

DRAFT Proposed Long-Term BDCP Water Operations Range of Criteria (June 26, 2009)ⁱ

Range A	Proposed Operations	Range B
<p>1. North Delta Diversion Bypass Flows</p>		
<p><i>Considerations include (1) maintain fish screen sweeping velocities, (2) avoid upstream transport from downstream channels, (3) support salmonid and pelagic fish transport to regions of suitable habitat, (4) minimize predation effects downstream, and (5) maintain or improve rearing habitat in the north Delta.</i></p>		
<p>Not yet defined (may establish to reflect low estimate of criteria established under "Proposed Operations")</p>	<p>Flows or functional equivalent to achieve the following objectives:</p> <ol style="list-style-type: none"> 1. Maintain fish screen sweeping velocities (2-3 times approach velocity ~0.2 fps): 2. Avoid upstream transport from downstream channels 3. Support salmonid and pelagic transport to regions of suitable habitat 4. Minimize predation in downstream channels 5. Maintain or improve suitable rearing habitat in north Delta. <p>* Need to evaluate whether Fremont Weir flows have a significant effect on the water supply objectives.</p>	<p>Not yet defined (may establish to reflect high estimate of criteria established under "Proposed Operations")</p>
<p>2. South Delta Channel Flows</p>		
<p><i>Minimize take at south Delta pumps by reducing incidence and magnitude of reverse flows during critical periods for pelagic species.</i></p>		
<p>None Proposed</p>	<p>OMR Flows</p> <ul style="list-style-type: none"> • FWS smelt BO model of adaptive restrictions (temperature, turbidity, salinity, smelt presence) • Table below represents <u>current</u> estimate of 	<p>South Delta Export - San Joaquin Inflow Ratio</p> <ul style="list-style-type: none"> • Consider replacement of OMR with sliding scale SJR EI ratio that provides similar or greater protection than FWS smelt BO

	<p style="text-align: center;">“most likely” operation under FWS BO for modeling purposes</p> <table border="1" data-bbox="751 305 1318 604"> <thead> <tr> <th>Month</th> <th>W</th> <th>AN</th> <th>BN</th> <th>D</th> <th>C</th> </tr> </thead> <tbody> <tr><td>Jan</td><td>-4000</td><td>-4000</td><td>-4000</td><td>-5000</td><td>-5000</td></tr> <tr><td>Feb</td><td>-5000</td><td>-4000</td><td>-4000</td><td>-4000</td><td>-4000</td></tr> <tr><td>Mar</td><td>-5000</td><td>-4000</td><td>-4000</td><td>-3500</td><td>-3000</td></tr> <tr><td>Apr</td><td>-5000</td><td>-4000</td><td>-4000</td><td>-3500</td><td>-2000</td></tr> <tr><td>May</td><td>-5000</td><td>-4000</td><td>-4000</td><td>-3500</td><td>-2000</td></tr> <tr><td>Jun</td><td>-5000</td><td>-5000</td><td>-5000</td><td>-5000</td><td>-2000</td></tr> <tr><td>Jul</td><td>-99999</td><td>-99999</td><td>-99999</td><td>-99999</td><td>-99999</td></tr> <tr><td>Aug</td><td>-99999</td><td>-99999</td><td>-99999</td><td>-99999</td><td>-99999</td></tr> <tr><td>Sep</td><td>-99999</td><td>-99999</td><td>-99999</td><td>-99999</td><td>-99999</td></tr> <tr><td>Oct</td><td>-99999</td><td>-99999</td><td>-99999</td><td>-99999</td><td>-99999</td></tr> <tr><td>Nov</td><td>-99999</td><td>-99999</td><td>-99999</td><td>-99999</td><td>-99999</td></tr> <tr><td>Dec</td><td>-6839</td><td>-6839</td><td>-6258</td><td>-6258</td><td>-6065</td></tr> </tbody> </table> <p>* Values are monthly average for use in modeling. December 20-31 targets are -5000 cfs (W, AN), -3500 cfs (AN, D), and -3000 cfs (C), and are averaged with an assumed background of -8000 cfs for December 1-19. Values are reflective of the “most likely” operation under the FWS Delta Smelt Biological Opinion. Values for modeling may be updated based on review by fishery agencies.</p> <p>[Note that Conveyance WG/HOTT recommends continuing to evaluate the concept of isolating Old River to address south Delta channel flows.]</p>	Month	W	AN	BN	D	C	Jan	-4000	-4000	-4000	-5000	-5000	Feb	-5000	-4000	-4000	-4000	-4000	Mar	-5000	-4000	-4000	-3500	-3000	Apr	-5000	-4000	-4000	-3500	-2000	May	-5000	-4000	-4000	-3500	-2000	Jun	-5000	-5000	-5000	-5000	-2000	Jul	-99999	-99999	-99999	-99999	-99999	Aug	-99999	-99999	-99999	-99999	-99999	Sep	-99999	-99999	-99999	-99999	-99999	Oct	-99999	-99999	-99999	-99999	-99999	Nov	-99999	-99999	-99999	-99999	-99999	Dec	-6839	-6839	-6258	-6258	-6065	
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<p>3. Fremont Weir/Yolo Bypass</p> <p><i>Considerations include (1) increasing spawning and rearing habitat for splittail and rearing habitat for salmonids, (2) providing alternate migration corridor to the mainstem Sacramento River, and (3) increasing effectiveness of habitat and food transport in Cache Slough.</i></p>																																																																																
<p>Same as “Proposed Operations”, except flows in the 2-4,000 cfs range. Physical modifications to Yolo Bypass and toe drain may be required to achieve levels of desired floodplain habitat enhancement.</p>	<p><u>Modified Fremont Weir and Control Gate</u></p> <ul style="list-style-type: none"> • Spills into Yolo Bypass enabled at water surface elevation 17.5 ft NAVD88 (~15,000 cfs Sac R at Fremont flow) by notch and new gates, as compared to current weir elevation of 33.5 ft (~56,000 cfs Fremont flow). • Flows: 3-6,000 cfs depending on hydrology • Duration: 30-45 days 	<p>Same as “Proposed Operations”</p>																																																																														

	<ul style="list-style-type: none"> Period: Gates operable December – April 15 (occasionally April 16-May 15 depending of hydrologic conditions) 	
4. Delta Cross Channel Gate Operations <i>Considerations include (1) reduce transport of outmigrating Sacramento River fish into central Delta, (2) maintain flows downstream on Sacramento River, (3) and providing sufficient Sacramento River flow into interior Delta when water quality for M&I and AG may be of concern.</i>		
Same as “Proposed Operations”	Nov-Jun: DCC Gate closed Jul-Aug: DCC gate open Sep-Oct: DCC gate open up to 15 days per month; may be open longer depending on presence of fish Diurnal operations of the DCC gate may be considered if fish are present during periods of gate openings and central/south Delta water quality is a concern	Same as “Proposed Operations”
5. Rio Vista Minimum Instream Flows <i>Maintain minimum flows for outmigrating salmonids and smelt.</i>		
Not yet defined (Possibly package with North Delta diversion operations)	Not yet defined (Possibly package with North Delta diversion operations)	Not yet defined (Possibly package with North Delta diversion operations)
6. Delta Inflow & Outflow <i>Considerations include (1) Provide sufficient outflow to maintain desirable salinity regime downstream of Collinsville during the spring, (2) explore range of approaches toward providing additional variability to Delta inflow and outflow.</i>		
Delta Outflow: Jul-Jan: Per D-1641 Feb-Jun: Per D-1641*, except no Roe Island triggering	Delta Outflow: Jul-Jan: Per D-1641 Feb-Jun: Per D-1641 [D-1641 for evaluation purposes – not proposed]	Delta Outflow: Jul-Aug & Jan: Per D-1641 Sep-Nov: Fall X2 per FWS Smelt BO Feb-Jun: NGO X2-Eight River Index approach

<p>* Current relaxation of Collinsville standard to 4,000 cfs in May and June revised to state when the Eight River Index is 10.0 or less as established on May 1.</p> <p>** Proportional Reservoir Release concept will continue to be evaluated to the extent that it provides similar response to outflow and upstream storage conditions</p>	<p>* Proportional Reservoir Release concept will continue to be evaluated to the extent that it provides similar response to outflow and upstream storage conditions</p>	<p>(storage off-ramps to be refined)</p> <p>* Proportional Reservoir Release concept will continue to be evaluated to the extent that it provides similar response to outflow and upstream storage conditions</p> <p>** Continue analysis of NGO watershed unimpaired runoff approach as it relates to PREs and parties outside of BDCP. Carry into “related action” alternative.</p>
<p>7. Operations for Delta Water Quality and Residence Time</p> <p><i>Considerations include (1) maintain a minimum level of pumping from the south Delta during summer to provide limited flushing for general water quality conditions (reduce residence times), (2) for M&I and AG salinity improvements, and (3) to allow operational flexibility during other periods to operate either north or south diversions based on real-time assessments of benefits to fish and water quality .</i></p>		
<p>Same as “Proposed Operations”</p>	<p><u>Assumptions for analysis:</u> Jul-Sep: Prefer south delta pumping up to 3,000 cfs before diverting from north Oct-Jun: Prefer north delta pumping (real-time operational flexibility)</p>	<p>Same as “Proposed Operations”</p>

ⁱ This table provides a summary of proposed long-term Delta water operations for the purpose of conducting the BDCP impact and conservation assessment. Information in this table provides the basis for hydrologic and hydrodynamic modeling inputs for the assessment. More specifics regarding criteria and rationale for each water operational parameter will be provided in the text of water operations conservation measures in Chapter 3 *Conservation Strategy*.