent that the objectives and provisions are applied to protect bay or estuarine benthic communities from toxic pollutants in sediments.”⁸ The SQO Plan further requires both elevated chemical exposure and biological effects in order for areas that currently have more limited data available before a site

⁶ SQO Plan at 6.

⁷ Peer Review by Dr. Linda Schaffner *available at*
http://www.swrcb.ca.gov/water_issues/programs/bptcp/sediment.shtml.

⁸ SQO Plan at 4-5.

will be considered impacted, and does not allow the use of a single line of evidence in any case for making an impacted determination.⁹

The combination of these three factors – elimination of existing narrative water quality objectives, inability to use one line of evidence in making an initial determination, and requiring both elevated chemical exposure and evidence of biological impacts results in drastically lowering the protections afforded to enclosed bays and estuaries, especially in areas that do not currently have the same data available as San Francisco Bay, for example. This methodology will result in areas of limited data continuing to be impacted potentially indefinitely. For many of these areas only one line of evidence might currently be available. Under the SQO Plan these areas will not receive the protections or further investigations outlined within the SQO Plan unless or until additional data is gathered, while the Plan contains minimal provisions to encourage such undertakings.

4. The Methods Found in the SQO Plan are not Adequately Protective

It appears that under pressure from discharger's to not be regulated, State Board staff have taken the position that the complicating factors in sediment toxicity require an approach fundamentally less protective than the approach for controlling toxics in water. We do not agree. As stated by Dr. Sedlak in his peer review, these complicating factors in sediment toxicity are likely not more difficult to capture than those inherent in land, water, air or any other area of environmental regulation.¹⁰ While there are complexities related to bioavailability in sediment that often need to be addressed, a more appropriate method can be formulated than what is found in the SQO Plan as it is currently drafted.

Water Code Section 13391.5(d) defines a sediment quality objective as "that level of a constituent in sediment that is established with an adequate margin of safety, for the reasonable protection of the beneficial uses of water or to the prevention of nuisance." This section clearly presents the idea that a sediment quality objective should err on the side of greater protection, not towards lesser protection. As currently written, when there is doubt as to whether a location is impacted ("Possibly Impacted") the area will be determined to not be degraded unless the site is proven to be impacted through confirmation monitoring and stressor identification.¹¹ Furthermore, high indications of impact from one line of evidence can be overridden by low indications of impact from another line of evidence. This is clearly contrary to providing "an adequate margin of safety" and protecting the most sensitive aquatic organisms as required by the Water Code.

⁹ SQO Plan at 16.

¹⁰ Peer review by Dr. David Sedlak *available at*
http://www.swrcb.ca.gov/water_issues/programs/bptcp/sediment.shtml

¹¹ SQO Plan at 16.

Problems with specific elements of the SQO Plan methods are as follows:

a. Toxicity Line of Evidence

The Toxicity line of evidence ("LOE") is clearly the most obvious representation of the condition of sediments. In applying this portion of the analysis the SQO Plan provides for a limited number of test organisms to be used in analyzing the toxicity of sediments from specific locations. These species have been chosen due to their known response and sensitivity to various conditions. They represent however, a small snapshot relative to the large diversity actually found within natural aquatic environments. As these species have been identified for their responsiveness, this characteristic needs to be properly appreciated in application of the toxicity line of evidence. Should any analysis show impact from this line of evidence the proper weight should be granted to that information and the site should be considered impacted. Combining this evidence with other lines of evidence should not be allowed to override the finding of toxicity and find that an area is not in fact impacted.

b. Chemistry Line of Evidence

The chemistry LOE needs to be more robust and protective. Both of the proposed chemistry LOE methods are those based on regressions of toxicity and benthic condition with a short list of chemicals. The only way to fulfill the SQO Plan's requirement to prove that a community level impact exists requires knowing what level of a pollutant causes a specific level of impact and thus having widespread sediment toxicity. We should not have to wait until widespread impacts have occurred and been documented in millions of dollars worth of studies in order to develop sediment chemistry thresholds. The SQO Plan needs to allow all useful information such as sensitive species toxicity values, mechanistic models, and Toxicity Identification Evaluations in developing chemical thresholds and assessing contaminant exposure risks for benthic species.

The chemical line of evidence should not exclude by design anything not on the proposed short analyte list. The need for consideration of data on additional pollutants such as current use pesticides, and use of the most appropriate metrics to evaluate their the potential toxicity in evaluating sediments was actually a concern of the experts whose opinion is cited as validation of the MLOE approach:

"(T)he inclusion of data for additional chemicals of concern (e.g., current use pesticides) would have given some experts greater confidence in their assessment decisions with respect to the

chemistry and benthos lines of evidence by indicating whether additional potential toxicants were present. The lack of established assessment guidelines for these additional chemicals is problematic, but mechanistic models and effects data from the literature can be used to assist in interpretation when using best professional judgment."¹²

The proposed Chemical Score Index ("CSI") metric appears to have not been peer reviewed as a basis for the proposed regulation, but is still used as part of the SQO Plan. Not only was the CSI metric not reviewed, there are fundamental problems with the design of the metric itself. The CSI metric merely compares chemical mixes found at a site being analyzed to the chemical mix present most often at the historical degraded sites used to develop the dataset. Radically different chemical mixes could be similarly toxic and have similar effects on communities, but would not be ranked as impacted unless they had high concentrations of the specific chemicals which were elevated at the degraded sites in the historical dataset. For example, if pure DDT was analyzed under this metric the site that generated it would not be considered be impacted.

Furthermore, averaging the two limited chemical metrics together doesn't make their weaknesses go away; it actually lets the extremely weak CSI metric water down the slightly better California Logistic Regression Model ("CA LRM") metric. This results in a chemical line of evidence that provides no protection for even potentially heavily impacted and toxic sites.

c. Benthic Community Line of Evidence

Beyond the fact that the SQO Plan improperly uses impacts to the benthic community as a basis of finding that an area has been impacted by sediments, the benthic community line of evidence improperly uses least impacted conditions as a baseline, or reference condition, instead of using an unimpacted condition.¹³ To use as a reference condition for determining impact something which itself has already been impacted does not amount to a sound assessment. All of our bays and estuaries have been impacted by toxics to greater or lesser extent through decades of historical uses.

¹² Bay, S., W. Berry, P. Chapman, R. Fairey, T. Gries, E.R. Long, D. McDonald and S.B. Weisberg. 2007. Evaluating consistency of best professional judgment in the application of a multiple lines of evidence sediment quality triad. Integrated Environmental Assessment and Management Vol 3 number 4 – pp 491-497.

¹³ SQO Plan at 11.

d. Lines of Evidence Integration and Multiple Lines of Evidence

We support using all available LOE appropriately. But this evidence needs to be combined in a manner consistent with strong environmental protection. Additionally, what the SQO plan calls a multiple line of evidence ("MLOE") approach would actually function to limit the information and analysis that can be used in assessing sediment toxicity by strictly prescribing to the exclusion of all other methods, limiting all analysis to this lowest common denominator. It is inappropriate to limit the interpretation of a narrative objective to such a narrow analysis given the evolving science in this field. Protection of aquatic life should not be sacrificed for consistency.

It is notable that while there is no flexibility for what can be used to identify an exceedance of standards, there is considerable flexibility in what can be used in section F to determine that an exceedance was incorrectly identified. This approach further skews the application of the SQO Plan towards eliminating responses to, or never beginning to protect in the first place, areas of proven or potential impact.

The approach for integrating the lines of evidence seems to be based on the premise that somehow averaging together defective lines of evidence makes up for the deficiencies outlined above in the specific methods. This should be approached more intelligently. Since each line of evidence provides useful indications of sediment quality problems, the results from one line of evidence should not be used to contradict valid indications of standards exceedance from the other lines of evidence. This principal is stated in USEPA's policy of Independent Applicability found in Biological Criteria: National Program Guidance for Surface Waters.¹⁴ It is especially important not to let warnings from toxicity testing be ignored due to chemical tests that exclude numerous relevant chemicals and/or bioassessments that are insensitive and based on already impacted "reference" conditions.

¹⁴ U.S. EPA, Biological Criteria: National Program Guidance for Surface Waters (2007), available at <http://www.epa.gov/bioiweb1/html/biolcont.html>. As the EPA states: "Since each type of criteria (biological criteria, chemical-specific criteria, or whole-effluent toxicity evaluations) has different sensitivities and purposes, a criterion may fail to detect real impairments when used alone. As a result, these methods should be used together in an integrated water quality assessment, each providing an independent evaluation of nonattainment of a designated use. If any one type of criteria indicates impairment of the surface water, regulatory action can be taken to improve water quality. However, no one type of criteria can be used to confirm attainment of a use if another form of criteria indicates nonattainment" (emphasis added).

5. The List of Applicable Chemicals in the SQO Plan is too Narrow

The SQO Plan identifies the specific chemicals that can be used to identify a site as impacted. By establishing a defined set of constituents and not providing for application of the SQOs to other chemicals the SQO Plan is sacrificing the health of our bays and estuaries for the limited benefit of ease of use. There are a wide variety of chemical constituents that have the potential to cause toxic impacts on the environment, many of which are not found on this list.

A notable omission are polychlorinated dibenzo-p-dioxins and polychlorinated dibenzo-furans¹⁵ ("dioxins") from the list of analytes. Dioxins are some of the most toxic chemicals known to man, causing a range of developmental defects to children exposed to them and to children of women exposed to them even prior to conception, among other harms. These chemicals are hydrophobic and bind readily to organic materials, including those found in sediments, and are known to bio-accumulate when ingested. The SQO Plan as currently listed would not recognize the harms posed by these chemicals and would instead give those sediments impacted by dioxins a pass – allowing exposure to continue indefinitely.

Furthermore, the SQO Plan does not contain a specific provision for updating the list of chemicals of concern. New chemicals are being introduced regularly, and impacts from existing chemicals are discovered almost daily, not to mention the known harms from existing chemicals. Since the list does not contain any provision for addressing these impacts and future changes, and in fact limits the ability under the SQO Plan to deal with emerging or even existing chemicals of concern, it cannot adequately address sediment toxicity issues. This inadequacy of the SQO Plan must be addressed.

6. No Clear Trigger for Cleanup or Other Remedial Action

Although the legislature required the State Board to develop a consolidated toxic hot spots cleanup plan¹⁶ in addition to the creation of sediment quality objectives, and the SQO Plan does contemplate the cleanup or other remediation of sites that are determined to be impacted¹⁷, it does not contain a clear procedure for actually addressing impacted sediments. The SQO Plan does contain a complex framework for determining whether a site is impacted – but it stops there.

The provisions contained in the SQO Plan for addressing impacted sites include receiving water limitations and sediment monitoring, for example. While these measures will help to identify impacted sites, their spatial extent, monitor any

¹⁵ Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzo-furans are commonly referred to as "dioxins and furans". These terms include all congeners of the constituents.

¹⁶ CWC Section 13394

¹⁷ See e.g. SQO Plan at VII. A. and G.

changes that might occur to these areas through time, and possibly prevent them from getting worse, it does not alleviate the impact that is currently being felt due to contaminated sediments. Without clear provisions for addressing the contamination that is found through the application of the SQOs, no improvement to the status of the environment can be realized, and the goals identified by the legislature will not be met.

7. Application of SQOs to the CWA 303(d) Listing Process

It appears that the SQO Plan creates an additional barrier to the inclusion of California's bays and estuaries on the Clean Water Act Section 303(d) list of impaired waters. For water bodies not currently listed, the SQO Plan requires that the number of locations that exhibit the degraded condition as defined in the SQO Plan must meet the listing criterion established by the State Water Board's Listing Policy. This method for including waterbodies on the 303(d) list appears to narrow whether a waterbody can be included.

This provision creates an even weaker environment for protection and restoration of California's bays and estuaries. Not only will cleanup or other remediation not be required under the SQO Plan, these impacted areas will no longer be eligible for inclusion in the 303(d) list. At a minimum, the existing methods for inclusion of a waterbody on the CWA 303(d) list should remain while the SQO Plan should be an additional means by which impacted waterbodies can become listed. Furthermore, the policies and provisions in the SQO Plan should not be used to remove waterbodies that have been listed from the 303(d) list unless substantial evidence shows that the waterbody is not being impaired as originally determined by the State Board.

8. Inadequate Peer Review

This flawed approach had been given a veneer of scientific credibility in the Staff Reports and presentations by making vague sweeping statements about the level of scientific support without being clear about what was reviewed, whether the reviewers were asked the right questions, and what they actually said. There is no evidence that the Scientific Steering Committee or the peer reviewers actually reviewed all technical aspects of the entire SQO Plan using the appropriate criteria for review and determined that the approach proposed would provide a level of protection consistent with the mandate. The fact that some of the supporting reports have been well received does not mean the approach, taken as a whole, is technically sound in meeting the goals of the mandate.

The package sent to the peer reviewers asks the wrong questions and reads more like a sales pitch than a request for critical review. The question the peer reviewers should have been asked was whether the SQO meets the requirements of

the CWC and whether the SQO Plan will prevent or remedy impacts to water quality and the beneficial uses dependant upon them.

One paper (Bay and Weisberg, 2007)¹⁸ has been cited numerous times as showing that the approach proposed appeared to correlate well with 'median expert opinion'. Even assuming that 'median expert opinion' was in fact based on the right evaluation criteria, what they reviewed was not the approach that appears in the final SQO Plan as currently presented for adoption. There were significant differences; only one species of toxicity tests were used in for the toxicity LOE, and the listing policy's exceedance frequency table was not applied. Therefore the level of validation this provides for the actual method proposed in the SQO Plan is greatly overstated. Additionally, the experts had concerns about lack of data for some potential toxicants. The authors also clearly stated in the discussion, when other information, such as toxicity identification evaluations or bioaccumulation testing are available, they should be incorporated into the assessment process. The SQO plan does not include any provisions for using this information in its MLOE.

Another report (Barnett et al., 2007)¹⁹ has been used to demonstrate to this board the applicability of the SQO plan's MLOE method by showing the results when applied to Bays and Estuaries statewide. This report, however also did not use the proposed method contained in the SQO plan. Again, only one toxicity test was used in this report. A different method of spatial averaging of sites was used, but that's not what the SQO plan proposes, which is the binomial method from the listing policy.

9. Lack of Consideration of Viable Alternatives and Impacts

State Water Board staff have provided little meaningful analysis of alternatives or impacts, including other potentially more sound, protective alternatives. This is especially disturbing given the fundamental flaws that are foundational in the single approach given any substantive development and analysis. There is no acknowledgement of the degradation and resulting biological impacts that would be allowed from the SQO Plan as proposed, and no meaningful anti-degradation analysis. The staff report and supporting economic analysis only acknowledge that the SQO Plan would allow more pollution than existing objectives in the context of the cost savings for dischargers due to its often less stringent objectives and "requirement for additional evidence of impairment."²⁰ In order for the

¹⁸ Bay SM, Weisberg SB. 2007. A framework for interpreting sediment quality triad data. Southern California Coastal Water Research Project. Costa Mesa, CA

¹⁹ Barnett, AM., Bay S., Ritter, K.J. Morre, S.L. and Weisberg, S.B. 2007. Sediment Quality in California Bays and Estuaries. Southern California Coastal Water Research Project. Coasta Mesa, CA.

²⁰ Scientific Applications International Corporation (SAIC). 2007. Economic Considerations of Sediment Quality Plan for Enclosed Bays in California". SAIC. Reston, VA.

SQO Plan to be considered appropriately adopted these inadequacies must be addressed.

Thank you for your consideration of our comments.

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