

**Appendix B. Delta Wetlands Project Final Operations  
Criteria**

---

## AVOIDANCE MEASURES

### Introduction

This narrative reflects final operations criteria for the Delta Wetlands (DW) project that would take the place of the operations criteria previously proposed by Jones & Stokes Associates on March 1, 1996. These operations criteria are intended to ensure that the DW project operations do not jeopardize the continued existence of delta smelt, Sacramento splittail, winter-run chinook salmon, or steelhead trout. DW expects that non-listed species will also benefit from these criteria and such criteria will replace the related mitigation measures for fishery impacts proposed in the context of the CEQA/NEPA process.

Under these operations criteria, DW will be consistent with, and in many instances, exceed the conditions set forth in the State Water Resources Control Board's (SWRCB) 1995 Water Quality Control Plan for the Bay-Delta estuary. These revised operations criteria set forth multi-layered diversion and discharge parameters. In the instance where two or more conditions apply, the condition that is the most restrictive on DW operations will control.

Additional restrictions apply if the Fall Mid-Water Trawl (FMWT) index shows a significant decline in delta smelt abundance. The FMWT Index refers to the most current four month (Sep-Dec) FMWT index in place at the time of the intended diversion. A diversion prior to January can utilize either the previous year's FMWT Index or the partial FMWT Index for the months available, whichever is greater. Any changes in the FMWT Index calculation methodology will be adjusted so that the FMWT Index values applied herein can continue to be the standard for DW operations criteria.

A delta smelt Fall Mid-Water Trawl index measurement of less than 84 (FMWT<84) is new information under the reinitiation regulations (50 C.F.R. § 402.16) and may require reinitiation of the USFWS biological opinion. [#26,45]<sup>1</sup>

The following text represents the final language for replacement of Term I of the USFWS draft biological opinion: [#1]

DW will not enter into any contractual agreement(s) which would provide for the export of more than 250,000 AF of DW water on a yearly (calendar year) basis. This provides for, but is not limited to, the following types of transfers: a c-user,

---

<sup>1</sup> The number(s) in brackets are provided as a reference to the DW ESA Matrix which summarizes the final operations criteria as compared to the March 1, 1996 JSA proposed terms.

short-term, opportunistic water transfer; a long-term water transfer; and any other such agreement, or contract for sale or transfer which is consistent with the March 6, 1995 biological opinion on the CVP/SWP, the SWRCB's 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (1995 WQCP), and the improved environmental baseline established under the March 6, 1995, CVP/SWP Section 7 consultation performed in conjunction with implementation of the *Principles for Agreement on Bay-Delta Standards Between the State of California and the Federal Government* (Bay-Delta Agreement). If such agreement(s) were determined to result in an adverse effect to delta smelt, delta smelt critical habitat or the Sacramento splittail in a manner or to an extent not previously identified, the contractual agreement(s) would be subject to some level of further environmental review.

### Diversion Measures

DW shall limit diversions to the four project islands as set forth in the following measures:

1. In the period from September through November, DW shall not undertake its initial diversion to storage for the current water year until X2 is located at or downstream of Chipps Island. If DW's initial diversion to storage has not taken place by November 30, 1996, DW shall not undertake its initial diversion to storage for the current water year until X2 is located at or downstream of Chipps Island for a period of ten (10) consecutive days. After the initial X2 condition is met, diversions shall be limited to a combined maximum rate of 5,500 cfs for five consecutive days. Information documenting achievement of the X2 condition and resultant operational changes shall be submitted to the CDFG, USFWS, and NMFS within 24 hours of implementation of operational changes. [#2, 3, 4]

The location of X2 shall be defined as the average daily location of a surface water salinity of 2.64 EC, determined by interpolating the average daily surface EC measurements at existing Bay-Delta monitoring stations. Should this traditional X2 methodology be replaced, superseded, or become otherwise unavailable, DW shall follow whatever equivalent practice is developed, subject to approval of the resources agencies and notice to the responsible agencies.

2. In the period from September through March, DW shall not divert water to storage when X2 is located upstream (east) of the Collinsville salinity gauge. When the delta smelt Fall Mid-Water Trawl index is less than 239 (FMWT<239), DW shall not divert water to storage when X2 is located upstream of a point 1.4 kilometers west of the Collinsville salinity gauge. [#5, 6, 7, 19]
3. In the period from October through March, DW shall not divert water to storage if the effect of DW diversions would cause an upstream shift in the X2 location in excess of 2.5 km. The resultant shift in X2 shall be determined by a comparison of the modeled estimates of the X2 location outflow, with and without the DW project, using a mathematical model, e.g., Kimmerer and Monismith equation. [#8, 9]
4. In the period from April through May, DW shall not divert water to storage. If the delta smelt Fall Mid-Water Trawl index is less than 239 (FMWT<239), DW shall not divert water for storage from February 15 through June 30. [#10, 20]

5. DW diversions to storage shall be limited to the following percentage of available surplus water as derived pursuant to the 1995 WQCP (e.g., E/I ratio, outflow). [#13]

Table 1: Surplus Availability

Month	FMWT>239	FMWT<239
October	90%	90%
November	90%	90%
December	90%	90%
January	90%	90%
February 1-14	75%	75%
February 15-28	75%	NA
March	50%	NA
April	NA	NA
May	NA	NA
June	50%	NA
July	75%	75%
August	90%	90%
September	90%	90%

6. DW diversions to storage shall not exceed a percentage of the previous day's net Delta outflow rate (cfs), as set forth in the following table: [#11, 23]

Table 2: Outflow Diversion Limit

Month	Percent Outflow <sup>(1)</sup>	
	FMWT>239	FMWT<239
October	25%	25%
November	25%	25%
December	25%	25%
January	15%	15%
February 1-14	15%	15%
February 15-28	15%	NA
March	15%	NA
April	NA	NA
May	NA	NA
June	25%	NA
July	25%	25%
August	25%	25%
September	25%	25%

- <sup>(1)</sup> The percent of Delta outflow is calculated without consideration of DW diversions; therefore, the calculation could use the previous day's actual Delta outflow added to the previous day's DW diversions to yield an outflow value that would not include DW operations.

7. In the period from December through March, DW diversions to storage shall not exceed the percentage of the previous day's San Joaquin River inflow rate (cfs) for the maximum number of days, as set forth in the following table: [#12, 24]

Table 3: SJR Diversion Limit

Month	Percent SJR Inflow <sup>(1)</sup>	
	FMWT > 239	FMWT < 239
Application <sup>(2)</sup>	15 days	30 days
December	125%	125%
January	125%	100%
February 1 - 14	125%	50%
February 15 - 28	125%	NA
March	50%	NA

(1) The percent of SJR inflow is calculated from the previous day's inflow at Vernalis.

(2) The application of the SJR diversion limit is subject to a specific election on the part of the responsible fishery agencies for a maximum number of days, as specified above. The election to invoke the SJR diversion limit shall be based upon available monitoring data (e.g., project specific monitoring, MWT data).

8. DW shall implement a monitoring program to minimize or avoid adverse impacts of DW diversions to storage, as set forth below: [#15, 16, 21, 22]
- a. DW shall implement a monitoring program in accordance with the attached "Delta Wetlands Fish Monitoring Program."
  - b. DW shall provide daily in-channel monitoring from December through August during all diversions to storage, except as provided below.
  - c. DW shall provide daily on-island monitoring from January through August during all diversions to storage, except as provided below.
  - d. Monitoring shall not be required at a diversion station if the total diversion rate at the station is less than 50 cfs and the maximum fish screen approach velocity is less than 0.08 fps (e.g., topping-off).

- e. DW shall reduce the diversions at a diversion station to 50% of the previous day's diversion rate during the presence of delta smelt. Should delta smelt be detected on the first day of diversions to storage, the diversion rate shall be immediately reduced to 50%. This reduced diversion rate will remain in place until the monitoring program no longer detects a presence of delta smelt at the diversion station. For the purpose of this mitigation measure, delta smelt presence is defined as a two-day running average in excess of one (1) delta smelt per day at any reservoir diversion station. The definition of presence may be revisited from time to time as new information or monitoring techniques become available.
9. During periods when the DCC gates are closed for fisheries protection purposes, between November 1 and January 31, and the inflow into the Delta is less than or equal to 30,000 cfs, DW shall restrict diversions onto the reservoir islands to a combined instantaneous maximum of 3,000 cfs. When the DCC gates are closed for fishery protection purposes and the inflow into the Delta is between 30,000 and 50,000 cfs, DW shall restrict diversions onto the reservoir islands to a combined instantaneous maximum of 4,000 cfs. At Delta inflows greater than 50,000 cfs, DW diversions shall not be restricted by the closure of the DCC for fishery protection purposes. For purposes of this provision, Delta inflow is defined in accordance with the 1995 WQCP. [#17]
10. Nothing in measures 1 through 9 above shall limit DW from diverting water onto Bacon Island and Webb Tract from June through October in order to offset actual reservoir losses of water stored on those islands, hereafter referred to as "topping-off" reservoirs. Daily topping-off diversions shall be subject to the following conditions: [#18, 25]
- a. Topping-off diversions shall not exceed the maximum diversion rate (cfs) and maximum monthly quantity (TAF) listed in below:

Table 4: Maximum Topping-Off Diversion Rates

Month	Jun	Jul	Aug	Sep	Oct
Maximum diversion rate (cfs)	215	270	200	100	33
Maximum monthly quantity (TAF)	13	16	12	6	2

- b. Topping-off diversions shall occur through screened diversions with approach velocities less than 0.10 fps.
- c. A mechanism acceptable to USFWS, NMFS, and CDFG shall be devised and used by DW to document actual reservoir losses.

- d. The maximum topping-off diversion rates shown above shall be further limited by diversions onto the habitat islands. The maximum topping-off diversion rate and quantity shall be reduced by an amount equal to the habitat island diversions during the same period.

### Discharge Measures

Delta Wetlands (DW) shall limit discharges from the four project islands as set forth in the following measures:

1. In the period from April through June, DW shall limit discharges for export or rediversion from Bacon Island to one-half (50%) of the San Joaquin River inflow measured at Vernalis. [#34]
2. In the period from January through June, DW shall not discharge for export or rediversion from Webb Tract. [#33]
3. DW shall not discharge for export or rediversion any water from the habitat islands. [#41]
4. In the period from February through July, DW discharges for export shall be limited to the following percentage of the available unused export capacity at the CVP and SWP facilities as derived pursuant to the 1995 WQCP. [#35, 36]

Table 5: Export Availability

Month	Bacon	Webb
February	75%	NA
March	50%	NA
April	50%	NA
May	50%	NA
June	50%	NA
July	75%	75%

6. DW shall provide a quantity of "environmental water" for release as additional Delta outflow, as set forth in the following terms and conditions: [#38, 42]
  - a. DW shall provide a quantity of environmental water equal to 10% of all discharges for export that occur in the period from December through June. If the delta smelt Fall Mid-Water Trawl index is less than 239 (FMWT<239), this

environmental water percentage shall be increased to 20% of all discharges for export that occur in the period from December through June.

- b. Environmental water shall be released between February and June of the same water year as the discharge for export that generated the water and may not be banked for future use in subsequent water years.
  - c. Habitat island discharges may be credited toward the environmental water quantities required above, if:
    - I. habitat island discharges occur between February and June;
    - ii. habitat island discharge credits are limited to the net flow quantity (e.g., habitat discharge minus habitat diversion);
    - iii. habitat island discharges occur during a period of time when 75% of the spacial distribution of the delta smelt population is located downstream of the discharge location, where the determination of spacial distribution is based on the most recent distribution data available (e.g., IEP);
    - iv. the habitat island discharge rate does not vary on a daily basis more than 1% of the average gross flow rate in the adjacent channel, either upstream or downstream, when delta smelt are spawning in the area;
    - v. DW makes a best effort to minimize fluctuations in daily discharge rates;
    - vi. and the habitat island discharges are consistent with the HMP.
  - d. Environmental water, less habitat island discharge credits, shall be discharged at the discretion of USFWS, NMFS and CDFG to maximize fishery benefits. Coordination of these discharges shall be performed by the CDFG Bay-Delta office.
7. DW shall implement a monitoring program to minimize or avoid adverse impacts of DW discharges for export, as set forth below: [#39, 40, 43, 44]
- a. DW shall implement a monitoring program in accordance with the attached "Draft Proposed Delta Wetlands Fish Monitoring Program."
  - b. DW shall provide daily in-channel monitoring from April through August during all discharges for export, except as provided below.

- c. Monitoring shall not be required if the total discharge for export rate is less than 50 cfs.
- d. DW shall reduce the discharge for export rate to 50% of the previous day's diversion rate during the presence of delta smelt. Should delta smelt be detected on the first day of discharges for export, the discharge rate shall be immediately reduced to 50%. This reduced diversion rate will remain in place until the monitoring program no longer detects a presence of delta smelt at the in-channel sampling sites. For the purpose of this mitigation measure, delta smelt presence is defined as a two-day running average in excess of one (1) delta smelt per day at the Old and Middle River sampling sites. The definition of presence may be revisited from time to time as new information or monitoring techniques become available.
- e. DW shall provide for this monitoring either by contributing financial support commensurate with the proportionate share of DW exports to the Bay/Delta monitoring programs, or when no other monitoring is being conducted at appropriate sites, DW shall provide for direct monitoring in river channels as described above.

### Other Measures

1. Fish screen design: [#49]

The DW fish screens will be generally consistent with the design presented in the DEIR/EIS except that DW shall maintain a 0.2 fps approach velocity for diversions. Final design elements and installation guidelines will be subject to approval by the responsible agencies with concurrence by the resource agencies. Final design, including a monitoring program to evaluate performance criteria will be submitted for approval at least 90 days prior to commencing operations.

2. Rearing and Spawning Habitat. [#50, 51]

Prior to construction, DW will secure a perpetual conservation easement (easement) for 200 acres of shallow-water aquatic habitat not currently protected by easement or covenant. The easement shall fully protect in perpetuity the shallow-water aquatic habitat. A management plan for the easement area shall be developed for the habitat covered by the easement, and shall be incorporated as an exhibit to the easement.

Additionally, DW shall provide to the USFWS documentation that there is adequate financing for the perpetual management of the habitat protected by the conservation easement consistent with the terms of this biological opinion and the management plan including that (1) adequate funds for the management of habitat in perpetuity protected by the conservation easement have been transferred to an appropriate third-party, and (2) the third party has accepted the funds and (3) such funds have been deposited in an interest-bearing account intended for the sole purpose of carrying out the purposes of this easement.

The easement (along with a title report for the easement area) and management plan shall be approved by the USFWS prior to recordation. After approval, the easement and management plan shall be recorded in the appropriate County Recorder's Office(s). A true copy of the recorded easement shall be provided to the USFWS within 30 days after recordation.

3. Boat Wake Erosion [#53]

DW shall contribute \$100 per year for each net additional berth beyond pre-project conditions added to any of the four project islands. These funds shall be in January 1996 dollars and shall be adjusted annually for inflation.

## 4. Aquatic Habitat [#54]

The actual impact to aquatic habitat acreage for construction and operation of siphon and pumping facilities and waterside boat docks shall be verified prior to construction and mitigation shall take place on a 3:1 basis.

## 5. Temperature Limits [#55]

DW shall implement a temperature program to minimize or avoid adverse impacts of DW discharges for export, as set forth below:

- a. DW shall not discharge reservoir water for export if the temperature differential between the discharge and the adjacent channel temperature is greater than or equal to 20°F.
- b. If the natural receiving water temperature of the adjacent channel is greater than or equal to 55°F and less than 66°F, DW discharges for export shall not increase the channel temperature by more than 4°F.
- c. If the natural receiving water temperature of the adjacent channel is greater than or equal to 66°F and less than 77°F, DW discharges for export shall not cause an increase of more than 2°F.
- d. If the natural receiving water temperature of the adjacent channel is greater than or equal to 77°F, DW discharges for export shall not cause an increase of more than 1°F.
- e. DW shall develop temperature monitoring and implementation plans to ensure that the project does not adversely impact the channel temperature levels as described above. The monitoring plan shall include reservoir and channel temperature monitoring. The monitoring and implementation plans shall be completed after the project is permitted, but at least 90 days prior to project operations. The plans shall be submitted to the responsible agencies for approval with the concurrence of the resource agencies.

## 6. DO Limits [#56]

DW shall implement a dissolved oxygen (DO) program to minimize or avoid adverse impacts of DW discharges for export, as set forth below:

- a. DW shall not discharge reservoir water for export if the discharge DO level is less than 6.0 mg/l without authorization from the resource agencies and notice to the responsible agencies.
- b. DW shall not discharge reservoir water for export if the discharge would cause channel water DO levels to fall below 5.0 mg/l.
- c. DW shall develop DO monitoring and implementation plans to ensure that the project does not adversely impact the channel DO levels as described above. The monitoring plan shall include reservoir and channel DO monitoring. The monitoring and implementation plans shall be completed after the project is permitted, but at least 90 days prior to project operations. The plans shall be submitted to the responsible agencies for approval with the concurrence of the resource agencies.

## 7. Incidental Entrainment Compensation [#57]

Certain life stages of key fish species may not be effectively screened during periods of diversions for storage. DW will, therefore, sample DW diversions during the periods specified below and compensate for losses to selected target fish. DW diversions onto the reservoir islands will be sampled for egg, larval, and juvenile life stages of the selected target fish. Those losses will be mitigated using a formula which ties measured losses with mitigation as specified below.

This provision covers entrainment of non-listed species, as well as, delta smelt and splittail (that are, respectfully, listed and candidate species). Coverage of non-listed species is intended as a CEQA/NEPA mitigation measure and is only included here for ease of understanding.

Should on-island monitoring detect the presence of eggs, larvae, and juveniles during the months specified in the incidental entrainment monitoring guidelines, DW shall provide monetary compensation for incidental entrainment, as set forth in the following tables:

Table 6: Incidental Entrainment Monitoring Guidelines

Species and Life Stages	Jan	Feb	Mar	Jun	Jul	Aug
Striped Bass larvae and juveniles				X	X	X
American Shad larvae and juveniles				X	X	X
Delta Smelt larvae juveniles	X	X X	X X	X X	X X	X
Splittail larvae juveniles	X	X X	X X	X X	X X	X X
Longfin Smelt eggs and larvae juveniles	X X	X X	X X	X	X	X

Table 7: Incidental Entrainment Compensation

Measured Density	Mitigation/TAF
10-999 eggs, larvae, and juveniles/AF	\$500
1,000-5,000 eggs, larvae, and juveniles/AF	\$750
>5,000 eggs, larvae, and juveniles/AF	\$1,000

Should DW be unable to perform on-island monitoring, the maximum mitigation compensation will be assumed, unless waived or modified by the responsible agencies, with concurrence of the resource agencies. Funds are in January 1996 dollars and shall be adjusted annually for inflation. Monetary reimbursement shall be deposited into a mitigation fund on a semi-annual basis. The use of the mitigation funds shall be at the discretion of the resource agencies (e.g., CDFG Bay-Delta office) but shall be used to the fullest extent possible to plan and implement actions that improve habitat for the target species in the Estuary.

8. Construction Period [#60]

All construction activities taking place in the tidal waters of the adjacent channels or impacting a tidal water habitat shall occur between June and November.

### Delta Wetlands Fish Monitoring Program

The following sets forth a general description of the fish monitoring program Delta Wetlands (DW) will implement to provide data to minimize, avoid, and mitigate adverse impacts of DW project operations on fish. There are seven components of the program: 1) daily in-channel monitoring for the presence of juvenile and adult delta smelt in the immediate vicinity of DW diversion sites during diversions to storage, 2) daily on-island multiple species monitoring of entrainment of eggs, larvae, and juveniles during diversions to storage, 3) daily in-channel monitoring for the presence of juvenile and adult delta smelt in the general vicinity of DW reservoir islands during discharges for export, 4) reporting requirements, 5) sample handling and quality assurance/quality control (QA/QC) requirements, 6) Interagency Ecological Program (IEP) coordination, and 7) establishing a monitoring technical advisory committee (MTAC). The monitoring program as set forth below is intended to establish general parameters, with final details and specifications determined during final design of the monitoring program. This final design shall be completed after the project is permitted and must be accepted, in writing, by the responsible agencies prior to project operations with concurrence by the resource agencies.

#### *1) In-Channel Monitoring of Diversions to Storage*

The objective of this component shall be to provide for the detection of juvenile and adult delta smelt that could be vulnerable to entrainment at DW diversions. This DW sampling program would be supplementary to the existing IEP monitoring programs in the Delta. In the event that IEP monitoring is being conducted in a manner and location that satisfies DW sampling requirements, with the concurrence of the resource agencies and notice to the responsible agency, DW would use those data and would not be required to duplicate monitoring effort at those locations (e.g., Real-Time Monitoring Program sampling in Middle River and Old Rivers near DW reservoir islands). To the extent possible, sampling frequency will be stratified to obtain samples representative of any variation in specific conditions with respect to diel and tidal periodicity at each site. In-channel monitoring will utilize sampling technologies consistent with current IEP protocol (sampling gear may vary with season and life stage). Complete siting and sampling specifications will be determined during final design of the DW monitoring program.

DW shall provide daily in-channel monitoring during diversions to storage during allowable periods from December through August, except as provided below. Monitoring stations shall be located in the immediate vicinity of each of the four (4) DW diversion points. Each diversion point shall require two monitoring sites, for a maximum of eight (8) sites. The final location of each monitoring site shall be determined during final design of the DW monitoring program. Monitoring shall begin at a diversion point on the first day of diversions to storage from that site and shall continue

throughout the diversion event. In-channel monitoring shall not be required if the total diversion rate at the diversion point is less than 50 cfs and the fish screen approach velocity is less than 0.08 fps (e.g., topping-off).

Should DW be unable to perform in-channel monitoring for any reason except operational safety constraints, the monitoring mitigation measure shall automatically trigger unless waived by the responsible agencies, with concurrence by the resource agencies.

### ***2) On-Island Monitoring of Entrainment during Diversions***

The objective of this component shall be to provide for the detection of eggs, larvae, and juveniles entrained by DW diversions to storage. Certain life stages of key fish species may not be effectively screened during diversions to storage. These incidental losses shall therefore be mitigated using a monetary formula which ties measured losses to compensation that can be utilized, to the fullest extent possible, to plan and implement actions that maintain or enhance habitat for target species in the Bay-Delta estuary.

DW shall provide on-island monitoring during diversions to storage during allowable periods from January through August, except as provided below. A typical siphon located at each reservoir diversion point shall be fitted with a sampling apparatus attached to the floating siphon platform at the discharge end of the assembly. The final selection of the specific siphon to be monitored and complete specifications of the sampling apparatus will be determined during final design of the DW monitoring program. These sampling sites shall provide for installation of a variety of fish entrainment sampling gear using CDFG-approved methodologies. Therefore, four sampling sites would be constructed (i.e., 1 sampling site within a sixteen-siphon station times 2 siphon stations, times 2 reservoir islands, equals 4 total sampling sites). To the extent possible, sampling at each operating siphon station will be conducted as stratified subsamples with respect to diel and tidal periodicities so that total daily sampling time will be at least two hours each day. Monitoring shall begin at a diversion point on the first day of diversions to storage from that site and shall continue throughout the diversion event. On-island monitoring shall not be required if the total diversion rate at the diversion point is less than 50 cfs and the fish screen approach velocity is less than 0.08 fps (e.g., topping-off).

### ***3) In-Channel Monitoring of Discharge for Export***

The objective of this component shall be to provide for the detection of juvenile and adult delta smelt that could be vulnerable to entrainment at the Delta export facilities during the export of DW discharges. This DW sampling program would be supplementary to the existing IEP monitoring programs in the Delta. In the event that IEP monitoring is being conducted in a manner and location that satisfies DW sampling requirements, with concurrence by the resource agencies and notice to

the responsible agency, DW would use those data and would not be required to duplicate monitoring effort at those locations (e.g., Real-Time Monitoring Program sampling in Middle and Old Rivers near DW reservoir islands). To the extent possible, sampling frequency will be stratified to obtain samples representative of any variation in specific conditions with respect to diel and tidal periodicity at each site. In-channel monitoring will utilize sampling technologies consistent with current IEP protocol (sampling gear may vary with season and life stage). Complete siting and sampling specifications will be determined during final design of the DW monitoring program.

DW shall provide daily in-channel monitoring during discharges for export from April through August, except as provided below. Monitoring stations shall be located at paired transects at each of the two discharge stations, one in Middle River near Webb Tract and one in Old River near Bacon Island to be selected based on Real-Time Monitoring Program results and technical experience to provide indication of delta smelt density and distribution in this region of the Delta. The final location of each of monitoring site will be determined during final design of the DW monitoring program. Monitoring shall begin on the first day of discharges for export from Webb Tract and shall continue throughout the discharge event. In-channel monitoring shall not be required if the total discharge for export rate is less than 50 cfs.

### *Reporting*

Weekly monitoring reports will be transmitted by FAX and daily reports by INTERNET to the fishery agencies as follows:

USFWS, Sacramento Fish and Wildlife Office  
NMFS, Protection Resources and Habitat Conservation Division  
CDFG, Bay-Delta and Special Water Projects Division

### *5) Sample Handling Protocol*

DW will retain samples for a minimum of one year after collection. Agency biologists and law enforcement personnel shall have 24 hour access to fish monitoring personnel, fish samples, and daily fish capture data. A QA/QC protocol, acceptable to the fishery agencies, will be developed by DW and provided to the fishery agencies as part of the final monitoring program plan. The QA/QC protocol will include, but is not limited to, measures to ensure correct identification of larval and juvenile fishes.

#### *6) Coordination with IEP Monitoring Programs*

DW will be solely responsible for conducting the required monitoring. In the event that IEP monitoring is being conducted in a manner and location that satisfies the previously described operations requirements, DW may use the data collected and will not be required to conduct duplicate monitoring at those sites. If DW is able to make use of the IEP monitoring data in lieu of project specific monitoring, DW shall compensate IEP for the use of this data by contributing financial support to the IEP monitoring program commensurate to the proportionate share of DW exports to the total Delta exports for the period.

#### *7) Monitoring Technical Advisory Committee*

The objective of this component is to establish a monitoring technical advisory group (MTAC) to advise and resolve monitoring issues that may develop over the life of the DW project. The MTAC shall be made up of voluntary participants from a variety of agencies, including, but not limited to, invitees from SWRCB, USACE, USFWS, NMFS, CDFG, DWR, USBR, USEPA, and DW. DW may convene the MTAC to evaluate and recommend adjustments to the DW monitoring program.

Initially, DW shall work directly with CDFG to resolve daily technical monitoring issues but may convene the MTAC to act in a technical capacity to provide review and address any technical inadequacies or disagreements that may occur. The committee may also provide advisory review on issues of waiver occurring during implementation of the monitoring program. Any modifications to the monitoring program must be made with the approval of the responsible agencies and concurrence of the resource agencies who will continue to retain final approval or disapproval of any monitoring changes.

## DIVERSION LIMITS

Ref	Measure	JSA BA Alternative	Final Operations Criteria
1	Export cap	None	250 TAF (see Term I language)
2	Initial diversion Sep-Nov	10 days past Chipps 5 day ramp @ 5500 cfs	X2 at or downstream of Chipps 5 day ramp @ 5500 cfs - no split
3	Initial diversion Dec-Jan	10 days past Chipps 5 day ramp @ 5500 cfs	10 days past Chipps 5 day ramp @ 5500 cfs - no split
4	Initial diversion Feb-Mar	None	10 days past Chipps 5 day ramp @ 5500 cfs - no split
5	X2 position Sep-Nov	West of km 81 (Collinsville)	West of Collinsville salinity gauge
6	X2 position Dec-Jan	West of km 81 (Collinsville)	West of Collinsville salinity gauge
7	X2 position Feb-Mar	None	West of Collinsville salinity gauge
8	X2 shift Oct-Jan	Shift < 2.5 km	Shift < 2.5 km
9	X2 shift Feb-Mar	None	Shift < 2.5 km
10	Fixed prohibitions	No diversions during Apr-May pulse	No diversion Apr-May
11	Outflow limits Oct/Nov/Dec Jan/Feb/Mar Apr/May/Jun Jul/Aug/Sep	Outflow limit (%) 25/25/25 25/na/na na/na/na na/na/na	Outflow limit (%) 25/25/25 15/15/15 na/na/25 25/25/25

## DIVERSION LIMITS

Ref	Measure	JSA BA Alternative	Final Operations Criteria
12	SJR limits Oct/Nov/Dec Jan/Feb/Mar Apr/May/Jun Jul/Aug/Sep	None	SJR flow limit (%) (applies up to 15 days) na/na/125 125/125/50 na/na/na na/na/na
13	Available limits Oct/Nov/Dec Jan/Feb/Mar Apr/May/Jun Jul/Aug/Sep	% of available surplus na/na/na na/75/50 25/25/50 75/na/na	% of available surplus 90/90/90 90/75/50 0/0/50 75/90/90
14	Enviro-water Oct/Nov/Dec Jan/Feb/Mar	None	None
15	DS monitoring period	None	In-channel monitoring Dec-Aug if > 50cfs On-island monitoring Jan-Aug if > 50 cfs
16	DS monitoring restrictions	None	Reduce diversions to 50% of previous day's rate during presence of delta smelt
17	DCC gate limits Nov-Jan	None	If DCC is closed for fishery protection, reduce maximum diversion rate to: 3,000 cfs if Delta inflow ≤ 30,000 cfs 4,000 cfs if inflow is 30,000 to 50,000 cfs
18	Summer top-off for evaporation Jun-Oct	None	Max. top-off rate for Jun-Oct in cfs: 215/270/200/100/33 including habitat island diversions
19	FMWT < 239 X2 position	Not applicable	1.4 km west of Collinsville salinity gauge
20	FMWT < 239 Fixed prohibitions	Not applicable	No diversions Feb 15 - Jun 30 except top-off (see # 25)

## DIVERSION LIMITS

Ref	Measure	JSA BA Alternative	Final Operations Criteria
21	FMWT < 239 DS monitoring period	Not applicable	In-channel monitoring Dec-Aug if > 50cfs On-island monitoring Jan-Aug if > 50 cfs
22	FMWT < 239 DS monitoring restrictions	Not applicable	Reduce diversions to 50% of previous day's rate during presence of delta smelt
23	FMWT < 239 Outflow limits Jan/Feb/Mar	Not applicable	Outflow limit (%) 15/15/na
24	FMWT < 239 SJR limits Dec/Jan/Feb	Not applicable	SJR flow limit (%) 125/100/50 (applies up to 30 days)
25	FMWT < 239 Summer top-off for evaporation Jun-Oct	Not applicable	Max. top-off rate for Jun-Oct in cfs: 215/270/200/100/33 including habitat island diversions
26	FMWT < 84 Fixed prohibitions	Not applicable	Considered "new information" and reinitiation of BO may occur
27	FMWT < 84 DS monitoring period	Not applicable	Not applicable
28	FMWT < 84 DS monitoring restrictions	Not applicable	Not applicable
29	FMWT < 84 Outflow limits	Not applicable	Not applicable
30	FMWT < 84 SJR limits	Not applicable	Not applicable
31	FMWT < 84 Summer top-off for evaporation	Not applicable	Not applicable

## DISCHARGE FOR EXPORT LIMITS

Ref	Measure	JSA BA Alternative	Final Operations Criteria
32	Delta inflow	DW not included	BO will adopt a neutral position with respect to this action, see DW letter of 10/18/96
33	Fixed prohibitions	None	Webb: no discharges Jan-Jun
34	SJR limits: Bacon	None	50% SJR Apr-Jun
35	Export capacity fraction: Webb	Feb 75% Mar-Jun 50% Jul 75%	Feb-Jun NA Jul 75%
36	Export capacity fraction: Bacon	Capacity available Feb 75% Mar-Jun 50% Jul 75%	Feb 75% Mar-Jun 50% Jul 75%
37	Bacon pulse-flow period exports	Only if Old & Middle flow south	None
38	Enviro-water	None	10% match for export during Dec-Jun subject to Feb-Jun habitat island credit
39	DS monitoring period	None	In-channel monitoring Apr-Aug if > 50cfs
40	DS monitoring restrictions	Not applicable	Reduce diversions to 50% of previous day's rate during presence of delta smelt
41	Habitat island discharge limits	None	No export but may be used for enviro-water match from Feb-Jun (see #38)

## DISCHARGE FOR EXPORT LIMITS

Ref	Measure	JSA BA Alternative	Final Operations Criteria
42	FMWT < 239 Enviro-water	Not applicable	20% match for export during Dec-Jun subject to Feb-Jun habitat island credit
43	FMWT < 239 DS monitoring period	Not applicable	In-channel monitoring Apr-Aug if > 50cfs
44	FMWT < 239 DS monitoring restrictions	Not applicable	Reduce diversions to 50% of previous day's rate during presence of delta smelt
45	FMWT < 84 Fixed prohibitions	Not applicable	Considered "new information" and reinitiation of BO may occur
46	FMWT < 84 Enviro-water	Not applicable	Not applicable
47	FMWT < 84 DS monitoring period	Not applicable	Not applicable
48	FMWT < 84 DS monitoring restrictions	Not applicable	Not applicable

## OTHER MEASURES

Ref	Measure	JSA BA Alternative	Final Operations Criteria
49	Fish screen design	Not included	0.2 fps approach velocity
50	Rearing habitat	Not included	200 acres
51	Spawning habitat	Not included	Included above
52	SRA habitat	Not included	None
53	Boat wake erosion	Not included	\$100/yr/berth for each net additional berth
54	Aquatic habitat	Not included	Replace actual losses at 3:1 ratio
55	Temperature limits	Per CVRWQB (Basin Plan)	No $\Delta T > 20^{\circ}F$ No channel increase $> 4^{\circ}F$ for $55^{\circ}F$ to $66^{\circ}F$ No channel increase $> 2^{\circ}F$ for $66^{\circ}F$ to $77^{\circ}F$ No channel increase $> 1^{\circ}F$ over $77^{\circ}F$
56	DO limits	Per CVRWQB (Basin Plan)	No DO discharge $< 6$ mg/l Do not cause channel to drop below 5 mg/l
57	Incidental entrainment comp.	None	\$500-\$1000 per TAF for scheduled species, Jan through Aug
58	Service area conditions	None	None
59	HMP conditions	None	Actual costs plus overhead
60	Construction period	Not included	Jun-Nov for in-water work