Additional Comments on Technical Validity Issues for State Board Staff's Proposed Incorporation of Chemical Information into the Sediment Quality Triad for Designating, Ranking and Toxic Hot Spot Cleanup Plan Development and Implementation

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Dear Board Member Forster and Other Board Members:

I wish to provide comments on the State Board staff's Draft Final Functional Equivalent Document (FED) "Water Quality Control Policy for Guidance on the Development of Regional Toxic Hot Spot Cleanup Plans" dated June 1998, as well as addressing some of the unreliable information provided by State Board staff at the June 18, 1998 workshop on this Draft Final FED.

Over the past eight years I have provided detailed comments to the State Board on the significant technical deficiencies in the approach being followed by the State Board staff in formulating, implementing and reporting on the results of the Bay Protection and Toxic Hot Spot Cleanup Program (BPTCP). This effort has included my submitting two sets of comments to the State Board in connection with review of the preliminary draft FED (March 1998) for the BPTCP Toxic Hot Spot Cleanup Plans. I find, based on a review of the Final Draft FED, that the State Board staff have continued to use several technically invalid approaches for designating and ranking toxic hot spots. The Final Draft FED and the presentations made by the State Board staff (Mr. Wilson) at the June 18, 1998 workshop are further examples of the significant problems that have existed throughout this Program of providing superficial, technically invalid approaches toward addressing fundamental issues important to properly designate and rank toxic hot spots in the waters of the state of California.

The State Board staff in responding to commentors' comments have failed to follow traditional approaches of providing complete correspondence of each of the commentors on the preliminary draft FED, with the result that they have manipulated information in an attempt to try to convince the Board that their proposed approach for designating and ranking toxic hot spots has technical validity. This is not just my view; several of those who testified at the June 18 workshop discussed the fact that the staff had not adequately or reliably responded to their comments. If the staff had provided for full public review the complete comments provided by each of the reviewers, it

would be readily evident that the staff have not properly addressed many of the issues raised by several of the reviewers, including myself, on the significant technical deficiencies in the preliminary draft of the FED.

The Final Draft FED dated June 1998 must be rejected by the State Board as a technically invalid, inappropriate approach for designating and ranking toxic hot spots. If it is approved by the Board, this Board's actions will become recognized as one of the most significant mistakes that the State Water Board has made in addressing the regulation of aquatic life toxicity and excessive bioaccumulation of hazardous chemicals in edible organisms in the State Board's history. Since the State Board's staff have not adequate addressed many of the issues I raised in my comments on the preliminary draft FED and the initial workshop, I request that my previous comments on these issues, including attachments, be incorporated into the administrative record for review of the Final Draft FED.

As discussed in my initial comments, the State Board should reject its staff's recommendations and appoint an independent technical advisory panel to the Board who can develop a technically valid appropriate approach for regulating aquatic life toxicity and excessive bioaccumulation as well as other adverse impacts of chemical constituents in the state's waters and sediments that are covered under the BPTCP regulations.

At the June 18, 1998 workshop, Mr. Wilson asserted that the comments on the technically invalid approaches for incorporating chemical information into designating and ranking toxic hot spots were not valid. In my comments on the preliminary draft FED, I provided detailed discussions with appropriate references from the literature on why the total concentration co-occurrence-based approaches that Mr. Wilson is trying to get the State Board to adopt as part of designating and ranking toxic hot spots is obviously technically invalid. It has become clear that Mr. Wilson's superficial approach toward addressing these issues must receive full, public, interactive peer review by experts in the field who have significant expertise in aquatic chemistry/aquatic toxicology and water quality. I am very confident that such a full, public, interactive peer review where Mr. Wilson and any of those who claim that his approaches have technical validity for properly "associating" adverse impacts in aquatic sediments to a particular chemical or group of chemicals will be found to be fundamentally flawed. I have become aware that Mr. Wilson and others who support the total concentration co-occurrence-based approaches for association of the cause of adverse impacts, such as toxicity, have little or no understanding of the elementary principles of aquatic chemistry. I have yet to find a person who is a recognized leader in the aquatic chemistry field who supports the approach that is advocated by Mr. Wilson.

While Mr. Wilson claims that there are individuals who support his approach, a critical review of the expertise and experience of those who make these claims shows that they are not based on an appropriate use of well-established principles of aquatic chemistry. As discussed in the materials that I have submitted to the State Board on these issues and is well-known by those who have familiarity with aquatic chemistry, chemical

constituents exist in aquatic systems in a variety of forms, only some of which are toxic/available. It has been known since the 1960s that the total concentration of a constituent in sediments is a highly unreliable predictor of toxicity and available forms of chemical constituents that can bioaccumulate in higher trophic level organisms, etc. In the 1970s, I conducted over $1 million in research devoted specifically to this issue where I examined the relationship between concentrations of chemical constituents in sediments and their impacts on water quality from sediments taken throughout the US. Our study generated over 50,000 data points and clearly demonstrated what was already well-known-that total concentrations of constituents in sediments could not be used to estimate the cause of aquatic life toxicity. In the 1970s, the US EPA and Corps of Engineers, as part of developing the approach used for regulating open water disposal of dredged, contaminated sediments, adopted an effects-based approach of directly measuring toxicity, bioaccumulation, etc. since the chemical measurements of concentrations in sediments were not reliable for estimating impacts.

In the 1980s and 1990s, the US EPA conducted extensive research on these issues and confirmed the earlier work-that total concentrations of chemical constituents are not reliable for estimating impacts. While the Agency thought for a while that it could normalize the chemical concentration information to obtain a better relationship between chemical measurements and biological impacts as part of developing sediment quality criteria, they have recently abandoned that approach as not being reliable. It is unbelievable to me that Mr. Wilson and others would try to trap the state of California into a massive aquatic sediment Superfund (Aquafund) program in which the approach that is advocated for incorporating chemical information into associating biological impacts is based on total concentrations of constituents in sediments. If the State Board adopts this approach, it will be responsible for causing the people of California to waste massive amounts of money in inappropriately directed BPTCP cleanup plans.

As discussed in previous correspondence, there are readily available approaches that can and must be incorporated into the use of chemical information in the non-numeric, best professional judgement, sediment quality triad. Rather than using obviously technically invalid approaches of the type advocated by Mr. Wilson, the incorporation of chemical information must be based on chemistry, not chemical composition. Chemistry involves the appropriate investigation of the sediments to determine whether a chemical constituent exists in a toxic/available form at sufficient concentrations to be responsible for the biological impact. This is the only reliable approach for incorporating chemical information into the sediment quality triad.

As you know, I am highly concerned about the significant over-regulation that is occurring in managing urban area and highway stormwater runoff. I can readily foresee where Mr. Wilson's proposed approach could trap the California public into spending many tens to hundreds of billions of dollars in treating urban area and highway stormwater runoff because the sediments of the waterbodies receiving this runoff contain elevated concentrations of chemical constituents that according to Mr. Wilson's approach for using chemical information in the sediment quality triad must be responsible for adverse impacts on the receiving water beneficial uses. As discussed in

previous correspondence, we have already seen how Mr. Wilson's approach has caused the people in the LA area to be trapped into spending over $40 million in five years principally because elevated concentrations of lead occurred in Santa Monica Bay sediments which were believed to be derived from urban stormwater runoff from streets and highways in the Santa Monica Bay watershed. The Santa Monica Bay Restoration Project focusing on urban stormwater runoff was largely 0based on exceedance of a co-occurrence-based value of the type that Mr. Wilson advocates using in designating and ranking toxic hot spots which was "associated" with adverse impacts to aquatic life by constituents in sediments.

In the Santa Monica Bay Restoration Project there were no measurements to determine if the lead present in the sediments, which was the primary driving factor behind spending $42 million in five years for controlling lead and other metals from stormwater runoff from the Santa Monica Bay watershed urban streets and highways, was in a toxic/available form. Even today, five years later, there has not been an evaluation of this issue. However, where lead from highway and street runoff has been investigated in marine sediments, it has typically been found to be in non-toxic forms. While the people in the LA area did not allocate the $42 million, those responsible for the Santa Monica Bay Restoration Project are still trying to get the funds to control lead and other heavy metals in urban area street and highway stormwater runoff without first evaluating whether these constituents are having adverse impacts on the beneficial uses of Santa Monica Bay. The sole basis for this is the misguided effort associated with using total concentrations of constituents in aquatic sediments as a cause of adverse impacts. This is a prime example of how inappropriate incorporation of chemical information into sediment quality evaluations can cost the public massive amounts of funds and will likely result in little or no impact on the beneficial uses of the waterbodies in which the exceedance of the co-occurrence-based values are occurring in the sediments.

The Santa Monica Bay situation is not atypical of what is going to occur in the future unless more appropriate approaches are adopted for incorporating chemical information into sediment quality evaluations. At the State Board's recent meeting devoted to 303(d) listing of impaired waterbodies, two regions, LA and San Diego, have used elevated concentrations of chemical constituents in sediments as a basis for listing a waterbody as being "impaired." This, in turn, will set off the requirement of developing a TMDL for controlling inputs of constituents that have accumulated in the sediments. As I have discussed in separate correspondence on this issue, such an approach ignores the information that has been available since the 1960s that elevated concentrations of chemical constituents in sediments cannot and should not be used to judge toxicity, the potential for serving as a source for bioaccumulation, etc. The basic problem with this approach is that the toxic/available forms of constituents in water and sediments depends not only on the concentration of the constituent, but also on the concentration of the detoxifying constituents in the sediments.

Most of the heavy metals and organics present in aquatic sediments are in non-toxic forms due to detoxification reactions. An example of this type of situation is the impact

of sulfides on the toxicity of heavy metals. Sulfides are a common constituent in aquatic sediments. Their concentration in sediments is not related to the input of constituents, such as heavy metals. Therefore, their concentrations can vary independently of heavy metal concentration. Sulfides detoxify heavy metals by conversion to metal sulfide precipitates which are non-toxic. Very high concentrations of heavy metals in sediments can be non-toxic if the characteristics of the sediments are such that they also contain a high concentration of sulfides. Mr. Wilson's approach for incorporating chemical information into the BPTCP toxic hot spot designation and ranking and cleanup plan development basically ignores the fact that heavy metals in sediments interact with sulfides to form non-toxic species. The approach that I advocate, however, is to require that before someone associates aquatic life toxicity with heavy metals, they determine whether there are sufficient sulfides in the sediments to detoxify the heavy metals. This is a readily accomplishable requirement; it is one that has been recommended by the National Academy of Science, the US EPA and others. Yet Mr. Wilson is trying to convince this Board that there is no need to incorporate this type of approach into using chemical information in the sediment quality triad.

The same kinds of problems occur with the organics that occur in sediments. The total organic carbon present in sediments influences toxicity/availability of many of the organic constituents of concern. The TOC of sediments can readily vary independent of the constituent of concern concentration in sediments, with the result that there is no relationship between total concentration of organics, such as DDT or PCBs, etc., and toxicity/availability. Low concentrations of DDT in sediments with low TOC can readily be toxic, yet high concentrations of DDT in high TOC sediments can be non-toxic.

The people of California are entitled to a more enlightened approach for incorporating chemistry into the toxic hot spot designation and ranking cleanup plan development and implementation than is being proposed by Mr. Wilson. The State Board must not endorse the obviously technically invalid approach that he is advocating. I urge that the State Board require Mr. Wilson to develop a discussion of three plausible scenarios where there is information on aquatic life toxicity and/or excessive bioaccumulation that could cause a waterbody to be designated as a toxic hot spot. He should then present typical data of the type that is called for in the Final Draft FED for designating and ranking toxic hot spots for each of these scenarios. His discussion of these issues should include how he is going to make the association between the toxic response found and the cause of this response based on total concentrations of constituents, i.e. his approach for incorporating chemical information into the sediment quality triad. He should then be required to discuss how this information is going to be used to establish clean-up objectives and control sources of constituents such as those that are derived from urban stormwater runoff. His discussions of three scenarios, which should cover heavy metals, PAHs and toxicity of unknown cause or origin derived in part from constituents that are present in urban stormwater runoff, will demonstrate the very great danger of adopting Mr. Wilson's recommended approach for incorporating chemistry into the sediment quality triad. His approach would trap the urban populations into ultimately having to spend hundreds of billions of dollars throughout the state

controlling lead, heavy metals and certain organics in urban area stormwater runoff because they accumulate in receiving water sediments above co-occurrence-based concentrations that Mr. Wilson proposes to use to determine association between adverse impacts of these constituents and their concentrations in sediments.

The proper association of responsible chemicals for an adverse impact such as toxicity or excessive bioaccumulation is the foundation for the designation of Responsible Parties in toxic hot spot cleanup plan funding. The current recommended approach is not reliable for determining the chemicals responsible for a toxic response or their sources. It can readily lead to inappropriate association where a Responsible Party, including the public through their stormwater management agency, could be required to fund massive sediment Superfund cleanup programs that will have little or no impact on the beneficial uses of the waterbody. Further, stormwater management agencies and others could be trapped into treating stormwater runoff to remove inert forms of particulate chemicals that while causing elevated concentrations of constituents in sediments receiving stormwater runoff are not adverse to the beneficial uses of the waterbodies in which the sediments are located. It is essential that if the BPTCP is to be implemented in a technically valid, cost-effective manner, proper cause-and-effect relationships be developed to determine the cause of toxicity and the source of those constituents responsible for the toxicity.

At this time, the Board is being asked to adopt an approach for designating toxic hot spots and the development of cleanup plans for such areas without having the benefit of understanding how this situation ultimately will be implemented into the expenditure of public and private funds. By requiring that the State Board staff provide examples of how the staff's proposed approach would, in fact, be implemented will, I am confident, show that the proposed approach for incorporating chemical information to develop the so-called association with a responsible chemical required for toxic hot spot designation and ranking is fundamentally flawed and can readily lead to massive, unnecessary public expenditures.

It is important that Mr. Wilson not be allowed to continue his superficial approach toward addressing these issues. The staff's write-up covering three plausible scenarios should be subject to full, public, interactive peer review before the Board so the Board will be able to judge from the materials presented by those participating in this review, which should be open to all interested parties, the technical validity of the total concentration co-occurrence-based approach vs. a true chemistry-based approach for incorporating chemical information into a sediment quality triad for designating and ranking toxic hot spots.

The peer review should not be of the type that is typically being conducted today where selected information is sent to peer reviewers selected by the staff who have a particular approach for which they wish to gain support. Further, the approach being used today where a few somewhat off-the-cuff comments are made on the validity of the approach advocated by the staff are presented by the staff as representing the peer reviewers' findings. This is a highly superficial peer review that is not a real peer review of issues,

but can readily be manipulated to support a particular, pre-conceived position on issues. The selection of the peer reviewers should be a public process where the peer reviewers are knowledgeable and will take the time to fully review the pertinent information on the topic. They should review not only the staff's discussion of issues, but also the comments made by others on the lack of validity of the staff's approach. The peer review panel should present the preliminary results of their reviews in a public meeting where the public has the opportunity to question and comment on the adequacy of the review. The reviewers then should be given the opportunity to make revisions in their review based on any new information obtained and develop a final review which is then submitted to the Board where again the public would have the opportunity to comment on its adequacy. The topic of the proper incorporation of chemistry into determining the chemicals responsible for adverse impacts, such as toxicity, source of bioaccumulatable chemicals, etc., in sediments is of such great importance to the state that this type of full, public, interactive peer review must be used if the State Board plans to adopt the staff's recommended approach for incorporating chemical information into designating and ranking toxic hot spots as well as the development and implementation of toxic hot spot cleanup plans and source control.

Specific Comments

I have reviewed the revisions of the March 1998 FED and have the following comments on the changes.

On page xviii, the staff have added as the last paragraph, that the Regional Board *"shall work with responsible parties to determine the appropriate and reasonable cleanup or remediation level."* That should be revised so that the Regional Board works with all interested parties, both public and private. The public, environmental groups and others should be involved in any discussions of appropriate remediation approaches, not just the Board and the PRPs.

On page xix, item e, the staff have added, the Regional Board *"will also present a list of benefits (consistent with the guidance in this Policy) derived by implementing the cleanup plan."* This needs to be expanded to include documentation of the benefits, not simply a superficial list. The public, Responsible Parties and others are entitled to an appropriate evaluation of the benefits that will accrue through spending public and/or private funds in remediation of toxic hot spots.

Page xx, item 2, the staff have changed the t-test requirements from 80% to 90%. Ninety percent is too strict a requirement for certain types of test organisms.

Page xxiii, under "Aquatic Life Impacts," the staff have still not addressed the fundamental error that was made in the March 1998 draft of using sediment chemical analyses rather than sediment chemistry as a basis for incorporating chemical information into the decision process.

Page xxiv, I am pleased to see that "Pollutant Source" has been deleted by the staff. This was an error that was pointed out many years ago in their attempts to rank toxic hot spots. There are other errors discussed in my comments on the March 1998 draft which have not been addressed by the staff, however. These include the significant errors of including the NAS values in Table 1.

Pages xlii and xliii contain considerable amounts of new wording on issues. The staff have still not addressed the key fundamental problems with site investigation and remediation that were discussed in previous comments. The new information does not address these issues.

Table 15 will certainly lead to a superficial discussion of the benefits compared to the costs of remediation of toxic hot spots and the prevention of future toxic hot spots. The regional boards must be able to provide fairly quantitative estimates of the potential benefits for expenditure of public and private funds in remediation of toxic hot spots and the imposition of additional controls on NPDES-permitted discharges. Without this type of information, the public and private interests will be subject to inappropriate regulatory requirements which could cost large amounts of funds and have little or no impact on the beneficial uses of a waterbody.

Overall, the section through page xlix is another of the State Board staff's superficial addressing of issues. The State Board should require that its staff properly address the issues raised by various commentors on these issues and make appropriate changes in them.

The next section, pages 1 through 138, has not addressed the issues raised by the commentor as well as others on the significant technical deficiencies that the State Board staff have proposed to designate and rank toxic hot spots. My previously submitted comments on these issues discuss these problems.

Comments on Specific Comments

Beginning on page 144, the State Board staff have presented a summary, which is often inappropriate compared to the original comment, of the comments made by various commentors and a response as well as any revisions because of the comments.

On page 176, the staff start to respond to their interpretation/presentation of the issues that I raised in my comments on the March 1998 preliminary draft FED. The staff have inadequately presented many of the key issues raised in my comments and have provided a superficial, often inadequate and unreliable discussion of issues in their responses. By using a table format, rather than a proper technical discussion of issues, the staff have failed to provide the information needed to adequately address the issues raised. The State Board should not rely on the staff's presentations of comments as an assessment of the issues raised by me and I presume by other commentors. They should review the specific issues raised by the commentor and make their own evaluation of whether the staff have addressed issues in an inadequate, superficial manner. If there is

any doubt about these issues, please conduct a technically valid, independent, interactive peer review of issues where the commentor, the staff and anyone that the staff fell are appropriate to help them defend their position can discuss these issues in the presence of the Board. I am confident that if this type of a full public peer review is conducted, the Board will find that the staff have proceeded in a technically invalid, highly superficial approach toward addressing issues raised in my comments.

My comment 13.1 on the proposed policy readily leading to misdesignation and ranking of toxic hot spots is not addressed adequately in the responses to comments 13.2, 13.7 and 13.13. The staff should be required to specifically discuss this issue.

My comment 13.2 on the need to focus on real significant water quality use impairments has been addressed in a superficial manner. The sediment quality triad approach, as discussed in my comments, is technically invalid as it has been implemented by the State Board staff. While I support the sediment quality triad approach, it must be based on a proper and adequate database and most importantly, an appropriate use of chemical information. The statements from the staff about the BPTCP monitoring efforts are gobbledy-gook where a critical, independent, interactive peer review would show that the BPTCP monitoring program was inappropriately planned, implemented and reported. Substantial parts of this program's funds have been misdirected toward approaches which were obvious at the time known by knowledgeable individuals to not yield meaningful results. Unfortunately, previous State Boards allowed the staff, over objections from the public, to spend millions of dollars per year of fee-based funds without any accountability or review. This has resulted in BPTCP being a significantly deficient program in providing the information needed to properly designate and rank toxic hot spots.

Comment 13.3 about the potential for increasing the cost of wastewater treatment and stormwater runoff without a significant improvement in the beneficial uses has not been addressed by the staff in an appropriate manner. The staff should be required to specifically discuss the issues raised, rather than be allowed to make superficial statements about these issues as they have now done.

Comment 13.4, the staff have stated that there is an adequate database for designating and ranking toxic hot spots. That statement is false. The statement at the end of 13.4 about the approaches used have been reviewed by scientists familiar with sediment and water quality assessments. SPARC (1997) is a prime example of the superficial approach used by the staff. The SPARC review did not address the adequacy of the database to designate and rank toxic hot spots; SPARC indicated that they did not want to address that issue. The State Board staff have in this response, as they have in the past, provided an unreliable superficial discussion of issues. The issue is not whether the methods used were appropriate for measuring some parameter; the issue is whether the methods used were appropriate for designating and ranking toxic hot spots. That is what should be addressed by the staff.

My comment 13.5 recommends an economic analysis. The staff state that there is no requirement for an economic analysis. The public and the regulated community are entitled to understand the economic impacts of the proposed policy. While this may not have been specified in the BPTCP legislation, it clearly is a component of Porter-Cologne which has already caused the previous State Board to have its approaches for developing water quality standards judged inadequate by the court.

My comment 13.6 regarding the development of an independent expert panel to provide guidance to the State Board on developing toxic hot spot and ranking where the staff indicate that such an approach could cause the State Board to fail to meet the June 30, 1999 deadline, is again an inadequate response. There are highly significant technical deficiencies with the approach that is proposed to be implemented. Until recently, the State Board staff held the position that they did not have a database to designate and rank toxic hot spots. Now that Governor Wilson made a significant mistake in requiring that the State Board, over the objections of the Board, implement the BPTCP, even though an inadequate database exists, the State Board staff have reversed their position and now claim that there is an adequate database to proceed with designating and ranking toxic hot spots. Basically, the State Board needs to work with the legislature to change the June 30, 1999 date so that an adequate database can, in fact, be developed to implement this program in a technically valid, cost-effective manner.

Comment 13.7 concerns the inappropriate use of the co-occurrence-based approaches for incorporating chemical information where the staff state "*The use of 'co-occurrence-based approaches' is only used when there is need to show that pollutants or hazardous substances are caused by or contributing to the observed impact..."* This comment goes to the heart of the fundamental issues that Dr. Jones-Lee and I have repeatedly raised over the past eight years about the failure of the staff to understand and/or reliably report on the use of co-occurrence-based approaches in the BPTCP. Contrary to the statement made by the staff, there is no way that an independent, interactive peer review would clearly demonstrate to the Board that the staff's statement about how co-occurrence-based approaches can be used is totally inappropriate. Under no circumstances can co-occurrence-based approaches be used to show that pollutants or hazardous substances are caused by or contributing to the observed impact on the beneficial uses. I am shocked that the State Board staff would make such a statement. This clearly demonstrates the lack of understanding of how co-occurrence-based approaches were developed and how they should be used.

The staff's response to comment 13.7,

"The Water Code definition of a toxic hot spot requires the focus on assessing beneficial use impact and requires that there be a showing that pollution or contamination are related to the impacted use. Section 13391.5(e) does not require a cause-and-effect relationship to be available to determine if a site is a toxic hot spot. The definition states, in part: 'Toxic hot spots means locations...where hazardous substances have accumulated in water or sediment to levels which (1) <u>may</u> pose a substantial present or potential hazard to aquatic life..., or (2) <u>may</u> adversely affect

beneficial uses....' The BPTCP has met the requirements of law, focused on beneficial use impairment and used sediment chemical guidelines correctly (SPARC, 1997; Long et al., 1998)."

The staff have significantly distorted the principles of basic science in relating the presence of a chemical constituent in sediments and adverse impacts observed in those same sediments. It is preposterous that the staff would assert that they could use obviously technically invalid approaches based on co-occurrence which involved the use of total concentrations of constituents to relate to adverse impacts which could cost the people of California ultimately billions of dollars in misdirected site clean-up and NPDES permit modifications. The people in California are entitled to a more enlightened approach than has been demonstrated by the staff where those who propose to associate a particular adverse impact, such as altered numbers, types and characteristics of aquatic life and/or aquatic life toxicity to an adverse impact must do the necessary TIE type studies to demonstrate that there is a cause-and-effect relationship. Without it, the BPTCP is a sham to technical validity.

The statement is made, *"The approaches used to show the significance of chemical concentration have been published in the peer reviewed literature and have been reviewed by the SPARC."* Those who are familiar with this type of situation know that peer-reviewed literature does not mean that it is necessarily valid. There are substantial numbers of peer-reviewed articles that show that the co-occurrence-based approach is not valid. Contrary to the staff's statement, SPARC did not endorse this approach. In fact, two of the SPARC members made it very clear that simply relying on total concentrations of co-occurrence was technically invalid and should not be used.

Comment 13.10 in which the State Board staff state, *"At present it is not possible to use only the bioavailable fraction because these studies are generally not available."* again is gobbledy-gook. There are well-established techniques that could and should have been used in the BPTCP to develop the kinds of information necessary to determine whether constituents present in the sediments are, in fact, responsible for adverse impacts noted in those sediments. There is no need to use the technically invalid approaches that the staff have adopted or to now claim that because there is inadequate information, it is appropriate to use technically invalid approaches, especially when inadequate information is the result of the staff's misdirecting the BPTCP's data collection efforts.

Comment 13.10, the staff state *"The BPTCP is using the best available information to assess the significance of chemicals."* While that statement may be true, it is only true because the staff misdirected the whole BPTCP to focus on total concentrations of constituents and did not properly address the recommended approach of focusing on toxic available forms. Because of the mismanagement and misdirection of the Program, the Program cannot proceed as it is currently being developed. Basically, there is need to start over with the Program to gather the information necessary before the people of California are asked to spend ultimately billions of dollars in sediment clean-up.

Comment 13.11, the staff dispute the statement made about flipping a coin being more reliable than Long and Morgan values. Why did not the staff quote the work of NOAA staff in reviewing this matter as well as those of the US EPA who in August 1997 at the Multi-Regional Meeting in St. Louis reported that the Long and Morgan are less reliable than flipping a coin for predicting toxicity in an unbiased data set? This is more of the unreliable, biased information provided by the staff on this issue.

Comment 13.12, the staff state, *"There is no reason to discuss the deficiencies..."* in the monitoring approach. The public, whose funds were spent in the monitoring approach, are entitled to know the strengths and weakness of the results of this approach. I can appreciate that the staff do not want the public to know the very significant errors made in establishing, implementing and now reporting on the BPTCP monitoring program.

Comment 13.29 is a response by the staff to the criticisms of the NAS values. The staff persist with obviously technically invalid approaches when they state that these values have not been withdrawn. As discussed in my presentation on this matter, the values were never adopted by the US EPA or anyone else. They were put forth as information available as of the late 1960s when the "Blue Book of Water Quality Criteria" was developed. No credible organization accepts the NAS values as credible values for estimating critical tissue concentrations of various constituents. As discussed, they are only used in California; they are not accepted as being reliable by the US EPA, the National Academy of Science or any other organization. The State Board and regional boards have been misguided by those who originally proposed to use these values and by Mr. Wilson and the other BPTCP staff who propose to continue to use these values even though the errors in their use have been documented. This is more of the technically invalid approach that prevails through the BPTCP where the staff did not take the time to understand how the values were developed and how they were to be used. As I discussed, I was involved as a peer reviewer to the National Academies on this issue and therefore I speak with direct familiarity with the inappropriateness of the State Board and regional boards to continue to refer to in any way the so-called NAS values. There are no NAS values; there are values that the state of California State Board staff inappropriately attribute to the NAS.

Item 13.42, presents the staff's misguided efforts to fail to use TIEs to identify whether toxic constituents are derived from a particular source. Without this information, significant errors could readily occur in identifying the sources of constituents that cause toxic hot spots.

Item 13.48, my statement was that SPARC did not conduct a detailed peer review discussion of issues that would support the BPTCP monitoring. That statement stands. I was present at the meeting and heard the SPARC member discuss the significant deficiencies with the staff's proposed approach. Further, the staff's additional peer review in compliance with Health and Safety Code Section 57004 can readily be a highly distorted peer review, depending on what information is made available by the staff and how the peer review information is used. A credible peer review involves providing the peer reviewers with a complete set of information, not just the biased

information developed by the staff on issues and having the peer reviewers respond in an interactive peer review with the public to discuss issues. Without this, the peer review that is being conducted can readily be a biased statement of issues that is not appropriate.

Overall, the staff have not provided a credible discussion of issues raised in my detailed comments which cover an eight-year period during which I have closely to the extent that it has been possible, observed how the BPTCP was developed, implemented and now being reported. I fully agree with the State Board staff's assessment as of a year ago that there is an insufficient database to properly designate and rank toxic hot spots.

I strongly urge the State Board conduct a true independent, interactive peer review of these issues where all parties, including the State Board staff, the regulated community, environmental groups and the public have the opportunity to provide information to the peer reviewers. I am confident that if this type of review were conducted, the position that I have previously stated that the State Board staff have inadequately developed, planned, implemented and now are reporting on the BPTCP will be supported. Further, it will show that the staff's approach for incorporating chemical information into the toxic hot spot designation and ranking in the development of cleanup plans is technically invalid and can readily lead to significant errors that can cost private and public interests millions to possibly billions or more dollars in unnecessary cleanup.

Again, I strongly urge that the State Board reject the staff's proposed Draft Final FED as a non-credible document in many aspects and basically tell the governor and legislature that they need to start over and that the previous State Boards have made significant errors in allowing the staff to run with this Program without public review.

Please contact me if you have questions on this matter or these comments.

Sincerely yours,

G. Fred Lee

G. Fred Lee, PhD, DEE

Copy to: SWRCB Members
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GFL:oh

Development and Implementation,' letter to M.J. Forster, State Water Resources Control Board, Sacramento, CA June (1998)."