UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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OFFICE OF THE
REGIONAL ADMINISTRATOR

September 3, 1991

Mr. W. Don Maughan
Chairman
State Water Resources Control Board
State of California
P.O. Box 100
Sacramento, California 95801

RE: EPA Review of Bay/Delta Plan

Dear Mr. Maughan:

I am writing to inform you of the U.S. Environmental Protection Agency's (EPA's) action on the Water Quality Control Plan for Salinity for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay/Delta Plan). The Bay/Delta Plan was adopted by the State Water Resources Control Board (State Board) in State Board Resolution No. 91-34 on May 1, 1991, and submitted to EPA for approval on May 29, 1991.

In taking this action, EPA is aware of the substantial time and energy it has taken to develop the Bay/Delta Plan, and we are cognizant of the difficult issues the State Board faces as it establishes water quality standards for the estuary. We commend the State Board and its staff for seeking a high level of public involvement in the Bay/Delta proceedings.

Summary

As detailed below, by this letter EPA is taking the following actions:

(1) EPA is approving the salinity objectives for municipal/industrial and agricultural uses, and is approving the dissolved oxygen objective for fish and wildlife uses of the San Joaquin River. As to these objectives, EPA's action constitutes final agency action under Section 303(c) of the Federal Clean Water Act.

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(2) EPA is disapproving the Bay/Delta Plan's objectives because of their failure to protect the Estuarine Habitat and other designated fish and wildlife uses of the estuary. EPA is also disapproving certain salinity and temperature objectives. Under the Clean Water Act, the disapproved objectives remain in effect until replaced by new or revised objectives adopted by the State or promulgated by EPA. The State has 90 days to adopt any necessary revisions. If the State does not adopt the necessary revisions, EPA must propose and promulgate revised standards for the State. Therefore, today's disapproval does not constitute final agency action under Section 303 of the Clean Water Act.

EPA's Review of Standards

Under Section 303 of the Federal Clean Water Act and EPA's implementing regulations, states are to establish designated uses for waterbodies, and must adopt water quality criteria sufficient to protect those designated uses. EPA is to review and approve or disapprove all state-adopted water quality standards. In reviewing water quality criteria, EPA considers whether the criteria contain sufficient parameters to protect the designated uses and are based on sound scientific rationale. If EPA determines that the criteria will not protect the designated uses, or were not based on sound scientific rationale, it is to disapprove the criteria and describe the changes it believes are necessary to provide adequate criteria. The State then has 90 days to adopt criteria meeting the requirements of the Act. If it fails to do so, EPA must promptly propose and promulgate new or revised criteria consistent with the requirements of the Act. At any time during EPA's promulgation effort, including after any such promulgation, the State can adopt acceptable criteria and thereby terminate EPA's promulgation action.

California's Bay/Delta Plan establishes "objectives" for salinity, temperature, and dissolved oxygen for the waters of the Bay/Delta estuary. In accordance with our past practices, EPA will treat these "objectives" as the equivalent of "water quality criteria" for all purposes under the Act.

Standards Approved

EPA has reviewed the State Board's submittal and has concluded that the salinity objectives for municipal/industrial and agricultural uses are consistent with the protection of those uses and otherwise comply with the requirements of the Clean Water Act. Those objectives are described on pages one through four of Table 1-1 of the Bay/Delta Plan. Accordingly, EPA hereby approves the Bay/Delta Plan's salinity objectives for municipal/industrial and agricultural uses.

EPA also approves the 6 mg/l dissolved oxygen objective for the designated fish and wildlife uses on the San Joaquin River. This objective is described on page five of Table 1-1.

EPA's action approving the above objectives as water quality criteria under Section 303 of the Federal Clean Water Act constitutes final agency action on those objectives for purposes of this triennial review.

Standards Disapproved

I. **Objectives Protecting Estuarine Habitat Uses**

To be consistent with the Clean Water Act and the accompanying Regulations, the State's objectives must be sufficient to protect Estuarine Habitat and other designated fish and wildlife uses. The Estuarine Habitat use, which has been formally approved by the State and EPA as part of the State's water quality standards, was established to provide "an essential and unique habitat that serves to acclimate anadromous fishes (salmon, striped bass) migrating into fresh or marine conditions. This habitat also provides for the propagation and sustenance of a variety of fish and shellfish, numerous waterfowl and shore birds, and marine mammals." Water Quality Control Plan, San Francisco Bay Basin[2], December 1986, at II-4. The other fish and wildlife uses of the estuary designated for protection include Cold and Warm Water Habitat, Fish Migration, Fish Spawning, Ocean Commercial and Sport Fishing, Preservation of Rare and Endangered Species, Shellfish Harvesting, and Wildlife Habitat. Bay/Delta Plan, Ch. 4, at p. 4-1 to 4-3.

During the review process of the 1978 Delta Plan, EPA and the State Board agreed to use the Striped Bass Index (SBI) as a measure of whether the fish and wildlife uses of the estuary were being protected. The State Board committed to revising the 1978 Delta Plan objectives if the SBI showed a measurable decrease below the predicted levels. See Letter from Paul De Falco, Jr., Regional Administrator of EPA, to Carla M. Bard, Chairwoman, SWRCB, dated August 28, 1980 (1980 Approval Letter), and Letter from Carla M. Bard, Chairwoman, SWRCB, to Sheila M. Prindiville, Acting Regional Administrator, EPA, dated November 21, 1980 (1980 Approval Letter). We have previously noted that the SBI has in fact decreased substantially below the predicted level. See Letter from Judith E. Ayres, Regional Administrator, EPA, to W. Don Maughan, Chairman, SWRCB, dated June 29, 1987; Letter from Daniel W. McGovern, Regional Administrator, EPA, to W. Don Maughan, Chairman, SWRCB, dated February 23, 1990. The drop in the SBI has been dramatic. Whereas the 1980 Approval Letter stated a target SBI of 79, the average SBI since 1978 has been approximately 25, and it has dropped to less than five during the past few years. Even before the most recent decline in the SBI, the State Board had acknowledged the crisis in the estuary's fisheries: "The decline in the Striped Bass Index clearly indicates that current standards are not adequate to protect the fishery resource." Letter from Raymond Walsh, Interim Executive Director, SWRCB, to Judith E. Ayres, Regional Administrator, EPA dated June 23, 1986.

The precipitous decline in striped bass is indicative of the poor health of other fisheries resources in the estuary. Several species, including the Chinook salmon (the winter run of which is listed as an endangered species), the Delta Smelt (recently proposed for listing as a threatened species) and the Sacramento splittail (a candidate for listing as an endangered species), have experienced similar declines. In fact, the California Department of Fish and Game (DFG) recently testified that virtually all of the estuary's major fish species, as well as its lower trophic levels, are in clear decline.

In our 1987 Triennial Review Letter, EPA outlined the inadequacy of the set of objectives protecting the fish and wildlife uses, but agreed to postpone action on the objectives pending submission of revised objectives pursuant to the present triennial review. In the February 5, 1987 Workplan for the triennial review, the State agreed to adopt a comprehensive set of revised objectives by August 1989 for submittal to EPA. Nevertheless, the State Board's recent submittal concedes that "other than the striped bass spawning objectives, the proposed Plan is essentially identical to the 1978 Delta Plan." Responses to Comments at II-59.

The record, therefore, does not support the conclusion that the State has adopted criteria sufficient to protect the designated uses. Accordingly, pursuant to the authority vested in the Administrator by Section 303(c)(3) of the Clean Water Act and 40 CFR 131.5 and 131.21 and delegated to me, I hereby disapprove the current set of objectives contained in the State Board's Bay/Delta Plan because they fail to protect the Estuarine Habitat and the other designated fish and wildlife uses of the estuary.

Given the evidence in the record, there are various options at the State Board's disposal for developing objectives that would be approvable under the Clean Water Act. One option would be for the State Board to adopt additional salinity and temperature standards protecting the designated uses of the estuary. Alternatively, the State Board could follow the approach taken in its November 1988 Draft Plan and adopt flow objectives that would be protective of the designated uses. Similarly, the State Board could adopt biological objectives that could serve as measurable indicators of whether the uses are protected. This list of alternatives is not intended to be exhaustive; the State Board can choose any set of objectives that protect the designated uses of the estuary. We are willing to work closely with the State Board to develop scientifically-defensible objectives that meet the requirements of the Clean Water Act.

II. Salinity Objectives

We are also disapproving certain of the Bay/Delta Plan's salinity objectives. The Bay/Delta Plan includes salinity objectives for only a short reach of the lower San Joaquin River and for the managed wetlands of Suisun Marsh. After carefully reviewing the State Board's submittal, I have determined that these objectives are insufficient to protect the designated uses of those waterbodies, and that additional salinity objectives are needed to protect the designated fish and wildlife uses of the estuary.

A. Suisun, San Pablo, and San Francisco Bays

There are currently no salinity objectives to protect fish and wildlife in Suisun, San Pablo, and San Francisco Bays. There is significant scientific evidence that salinity objectives for these areas are necessary to maintain adequate levels of production at the base of the estuary's food chain and to protect the habitat for those species restricted to brackish water during all or part of their life cycles. We are especially concerned that no salinity objectives have been set to protect habitat for Delta Smelt, a candidate for protection under the Federal Endangered Species Act. The Bay/Delta Plan itself states that "Delta smelt habitat indicates a salinity preference of less than 2 [parts per thousand (ppt)] and seldom greater than 10 ppt" and concludes that "existing knowledge suggests that salinities of 2 ppt or less are desired in Suisun Bay from March through June." Bay/Delta Plan, at 5-44.

Accordingly, I hereby disapprove the Bay/Delta Plan because it fails to adopt salinity standards in the Suisun, San Pablo, and San Francisco Bays that are protective of the Estuarine Habitat and other designated fish and wildlife uses of the estuary. To be approvable by EPA, the Bay/Delta Plan should be revised to include a maximum salinity objective of 2 ppt at appropriate locations in these waterbodies, or an alternative objective that is scientifically defensible and protective of the designated uses.

B. **San Joaquin River**

The Bay/Delta Plan includes salinity objectives to protect spawning conditions for adult striped bass in the lower San Joaquin River. The Plan established objectives of 1.5 millimhos per centimeter electroconductivity (mmhos/cm EC) at Antioch and 0.44 mmhos/cm EC at Prisoners Point in April and May. EPA is disapproving these objectives for the following reasons:

1. The salinity objectives do not provide protection for the designated Fish Spawning use of the San Joaquin River in the reach between Prisoners Point and Vernalis.

The Bay/Delta Plan notes that salinity in the San Joaquin River increases upstream of Prisoners Point due to saline agricultural return flows. Thus the absence of salinity objectives above Prisoners Point effectively establishes a barrier to adult migration and spawning further upstream on the San Joaquin River. DFG has testified that striped bass occasionally spawn above Prisoners Point, but this activity has diminished because of poor water quality. Nevertheless, despite the recommendations of DFG and the U.S. Fish and Wildlife Service (USFWS), the State Board did not establish salinity objectives to protect striped bass spawning in the reach between Prisoners Point and Vernalis.

In order to approve the State's water quality standards for this reach of the San Joaquin River, EPA must find that they contain sufficient parameters to support the designated uses. Therefore, EPA disapproves the State's objectives in the lower San Joaquin River between Prisoners Point and Vernalis for failure to include salinity objectives that protect striped bass spawning.

EPA recognizes that DFG and others have expressed concern that protection of the spawning habitat upstream of Prisoners Point may increase the possibility of eggs and young being trapped and killed at the state and federal pumps in the southern Delta. Thus we recommend that the State Board's implementation measures for the revised objectives be developed in conjunction with measures to reduce the impacts of the pumps on spawning habitat.

2. The Antioch and Prisoners Point objectives are not based on sound scientific methods, as required by 40 CFR 131.11(b).

In comments on the Draft Bay/Delta Plans, EPA asked the Board to fully explain the scientific basis for the 1.5 mmhos/cm EC objective at Antioch. Several parties questioned this objective in light of DFG's testimony that striped bass spawn primarily at EC levels of less than 0.3 mmhos/cm, and seldom migrate up the San Joaquin River to spawn when EC levels exceed 0.44 mmhos/cm.

In the final Bay/Delta Plan, the State Board explained that the 1.5 mmhos/cm EC objective was designed to provide suitable spawning habitat upstream of Antioch, not at the Antioch location itself. The State Board acknowledged that "the use of 1.5 EC at Antioch appears not to be generally appropriate," and proposed that "a thorough review of this objective be undertaken at the next Triennial Review." Bay/Delta Plan, at p. 5-32.

The Bay/Delta Plan also acknowledged that "the spawning objectives do not in fact designate a spawning reach, but only a single location (Prisoners Point) where appropriate salinities for the majority of spawning, as determined by DFG, are required to be present." Bay/Delta Plan at page 5-30. As a result, the Plan directs the DFG to study how a specific habitat zone of 0.44 mmhos/cm EC could be established in the reach between Jersey Point and Prisoners Point "to make certain that the State Board develops water quality objectives that are based on sound scientific data." Bay/Delta Plan at p. 5-33.

Finally, the Plan acknowledged that the relaxation provision of the Antioch objective is not based on sound scientific methods. The Plan noted that "deficiencies in firm supplies and the level of protection afforded by the striped bass spawning objective should be correlated. The present deficiency schedule does not do that, since no specific relationship between extent of habitat and change in salinity intrusion has been made....Several participants have appropriately questioned the basis for this relationship." Bay/Delta Plan at p. 5-32. Again, the Board directed DFG and others to reevaluate this provision in the next triennial review.

EPA believes that given the State Board's own statements that the objectives are inadequate - a conclusion we fully share - these objectives must be revised now and not postponed until the next triennial review. The Board has had ample opportunity to develop new objectives based on sound scientific methods since the results of the last triennial review were submitted in 1985. Therefore, we disapprove the State's salinity criteria for the lower San Joaquin River because they are not based on scientifically defensible methods.

In summary, I disapprove the State's salinity objectives for the San Joaquin River portion of the Delta because they are insufficient to protect the designated fish and wildlife uses and are not based on sound scientific methods. To be approvable by EPA, the Bay/Delta Plan should be revised to include a maximum salinity objective of 0.44 mmhos/cm EC from Jersey Point to Vernalis, or an alternative objective that is scientifically defensible and protective of the designated uses.

C. **Suisun Marsh**

1. **Salinity Objectives.** The salinity objectives for Suisun Marsh remain unchanged from the 1978 Water Quality Control Plan for the Sacramento-San Joaquin Delta and Suisun Marsh (1978 Delta Plan). These objectives were established to protect plants and wildlife in the managed wetlands of the Marsh. EPA's approval of the 1978 Delta Plan objectives was explicitly conditioned on the State's commitment to develop additional objectives and to protect aquatic life in the Suisun Marsh channels and open waters. See 1980 Approval Letter. These conditions have not been met; there are currently no salinity objectives to protect the aquatic life and the tidal wetland habitat. Accordingly, I disapprove the salinity objectives for the Marsh because they fail to protect the Estuarine Habitat, Wildlife Habitat, and other fish and wildlife uses of the waterbodies in and around Suisun Marsh. To meet the requirements of the Clean Water Act and EPA regulations, the State Board should immediately develop salinity objectives sufficient to protect aquatic life and the brackish tidal wetlands surrounding the Marsh.

2. **Clarification of Existing Objectives.** We note that the State Board's implementation requirements for the existing salinity objectives (Table 1-2) contain a different set of "objectives" that may significantly reduce protection for both the managed and tidal wetlands of the Marsh. The implementation requirements are based on amendments made to the water rights permits of the state and federal projects in 1985. The amendments eliminated the two westernmost stations in Suisun and Montezuma Sloughs and relocated several others. These changes were made without the benefit of a public hearing or environmental review, and were never adopted and submitted to EPA as formal revisions to the 1978 Delta Plan.

Since the State Board has not formally amended this component of the 1978 Delta Plan, the 1978 Delta Plan objectives specified in Table VI-I of that Plan continue to be the water quality objectives in the Suisun Marsh for all purposes under the Act. We believe that it is inconsistent with the Act for the State Board to adopt one set of objectives as water quality criteria but to adopt implementation plans using a different and inconsistent set of objectives. The implementation plans required under Section 303(e)(3)(F) of the Act should be consistent with the 1978 Plan objectives. Should the State Board desire to change those objectives, it must adopt revised objectives in accordance with 40 CFR 131.20, and must submit any such revisions to EPA for review under 40 CFR 131.21.

III. Temperature Objectives

A. Fall-run chinook salmon

The Bay/Delta Plan includes new temperature objectives of 68 degrees at Freeport on the Sacramento River and Vernalis on the San Joaquin River from April 1 through June 30 and from September 1 through November 30 to protect Cold Water Habitat for fall-run salmon. The Plan notes that high water temperatures have been a major problem for fall-run salmon smolts emigrating through the estuary.

The supporting analysis in the State's submittal, however, is not consistent with the adopted objectives. The Technical Appendix states that "juvenile emigrants (smolts) can tolerate water temperatures somewhat higher than 60 degrees, but above about 65 degrees a variety of stress effects occur," and adds that smolts are "highly stressed" at 68 degrees or more (5.3-1). The Bay/Delta Plan also cites studies that temperatures above 65 degrees have blocked salmon migrations.

In addition, the Bay/Delta Plan's temperature objectives are inconsistent with DFG's 1990 Central Valley Salmon and Steelhead Restoration and Enhancement Plan, which states that maximum growth occurs from 54-60 degrees, and that growth ceases above 65 degrees (p. 78).

In summary, the State's temperature objectives for the fall-run salmon are contrary to the extensive evidence in the State's submittal that fall-run salmon would not be protected at temperatures of 68 degrees. Accordingly, I hereby disapprove these objectives because of their failure to protect Cold Water Habitat and other fish and wildlife uses. To be approvable by EPA, the Bay/Delta Plan should be revised to include a maximum objective of 65 degrees, or an alternative objective that is scientifically defensible and protective of the designated uses.

B. Winter-run Salmon

The Bay/Delta Plan also includes a new temperature objective of 66 degrees at Freeport on the Sacramento River from January 1 through March 31 to protect winter-run salmon. However, the supporting evidence in the State's submittal is insufficient to approve this objective. The Plan acknowledges that "there was no testimony presented on the temperature requirements specifically for the winter-run." Bay/Delta Plan, at 5-23.

In addition, both the USFWS and DFG opposed this objective because it is considerably higher than present temperatures at Freeport. According to the USFWS, average temperatures in this reach during the winter range from about 45 to 60 degrees. The USFWS concluded that they "cannot envision when such an objective would be beneficial." USFWS, Comments on Final Draft Water Quality Plan, January 1991, at p. 5.

Therefore, I disapprove the State's temperature objective for winter-run salmon because it is not based on sound scientific rationale. The objective should be removed and replaced with an objective based on better-supported evidence of the temperatures required to protect Cold Water Habitat for winter-run salmon and other species.

C. "Controllable Factors" Limitation

Finally, the State's requirement that temperature objectives be subject to "controllable factors" is inconsistent with EPA regulations. Water quality criteria are to be scientifically based and protective of the designated uses. Consideration of other factors may be appropriate in designating uses, but not in establishing water quality criteria.

EPA recognizes that temperature objectives may be difficult to implement in the estuary. However, this concern should be addressed in the State's implementation plan, through variance provisions, or other approaches consistent with EPA regulations. The objectives themselves must be established to protect the designated uses and be based on sound scientific rationale.

CONCLUSION

As to the objectives that are being disapproved pursuant to this letter, the State has 90 days from the date of this notification letter to adopt and resubmit approvable objectives. The State may make the changes recommended in this letter or adopt an alternative set of objectives sufficient to protect the designated fish and wildlife uses of the estuary. If the State does not adopt approvable objectives within 90 days, EPA must initiate Federal promulgation of acceptable standards. The State's submitted objectives will continue to be in effect until they are replaced either by the State or by a Federal promulgation. If the State adopts approvable objectives, EPA will cease its Federal promulgation efforts.

In closing, I intend to make every effort to work cooperatively with the State to protect and enhance the fisheries and other uses in the Bay and Delta. I also strongly support the consensus process now underway among the State's environmental, urban, and agricultural interests to develop a new framework for California water management. In the spirit of that effort, I hope our agencies will continue to work towards solutions that are broadly acceptable and environmentally sound.

Sincerely,

Daniel W. McGovern

Daniel W. McGovern
Regional Administrator