

### **CHAPTER III. EXISTING REGULATORY CONDITIONS**

The existing regulatory setting for the Bay-Delta Estuary consists of the requirements set forth in water quality control plans, water right decisions, and biological opinions issued under the federal ESA. A summary of existing requirements relevant to the adoption of fish and wildlife objectives for the estuary are presented below.

#### **A. 1978 DELTA PLAN AND D-1485**

On August 16, 1978, the SWRCB adopted both the 1978 Delta Plan and D-1485. The 1978 Delta Plan included water quality objectives intended to protect municipal and industrial, agricultural, and fish and wildlife beneficial uses in the Delta, and fish and wildlife beneficial uses in the Suisun Marsh.

D-1485 was adopted as the primary means to implement the 1978 Delta Plan. While it is consistent with the 1978 Delta Plan, D-1485 only incorporates those elements of the plan for which a State or federal water project mitigation responsibility or a compelling public interest was shown. Therefore, D-1485 requires the DWR and the USBR to meet the objectives in the 1978 Delta Plan with the exception of the agricultural objectives for the southern Delta. The SWRCB determined that, because the Delta SWP and CVP facilities had no apparent direct impact on water quality conditions in the southern Delta, requiring the projects to meet southern Delta agricultural objectives could not be justified. Water Right Decision 1422 (SWRCB 1973), adopted for the New Melones Project in 1973, already required releases of water from New Melones Reservoir for the purpose of maintaining a mean monthly total dissolved solids concentration no greater than 500 parts per million (ppm) in the San Joaquin River at Vernalis. The D-1485 water quality standards are presented in Table III-1.

The underlying principle of the 1978 Delta Plan and D-1485 standards is that water quality in the Delta should be at least as good as those levels which would have been available had the State and federal water projects not been constructed (i.e., without project conditions), as limited by the constitutional mandate of reasonable use. The standards include adjustments in the levels of protection to reflect changes in hydrologic conditions experienced under different water year types.

The level of protection for municipal and industrial uses afforded by the 1978 Delta Plan and D-1485 was equivalent to that of the Regional Water Quality Control Plan for the Sacramento-San Joaquin Delta Basin (Basin 5B Plan) that was effective in 1978. However, unlike the Basin 5B Plan, the 1978 Delta Plan and D-1485 include no standard for protection of municipal and industrial uses offshore at Antioch. The Antioch standard was terminated when the SWRCB determined that adequate substitute water supplies were available to all municipal and industrial users, including salt-sensitive industries, in the vicinity of Antioch.

Table III-1. Water Right Decision 1485 (D-1485) water quality standards for the Sacramento-San Joaquin Delta and Suisun Marsh<sup>1/</sup>.

| BENEFICIAL USE PROTECTED<br>and LOCATION  | PARAMETER                  | DESCRIPTION  | YEAR TYPE <sup>2/</sup>                            | VALUES   |  |
|---|----------------------------|--|--|--|--|
| <b>MUNICIPAL and INDUSTRIAL</b>   |                            |  |  |  |  |
| Contra Costa Canal Intake<br>at Pumping Plant No. 1   | Chloride                   | Maximum Mean Daily Cl <sup>-</sup><br>in mg/l  | All  | 250  |  |
| Contra Costa Canal Intake<br>at Pumping Plant No. 1<br>or<br>Antioch Water Works Intake<br>on San Joaquin River | Chloride                   | Maximum Mean Daily 150 mg/l<br>Chloride for at least the number<br>of days shown during the<br>Calendar Year. Must be provided<br>in intervals of not less than<br>two weeks duration. (% of Year<br>shown in parenthesis) | Wet<br>Ab. Normal<br>Bl. Normal<br>Dry<br>Critical | Number of Days Each Calendar Year<br>Less than 150 mg/l Chloride |  |
|   |                            |  |  | 240 (66%)  |  |
|   |                            |  |  | 190 (52%)  |  |
|   |                            |  |  | 175 (48%)  |  |
|   |                            |  |  | 165 (45%)  |  |
|   |                            |  |  | 155 (42%)  |  |
| City of Vallejo Intake<br>at Cache Slough   | Chloride                   | Maximum Mean Daily Cl <sup>-</sup><br>in mg/l  | All  | 250  |  |
| Clifton Court Forebay Intake<br>at West Canal   | Chloride                   | Maximum Mean Daily Cl <sup>-</sup><br>in mg/l  | All  | 250  |  |
| Delta Mendota Canal<br>at Tracy Pumping Plant   | Chloride                   | Maximum Mean Daily Cl <sup>-</sup><br>in mg/l  | All  | 250  |  |
| <b>AGRICULTURE</b>  |                            |  |  |  |  |
|   |                            |  |  | 0.45 EC<br>April 1 to<br>Date Shown                              | EC from Date<br>Shown 3/ to<br>Aug. 15 |
| <b>WESTERN DELTA</b>  |                            |  |  |  |  |
| Emmaton on the<br>Sacramento River  | Electrical<br>Conductivity | Maximum 14-day Running<br>Average of Mean Daily<br>EC in mmhos   | Wet<br>Ab. Normal<br>Bl. Normal<br>Dry<br>Critical | Aug. 15<br>July 1<br>June 20<br>June 15<br>---                   | ---<br>0.63<br>1.14<br>1.67<br>2.78    |
| Jersey Point on the<br>San Joaquin River  | Electrical<br>Conductivity | Maximum 14-day Running<br>Average of Mean Daily<br>EC in mmhos   | Wet<br>Ab. Normal<br>Bl. Normal<br>Dry<br>Critical | Aug. 15<br>Aug. 15<br>June 20<br>June 15<br>---                  | ---<br>---<br>0.74<br>1.35<br>2.20     |
| <b>INTERIOR DELTA</b>   |                            |  |  |  |  |
| Terminus on the<br>Mokelumne River  | Electrical<br>Conductivity | Maximum 14-day Running<br>Average of Mean Daily<br>EC in mmhos   | Wet<br>Ab. Normal<br>Bl. Normal<br>Dry<br>Critical | Aug. 15<br>Aug. 15<br>Aug. 15<br>Aug. 15<br>---                  | ---<br>---<br>---<br>---<br>0.54       |
| San Andreas Landing on the<br>San Joaquin River   | Electrical<br>Conductivity | Maximum 14-day Running<br>Average of Mean Daily<br>EC in mmhos   | Wet<br>Ab. Normal<br>Bl. Normal<br>Dry<br>Critical | Aug. 15<br>Aug. 15<br>Aug. 15<br>June 25<br>---                  | ---<br>---<br>---<br>0.58<br>0.87      |

Table III-1. Water Right Decision 1485 (D-1485) water quality standards for the Sacramento-San Joaquin Delta and Suisun Marsh<sup>1/</sup> (continued).

| BENEFICIAL USE PROTECTED<br>and LOCATION           | PARAMETER  | DESCRIPTION   | YEAR TYPE <sup>2/</sup>  | VALUES  |                              |                     |
|--|--|---|--|---|------------------------------|---------------------|
| <b>FISH AND WILDLIFE</b>                           |  |   |  |   |                              |                     |
| <b>• STRIPED BASS SPAWNING</b>                     |  |   |  |   |                              |                     |
| Prisoners Point on the San Joaquin River           | Electrical Conductivity  | Average of mean daily EC for the period not to exceed   | All  | April 1 to May 5<br>0.550 mmhos   |                              |                     |
| Chipps Island                                      | Delta Outflow Index in cfs   | Average of the daily Delta outflow index for the period, not less than  | All  | April 1 to April 14<br>6700 cfs   |                              |                     |
| Antioch Waterworks Intake on the San Joaquin River | Electrical Conductivity  | Average of mean daily EC for the period, not more than  | All  | April 15 to May 5<br>1.5 mmhos  |                              |                     |
| Antioch Waterworks Intake                          | Electrical Conductivity (Relaxation Provision — replaces the above Antioch and Chipps Island Standard whenever the projects impose deficiencies in firm supplies <sup>5/</sup> ) | Average of mean daily EC for the period, not more than the values corresponding to the deficiencies taken (linear interpolation to be used to determine values between those shown) | All — whenever the projects impose deficiencies in firm supplies <sup>5/</sup> | Total Annual Imposed Deficiency MAF   | April 1 to May 5 EC in mmhos |                     |
|  |  |   |  | 0   | 1.5                          |                     |
|  |  |   |  | 0.5   | 1.9                          |                     |
|  |  |   |  | 1.0   | 2.5                          |                     |
|  |  |   |  | 1.5   | 3.4                          |                     |
|  |  |   |  | 2.0   | 4.4                          |                     |
|  |  |   |  | 3.0   | 10.3                         |                     |
|  |  |   |  | 4.0 or more   | 25.2                         |                     |
| <b>• STRIPED BASS SURVIVAL</b>                     |  |   |  |   |                              |                     |
| Chipps Island                                      | Delta Outflow Index in cfs   | Average of the daily Delta outflow index for each period shown not less than  |  | May 6-31  | June                         | July                |
|  |  |   | Wet  | 14,000  | 14,000                       | 10,000              |
|  |  |   | Ab. Normal   | 14,000  | 10,700                       | 7,700               |
|  |  |   | Bl. Normal   | 11,400  | 9,500                        | 6,500               |
|  |  |   | Subnormal  |   |                              |                     |
|  |  |   | Snowmelt   | 6,500   | 5,400                        | 3,600               |
|  |  |   | Dry <sup>6/</sup>  | 4,300   | 3,600                        | 3,200               |
|  |  |   | Dry <sup>7/</sup> or Critical  | 3,300   | 3,100                        | 2,900               |
| <b>• SALMON MIGRATIONS</b>                         |  |   |  |   |                              |                     |
| Rio Vista on the Sacramento River                  | Computed net stream flow in cfs  | Minimum 30-day running average of mean daily net flow   |  | Jan.  | Feb. 1-<br>Mar. 15           | Mar. 16-<br>June 30 |
|  |  |   | Wet  | 2,500   | 3,000                        | 5,000               |
|  |  |   | Ab. Normal   | 2,500   | 2,000                        | 3,000               |
|  |  |   | Bl. Normal   | 2,500   | 2,000                        | 3,000               |
|  |  |   | Dry or Critical  | 1,500   | 1,000                        | 2,000               |
|  |  |   |  | July  | Aug.                         | Sept. 1-<br>Dec. 31 |
|  |  |   | Wet  | 3,000   | 1,000                        | 5,000               |
|  |  |   | Ab. Normal   | 2,000   | 1,000                        | 2,500               |
|  |  |   | Bl. Normal   | 2,000   | 1,000                        | 2,500               |
|  |  |   | Dry or Critical  | 1,000   | 1,000                        | 1,500               |
| <b>• SUISUN MARSH</b>                              |  |   |  |   |                              |                     |
| Chipps Island at O&A Ferry Landing                 | Electrical Conductivity  | Maximum 28-day running average of mean daily EC   |  | Jan.-May  | Oct.-Dec.                    |                     |
|  |  |   | Wet  | 12.5 mmhos  | 12.5 mmhos                   |                     |
|  |  |   | Ab. Normal   | 12.5 mmhos  | 12.5 mmhos                   |                     |
|  |  |   | Bl. Normal   | 12.5 mmhos  | 12.5 mmhos                   |                     |
|  |  |   | Dry or Critical  | 12.5 mmhos  | 15.6 mmhos                   |                     |
|  |  |   |  | (The 15.6 mmhos EC Standard applies only when project water users are taking deficiencies in scheduled water supplies <sup>8/</sup> otherwise the 12.5 mmhos EC remains in effect.) |                              |                     |
| Chipps Island                                      | Delta Outflow Index in cfs   | Average of the daily Delta outflow index for each month, not less than values shown   | Wet  | February-May<br>10,000 cfs  |                              |                     |
|  |  |   | Subnormal Snowmelt   | February-April<br>10,000 cfs  |                              |                     |
|  |  | Minimum daily Delta outflow index for 60 consecutive days in the period   | Ab. Norm. and Bl. Norm.  | January-April<br>12,000 cfs   |                              |                     |

Table III-1. Water Right Decision 1485 (D-1485) water quality standards for the Sacramento-San Joaquin Delta and Suisun Marsh<sup>1/</sup> (continued).

| BENEFICIAL USE PROTECTED<br>and LOCATION                    | PARAMETER                  | DESCRIPTION  | YEAR TYPE <sup>2/</sup>  | VALUES  |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
|---|----------------------------|--|--|---|-------|-------------|-------|-------|-------|-------|------|------|------|------|------|-----|------|-----|------|------|-----|------|
| <b>FISH AND WILDLIFE</b>                                    |                            |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| • <b>SUISUN MARSH</b>                                       |                            |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Chippis Island (continued)                                  | Delta Outflow Index in cfs | Average of the daily Delta outflow index for each month, not less than values shown  | All (if greater flow not required by above standard)—whenever storage is at or above the minimum level in the flood control reservation envelope at two out of three of the following: Shasta Reservoir, Oroville Reservoir, and CVP storage on the American River | Jan.—May<br>6,600 cfs   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Collinsville on Sacramento River (C-2)                      | Electrical Conductivity    | The monthly average of both daily high tide values not to exceed the values shown (or demonstrate that equivalent or better protection will be provided at the location)           | All — To become effective Oct. 1, 1984   | <table border="1"> <thead> <tr> <th>Month</th> <th>EC in mmhos</th> </tr> </thead> <tbody> <tr> <td>Oct.</td> <td>19.0</td> </tr> <tr> <td>Nov.</td> <td>15.5</td> </tr> <tr> <td>Dec.</td> <td>15.5</td> </tr> <tr> <td>Jan.</td> <td>12.5</td> </tr> <tr> <td>Feb.</td> <td>8.0</td> </tr> <tr> <td>Mar.</td> <td>8.0</td> </tr> <tr> <td>Apr.</td> <td>11.0</td> </tr> <tr> <td>May</td> <td>11.0</td> </tr> </tbody> </table> | Month | EC in mmhos | Oct.  | 19.0  | Nov.  | 15.5  | Dec. | 15.5 | Jan. | 12.5 | Feb. | 8.0 | Mar. | 8.0 | Apr. | 11.0 | May | 11.0 |
| Month   | EC in mmhos                |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Oct.  | 19.0                       |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Nov.  | 15.5                       |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Dec.  | 15.5                       |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Jan.  | 12.5                       |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Feb.  | 8.0                        |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Mar.  | 8.0                        |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Apr.  | 11.0                       |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| May   | 11.0                       |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Miens Landing on Montezuma Slough (S-64)                    |                            |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Montezuma Slough at Cutoff Slough (S-48)                    |                            |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Montezuma Slough near mouth                                 |                            |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Suisun Slough near Volanti Slough (S-42)                    |                            |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Suisun Slough near mouth (S-31)                             |                            |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Goodyear Slough south of Pierce Harbor (S-35)               |                            |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Cordelia Slough above S. P. R.R. (S-32)                     |                            |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| • <b>OPERATIONAL CONSTRAINTS</b>                            |                            |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Minimize diversion of young striped bass from the Delta     | Diversions in cfs          | The mean monthly diversions from the Delta by the State Water Project (Department) not to exceed the values shown.   | All  | <table border="1"> <thead> <tr> <th>May</th> <th>June</th> <th>July</th> </tr> </thead> <tbody> <tr> <td>3,000</td> <td>3,000</td> <td>4,600</td> </tr> </tbody> </table>   | May   | June        | July  | 3,000 | 3,000 | 4,600 |      |      |      |      |      |     |      |     |      |      |     |      |
| May   | June                       | July   |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| 3,000   | 3,000                      | 4,600  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
|   |                            | The mean monthly diversions from the Delta by the Central Valley Project (Bureau), not to exceed the values shown  | All  | <table border="1"> <thead> <tr> <th>May</th> <th>June</th> </tr> </thead> <tbody> <tr> <td>3,000</td> <td>3,000</td> </tr> </tbody> </table>  | May   | June        | 3,000 | 3,000 |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| May   | June                       |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| 3,000   | 3,000                      |  |  |   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Minimize diversion of young striped bass into Central Delta |                            | Closure of Delta cross channel gates for up to 20 days but no more than two out of four consecutive days at the discretion of the Department of Fish and Game upon 12 hours notice | All — whenever the daily Delta outflow index is greater than 12,000 cfs  | April 16—May 31   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |
| Minimize cross Delta movement of Salmon                     |                            | Closure of Delta Cross Channel gates (whenever the daily Delta outflow index is greater than 12,000 cfs)   | All  | Jan. 1—April 15   |       |             |       |       |       |       |      |      |      |      |      |     |      |     |      |      |     |      |

**Table III-1. Water Right Decision 1485 (D-1485) water quality standards for the Sacramento-San Joaquin Delta and Suisun Marsh<sup>1/</sup> (continued).**

### FISH PROTECTIVE FACILITIES

Maintain appropriate records of the numbers, sizes, kinds of fish salvaged and of water export rates and fish facility operations.

#### STATE FISH PROTECTIVE FACILITY

The facility is to be operated to meet the following standards to the extent that they are compatible with water export rates:

- (a) King Salmon — from November through May 14, standards shall be as follows:
  - (1) Approach Velocity — 3.0 to 3.5 feet per second
  - (2) Bypass Ratio — maintain 1.2:1.0 to 1.6:1.0 ratios in both primary and secondary channels
  - (3) Primary Bay — not critical but use Bay B as first choice
  - (4) Screened Water System — the velocity of water exiting from the screened water system is not to exceed the secondary channel approach velocity. The system may be turned off at the discretion of the operators.
- (b) Striped Bass and White Catfish — from May 15 through October, standards shall be as follows:
  - (1) Approach Velocity — in both the primary and secondary channels, maintain a velocity as close to 1.0 feet per second as is possible
  - (2) Bypass Ratio
    - (i) When only Bay A (with center wall) is in operation maintain a 1.2:1.0 ratio
    - (ii) When both primary bays are in operation and the approach velocity is less than 2.5 feet per second, the bypass ratio should be 1.5:1.0
    - (iii) When only Bay B is operating the bypass ratio should be 1.2:1.0
    - (iv) Secondary channel bypass ratio should be 1.2:1.0 for all approach velocities.
  - (3) Primary Channel — use Bay A (with center wall) in preference to Bay B
  - (4) Screened Water Ratio — if the use of screened water is necessary, the velocity of water exiting the screened water system is not to exceed the secondary channel approach velocity
  - (5) Clifton Court Forebay Water Level — maintain at the highest practical level.

#### TRACY FISH PROTECTIVE FACILITY

The secondary system is to be operated to meet the following standards, to the extent that they are compatible with water export rates:

- (a) The secondary velocity should be maintained at 3.0 to 3.5 feet per second whenever possible from February through May while salmon are present
- (b) To the extent possible, the secondary velocity should not exceed 2.5 feet per second and preferably 1.5 feet per second between June 1 and August 31, to increase the efficiency for striped bass, catfish, shad, and other fish. Secondary velocities should be reduced even at the expense of bypass ratios in the primary, but the ratio should not be reduced below 1:1.0
- (c) The screened water discharge should be kept at the lowest possible level consistent with its purpose of minimizing debris in the holding tanks
- (d) The bypass ratio in the secondary should be operated to prevent excessive velocities in the holding tanks, but in no case should the bypass velocity be less than the secondary approach velocity.

#### FOOTNOTES

- 1/ Except for flow, all values are for surface zone measurements. Except for flow, all mean daily values are based on at least hourly measurements. All dates are inclusive.
- 2/ Footnote 2 is set forth on next sheet.
- 3/ When no date is shown in the adjacent column, EC limit in this column begins on April 1.
- 4/ If contracts to ensure such facilities and water supplies are not executed by January 1, 1980, the Board will take appropriate enforcement actions to prevent encroachment on riparian rights in the southern Delta.
- 5/ For the purpose of this provision firm supplies of the Bureau shall be any water the Bureau is legally obligated to deliver under any CVP contract of 10 years or more duration, excluding the Friant Division of the CVP, subject only to dry and critical year deficiencies. Firm supplies of the Department shall be any water the Department would have delivered under Table A entitlements of water supply contracts and under prior right settlements had deficiencies not been imposed in that dry or critical year.
- 6/ Dry year following a wet, above normal or below normal year.
- 7/ Dry year following a dry or critical year.
- 8/ Scheduled water supplies shall be firm supplies for USBR and DWR plus additional water ordered from DWR by a contractor the previous September, and which does not exceed the ultimate annual entitlement for said contractor.

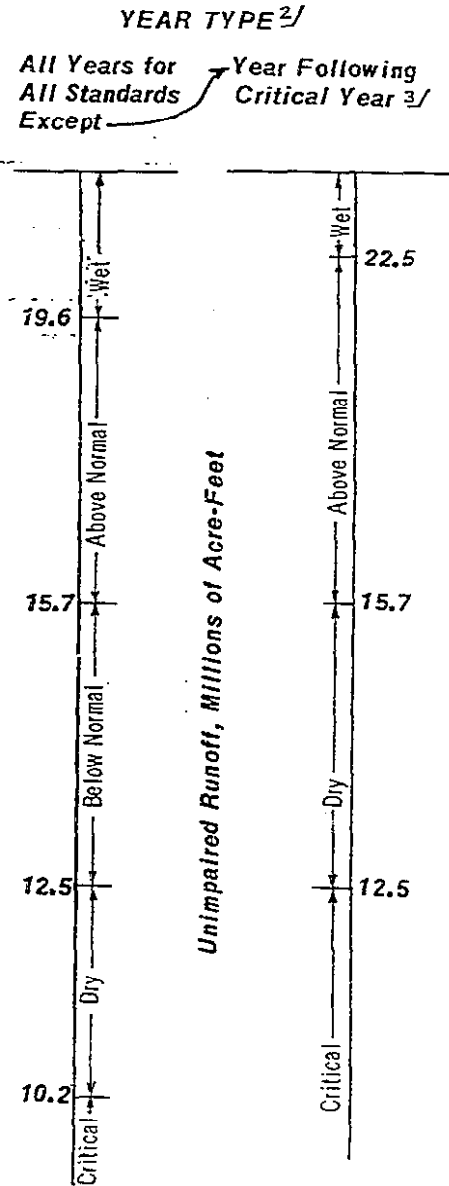
NOTE: EC values are mmhos/cm at 25°C.

Footnote 2 of Table III-1.

YEAR CLASSIFICATION

Year classification shall be determined by the forecast of Sacramento Valley unimpaired runoff for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year) as published in California Department of Water Resources Bulletin 120 for the sum of the following locations: Sacramento River above Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River at Smartville; American River, total inflow to Folsom Reservoir. Preliminary determinations of year classification shall be made in February, March and April with final determination in May. These preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming normal precipitation for the remainder of the water year.

| YEAR TYPE                  | RUNOFF, MILLIONS OF ACRE-FEET   |
|----------------------------|---|
| Wet <sup>1/</sup>          | equal to or greater than 19.6 (except equal to or greater than 22.5 in a year following a critical year). <sup>2/</sup>                                       |
| Above Normal <sup>1/</sup> | greater than 15.7 and less than 19.6 (except greater than 15.7 and less than 22.5 in a year following a critical year). <sup>3/</sup>                         |
| Below Normal <sup>1/</sup> | equal to or less than 15.7 and greater than 12.5 (except in a year following a critical year). <sup>3/</sup>  |
| Dry                        | equal to or less than 12.5 and greater than 10.2 (except equal to or less than 15.7 and greater than 12.5 in a year following a critical year). <sup>3/</sup> |
| Critical                   | equal to or less than 10.2 (except equal to or less than 12.5 in a year following a critical year). <sup>3/</sup>   |



<sup>1/</sup> Any otherwise wet, above normal, or below normal year may be designated a subnormal snowmelt year whenever the forecast of April through July unimpaired runoff reported in the May issue of Bulletin 120 is less than 5.9 million acre-feet.

<sup>2/</sup> The year type for the preceding water year will remain in effect until the initial forecast of unimpaired runoff for the current water year is available.

<sup>3/</sup> "Year following critical year" classification does not apply to Agricultural, Municipal and Industrial standards.

The agricultural standards for the western and interior Delta in the 1978 Delta Plan and D-1485 result in substantially greater protection for Delta agricultural uses than that established in the Basin 5B Plan.

The fish and wildlife standards in the 1978 Delta Plan and D-1485 were taken essentially from a draft Four-Agency Agreement developed among the DWR, DFG, USBR, and USFWS. While the standards in D-1485 were believed to approach a without-project level of protection for striped bass, it was acknowledged that they did not provide equivalent protection for many other species, such as white catfish, shad, and salmon. However, the level of protection provided for these species under the 1978 Delta Plan and D-1485 was believed to be reasonable until final determinations regarding a cross-Delta transfer facility or other mitigation were made.

D-1485 requires that water quality standards in the Delta must be satisfied prior to any export from the Delta to other areas for any purpose. These standards are to be achieved by reduction of direct diversion at the project pumps, release of natural flow or water in storage, operation of the Delta Cross Channel gates, or any combination of these measures. To ensure the collection of data necessary to measure compliance with the standards, D-1485 requires a monitoring program that is implemented through the terms and conditions in the DWR and the USBR water rights permits.

Other D-1485 requirements of the permittees include:

- Develop and implement a plan for full protection of the Suisun Marsh.
- Continue and report on negotiations with South Delta Water Agency (SDWA) concerning the construction of physical facilities or other measures for long-term protection of southern Delta agriculture.
- Report annually on: (1) methods used to determine flows past Rio Vista and improving accuracy of Delta outflow estimates, or on studies to be commenced to determine such procedures; and (2) methods for making more precise projections of salinity distribution in the Delta under varying inflow, outflow, and export conditions.
- Conduct special studies on the Delta and Suisun Marsh, and develop and improve water quality and biological predictive tools for the western Delta and Suisun Bay area (including Suisun Marsh), San Francisco Bay to the Golden Gate Bridge, and the interior Delta.
- Participate in research studies to determine: (1) outflow needs in San Francisco Bay; and (2) the need for winter flows for long-term protection of striped bass and other aquatic organisms in the Delta.

Table III-2. Suisun Marsh objectives as amended in D-1485 in 1985.

| LOCATION  | SAMPLING<br>SITE NOS.<br>(I-A/RKI) | PARAMETER         | DESCRIPTION  | EFFECTIVE<br>DATES | MONTHS | VALUES |
|---|------------------------------------|-------------------|--|--------------------|--------|--------|
| Sacramento River at<br>Collinsville   | C-2                                | Electrical        | Monthly average of both daily<br>high tide values not to exceed<br>the values shown, in mmhos/cm<br>(or demonstrate that equivalent<br>or better protection will be<br>provided at the location) | Oct 1, 1988        | Oct    | 19.0   |
|   | RSAC081                            | Conductivity (EC) |  |                    | Nov    | 15.5   |
|   |                                    |                   |  |                    | Dec    | 15.5   |
| Montezuma Slough at<br>National Steel   | S-64(new)                          |                   |  |                    | Jan    | 12.5   |
|   | SLMZU25                            |                   |  |                    | Feb    | 8.0    |
|   |                                    |                   |  |                    | Mar    | 8.0    |
| Montezuma Slough near<br>Beldon Landing   | S-49                               |                   |  |                    | Apr    | 11.0   |
|   | SLMZU11                            |                   |  |                    | May    | 11.0   |
|   |                                    |                   |  |                    |        |        |
| Chadbourne Slough at<br>Chadbourne Road (proposed)<br>and<br>Cordelia Slough 500 ft west<br>of S.P.R.R. crossing at Cygnus<br>-or-<br>Chadbourne Slough at<br>Chadbourne Road (proposed)<br>and<br>Cordelia Slough at Cordelia<br>Goodyear Ditch (proposed) | S-21(prop.)                        |                   |  | Oct 1, 1991        |        |        |
|   | SLCBN1                             |                   |  |                    |        |        |
|   |                                    |                   |  |                    |        |        |
| Goodyear Slough at<br>Morrow Island Clubhouse<br>-or-<br>Goodyear Slough, 1.3 mi<br>south of Morrow Island<br>[Drainage] Ditch at Pierce  | S-33                               |                   |  | or                 |        |        |
|   | SLCRD04                            |                   |  |                    |        |        |
|   |                                    |                   |  |                    |        |        |
| Suisun Slough, 300 ft<br>south of Volanti Slough  | S-21(prop.)                        |                   |  | Oct 1, 1993        |        |        |
|   | SLCBN1                             |                   |  |                    |        |        |
|   |                                    |                   |  |                    |        |        |
| Water Supply Intakes<br>for Waterfowl Manage-<br>ment Areas on Van<br>Sickle and Chipps islands   | S-97(prop.)                        |                   |  |                    |        |        |
|   | SLCRD06                            |                   |  |                    |        |        |
|   |                                    |                   |  |                    |        |        |
| Goodyear Slough at<br>Morrow Island Clubhouse<br>-or-<br>Goodyear Slough, 1.3 mi<br>south of Morrow Island<br>[Drainage] Ditch at Pierce  | S-35(new)                          |                   |  | Oct 1, 1991        |        |        |
|   | SLGYR03                            |                   |  |                    |        |        |
|   |                                    |                   |  |                    |        |        |
| Suisun Slough, 300 ft<br>south of Volanti Slough  | S-75                               |                   |  | or                 |        |        |
|   | SLGYR04                            |                   |  |                    |        |        |
|   |                                    |                   |  |                    |        |        |
| Suisun Slough, 300 ft<br>south of Volanti Slough  | S-42                               |                   |  | Oct 1, 1997        |        |        |
|   | SLSUS12                            |                   |  |                    |        |        |
|   |                                    |                   |  |                    |        |        |
| Water Supply Intakes<br>for Waterfowl Manage-<br>ment Areas on Van<br>Sickle and Chipps islands   | No Locations<br>specified          |                   |  |                    |        |        |

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D-1485 also provides that:

- CVP export reductions required to minimize the diversion of young striped bass during May and June may be made up later in the year through coordinated operations involving direct diversion or re-diversion of stored water released through SWP facilities.
- Variations in flow for experimental purposes for protection and enhancement of fish and wildlife may be allowed, upon SWRCB approval, provided that D-1485 municipal, industrial, and agricultural standards are not violated.

D-1485 adds conditions to the permits of the CVP and the SWP requiring that they meet water quality objectives. In all SWP permits and in CVP permits affecting the Delta, the SWRCB reserved jurisdiction to formulate or revise terms and conditions for salinity control and for fish and wildlife protection, and to coordinate the terms and conditions of the various permits for the two projects. This continuation of reserved jurisdiction in permits issued to the DWR and the USBR which affect Delta water supplies was based on the difficulty of setting reasonably accurate, unlimited duration conditions for the Delta.

To ensure protection of Delta beneficial uses, and to make optimum use of storage, pumping, and conveyance facilities, the operations of the CVP and SWP must be coordinated. Therefore, the terms and conditions related to the Delta are the same in all of the projects' permits. Also, in 1986, the USBR and the DWR entered into the COA (described in Chapter I) which obligates the CVP and the SWP to coordinate their operations to meet D-1485 objectives.

In 1985, some of the standards in D-1485 were amended to change or delete some monitoring stations in the Suisun Marsh and to revise the schedule for implementation of the salinity objectives. Table III-2 presents a summary of the amended Suisun Marsh requirements for the CVP and the SWP.

## **B. SWRCB 1991 BAY-DELTA PLAN**

In May 1991, the SWRCB adopted the 1991 Bay-Delta Plan. The 1991 Bay-Delta Plan superseded: (1) the 1978 Delta Plan to the extent that the 1978 plan addressed the water quality parameters that are included in the 1991 plan; and (2) the regional water quality control plans for San Francisco Bay and the Sacramento-San Joaquin Delta (Basin 2 Plan and Basin 5B Plan, respectively) to the extent of any conflict.

The 1991 Bay-Delta Plan contains numerous water quality objectives for the protection of municipal and industrial, agricultural, and fish and wildlife beneficial uses (Table III-3). They include: salinity levels for municipal and industrial intakes, Delta agriculture, export agriculture, and estuarine fish and wildlife resources; an expanded period of protection for striped bass spawning; and temperature and dissolved oxygen levels for fisheries in the Delta.

Table III-3. 1991 Bay-Delta Salinity Plan water quality objectives.

**A) MUNICIPAL AND INDUSTRIAL**

| LOCATION  | SAMPLING SITE NOS. (I-A/RKI)                | PARAMETER      | DESCRIPTION   | INDEX TYPE                                 | YEAR TYPE         | DATES   | VALUES    |
|---|---|----------------|---|--|-------------------|---|-----------|
| Contra Costa Canal at Pumping Plant #1  | C-5<br>CHCCC06                              | Chloride (Cl-) | Maximum mean daily, in mg/l   | Not Applicable                             | All               | Oct-Sep   | 250       |
| Contra Costa Canal at Pumping Plant #1<br>- or -<br>San Joaquin River at Antioch Water Works Intake | C-5<br>CHCCC06<br><br>D-12(near)<br>RSAN007 | Chloride (Cl-) | Maximum mean daily 150 mg/l chloride for at least the number of days shown during the Calendar Year. Must be provided in intervals of not less than two weeks duration. (% of Calendar Year shown in parenthesis) | Sac R<br>40-30-30<br><br>Sac R<br>40-30-30 | W<br>AN<br>D<br>C | No. of days each Cal. Year < 150 mg/l Cl-<br><br>190 (52%)<br>175 (48%)<br>165 (45%)<br>155 (42%) | 240 (66%) |
| West Canal at mouth of Clifton Court Forebay  | C-9<br>CHWST0                               | Chloride (Cl-) | Maximum mean daily, in mg/l   | Not Applicable                             | All               | Oct-Sep   | 250       |
| Delta Mendota Canal at Tracy Pumping Plant  | DMC-1<br>CHDMC004                           | Chloride (Cl-) | Maximum mean daily, in mg/l   | Not Applicable                             | All               | Oct-Sep   | 250       |
| Cache Slough at City of Vallejo Intake [1]<br>and/or<br>Burker Slough at North Bay Aqueduct Intake  | C-19<br>SLCCH16<br><br>SLBAR3               | Chloride (Cl-) | Maximum mean daily, in mg/l   | Not Applicable                             | All               | Oct-Sep   | 250       |

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Table III-3. 1991 Bay-Delta Salinity Plan water quality objectives (continued).

**B) AGRICULTURAL**

**AREA**

| LOCATION                             | SAMPLING SITE NOS. (I-A/RKI) | PARAMETER                    | DESCRIPTION   | INDEX TYPE        | YEAR TYPE | DATES      | VALUES       |
|--------------------------------------|------------------------------|------------------------------|---|-------------------|-----------|------------|--------------|
| <b>(D) WESTERN DELTA</b>             |                              |                              |   |                   |           |            |              |
| Sacramento River<br>at Emmiton       | D-22<br>RSAC092              | Electrical Conductivity (EC) | Maximum 14-day running average of mean daily, in mμhos/cm (mμhos) | Sac R<br>40-30-30 |           | 0.45 EC    | EC from Date |
|                                      |                              |                              |   |                   |           | April 1 to | Shown to     |
|                                      |                              |                              |   |                   |           | Date Shown | Aug. 15 [2]  |
|                                      |                              |                              |   |                   | W         | Aug. 15    | ..           |
|                                      |                              |                              |   |                   | AN        | July 1     | 0.63         |
| BN                                   | June 20                      | 1.14                         |   |                   |           |            |              |
|                                      | D                            | June 15                      | 1.67  |                   |           |            |              |
|                                      | C                            | ..                           | 2.78  |                   |           |            |              |
| San Joaquin River<br>at Jersey Point | D-15<br>RSAN018              | Electrical Conductivity (EC) | Maximum 14-day running average of mean daily, in mμhos            | Sac R<br>40-30-30 |           | 0.45 EC    | EC from Date |
|                                      |                              |                              |   |                   |           | April 1 to | Shown to     |
|                                      |                              |                              |   |                   |           | Date Shown | Aug. 15 [2]  |
|                                      |                              |                              |   |                   | W         | Aug. 15    | ..           |
|                                      |                              |                              |   |                   | AN        | Aug. 15    | ..           |
| BN                                   | June 20                      | 0.74                         |   |                   |           |            |              |
|                                      | D                            | June 15                      | 1.35  |                   |           |            |              |
|                                      | C                            | ..                           | 2.20  |                   |           |            |              |

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Table III-3. 1991 Bay-Delta Salinity Plan water quality objectives (continued).

**B) AGRICULTURAL**

**AREA**

| LOCATION                                    | SAMPLING SITE NOS. (I-A/R/K) | PARAMETER                    | DESCRIPTION   | INDEX TYPE        | YEAR TYPE | DATES      | VALUES       |
|---|------------------------------|------------------------------|---|-------------------|-----------|------------|--------------|
| <b>2) INTERIOR DELTA</b>                    |                              |                              |   |                   |           |            |              |
| South Fork Mokelumne River<br>at Terminus   | C-13<br>RSMKL08              | Electrical Conductivity (EC) | Maximum 14-day running<br>average of mean daily, in mmhos | Sac R<br>40-30-30 |           | 0.45 EC    | EC from Date |
|   |                              |                              |   |                   |           | April 1 to | Shown to     |
|   |                              |                              |   |                   |           | Date Shown | Aug. 15 [2]  |
|   |                              |                              |   |                   | W         | Aug. 15    | --           |
|   |                              |                              |   |                   | AN        | Aug. 15    | --           |
| BN  | Aug. 15                      | --                           |   |                   |           |            |              |
|   | D                            | Aug. 15                      | --  |                   |           |            |              |
|   | C                            | --                           | 0.54  |                   |           |            |              |
| San Joaquin River<br>at San Andreas Landing | C-4<br>RSAN032               | Electrical Conductivity (EC) | Maximum 14-day running<br>average of mean daily, in mmhos | Sac R<br>40-30-30 |           | 0.45 EC    | EC from Date |
|   |                              |                              |   |                   |           | April 1 to | Shown to     |
|   |                              |                              |   |                   |           | Date Shown | Aug. 15 [2]  |
|   |                              |                              |   |                   | W         | Aug. 15    | --           |
|   |                              |                              |   |                   | AN        | Aug. 15    | --           |
| BN  | Aug. 15                      | --                           |   |                   |           |            |              |
|   | D                            | Jun. 25                      | 0.58  |                   |           |            |              |
|   | C                            | --                           | 0.87  |                   |           |            |              |

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Table III-3. 1991 Bay-Delta Salinity Plan water quality objectives (continued).

**B) AGRICULTURAL**

**AREA**

| LOCATION   | SAMPLING<br>SITE NOS.<br>(I-A/R/K)           | PARAMETER                               | DESCRIPTION  | INDEX<br>TYPE         | YEAR<br>TYPE | DATES   | VALUES             |
|--|--|---|--|-----------------------|--------------|---|--------------------|
| (To be implemented by 1996) [3]  |  | <b>3) SOUTH DELTA</b>                   |  |                       |              |   |                    |
| <i>San Joaquin River at<br/>Airport Way Bridge, Vermlis</i>  | <i>C-10<br/>RSAN112</i>                      | <i>Electrical<br/>Conductivity (EC)</i> | <i>Maximum 30-day running average<br/>of mean daily EC, in mmhos</i> | <i>Not Applicable</i> | <i>All</i>   | <i>Apr 1-Aug 31<br/>Sep 1-Mar 31</i>  | <i>0.7<br/>1.0</i> |
| <i>Old River near<br/>Middle River</i>   | <i>C-8<br/>ROLD69</i>                        |   |  |                       |              | <i>or</i>   |                    |
| <i>Old River at<br/>Tracy Road Bridge</i>  | <i>P-12<br/>ROLD59</i>                       |   |  |                       |              | <i>If a three-party contract has been implemented among DWR,<br/>USBR and the SDWA, that contract will be reviewed prior<br/>to implementation of the above and, after also considering<br/>the needs of other beneficial uses, revisions will be made<br/>to the objectives and compliance/monitoring locations noted<br/>above, as appropriate.</i> |                    |
| <i>San Joaquin River<br/>at Brandt Bridge [site]</i>   | <i>C-6<br/>RSAN073</i>                       |   |  |                       |              |   |                    |
|  |  | <b>4) EXPORT</b>                        |  |                       |              |   |                    |
| <i>West Canal at mouth of<br/>Clifton Court Forebay -and-<br/>Delta Mendota Canal at<br/>Tracy Pumping Plant</i> | <i>C-9<br/>CHWST0<br/>DMC-1<br/>CHDMC004</i> | <i>Electrical<br/>Conductivity (EC)</i> | <i>Maximum monthly average of mean<br/>daily EC, in mmhos</i>        | <i>Not Applicable</i> | <i>All</i>   | <i>Oct-Sep</i>  | <i>1.0</i>         |

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Table III-3. 1991 Bay-Delta Salinity Plan water quality objectives (continued).

**C) FISH AND WILDLIFE**  
**HABITAT/SPECIES**

| LOCATION   | SAMPLING SITE NOS. (I-A/RK) | PARAMETER             | DESCRIPTION                       | INDEX TYPE     | YEAR TYPE | DATES   | VALUES   |
|--|-----------------------------|-----------------------|-----------------------------------|----------------|-----------|---|--|
| <b>CHINOOK SALMON</b>  |                             |                       |                                   |                |           |   |  |
| DISSOLVED OXYGEN<br><i>San Joaquin River between Turner Cut &amp; Stockton</i> | RSAN050-<br>RSAN061         | Dissolved Oxygen (DO) | Minimum dissolved oxygen, in mg/l | Not Applicable | All       | Sep 1-Nov 30  | 6.0  |
| TEMPERATURE<br><i>Sacramento River at Freeport and</i>                         | RSAC155                     | Temperature           | Narrative Objective               | Not Applicable | All       | "The daily average water temperature shall not be elevated by controllable factors above 68 deg. 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." [4] |  |
| <i>San Joaquin River at Airport Way Bridge, Vernalis</i>                       | C-10<br>RSAN112             | Temperature           | Narrative Objective               | Not Applicable | All       |   |  |
| <i>Sacramento River at Freeport</i>  | RSAC155                     | Temperature           | Narrative Objective               | Not Applicable | All       |   | "The daily average water temperature shall not be elevated by controllable factors above 66 deg. F from the I Street Bridge to Freeport on the Sacramento River between January 1 through March 31." [4] |

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Table III-3. 1991 Bay-Delta Salinity Plan water quality objectives (continued).

**C) FISH AND WILDLIFE**

**HABITAT/SPECIES**

| LOCATION   | SAMPLING SITE NOS. (I-A/R/K)   | PARAMETER                           | DESCRIPTION  | INDEX TYPE   | YEAR TYPE  | DATES  | VALUES          |
|--|--------------------------------|-------------------------------------|--|--|------------|--|-----------------|
| <b>STRIPED BASS SALINITY 1 ANTIOCH SPAWNING</b>  |                                |                                     |  |  |            |  |                 |
| <i>Sacramento River at Chipps Island</i>   | <i>D-10<br/>RSAC075</i>        | <i>Delta outflow Index (DOI)</i>    | <i>Average for the period not less than the value shown, in cfs</i>  | <i>Not Applicable</i>  | <i>All</i> | <i>Apr 1-Apr 14</i>                                    | <i>6,700</i>    |
| <i>San Joaquin River at Antioch Water Works Intake</i>   | <i>D-12 (near)<br/>RSAN007</i> | <i>Electrical Conductivity (EC)</i> | <i>14-day running average of mean daily for the period not more than value shown, in mmhos</i>   | <i>Not Applicable</i>  | <i>All</i> | <i>Apr 15-May 31<br/>(or until spawning has ended)</i> | <i>1.5</i>      |
| <b>STRIPED BASS SALINITY 2 ANTIOCH SPAWNING RELAXATION PROVISION</b>   |                                |                                     |  |  |            |  |                 |
| <i>San Joaquin River at Antioch Water Works Intake</i>   | <i>D-12 (near)<br/>RSAN007</i> | <i>Electrical Conductivity (EC)</i> | <i>14-day running average of mean daily not more than value shown corresponding to deficiencies in firm supplies declared by a set of water projects representative of the Sacramento River and San Joaquin River watersheds, for the period shown, or until spawning has ended. The specific representative projects and amounts of deficiencies will be defined in subsequent phases of the proceedings.</i> | <i>Total Annual Imposed Deficiency (MAF)</i>                                       |            | <i>Apr 1-May 31<br/>EC in mmhos<br/>Dry</i>            | <i>Critical</i> |
| <i>This relaxation provision replaces the above Antioch &amp; Chipps Island standard whenever the projects impose deficiencies in firm supplies.</i> |                                |                                     |  | <i>0.0</i>   |            | <i>1.5</i>   | <i>1.5</i>      |
|  |                                |                                     |  | <i>0.5</i>   |            | <i>1.8</i>   | <i>1.9</i>      |
|  |                                |                                     |  | <i>1.0</i>   |            | <i>1.8</i>   | <i>2.5</i>      |
|  |                                |                                     |  | <i>1.5</i>   |            | <i>1.8</i>   | <i>3.4</i>      |
|  |                                |                                     |  | <i>2.0 or more</i>   |            | <i>1.8</i>   | <i>3.7</i>      |
|  |                                |                                     |  | <i>Linear interpolation is to be used to determine values between those shown.</i> |            |  |                 |
| <b>STRIPED BASS SALINITY 3 PRISONERS POINT SPAWNING</b>  |                                |                                     |  |  |            |  |                 |
| <i>San Joaquin River-at: Prisoners Point</i>   | <i>D-29<br/>RSAN038</i>        | <i>Electrical Conductivity (EC)</i> | <i>14-day running average of mean daily for the period not more than value shown, in mmhos</i>   | <i>Not Applicable</i>  | <i>All</i> | <i>Apr 1-May 31<br/>(or until spawning has ended)</i>  | <i>0.44</i>     |

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Table III-3. 1991 Bay-Delta Salinity Plan water quality objectives (continued).

**C) FISH AND WILDLIFE**

**HABITAT/SPECIES**

| LOCATION   | SAMPLING SITE NOS. (I-A/RKI) | PARAMETER                    | DESCRIPTION   | INDEX TYPE     | YEAR TYPE | DATES   | VALUES |
|--|------------------------------|------------------------------|---|----------------|-----------|---|--------|
| <b>STRIPED BASS - SALINITY - 4 PRISONERS POINT - SPAWNING - RELAXATION PROVISION</b> |                              |                              |   |                |           |   |        |
| <i>When the relaxation provision for Antioch spawning protection is in effect:</i>   |                              |                              |   |                |           |   |        |
| San Joaquin River at:<br>Prisoners Point   | D-29<br>RSAN038              | Electrical Conductivity (EC) | 14-day running average of mean daily for the period not more than the value shown, in mmhos | Not Applicable | D&C       | Apr 1-May 31<br>(or until spawning has ended) | 0.55   |

**SUISUN MARSH**

*In regard to the Suisun Marsh, the water quality objectives for Suisun Marsh are unchanged from the 1978 Delta Plan. The implementation vehicle, Water Right Decision 1485 (D-1485), was amended in 1985 to change (or delete) some monitoring stations and to revise the schedule for implementation. The DWR, USBR, DFG, and Suisun Resource Conservation District (SRCD) have signed and adopted a set of three agreements concerning the Suisun Marsh. These are the Suisun Marsh Preservation Agreement (SMPA), the Monitoring Agreement, and the Mitigation Agreement. The SMPA contains water quality standards for the managed marshes of Suisun Marsh which the four signatories would like the State Board to adopt as water quality objectives. The SMPA also describes the physical facilities that the four signatories have agreed would serve the managed marshes in order to maintain production of preferred waterfowl food plants. The facilities built so far, including the Suisun Marsh Salinity Control Gates (previously called the Montezuma Slough Control Structure), have changed the physical regime in the Marsh.*

*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 (discussed in Section 7.4.2.6 of the plan) is completed. Until that time, the water quality standards in the amended D-1485 will continue to be implemented; see Table 1-2 for a summary of these standards.*



Table III-3. 1991 Bay-Delta Salinity Plan water quality objectives

FOOTNOTES:

[1] The Cache Slough objective to be effective only when water is being diverted from this location.

[2] When no date is shown, EC limit continues from April 1.

[3] South Delta Agriculture objectives will be implemented in stages: two interim stages and one final stage. The first interim stage will be implemented with the adoption of the WQCP, the second interim stage by 1994, and the final stage by 1996. Interim Stage 1 -- 500 mg/l mean monthly TDS all year at Vernalis. Interim Stage 2 -- (to be implemented no later than 1994) 0.7 mmhos/cm EC April 1 to August 31, 1.0 mmhos/cm EC September 1 to March 31, 30-day running average, at Vernalis and Brandt Bridge; with water quality monitored at three current interior stations -- Mossdale, Old River, near Middle River and Tracy Road Bridge, and an additional interior monitoring station on Middle River at Howard Road Bridge. Final Stage -- (to be implemented no later than 1996) 0.7 mmhos/cm EC April 1 to August 31, 1.0 mmhos/cm EC September 1 to March 31, 30-day running average, at Vernalis and Brandt Bridge on the San Joaquin River; with two interior stations at Old River Near Middle River and Old River at Tracy Road Bridge. Monitoring stations will be at Mossdale at head of Old river and Middle River at Howard Road Bridge.

OR

If a three-party contract has been implemented among DWR, USBR and the SDWA, that contract will be reviewed prior to implementation of the above and, after also considering the needs of other beneficial uses, revisions will be made to the objectives and compliance/monitoring locations noted above, as appropriate.

[4] Controllable water quality factors are 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. 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.

**Appendix to Table III-3.**

**Sacramento Valley  
Water Year Hydrologic Classification**

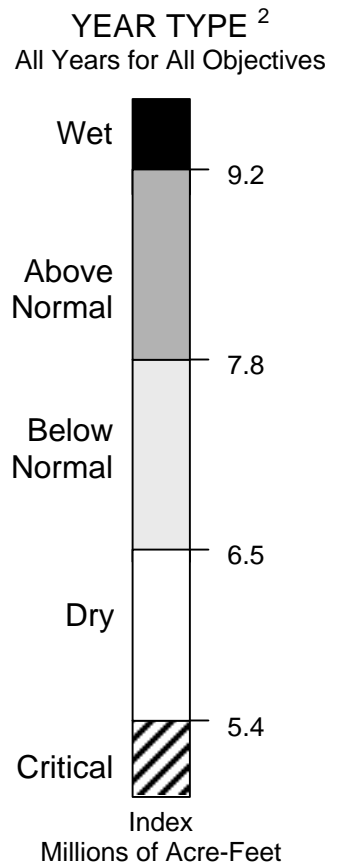
Year classification shall be determined by computation of the following equation:

$$\text{INDEX} = 0.4 * X + 0.3 * Y + 0.3 * Z$$

- Where:
- X = Current year's April – July Sacramento Valley unimpaired runoff
  - Y = Current October – March Sacramento Valley unimpaired runoff
  - Z = Previous year's index<sup>1</sup>

The Sacramento Valley unimpaired runoff for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year), as published in California Department of Water Resources Bulletin 120, is a forecast of the sum of the following locations: Sacramento River above Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River at Smartville; American River, total inflow to Folsom Reservoir. Preliminary determinations of year classification shall be made in February, March, and April with final determination in May. These preliminary determinations shall be based on hydrologic conditions to date plus forecasts of future runoff assuming normal precipitation for the remainder of the water year.

| <u>Classification</u>     | <u>Index<br/>Millions of Acre-Feet (MAF)</u>   |
|---------------------------|--|
| <b>Wet</b> .....          | Equal to or greater than 9.2                   |
| <b>Above Normal</b> ..... | Greater than 7.8 and less than 9.2             |
| <b>Below Normal</b> ..... | Equal to or less than 7.8 and greater than 6.5 |
| <b>Dry</b> .....          | Equal to or less than 6.5 and greater than 5.4 |
| <b>Critical</b> .....     | Equal to or less than 5.4                      |



<sup>1</sup> A cap of 10.0 MAF is put on the previous year's index (Z) to account for required flood control reservoir releases during wet years.

<sup>2</sup> The year type for the preceding water year will remain in effect until the initial forecast of unimpaired runoff for the current water year is available.

Appended to Table III-3 is the water year hydrologic classification for the Sacramento Valley, adopted in the 1991 Bay-Delta Plan, which is used to decide what objectives are applicable each year upon which the application of objectives is based.

Unlike the 1978 Delta Plan, the 1991 Bay-Delta Plan does not include Delta outflow objectives and operational constraints. The flow and operational objectives in the 1978 Delta Plan remain in effect and are implemented through D-1485.

The beneficial uses and water quality objectives in the 1991 Bay-Delta Plan were submitted to the USEPA for review and approval. The USEPA approved the objectives for municipal and industrial uses, agricultural uses, and the dissolved oxygen fish and wildlife objective for the San Joaquin River. All other fish and wildlife objectives in the 1991 plan were disapproved by the USEPA. Although the 1991 plan objectives remain in effect until the USEPA promulgates substitute objectives, the requirements of the 1991 plan have not been implemented through a new water right decision. Therefore, as stated above, D-1485 constitutes the current state regulatory scheme.

### **C. ENDANGERED SPECIES REQUIREMENTS**

Section 7 of the federal ESA requires that federal agencies that authorize, fund, or carry out any federal agency action shall, through consultation, ensure that such action is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the habitat of such species. Promptly after conclusion of consultation, a biological opinion must be issued, detailing how the agency action affects the species or its critical habitat.

If jeopardy to the continued existence of the listed species or destruction or adverse modification of the critical habitat of the listed species is found by the issuing agency, the biological opinion must include reasonable and prudent alternatives (RPAs) to the proposed agency action. RPAs are defined as alternative actions identified during formal consultation (between the issuing agency and the federal agency taking some action) that the issuing agency believes will avoid jeopardy or adverse modification of the habitat. RPAs are economically and technologically feasible measures that can be implemented in a manner consistent with the intended purpose of the agency action.

If the biological opinion concludes that the agency action or the RPA will not likely result in jeopardy yet would result in the taking of the species incidental to the action, the issuing agency must include an incidental take statement. This statement specifies the impact of any incidental taking, provides nondiscretionary reasonable and prudent measures necessary or appropriate to minimize such impact, and sets forth the terms and conditions that must be followed by the federal agency. If the biological opinion concludes that the agency action will likely result in jeopardy, the incidental take is authorized only if the RPA included in the opinion is implemented by the federal agency.

Several biological opinions have been issued to limit the effects of the CVP and SWP operations on two Bay-Delta Estuary species listed under the federal ESA: the endangered Sacramento River winter-run chinook salmon and the threatened Delta smelt. Some background information on the biological opinions for winter-run chinook salmon and Delta smelt issued by the NMFS and the USFWS, respectively, after consultation with the USBR, and a description of the current status of the biological opinions, are provided below.

### **1. NMFS Biological Opinion for Winter-Run Chinook Salmon**

In 1989, the NMFS listed the Sacramento River winter-run chinook salmon as "threatened" under emergency provisions of the federal ESA. That same year, the State of California listed the species as "endangered" under the State ESA. The NMFS formally listed the species as threatened in 1990 and, subsequently, reclassified it from threatened to endangered in 1992. Later that year, the NMFS proposed critical habitat for the winter-run chinook salmon from Keswick Dam at Sacramento River Mile 302 to the Golden Gate Bridge on San Francisco Bay.

In February 1991, the NMFS requested the USBR to formally consult with the NMFS, pursuant to Section 7 of the federal ESA, to determine whether its operation of the CVP jeopardized the continued existence of the then threatened Sacramento River winter-run chinook salmon. In September 1992, the USBR requested initiation of formal consultation and provided drafts of the "Long-term Central Valley Project Operations Criteria and Plan" (CVP-OCAP) and biological assessment concerning the effects of long-term operations of the CVP on winter-run chinook salmon. In October 1992, the USBR submitted a final CVP-OCAP and a biological assessment. A companion assessment regarding effects of the combined operations of the CVP and the SWP on the salmon was submitted by the DWR in November 1992.

On February 12, 1993, the NMFS issued a long-term biological opinion (NMFS 1993) concerning the effects of the CVP operations on winter-run chinook salmon. The opinion concluded that, based on the USBR's CVP-OCAP and biological assessment of impacts, the proposed long-term operations of the CVP and the SWP are likely to jeopardize the continued existence of winter-run chinook salmon. The environmental baseline upon which the opinion was based consisted of proposed CVP and SWP operations under D-1485 regulatory requirements.

When the multi-party Principles for Agreement on Bay-Delta standards was signed on December 15, 1994, the NMFS agreed to initiate immediate reconsultation on the biological opinion and modify it to conform with the agreement. As of the date of adoption of the Bay-Delta Plan and this report, the revised biological opinion for winter-run chinook salmon had not been issued.

## 2. USFWS Biological Opinion for Delta Smelt

In March 1993, the USFWS listed the Delta smelt as a threatened species under the federal ESA. In October 1993, the USBR requested formal consultation with the USFWS and submitted a biological assessment on the effects of the 1994 operations of the CVP and the SWP on Delta smelt. Later that year, the State of California listed the species as threatened under the State ESA. On February 4, 1994, the USFWS issued a one-year biological opinion (USFWS 1994) which addressed the effects of combined operations of the CVP and the SWP on Delta smelt from February 15, 1994 to February 15, 1995. That opinion concluded that the proposed operations of the CVP and the SWP would result in jeopardy; therefore, an RPA consisting of requirements that the CVP and the SWP implement and comply with specific operational criteria was included.

When the USFWS signed the Principles for Agreement in December 1994, it agreed to initiate immediate reconsultation on the biological opinion and to modify it to conform with the agreement. As a result of reconsultation, the USFWS issued a revised biological opinion for Delta smelt on March 6, 1995 (USFWS 1995). The biological opinion establishes a working group, comprised of representatives of the USFWS, NMFS, USBR, USEPA, DWR, SWRCB, and DFG, to resolve biological and technical issues raised by the biological opinion and develop recommendations with the operations group established under the Framework Agreement.

a. **Biological Opinion Requirements.** The March 6, 1995 biological opinion states that the proposed long-term combined CVP and SWP operations, as modified by the winter-run chinook salmon biological opinion, the Principles for Agreement, and the draft Bay-Delta plan, are not likely to jeopardize the continued existence of the threatened Delta smelt or adversely modify its critical habitat. The biological opinion presents the water quality standards and operational constraints that provide biological benefits for Delta smelt. These standards and constraints are consistent with the objectives in the plan except for the following:

1. A 90% exceedence forecast, rather than a 75% exceedence forecast, shall be used to determine required San Joaquin River flows.
2. The October pulse/attraction flow for the San Joaquin River at Vernalis of up to 28 TAF does not mention that this additional flow will be limited to that amount necessary to provide a monthly average flow of 2,000 cfs.
3. During the April and May 30-day pulse flow on the San Joaquin River at Vernalis, the USBR will pursue acquisition of flow at Vernalis that exceeds the combined exports of the CVP and the SWP by an amount equal to 50% of the identified pulse flow.

4. When monitoring at the North Bay Aqueduct diversion at Barker Slough indicates the presence of Delta smelt larvae (under 20 millimeters [mm]), diversions from Barker Slough shall be reduced to a 5-day running average rate of 65 cfs, not to exceed a 75 cfs daily average for any day, for a minimum of 5 days.

**b. Incidental Take Statement.** In operating the CVP and the SWP, the USFWS anticipates the take and loss of Delta smelt, including that incurred by salvage activities at the Tracy and Skinner fish facilities, at the North Bay Aqueduct intake on Barker Slough, and at the Contra Costa Canal intake on Rock Slough. Take is also expected through studies done to determine screening criteria and to improve Delta smelt handling techniques. The biological opinion identifies seven reasonable and prudent measures to minimize the impact of incidental take in the Delta. The biological opinion further states that the USBR and the DWR must comply with specific terms and conditions that implement the reasonable and prudent measures. The seven reasonable and prudent measures, each followed by the terms and conditions (as presented in the biological opinion), are provided below.

1. Improve salvage operations at the Tracy and Skinner fish protection facilities during the Delta smelt spawning period.

Between December 1 and March 30, truckloads of salvaged fish from the CVP and SWP salvage facilities shall be transported to a new release site whenever the number of adult Delta smelt observed in any salvage count preceding a truckload exceeds 0.5 adult Delta smelt per count minute. The threshold abundance value (0.5 adult Delta smelt) triggering this action may be adjusted by the working group if it is apparent that too few or too many loads are being transported to the new release site. Delta smelt handling techniques (source is specified in the biological opinion) shall be modified for use at the salvage facilities. The USFWS understands that these handling techniques are continually being improved and that all aspects of these techniques may not be appropriate for use at the fish salvage facilities. Therefore, the USBR and the DWR shall submit a plan to the USFWS to modify all aspects of the handling techniques that are appropriate for the fish salvage facilities, and a plan to update these techniques as future improvements occur, within one year of finalization of the biological opinion. Salt shall be added to maintain an 8 parts per thousand (ppt) salinity in transport water for trucking Delta smelt during this period, and this requirement shall be modified to increase survival consistent with the handling techniques modifications. At the Tracy and Skinner fish protection facilities, if Delta smelt are present in samples pulled for fish counts at a facility, Delta smelt shall not be held at that facility more than 8 hours before beginning transport to a release site.

2. Minimize take at the Tracy and Skinner fish protection facilities.

(a) If the 14-day running average of the combined salvage of Delta smelt juveniles and adults at the CVP and the SWP salvage facilities is 400 or more, then the USBR and the DWR will consider actions to: (1) determine the significance of the increase

in salvage; (2) develop and recommend to the USFWS additional monitoring to identify population distribution and the potential for adverse impacts on Delta smelt; and (3) develop recommendations for appropriate actions that can be taken by the USBR and the DWR and submit these actions to the working group. If appropriate, these recommendations may be submitted to the operations group defined in the Principles for Agreement.

(b) The USBR and the DWR shall use Table III-4 at the CVP and the SWP fish salvage facilities on a monthly basis. If reasonable operation of the CVP and the SWP cannot satisfy this requirement, the working group shall meet to develop alternative actions.

**Table III-4.** Monthly average Delta smelt salvage at the federal and State fish facilities from 1980 to 1992 by water year type. Numbers are total allowable incidental take for each month by water year type, with 90% exceedence forecasts used to update water year classifications monthly.

|           | Above Normal     | Below Normal     |
|-----------|------------------|------------------|
| Month     | Top 25% of Years | Top 25% of Years |
| January   | 5,397            | 13,354           |
| February  | 7,188            | 10,910           |
| March     | 6,979            | 5,368            |
| April     | 2,378            | 12,345           |
| May       | 9,769            | 55,277           |
| June      | 10,709           | 47,245           |
| July      | 9,617            | 35,550           |
| August    | 4,818            | 25,889           |
| September | 1,329            | 1,978            |
| October   | 11,990           | 6,440            |
| November  | 3,330            | 2,001            |
| December  | 733              | 8,052            |

3. Minimize take at the North Bay Aqueduct intake on Barker Slough during the Delta smelt spawning period.

The monthly average of daily density for incidental take of Delta smelt larvae at the Barker Slough diversion shall be the following: 15 larvae per acre-foot (AF) for January-March and May-July, and 20 larvae per AF for April.

4. Minimize take at the Roaring River Diversion in Montezuma Slough.

The USBR and the DWR shall maintain approach velocities at the Roaring River Diversion to 0.2 feet per second (fps) when Delta smelt are present, unless and until new information on a more appropriate approach velocity becomes available. From September through November, an approach velocity of 0.5 fps for 4-6 weeks may be substituted for the above requirement upon approval by the USFWS. Any changes to these approach velocities shall be approved by the USFWS before they are implemented.

5. Minimize take at Contra Costa Water District diversions.

To minimize take of Delta smelt at the unscreened Rock Slough intake, monitoring information described in the reporting requirements of the biological opinion shall be used to determine reduction in diversion of water at the Rock Slough and Mallard Slough intakes. The intent is to minimize take of Delta smelt adults, juveniles, or larvae that are exposed to pumping and diversion-related losses during the spawning and rearing period from January 1 through August 31. Notification of proposed diversion reduction, to reduce take of Delta smelt, shall be submitted to the USFWS for approval.

6. Minimize take by monitoring abundance and distribution of Delta smelt.

(a) If ongoing monitoring indicates that flows specified in the Principles for Agreement and the Bay-Delta Plan are not sufficient to maintain rearing habitat for Delta smelt away from the southern and central Delta, then the working group will convene and make a recommendation to the operations group. The operations group shall then recommend an appropriate action to the USFWS within 10 days to protect Delta smelt, Delta smelt critical habitat, and the Sacramento splittail (proposed for listing). Based on these recommendations, the USBR and the DWR will reinitiate Section 7 consultation, or submit to the USFWS for approval prior to implementation, recommendations for project changes to protect the Delta smelt, consistent with the Principles for Agreement, the Bay-Delta Plan, and the Framework Agreement.

(b) If the summer tow-net survey shows that Delta smelt are not found distributed in three out of seven Suisun Bay stations (405-519) and four out of eight Montezuma Slough and Sacramento River stations (513-707) and/or Delta smelt larval surveys



provide evidence that Delta smelt have spawned late (i.e., an average of one or more larvae collected at current [1994] sampling sites during one sampling interval in July or August), then the USBR and the DWR shall recommend that the USFWS convene the working group that will subsequently make a recommendation to the operations group. The operations group shall then recommend an appropriate action to the USFWS within 10 days of the results of the tow-net or larval surveys being available that minimizes entrainment of Delta smelt and maximizes downstream movement of fish away from the pumps. The USFWS shall make a final determination necessary for protection of Delta smelt.

7. Minimize take at the Suisun Marsh Salinity Control Structure.

The DWR shall operate the Suisun Marsh Salinity Control Structure only as required to meet the standards contained within the Bay-Delta Plan. When not operating, the gates shall remain in the raised position.

### Literature Cited in Chapter III

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