1/93

BAY/DELTA STRATEGY

Goal: To persuade the State to adopt a comprehensive, balanced protection plan for the Bay/Delta estuary. A secondary goal is to work with State and Federal agencies and stakeholders in developing long-term solutions to California water management issues.

Objectives:

Environmental Results: Support State Adoption of Water Quality Standards Sufficient to Protect the Ecological Health of the Estuary.

State Relations: Support the State's Long-Term Planning Process. (Bay/Delta Oversight Council - BDOC)

Economic Efficiency: Promote Market-based Approaches to Allocating Supplies. (AG Initiative and CVPIA Implementation)

Better Science: Build upon SFEP workshop results; Coordinate Recommendations with FWS/NMFS/DFG.

Consensus-Building: Address Stakeholder Concerns.

- o Build upon emerging urban/environmental coalition
- o Minimize impacts on agriculture
- o Minimize lawsuits

Planning & Coordination: Make effective use of QMMs and other interagency forums.

PRIMARY ACTIVITIES

1. Participate in State hearings and negotiations.

   o Support State adoption of approvable standards.
   o Focus on resolving environmental rather than legal issues.
   o Coordinate recommendations with FWS/NMFS/DFG.

2. Develop proposed federal standards.

   o Focus on traditional paramaters (salinity) and biological criteria (salmon smolt survival index) to minimize legal risk and provide maximum flexibility in allocating supplies.
   o Coordinate with FWS/NMFS/DFG; address ESA requirements.

3. Work with W-7 and OFA in reviewing the environmental impacts of proposed water projects (Los Vaqueros, Delta Wetlands, North and South Delta, Los Banos Grandes, etc.).

   o Promote use of net environmental benefit in evaluating impacts.
   o Develop joint EPA/FWS/NMFS criteria for NEPA/ESA compliance.

4. Participate in State and Federal long-term planning efforts (BDOC, CCMP and CVPIA Implementation).

   o Support alternative approaches to meeting environmental and water supply needs, including water transfers, conservation/reclamation, and conjunctive use of surface and groundwater.
   o Support new projects/facilities that provide net environmental benefits and improve water supply reliability.

5. Coordinate and resolve issues with other state and federal agencies.

   o Interagency Ecological Studies Program (IESP)
   o EPA/FWS/NMFS QMMs
   o EPA/USBR QMMs

EPA COMMENTS ON D-1630

Positive Elements

1. Elimination of reverse flows from February through June
2. Limits on exports and cross-channel gate operations
3. $60 million/yr Restoration Fund
4. Conservative water availability forecasts/storage reqs
5. Urban and agricultural conservation requirements

Major Shortcomings

1. The decision would stabilize, but not significantly increase, populations of most fish species.

2. No salinity or flow standards were set to protect habitat conditions in Suisun Bay, and to meet ESA requirements for Delta smelt.

3. No specific long-term goals were set to drive the State's planning process and evaluation of facilities.

STATE RESPONSE

1. Acknowledges that more protective standards will be needed, but wants 5 more years to develop long-term standards in conjunction with new facilities.

2. Predicted flows are adequate to stabilize conditions until long-term standards are adopted; mandated salinity or flow standards would reduce flexibility in developing long-term solutions.

SUMMARY OF STATE POSITIONS

- The State Board, facing significant opposition from agriculture, is not interested in making any significant changes to D-1630. They believe they have met the Governor's mandate to set interim standards that will stabilize fish populations until a long-term solutions are developed in the Bay/Delta Oversight Council process. Apparently, the Board is also not overly concerned about EPA's potential involvement, since they question our authority and expect to be sued by several parties regardless of whether they address our concerns.

- The State Administration, however, recognizes that EPA involvement may have two major drawbacks for the Governor and the success of his water policy:

  1. It may drive the stakeholders even further apart, with the State and urban and agriculture groups opposing EPA involvement, and environmental groups siding with EPA. This may threaten the Governor's efforts to bring the parties together through the BDOC process.

  2. The Governor would lose the opportunity to provide leadership on water issues. There is already great concern that ESA requirements and the CVPIA are now largely driving water policy and management decisions, and the State wants to regain the leadership role.

- The State Administration also recognizes that EPA is sincere in seeking a State solution to these issues, but that we are constrained by the threat of a lawsuit by the environmental groups, and may not be able to accept a vague promise that our concerns will be addressed in the BDOC process.

SUMMARY OF STATE/EPA RESOLUTION PROCESS

Legal/procedural Issues

Both sides agree to minimize legal conflict. EPA would agree to postpone the promulgation process upon resolution of the substantive issues; both sides would maintain legal positons.

Technical/substantive Issues

Salmon: Both sides agree that the salmon smolt survival index is a good indicator of the health of the estuary for migrating salmon and steelhead. The State would probably be willing to adopt our recommended salmon indices as long-term goals/standards.

Estuarine Habitat: EPA believes that salinity levels are the best available indicator of the health of the estuary for all other species, but would accept equivalent flow standards. Both sides also agree that salinity or flow standards will be needed, but differ on the process and timeframe for setting these standards.

Process Issues

Short term: Both sides agree that a focus on export limits is appropriate in the short-term. EPA accepts D-1630 as a first step towards approvable standards.

Long term: EPA believes that the Board should set specific long-term salinity or flow standards now to meet CWA requirements and help drive the Governor's planning process. To address the State's concerns about limiting BDOC's flexibility, EPA could agree that the standards won't be implemented for five years, and would be subject to revision in the BDOC process. The State has agreed to consider adoption of more specific long-term goals, but these should not include flow or salinity standards. They are concerned that these standards, once adopted, would be very difficult to change, even if agreement is reached in the BDOC process that fish populations could be protected with less Delta outflow and new facilities.

ACTION ITEMS

1. Pursue development of alternative long-term goals/standards that would be approvable (salinity/flow standards, species indices, habitat protection levels, etc.).

2. Develop procedural options for State adoption of these standards. These might range from a water quality standards submittal to a a a State resolution on long-term standards after D-1630 is adopted.

CRITERIA FOR PROPOSED FEDERAL STANDARDS

1. Focus on Highest Ecological Risk

   - o Protect peak spawning and migration period for most species (February - June)
   - o Shift exports to fall, when fewer species (striped bass) are affected

2. Satisfy Endangered Species Requirements

   - o Consult with FWS and NMFS
   - o Protect "critical habitat" for Delta smelt (FWS)
   - o Avoid adverse impact on winter-run salmon (NMFS)

3. Maximize State Flexibility/Minimize Legal Risk

   - o Focus on salinity/biological criteria
   - o Emphasize protection of use rather than specific criteria
   - o Minimize impacts on water supplies

EPA RECOMMENDED WATER QUALITY STANDARDS
FOR THE BAY/DELTA ESTUARY

Designated Use	Criteria	Period	Source	Benefits
Estuarine Habitat	2 ppt @ Roe Is., Chipps Is., and Sac/SJR confluence	Feb-June	SFEP, USFWS, Peter Moyle (UCD)	Protects low salinity habitat in Suisun Bay; reflects levels prior to 1976.
Fish Spawning (Striped Bass)	.44 mmhos/cm EC Pris. Pt - Vernalis (distance varies by year type)	April-June	DFG, SWRCB evidence	Protects historical striped bass spawning range in the San Joaquin River.
Fish Migration; Cold-Water Habitat (Salmon smolt survival index)	Survival varies by year type: Sac SJR W .48 .46 AN .40 .30 BN .38 .26 D .32 .23 C .29 .20	Sac R: April-June SJR: April-May	5-Agency Workgroup evidence; FWS,DFG,NMFS recommendations	Protects survival rates for fall-run salmon. Measures percentage of salmon smolts surviving passage through the Delta.

SUMMARY OF EPA STRATEGY

- o Use the threat of a federal promulgation to persuade the State to adopt approvable long-term standards for the estuary.
- o Support adoption of D-1630 as an interim step towards approvable long-term standards.
- o Focus on State administration and Stakeholders, rather than the Board, at least until D-1630 is adopted.
- o Place equal priority on State negotiations and the proposed rule after D-1630 is adopted.
- o Coordinate actions with FWS and NMFS.
- o Continue to support and participate in State and Federal planning efforts (BDOC, CVPIA) to achieve our goals in the watershed.

POTENTIAL OPPORTUNITIES TO REACH AGREEMENT

Timing	Potential
Before D-1630 Adopted (3/1)	Low
After D-1630, Before Proposal	Medium
After Proposed Rule	High
After Final Rule	Low

NEXT STEPS

1. Continue Negotiations with State and Stakeholders.
   Focus on:

   o State adoption of specific long-term goals that would be approvable, and
   o Procedural options/implementation.

2. Prepare Proposed Rule.

   o Prepare internal draft by March 1.
   o Coordinate with FWS/NMFS
   o Review economic analysis

3. Prepare CVPIA Strategy (Ag Initiative with W-7, OFA, and OPM) and USBR Strategy.

4. Prepare Briefing Package for New RA and HQ.

SAN FRANCISCO BAY/DELTA BRIEFING

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Produced by IRM Branch

SAN FRANCISCO BAY/DELTA BRIEFING

I. BACKGROUND

II. EPA'S ROLE: WATER QUALITY STANDARDS REQUIREMENTS AND LEGAL AUTHORITY

III. SUMMARY OF BAY/DELTA STANDARDS DECISION AND STATE RESPONSE

IV. CONCURRENT ACTIONS

V. SUMMARY OF REGION 9 OBJECTIVES

VI. NATIONAL IMPLICATIONS

Produced by IRM Branch

IMPORTANCE OF THE ESTUARY

- CAPTURES 47% OF STATE'S RUNOFF, AND PROVIDES 2/3 OF WATER USED.
- SUPPLIES 40% OF STATE'S DRINKING WATER SUPPLIES.
- PROVIDES IRRIGATION WATER FOR 200 CROPS, INCLUDING 45% OF NATION'S FRUITS AND VEGETABLES.
- SUPPORTS OVER 150 SPECIES OF FISH, AND A LARGE COMMERCIAL AND RECREATIONAL FISHERY FOR SALMON, STRIPED BASS, STEELHEAD TROUT, SHAD, STURGEON, HERRING, AND ANCHOVIES.
- CONTAINS LARGEST WETLAND HABITAT IN WESTERN U.S.

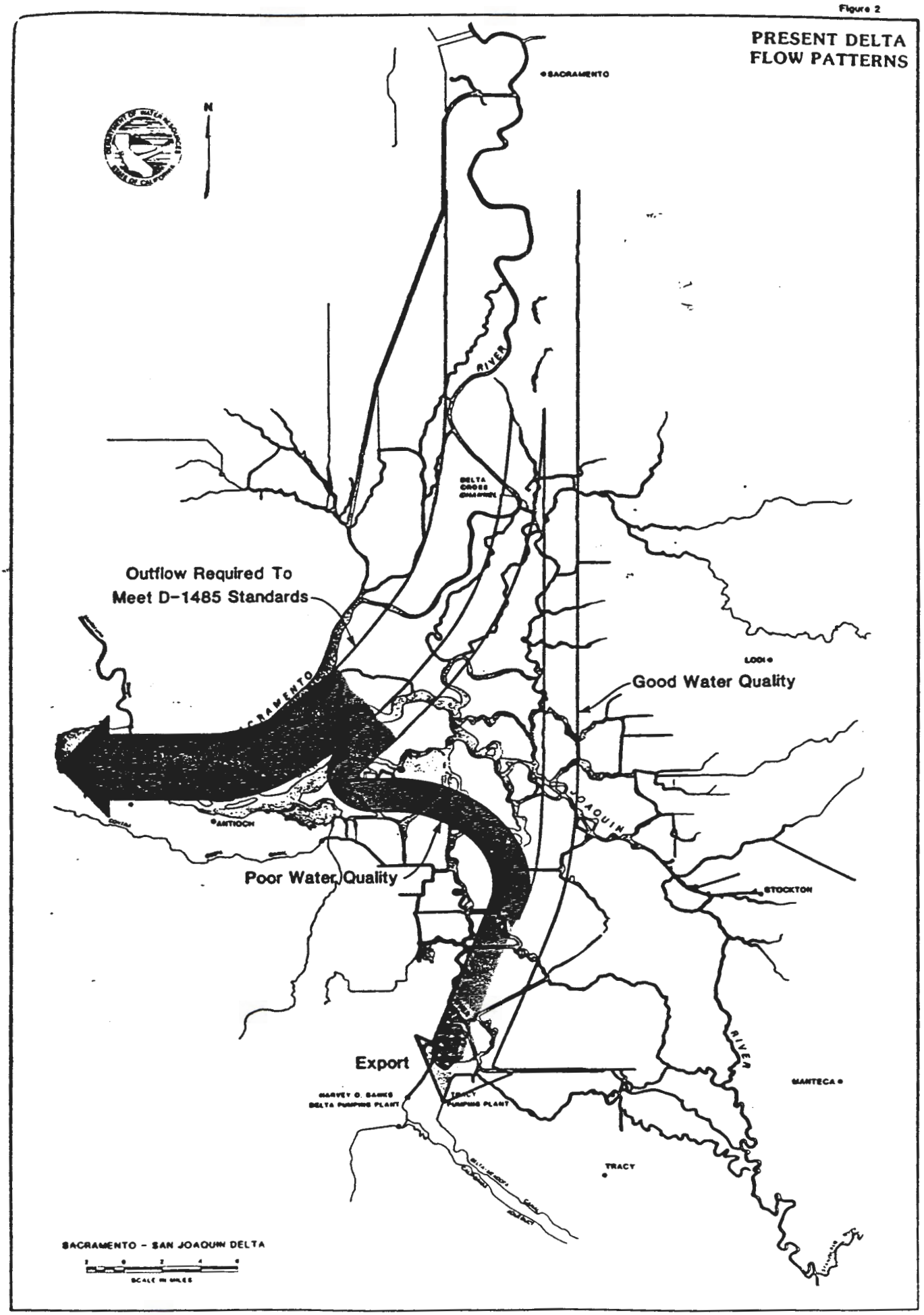
Produced by IRM Branch

ENVIRONMENTAL IMPACTS OF THE PROJECTS

- FISH SPAWNING AND MIGRATION
  - High salinity levels reduce spawning areas.
  - High temperatures are lethal to migrating salmon and cold water fisheries.
  - Pumps and "reverse flows" kill hundreds of millions of eggs and young, and confuse migrating adults.
- HABITAT AND FOOD CHAIN PROTECTION
  - Low flows decrease estuary's food supply and productivity.
- WETLANDS AND ENDANGERED SPECIES
  - Low flows threaten marsh habitat for plants, waterfowl, and endangered species.

Produced by IRM Branch

Figure 2


PRESENT DELTA FLOW PATTERNS
N
SACRAMENTO
RIVER
DELTA CROSS CHANNEL
Outflow Required To Meet D-1485 Standards
Good Water Quality
LODI
ANTIOCH
Poor Water Quality
STOCKTON
JOAQUIN
RIVER
Export
HARVEY O. BANKS DELTA PUMPING PLANT
TRACY
MANTECA
SACRAMENTO - SAN JOAQUIN DELTA
SCALE IN MILES

DECLINE IN MAJOR FISHERIES
(from the 1960's)

● Striped Bass:	80%
● Chinook Salmon:	75%
Winter-run:	97% (endangered)
● Delta Smelt	90% (candidate)

Produced by IRM Branch

LESSONS FROM THE DROUGHT

- Fish and Wildlife
  - Instream uses have not received the same level of protection as other uses.
- Water Quality and Quantity
  - Water quantity and quality decisions are closely related in arid regions, and must be coordinated.
- Conservation and Reclamation
  - The West must develop a conservation ethic to reduce water usage to sustainable levels.
- Market Approaches
  - The State's water bank demonstrates that market-based approaches can be important tools in reallocating supplies.

Produced by IRM Branch

WATER QUALITY STANDARDS PROGRAM UNDER THE CLEAN WATER ACT

- ESTABLISHES WATER QUALITY GOALS FOR THE NATION'S WATERS.
- SERVES AS A REGULATORY BASIS FOR POINT SOURCE AND NONPOINT SOURCE PROGRAMS.
- GIVES STATES PRIMARY AUTHORITY WITH EPA OVERSIGHT.

Produced by IRM Branch

REQUIREMENTS FOR APPROVABLE STANDARDS

- CRITERIA MUST BE SUFFICIENT TO PROTECT THE MOST SENSITIVE USE.
- CRITERIA MUST BE BASED ON SOUND SCIENTIFIC RATIONALE.
- STATE CANNOT "DOWNGRADE" AN "EXISTING USE" (ONE EXISTING AT ANY TIME ON OR AFTER 1975).
- STATE MUST HAVE AN "ANTI-DEGRADATION POLICY" WHICH MAINTAINS AND PROTECTS EXISTING INSTREAM WATER USES AND THE CORRESPONDING LEVEL OF WATER QUALITY.

Produced by IRM Branch

WATER QUALITY STANDARDS PROCESS

STATE ADOPTS STANDARDS

30 DAYS

STATE SUBMITS STANDARDS

90 DAYS

EPA APPROVES/DISAPPROVES STANDARDS

90 DAYS

STATE RESPONDS

"PROMPTLY"

EPA PROMULGATES STANDARDS

Produced by IRM Branch

CONFLICT BETWEEN STATE AND FEDERAL LAW

FEDERAL	STATE
CRITERIA MUST PROTECT MOST SENSITIVE USE	"REASONABLE" PROTECTION FOR ALL USES
SCIENTIFIC BASIS FOR CRITERIA REQUIRED	ECONOMICS CAN BE CONSIDERED ESTABLISHING CRITERIA
"EXISTING USES" MUST BE PROTECTED	"REASONABLE" PROTECTION FOR ALL USES

Produced by IRM Branch

CLEAN WATER ACT SECTION 101(g)

"It is the policy of Congress that the authority of each state to allocate quantities of water within its jurisdiction shall not be superceded, abrogated, or otherwise impaired by this chapter."

GENERAL COUNSEL'S OPINION INTERPRETING SECTION 101(g)

"EPA should therefore impose requirements which affect water usage only where they are clearly necessary to meet the Act's requirements."

Produced by IRM Branch

BAY/DELTA
STANDARDS CHRONOLOGY

1978/80: State adopts Delta Plan salinity and flow criteria. EPA approves on condition that striped bass fishery not decline significantly.

1981/85: During two triennial review periods, fishery drops sharply, but state reaffirms 1978 standards.

1987: EPA unable to approve 1978 standards, but defers to state hearing process.

1988: State releases draft revised Plan for increased flow to the Bay. Plan withdrawn and state begins new process.

1989-91: EPA issues more warnings that protective new standards must be adopted.

1990: Environmental groups issue notice of intent to sue EPA for failure to act.

May 91: State adopts revised Plan with only salinity and temperature criteria. Flow decisions postponed to later proceedings.

Produced by IRM Branch

RECENT STATE/EPA CONTACTS

Feb/Aug 1990	Detailed Comment Letters on Draft Plans
Dec 1990	Reilly meets with State Representatives
Jan/Feb 1991	McGovern meets with new State Leadership
March 1991	Comment Letter on Final Draft Plan
April 1991	McGovern/Strock Prepare Joint Statement on the Drought for Reilly Visit
Aug 1991	McGovern Briefs State on EPA's Decision
Sept 3, 1991	McGovern Signs Letter to State

Produced by IRM Branch

SUMMARY OF DECISION AND STATE RESPONSE

- Summary of Decision
  - Approval of Salinity Criteria for Municipal/Industrial and Agricultural Uses
  - Disapproval of State's Criteria for Failure to Protect Fish and Wildlife Uses
  - Disapproval of Specific Salinity and Temperature Criteria
- State Response
  - State Recognizes Need for New Standards but Opposes EPA Involvement in Decisions Affecting Flows
  - State Unlikely to Respond in 90 days; Flow decisions expected 12/92
- EPA Promulgation
  - Focus on Salinity and Temperature
  - New Staff and Contractor Support

Produced by IRM Branch

CONCURRENT ACTIONS

- Ongoing State Hearings
  - Focus on flows
  - To be completed by 12/92
- Urban/Agricultural/Environmental Negotiations
  - Framework Signed
- SF Estuary Project
  - Joint State/EPA Project
  - "State of the Estuary" and Mixing Zone Conferences
  - Comprehensive Plan due 12/92

Produced by IRM Branch

CONCURRENT ACTIONS (Cont.)

- Proposed Federal Legislation
  - Bradley/Miller Bills
  - EPA and State Testimony
- EPA/USBR Meetings
  - National Workgroups
  - EPA Region 9/USBR Mid-Pacific Meetings
- Endangered Species Act Consultations
  - NMFS: Winter-run Salmon (dredging)
  - USFWS: Delta Smelt?

Produced by IRM Branch

SUMMARY OF
REGION 9 OBJECTIVES

- Persuade State to Adopt Balanced Plan
- Maintain State/Federal Partnership
- Support Reforms in CA Water Management
- Minimize Litigation

Produced by IRM Branch

NATIONAL IMPLICATIONS

EPA

- Precedent on Instream Flows
- Future Direction of Water Quality Standards Program
- Clean Water Act Reauthorization

STATES

- Western Governors' Association Meetings
- EPA/State Workshops

Produced by IRM Branch

SUMMARY OF 1991 BAY/DELTA SALINITY PLAN AND STAFF RECOMMENDATIONS

AUGUST 1991

I. MUNICIPAL AND INDUSTRIAL

1. Present Objectives

The 1978 Plan established a 250 mg/l chloride objective at all Delta municipal and industrial intakes to protect water supplies for cities and industry. In addition, a 150 mg/l chloride was established at Antioch for a certain number of days each year to protect the historical water supply of two paper manufacturers.

2. The 1991 Plan

The Revised Plan made no changes to these objectives.

3. Issues

A. THMs

Delta water often contains bromides from seawater and organic substances from agricultural drains. When Delta water is disinfected, these bromides and organics react with chlorine to form trihalomethanes (THMs) and other disinfectant by-products. Based on health effects studies indicating that THMs are carcinogens, EPA in 1979 set a maximum contaminant level (MCL) of 100 ppb for THMs through its Safe Drinking Water Act regulations.

In response to concerns that EPA may strengthen this standard in the near future, the water contractors have been urging the development of 1) new facilities to draw high quality water further upstream of the Delta, and 2) controls on agricultural discharges near the M&I intakes. They have concluded that future EPA drinking water standards will be difficult to meet unless bromide levels are less than .15 mg/l. Since bromide and chloride levels are correlated in Delta waters, a chloride standard of 50 mg/l at the M&I intakes could be set to maintain bromide levels below .15 mg/l. The Bay/Delta M&I workgroup recommended that the Board adopt this standard, when feasible, but added that such a standard would not be feasible without new facilities, since it would require significant increases in Delta outflow.

Despite their concerns about controlling THM precursors, the contractors, DWR, and the Bureau also urged the Board to drop the 150 mg/l chloride objective at Antioch because of its impact on the availability of water for export from the Delta. They argued that this objective is no longer needed since DWR has negotiated agreements to provide the paper companies with alternative sources of high quality supplies.

The Board decided to retain the current objectives. They concluded that it is premature to modify the 250 mg/l objectives until EPA revises the drinking water standards for disinfection by-products. The Board also concluded that the existing 150 mg/l objective at Antioch should be retained to protect municipal rather than industrial supplies until more is known about the public health hazards of disinfection byproducts.

The Region concurs with this approach. At this point, it is unclear whether the THM standards will in fact be strengthened. Our latest information is that Headquarters is likely to conclude that the benefits of disinfection outweigh the health risks associated with disinfection by-products. This may lead them to retain the current standards.

To address the impact of agricultural drains on THM formation, the Plan directs the Central Valley Regional Board to "require the development and implementation of best management practices to appropriately control these discharges" (p. 7-5). The Plan also requests the Delta M&I workgroup to develop and implement a comprehensive THM monitoring program for the Delta by July 1991, and to recommend actions no later than January 1, 1993.

4. Recommendations

- The objectives for municipal and industrial uses should be approved.

II. AGRICULTURE

1. Present Objectives

A. Western and Interior Delta

The 1978 Delta Plan established agricultural water quality objectives for the western Delta (Emmaton and Jersey Point) at a base level of .45 mmhos/cm EC. This objective was based on studies of salinity levels needed to provide 100 percent corn yields in the region's subirrigated organic soil. On varying dates during the irrigation season, depending on water year type, this objective is adjusted to a lower quality. The adjustment is made for all water year types except wet years at Emmaton and Jersey Point, and above normal years at Jersey Point. The amount of the adjustment is based on the average water quality that would have existed in the absence of the state and federal projects (without project conditions).

The agricultural objectives for the interior Delta (Terminous and San Andreas) have the same base level of .45 EC as in the western Delta. However, under without project conditions, water quality in the interior Delta during the irrigation season was better than in the western Delta. Hence the water year type adjustments for the interior Delta are smaller.

B. Southern Delta

The 1978 Plan objectives for the Southern Delta were based on the salinity requirements of beans (.7 EC in the summer) and alfalfa (1.0 EC in the winter), the two most widely grown salt-sensitive crops. In 1978, the Board concluded that it would not be reasonable to meet these objectives without new facilities. As a result, the Board established an interim objective of 500 TDS at Vernalis on the San Joaquin River to become effective after New Melones Reservoir was built and until suitable circulation facilities were completed to implement the long-term objectives. The proposed circulation facilities have been the subject of long-running litigation between the South Delta Water Agency and the Bureau over the impacts of the projects on water quality conditions in the southern Delta.

Upon completion of New Melones Reservoir in 1981, the Bureau was required to meet the interim 500 TDS objective. This requirement was set forth in Water Right Decision 1422 (the New Melones Decision).

The 500 TDS objective has not always been met, particularly in recent drought years. The South Delta Water Agency and the Bureau have agreed on a number of occasions to release the limited supply from New Melones in a pattern which violates the objective at certain times of the year, in order to hold water in storage for more critical periods.

2. The 1991 Plan

A. Western and Interior Delta

The revised Plan does not change any of these objectives.

B. Southern Delta

The Revised Plan retains the long-term objectives in the 1978 Plan that were never implemented. These objectives will be implemented in stages, with the final stage to be completed in 1996. The Plan also notes that any negotiated agreement affecting southern Delta water quality will be fully reviewed by the State Board prior to implementation of the final stage, and at that time, the objectives and locations may be revised as appropriate.

C. Export Agriculture

The Revised Plan also includes a new 1.0 mmhos/cm EC objective at the state and federal pumping plants to protect salt-sensitive crops grown in the San Joaquin Valley and Southern California. This objective was based on salinity levels needed to protect almond orchards, the most sensitive crop which constitutes at least 5 percent of the CVP and SWP service areas.

3. Issues

A. South Delta Relaxations

The long-term objectives for the Southern Delta, although unchanged from the original 1978 Plan, are less stringent in the winter months than the interim objectives set forth in the 1978 Plan and the New Melones Decision. From September to March, the current 500 TDS (.85 EC) objective would be replaced by a 1.0 EC objective. The South Delta Water Agency testified that this was inconsistent with the San Joaquin River Protection Act, which prohibits the Board from taking actions that would lead to further degradation of this reach of the San Joaquin River.

In its responses to comments, the Board acknowledged that "this standard will provide better quality in the irrigation season and poorer quality in other parts of the year." (Responses to comments, p. II-7) They also pointed out, however, that the long-term objectives are fully protective of agricultural uses, and are now required to be implemented regardless of whether there are new circulation facilities.

4. Recommendations

- All of the agricultural objectives should be approved.

III. CHINOOK SALMON - DISSOLVED OXYGEN

1. Present Criteria

No objectives for dissolved oxygen were developed in the 1978 Delta Plan. The Central Valley Basin Plan, however, includes two DO objectives for Delta waters:

- 7.0 mg/l in the Sacramento River (below the I St Bridge) and in all Delta waters west of the Antioch Bridge.

- 5.0 mg/l in all other Delta waters except for those bodies of water which are constructed for special purposes and for which fish have been excluded or where the fishery is not important as a beneficial use.

2. The 1991 Plan

The Revised Plan includes a new 6.0 mg/l objective for dissolved oxygen from September 1 through November 30 in all water year types between Stockton and Turner Cut on the San Joaquin River. This objective was developed out of concern that DO levels have partially blocked migrations of adult chinook salmon in the San Joaquin River above Stockton during the fall. The factors that may contribute to the DO problem in this area include: 1) low flows in the San Joaquin River; 2) the recently deepened ship channel; 3) the enlarged turning basin at the at the Port of Stockton; 4) the Stockton Sewage Treatment Plant; 5) upstream BOD sources; and 6) commercial use of the dead-end portion of the ship channel.

3. Issues

A. Consistency Among DO Objectives

In our comments on the Draft Plans, we noted that the Board failed to explain why different areas of the Delta should be subject to different DO objectives, and why the objectives should only apply for three months. Since salmon migrate through the Delta all year, the same criteria should apply throughout the year to all Delta waters in which fish migration is a designated use. The Board responded that DO levels have not been identified as a problem in all Delta waters, but agreed to modify the objectives in during future triennial reviews if low DO levels are found at other times or in other fishery habitat areas of the Delta.

4. Recommendations

- The new dissolved oxygen objective should be approved, with the understanding that the Board will evaluate the need for a more consistent set of objectives in the next triennial review.

IV. CHINOOK SALMON - TEMPERATURE

1. Present Objectives

The 1978 Delta Plan did not contain any temperature objectives to protect migrating chinook salmon. The Central Valley Basin Plan, however, includes the following narrative temperature objective for Delta waters:

> "The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses." (Region 5 Basin Plan, p. III-8, March 1991)

2. The 1991 Plan

The Revised Plan includes the following new temperature objectives to protect the upstream migration of adult salmon and downstream emigration of smolts through Delta waters:

Fall-run salmon: "The daily average water temperature shall not be elevated by controllable factors above 68 F from the I Street Bridge to Freeport on the Sacramento River, and at Vernalis on the San Joaquin River between April 1 through June 30 and September 1 through November 30 in all water year types."

Winter-run salmon: "The daily average water temperature shall not be elevated by controllable factors above 66 F from the I Street Bridge to Freeport on the Sacramento River between January 1 through March 31."

3. Issues

A. Scientific Basis of Criteria

i. Fall-run objectives

The Revised Plan does not provide an adequate scientific rationale for adoption of a 68 degree temperature objective for fall-run salmon. The Board's rationale for this objective can be found in the following statement in the comment response document:

> There is no precise method for determining what temperatures in the Delta provide adequate protection for Chinook salmon. A range of 66 to 68 F was identified as the boundary between providing appropriate protection and unacceptable conditions. In the Delta during the spring and early summer months, it would be **unreasonable** to set temperature objectives within a conservative range of temperatures, say 55 to 60 F. Be-

> cause the winter run is a federal and state listed species, the lower end of the range was determined to be appropriate for this run as its survival is more tenuous." (Responses to Comments, p. II-32,33)

The Plan's summary of the scientific evidence, however, acknowledges that temperatures above 65 F are undesirable:

> Juvenile emigrants (smolts) can tolerate water temperatures somewhat higher than 60 F but above about 65 F a variety of stress effects occur. Water temperatures above 18 C (64.4 F) are usually considered undesirable for Chinook juveniles. At temperatures of about 68 F or more, smolts are highly stressed.... (Technical Appendix, p. 5.3-1)

In addition, according the Plan's summary of the hearing testimony, DFG, USFWS, and others testified that Delta temperatures in the fall above 65 F have blocked adult salmon migrations. The Plan also notes that water temperatures are a major problem for smolts emigrating through the Delta, and that smolts suffer "high chronic stress" at 68 F. (p. 5-20, 5-23).

The Department of Fish and Game recommended a 65 F objective for the San Joaquin River. This recommendation is consistent with several other fisheries management plans issued by DFG, including the 1990 Central Valley Salmon and Steelhead Restoration and Enhancement Plan, the Lower Yuba River Fisheries Management Plan (February 1991), and the Lower Sacramento River Temperature section of the Resources Agency's Upper Sacramento River Fisheries and Riparian Habitat Management Plan (January 1989). Each of these plans recommended temperatures no higher than 65 degrees.

DFG supported the Board's 68 F objective for the Sacramento River. However, they later added several qualifiers to their support of the 68 F objective, and conceded that it would be "higher than optimum."

The Fish and Wildlife Service recommended an objective of 66 F for both locations, and the environmental groups recommended 63 F.

In short, there is insufficient supporting evidence in the state's submittal for EPA to approve a temperature objective of 68 degrees. According to the state's own summary of the testimony, this objective would not be sufficient to protect fall-run salmon and other cold-water fisheries.

i. Winter-run objective

There is also virtually no scientific evidence submitted to support of the state's 66 degree objective for winter run salmon. The Plan notes that "temperature tolerances of winter-run chinook salmon are unknown, although the Department of Fish and Game believes they are similar to other runs." (p. 5-22), and that "there was no testimony presented on the temperature requirements specifically for the winter-run." (p. 5-23) As noted above, the state's decision was apparently based on the conclusion that 66 degrees is at the lower end of the range of acceptable temperatures. However, there was little scientific evidence submitted in support of this conclusion.

The State also did not submit any evidence indicating that teperatures are adversely affecting winter-run salmon. DFG, USFWS and many others opposed adoption of the 66 F objective for winter-run salmon because there is no evidence that a temperature problem exists during this period. Temperatures are always well below 66 F in the Sacramento River from January to March.

In response to these concerns, the Board's comment response document noted that this objective "is a cap to prevent water temperatures from going higher than the present temperatures in the Delta. It is not a goal." But since temperatures are always well below 66 F from January to March, it cannot serve this purpose. In addition, the existing narrative objective already serves this purpose. According to Board staff, the objective was included to demonstrate that they are not ignoring an endangered species.

This objective would also establish an inappropriate baseline for determining desirable temperature conditions. Typically, sponsors of water projects are required to show that their projects will not have adverse impacts on aquatic uses by demonstrating compliance with applicable water quality standards. With the Board's new winter-run objective in place, a proposed project could significantly warm temperatures in the Delta to the detriment of aquatic life without violating the objective.

B. "Controllable Factors"

The new temperature objectives are subject to <u>controllable factors</u>. This language is based on a similar provision in the Central Valley Basin Plan. The Basin Plan defines controllable factors as:

> "...those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State, that are subject to

the authority of the State Board or the Regional Board, and that may be reasonably controlled." (Basin Plan, p. III-2, III-8; 1991 Plan, Tables 1-1, 6-3, p. 5-16)

In the Draft Plans, the Board claimed this language was necessary to emphasize that temperatures in the Delta were not controllable because of the large distances from upstream reservoirs, and because ambient air temperatures may be a significant uncontrollable factor in determining water temperature in the Delta.

In response to comments from DFG and others, however, the Board acknowledged that temperatures in the Delta may be controllable through reservoir releases, but added that doing so would be <u>unreasonable</u>:

> "Based on the record in these proceedings, controlling temperature in the Delta utilizing reservoir releases does not appear to be reasonable, due to the distance of the Delta downstream of reservoirs and uncontrollable factors such as ambient air temperature, water temperatures in the reservoir releases, etc. For these reasons, the State Board considers reservoir releases to control water temperatures in the Delta a waste of water; therefore, the State Board will require a test of reasonableness before consideration of reservoir releases for such a purpose." (1991 Plan, p. 5-16)

The Board's rationale for this conclusion is unclear. According to the Plan, "the ability and options available to attain a desired temperature objective at Freeport on the Sacramento River or Vernalis on the San Joaquin River during the various water year types have not been fully investigated." (p. 5-19)

In our comments on the Draft Plans, we suggested that this concern is more appropriately addressed in the implementation plan, and should not be made an explicit part of the objective. We recognize that some flexibility may be necessary in implementing the objective. For example, water supplies may not be sufficient to meet the objectives in the spring without depleting reservoirs and jeopardizing supplies to control temperatures in the fall. However, since implementation measures for these and other objectives will not be considered until the scoping phase of the proceedings, it is premature for the Board to conclude that any specific measure is unreasonable or uncontrollable.

C. Narrative Criteria

In response to comments on the Final Draft Plan, the Board changed the temperature objectives to "narrative" objectives. The reason for this change is unclear, since numeri-

cal limits (66 and 68 F) remain part of the objectives. In its responses to comments, the Board provided the following rationale:

> "A temperature value in a narrative objective provides slightly more guidance than would be available without that data. The intent of this value is to indicate a boundary by which to evaluate the relative health or quality of the Delta for fisheries habitat." (p. II-6)

According to Board staff, this statement is intended to reinforce the Board's position that the temperature objectives may be unreasonable. As noted above, however, this "guidance" would set an inappropriate baseline (66 and 68 F) for evaluating the quality of the habitat, and contradicts the Board's statement that the winter-run temperature objective is a cap, not a goal.

D. The Basin Plan Objective Upstream

The Central Valley Basin Plan includes a temperature objective of 68 F in the Sacramento River upstream of the Delta. Temperatures in the Sacramento River are always lower upstream; thus the upstream objectives should be equal to or lower than the Delta objectives. Since we have not acted on the latest submittal of the Basin Plan (1990), we have an opportunity to address both sets of objectives at the same time.

4. Recommendations

These objectives should be disapproved.

A. Fall-run objectives

- There is insufficient evidence in the state's submittal for EPA to conclude that they are based on sound scientific rationale.
- Temperature is among the most important factors influencing salmon survival.
- It is unclear if temperature conditions will be addressed by the state because of the "controllable" and "narrative" language in the objective.

B. Winter-run objective

- The state did not submit any evidence that supports this objective.
- The objective will not improve temperature conditions, and may lead to increases in temperatures if interpreted as a measure of acceptable conditions.
- It would undercut the existing narrative criteria that should prevent increases in temperatures.

- It would establish an inappropriate measure of desirable temperature conditions for other planning efforts.

6. Changes Needed

A. Fall-run objectives

As the Plan indicates, it is difficult to pinpoint a precise temperature level to protect salmon above the optimal range of 56-60 F. Most studies indicate that salmon survival decreases as temperature levels increase above this range. Both DFG and USFWS have testified, however, that a variety of stress effects occur above 65 F, and that salmon migrations are blocked at this level. Therefore, an objective of 65 F should be the maximum level that would be acceptable for the protection of fall-run salmon.

B. Winter-run objective

This objective should be removed and/or replaced with an objective based on better supported evidence of the temperatures required to protect cold water habitat conditions for winter-run salmon and other species.

C. Upstream Basin Plan Criteria

If we disapprove the above criteria, we should also urge the State and Regional Board to revise the temperature objectives on the Sacramento River upstream of the Delta. This could be accomplished through a disapproval of the 1990 submittal of the Central Valley Basin Plan, or through comments on the next triennial review of the Basin Plan.

V. STRIPED BASS

1. Present Objectives

The 1978 Plan included salinity objectives to protect spawning conditions for adult striped bass in a zone of about 17 miles in the lower San Joaquin River. The downstream objective is 1.5 mmhos/cm EC[1]; upstream, the objective is .55 mmhos/cm EC at Prisoners Point. The standards apply from April 1 to May 5 in all water years. Salinity conditions in the remainder of the spawning season (through May) are maintained by the current flow standards.

The Antioch objective includes a relaxation provision when the state and federal projects must make cutbacks in deliveries. Under this provision, EC levels can rise as high as 25.2 EC, although that would be unlikely because of the umbrella protection provided by other objectives.

2. The 1991 Plan

A. Antioch objective

The Revised Plan retains the current objective at Antioch, but extends the period of protection to May 31, in lieu of the flow objectives that are no longer included in the Plan. As noted above, the 1978 Plan flow objectives provided spawning protection from May 5 until the end of the spawning season.

B. Antioch Relaxation Provision

The Revised Plan also modifies the relaxation provision of the Antioch objective. In the 1978 Plan, the Antioch objective was relaxed in drought years proportional to the amount of deficiencies taken in the firm supplies of the state and federal water projects. Under extreme conditions, when the projects imposed deficiencies of more than 4 million acre/feet, this provision in theory allowed EC levels to rise as high as 25.2 mmhos/cm, which would substantially reduce the spawning habitat. However, it was believed that the agricultural and Suisun Marsh objectives would in fact control salinity in the lower San Joaquin River throughout the month of May. Therefore, the actual EC at Antioch,

---

1. The first two weeks of spawning are protected by a Delta outflow objective of 6,700 cfs to provide some operational flexibility for the state and federal projects. It is not referred to as a "flow objective," however, because its purpose is to maintain salinity levels at Antioch.

regardless of the size of the deficiency, was not expected to exceed 3.7 mmhos/cm in critical years, and 1.8 mmhos/cm in dry years.

In 1990, however, the Board found that when the relaxation provision was invoked, EC levels exceeded 3.7 mmhos/cm at Antioch. In the revised Plan, therefore, the Board simply replaced the 25.2 EC limit with a cap of 3.7 EC. They also decided to reexamine the issue of deficiencies in a subsequent triennial review (see below).

C. Prisoners Point Objective

The Revised Plan lowers the Prisoners Point objective from .55 to .44 mmhos/cm EC in all but critical years. This was based on testimony by the Dept of Fish and Game that .44 EC represents the "best scientific evidence" to maintain spawning conditions in this reach of the San Joaquin River. The Plan notes, however, that due to umbrella protections from other objectives, water quality currently is almost always better than .44 EC at this location. (The agricultural objective is .45 mmhos/cm at nearby Prisoners Point).

In critical years, the .55 objective was retained as a relaxation provision. The period of protection was extended to May 31 to be consistent with the revised Antioch objective.

D. Summary

In summary, the revised striped bass spawning objectives provide only slightly improved conditions for spawning, but enable the Board to avoid relying on the umbrella protection provided by other objectives.

3. Issues

A. Antioch Objective

In comments on the Draft Plans, EPA asked the Board to fully explain the scientific basis for the 1.5 EC objective, which has been in place since 1967. Several parties questioned this objective in light of the Dept of Fish and Game's testimony that striped bass spawn primarily at an EC of less than .3 mmhos/cm, and seldom migrate up the San Joaquin River to spawn when the EC exceeds .44 mmhos/cm.

In its Responses to Comments, the Board explained that the 1.5 EC objective was designed to provide suitable spawning habitat <u>upstream</u> of Antioch, not at the Antioch location itself. They conceded that "the use of 1.5 EC at Antioch appears not be generally appropriate," based on the testimony by DFG and evidence that all known striped bass populations

prefer to spawn above the limits of seawater intrusion. As a result, the Plan now proposes "that a thorough review of this objective be undertaken at the next Triennial Review." (p. 5-32)

In the meantime, the Plan states that the Antioch objective should be "considered an 'implementing measure' since maintaining that objective should produce less saline, and thus more suitable habitat, upstream of Antioch." (p. 5-30) Their analysis of historical data indicates that the 1.5 EC objective maintains EC levels of approximately .44 mmhos/cm at Jersey Point, several miles upstream.

Finally, in the Response to Comments, the Board states that it "agree(s) that the spawning objectives do not in fact designate a spawning reach, but only a single location (Prisoners Point) where appropriate salinities...are required to be present." (p. 5-30) As a result, the Program of Implementation directs DFG to undertake a study of how a specific habitat zone of .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." (p. 7-22)

B. Antioch Relaxation Provision

In the Final Plan, the Board also conceded that the relaxation provision is not based on sound scientific data:

> "The 1978 Delta Plan based the relaxations on a salinity/flow relationship for the Sacramento River, which was assumed to be applicable to the San Joaquin River as well. In addition, the theoretical extent of salinity degradation was supposedly limited to a maximum of 3.7 mmhos/cm EC because of the Chipps Island Suisun Marsh objective. The entire process is built on series of artificial relationships which are unrelated to the main issue at hand, which is the establishment and maintenance of suitable spawning habitat for striped bass in the San Joaquin River and the relaxation of that habitat requirement when water project firm deliveries are reduced. (5-32)

The Plan adds 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." (p. 5-33).

In the Responses to Comments, the Board outlined a new approach that would shorten the length of the river reach protected in direct proportion to increases in project deficiencies. The Program of Implementation directs DFG, DWR, and others to evaluate the effects of this proposal in the next triennial review. (p. 7-20).

C. Extension of Spawning Habitat

The major issue involving the current striped bass spawning objectives is whether the spawning area should be expanded beyond its present size. The present objectives have established a spawning area in the channels which move water to the export pumps in the south Delta, and for part of the spawning period (April) there are no restrictions on export rates. This results in substantial losses of eggs and young. In its comments on the proposed objectives in the 1978 Plan, DFG noted that the designated spawning area provided "minimal suitable conditions."

In the 1987 hearings, DFG testified that striped bass used to spawn farther up the San Joaquin River than at present, but do not do so now because of increased salinity levels. Salinity in the San Joaquin River increases upstream of Prisoners Point due to reduced freshwater inflow and saline agricultural return flows. Thus the absence of salinity objectives above Prisoners Point effectively establishes a barrier to adult migration and spawing farther upstream on the San Joaquin River.

In wetter years, when salinity levels remain low, large striped bass are still seen in the San Joaquin River tributaries. In 1968, for example, spawning occurred more than a hundred miles above the mouth of the river. Thus the upper Delta and tributary rivers would support striped bass spawning if appropriate water quality conditions are provided.

The major argument that has been raised to support retention of the present objective (which limits spawning to the reach west of Prisoners Point) is that expansion of the spawing area upstream may expose more eggs and young to entrainment at the state and federal pumping plants. Because of the "reverse flows" caused by the pumps, most of the flow (and eggs and young fish of all species) in the upper San Joaquin River is drawn to the pumps. In the Response to Comments, the Board stated that it "remains unconvinced that extension of the spawning habitat upstream would produce any significant beneficial effects, given the present configuration and water project operations in the Delta. The Board remains open to further consideration of this issue in subsequent phases and in the Triennial Review." (Responses to Comments, p. II-47)

DFG and USFWS both supported expansion of the spawning area upstream, but also agreed that doing do without correcting the adverse impacts caused by the pumps may not significantly improve conditions and at worst may be detrimental. As a result, they both recommended that the Board adopt a new objective of .44 mmhos/cm at various locations from Prisoners Point to Vernalis, but delay implementation of the objectives until they can be coordinated with other measures to reduce entrainment losses. They also noted that their forthcoming recommendations on San Joaquin River flows to protect salmon migrations are likely to be more than adequate to meet a .44 mmhos/cm EC objective at Vernalis.

4. Recommedations

The salinity objectives for striped bass spawning should be disapproved.

- The state acknowledges that the 1.5 EC objective at Antioch is not appropriate, and that the Prisoners Point objective does not designate a spawning reach for protection.
- There is no scientific basis for the Antioch relaxation provision.
- An extension to Vernalis would significantly increase the spawning habitat for bass.

6. Changes Needed

A. Antioch and Prisoners Point Objectives

According to the Department of Fish and Game, an objective of .44 mmhos/cm represents the "best scientific evidence" of salinity levels needed to support striped bass spawning. However, this position is inconsistent with the DFG's own testimony that striped bass prefer to spawn in waters with an EC of less than .3 mmhos/cm EC. Therefore, in addition to recommending that the Board extend the .44 EC objective to Vernalis, we should fully evaluate the need for a more protective objective as part of the promulgation process, should that be necessary.

VI. SUISUN MARSH

1. Present Objectives

Suisun Marsh is the largest contiguous brackish water marsh in the United States. According to the 1978 Plan, it represents about 15 percent of the remaining natural wetlands in the state, and at times has provided habitat for about 30 percent of California's waterfowl population.

The Marsh contains about 52,000 acres of managed diked wetlands and 10,000 acres of unmanaged tidal wetlands. About 44,000 acres of the managed wetlands are operated as duck clubs.

The 1978 Plan included both interim and permanent objectives for Suisun Marsh. The purpose of the objectives was to ensure that water and soil salinities in the managed wetlands of Suisun Marsh remained fresh enough to support the growth of brackish vegetation (especially alkali bulrush) which are important food for waterfowl. The permanent objectives were established at eight locations within Suisun Marsh from October to May in all water years.

There are two methods available to meet these objectives: maintain sufficient outflow from the Delta, or modify the circulation patterns within the Marsh channels with salinity control gates. In 1978, the Board concluded that immediate compliance with the permanent standards solely by fresh water outflow would be an unreasonable use of water. As a result, they established interim standards to be effect until 1984, when full protection of the Marsh would be required.

To implement the permanent standards, the Plan directed DWR and the Bureau, in cooperation with the Department of Fish and Game and the Suisun Resource Conservation District, to develop a Plan of Protection for Suisun Marsh. This Plan, together with EIR/EIS documentation, was to provide for a monitoring network, construction of physical facilities, and other measures to maintain the Marsh as a brackish wetland.

In 1984, however, DWR concluded that the proposed salinity control gates in its Plan of Protection would not be able to meet the 1978 Plan permanent salinity standards at the mouth of Montezuma and Suisun Sloughs. DWR then recommended changes to D-1485, the water right decision that implements the Plan, that would abandon the station at this location and relax the standards in dry periods.

At the second triennial review of the 1978 Plan standards in 1984, the State Board staff recommended that the original standards be maintained until the forthcoming Bay/Dleta hearings, and no action was taken. In 1985, however, the

Board made two significant changes to D-1485: 1) They eliminated the station at the mouth of Montezuma slough, and 2) they further delayed implementation of the permanent standards to a phased schedule from 1988 to 1997. These changes in water right permits were made administratively without the benefit of a public hearing, environmental review, or noticed change of water quality standards. As a result, the original 1978 Delta Plan standards were never amended to reflect these changes.

Finally, in March 1987, the four agencies concerned with managing Suisun Marsh (DWR, DFG, the Bureau, and the Suisun Resource Conservation District) signed an Agreement concerning construction and management of the new facilities. The Suisun Marsh Preservation Agreeement (SMPA) proposed a further weakening of the 1978 Plan objectives, particularly in dry periods.

According to DWR's testimony at the hearings, the Agreement binds the parties to petition the Board to find that the SMPA objectives are appropriate to protect the Marsh and should replace the 1978 Delta Plan objectives (1991 Plan, Technical Appendix, p. 5.6-2). This petition has been submitted to the Board.

2. The 1991 Revised Plan

In the 1991 Plan, the Board concluded that "the managed portions of Suisun Marsh are currently being protected by D-1485 as amended in 1985." (p. 5-45) However, instead of adopting these changes as the revised objectives, the Board retained the original 1978 Plan objectives, and included the amended objectives as "Implementation Requirements."[2] Thus the water quality objectives for Suisun Marsh are unchanged in the Plan, but the Program of Implementation includes a different set of objectives.

The Board also concluded that the SMPA objectives "differ from the 1978 Plan in several ways." (Technical Appendix, p. 5.6-3). According to the Plan, the SMPA objectives remove 2 locations, relocate some others, reschedule construction of facilities, and add relaxations in dry periods. The Plan's Appendix concludes that "these factors taken together could increase the salinity in the western and fringe areas of the legally defined Suisun Marsh compared to the 1978 Delta Plan" (Technical Appendix, p. 5.6-3)

---

2. For some unexplained reason, the table of adopted objectives (Table 1-1) does not list the original 1978 Plan objectives. Instead, it contains a narrative statement of the Board's intent to implement the amended D-1485 objectives until the SMPA objectives are evaluated and adopted.

Nevertheless, the Board agreed to adopt them pending a biological assessment under the state and federal Endangered Species Acts. (Since DWR completed the Plan of Protection for the Marsh in 1984, several additional species have been listed in the Marsh area.) Table 1-1 states that:

> Revised water quality objectives incorporating the SMPA (with any modifications necessitated by the biological assessment) **will** be adopted by the State Board after the biological assessment is completed. Until that time, the water quality standards in the amended D-1485 will continue to be implemented" (Table 1-1, 1-2).

Finally, the Program of Implementation (p. 7-16) notes that:

> DWR has volunteered to conduct the biological assessment to evaluate the impacts of adopting the SMPA standards as water quality objectives. The State Board will need an acceptable biological assessment on or before **April 1, 1996**, allowing review of the results of the assessment as part of its regular triennial review.

3. Issues

A. Scientific Basis of Amended Objectives

The Bay Conservation and Development Commission (BCDC), the environmental groups, and others have testified that the Board's implementation schedule (the amended D-1485 objectives) adversely affect 4,000 acres of highly productive managed wetlands and 1,000 acres of tidal wetlands. They also expressed concern that the delay in implementation of the objectives for up to 10 years would allow for continual deterioration of wetlands in the affected areas. The same groups testified that the SMPA objectives would further weaken protection of both the managed and tidal wetlands of the Marsh. As noted above, these changes were made in 1985 without the benefit of public review or environmental review.

B. Scope of Protection - Tidal Wetlands and Aquatic Life

EPA included the following provision in its conditional approval of the 1978 Plan:

> The State shall ensure that necessary studies are performed to provide a basis for additional standards which will supplement the protection derived from Suisun Marsh standards and provide more direct protection for aquatic life in marsh channels and open waters.

EPA included this condition out of concern that the 1978 Delta Plan objectives did not address the unmanaged tidal wetlands or aquatic life in the Marsh. As noted above, the

1978 Plan objectives were limited to protection of waterfowl in the managed wetlands. These studies have never been undertaken, and are not included in the Plan's description of the forthcoming biological assessment.

In our comments on the Final Draft Plan, we noted that the biological assessment should not be limited to evaluating the impacts of adopting the SMPA objectives on endangered species. It should also include 1) the water quality needs of the unmanaged tidal wetlands; 2) other alternatives in addition to the SMPA objectives; and 3) the full range of species that depend on Marsh resources.

4. Recommendations

A. Scope of Protection - Tidal Wetlands and Aquatic Life

We should disapprove the state's salinity standards for Suisun Marsh for failure to protect the designated uses of the Marsh. The State has not fulfilled the commitment it made in 1980 to develop and adopt revised standards sufficient to protect the tidal wetlands and aquatic life of the Marsh.

B. Implementation of Standards for Managed Wetlands

We should express our concern that the state has no intention of implementing the current objectives, and note that the state's implementation plan is inconsistent with the continuing planning process and antidegradation regulations. This would allow us to get our concerns on the record. We should also note that there is no evidence in the state's submittal that supports its conclusion that the SMPA objectives should be adopted. EPA cannot approve these objectives unless the state demonstrates that they are fully protective of marsh resources.

VII. 1978 DELTA PLAN FLOW OBJECTIVES NOT REVISED IN THE 1991 PLAN

1. Striped Bass Survival Standards

The striped bass survival standards were based on statistical relationships between striped bass abundance, Delta outflow, and exports from the estuary to the water projects. From historical data, the Department of Fish and Game found that there was a direct correlation between freshwaer flows in the spring and the Striped bass Index (SBI), a measure of abundance levels of young striped bass in the estuary. The level of flows is important to move young bass into suitable nursery areas (Suisun Bay), and to keep them out of the central Delta, where they become disoriented and vulnerable to agricultural and water project diversions.

The Plan set standards based on a predicted SBI, an estimate of what the Striped Bass Index ought to be, given certain flow and export conditions. Based on these relationships, the Plan established flow stndards in May, June, and July. The standards vary by hydrologic year type, and range from 2,900 to 14,000 cfs at Chipps Island. The Board expected that the flow standards would achieve an actual SBI that would vary annually depending on water year typed, but would average 79, the state's estimatge of striped bass levels that would have occurred in the absence of the projects ("without project" levels). It was the Board's position that these levels represented the water projects' minimum obligation to protect the fishery.

The State Board and EPA agreed that the Striped Bass Index would be used as the basis for determining whether the designated aquatic life uses were protected. In effect, the Index served as an early form of biological criteria. As a result, EPA conditioned its approval of the Delta Plan upon the State's commitment to immediately revise the Delta Plan standards if there was a "measurable decrease" in the actual SBI below that predicted.

In the 1987 triennial review, EPA concluded that it could no longer approve these objectives. With the exception of 1986, the actual SBI was significantly below the predicted levels in every year, and dropped to all-time lows of 4.6, 5.3, and 4.3 in 1988 1989, and 1990.

The Board's 1988 Draft Plan recommended a revised set of salinity and flow objectives that would have increased Delta outflow by 1.5 million acre/feet in the critical spring months. However, this Plan was withdrawn and the issue of flows was postponed for several years.

2. Salmon Migration Standards

The 1978 Delta Plan also contains flow objectives to protect Chinook salmon migration in the Sacramento River throughout the year. These stadnards range from 1,000 to 5,000 cfs at Rio Vista. They were based largely on information relating rvier flows to abundance of returning adult salmon. In practice, however, other standards in the Plan provide higher flows during the most critical periods for salmon.

In the 1987 triennial review, EPA approved the salmon migration standards, but noted that sufficient evidence existed to revise them in the upcoming hearings. The Board's 1988 Draft Plan concluded that these standards should be increased substantially, and that new flow standards should be set for salmon on the San Joaquin River as well.

3. Operational Constraints

In addition to the salinity and flow objectives, the 1978 Plan established restrictions on the operation of the state and federal project facilities to minimize their impact on the Delta fisheries.

Export Limits

The most important operational requirement is a curtailment of exports south of the Delta to protect striped bass. The 1978 Plan limits total Delta exprots to the Central Valley Project (CVP) and State Water Project (SWP) to 6,000 cfs in May and June, and to 4,600 cfs in July.

These objectives were designed to limit diversions from the Delta during the critical spring months, and to reduce the impacts of the pumps on the fisheries. As the quantity of water exported increases relative to inflows from the Sacramento and San Joaquin Rivers, water is drawn around the western end of the Delta and back up the San Joaquin River to the export pumps. These "reverse flows" kill hundreds of thousands of fish eggs and young as they are drawn to the pumps, and disrupt migration patterns throughout the estuary.

Delta Cross Channel

The Delta Cross Channel was built in 1951 to provide a means for conveying water from the upper Sacramento River into the central Delta and towards the export pumps. When the gates are opened in the spring, large numbers of striped bass and salmon are drawn away from their migration routes in teh main river channnels. These standards require the projects to close the gates when Delta outflows exceed 12,000 cfs between January 1 and April 15.

EPA has never commented specifically on the operational constraints in the 1978 Delta Plan. (In 1980, EPA approved the Plan as a whole.) It should be emphasized, however, that the export limits were to work in combination with the striped bass survival standards to attain "without project" levels. As noted above, the Striped Bass Index was based on a statistical relationship between Delta outflow, exports, and abundance levels of young bass. Hence EPA's 1980 approval conditions applied to the "Delta Plan standards," not just to the striped bass survival standards.

In the 1978 Plan, the Board noted that operating criteria are not a usual element of a water quality control plan, but were included "in view of the dual nature (water quality and water rights) of the proceedings." (p. 6-13) The Plan did not include a similar statement with respect to the flow objectives, which were clearly identified as water quality objectives to be implemented through changes in the water right permits of the state and federal projects. As the Board noted in D-1485,

> "maintenance of water quality standards set forth in this decision, including flows to be maintained for the protection of fish and wildlife, will be imposed as a condition to all of the CVP and SWP permits shown in Table 1." (p. 6)

4. Recommendations

The State's revised standards are clearly insufficient to meet the outstanding conditions of EPA's approval of the 1978 Delta Plan, and will not protect estuarine habitat and other designated uses of the estuary. Therefore, EPA should disapprove the state's standards for the estuary for failure to protect the designated uses, and the State should be directed to immediately develop and submit a revised set of salinity, flow, and/or biological criteria sufficient to protect these uses.

VIII. OTHER STANDARDS NEEDED

1. Salilnty Standards for Suisun Bay - Entrapment Zone

The 1991 Plan concluded that a salinity objective is needed to protect the entrapment zone, the mixing zone between salt and freshwater in which suspended sediments, nutrients, plankton, and young fish are highly concentrated. Depending on the season, the hydologic year, and the tidal stage, the entrapment zone can occur anywhere from San Pablo Bay to upstream of the mouth of the Sacramento River. When freshwater outflow is high, it is located in the larger and more shallow area of Suisun Bay; when flows are low, it moves upstream and is much less productive.

The 1991 Plan notes that the entrapment zone plays an important role in determining the abundance of phytoplankton, zooplankton, and the fisheries that depend on them for their food supply, including striped bass, American shad, and Delta smelt. The "staff analysis" in the January 1990 Draft Plan stated that a salinity objective of "2.0 mmhos/cm EC (measured in some fashion) appears to be an acceptable indicator of where physical conditions providing best habitat protection occur." (p. 5-48)

These conclusions are also supported by several other publications, including the following:

- The Department of Fish and Game's Report to the Fish and Game Commission: A Status Review of the Delta Smelt in California (August 1990).

- Ball and Arthur, "Factors Influencing the Entrapment of Suspended Materials in the San Francisco Bay-Delta Estuary," in Conomos, T.J;, San Francisco Bay: The Urbanized Estuary (1979).

- Moyle, Herbold, Stevens, and Miller, Life History and Status of Delta Smelt in the Sacramento-San Joaquin Estuary, California (1990)

- Kimmerer, Wim, Draft Report, An Evaluation of Existing Data in the Entrapment Zone of the San Francisco Bay Estuary, prepared for the State Water Contractors, May 24, 1991.

- Kimmerer, et al., A Discussion of Issues Relevant to the Entrapment Zone in the San Francisco Bay Estuary (August 12, 1991).

- Herbold, Jassby, and Moyle, Status and Trends Report of Aquatic Resources of the San Francisco Estuary (Third Draft, July 1991).

Despite its own findings on the importance of the entrapment zone, however, the Board decided not to include an entrapment zone objective in the Salinity Plan since it would be implemented primarily by freshwater outflows. Given the complex interrelationships between flows and other parameters (salinity, turbidity, nutrients) that characterize the entrapment zone, the Board's decision was rather arbitrary.

In addition, the reports cited above and others indicate that Delta Smelt and other aquatic species prefer water quality with salinities less than 2 ppt for survival and reproduction, regardless of the level of outflow. The fact that Delta outflow is the primary means of implementing such an objective should not prevent the Board from including it in its Salinity Plan.

2. Recommendations

The State's submittal clearly identifies the need for a salinity objecitive to protect estuarine habitat conditions. Therefore, EPA should disapprove the state's standards for failure to include a salinity objective to protect the designated uses of Suisun, San Pablo and San Francisco Bays. Based on the Board's submittal and other supporting evidence, a salinity objective of 2 ppt in Suisun Bay would be sufficient to protect these uses. The Board should immediately develop the necessary information, including locations and periods of protection, to adopt such an objective.

DAN

BRIEFING PACKAGE

SUMMARY OF 1991 BAY/DELTA SALINITY PLAN AND STAFF RECOMMENDATIONS

JULY 29, 1991

I. MUNICIPAL AND INDUSTRIAL

1978 Plan Criteria:

- 250 mg/l chloride at all Delta municipal and industrial in takes.
- 150 mg/l chloride at Antioch for a certain number of days each year.

Purpose: To protect water supplies for cities and industry. The 150 mg/l criterion was established to protect the historical water supply of two paper manufacturers in Antioch.

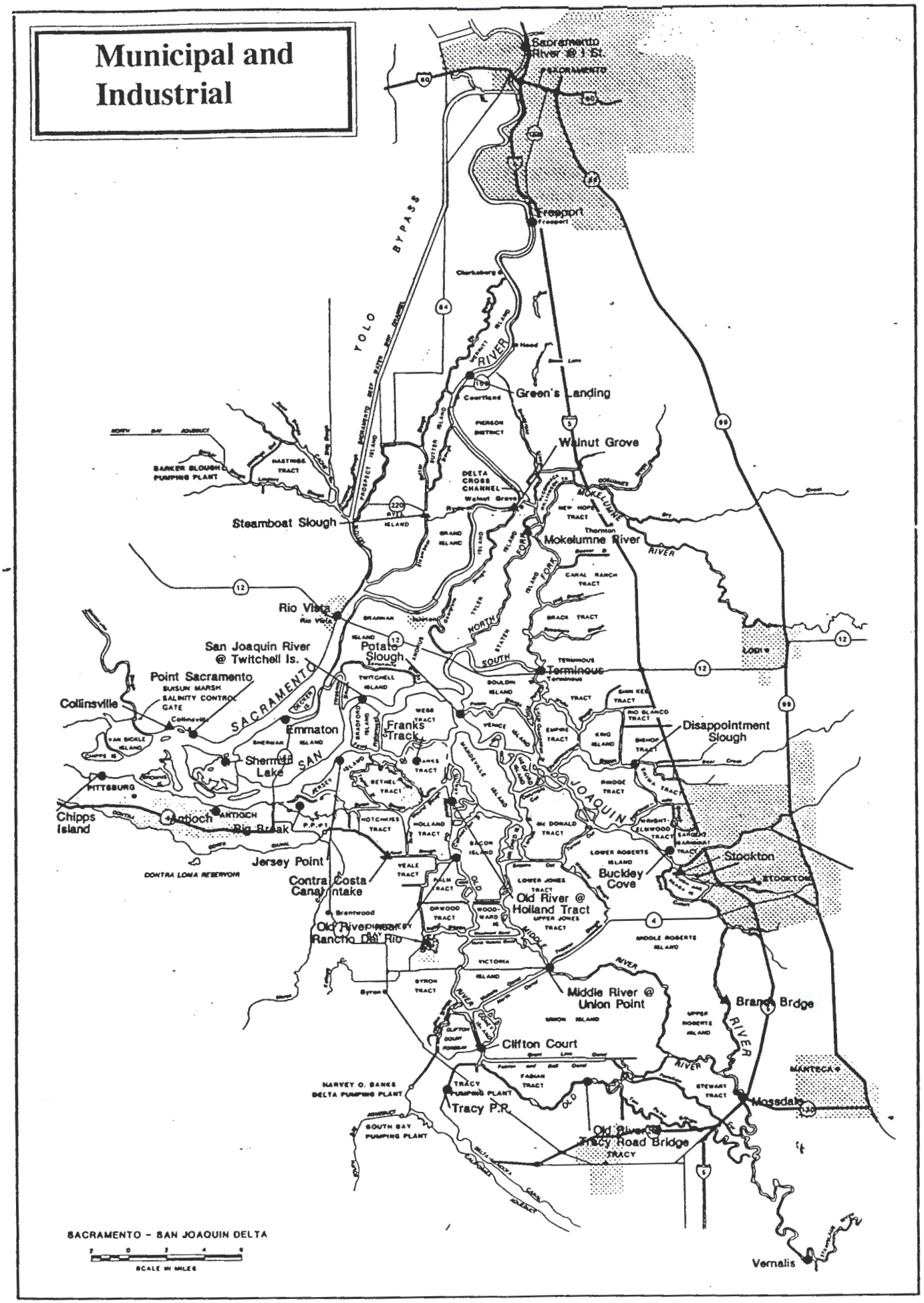
1991 Plan: No changes.

Issues: Water contractors have urged the development of new facilities to lower trihalomethane precursors in Delta drinking water supplies.

Recommendation:

◉ Approve
○ Disapprove

Municipal and Industrial



II. AGRICULTURE

1978 Plan Criteria:

Western & Interior Delta:	0.45 - 2.78 mmhos/cm EC (April 1 - August 15)
Southern Delta (interim):	500 TDS (.85 mmhos/cm EC) (All year)
Southern Delta (long-term):	0.7 mmhos/cm EC (Apr - Aug) 1.0 mmhos/cm EC (Sept - March)

Purpose: To protect salt-sensitive crops in the Delta.

1991 Plan:

- No changes to West & Int Delta criteria
- Extended compliance schedule for long-term Southern Delta criteria (1996); interim criteria removed.
- Adds new export criteria of 1.0 EC at the state and federal pumps.

Issues: None.

Recommendation:

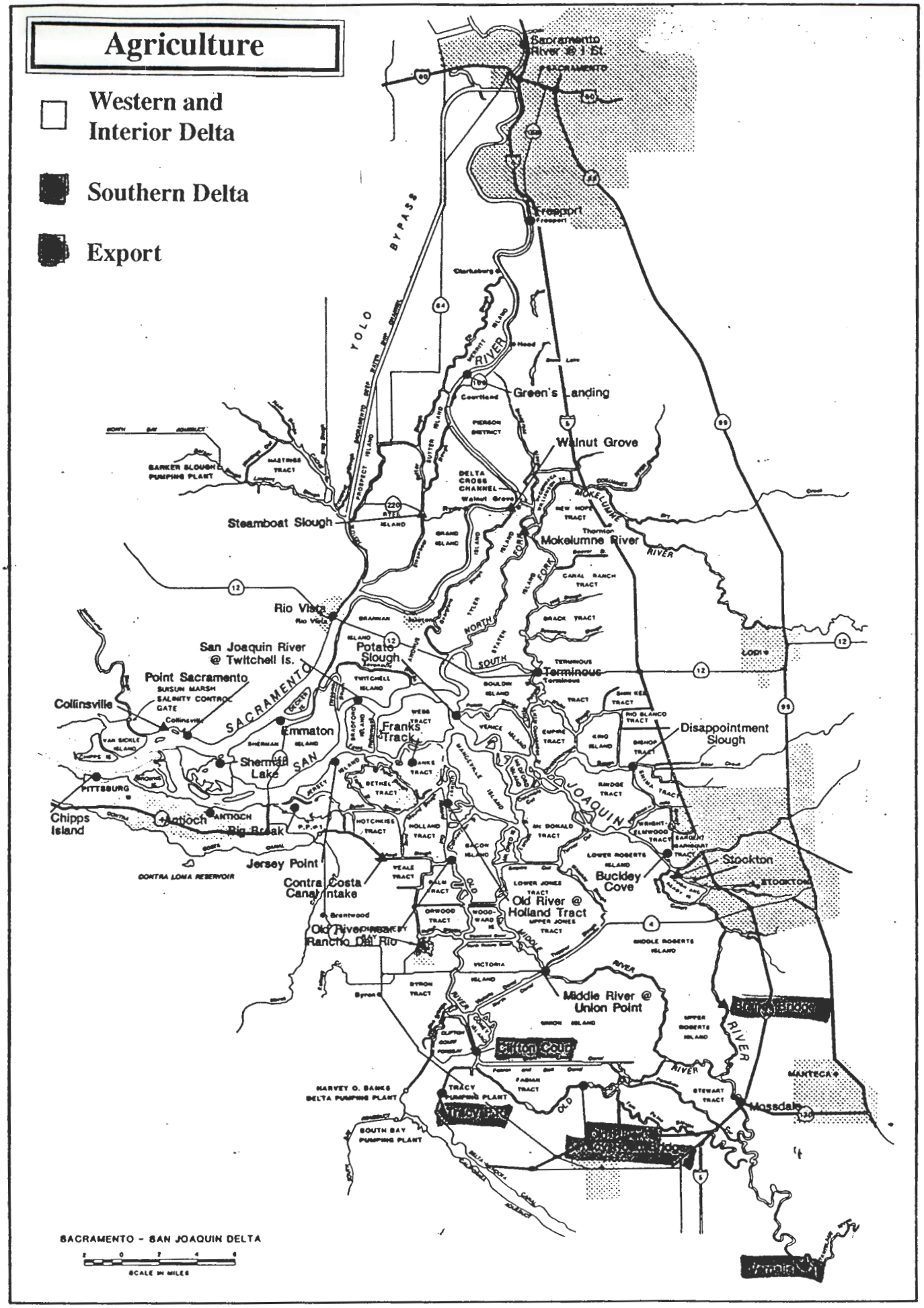
◉ Approve
○ Disapprove

Agriculture

Western and Interior Delta

Southern Delta

Export



III. CHINOOK SALMON - DISSOLVED OXYGEN

Present Criteria:	7.0 mg/l at Sacramento River and all waters west of Antioch Bridge
(Central Valley Basin Plan)	5.0 mg/l in all other Delta waters
Purpose:	DO levels below 6 mg/l have sometimes blocked adult salmon migrations
1991 Plan:	Adds new 6.0 mg/l DO criterion for the San Joaquin River between Stockton and Turner Cut from September to November.
Issues:	No justification for different criteria at different times and locations.
Recommendation:	◉ Approve - with understandings ○ Disapprove

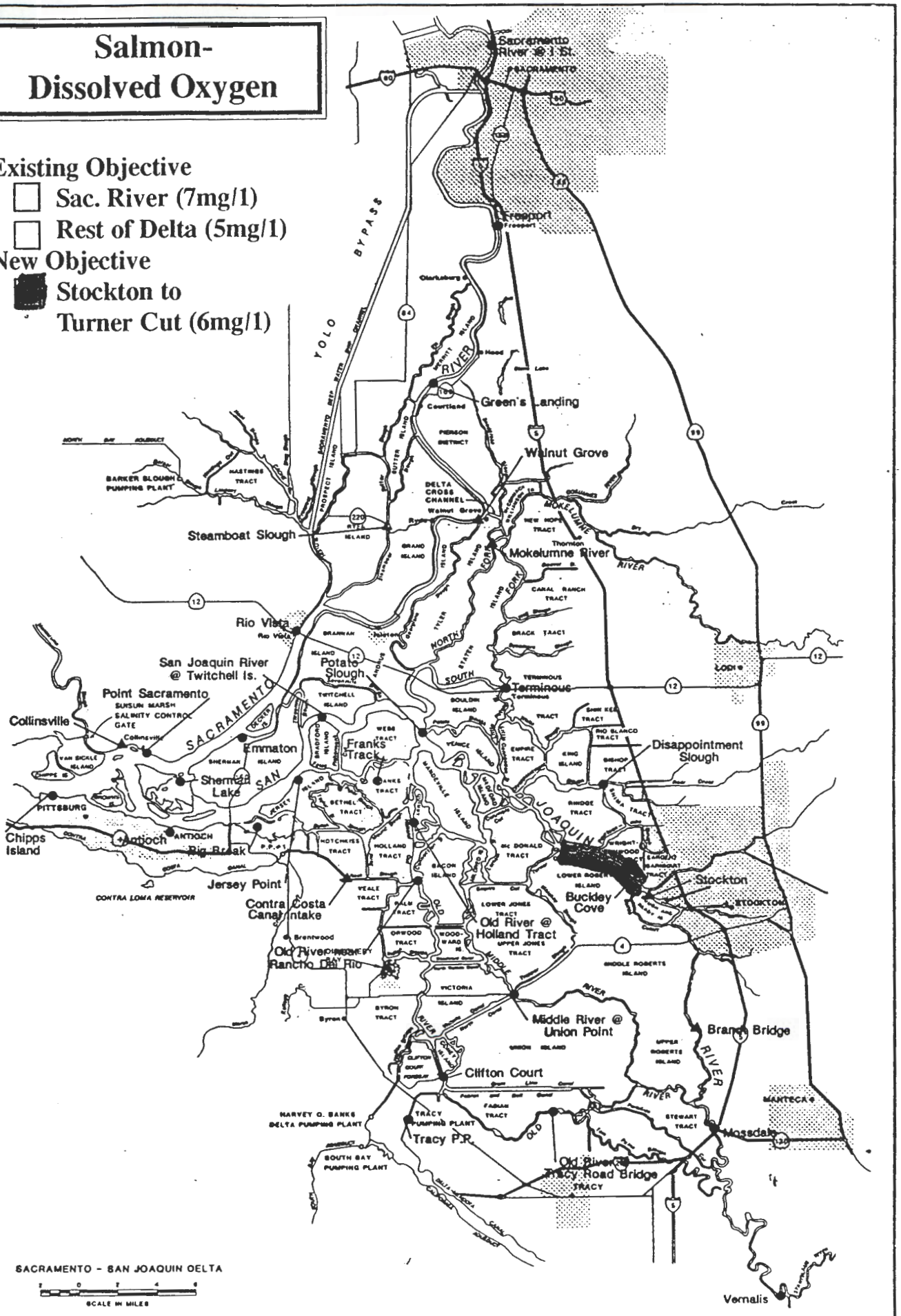
Salmon-Dissolved Oxygen

Existing Objective

- ☐ Sac. River (7mg/1)
- ☐ Rest of Delta (5mg/1)

New Objective

- ■ Stockton to Turner Cut (6mg/1)



IV. CHINOOK SALMON - TEMPERATURE

Present Criteria:
(Central Valley Basin Plan)

"The natural receiving water temperature...shall not be altered unless...such alternation...does not adversely affect beneficial uses."

Purpose:

To protect adult salmon migrating upstream and emigrating smolts.

1991 Plan:

Fall-run Salmon:

"The daily average water temperature shall not be elevated by controllable factors above 68 degrees F" at Freeport (Sac R) and Vernalis (SJR) from April through June and September through November.

Winter-run Salmon:

"The daily average water temperature shall not be elevated by controllable factors above 66 degrees F" at Freeport from January through March.

Issues:

- Scientific basis for criteria
  - Salmon are highly stressed and migrations are blocked above 65 degrees.
  - No data on temperature requirements of winter run salmon.
- "Controllable factors" language

IV. (Continued)

Recommendations:

Fall-run:	○ Approve	◉ Disapprove
Winter-run:	○ Approve	◉ Disapprove

Changes Needed:

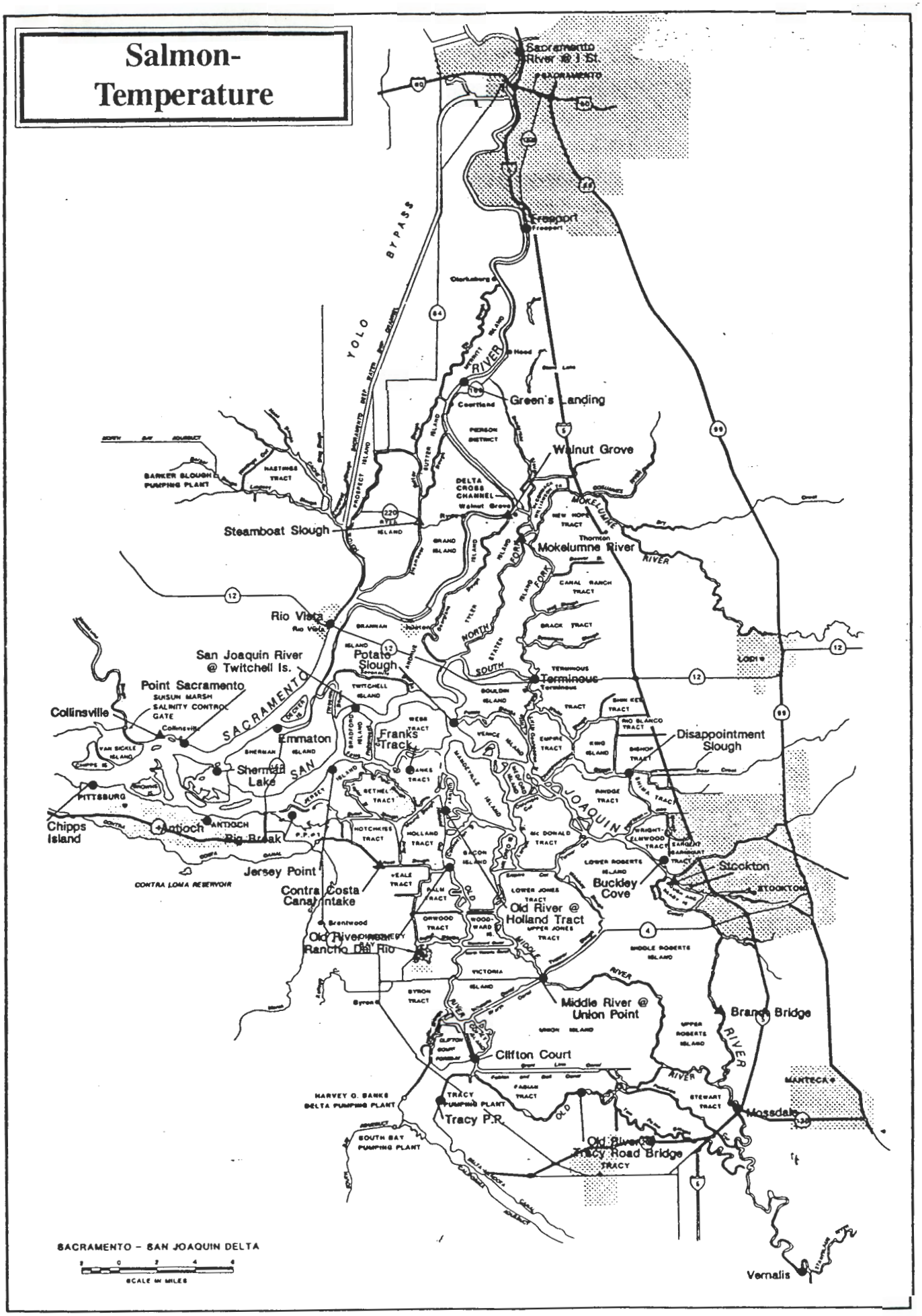
Fall-run

Environmental Groups:	63° F at Freeport and Vernalis
DFG:	65° F at Vernalis, 68° F at Freeport (with qualifiers)
USFWS:	66° F at Freeport and Vernalis
DWR, USBR, Water Contractors:	Opposed any numeric criteria because temperatures are too difficult to control
Recommendation:	*65° F at Freeport and Vernalis*

Winter-run

Environmental Groups:	None
DFG, USFWS, Water Contractors:	All opposed 66° F objective because of lack of scientific evidence.
Recommendation:	*No change needed; rely on existing narrative objective.*

Salmon-Temperature



V. STRIPED BASS SPAWNING

1978 Plan Criteria:

Antioch: 1.5 mmhos/cm EC April 1 - May 5
Relaxation: 1.5 to 25.2 EC (corresponds to deficiencies in supplies)

Prisoners Point: 0.55 mmhos/cm EC April 1 - May 5

Purpose: To protect spawning conditions for adult striped bass in the lower San Joaquin River.

1991 Criteria:

Antioch: 1.5 mmhos/cm EC April 15 - May 31
Relaxation: 1.5 - 3.7 mmhos/cm EC

Prisoners Point: 0.44 mmhos/cm EC April 1 - May 31
Relaxation: 0.55 mmhos/cm EC in critical years
(Extends compliance date; reduces extent of relaxations)

Issues:

- Scientific basis of Antioch criterion and relaxation provisions
- Extension to Vernalis

Recommendation:

○ Approve
◉ Disapprove

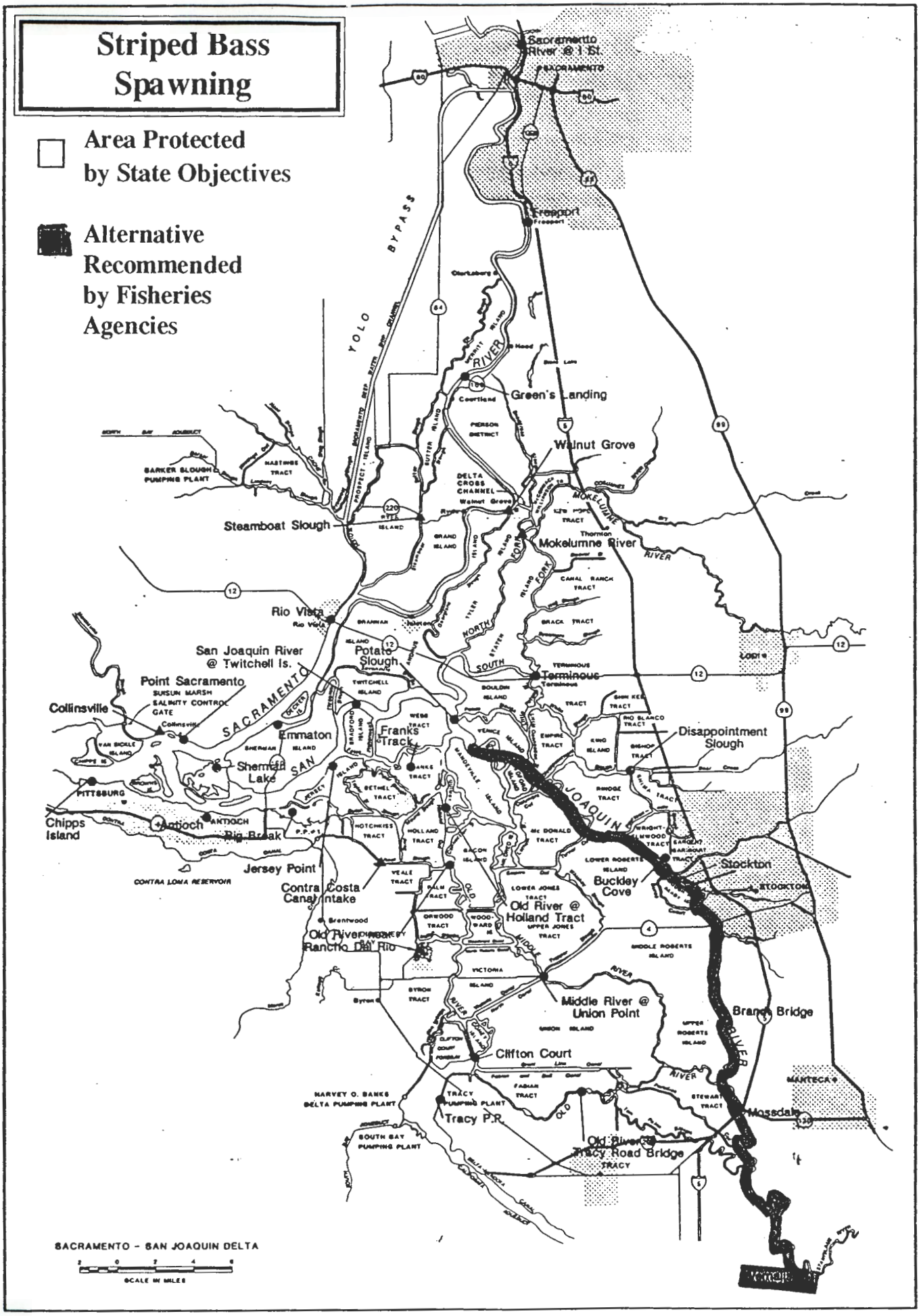
V. (Continued)

Changes Needed:	
Environmental Groups:	0.3 EC from Antioch to Vernalis
DFG, USFWS:	0.44 EC from Prisoners Point to Vernalis
DWR, USBR	
Water Contractors:	No changes needed.
Recommendation:	*0.44 EC from Prisoners Point to Vernalis*

Striped Bass Spawning

Area Protected by State Objectives

Alternative Recommended by Fisheries Agencies



VII. FLOW OBJECTIVES AND OPERATIONAL CONSTRAINTS

1978 Plan Criteria:	
Striped Bass Survival:	2,900-14,000 cfs Delta outflow at Chipps Island from May to July
Salmon Migration:	1,000-5,000 cfs at Rio Vista on the Sac R
Export Limits:	Limits total Delta exports to 6,000 cfs from both the CVP and SWP (3,000 each) in May and June; and to 4,600 cfs by the CVP in July.
Cross Delta Channel:	Channel gates close when the daily Delta outflow index is greater than 12,000 cfs.
1991 Plan:	No changes considered until later phases of the state's proceedings.
Issues:	The State acknowledges that these objectives have not been adequate to protect Delta fisheries, but no longer believes they should be addressed in a water quality plan.

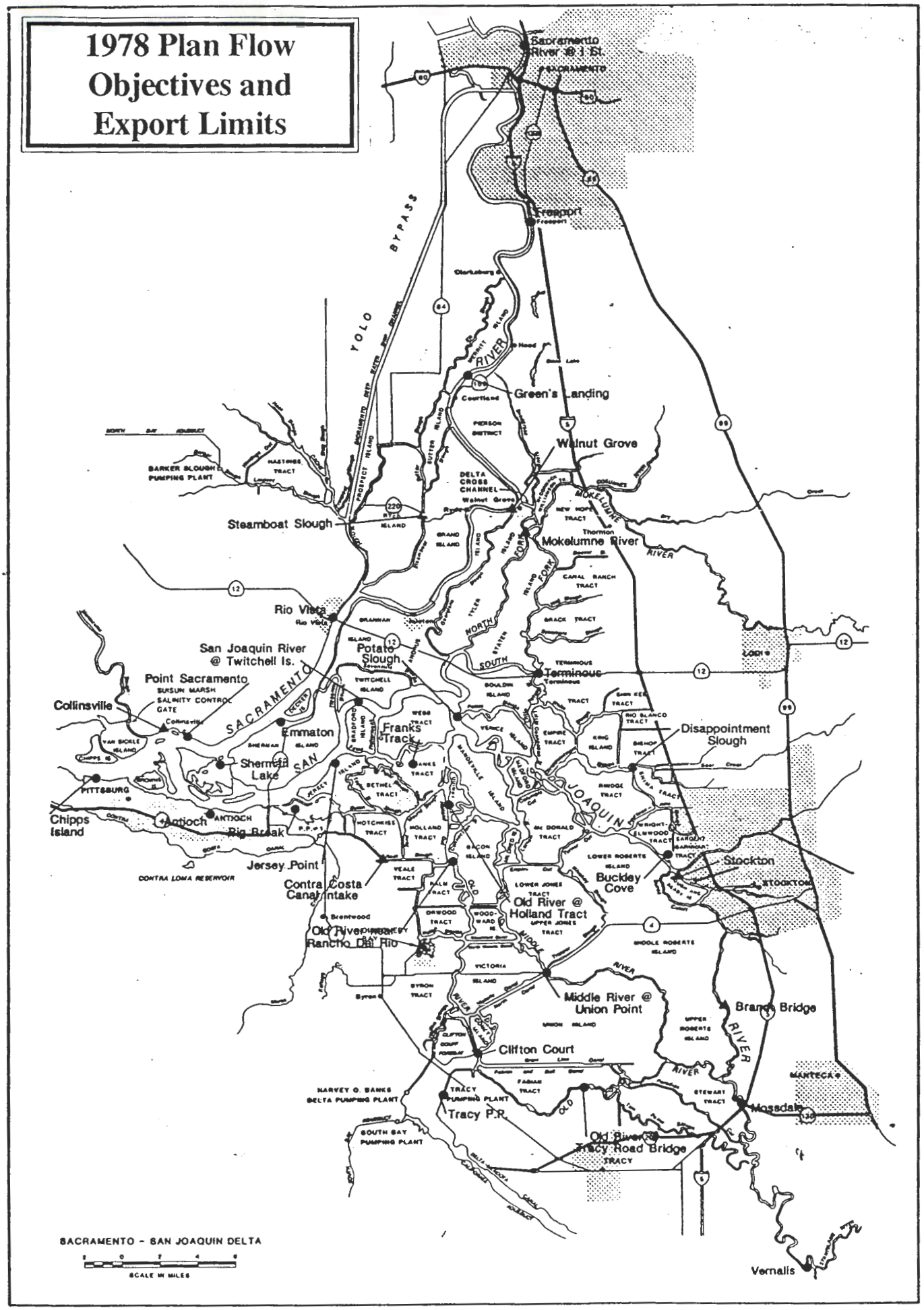
VII. (Continued)

Recommendation:

- ○ No Action
- ○ Disapprove current flow objectives
- ○ Disapprove Plan as a whole for failure to meet conditions and protect uses.
- ◉ Initiate promulgation under Administrator's discretionary authority

Changes Needed: None must be specified, but promulgation will focus on salinity criteria for the entrapment zone.

1978 Plan Flow Objectives and Export Limits



VI. SUISUN MARSH

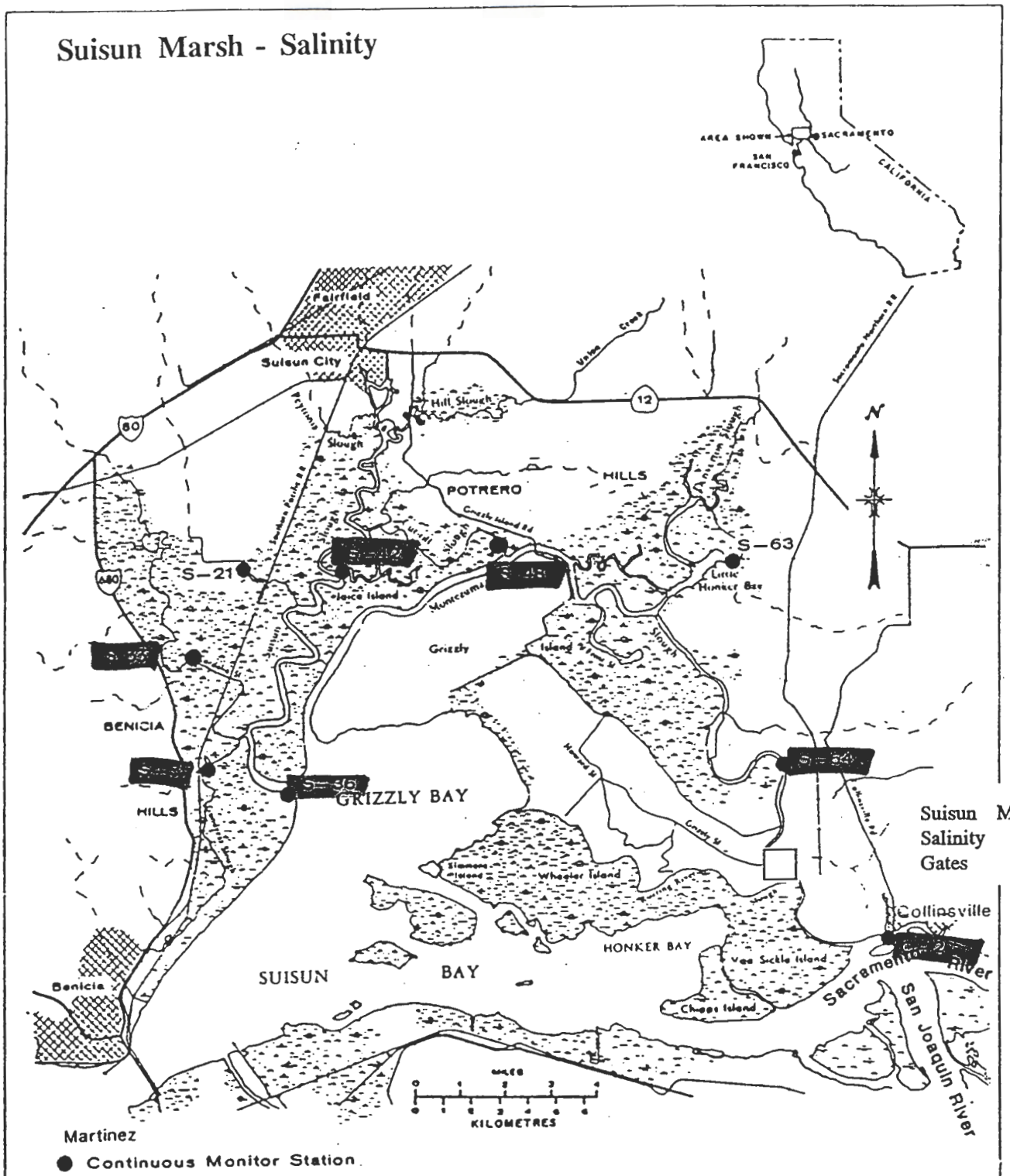
1978 Plan Criteria: 8.0 - 19.0 mmhos/cm EC at various locations

Purpose: To protect waterfowl in the managed wetlands of the Marsh

1991 Plan: No changes.

Issues:
- Implementation Plan contains a different (weaker) set of objectives.
- Tidal wetlands and aquatic resources are not protected.

Recommendations:
- ○ No Action
- ○ Disapprove
- ◉ Initiate federal promulgation of standards for tidal wetlands and aquatic resources.



Station deleted from implementation schedule

SUISUN MARSH
SALINITY MONITORING STATIONS

SUMMARY OF RECOMMENDATIONS

	Approve	Disapprove	Promulgate
Municipal and Industrial	●		
Agriculture	●		
Salmon (Dissolved Oxygen)	●		
Salmon (Temperature)			
Fall-run		●	●
Winter-run		●	
Striped Bass		●	●
Suisun Marsh			●
Entrapment Zone			●
San Francisco Bay			?

SUMMARY OF CHANGES NEEDED

Short Term (90 days)

1. Temperature: Adopt 65° F temperature criteria for fall-run salmon, and remove or replace 66° F temperature criteria for winter-run salmon.

2. Striped Bass Spawning: Extend .44 EC salinity criteria for striped bass spawning to Vernalis.

Long-term

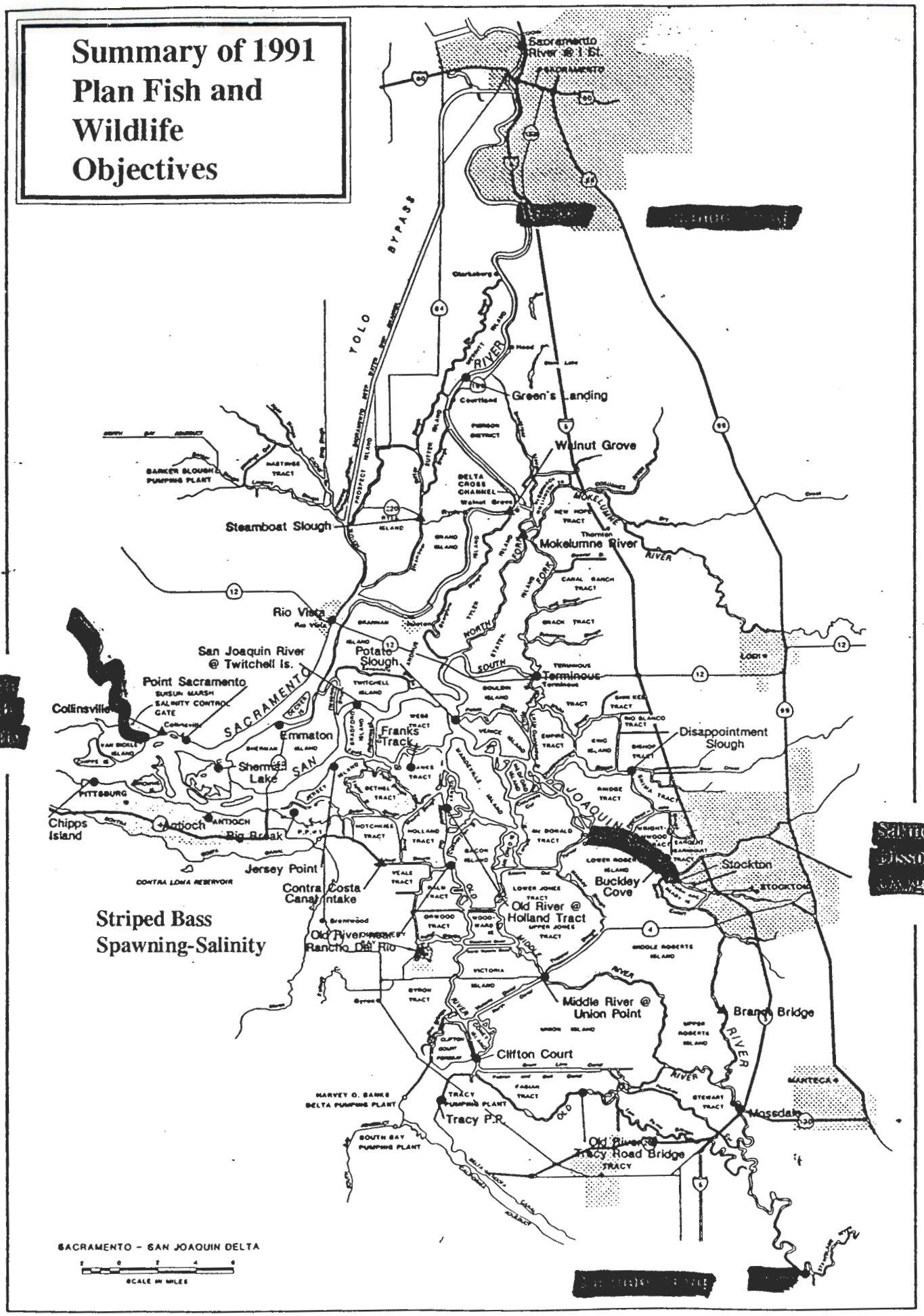
1. Suisun Marsh: Adopt revised salinity criteria to protect aquatic life and tidal wetlands.

2. Flows: Adopt new salinity criteria for the entrapment zone

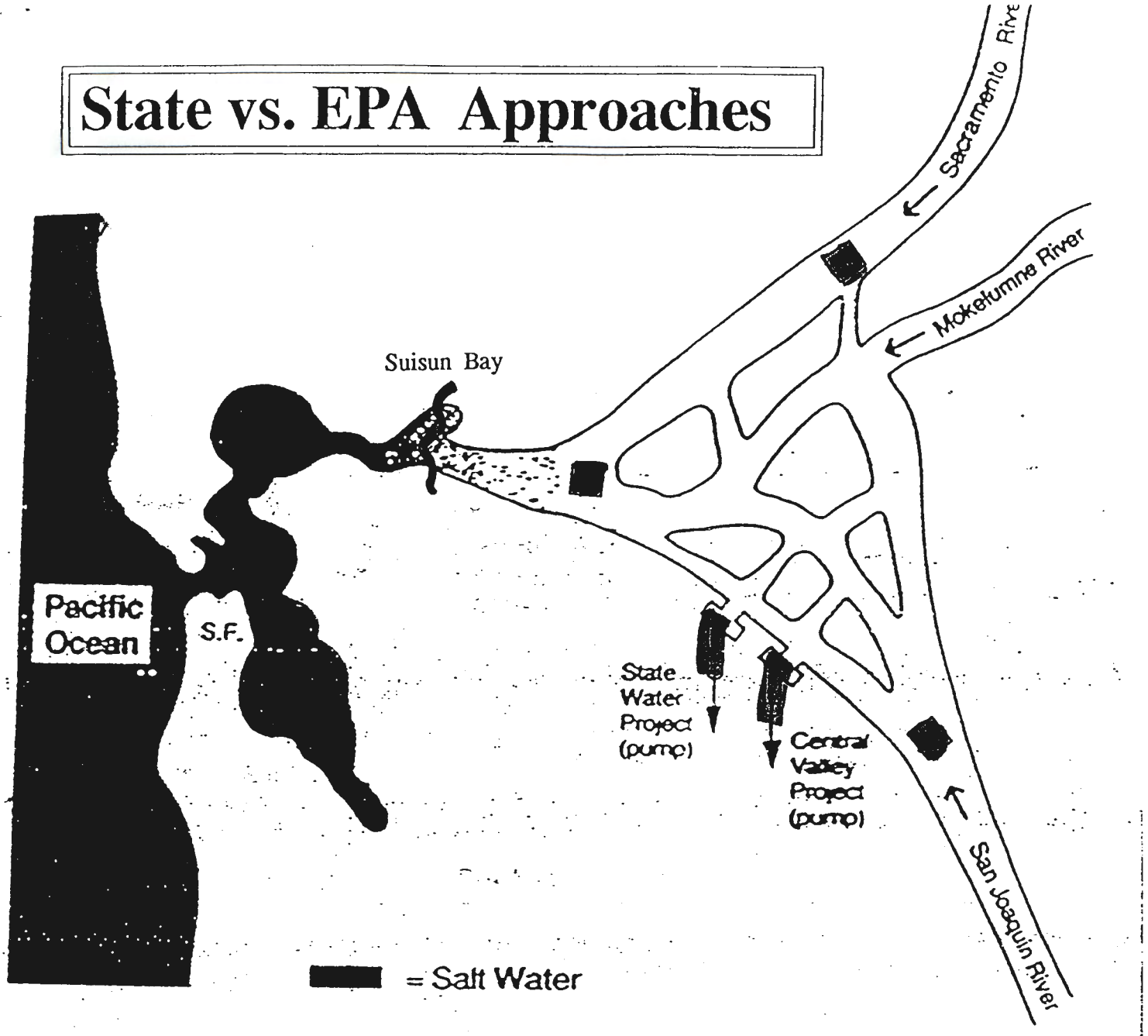
   or

   Adopt an EIR alternative that adequately protects the fish and wildlife of the estuary.

Summary of 1991 Plan Fish and Wildlife Objectives



State vs. EPA Approaches



State Approach	EPA Approach
1978: Delta Outflow	Entrapment Zone (Salinity)
Correlates with Bass Index Pushes Larvae to Suisun Bay	
Export Limits Reduces Diversions, Entrainment and Reverse Flows	
1988: Sac. R. and SJR Flows (Salmon)	Temperature
Lowers Temps. and Keeps Smolts in Main Channels	

NEXT STEPS

- Prepare disapproval letter/communications strategy
- Meet with state
- Meet with NMFS and USFWS on ESA issues

ONGOING ACTIVITIES

- Coordination with Headquarters
- Development of promulgation workplan with new staff and contractor support
- Participation in ongoing State Board proceedings

9/3/91

QUESTIONS AND ANSWERS

BAY/DELTA WATER QUALITY STANDARDS

1. What actions are required as a result of EPA's disapproval?

The State has 90 days from the date of EPA's disapproval to adopt and resubmit approvable objectives. If the State does not adopt approvable objectives within 90 days, EPA will begin developing Federal standards. If the State adopts approvable objectives at any time before or after EPA proposes federal standards, EPA will cease its efforts.

2. Does EPA want to promulgate water quality standards?

No. EPA prefers for the state to resolve the problems with its standards. However, if the state fails to develop acceptable standards in a timely fashion, as required by the Clean Water Act, EPA will begin a federal promulgation of water quality standards that would protect the state's designated uses. EPA is fully prepared to carry out its legal obligation.

3. What legal status does your action give the State's standards?

Under the Clean Water Act, the State's submitted objectives, as well as the existing flow objectives, remain in effect until they are replaced either by the State or by a Federal promulgation.

4. What would satisfy EPA?

The State has several options in responding to EPA's letter. One option would be adopt additional salinity and temperature standards that are sufficient to protect the fisheries. Another option would be to follow the approach taken in the November 1988 Draft Plan, which included several revised flow standards. The State could also adopt a set of "biological criteria" to provide measurable indicators of whether the fishery populations were being protected. EPA will not object to the particular method chosen by the State, so long as the State's standards are sufficient to protect the fish and wildlife uses.

5. Does EPA expect the State to respond in 90 days?

The State has indicated that it will not be able to revise its standards in the required 90-day period. However, if the State adopts approvable objectives at any time after the 90-day period, EPA will cease its development of federal standards.

6. What process will EPA follow in promulgating standards?

EPA intends to work closely with the State and other interested parties in developing federal standards, and will provide opportunities for public review and comment before making any final decisions. Prior to adopting final standards, EPA must propose standards in the Federal Register and consider public comment.

7. How long will it take EPA to promulgate standards?

EPA intends to develop federal standards as rapidly as possible. Previous proposed federal promulgations have taken one or more years, depending on the complexity of the rulemaking.

8. Doesn't the Clean Water Act Section 101(g) (the "Wallop Amendment") prevent EPA from disapproving and promulgating water quality standards affecting state water allocation decisions?

The Wallop Amendment states the broad Congressional policy that the Clean Water Act should not interfere with state determinations of water rights and water allocations. However, Senator Wallop, in offering his amendment, made it clear that his amendment was not intended to prevent legitimate implementation of the other provisions of the Act. While we hope that a federal promulgation will not be necessary, EPA believes that it would be acting within the letter and the spirit of the Wallop Amendment in adopting water quality standards that are clearly necessary to protect the Bay/Delta's fisheries resources, even if those water quality standards have an incidental effect on water allocations.

9. Does EPA intend to promulgate flow standards?

If the State fails to respond to EPA's disapproval letter, EPA will propose new or revised standards sufficient to protect the fish and wildlife uses of the estuary. To the maximum extent possible, EPA expects to rely on parameters such as salinity and temperature. Any EPA-promulgated standards must be scientifically defensible and contain sufficient parameters to protect the designated uses.

10. What are designated uses?

A designated use is a use which is specified for protection in the water quality standards for a waterbody (California uses the term "beneficial use.") Typical uses include propagation of fish and wildlife, public water supply, agriculture, recreation, and navigation.

11. What are the designated fish and wildlife uses in the Bay/Delta Plan?

The designated fish and wildlife uses in Bay/Delta Plan include Estuarine Habitat, Fish Migration, Fish Spawning, Ocean and Commercial Fishing, Preservation of Rare and Endangered Species, Shellfish Harvesting, Warm and Cold Fresh-Water Habitat, and Wildlife Habitat. The Estuarine Habitat use was established to provide for the growth and protection of a wide variety of fish, shellfish, waterfowl, and other species.

12. Can the State simply adopt less stringent designated uses so that the related water quality standards can be relaxed?

No. A state cannot eliminate or modify a designated use if that use was ever actually achieved on or after November 28, 1975. This is known as the protection of "existing uses."

In addition, a state must implement an "antidegradation policy" which at a minimum fully protects and maintains both the "existing uses" and the level of water quality necessary to maintain the existing uses. Here again, an existing use is one that was ever actually acheived on or after November 28, 1975.

13. Why are the striped bass and Striped Bass Index so important?

Aside from its inherent importance as one of the more prized sports fish in the estuary, the striped bass serves as an indicator of the overall health of the ecological system. Furthermore, it is one of the few species for which we have fairly comprehensive historical data, and can therefore reflect the long-term trends in the estuary. The Striped Bass Index (SBI) is a measure of the abundance of the estuary's juvenile striped bass.

14. Why are salinity objectives important to protect the fish and wildlife in the estuary?

The San Francisco Bay/Delta is an estuarine system where marine and freshwater meet and mix. All of the biota, including plants, invertebrates, fish, birds, and mammals of the estuary have adapted to estuarine conditions, and depend on specific salinity ranges within specific regions of the system to sustain their populations. Salinity objectives will protect the productivity of the estuary and sustain these populations.

15. Is there enough information to develop salinity objectives for the estuary?

There is at least a decade of salinity and abundance information for the important estuarine fish species in the San Francisco Bay/Delta, and for many species the record is considerably longer. Researchers have in the past focused on relating biological change in the estuary to changes in freshwater flow into the estuary. However, salinity is highly correlated with flow in an estuarine system, and relationships between biological change and salinity can also be developed and used to set objectives for protection of the estuary.

16. Why are temperature objectives important to protect Chinook salmon?

High temperatures are lethal to the early life stages of Chinook salmon, and will also block or delay upstream migration of adults to spawning grounds. Studies in both the Sacramento River system and the San Joaquin River system have shown that high temperatures are a major source of mortality, both in the Delta and upriver. Temperature objectives will protect Chinook salmon by increasing the number of young fish surviving to enter the ocean, as well as increasing the number of adult fish able to reach their spawning grounds.

17. Hasn't the drough been an important contributor to the decline of several species?

The decline of many Bay/Delta species began before the current drought. Species populations of striped bass, Chinook salmon, delta smelt and Sacramento splittail have all been on a downward trend for at least the last decade.

T. Hagler (ORC)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, Ca. 94105

February 6, 1992

MEMORANDUM

SUBJECT: Bay/Delta Activities Report

FROM: Gail Louis (W-3)

TO: Harry Seraydarian (W-1)
Alexis Strauss (W-1)

Below is a summary of recent activities/developments relating to the San Francisco Bay/Delta. While this is by no means a comprehensive listing, we have tried to report recent events that are particularly noteworthy, and that in various ways may impact our potential promulgation of federal water quality standards for the Bay/Delta. As you will see, many of these activities involve staff from other EPA programs. We will try to produce this report on a semi-regular basis (bi-monthly or as time permits). We'd appreciate input from other programs on related activities for inclusion in future reports.

Accomplished in January:

COORDINATION WITH SWRCB

- Susan and Bruce are working closely with State Board staff to better understand the technical basis for the alternatives likely to be included in the Board's forthcoming EIR. They will be preparing a summary of issues that have arisen in these discussions prior to the next Fairfield meeting on February 24th.

- We recently received a draft copy of the State Board's response to our disapproval letter. As expected, the response takes issue with our action, and provides some additional legal and technical justifications for the standards they adopted. After we receive the final letter, we will prepare a response to thank them for providing additional information and clarifications, and to establish for the record that we have fully considered and responded to this information before proceeding with the promulgation process.

Printed on Recycled Paper

PROMULGATION ACTIVITIES

- Staff has been working closely with Biosystems Analysis, Inc. on the development of temperature and salinity parameters that: (1) we would give to the State Board at the end of March for their full consideration in their water right process; and (2) upon further refinement, would provide the basis for our federal standards promulgation package. Biosystems' work on the salinity issue has been jointly supported by our contract and their contract with the San Francisco Estuary Project (SFEP) to develop materials for the Project's technical flows workshops (see below).

- In early January, Cat, Patrick, Maria and Tom Hagler met with OPPE, OW and OGC on our federal promulgation efforts. We discussed how HQ could assist the Region in developing and promulgating standards that are technically sound and broadly acceptable. Several HQ offices expressed interest in forming an informal workgroup to follow the promulgation development process.

  We also discussed the need for preparation of a Regulatory Impact Analysis (or benefit-cost analysis) to support the proposed rule for OMB's review. We would like to use the RIA process to evaluate the inefficiencies of the state's current water allocation system and the potential for market-based incentives to achieve the standards and provide additional supplies for other uses. OPPE (Rob Wolcott) was very interested in supporting this effort - both by providing resources and using his connections to secure the assistance of esteemed economists. We are currently seeking at least $60,000 (ideally split equally by the Region, OPPE and OW) for conducting a benefit-cost analysis.

INTERAGENCY ACTIVITIES

- **San Francisco Estuary Project** - In December, Dr. Schubel, Director of Marine Sciences Research Center at SUNY, facilitated a second technical workshop to discuss linking salinity, Delta outflows, and fish abundance. There was general consensus that salinity levels in the Estuary are strongly correlated with the survival and abundance indices of resident and anadromous fish. However, further work is needed to reach agreement on specific management recommendations (including recommended salinity standards across seasons and year types and other water quality requirements of estuarine species and habitats). SFEP is planning a third workshop this spring.

- **Endangered Species Act (ESA) Coordination**

  * In December, EPA, U.S. Fish and Wildlife Service (FWS), and National Marine Fisheries Service (NMFS) had the first (of what will probably be quarterly) meeting to coordinate implementation of the Clean Water Act

and the federal Endangered Species Act. Discussion focused on how to best use our respective authorities to solve the environmental problems facing the Bay/Delta estuary, and what sort of consultation will be necessary should EPA proceed with a promulgation of federal standards. A second meeting has been scheduled for March 18.

* Delta smelt - On September 27, the U.S. Fish and Wildlife Service announced that it is proposing to list the Delta smelt as threatened under the provisions of the federal ESA. The proposed listing appeared in the Federal Register on 10/3/91. The Service has one year (which can be extended by an additional six months) to determine if the smelt should be listed. During the comment period, which closed on January 31st, the Service held three public hearings around the State and received numerous comments.

  Due to its potential impacts on water diversions from the Delta, public interest in the proposed listing is very high. Many parties with vested interests (including the Resources Agency, DWR and the State Water Contractors) are campaigning heavily to avoid a listing. One interagency effort that will attempt to address the plight of the smelt, sponsored by the Resources Agency, is described below.

  The proposed listing includes a proposed critical habitat designation for the delta smelt that includes all water and submerged lands below the high tide mark in Suisun Bay, the length of Montezuma Slough, portions of the Sacramento and San Joaquin Rivers, and portions of the Delta and adjacent waters. It further recommends that the following be provided in this area: (1) space for population growth, cover or shelter; (2) estuarine water with a salinity of 0-2 ppt in Suisun Bay during January to June for reproduction; and (3) a salinity of 0-10 ppt to maintain zooplankton populations as a food supply. (This second condition is consistent with EPA's suggested salinity level in our 9/3/91 disapproval letter to the State Board.)

o **Bureau of Reclamation (BOR)/EPA Interagency Coordinating Committee (ICC) Meeting** - The ICC was established in 1990 after EPA's referral to CEQ of BOR's proposed action to renew long-term water contracts without conducting an EIS. The ICC meetings bring together principles of the two agency's headquarters and regional offices to review and discuss current or upcoming issues. The fourth meeting was hosted by Region IX on January 15th. Particularly noteworthy issues: (1) discussions between EPA and BOR on the scope and alternatives for the Friant Contract Renewal EIS are underway (see below); (2) BOR is considering a comprehensive EIS to address upcoming contract renewals in other water districts and diversions around the Sacramento Delta; (3) EPA and BOR

HQ will evaluate the structure and function of the four workgroups and recommend changes at the next meeting. Of particular interest to Region IX, there are 53 water contracts managed by BOR's Mid-Pacific Region which will expire by 1995; the Bureau is interested in initiating, as soon as possible, discussions with EPA on EIS scoping for these contracts.

- **Bureau of Reclamation, Friant Water Service Contract Renewals Environmental Impact Statement** - Office of Federal Activities staff have met regularly with the Bureau of Reclamation to define the scope of the Friant EIS and during February and March will work on action alternatives. The Draft EIS is scheduled to be completed by the end of 1992.

  Major concerns of EPA and environmental groups include that BOR may limit the scope of impact analysis and environmental mitigation to the largely agricultural areas in the Tulare and San Joaquin basins now receiving contract water. Consideration of impacts to the San Joaquin River drainage (including various wetlands and refuges), from which water was diverted by the Friant Division project, may be deferred to BOR's "San Joaquin River Basin Initiative". The Initiative, which will provide funding and technical support to the State's San Joaquin River Management Program, will not result in a much-needed reexamination of water allocation for environmental resources.

  BOR has requested EPA's assistance as a cooperating agency for the EIS, to provide technical consultation (particularly on Clean Water Act issues and NEPA compliance). A draft memorandum of understanding is under review.

- **CA Resources Agency's Delta and Related Systems Interagency Management Program** - The California Resources Agency has convened this interagency group, consisting of both state and federal agencies, to design specific short- and long-term management plans to improve habitat conditions for species in the Delta. While addressing species that have become less abundant in recent years (including the delta smelt, winter-run salmon and striped bass), this effort will also highlight the need for an ecosystem-based approach to solving the problems in the delta.

  In the short-term, the group has discussed developing a management plan specifically directed towards enhancing the delta smelt population. FWS has indicated that, if an effective plan is developed by this summer, the Service may consider not listing the smelt as threatened. The Delta smelt working group (composed of DWR, BOR, DFG, FWS, EPA and Peter Moyle from UC Davis) met on January 29th and reached agreement on a package of management actions to recommend to the Oversight Committee on February 18th.

- **Interagency Ecological Studies Program (IESP)** - In December, EPA was invited to become an official member of IESP. The program was initiated in 1971 to evaluate the effects of the State Water Project and Central Valley Project on environmental resources of the Bay and Delta, and to determine ways of mitigating adverse impacts. IESP has been carrying out cooperative studies necessary to understand requirements of fish and wildlife resources and how they can be protected. EPA joins DFG, DWR, FWS, BOR, SWRCB, USGS and COE as cooperating agencies in this program.

- **Data management activities (IESP)** - Olof represented EPA at several meetings of IESP's Data Management Committee. The committee was asked to make recommendations for data handling to the agency coordinators group. Currently, all data is stored in EPA's STORET water quality system. The group will recommend the long-term adoption of a new centralized data base management system (that will eventually replace STORET). In addition, they will encourage the establishment of a full-time data manager position. All of the group's recommendations will be presented to the agency coordinators at their next meeting.

MISCELLANEOUS

- **Appointment(s) to the State Water Resources Control Board** - In early January, Governor Wilson named Marc Del Piero, a Monterey County Supervisor, to fill a Darlene Ruiz' vacancy on the State Board. Mr. Del Piero allegedly brings "a balanced set of environmental and business credentials" to the job. The Governor is expected to make another appointment to the Board, to replace Ted Finster, in the next few weeks.

- **Governor's Water Policy Task Force** - In September, Governor Wilson convened a task force to develop a comprehensive, statewide water policy. The policy will "recognize and address the legitimate and competing claims of agriculture, cities, and the environment." The Task Force is focusing on ways to meet projected water demand through 2010, when they expect a shortfall in supplies of 5 to 10 million acre-feet.

  The Task Force, chaired by Doug Wheeler, is composed of representatives from the Governor's office, Resources Agency, Cal EPA, Office of Planning and Research, DWR, Department of Fish and Game, Department of Food and Agriculture, and the State Board. The Task Force met with Governor Wilson to discuss its recommendations on January 27th and received positive feedback. They are currently working on resolving outstanding issues. The Governor is expected to make a public announcement in late February or early March.

Ultimately, the recommendations will be incorporated into a revised DWR Bulletin 116, and may also impact the State Board's Bay-Delta proceedings. State and/or federal legislation may also be recommended to enact specific provisions.

- **Bureau of Reclamation, San Luis Unit Drainage Program/EIS** - The public comment period for BOR's Draft EIS on the San Luis Unit drainage program (including Westlands Water District and four irrigation districts to the north) continues until March 27. The timetable and Westlands component of the drainage program are calculated to comply with the Barcellos Judgment, which requires that Reclamation adopt and implement a drainage service plan for Westlands. Preliminary review by staff in OFA and W-3 suggests that the preferred alternative would have major adverse environmental effects on surface and ground waters and would continue to expose wildlife to unacceptably high levels of selenium. WMD and OFA staff will be preparing detailed comments and briefing EPA management during February and March.

- **Los Vaqueros EIS** - Contra Costa Water District is attempting to expedite the evaluation process for the EIS for its proposed Los Vaqueros reservoir. This reservoir would increase the District's emergency storage capacity and would enable storage of high quality water that can then be mixed with lower quality water taken from the traditional intake during the summer.

  In January, EPA reviewed an administrative draft of the EIS. Principal comments concerned how the proposed project could be operated in a fashion that would possibly benefit delta fish populations. In addition, we suggested that proposed operating schedules be changed to minimize impacts rather than including possible mitigation measures for an unnecessarily detrimental operating schedule. We reiterated the difficulties of assessing impacts of any project when proposed water quality standards have been disapproved. The draft EIS, expected to be released in February, will assess environmental impacts under a range of possible future conditions. EPA will review and comment on the DEIS.

- **Legislative update** - We are informally tracking four proposed pieces of federal legislation that may affect operations of the CVP:
  (1) Central Valley Project Improvement Act (S. 484 or the "Bradley bill");
  (2) California Fish and Wildlife Protection Act of 1991 (H.R. 1306 or the "Miller bill");
  (3) Central Valley Project Fish and Wildlife Act of 1991 (S. 2016 or the "Seymour bill" or the "contractors' bill"); and
  (4) Upper Sacramento River Fishery Resources Restoration Act (S. 728 or another "Seymour bill"). (Provisions of this bill has apparently been incorporated into S. 2016.)

Compared to either the Bradley or Miller bills, the Seymour bill (S. 2016) is more limited. It has none of the directives included in the Bradley bill for immediate water supply to refuges, nor any firm directives for recovery levels such as those initially included in the Miller bill. Furthermore, it does not discuss the current controversy over renewing 40-year contracts in the CVP. The Bradley bill apparently has been revised in a manner that weakens the "up front" water and funding assurances provided by the original bill, but still retains the strong restoration goals.

The Wilson administration is reportedly striving for a position that lies somewhere between the Miller/Bradley and Seymour bills. They have apparently submitted several pages worth of proposed changes to Seymour.

o **North Bay Initiative** - The Wetlands and Coastal Planning Section is implementing an advanced planning initiative in the North San Francisco Bay Area (Marin, Sonoma, Napa and Solano Counties). The goal of this initiative is to maintain or increase wetlands functions and values. Specific projects may include: advanced identification of wetlands using GIS technology; development of watershed assessments and management plans; reuse of dredged materials for wetlands creation/restoration; and possible mitigation banking projects.

Upcoming in February:

6 - LaJuana Wilcher speaks at American Bar Association Water Law Conference in San Diego on water quality and water quantity issues. We have provided relevant info to her special assistant who is writing her speech. LaJuana is expected to make a fairly strong statement about EPA's role in water quantity issues.

12 - EPA and BOR Mid-Pacific Region will meet to discuss BOR's development of a comprehensive EIS on upcoming Central Valley Project (CVP) water renewals. The scope of the EIS may be expanded to include all of BOR's Delta exports.

14 - BOR is expected to announce its decision on CVP water allocations for 1992. Sierra Club Legal Defense Fund (SCLDF), representing several environmental and sportfishing groups, gave the Bureau 60-days notice that it will sue over the Bureau's failure to protect the winter-run salmon under the Endangered Species Act, if BOR doesn't allocate sufficient water to protect the salmon. In a letter dated December 13, SCLDF demands that BOR maintain sufficient water behind Shasta dam during summer months to control temperature in the Sacramento River during the winter months when the salmon spawn. In addition, this letter serves as a 60-day notice of intent to sue BOR under the Clean Water Act for its anticipated failure to meet in-stream water quality standards in the Sacramento River.

18 - Oversight Committee of the Resources' Agency "Delta and Related Systems Management Program" will meet to survey progress towards developing a Delta management plan, which may avert US FWS' listing of the Delta smelt as a threatened species. Harry and Patrick will attend.

19-21 Bay/Delta team will participate in Interagency Ecological Studies Program's (IESP's) annual workshop in Asilomar.

24 - EPA and SWRCB will meet at Fairfield. Discussion will include progress on general coordination, SWRCB's response letter, and agenda & preparation for the Strock/ McGovern meeting. Jim and Dan are scheduled to meet on March 2nd.

Upcoming in March:

2 - EPA (Dan) and Cal EPA (Jim Strock) will conduct the second coordination meeting on Bay/Delta standards issue.

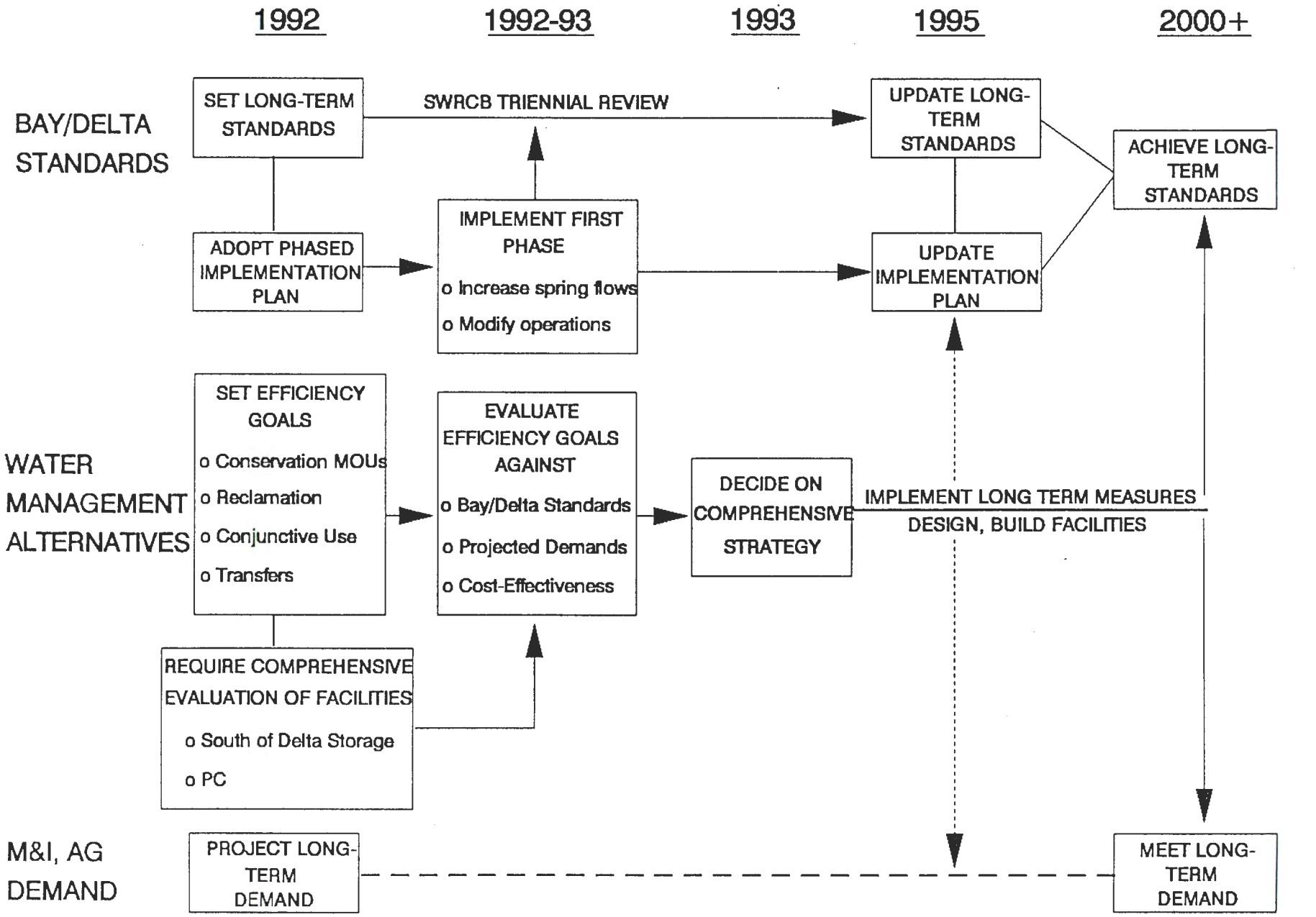
9 - IESP Agency Directors will meet to approve budgets and programs for the coming fiscal year. Harry and Cat will participate.

18 - Harry and staff will participate in second meeting between EPA, FWS & NMFS to coordinate on Endangered Species Act activities. Possible discussion topics include update on delta smelt listing and coordination with BOR.

Attachments

cc: Bay/Delta Team
Kuhlman, Tom, Wiltse, Rea, Tuden (W-3)
Zimpfer, Vendlinski (SFEP)
Barsamian, Morris, Oshida (W-7)
Macler (W-6-1)
Wyland, Yale (OFA)
Hagler (ORC)
Victery, Wood (ORA)

PROPOSED BAY/DELTA PLANNING PROCESS



EPA 2/92

MEMORANDUM

SUBJECT: Greg Thomas Report on "Environmental Guarantees Arising Out of the Three-Way Process" on Monday, October 28, at 2:30

FROM: Tom Hagler

TO: Nancy Marvel

DATE: October 25, 1991

We have been invited to attend a senior staff briefing presented by Greg Thomas of the Natural Heritage Institute about the "environmental guarantees" being considered by the "Three-way Process" or "Tripartite Negotiations" now underway to solve the California water issue. This memo gives you some background on that process.

All sides (broadly grouped as "Urban", "Ag", and "Environmentalists") in the California water wars have become frustrated with the State Board's process of water quality and water allocation determinations. About 1 1/2 years ago, an informal and strictly unofficial negotiation process began between what appeared to be self-appointed representatives of each interest group. Included were some Environmentalists (Graff at EDF, Thomas at Natural Heritage, Jerry Merrill at Planning and Conservation League, David Fullerton with the Committee on Water Policy Consensus), Urban users (Carl Boronkay of the MWD, maybe Anson Moran from N. Cal.), and some Ag users (probably Jason Peltier of the CVP Users, et. al.). It is a large and fluid group.

As the group continued meeting, it began to get some support from more official bodies, notably Gov. Wilson and Dan McGovern. The "Deal" they seem to be moving towards is to move water from Ag to Urban, giving Ag lots of money in return, and to give Environmentalists some water with environmental "guarantees". In return, the Environmentalists will probably sign off on building some new facilities (reservoirs, maybe a new canal, etc.). Depending on who you talk to, the negotiations are either very successful or a slow failure. I personally think they are moving, but very very slowly.

Region IX (through the Estuary Project, I believe) is actually funding Greg Thomas' participation in these negotiations, mainly because his group has some technical expertise and some credibility with all sides, even though it is a clearly environmentalist group. In return, Greg is required to give EPA a report on the nature of the environmental guarantees arising out of the negotiations. This Monday's meeting is apparently a status report on the guarantees (which may take the form of water easements, instream flow protection statutes, constitutional amendments, etc.) The big issue on the guarantees is how to make them "airtight" so that we don't lose any environmental protection whenever the next drought or next round of S. Cal. development occurs.

cc: Gail Cooper