

(All project specific actions are subject to full environmental evaluation and permitting)

Features of the SDI Alternatives

rev. 4/30/99 smb

Note: Direct construction impacts, including dredging and facilities, will be avoided, minimized, and mitigated as appropriate.

Alternative Features	1. Single Barrier Alternative	2. Multiple Barrier Alternative
New Northern CCFB Intake and Fish Screens		
1	Screen all water diverted for export by the SWP and CVP from the South Delta with best available technology by the end of Stage 1. The most appropriate configuration of intakes will be determined by continuing research and analysis.	same as 1
2	Construct new intake gates and channel on Byron Tract south of the Los Vaqueros screen on Old River. Siphon water under Italian Slough into north end of forebay.	same as 1
3		
4	Construct 500 cfs Tracy Test Fish Facility	same as 1
5	Construct 2500 cfs fish screen module, including fish salvage facilities acceptable to the fish and wildlife agencies for new CCFB intake based on results of TTFE results	same as 1
6	Construct additional screen modules and fish salvage facilities based on experience with first module to achieve screening of full export capacity at 0.2 ft/sec approach velocity.	same as 1
7	Option: SWP/CVP Intertie between Export Pumps	

	Alternative Features	1. Single Barrier Alternative	2. Multiple Barrier Alternative
8		Construct intertie between SWP and CVP, expand northern intake of CCFB to 14,900 cfs, with screens and fish salvage facilities and close TFF screened intake OR construct new screens at Tracy Pumping Plant with fish salvage facilities acceptable to the fish and wildlife agencies.	same as 1
9	SWP/CVP Intertie between DMC and California Aqueduct		
10		Construct an intertie downstream of the export pumps between the CVP Delta-Mendota Canal and the SWP California Aqueduct. Its use will be at times and for purposes acceptable to the fish and wildlife agencies	same as 1
11	A. Dredging in Old River		
12		Dredge Old River north of the new intake to avoid, to the extent possible, areas that are < 3 m at MLW. Confine dredging to August 1 through October 14.	same as 1
13	Intake Operations:		
14		During the February through August period, limit pumping to the extent needed to keep intake velocities at or below an approach velocity of 0.2 f/s.	same as 1
15		Report approach velocity criteria data daily and include in the monitoring plan (see Component "Monitoring").	same as 1
16			
17	Fish Salvage Facilities Operation, Enhanced Salvage Data Processing and Reporting at both CVP and SWP Export Facilities		
18		Coordinate salvage procedures, data processing, and reporting with fishery agencies.	same as 1

	Alternative Features	1. Single Barrier Alternative	2. Multiple Barrier Alternative
19		Develop revised formulas for loss estimates that are acceptable to the fish and wildlife agencies using appropriate studies to determine new prescreen loss rates, changed predation effects, and any other changes that could affect take estimates for the SWP and mitigation funding for agreements such as the Four Pumps Agreement.	same as 1
20		Before operating the new CVP facilities or new SWP intake, DWR and USBR will enter into an Operations and Maintenance agreement that is acceptable to the fish and wildlife agencies, and that includes a fish salvage plan.	same as 1
21		Report daily approach velocity criteria data.	same as 1
22	SWP and CVP operations will be modified to allow Joint Point of Diversion.		
23		Implement JPOD using an approach acceptable to the Fish and Wildlife agencies.	same as 1
24	SWP operations prior to completion of new intake and fish screen		
24a		Exports will not be full screened at first; additional operational constraints will limit use of full 10,300 cfs capacity accordingly.	same as 1
24b		Increase average daily exports of up to 8,500 cfs through the existing radial gate intake to Clifton Court Forebay, in phases, corresponding to progress with ecosystem restoration. Incremental increase in exports will be in accordance with the following criteria, except as modified by implementation of the Environmental Water Account.	same as 1
24c		Use the increased diversion capability in February and March only if the previous day's QWEST is positive and is calculated to remain positive during the current day's increased diversions.	same as 1

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24d		Limit the increased diversion capability in February so that the increased diversions do not result in a daily E/I ratio of greater than 35 percent.	same as 1
24e		Limit the increased diversion capability in March will so that, except in wet and above normal years, the increased diversions do not result in a daily E/I ratio of greater than 30 percent.	same as 1
24f		Restrict exports in April through June to the presently permitted pumping levels.	same as 1
24g		Ramp up increased export capacity in July so that increased exports beyond currently allowed levels are less than 1,000 cfs in the first ten days of July, and 2,000 cfs in the second ten days of July.	same as 1
25	SWP operations after completion of new intake and fish screen and approval by the fish and wildlife agencies		
26		Allow SWP operations to export, consistent with the above operating criteria an average daily amount of up to 10,300 cfs.	same as 1
27	Agricultural and Wetland Diversion Screening		
28		Annually, allocate an appropriate level of funding for the south Delta portion of a Delta Screening Program.	same as 1
29		Screen all agricultural diversions in Grant Line Canal.	Ag diversions west of the GLC barrier that are lowered will be screened
30	Aquatic and Terrestrial Habitat Restoration Targets in the South Delta Region		

	Alternative Features	1. Single Barrier Alternative	2. Multiple Barrier Alternative
31		To begin implementation of the ERP and the multi-species conservation strategy, contiguous expanses of terrestrial and aquatic habitat will be identified, protected, and increased in the lower San Joaquin River and South Delta Region. The following target acreages may be modified in accordance with the principles of adaptive management, taking into consideration the specific physical and operational features of the selected alternative.	same as 1
32		Tidal Perennial Aquatic, 2000 ac	same as 1
33		Nontidal Perennial Aquatic, deep open water, 200 ac	same as 1
34		Nontidal Perennial Aquatic, shallow open water, 300 ac	same as 1
35		Delta Sloughs, 50 mi	same as 1
36		Midchannel Islands, 50 to 200 ac	same as 1
37		Fresh Emergent Wetland (Tidal), est. 8,000 ac to 12,000 ac as part of the total estimated acreage for the Delta region	same as 1
38		Fresh Emergent Wetland (non-Tidal), 4000 ac	same as 1
39		Seasonal Wetland, improve 500 ac, restore 12,000	same as 1
40		Riparian and Riverine Aquatic, 25 mi	same as 1
41		Perennial Grassland, 1,000 to 2000 ac	same as 1
42		Wildlife Friendly Ag, est. 8,000 ac to 12,000 ac as part of the total estimated acreage for the Delta region	same as 1
43	Regional Fishery Resources Monitoring		
44		Increase fishery monitoring in order to guide the use of the flexibility associated with the increased export capacity.	same as 1
45		Conduct an Adult Salmon Passage Evaluation to determine if adult salmon are delayed or blocked by the flow or fish control structures. If impediments occur, develop and implement mitigation measures.	same as 1
46	Component: Water Quality		

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47		Take appropriate measures to manage dissolved oxygen in San Joaquin River in vicinity of Stockton, including the Port of Stockton turning basin. Includes studies and appropriate implementation actions.	same as 1
48		Evaluate and if demonstrated to be feasible, implement release of TDS buildup during Pulse Flow Period.	same as 1
49		Conduct a feasibility study to evaluate recirculation benefits and impacts.	same as 1
50		Enhance existing studies in the San Joaquin Valley to evaluate integrated on-farm management of selenium. Based on the results of these studies, contribute to full implementation of the program.	same as 1
51	Consolidation and Extension of Agricultural Diversions as appropriate		
52		Fund and implement a program to consolidate, extend, and screen agricultural diversions in the south Delta region as appropriate	Limited to diversion locations which must be relocated because they are west of the barrier locations.
53		Fund and set up an Operation and Maintenance Team funding for agricultural diversions by 2001.	Limited to diversion locations which must be relocated because they are west of the barrier locations.
54		Conduct maintenance dredging as appropriate to assure proper operation of the screened intakes.	Limited to diversion locations which must be relocated because they are west of the barrier locations.
55	SJQ River & Tributaries Management for WQ standards within SDWA service area.		
56		Seek the cooperation of San Joaquin River basin reservoir operators to achieve re-operation and/or purchase water for release during summer months to achieve existing WQ standards within SDWA service area and at Vernalis. Determine the amount of flow needed to achieve this through modeling.	Continue with existing operational approach
57	Component: Head of Old River Fish Control Structure		

	Alternative Features	1. Single Barrier Alternative	2. Multiple Barrier Alternative
58		Construct a permanent, operable Head of Old River (HOR) Fish Control Structure. Continue fishery monitoring, reevaluate, and modify operations of structure as appropriate. Continue temporary barrier placement until the permanent structure is in place.	same as 1
59	HOR Operations:		
60		Begin HOR Fish Control Structure operation in the spring at the discretion of the fish and wildlife agencies, in consultation with project operators and subject to San Joaquin River flow conditions, as early as April 1 and continue operation through no later than June 15.	same as 1, except installation by April 15 and removal by May 30
61		Begin HOR Fish Control Structure operation in the fall at the discretion of the fish and wildlife agencies, in consultation with project operators and subject to San Joaquin River flow conditions, as early as September 1 and continue operation through no later than November 30.	same as 1, except begin operation on October 1
62	Flow Control Structures		
63		Remove Temporary Flow Control Structures in phases, by year 2003 with Channel Dredging as required to achieve appropriate water supply utility. This dredging could include most of Old River upstream of Tracy Pumping Plant, Grant Line Canal, and Middle River, and the Salmon Slough area channels.	Construct operable Flow Control Structures at Middle River and Old River at Tracy. Grant Line Canal Flow Control Structure may or may not be constructed (Option A, no GLC, Options B,C, construct GLC. See Operations section below). For GLC, construct with an inflatable rubber dam and stop logs. Other flow control structures will either be inflatable rubber dams or operable radial gates.
64	Flow Control Structures Operations		
65		n/a	Operate Middle River (MR) Flow Control Structure only from April 15 through October 31.
66		n/a	Operate Old River at Tracy (ORT) Flow Control Structure no earlier than April 15 and no later than October 31.

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	Alternative Features	1. Single Barrier Alternative	2. Multiple Barrier Alternative
67		n/a	The Grant Line Canal (GLC) Flow Control Structure: Option B, limit operation to the period of August 1 through October 31. If operations occur prior to September 1 it will be for no more than two days in any seven day period. Option C, operation from June through October 31, but about 5 hours per day, on low tides.
68	Flow Control Structures Monitoring		
69		Continue monitoring program for temporary structures until they are phased out.	Monitor impacts on fish, stages, effects on circulation and water quality, and San Joaquin flows.
70			
71	Other		
72		Create an operation coordination team (OCT) and include the fish and wildlife agencies.	Create an operation coordination team (OCT) and include the fish and wildlife agencies.

Feasibility Issues	Issues to address	Alternative Ratings	
		Single Barrier Alternative	Multiple Barrier Alternative
Existing Technology			
Questionable or untested technology			
Logistics/Timing			
	Done in Stage 1		
Availability			
Managable/Jurisdiction To Do the Work	Components		
	Intake Structure		
	Dredging Old River		
	Dredge south Delta channels		
	Extend Ag diversions & add Fish Screens		
	Flow Structures		
	Fish Structure at HOR		
Cost	Components		
	Intake Structure		
	Dredging Old River		
	Dredge south Delta channels		
	Extend Ag diversions & add Fish Screens		
	Flow Structures		
	Fish Structure at HOR		
	O & M		
	Mitigation		

Alternative Ratings	Alternative Ratings	Resource/ Subcategory	
		Aquatic	Terrestrial
Alternative Ratings	Alternative Ratings	Intake Structure	Predation
		Entailment	Entailment
		Blockage	Predation
		Flow structures or equivalent	Entailment
		Hydrodynamic effects	Increased exports
			Flow Structure
			Fish Control Structure
		Habitat Losses	Biological Communities
			Community Energetics
			Environmental Water
			Stanislaus Steelhead
			San Joaquin fall-run chinook survival
			Smolt
			San Joaquin Salmon passing thru south Delta
			Juvenile Salmon
	Survival of other delta native fishes		
	Spittall		
	Water Quality at Exprt Facilities		
	CVP		
	SWP		
	CCWD		
	Water Rights		
	Navigation/ Transportation		
	Middle River		
	Old River at Tracy		
	Grant Line Canal		
	Head of Old River		
	Intake		
	Middle River		
	Old River at Tracy		
	Grant Line Canal		
	Head of Old River		
	Intake		
	Middle River		
	Old River at Tracy		
	Grant Line Canal		
	Head of Old River		
	Intake		
	Delta Levees		
	Land Use/ Planning		

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Alternative Rating for the South Delta Improvements Program

Impact	technical checklist	Alternative Ratings	
		Single Barrier Alternative	Multiple Barrier Alternative
<u>SWP Water Supply Reliability</u>			
	Average Years, AF		
	Critical/Dry Years, AF		
<u>South Delta Supply/ Agricultural Reliability</u>	Water Availability		
<u>South Delta Water Quality</u>			
South Delta channels (MR, OR, GLC) and WQCP criteria	Electrical conductivity, Total Dissolved Solids		
Middle River	Null zones		
Old River	Null zones		
San Joaquin River near Stockton	Dissolved Oxygen		

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