Western States Petroleum Association
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VIA ELECTRONIC MAIL

November 30, 2007

Jeanine Townsend
Acting Clerk to the Board
Executive Office
State Water Resources Control Board
P.O. Box 100
Sacrament, CA 95812-0100

Re: Comment Letter – Sediment Quality Objectives
Comments of Western States Petroleum Association

Dear Ms. Townsend:

This letter contains the comments of the Western States Petroleum Association ("WSPA") on the Sediment Quality Objectives ("SQOs") for enclosed bays and estuaries proposed by the State Water Resources Control Board ("State Board"). Specifically, we are submitting these comments in response to the *Draft Staff Report: Water Quality Control Plan for Enclosed Bays and Estuaries* dated September 27, 2007 ("Staff Report") and the *SQO Plan: Draft Water Quality Control Plan for Enclosed Bays and Estuaries of California: Part I Sediment Quality* ("SQO Plan") which is attached as Appendix A to the Staff Report.

The Western States Petroleum Association is a trade association that represents the companies and other entities that conduct most of the petroleum-related operations in the western United States. These operations include production, transportation, refining and marketing of petroleum and petroleum-based products. We appreciate the opportunity to submit these comments on the SQO Plan.

WSPA supports a number of technical aspects of the SQO Plan, as discussed in our detailed comments below. In particular, WSPA supports the reliance on multiple lines of evidence ("MLOE") in applying the narrative SQOs, as provided in the SQO Plan. Due

to the complexity of and interactions among the many factors which determine the impacts of toxic pollutants in sediments, evaluation of sediment quality cannot be reliably based on one or two lines of evidence. In addition, as provided in the Plan, SQO evaluations should be performed using current (rather than historical) data, although historical data should be used in developing management guidelines; e.g., to consider trends over time. WSPA also supports the SQO Plan's requirement to perform stressor identification and believes it is necessary prior to any management action. Stressor identification is important to ensure that management actions address the pollutants, including new and emerging pollutants, that actually cause SQO exceedances.

Nevertheless, WSPA is concerned about the lack of specificity regarding implementation of the proposed SQO Plan. The Plan provides minimal direction to guide future decisions and management actions by the Regional Water Quality Control Boards ("Regional Boards"). Our concerns are explained in our detailed comments, attached to this letter as Attachment A. In Attachment B, we propose specific implementation language which we recommend for incorporation into the SQO Plan.

Important issues addressed in our detailed comments include the following:

- **Incorporation of Flow Chart.** WSPA believes that specific implementation guidance from the State Board is crucial to avoid inconsistent and excessively costly implementation of the SQO Plan. We endorse the inclusion of a decision tree flow chart showing how implementation actions should flow from SQO assessments. State Board staff presented such a flow chart at the November 19, 2007 workshop on the SQO Plan. We believe that a flow chart would provide useful guidance and should be included in the SQO Plan itself, in order to ensure that it will be consistently applied. In Attachment C, we propose a modified version of staff's flow chart, incorporating our comments below.

- **"Impacted" Sediments Are Not Necessarily SQO Exceedances.** WSPA is concerned by the prospect that receiving water limitations may be implemented in NPDES permits based on the identification of sediment as "impacted." The determination that sediments are classified as "impacted" based on the multiple lines of evidence is not, by itself, sufficient to show that toxic pollutants are degrading sediment quality. Since the SQOs are intended to regulate toxic pollutants, identification of a confirmed SQO exceedance should be made only after stressor identification and after it is determined that the impact is not due to natural background conditions or to causes unrelated to toxic pollutants.

- **Permit Limits Should Be Derived Through TMDLs.** If the MLOE analysis indicates that sediment is clearly or likely impacted, stressor identification must be performed and, if appropriate, the results utilized to support development of a Total Maximum Daily Load ("TMDL"). Wasteload allocations from the TMDL would then be incorporated into permit requirements. Thus, any effluent or

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receiving water limits in NPDES permits related to SQOs should be derived from the TMDL process. Effluent or receiving water limits should not be used outside a TMDL process unless a discharger is identified as a primary contributor to a particular SQO exceedance, on an ongoing basis, based on substantial evidence and following stressor identification.

- **Different Impact Categories Should Be Treated Differently.** The Plan also categorizes varying degrees of certainty that sediment at a given location is impacted. There is considerable uncertainty regarding the "possibly impacted" category. Thus, we recommend that "clearly impacted" and "likely impacted" sediment stations should be given highest priority for analysis and management actions, followed by "possibly impacted" stations. Because even the "clearly impacted" and "likely impacted" categories reflect considerable uncertainty that impacts are caused by toxic pollutants, a water body should not be considered to have "exceeded SQO" or to be "impaired" until the stressor identification process is completed and it is determined that the impact is not due to natural background conditions.

- **Management Actions Should Be Determined Through Existing Programs.** Once an SQO exceedance is confirmed, management actions should be determined through the 303(d) listing process and TMDL development, or through the toxic hot spots program, as appropriate.

- **Legacy Pollutants Should Be Addressed Through Existing Programs.** The SQO Plan must provide specific guidance for how SQO exceedances that are due primarily to legacy pollutants are to be addressed. We recommend that SQO exceedances due primarily to legacy pollutants – i.e., pollutants that are no longer actively used or discharged, or for which the reservoir in sediments greatly exceeds ongoing discharges – be referred to the TMDL or toxic hot spots program.

- **Clarification is Needed Regarding Management Actions.** WSPA supports the recommendation that sediment management guidelines must be developed on a site-specific basis. We request that the SQO Plan explicitly state that:

    - The Regional Boards must conduct project-level environmental and economic assessments for all proposed management actions, including establishing sediment cleanup levels, selecting management measures, and developing NPDES permit limits. A full range of alternatives should be considered, including natural recovery.

    - Once an SQO exceedance is confirmed and referred to the TMDL or hot spots program, or in the rare case that permit limits may be appropriate, management actions must be reasonable and feasible and must take into

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account uncertainties in available information. WSPA recommends that the SQO Plan incorporate:

- language from State Board Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*, which requires management actions to be reasonable and "consistent with maximum benefit to the people of the state," based on consideration of economic and social costs, environmental impacts, and feasible alternative treatment or control methods; and

- the concept of "feasibility" from the California Environmental Quality Act ("CEQA"), in which "feasible" is defined as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, and social factors."

  - Neither the thresholds developed as part of the chemistry line of evidence nor existing sediment quality guidelines (such as ERMs, ERLs or TELs) shall be used either in establishing site-specific management guidelines or in developing NPDES effluent or receiving water limits.

  - The SQO Plan allows sediment mixing zones similar to mixing zones for water quality objectives.

- **Management Actions for Estuarine Sediments Should Be Undertaken Only After Appropriate LOE Metrics Are Developed.** WSPA supports the recommendation in the SQO Plan that all three LOE be used for estuarine sediments. However, we recommend that management actions be taken only after the State Board develops appropriate LOE metrics.

- **The Staff Report's Economic and CEQA Analyses Underestimate Costs and Impacts.** The Staff Report's economic and CEQA analyses conclude that adopting the SQO Plan will result in limited implementation costs – mainly monitoring costs – and insignificant adverse environmental side-effects. This conclusion is based on the staff's assumption that the SQOs will be implemented mainly through existing regulatory programs such as the TMDL and toxic hot spots program. We agree with the recommendation to implement SQOs via existing programs, but are concerned that costs may greatly exceed the Staff Report's estimates.

  - For example, consistent with the Staff Report's assessment that some bays and harbors may be classified as "possible," "likely," or "clearly impacted" almost in their entirety, the cost of remedial action in San Francisco Bay alone would be approximately $72 billion, while addressing

only the Bay sediments classified as "clearly" and "likely" impacted would still cost approximately $17 billion (see Attachment A, p. 26). In addition, the monitoring costs indicated in the Staff Report are unrealistically low, likely by at least an order of magnitude. We estimate that stressor identification costs alone could range from $5 million to $6 billion (see Attachment D).

- Moreover, the lack of implementation specifics and deferral to future management decisions calls both the CEQA and cost analyses into question. It is difficult to understand how the State Board can conclude that the environmental impacts of SQO implementation through future management decisions are not reasonably foreseeable and are too speculative for analysis at this time, and at the same time conclude that such impacts will be less than significant and that implementation costs will be modest.

Thank you for considering WSPA's comments. Please contact me at (916) 498-7755 if you have any questions or wish to discuss our comments. We look forward to further discussions of these issues with the State Board.

Sincerely yours,

Kevin Buchan

Attachment A: WSPA 11/30/07 Detailed Comments on Draft SQO Plan

Attachment B: WSPA 11/30/07 Proposed Changes to SQO Plan

Attachment C: WSPA 11/30/07 Proposed SQO Implementation Flow Chart

Attachment D: WSPA 11/30/07 Cost Estimates for Stressor Identification

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Attachment A

WSPA 11/30/07 Detailed Comments on Draft SQO Plan

Comment 1 – The SQO Plan Should Incorporate Implementation Guidance and a Decision Tree Flow Chart

WSPA believes that more specific guidance from the State Board is of crucial importance, to avoid widely inconsistent and excessively costly implementation of the SQO Plan. We also have a number of comments and concerns regarding implementation issues, discussed in our comments below, which are absent from or treated cursorily in the current Plan. Our comments below include our recommendations regarding these issues and proposed implementation language which we recommend for incorporation into the Plan.

In addition, WSPA endorses the idea of a decision tree flow chart showing how implementation actions should flow from SQO assessments. Many members of the Advisory Committee have worked together to develop flow charts, and to discuss the potential range of management actions, addressing the types of concerns outlined in these comments. State Board staff presented such an implementation flow chart at the November 19, 2007 workshop on the SQO Plan. We believe that a flow chart would provide useful guidance and should be included in the SQO Plan itself, in order to ensure that it will be consistently applied. In Attachment C to these comments, we propose a modified version of staff's flow chart. WSPA's various suggested changes to the SQO Plan in these comments are also reflected in our proposed modified flow chart.

Suggested changes to SQO Plan:

Under the heading of Section VII, Program of Implementation (SQO Plan, p. 20), insert the following (inserted text is underlined) and incorporate the flow chart in Attachment C to these comments as Attachment C to the SQO Plan:

<u>The program of implementation for the SQO Plan shall be carried out in accordance with the following provisions and consistent with the implementation flow chart provided in Attachment C.</u>

Comment 2 – WSPA Supports Reliance on Multiple Lines of Evidence

WSPA strongly supports the reliance on multiple lines of evidence ("MLOE") in applying the narrative SQOs as provided in the SQO Plan. As discussed in the Staff Report and also in *Sediment Quality in California Bays and Estuaries, Draft Final Report* (September 2007) ("Draft

Sediment Report"), a number of factors control the impacts of toxic pollutants in sediments, including chemical factors and interactions, bioavailability, and sensitivity of organisms to particular pollutants in a given setting. The interaction of these factors is complex. Due to this complexity, the evaluation of sediment quality should not be based on a single line of evidence. Use of a single line of evidence ("LOE"), or even two LOE, would yield unreliable results and lead to erroneous management actions that are either unnecessary or that do not have the intended effect. Such an approach would also be contrary to the direction of the Scientific Steering Committee convened by the State Board to review the SQO Plan and the scientific information underlying the Plan. Significantly, as stated in *Draft – A Framework for Interpreting Sediment Quality Triad Data* (October 15, 2007), the MLOE approach compensates for the weakness of any single LOE and provides a better understanding of the impact of sediment quality on aquatic organisms at a station of interest.

Comment 3 – Management Actions Should Be Based on Current Data

WSPA supports the approach, as provided in the SQO Plan, of relying on current, rather than historical, data for performing SQO evaluations and subsequent management decisions (such as listing under Clean Water Act section 303(d)). Historical data should be used in developing management guidelines and in evaluating implementation alternatives, e.g., to consider trends over time. However, identification of current conditions requiring management action must be based on current data collected subsequent to the adoption of the SQO Plan.

Suggested changes to SQO Plan:

In Section VII.E.4, Sediment Monitoring - Methods (SQO Plan, p. 23), insert the following:

Sediments collected from each station shall be tested or assessed using the methods and metrics described in Section 5. <u>The identification of current conditions requiring management action as provided in Sections VII.B, VII.F.3 and VII.G must be based on current data collected subsequent to the adoption of this Plan</u>.

Comment 4 – WSPA Supports the Use of Existing Methodology for Assessment of Site-Specific Human Health Risk

WSPA concurs with the staff recommendation for the use of existing site-specific human health risk methodology to interpret the SQOs in the first phase of their

application, prior to the development of a formal policy for applying SQOs to evaluate indirect effects. Staff Report (p.7). As noted by State Board staff, the process of developing SQOs that protect human health from consumption of contaminated fish is extremely complicated and cannot be applied across numerous sites given the site-specific nature of many variables. Staff Report (p. 7). Given such limitations and the lack of public review on this issue during the first phase of the SQO development process, we support the use of existing programs as proposed in the SQO Plan, such as Office of Environmental Health Hazard Assessment ("OEHHA") policies for fish consumption and risk assessment, Department of Toxic Substances Control ("DTSC") risk assessment procedures, and U.S. EPA's Human Health Risk Assessment policies. SQO Plan (p. 20).

Comment 5 – WSPA Recommends SQO Implementation in NPDES Permits Through Stressor Identification and TMDL Development

WSPA agrees with the statement in the SQO Plan that NPDES permit effluent limits should only be established after (1) a clear relationship has been established linking the discharge to the degradation; (2) pollutants causing or contributing to the degradation have been identified; and (3) appropriate loading studies have been completed. SQO Plan, Section VII.B.4 (p. 21). We believe that, in most or all cases, the Total Maximum Daily Load ("TMDL") process will be the appropriate means of accomplishing these steps. However, section VII.B.4 appears to be inconsistent with section VII.B.1, which states that SQOs can be applied directly as *receiving* water limits in discharge permits if the Regional Board determines that sediment quality in the vicinity of the point source is "potentially at risk." Further, under section VII.B.2, an individual discharger will be in violation of a receiving water limit if the discharge is "causing or contributing" to the SQO exceedance. Any exceedances of the SQOs will require permittees to develop site-specific management guidelines. SQO Plan (p. 22).

WSPA is concerned by the prospect that inappropriate receiving water limitations may be implemented in NPDES permits based on the identification of sediment as "impacted" or "potentially at risk." Because the relationship between a given discharge and sediment concentrations can be very complex, there must be a *clear* showing that an individual discharger is *substantially* contributing to exceedance of the SQO to justify imposing permit conditions on the discharger. Therefore, WSPA recommends that SQOs should not be used to directly establish receiving water limits. Rather, if the MLOE analysis indicates that sediment is clearly or likely impacted, stressor identification must be performed and, if appropriate, the results should be utilized to support development of a TMDL. Wasteload allocations from the TMDL and site-specific management guidelines would then be incorporated into permit requirements, if appropriate. Thus, any effluent or receiving water limitations in NPDES permits related to

SQOs should be derived from the TMDL process. More specifically, we believe that:

- The insertion of receiving water limits into NPDES permits should not be regarded as a primary (much less the only) management tool for dealing with an SQO exceedance. In fact, there are many instances (most notably, legacy pollutants) where regulation via NPDES permits would be an ineffective management tool, as current sources represent only a small fraction of the contaminant reservoir or load within a water body. In addition, it is not clear what will happen if no discharger is found to be responsible or if no stressor is identified. The Plan should provide that effluent limitations in NPDES permits should be derived from the TMDL process.

- Effluent limitations should not be used outside a TMDL process unless a discharger is identified as the single primary contributor to a particular SQO exceedance, on an ongoing basis, based on substantial evidence, and following stressor identification. In such cases, the SQO Plan should specify that receiving water limits must be pollutant-specific, and thus can only be implemented once a stressor has been identified. The SQO Plan should also specify how the "cause or contribute" language is to be evaluated in the context of SQOs.

- Given the unique issues involved and the complexity of and interaction among factors contributing to SQO exceedances, WSPA believes that it is critically important for the SQO Plan to provide specific guidance as to what "contributing" to an exceedance means in the context of SQOs, rather than applying the interpretation of "contributing" commonly used for water quality objectives. For this reason, we recommend that the identification of an SQO exceedance potential require a *clear* demonstration that the discharge is causing or *substantially* contributing to the exceedance.

- The SQO Plan must also specify how "reasonable potential analyses" are to be made, in order to determine that a discharge has the reasonable potential to cause or contribute to an exceedance of SQOs. Again, we recommend that the reasonable potential require a clear demonstration that the discharge is causing or substantially contributing to the SQO exceedance.

- The SQO Plan should include authority for Regional Boards to grant compliance schedules, allowing a reasonable time for permittees to come into compliance with new or revised permit limits.

Suggested changes to SQO Plan:

Section VII.B, NPDES Receiving Water and Effluent Limits (SQO Plan, p. 21), revise as follows:

1. Sediment quality objectives may not be applied directly as effluent or receiving water limits in NPDES permits. If the Regional Board determines, based on multiple lines of evidence, that sediment quality in the vicinity of permitted point sources (e.g., within the discharge gradient) is ~~potentially at risk~~clearly or likely impacted, ~~sediment quality objectives may be applied as~~ stressor identification shall be performed as provided in Section VII.F. If the study results confirm the identification of an SQO exceedance, and site-specific management guidelines are developed, the results may be utilized to support development of effluent or receiving water limits in the permit through the TMDL process. Effluent or receiving water limitations should not be used outside a TMDL process unless a discharger is identified as a primary contributor to a particular SQO exceedance, on an ongoing basis, based on substantial evidence, and following stressor identification.

2. A discharger shall not be deemed to have reasonable potential to cause or contribute to an SQO exceedance until it is clearly demonstrated that the discharger is causing or substantially contributing to the SQO exceedance, on an ongoing basis, based on substantial evidence, and following stressor identification.

[Renumber remaining sections of VII.B.]

Section VII.C, Exceedance of Receiving Water Limit (SQO Plan, p. 21), revise as follows:

Exceedance of a receiving water limit is demonstrated when, using a binomial distribution*, the total number of stations designated as not meeting the protective condition as defined in Sections V.I.4. or V.J.4. supports rejection of the null hypothesis* as presented in Table 15. The stations included in this analysis will be those located in the vicinity and identified in the permit. A permit limit exceedance is not a violation until it is clearly demonstrated that the discharge is causing or substantially contributing to the SQO exceedance, on an ongoing basis, based on substantial evidence, and following stressor identification. Regional Boards are authorized to grant compliance schedules allowing reasonable time for permittees to come into compliance with new or revised permit limits, as appropriate.

Comment 6 – WSPA Recommends a Multi-Step Process for Categorizing Sediment Impacts and Identifying SQO Exceedances After Stressor Identification

The SQO Plan includes three steps that are necessary to identify and address a sediment impact. In order, these steps are:

- *Initial monitoring and evaluation using MLOE.* This step is used to identify whether or not sediments at a given station are impacted (i.e., fall into the "clearly impacted," "likely impacted," or "possibly impacted" classifications) and to determine if subsequent action (e.g., further evaluation, stressor identification) is necessary.

- *Stressor identification.* Stressor identification would follow a determination using MLOE that sediments are clearly or likely impacted. Stressor identification is necessary (1) to determine that the impacts are due to toxic pollutants, (2) to determine that the impact is not due to natural background conditions, and (3) to identify the pollutant(s) responsible for the impact. Only when these three evaluations are complete can sediment be considered to exceed the SQO.

- *Development of site-specific management guidelines.* Following a confirmation that SQOs have been exceeded, information from monitoring and stressor identification will be used, along with additional information about the waterbody, to establish site-specific management guidelines and to begin implementation of management actions.

WSPA has concerns and recommendations regarding each of these three implementation steps, as detailed below.

Comment 6a – Sediments Classified as "Possibly Impacted" Should Not Be Considered Impaired. Sites falling into the Possibly Impacted category should be targeted for enhanced MLOE monitoring, but should not trigger a requirement to perform stressor identification. Additionally, stations classified as Possibly Impacted should be assigned lower priority than "Clearly Impacted" and "Likely Impacted" sites.

The SQO plan provides three degrees of "impact" following an evaluation of sediment quality using MLOE ("Clearly Impacted," "Likely Impacted," and "Possibly Impacted"). The categories of varying degrees of impact reflect the level of certainty that sediment at a given location is actually impacted. There is considerable uncertainty regarding the Possibly Impacted category.

The Possibly Impacted category is defined as

> "*Sediment contamination at the site <u>may</u> be causing adverse impacts to aquatic life, but these impacts are*

either small or uncertain because of disagreement among LOE." [Emphasis added; Staff Report at p. 99]

The Staff Report further states that the

> *"category designated 'Possibly Impacted' represents the greatest uncertainty and disagreement amongst the LOE of the categories. Stations within this category may be either unimpacted or impacted."* [Emphasis added; Staff Report at p. 102]

Finally, the supporting report by Barnett et al., Sediment Quality in California Bays and Estuaries (2007), states that

> *"The environmental significance of sediments classified as Possibly Impacted is uncertain, as this category may indicate a minor level of contaminant effect, or substantial disagreement among the LOE. More detailed investigations, such as toxicity identification evaluations, are needed at Possibly Impacted sites to determine whether sediment quality at these sites is adversely impacted by contaminants."* [Emphasis added; Barnett et al. (2007) at p. 21]

Additionally, the MLOE approach can categorize a site as Possibly Impacted when sediments are classified as "nontoxic," or when the benthic condition is classified as "reference" or "low disturbance." If sediments are classified as "nontoxic" or as having "low toxicity," a toxicity identification evaluation (TIE) will be an inappropriate evaluation tool, as it depends upon the presence of toxicity to identify the levels at which a pollutant causes that toxicity. Further, if the benthic community (the beneficial use to be protected by the SQO) is in a reference condition or exhibits low disturbance, which may be "within the measurement error of [the] unaffected condition" (SQO Plan at p. 12), it makes little sense to proceed with additional analyses.

Large portions of waterbodies (for example, much of San Francisco Bay) will likely fall into the Possibly Impacted category. Thus, this category of impact has little power of discrimination. It will be very difficult to take any management action if the scope of that action is nearly all-encompassing, particularly if stations classified as Possibly Impacted are treated the same as those classified as Clearly Impacted. Moreover, while the Staff Report (p. 103) states that it is not foreseeable that the SQO Plan will result in waterbody-wide remedial action, the broad characterization of Possibly Impacted areas could lead to just that result, which appears contrary to the State Board's intent.

In the current draft SQO Plan, Regional Boards have discretion to determine whether stations that are classified as being Possibly Impacted should be listed as "impaired" water bodies under Clean Water Act Section 303(d) (SQO Plan at p. 17). The lack of State Board guidance on this critical decision is sure to lead to widely divergent practices throughout the state. Instead, WSPA recommends that the SQO Plan clearly specify that sites classified as Possibly Impacted be placed on an "SQO Monitoring List" for enhanced monitoring and further evaluation. As discussed below, higher priority should be assigned to further evaluating and studying sites classified as Likely or Clearly Impacted. Sites classified as Possibly Impacted should not be considered impaired, used in 303(d) determinations, or otherwise targeted for management actions unless and until additional study is completed to confirm the impairment and the role of toxic pollutants in that impairment.

Suggested changes to SQO Plan:

Section V.I.4, Relationship to Aquatic Life – Benthic Community Protection Narrative Objective (SQO Plan, p. 17), revise as follows:

a. The categories designated as **Unimpacted** and **Likely Unimpacted** shall be considered as achieving the protective condition at the station except as described under b. ~~All other categories shall be considered as degraded.~~

b. The category **Possibly Impacted** shall be considered as having considerable uncertainty regarding whether or not an impact exists. Stations classified as Possibly Impacted shall be placed upon an SQO Monitoring List for enhanced monitoring and assessed using the MLOE approach detailed in Sections V.A through V.I. Alternatively, a Regional Board may designate the category **Possibly Impacted** as meeting the protective condition if studies demonstrate that the combination of effects and exposure measures are not responding to toxic pollutants in sediments and that other factors are causing these responses within a specific reach segment or waterbody. ~~In this situation, the Regional and State Board will consider only the categories **Likely Impacted** and **Clearly Impacted** as degraded when making a determination on receiving water limits and impaired water bodies described in Section VII.~~

c. The categories designated as **Likely Impacted** and **Clearly Impacted** will be assessed using the binomial distribution, and stressor identification studies shall be initiated if the number of stations classified as Likely Impacted and Clearly Impacted supports rejection of the null hypothesis presented in [Table 15].

Comment 6b – Stressor Identification is Necessary Before a Finding of "SQO Exceedance" and Before Proceeding with Management Actions. WSPA recommends that stations classified either as Likely Impacted or as Clearly Impacted (but not those classified as Possibly Impacted) should be used to trigger stressor identification studies, including enhanced assessment of sediment impacts.

For a sediment classified as Likely Impacted, there remains a significant level of uncertainty that sediments are impaired by toxic pollutants. The Likely Impacted category is defined as:

> *Evidence of contaminant-related impacts to aquatic life in the sediment is persuasive, in spite of some disagreement among LOE.* (Staff Report at p. 99)

Thus, the Staff Report acknowledges that there is some uncertainty with respect to the concordance of each line of evidence to indicate that there is a toxic pollutant-mediated effect for this category. We note in particular that it is possible to classify a station as Likely Impacted even when the benthic community is in a reference condition. Many factors in addition to the presence of toxic pollutants could lead to a finding that sediment at a given station is Likely Impacted. Benthic indices are designed to provide a representative assessment of benthic conditions over large areas (Diaz et al. 2004) and their use on a site-specific basis requires validation. For example, seasonal differences in salinity can cause changes in the composition of the benthic community, and can necessitate changes in the location of reference stations. Toxicity testing can also be subject to confounding factors such as inadequate sample acclimation or inadequate test organism acclimation that can lead to a toxicity result that is not representative of ambient conditions (Word et al. 2002).

Although the Clearly Impacted category is considered less uncertain than the Likely Impacted category, the SQO Plan appropriately recognizes that observed impacts even at stations classified as Clearly Impacted may be due to factors other than toxic pollutants.

WSPA supports the approach set out in the SQO Plan, providing that guideline development and subsequent management actions "should only be initiated after the stressor has been identified." SQO Plan (p. 27). It is critical that stressor identification evaluations be undertaken prior to any management action in order to determine whether the impacts are due to toxicity or which chemicals are responsible for the observed effect, and to establish site-specific sediment management actions.

Stressor identification will be especially critical to identify chemical(s) that are responsible for impacted sediments but that are not included in the chemistry LOE. For example, pyrethroid compounds have been identified by some authors

as potentially responsible for toxicity and/or benthic community effects (see, e.g., Bay et al., 2004), but these compounds could only be identified and evaluated as part of the stressor identification process. Without proper stressor identification, management actions might inappropriately focus only on those pollutants that are evaluated as part of the MLOE, potentially missing the pollutants responsible for the impacted sediments. Thus, without appropriate stressor identification, management actions may well fail to result in improvements in sediment quality.

For the same reasons, WSPA believes that it is inappropriate to identify an "SQO exceedance" prior to stressor identification. The determination that sediments are classified as "impacted" based on the MLOE is not, by itself, sufficient to show that toxic pollutants are degrading sediment quality. The determination that "exceedance" of an objective exists has regulatory consequences which are inappropriate when the stressor has not been identified, or the condition may be due to natural conditions or causes unrelated to toxic pollutants. Therefore, it is inappropriate to proceed directly from the classification of a station as "impacted" – when other explanations are still possible – to the determination that an "exceedance" exists. Since the SQOs are intended to regulate toxic pollutants, identification of an SQO exceedance should made only after stressor identification and after it is determined that the impact is not due to natural conditions or to other causes.

Suggested changes to SQO Plan:

Section VII.F, Stressor Identification (SQO Plan, p. 24), revise as follows:

If sediments fail to meet the narrative SQOs in accordance with Section V and VI, a sequential approach is necessary to manage the sediment appropriately. Following identification of sediment as Clearly Impacted or Likely Impacted based on multiple lines of evidence, an SQO exceedance shall not be determined until confirmed by stressor identification through this sequential approach. The sequential approach consists of development and implementation of a work plan to seek confirmation and characterization of pollutant-related impacts, pollutant identification and source identification. The work plan shall be submitted to the Regional Board for approval. Stressor identification consists of the following studies: . . . .

Comment 6c – Stressor Identification Should Proceed in Two Phases and Should Address Specific Issues. Stressor identification is necessary (1) to verify the sediment impact category determined through the MLOE process, (2) to determine that the impacts are due to toxic pollutants, (3) to determine that the impact is not due to natural background conditions, and (4) to identify the pollutant(s) responsible for the impact. Only when these three evaluations are complete can sediment be considered to exceed the SQO. Consistent with the

State's proposed Plan, WSPA recommends that stressor identification be conducted in two phases, or parts, as follows:

Part 1 stressor identification would proceed as provided in Section VII.F.1, and would be intended to address the question, "Are uncertainties associated with MLOE evaluation affecting results, and are toxic pollutants causing or substantially contributing to observed sediment impacts?" In Part 2 stressor identification (Section VII.F.2.), studies would proceed to identify the pollutant(s) responsible for impacts. However, it is also important to determine whether or not the pollutant concentrations are consistent with natural background conditions. For example, in some sediments and in some geologic formations, metals concentrations may be naturally elevated. The State should not require cleanup to levels more stringent than natural background conditions.

Suggested changes to SQO Plan:

Section VII.F.2, Pollutant Identification (SQO Plan, p. 26), revise to add:

f. Evaluation of Natural Background Conditions: After specific chemicals are identified as likely causes of impacts, an evaluation of natural background conditions should be made. An impact shall not be considered an SQO exceedance if it is demonstrated that concentrations of pollutant(s) responsible for the impact are present at levels consistent with natural background conditions.

Comment 7 – Management Actions Should Be Determined Through the Existing TMDL and Toxic Hot Spots Programs

Before SQO exceedances are determined, stressor identification must be conducted. When specific pollutant(s) are identified through the stressor identification process, sources of the responsible pollutant(s) should be identified. Three potential pathways are then available. First, in some isolated cases, it may be found that a pollutant responsible for an exceedance is discharged predominantly from current NPDES-permitted discharges; in this rare case, regulation through existing NPDES permits is appropriate, and 303(d) listing is unnecessary.

Second, it may be found that the pollutant responsible for an exceedance is due to a legacy reservoir of that pollutant in the sediment, and that existing sources are negligible compared to the legacy pollutant reservoir. In this case, the SQO exceedance should be referred to the TMDL or hot spots program.

Third, if the SQO exceedance is found to be neither due solely to a current, ongoing discharge, nor due solely to legacy conditions, but rather to a combination of ongoing and legacy sources, then 303(d) listing is indicated.

When the number of stations impacted exceeds the specifications of the binomial distribution, the water body should be listed for "[specific pollutant] in sediment." At this point, the existing TMDL program and toxic hot spots program should provide the basis for determining management actions.

The Staff Report notes the link between stressor identification and TMDLs, stating that "if stressor identification is performed and a stressor is identified, a logical application would be the development of biologically relevant guidelines that could be applied to support TMDL development or remediation goals," Staff Report (p. 100). However, it is not clear what will happen to water bodies listed under Clean Water Act section 303(d) when the stressor identification process has not yet occurred. To avoid inappropriate listings, WSPA recommends that:

- Stressor identification should be performed ***prior to*** placing a water body on the State's 303(d) list of impaired waters, so that any listing identifies the chemical(s), or class(es) of chemicals, that are responsible for the impairment.

- A 303(d) listing should not be based on a "likely" or "clearly impacted" assessment without knowledge of the responsible stressor.

- Stressor identification should be performed in a two-phase manner: first, a limited stressor identification as part of the SQO evaluation process to determine whether the sediment impact is due to a toxic pollutant or some other stressor. Second, if it is determined that the stressor is a toxic pollutant, and that the stressor is present at concentrations above natural background, the water body would be placed on the 303(d) list and a more detailed stressor identification would be performed as part of the TMDL process.

In any case, the selected option should result in management actions that would address the compound(s) that are responsible for the impairment.

In addition, although the SQO Plan indicates that SQOs should be used in the Clean Water Act section 303(d) listing process, it is not clear how these objectives can be implemented using the existing approach described in State Board's 303(d) listing policy. *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* ("Listing Policy"). The Listing Policy, section 3.6 (p. 5), provides that a water body should be included on the section 303(d) list if the water segment exhibits significant "sediment toxicity" and the observed toxicity "is associated with a pollutant or pollutants." The Listing Policy further specifies that the association of pollutants with toxic or other biological effects can be established using sediment quality guidelines, equilibrium partitioning approaches, or toxicity identification evaluation or other developed evaluations. Thus, prior to the development of the SQO Plan, the

State has listed water body segments using only toxicity data and a comparison of chemical concentrations to sediment quality guidelines.

This listing approach cannot be applied to SQOs, given that three LOE must be evaluated to determine if exceedances are occurring. As discussed in Comment 1, the use of only two LOE is without solid scientific foundation. WSPA therefore believes the State Board should either amend Section 3.6 of the Listing Policy to state that, as applied to "sediment toxicity," it is superseded by the SQO Plan, or to include within the SQO Plan an explicit statement that, notwithstanding the provisions of Listing Policy, any listings based on "sediment toxicity" impairment can be made only by applying the procedures set forth in the SQO Plan. Failure to amend the Listing Policy or otherwise correct this inconsistency between programs will result in 303(d) listings that are in direct conflict with the SQO Policy and will result in a greater number of inappropriate, unfounded listings than would otherwise occur. In addition, the application of MLOE and stressor identification under the SQO Plan should be applied to existing 303(d) listings, which should be re-evaluated as appropriate in light of the new policy and analysis methods.

Suggested changes to SQO Plan:

Section VII.F.3 (SQO Plan, pp. 26-27), revise as follows:

a. Determine if ongoing or legacy source. SQO exceedances attributable solely or primarily to legacy pollutants shall be listed for TMDL development under Clean Water Act section 303(d) or referred to the Bay Protection and Toxic Cleanup Program.

b. Determine number and nature of ongoing sources.

c. Following stressor identification, if a single discharger is identified as a primary contributor to a particular SQO exceedance, on an ongoing basis, based on substantial evidence~~found to be responsible for discharging the stressor pollutant at a loading rate that is significant~~, the Regional Water Board shall require the discharger to take all necessary and appropriate steps to address exceedance of the SQO, including but not limited to reducing the pollutant loading into the sediment as provided in Sections VII.B and VII.C and based on site-specific management guidelines.

d. If an SQO exceedance is confirmed following stressor identification and~~When~~ multiple sources are present in the water body, that discharge the stressor pollutant at a loading rate that is significant, the Regional Board shall ~~require the sources to take all necessary and appropriate steps to address exceedance of the SQO. If appropriate, the Regional Water Board may~~ develop and adopt a

TMDL to ensure attainment of the sediment standard or require remedial action under the Bay Protection and Toxic Cleanup Program.

e. For purposes of applying the State Board's *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* to sediment quality, identification of water bodies as impaired due to nonattainment of SQOs shall be determined based on all three lines of evidence and stressor identification. Existing listings of sediment impairment under Clean Water Act Section 303(d) should be re-evaluated to determine whether the listing is justified based on the MLOE and stressor identification.

Comment 8 – Legacy Pollutants Should Be Addressed Through the TMDL or Toxic Hot Spots Program

Although the stressor identification process includes a determination of whether a pollutant comes from an ongoing or legacy source, SQO Plan (p. 26), there is no guidance on management of exceedances attributable solely or primarily to legacy pollutants; i.e., pollutants that are no longer actively used or discharged, or for which the reservoir in sediments greatly exceeds ongoing discharges. We recommend that the State Board address how remedial measures will be implemented and funded if there is no on-going discharge of a compound, and if no "responsible party" can be identified. We request that the State Board provide additional specificity on Stressor Identification and Management Guidelines, and suggest that the State Board include a new section detailing how legacy compounds will be addressed. Specifically, WSPA recommends that SQO exceedances due to legacy pollutants be referred to the TMDL or toxic hot spots program as indicated above.

Comment 9 – WSPA Recommends Further Guidance Regarding Site-Specific Sediment Management Guidelines

WSPA supports the development of site-specific management guidelines and targets. We also concur with the State Board staff's recommendation that the selection of corrective action can be addressed only after considering many site-specific factors such as (1) the hydrodynamics and flow regime in the area of concern; (2) the specific pollutant that is causing the degradation or impairment; (3) the receptors at risk due to the presence of the pollutants at the levels observed within the area of concern; (4) the areal extent; (5) presence of existing sources or legacy releases; and (6) types of controls in place and feasibility of additional controls. (See Staff Report at p. 116.) As discussed in the Staff Report, "the fate and transport of pollutants from sediment to tissue and the water column pollutants is highly site specific and the direct and indirect

exposure to pollutants from sediments transported up the food web is difficult to relate directly to specific sites or stations of area of a waterbody." Staff Report (p.7). Thus, because pollutant impacts are site-specific, and because it will be important to identify stressors for each individual waterbody, it will be important to design management actions accordingly. We have the following specific suggestions.

Comment 9A – Chemistry Thresholds Should Not Be Applied As Cleanup Targets

WSPA supports the conclusion that the chemical thresholds in the chemistry LOE (SQO Plan, Section V.H) should not be used as cleanup targets. It is inappropriate to use either the chemistry LOE thresholds or any other sediment quality guidelines directly as cleanup targets, or for any purpose other than as a component of the MLOE evaluation framework. As indicated in the Staff Report, a variety of factors can influence the bioavailability of any given pollutant. Many important abiotic and biotic factors, including salinity, aqueous solubility of the compound, redox, affinity for sediments, organic carbon content, sediment mineral constituents, and grain size distribution determine the bioavailability of pollutants. Staff Report (p. 60).

We also support the conclusion in the Staff Report that the chemical sediment quality guidelines and the thresholds of the chemistry LOE shall not be used for calculating effluent limits for NPDES permits. As stated in Section VII.B. of the SQO Plan (p.21):

> Effluent limits established to protect or restore sediment quality shall be developed only after:
> a. A clear relationship has been established linking the discharge to the degradation,
> b. The pollutants causing or contributing to the degradation have been identified, and
> c. Appropriate loading studies have been completed to estimate the reductions in pollutant loading that will restore sediment quality.

This provision is of particular importance given the implementation discretion allotted to the regional boards. However, the State Board should also clarify that the regional boards do not have discretion to misapply the chemistry thresholds in isolation as effluent limits as well as cleanup targets.

We also note that the chemistry LOE consists of two separate measures. One of these, the CSI, is a weighted sum that incorporates the concentrations of thirteen individual pollutants or classes of pollutants. Although the SQO Plan provides "threshold" concentrations for each of these thirteen pollutants, they are only used in the context of calculating a summed CSI "score," and thus are quite

different from traditional sediment quality guidelines developed for single pollutants, such as ERMs or TELs. It would be wholly inappropriate to use the CSI concentration threshold values for any individual pollutant as a cleanup level or as the basis for calculating effluent limitations.

Suggested changes to SQO Plan:

Section VII.F.3, Sources Identification and Management Actions (SQO Plan, p. 27), insert the following:

f. Neither sediment quality guidelines nor the thresholds contained in Section V.H. may be applied directly as cleanup targets or used to develop effluent or receiving water limits in NPDES permits.

Section VII.B, NPDES Receiving Water and Effluent Limits (SQO Plan, p. 21) – see revisions provided under comment 5, above

Comment 9B – Cleanup Targets Should Be Determined Using Risk-Based Adaptive Management Approaches

Risk-based evaluation methods should be considered as one available tool that can be used to establish site-specific management guidelines. Adaptive management approaches should be considered in establishing cleanup targets. Existing risk evaluation procedures are useful in evaluating risk to both human health and to the environment, and can be used to establish site-specific cleanup levels and to evaluate other management actions using site-specific information.

Suggested changes to SQO Plan:

In Section VII.G. (SQP Plan, p. 27), add the following:

e. Risk assessment. Information from risk assessments, both for human health (as specified in Section VI) and for ecological risk, can be used in establishing site-specific remediation and management targets. Risk assessment utilizes site-specific information on pollutant concentration, bioavailability, and consumption to evaluate risks to receptor organisms. Adaptive management approaches should be considered in establishing cleanup targets.

Comment 9C – The SQO Plan Should Allow Mixing Zones

The SQO Plan should allows sediment mixing zones similar to mixing zones for water quality objectives. A sediment mixing zone would be similar to the mixing zones allowed for water quality objectives, and would be defined as a limited area wherein the regional board has determined that initial dilution of a point

source discharge may occur that may result in an exceedance of sediment quality objectives.

At the end of Section VII.B, NPDES Receiving Water and Effluent Limits, paragraph 1 (SQO Plan, p. 21), insert the following:

The Regional Board may allow mixing zones, where appropriate, for effluent limitations developed under this section.

Comment 10 – Environmental and Economic Considerations Must Be Evaluated in Selecting Management Actions

As noted above, WSPA endorses the SQO Plan's site-specific approach. However, beyond indicating that SQO evaluations will be done on a site-by-site basis, the SQO Plan contains no guidance regarding implementation. WSPA suggests that the State Board provide guidance to the regional boards on how to consider and evaluate the range of available/potential management actions and in assuring that any management action has benefit to the overall problem. Under the SQO Plan, a range of management actions may be considered when an SQO exceedance is confirmed. However, the SQO Plan does not even specify the actions that should be considered, much less how the appropriate alternative should be selected. To avoid divergent, unreasonable, ineffective or even counter-productive outcomes, the SQO Plan should direct the regional boards to evaluate the feasibility and environmental and economic impacts of each of the available potential management actions (e.g., imposition of NPDES limits, establishment of sediment cleanup levels, selection of management measures such as dredging, capping, monitored natural recovery, etc.). Management action should be undertaken only when there is reasonable assurance that the action will have the intended effect. A full range of alternatives should be considered, including natural recovery, which in many cases may have fewer adverse environmental side-effects as well as being less costly.

WSPA believes that the Plan should incorporate the concept of "feasibility" as defined in CEQA for the purpose of evaluating specific proposed implementation actions. Specifically, actions taken to implement the SQO Plan should be "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors." Public Resources Code section 21061.1. Absent such guidance by the State Board, implementation of the SQO Plan will likely be inconsistent, ineffective and unduly burdensome at the project level.

In addition, we note that Section 4.3 of the Staff Report suggests that State Board Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water*

Code Section 13304, will be applied when setting cleanup levels under the SQO Plan. Specifically, a "Regional Board *must* apply Resolution No. 92-49 when setting cleanup levels for contaminated sediment if such sediment threatens beneficial uses of the waters of the state, and the contamination or pollution is the result of a discharge of waste. Contaminated sediment must be cleaned up to background sediment quality *unless it would be technologically or economically infeasible to do so.*" Staff Report (p. 35) (emphasis added). The Staff Report also states that Resolution No. 92-49 "requires dischargers to clean up and abate the effects of discharges in a manner that promotes attainment of either background water quality or the best water quality that is *reasonable* if background levels of water quality cannot be restored, *considering economic and other factors.*" *Id.* (emphases added). However, although the Staff Report discusses in general the applicability Resolution No. 92-49 to the SQO Plan, there is no reference to the Resolution in the SQO Plan itself, nor any indication of how it will be applied to implementation actions.

Suggested changes to SQO Plan:

Section VII.F.3, Sources Identification and Management Actions (SQO Plan, p. 27), insert the following:

g. When considering all necessary and appropriate steps to address exceedances of SQOs, the Regional Water Board shall evaluate such steps in accordance with State Board Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*. Management actions and cleanup levels shall be selected consistent with maximum benefit to the people of the state, considering beneficial uses of the water, economic and social costs compared to the benefits, environmental aspects, and the implementation of feasible alternative treatment or control methods. Management action should be undertaken only when there is reasonable assurance that the action will have the intended effect. Impacts and costs should be considered for a range of alternatives to address the SQO exceedance, including natural recovery. If the Regional Board determines that eliminating SQO exceedances is not reasonably achievable through feasible actions by the identified dischargers and sources, the Regional Board shall require feasible steps to the extent necessary to achieve reasonable sediment quality, taking into account legacy conditions and other information as appropriate. For purposes of this provision, "feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

Comment 11 – Individual Monitoring Should Be Required in Limited Circumstances

Under Section VII. E.2 of the SQO Plan, individual NPDES permittees can be required to conduct monitoring on their own and/or to participate in regional or water body-wide monitoring coalition, at the discretion of the regional water boards. SQO Plan (p. 23). WSPA agrees with the proposal that sediment monitoring programs should be based upon a conceptual model, and should consider regional information, such as: (1) the points of discharge into the segment of the waterbody or region, (2) tidal flow and/or direction of predominant currents, (3) historic and legacy pollutant conditions, (4) nearby land and marine uses or actions, (5) grain size, salinity, and other considerations. SQO Plan (p. 24). Also, sampling methods should utilize a stratified random network and to be spatially representative of sediment within the water body. Further, we agree that proper consideration of these factors is best supported through a regional monitoring approach, which can be conducted most efficiently and effectively by coalitions and not by individual permittees. SQO Plan (p. 23-24).

Under Section VII.E.2, "[m]onitoring may be performed by individual Permitees to assess compliance with receiving water limits or through participation in a regional or water body monitoring coalition . . . *or both* as determined by the Regional Water Board." SQO Plan (p. 23) (emphasis added). We suggest that "or both" be deleted from Section VII.E.2 in order to be consistent with monitoring approaches already in place. If participation in a monitoring coalition is already occurring, it is unnecessary to require redundant monitoring by individual participants. Indeed, the risk of facing such redundant requirements will unnecessarily deter individual permittees from participating in coalitions. The Staff Report notes the advantages of a regional monitoring approach in Resolution 92-043, which describes the Regional Monitoring Program that exists in the San Francisco Bay area.

> Resolution 92-043 [was] adopted by the California Regional Water Quality Board San Francisco Bay Region on April 15, 1992 officially established the Regional Monitoring Program (RMP) in San Francisco Bay. Resolution 92-043 authorized Regional Board staff to suspend some site-specific monitoring requirements for permittees, if the permittees would contribute to the development and support of a regional monitoring program. The Regional Board recognizing the advantages of a regional program cited the cost effectiveness and the greater ability to assess both the effectiveness of controls and overall waterbody health in comparison to data only collected from specific discharges.

Staff Report (p. 40). We believe that the State and regional boards should support the monitoring coalition approach in SQO evaluations. The State Board should also delineate the conditions under which a coalition would be formed and NPDES permittees would become parties to those coalitions.

Suggested changes to SQO Plan:

Section Section VII. E.2, Sediment Monitoring (SQO Plan, p. 23), revise as follows:

Monitoring may be performed by individual Permitees to assess compliance with receiving water limits, or through participation in a regional or water body monitoring coalition as described under VII.E.3, ~~or both~~ as determined by the Regional Water Board. Individual monitoring should only be required if: (1) a coalition cannot be formed; (2) there is reason to believe, based on a stressor identification process, that an individual NPDES Permittee discharges a significant amount of a stressor pollutant; or (3) it is necessary to determine whether an individual permitted discharge causes or substantially contributes to an SQO exceedance as provided in Sections VII.B, VII.C and VII.D.

Comment 12 – Management Actions for Delta and Estuarine Sediments Should Be Required Only After the State Board Develops Appropriate LOE Metrics

As discussed in Comment 2, it is not sound scientific practice to use fewer than three LOE. WSPA supports the staff's recommendation to use the triad MLOE approach in the Delta and estuaries. Staff Report (p. 91). Unlike indicators and thresholds developed for enclosed bays and harbors, toxicity tools and thresholds to evaluate the toxicity LOE in estuarine environments are not yet fully developed. As discussed in the Staff Report,

> [t]he indicators and thresholds developed for bays cannot be applied to estuarine water bodies without undergoing rigorous assessment for a variety of reasons. Chapman et al. (2001) provides a detailed explanation of the fundamental physical and chemical differences between the two types of water bodies. The bioavailability of both hydrophobic organic and inorganic pollutants is strongly influenced by salinity. Chemical equilibrium may not exist within the highly dynamic environments of estuaries. While many of the organisms present in bays are also found in estuaries, their tolerance to external stressors may vary greatly.

Staff Report (p. 53). The three test species proposed to evaluate sediment toxicity in enclosed bays and harbors may be inappropriate for

evaluating toxicity in estuarine environments because thresholds have not been developed for this purpose, and the Plan specifies that different species may be used in the interim to evaluate toxicity in estuarine sediments. SQO Plan (pp. 9, 18). Similarly, thresholds and tools for evaluating chemical concentrations in estuarine environments do not currently exist, and a separate estuarine biological community analysis would be required to determine appropriate test species for the estuarine environment.

Until estuary-specific tools are developed, the SQO Plan allows evaluation of SQO using reference ranges or intervals. SQO Plan (pp. 18-19). However, this approach is not standardized and has not been tested. Since tools are currently being developed, WSPA recommends that preliminary assessments in estuaries serve as triggers for additional evaluation once the "estuary toolkit" has been developed and adopted. Management actions should not be taken until a complete, calibrated MLOE assessment and subsequent stressor identification have been completed.

Suggested changes to SQO Plan:

At the end of Section V.J, Application of Aquatic Life – Benthic Community Protection to Other Bays and Estuaries (SQO Plan p. 20), insert the following:

5. Sediments identified as impacted based on the Benthic Community Protection Narrative Objective shall be subject to additional evaluation and development of an appropriate methodology. Management actions should not be taken to address exceedances identified based on the Benthic Community Protection Narrative Objective until a complete, calibrated MLOE assessment and subsequent stressor identification have been completed.

Comment 13 – The Chemistry LOE Based on Southern California Data Only Should be Updated

The State Board adopted two methods to assess sediment chemistry exposure: (1) mean chemical score indicator (CSI) and (2) CA LRM. Staff Report (p. 74-79); SQO Plan (p. 13-15). As detailed in Table 5.8 in the Staff Report, the CSI is derived from data collected only in southern California. Staff Report (p. 79). However, the CSI will be used to evaluate sediments collected from bays in both northern and southern California. The Staff Report indicates that the environmental settings in northern and southern California vary significantly in numerous ways that can significantly affect the impact of pollutants in sediment. Staff Report (pp. 12-26). For example, salinity in San Francisco Bay region

varies even within the region so that salinity levels range from hypersaline to fresh water. The bioavailability of both hydrophobic pollutants is strongly influenced by salinity. Staff Report (p.53). WSPA is concerned that CSI category scores presented in Table 6, which are based solely on data from southern California, are inappropriate for application to sediments collected from northern California. Indeed, the relatively poor fit of sediment chemistry data from southern California to northern California bays confirms the inadvisability of using a single LOE (chemistry) and the need to develop site-specific cleanup or remediation goals. We recommend that data collected pursuant to the SQO program, using the appropriate test methods specified in the Plan, be used at triennial review to re-evaluate the chemistry LOE and to adjust threshold values as appropriate.

Suggested changes to SQO Plan:

Following Section V.A, (SQO Plan, p. 8), insert the following new Section V.B:

B. Triennial Review and Updates to Plan

Every three years and as required by Clean Water Act section 303(c)(1), data collected pursuant to the Plan shall be used by the State Board to evaluate the LOE and to update thresholds and test measures, as appropriate.

[Renumber current Sections V.B – V.J accordingly.]

Comment 14 – The Environmental Impacts Analysis is Incomplete and Misleading

The Staff Report's conclusions regarding the extent of environmental impacts associated with implementing the SOQ Plan are inconsistent and unsupported. On the one hand, the Staff Report concludes that "[d]ue to a lack of existing coupled data and known reference sites, staff is unable to determine whether adoption of the proposed objective could result in potentially significant adverse environmental impacts." Staff Report (p. 103). The Staff Report also states that is difficult to determine "the extent to which additional controls on pollutant sources or additional remediation would be required under the proposed program, over the current baseline" of existing regulatory requirements. Staff Report (p. 102). On the other hand, at the same time – and on the same page – the Staff Report concludes that "all reasonably foreseeable potential environmental impacts will be mitigated to less-than-significant environmental levels through a project-specific CEQA analysis, the Water Board's regulatory and permitting process or through other agencies with jurisdiction in relevant areas." Staff Report (p. 102). These contradictory conclusions cannot be reconciled.

CEQA requires an agency adopting new regulatory standards or requirements to evaluate the reasonably foreseeable environmental impacts of methods of compliance with the new standards or requirements, feasible mitigation measures, and alternative means of compliance which would avoid or eliminate the identified impacts. CEQA Guidelines (14 Cal. Code Regs.) section 15187. It is well settled that, where a program intended for environmental protection may have unintended adverse environmental consequences, those consequences must be analyzed, and feasible alternatives or mitigation incorporated in accordance with CEQA, before the program may be adopted. See, e.g., County Sanitation District v. County of Kern, 127 Cal. App. 4th 1544 (2005). One particularly relevant recent case is *City of Arcadia v. State Water Resources Control Board*, 135 Cal. App. 4th 1392 (2006), in which the court found that the Los Angeles Regional Water Quality Control Board failed to comply with CEQA in adopting a TMDL for trash in the Los Angeles River watershed, when the Regional Board failed to evaluate reasonably foreseeable environmental impacts of the means of compliance likely to be utilized by the cities subject to wasteload allocations.

WSPA provided extensive comments on potential adverse impacts of SQO implementation in its scoping comments submitted to the State Board on November 28, 2006, which are incorporated herein by reference. Such impacts could include, among other things, impacts of remedial dredging activity on water quality, biological resources, transportation and air quality; solid and hazardous waste impacts from disposal of residuals from increased wastewater treatment; energy and construction impacts for new treatment facilities; and cumulative impacts. We recognize that the environmental impact discussion in the Staff Report serves as a programmatic analysis, in which such deferral to the project level may be appropriate. We note, however, that merely invoking the tiered approach is not a "blank check" excusing the lead agency from conducting any meaningful CEQA analysis. Significant impacts must be analyzed at the point that they are reasonably foreseeable, including those that are already foreseeable at the initial tier of review. See CEQA Guidelines section 15152(b). If a future implementation action under the SQO Plan "is reasonably foreseeable in general terms, the [tier 1 CEQA document] must include a general discussion of the fact and its possible environmental effects, but need not include a detailed analysis of specific facts that cannot reasonably be foreseen at the time the [tier 1 document] is prepared." *Ebbetts Pass Forest Watch v. California Department of Forestry and Fire Protection*, 139 Cal. App. 4th 165 (2006).

More importantly, however, an analysis that has been deferred to the future cannot be relied on in the present. Generally, programmatic CEQA documents make reasonable worst-case assumptions about the range of future implementation actions, to provide a basis for determining their likely significance. In this case, the Staff Report has not done so. Accordingly, the conclusion that all impacts of adopting the SQO Plan will be mitigated to less-than-significance is without support in the Staff Report. To the extent that the

State Board elects to defer analysis of impacts and mitigation measures of the SQO Plan to the project level, it has no basis to make findings of insignificance for impacts it has not analyzed at the program level. In such circumstances, when future impacts are not yet known, CEQA requires a conclusion that they are potentially significant and unavoidable. By asserting otherwise – by concluding that unanalyzed impacts will be successfully mitigated to insignificance by unanalyzed mitigation measures – the Staff Report is unsupported, misleading to decisionmakers and the public and fails to fulfill the informational purposes of a CEQA document. This flaw is only exacerbated by the approach of deferring most implementation decisions at the project level to regional board discretion, leaving the State Board with no basis to know at this time what choices the regional boards will make. Accordingly, the Staff Report should be revised and recirculated to properly address those issues that can and cannot be addressed with specificity at the program level.

Comment 15 – The Economic Analysis Is Unsupported

Water Code section 13241 requires each regional board to consider a number of factors in establishing water quality objectives, including *economic considerations.* Thus, as the State Board acknowledges, under Water Code section 13241 it is legally required to consider economics, as well as other factors, prior to adopting the SQOs Plan. The economic analysis for the SQO Plan is presented in *Economic Considerations of Proposed Sediment Quality Plan for Enclosed Bays in California* (September 18, 2007) prepared by Science Applications International Corporation (SAIC) ("Economic Impact Report"). This report attempts to examine economic costs associated with the proposed Plan.

WSPA agrees with the Economic Impact Report's assumption that the regulatory baseline for implementing the SQO is the existing regulatory program. However, because the majority of decisions regarding implementation of the SQO Plan will be made by regional boards on a project-by-project basis, it is difficult to perform an economic impact analysis for the Plan. Although the Economic Impact Report provides *monitoring* and *stressor identification* cost estimates, it does *not* provide cost estimates for significant costs associated with other plan implementation actions, such as remediation or cleanup actions that may be required pursuant to the SQO Plan.

Significantly, regarding the incremental impact of the SQO Plan, the Economic Impact Report concluded that "[d]ue to the lack of existing coupled data and known reference sites, an analysis of potential incremental impacts is not possible at this time." Economic Impact Report (p. ES-2); *id.* at ES-4 ("Because strategies to meet current narrative objectives at many impaired sites are still in the planning stages and the overall effects of implementation strategies are unknown, estimates of incremental costs would be highly speculative"). Thus, given the lack of such information, "[h]ow the Regional Water Boards will

ultimately implement the Plan is also highly uncertain." Economic Impact Report (p. 7-3). In addition, "several data limitations prevent estimating incremental control costs or cost savings," *id.* (p. 7-2), and [a]ssessment data gaps also introduce uncertainty to the economic analysis of achieving compliance with the proposed Plan." *Id.* (p. 7-3).

Despite such uncertainties, the State Board staff appears to indicate that it expects the economic costs associated with the implementation of the SQO Plan to be small. The State Board staff concludes that "review of existing impairments and TMDL actions for the various bays suggests that incremental impacts may be unlikely." Staff Report (p. 123). This conclusion is similar to the State Board's conclusion regarding environmental impacts However, as noted above, the Economic Impact Report concluded that the information necessary to make such a determination is unavailable. Thus, any conclusion regarding the economic impact of the SQO Plan is unfounded. *See* Staff Report (p. 122) ("Because strategies to meet current narrative objectives at many impaired sites are still in the planning stages and the overall effects of implementation strategies are unknown, estimates of incremental costs would be highly speculative.")

In addition, monitoring and stressor identification cost estimates are inaccurately low. The Economic Impact Report estimates that monitoring costs for 16 bays for which no or insufficient data are available for assessing SQO compliance are estimated at $468,900 to $691,400. In addition to those 16 reaches, the Economic Impact Report looked at the available MLOE data on eight bay segments and estimated costs for Phase I stressor identification testing for those 24 bay segments at $210,000-$620,000. This cost analysis is flawed in that it only considers the cost associated with toxicity identification evaluation (TIE) testing. TIE is only one element of stressor identification. It is doubtful that TIE alone will identify the chemical-stressor, especially for "low level" chemical contamination that may be encountered at sites considered "Possibly Impacted." Additional stressor identification as described in the Economic Impact Report (at *pp. 4-6)* will be necessary and potentially at greater expense. The experience of WSPA members indicates that stressor identification can cost as much as $70,000 per sample station. On a per acre basis, costs can range up to $17,000 per acre). Table 7.4 of the Staff Report identified 69 sample stations covering approximately 304,000 acres that may require stressor ID. Assuming that Table 7.4 identifies a reasonable number of stations and acreage (although we note that there is considerable uncertainty in these assumptions), we estimate that the costs of stressor identification for these identified stations/areas could range from $5 million to $6 billon. A cost analysis to support these estimates is provided in Attachment D, based on cost data derived from a stressor identification study performed to support a TMDL for sediment toxicity in a shallow bayou in Deer Park, Texas (Parsons et al. 2002).

In an attempt to determine sediment remediation costs, SAIC indicated that these costs could be similar to those estimated by the Regional Water Boards for hot

spot clean ups under the Bay Protection and Toxic Cleanup Program (BPTCP). Statewide, these costs range from $87.6 M to $1.03 B for the cleanup of high priority sites.

We believe that using these figures may underestimate the actual cost of the SQO Plan. Per Section 13391.5 of the California Water Code, toxic hot spots are individual "locations in enclosed bays, estuaries, or adjacent waters." However, the proposed Plan encompasses *entire* bays, harbors, and estuaries, and the analysis supporting the Plan indicates that entire bays and harbors may fail the SQO (see, e.g., Report on Economic Impacts at p. 5-5, which shows the SQO assessment results for San Francisco Bay). BPTCP costs associated remediating several hot spots within San Francisco Bay (Islais Creek, Mission Creek, Point Potrero/Richmond Harbor, Castro Cove, and Stege Marsh) were provided in the Report on Economic Impacts, which estimated the total cost of remediating these hot spots at about $48,000,000. These hot spots comprise an area of 0.3 square miles. (See Regional Water Quality Control Board, San Francisco Bay Region, Final Regional Toxic Hot Spots Cleanup Plan, March 1999.) If these costs were scaled up to include all of San Francisco Bay, an area of approximately 450 square miles, the remediation costs associated with the new SQO Plan would be.$72 billion (i.e., 0.3 square miles at $48 million equals $160 million per square mile, or $72 billion for 450 square miles). The preliminary assessment presented in Barnett et al., 2007, indicates that 73% of San Francisco Bay is classified as Possibly Impacted, 23% is considered Likely Impacted, and 0.3% is classified as Clearly Impacted. Thus, if costs for all of San Francisco Bay are scaled such that only the Likely Impacted and Clearly Impacted categories are considered exceedances, the potential remediation costs for San Francisco Bay would be approximately $17 billion (i.e., 23.3% x 450 square miles = 105 square miles, at $160 million per square mile = $17 billion).

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Attachment B

WSPA 11/30/07 Proposed Changes to SQO Plan

Proposed added text is underlined; proposed deleted text is struck through.

P. 8: Following Section V.A, Multiple Lines of Evidence Approach, insert the following new Section V.B:

B. Triennial Review and Updates to Plan

Every three years and as required by Clean Water Action section 303(c)(1), data collected pursuant to the Plan shall be used by the State Board to evaluate the LOE and to update thresholds and test measures, as appropriate.

[Renumber remaining subsections of Section V as appropriate.]

P. 17: Section V.I.4, Relationship to Aquatic Life – Benthic Community Protection Narrative Objective, revise as follows:

a. The categories designated as **Unimpacted** and **Likely Unimpacted** shall be considered as achieving the protective condition at the station except as described under b. ~~All other categories shall be considered as degraded.~~

b. The category **Possibly Impacted** shall be considered as having considerable uncertainty regarding whether or not an impact exists. Stations classified as Possibly Impacted shall be placed upon an SQO Monitoring List for enhanced monitoring and assessed using the MLOE approach detailed in Sections V.A through V.I. Alternatively, a Regional Board may designate the category **Possibly Impacted** as meeting the protective condition if studies demonstrate that the combination of effects and exposure measures are not responding to toxic pollutants in sediments and that other factors are causing these responses within a specific reach segment or waterbody. ~~In this situation, the Regional and State Board will consider only the categories **Likely Impacted** and **Clearly Impacted** as degraded when making a determination on receiving water limits and impaired water bodies described in Section VII.~~

c. The categories designated as **Likely Impacted** and **Clearly Impacted** will be assessed using the binomial distribution, and stressor identification studies shall be initiated if the number of stations

classified as Likely Impacted and Clearly Impacted supports rejection of the null hypothesis presented in [Table 15].

P. 20: At the end of Section V.J, Application of Aquatic Life – Benthic Community Protection to Other Bays and Estuaries, insert the following:

5. Sediments identified as impacted based on the Benthic Community Protection Narrative Objective shall be subject to additional evaluation and development of an appropriate methodology. Management actions should not be taken to address exceedances identified based on the Benthic Community Protection Narrative Objective until a complete, calibrated MLOE assessment and subsequent stressor identification have been completed.

P. 20: Under the heading of Section VII, Program of Implementation, insert the following and incorporate the flow chart in Attachment C to these comments as Attachment C to the SQO Plan:

The program of implementation for the SQO Plan shall be carried out in accordance with the following provisions and consistent with the implementation flow chart provided in Attachment C.

P. 21: Section VII.B, NPDES Receiving Water and Effluent Limits, revise as follows:

1. Sediment quality objectives may not be applied directly as effluent or receiving water limits in NPDES permits. If the Regional Board determines, based on multiple lines of evidence, that sediment quality in the vicinity of permitted point sources (e.g., within the discharge gradient) is ~~potentially at risk~~clearly or likely impacted, ~~sediment quality objectives may be applied as~~ stressor identification shall be performed as provided in Section VII.F. If the study results confirm the identification of an SQO exceedance, and site-specific management guidelines are developed, the results may be utilized to support development of effluent or receiving water limits in the permit through the TMDL process. Effluent or receiving water limitations should not be used outside a TMDL process unless a discharger is identified as a primary contributor to a particular SQO exceedance, on an ongoing basis, based on substantial evidence, and following stressor identification.

2. A discharger shall not be deemed to have reasonable potential to cause or contribute to an SQO exceedance until it is clearly demonstrated that the discharger is causing or substantially

contributing to the SQO exceedance, on an ongoing basis, based on substantial evidence, and following stressor identification.

[Renumber remaining sections of VII.B.]

P. 21: Section VII.C, Exceedance of Receiving Water Limit, revise as follows:

Exceedance of a receiving water limit is demonstrated when, using a binomial distribution*, the total number of stations designated as not meeting the protective condition as defined in Sections V.I.4. or V.J.4. supports rejection of the null hypothesis* as presented in Table 15. The stations included in this analysis will be those located in the vicinity and identified in the permit. A permit limit exceedance is not a violation until it is clearly demonstrated that the discharge is causing or substantially contributing to the SQO exceedance, on an ongoing basis, based on substantial evidence, and following stressor identification. Regional Boards are authorized to grant compliance schedules allowing reasonable time for permittees to come into compliance with new or revised permit limits, as appropriate.

P. 23: Section VII. E.2, Sediment Monitoring, revise as follows:

Monitoring may be performed by individual Permitees to assess compliance with receiving water limits, or through participation in a regional or water body monitoring coalition as described under VII.E.3, ~~or both~~ as determined by the Regional Water Board. Individual monitoring should only be required if: (1) a coalition cannot be formed; (2) there is reason to believe, based on a stressor identification process, that an individual NPDES Permittee discharges a significant amount of a stressor pollutant; or (3) it is necessary to determine whether an individual permitted discharge causes or substantially contributes to an SQO exceedance as provided in Sections VII.B, VII.C and VII.D.

P. 23: In Section VII.E.4, Sediment Monitoring - Methods, insert the following:

Sediments collected from each station shall be tested or assessed using the methods and metrics described in Section 5. The identification of current conditions requiring management action as provided in Sections VII.B, VII.F.3 and VII.G must be based on current data collected subsequent to the adoption of this Plan.

P. 24: Section VII.F, Stressor Identification, revise as follows:

If sediments fail to meet the narrative SQOs in accordance with Section V and VI, a sequential approach is necessary to manage the sediment appropriately. Following identification of sediment as Clearly Impacted or Likely Impacted based on multiple lines of evidence, an SQO exceedance shall not be determined until confirmed by stressor identification through this sequential approach. The sequential approach consists of development and implementation of a work plan to seek confirmation and characterization of pollutant-related impacts, pollutant identification and source identification. The work plan shall be submitted to the Regional Board for approval. Stressor identification consists of the following studies: . . . .

P. 26: Section VII.F.2, Pollutant Identification, revise to add:

f. Evaluation of Natural Background Conditions: After specific chemicals are identified as likely causes of impacts, an evaluation of natural background conditions should be made. An impact shall not be considered an SQO exceedance if it is demonstrated that concentrations of pollutant(s) responsible for the impact are present at levels consistent with natural background conditions.

Pp. 26-27, Section VII.F.3, Source Identification and Management Actions, revise as follows:

a. Determine if ongoing or legacy source. SQO exceedances attributable solely or primarily to legacy pollutants shall be listed for TMDL development under Clean Water Act section 303(d) or referred to the Bay Protection and Toxic Cleanup Program.

b. Determine number and nature of ongoing sources.

c. Following stressor identification, if a single discharger is identified as a primary contributor to a particular SQO exceedance, on an ongoing basis, based on substantial evidence~~und to be responsible for discharging the stressor pollutant at a loading rate that is significant~~, the Regional Water Board shall require the discharger to take all necessary and appropriate steps to address exceedance of the SQO, including but not limited to reducing the pollutant loading into the sediment as provided in Sections VII.B and VII.C and based on site-specific management guidelines.

d. If an SQO exceedance is confirmed following stressor identification and ~~When~~ multiple sources are present in the water body, that discharge the stressor pollutant at a loading rate that is significant, the Regional Board shall ~~require the sources to take all necessary and appropriate steps to address exceedance of the SQO. If appropriate, the Regional Water Board may~~ develop and adopt a TMDL to ensure attainment of the sediment standard or require remedial action under the Bay Protection and Toxic Cleanup Program.

e. For purposes of applying the State Board's *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* to sediment quality, identification of water bodies as impaired due to nonattainment of SQOs shall be determined based on all three lines of evidence and stressor identification. Existing listings of sediment impairment under Clean Water Act Section 303(d) should be re-evaluated to determine whether the listing is justified based on the MLOE and stressor identification.

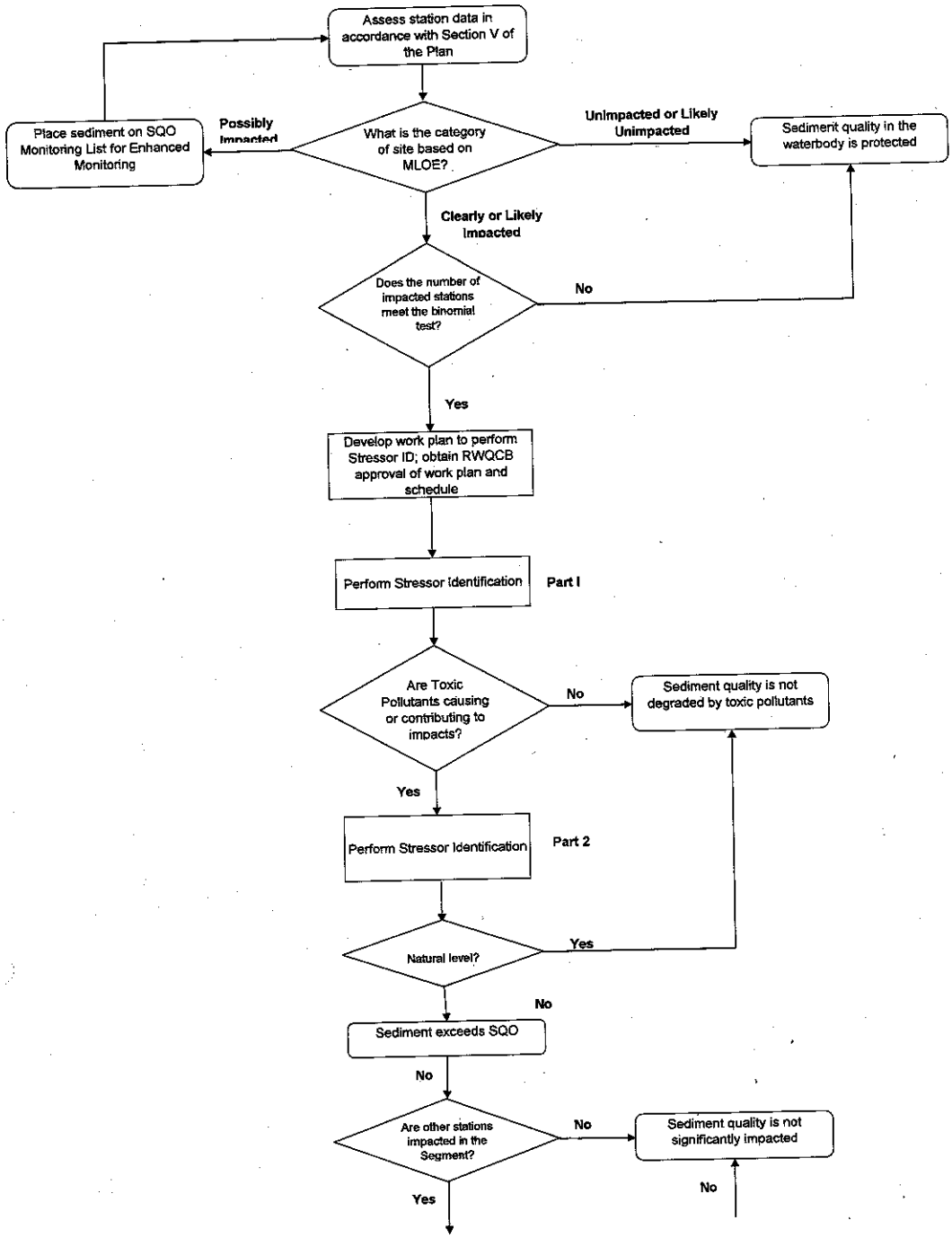
f. Neither sediment quality guidelines nor the thresholds contained in Section V.H. may be applied directly as cleanup targets or as effluent or receiving water limits in NPDES permits.

g. When considering all necessary and appropriate steps to address exceedances of SQOs, the Regional Water Board shall evaluate such steps in accordance with State Board Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*. Management actions and cleanup levels shall be selected consistent with maximum benefit to the people of the state, considering beneficial uses of the water, economic and social costs compared to the benefits, environmental aspects, and the implementation of feasible alternative treatment or control methods. Management action should be undertaken only when there is reasonable assurance that the action will have the intended effect. Impacts and costs should be considered for a range of alternatives to address the SQO exceedance, including natural recovery. If the Regional Board determines that eliminating SQO exceedances is not reasonably achievable through feasible actions by the identified dischargers and sources, the Regional Board shall require feasible steps to the extent necessary to achieve reasonable sediment quality, taking into account legacy conditions and other information as appropriate. For purposes of this provision, "feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

P. 27: In Section VII.G, Development of Site-Specific Management Guidelines, add the following:

f. Risk assessment. Information from risk assessments, both for human health (as specified in Section VI) and for ecological risk, can be used in establishing site-specific remediation and management targets. Risk assessment utilizes site-specific information on pollutant concentration, bioavailability, and consumption to evaluate risks to receptor organisms. Adaptive management approaches should be considered in establishing cleanup targets.

Sediment Quality Impairment - Appendix C Proposed Flow Chart



Stressor ID Cost Estimate Work Sheet for California SQOs

	Estimate Cost	Basis
1) Cost data derived from a stressor ID study done to support a TMDL for sediment toxicity on a shallow bayou in Deer Park, Texas		(from Table 7.4)
2) Station and acreage data from Table 7.4 Staff Report at Page 121	$5,045,726	$73,126 X 69 Stations
	$6,257,609,294	$17,367 X 360, 305 Acres

Supporting Data

Water Body-Patrick Bayou, Deer Park, Texas
http://www.tceq.state.tx.us/implementation/water/tmdl/18-patrickbayou.html
Parsons et al. 2002. Assessment of sediment toxicity and quality in Patrick Bayou, Segment 1006, Harris County, Texas. Prepared for Patrick Bayou TMDL Lead Organization, For Submission to Texas Natural Resource Conservation Commission.

Site Characteristics	
Habitat-Estuary	
Urban tributary of Houston Ship Channel; Receives Industrial, Municipal, Storm water Inflows	
Approximate Area: acres	80
Length: 2.5 miles-Width Max 500 ft.	
Number of Sample Stations In Study	19
Acres Per Station	4.21
Study period duration, years	2
Total number of stations sampled:	38
Stations to final TIE	2
Pore Water Toxicity-Number of Stations	28
Toxicity Testing: 2 species	
Sediment Chemistry, VOC, SVOC, PCB, Dioxins, Metals, AVS, SEM, Grain size: #Stations	38
Water Chemistry, VOC, SVOC, Metals, Salinity, TOC, DO, pH:# stations	38

Stressor Identification Task		**Cost**
Project Management/Data Analysis	$	537,000.00
Toxicity Test/Sediment TIE	$	231,000.00
Expert Benthic Assessment	$	54,280.00
Analytical Organics	$	76,000.00
Analytical Metals, AVS, SEM	$	39,000.00
Expert Statistics	$	18,000.00
Surface Water Modeling	$	175,000.00
Total	$	**1,130,280.00**
Cost Per Station (2007 Dollars)	$	73,126.46
Cost Per Acre (2007 Dollars)	$	17,367.53