

DRAFT
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**PRELIMINARY ASSESSMENT OF WATER SUPPLY BENEFITS
OF NEW FACILITIES UNDER ALTERNATIVE SCENARIOS
OF ENVIRONMENTAL OBLIGATIONS
(NoName Group Studies)**

Eight operations studies using DWRSIM are underway for the NoName Group (NNG) to assess the water supply benefits of new facilities under four scenarios of environmental obligations. Two of the studies were completed previously for the CVPIA (b)(2) evaluations, and an additional six new studies are under way. The modeling assumptions for the studies are described below.

The following assumptions are common to all studies:

- 1995 Level hydrology (1995d06a) and upstream depletions based on DWR Bulletin 160-98 land use projections (73 years: 1922-1994).
- 1995 Level SWP and CVP demands. Total SWP demand varies from 2.6 MAF to 3.5 MAF/year depending on water conditions in the service area. Total CVP demand is 3.3 MAF/year.
- Meet the 1993 winter-run salmon temperature requirements by maintaining Shasta Lake carryover storage at or above 1.9 MAF. In extremely dry years, the Shasta Lake carryover storage is allowed to drop below 1.9 MAF.
- New Melones Reservoir is operated to meet its obligations per USBR's Interim New Melones Operation Plan.

The following assumptions are used in the modeling of the new facilities:

- ISDP: Assume Banks P.P. pumping capacity of 10,300 cfs with no COE pumping restrictions.
- JPOD: Assume full and unlimited joint point of diversion. SWP wheels for the CVP after SWP demands are met and SWP San Luis Reservoir is at rule curve.
- DMC/California Aqueduct 400 cfs Intertie: For modeling convenience, increase the capacity in the upper Delta Mendota Canal to 4,600 cfs.

- Groundwater storage south of the Delta: The Madera Ranch Groundwater Bank is modeled as a CVP facility. During wetter conditions, water is pumped from the Mendota Pool for groundwater recharge, and during dry periods, water is pumped from the groundwater bank into the Mendota Pool for delivery to CVP water users. The groundwater bank physical features are as follows:

Bank Capacity: 390 TAF
 Recharge Capacity: 400 cfs
 Pump Capacity: 200 cfs

The following are additional assumptions specific to each study. For modeling convenience, standards that are less than monthly are converted or approximated to equivalent monthly requirements.

Study 1: Accord + Upstream AFRP Flows
(Base Case 1)

- Meet the 1994 Bay-Delta Accord export rules and water quality requirements.
- Meet the AFRP minimum instream flow requirements (AFRP Upstream Actions 1 through 3) downstream of Keswick, Nimbus, and Whiskeytown Dams. These requirements are dynamic; and are a function of the storage and forecasted inflow as described in the November 1997 AFRP document.
- Meet the water quality standards at Vernalis only. No minimum flows at Vernalis, including the pulse flows, are imposed. No additional water is released from New Don Pedro Reservoir and Lake McClure to meet Vernalis requirements.

Study 2: Accord + Upstream AFRP Flows + New Facilities

The assumptions for Study 2 are the same as Study 1 plus new facilities.

Study 3: Accord + Upstream AFRP Flows + AFRP Delta Actions
(Base Case 2)

- Meet the 1994 Bay-Delta Accord water quality standards. No minimum flows at Vernalis, including the pulse flows, are imposed. Instead, alternative flow and export requirements are imposed as discussed under Delta Action 1.
- Meet the AFRP minimum instream flow requirements (same as Study 1) downstream of Keswick, Nimbus, and Whiskeytown Dams.

The following AFRP Delta Actions are modeled in this study:

- **Delta Action 1: Vernalis Adaptive Management Plan (VAMP)**

A. During April 15 - May 15, increase the flow at Vernalis to meet the target flow conditions (2,000, 3,200, 4,450, 5,700, and 7,000 cfs) and set the Delta export accordingly (1,500, 1,500, 1,500, 2,250, and either 1,500 or 3,000 cfs) as described in the July 9th VAMP framework document. For modeling purposes, a San Luis storage (CVP+SWP) target was chosen to achieve export rates of 1,500 cfs and 3,000 cfs at approximately 50/50 distributions for flows above 5,700 cfs.

B. Additional water needed to meet the target flows at Vernalis during April 15 - May 15 is provided from the San Joaquin River upstream of its confluence with the Stanislaus River. Additional water requirements are shared between the Tuolumne (New Don Pedro Reservoir) and Merced (Lake McClure) River basins. The additional water is capped at 110 TAF/year.

- **Delta Action 3: Additional X2 Protection**

Increase X2 requirements at Chipps Island during March through June to the 1962 level of development.

- **Delta Action 4: Maintain Sacramento River Flow at Freeport**

The flow at Freeport is modeled as a monthly requirement in May. The required flow is a function of the Shasta end of April storage and May through September inflow as follows:

Shasta end of April storage + May through September Inflow (TAF)	Required Flow at Freeport (CFS)
>=6,200	15,000
5,000-6,200	10,000-15,000 (interpolate)
=5,000	10,000
4,000-5,000	9,000-10,000 (interpolate)
=4,000	9,000
<4,000	0

- **Delta Action 5: Ramping of Delta Exports**

The allowable Delta export (Banks+Tracy) to the total Delta inflow ratio (E/I) used in the second half of May consisted of the average of the E/I ratio during the first half of May (pulse period) and the allowable E/I ratio of 0.35 in June.

- **Delta Action 6:** Close Delta Cross Channel gates in October through January in all water year types.
- **Delta Action 7:** July Flows and Exports

The allowable Delta export in July is determined by applying a ratio to the Delta export in June, depending on the X2 position in June. The ratio is 1.0 if the June X2 is at or east of Collinsville (81 km) and would increase linearly to a maximum of 1.86 when the June X2 is at Chipps Island (74 km). When the June X2 is located west of Chipps Island, no export limit is imposed (beyond existing constraints i.e. 65% E/I ratio) in July.

The following AFRP Delta Actions are not modeled in this study:

- **Delta Action 2:** Old River Barrier Operation
- **Delta Action 8:** Evaluate exports and inflows in December - January

Study 4: Accord + Upstream AFRP Flows + AFRP Delta Actions + New Facilities

The assumptions for Study 4 are the same as Study 3 plus new facilities.

Study 5: Accord + Upstream AFRP Flows + AFRP Delta Actions + DEFT Actions (Base Case 3)

The assumptions for Study 5 are the same as Study 3, except the following DEFT Actions are added:

- Reduce the export/inflow (E/I) ratios in November through June to the following: Nov: 55%, Dec - Jan : 45%, Feb - Jun: 25%
- Relax the export/inflow (E/I) ratios in August through September to the following: Aug - Sep : 75%
- Extend the VAMP target flows and exports to 61 days (April 1 through May 31). Additional water needed to meet the VAMP target flows in April and May are provided from Lake McClure and New Don Pedro Reservoir. The additional water is capped at 300 TAF/year. It is noted that the 61-day VAMP export restriction supersedes the ramping of exports in AFRP Delta Action 5.

Study 6: Accord + Upstream AFRP Flows + AFRP Delta Actions + DEFT Actions + New Facilities

The assumptions for Study 6 are the same as Study 5 plus new facilities.

Study 7: Accord + Upstream AFRP Flows + New Minimum Trinity River Flows

The assumptions for Study 7 are the same as Study 1, except that new minimum Trinity River flows per Draft PEIS are added.

Study 8: Accord + Upstream AFRP Flows + New Minimum Trinity River Flows + New Facilities

The assumptions for Study 8 are the same as Study 7 plus new facilities.