Date: Mon, 18 Aug 1997 21:43:32 -0700
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Subject: Appropriate Target Goals for CALFED Water Quality Remediation Programs
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>August 16, 1997
>
>Richard Woodard
>CALFED Bay-Delta Program
>Water Quality Technical Group
>1416 Ninth Street; Suite 1155
>Sacramento, CA 95814
>
>Dear Rick:
>
> I wish to follow up on the discussions of the August 6, 1997 CALFED Water
>Quality Task Group meeting concerning appropriate approaches for defining
>Delta water quality remediation goals for CALFED's Water Quality Program.
>Bob Berger independently raised the issue that I have repeatedly raised
>throughout my now eight months of reviewing CALFED WQTG materials, of
>focusing on chemical impacts rather than chemicals in evaluating the success
>of a CALFED program. In defense of managing chemicals rather than chemical
>impacts, at the August 6, 1997 meeting you raised the argument that you have
>raised in the past of having to use a "legally defensible" tool, such as a
>chemical concentration, relative to the water quality objectives. That

Integrated Approach

Aug 16

>approach is only legally defensible for point source dischargers of domestic
>and industrial waste waters where such dischargers are obligated to meet
>water quality standards (objectives) at the edge of a mixing zone. It is not
>a legally defendable approach for urban stormwater and non-point source
>discharges, which are likely to be the primary sources of materials that are
>of concern in Delta Water quality.
>
> The legally defendable pollution control program for the NPDES regulated
>urban stormwater discharges in the Delta watershed is defined by the US EPA
>as controlling pollution to the maximum extent practicable (MEP) through the
>use of best management practices (BMPs). While water quality standards are
>the ultimate goals of such control, both the US EPA and the State Water
>Resources Control Board have adopted positions that violation of a water
>quality standard in an ambient water receiving regulated urban stormwater
>runoff does not constitute a violation of the NPDES permit. It is important
>to note that the stormwater discharges of communities with a population of
>less than 100,000 are, at this time, unregulated. While the US EPA is
>discussing the developing of an NPDES permit program for regulating
>stormwater runoff for communities between 50,000 and 100,000, it will likely
>be many years, if ever, before such a program is in place where these
>communities must meet water quality standards in their stormwater runoff.
>
> I have previously provided you with a discussion of why US EPA water quality
>criteria and state standards based on these criteria are inappropriate goals
>for urban stormwater runoff water quality management. The basic problem is
>that regulating urban stormwater runoff using the same approach as NPDES
>municipal and industrial waste water discharges, i.e. meeting water quality
>standards at the edge of a mixing zone where there is no more than one
>violation of a standard every three years, will cost the regulated community
>one to two dollars per person per day forever. It is for this reason that
>the US EPA and the WRCB backed off from Clean Water Act requirements in
>regulating urban stormwater runoff.
>
> Independent of that situation, as discussed in my review of this issue that
>was sent to you, there are fundamental technical issues as to why urban
>stormwater runoff should be regulated differently that relate to the
>concentration of available forms duration of exposure relationships that
>typically occur in urban stormwater runoff relative to the same relationships
>in the typical stormwater runoff event. It is the US EPA recommended policy
>now that regulated urban stormwater dischargers should focus on finding real
>water quality problems - use impairments in the receiving waters caused by
>stormwater runoff associated constituents. Where such problems are found,
>then these should be controlled using BMPs to the MEP. This is the legally
>defensible approach and the approach that CALFED should follow in
>establishing goals for chemical constituents that are derived from regulated
>urban stormwater runoff.
>
> A basic problem of CALFED adopting water quality standards as remediation

Target & General

>goals, in which CALFED programs are assessed in terms of achieving the
>standard, is that there are no statewide water quality standards (objectives)
>in California today. The US EPA, under the National Toxics Rule, has
>recently promulgated proposed standards. However, it will likely be years
>before these standards are actually adopted and implemented into permits.
> Meanwhile, CALFED will have to formulate WQTG programs. It is my
>understanding that it will likely be a number of years before the new
>standards will be legally defensible standards for the few regulated
>dischargers to which these standards apply. A key issue that remains to be
>resolved is the adequacy of the US EPA's economic analysis for the
>application of these standards to NPDES dischargers. Many municipalities and
>industries find that the US EPA's approach for conducting economic analyses
>is inadequate. This approach could be challenged in the courts and voided
>by the courts. This is what happened to the state standards adopted by the
>Water Resources Control Board in the early 1990s. Therefore, there is
>considerable uncertainty as to when the National Toxics Rule based criteria
>will become legally defensible standards in California that are applicable to
>NPDES permits. CALFED could readily find itself in a position of trying to
>implement chemical constituent control programs that are not in accord with
>legally defensible requirements by focusing on chemically based criteria.
>
> Another aspect of this situation is the one I have discussed in other
>correspondence of the growing recognition that the US EPA made a significant
>error in adopting the Independent Applicability Policy. At the last national
>Water Environment Federation conference a full session was devoted to this
>problem. I have also published on this problem and believe I sent you a copy
>of that paper. It is available from my web site
>(http://members.aol.com/gfredlee/gfl.htm). The Agency has proposed to change
>this policy through its current announced proposed rule making for water
>quality standards. If this policy is changed, as it should be, then the
>chemically based water quality criteria/standards will not be the legally
>defensible requirements. Instead, they would be used as triggers to allow
>the regulated community to determine whether the exceedance of a criterion
>represents a real water quality use impairment. This is the approach that
>CALFED should use in establishing water quality remediation goals.
>
> With respect to legally defensible approaches to regulating non-point source
>discharges/runoff, the situation is not clear on the role of achieving water
>quality standards (objectives). Until such time as legally defensible
>objectives are in place and have been through court challenges, the current
>situation of not having numeric chemical standards for most regulated
>chemical constituents will likely continue to prevail. I have been trying
>for almost two years to get the Central Valley Regional Water Quality Control
>Board (CVRWQCB) to fully enforce US EPA water quality criteria in ambient
>waters for an NPDES regulated discharger. Thus far, this Board has chosen
>not to do so. The former executive officer for the Board was terminated over
>this issue. It remains to be seen what the new executive officer and Board
>will do in fully enforcing the use of US EPA criteria as legally defensible

>standards in regulating NPDES permitted discharges of wastewaters. Recently,
>the University of California, Davis has announced its plans to challenge the
>CVRWQCB's implementation of US EPA criteria into its NPDES permit since these
>criteria have not been formally adopted by the Regional Board through a
>public review process. UCD administration has indicated that there are
>several other communities that will join with them in this effort. While it
>has been assumed that US EPA criteria could be used by the Regional Boards as
>legally defensible standards, the appropriateness of this approach is now
>somewhat in doubt. The same situation will apply for a number of years with
>respect to the National Toxics Rule criteria that the US EPA has recently
>proposed.

> The CVRWQCB has, as one of its Basin Plan objectives, control of toxicity
>in ambient waters. CALFED has as a constituent of concern "unknown
>toxicity." It would seem appropriate that the CALFED approach for assessing
>the adequacy of constituent of concern control programs for potentially toxic
>constituents is the use of the US EPA standard three-species test as well as
>the chemical test and, to the extent that funds were available, developing
>aquatic organisms assemblage information. At the August 6th meeting, Val
>Connor recommended a best professional judgement weight of evidence triad
>approach, where appropriately conducted chemistry, biological effects based
>assessments such as toxicity tests and information on the numbers, types and
>characteristics of the organisms present relative to the habitat
>characteristics and reference areas with similar habitat, be used to assess
>whether there is a water quality problem due to potentially toxic chemicals.
> While there are some, like the person from the Bureau of Reclamation, who
>will speak out against toxicity testing because of the lack of familiarity of
>how the tests are used and their effectiveness, such testing addresses real
>potential water quality problems. These types of tests are legally
>defensible and should be used by CALFED as a basis for implementing its Water
>Quality Program objectives of controlling potentially toxic chemicals and
>unknown toxicity.

> This is a far more technically valid approach than trying to control aquatic
>life toxicity based on chemical measurements where it is necessary to try to
>extrapolate from a chemical measurement to a water quality impact of concern
>to people. Those with an elementary knowledge of aquatic chemistry have
>known since the late 1960s chemical concentrations are not a valid tool for
>assessing toxicity. They are an indicator of potentially toxic chemicals.
> While there are questions about the interpretation of toxicity test results
>with respect to such issues as whether the toxicity test species (the
>three-standards species) are representative of all species that are present
>in the Delta, these questions are small compared to the magnitude of the
>justified well-known questions about the validity of relying on chemical
>concentration-based numbers as a goal. At least with toxicity testing the
>issue of biological effects has been addressed to a considerable extent.
> With chemicals it is not addressed at all. On a site specific basis it
>assumes that the Delta is made up of water like Lake Superior and that the

D-033971

>chemicals that go into the Delta are identical to the most toxic available >forms that are available from chemical supply houses in reagent grade >chemicals.

> There is a vast arena of unregulated stormwater runoff that is a source of >potentially significant water quality use impairment within the Delta and its >tributaries. Runoff from ag lands, forests, and communities with less than >100,000 people are essentially unregulated with respect to being required to >achieve water quality standards in ambient waters. CALFED's currently >proposed approach of trying to use chemically-based target ranges as set >forth in Table 3.4 of the draft "Component Report" is not only technically >invalid for many of the constituents of concern, it is also not legally >defensible for both regulated and unregulated dischargers. The CALFED Water >Quality Program should not be based on an exceedance of a numeric water >quality standard, but must be based on finding a real water quality problem >in CALFED waters, determining the cause of the problem and the source of the >specific constituents responsible for the problem. This approach is legally >defensible and readily implementable. It is one that CALFED can gain public >support for.

> It is important to understand that I have not heard anyone advocate the >abandonment of measurement of chemical concentrations. We are advocating >that CALFED not mechanically use chemical concentrations as the remediation >goal - target objective. Certainly I and I know others are concerned that >toxicity measurements be included in the evaluation of CALFED program >effectiveness as a parameter for potentially toxic chemicals. Failure to do >so will clearly cause CALFED Water Quality Task Group activities to be judged >significantly technically deficient and will lead to a potential effort to >redirect CALFED to focus on real water quality issues as opposed to those >that are contrived out of overly protective approaches. A failure to >routinely measure toxicity will also mean that the CALFED Water Quality >Program will fail to fulfill its obligation to adequately and reliably >address unknown toxicity as well as the CVRWQCB Basin Plan requirements of no >toxicity in ambient waters. I, for one, and I believe others would work with >CALFED management in developing appropriate approaches for using toxicity >test results as the goal for CALFED control programs for potentially toxic >chemicals and unknown toxicity.

> In summary, your advocating chemically-based water quality standards as >legally defensible goals has limited applicability to a few wastewater >dischargers in the Delta watershed. Even here it may be many years before >that approach is legally defensible. There is need for CALFED to develop >legally defensible goals for the regulated community such as urban stormwater >dischargers as well as the vast unregulated community of non-point source >dischargers. Biological effects-based test approaches using toxicity tests >and bioaccumulation are legally defensible goals that can be readily >implemented. They should become the target objectives for evaluating >CALFED's Water Quality Program effectiveness.

D-033972

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> If you or others in CALFED management have questions on this matter, please
>contact me.
>
> Sincerely yours,
>
> Fred
>
> G. Fred Lee, PhD, DEE
>
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