

North-of-the-Delta Offstream Storage Scenarios Description

Scenario	Water Supply Focus	Water Quality Focus	Ecosystem Restoration Focus	Multi-Purpose Focus
Major Project Features				
Sites Reservoir	1.8 MAF	1.8 MAF	1.8 MAF	1.8 MAF
Conveyance Facilities				
GCID Canal	1,800 cfs	1,800 cfs	1,800 cfs	1,800 cfs
T-C Canal	2,100 cfs	2,100 cfs	2,100 cfs	2,100 cfs
New Pipeline				
Diversion	1,500 cfs		2,000 cfs	2,000 cfs
Release	1,125 cfs	1,500 cfs	1,500 cfs	1,500 cfs
Total Conveyance Capacity				
Diversion	5,400 cfs	3,900 cfs	5,900 cfs	5,900 cfs
Release	1,125 cfs	1,500 cfs	1,500 cfs	1,500 cfs
Funks Reservoir Enlargement	●	●	●	●
Terminal Regulating Reservoir	●	●	●	●
Pumping/Generating Plants				
Sites Pump/Gen Plant	●	●	●	●
Sac. River Pump/Gen Plant	●		●	●
TRR Pump Plant	●	●	●	●
Transmission Lines/Substation	●	●	●	●
Fish Enhancement Measures				
Restore Gravel Mines			●	●
Replenish Spawning Gravels			●	●
Improve Instream Aquatic Habitat			●	●
Operational Priorities	<ol style="list-style-type: none"> 1. SWP 2. CVP 3. Local 4. Level 4 Ref. Water 5. EWA 6. WQ 7. ERP-1 	<ol style="list-style-type: none"> 1. WQ 2. SWP 3. CVP 4. Local 5. Level 4 Ref. Water 6. EWA 7. ERP-1 	<ol style="list-style-type: none"> 1. ERP-2 2. SWP 3. CVP 4. Local 5. Level 4 Ref. Water 6. WQ 7. EWA 	<ol style="list-style-type: none"> 1. SWP 2. WQ 3. CVP 4. Level 4 Ref. Water 5. EWA 6. ERP-3

SWP – State Water Project contractors; **CVP** – Central Valley Project contractors; **Local** – Tehama-Colusa Canal Authority water users; **Level 4 Ref. Water** – Level 4 water supply for wildlife refuges (Level 4 is defined as the difference between historic annual average water deliveries (Level 2), and the water supplies required to achieve optimum waterfowl habitat management (Level 4)); **EWA** – Environmental Water Account or equivalent program; **WQ** – water quality for Delta urban and environmental; **ERP** – ecosystem restoration

Table 1
ERP-1 (Ecosystem Restoration Actions) List

1. Improve the reliability of cold water carryover storage at Shasta Dam. See also ERP Plan, Sacramento River Zone, Central Valley Stream Temperatures, Target 1 / Action 1.
2. Provide supplemental flows for cold water releases for salmon and steelhead between Keswick and Red Bluff Diversion Dam. See also ERP Plan, Sacramento River Zone, Central Valley Stream Temperatures, Target 1.
3. Stabilize fall flows to avoid abrupt reductions - Keswick to Red Bluff: Assume 6,000 cfs target from October through January and 4,500 cfs for September. This concept is designed to avoid adverse conditions for spawning fall-run Chinook salmon (i.e. egg desiccation). See ERP Plan, Sacramento River Zone, Central Valley Stream-flow, Target 2 / Action 2.
4. Reduce diversions at Red Bluff (to provide water into the Tehama-Colusa Canal) and at Hamilton City (to provide water into the Glenn-Colusa Irrigation District Canal) during Jul, Aug, and Sep. Priority is to reduce diversions at GCID. This concept is designed to minimize diversion effects to fish during identified critical periods, July, August, & September. See ERP Plan, Sacramento River Zone, Water Diversion, Target 1 / Action 1C.
5. Improve the reliability of cold water carry-over storage at Folsom Reservoir and stabilize flows in the American River. See ERP Plan, American River Basin Zone, Central Valley Stream-flow, Targets 1, 2, and 3.
6. Modify spring flows into a “snowmelt pattern” in years with peak storm events in late-winter and early-spring - Red Bluff to Colusa. The snowmelt pattern would be designed to increase the success of cottonwood cohorts specifically. See ERP Plan, Sacramento River Zone, Riparian and Riverine Aquatic Habitats, Target 1 / Action 1C.

Table 2
ERP-2 (Ecosystem Restoration Actions) List

1. Table 1 ERP-1 action list, with the following modifications:
2. Improve habitat conditions for riparian habitat and aquatic species associated with Stony Creek downstream of Black Butte Reservoir. This concept would provide habitat improvements by reducing the scouring effects of flood flow releases in Stony Creek and potentially allow for the removal of two fish passage barriers, the TC Canal Constant Head Orifice seasonal gravel dam and the Orland Unit Water Users’ Association’s North Diversion Dam. A diversion and conveyance option from Stony Creek at the Black Butte Dam afterbay to a new conveyance to TC Canal south of Orland would provide additional water for NODOS. Contact Mike Tucker, NOAA and Paul Ward, DFG. See ERP Plan, Colusa Basin Zone, Central Valley Stream-flow, Target 1 / Action 1F and Riparian and Shaded Riverine Aquatic Habitats, Target 1 / Action 1.

3. Provide a flow event by supplementing normal operating flows from Shasta and Keswick Dams in March during years when no flow event has occurred during winter or is expected to occur. Flow events would be provided only when sufficient inflow to Lake Shasta is available to sustain the prescribed releases. This action can be refined by evaluating its indirect costs and the overall effectiveness of achieving objectives. / 8,000 – 10,000 cfs in dry years and 15,000 – 20,000 cfs in below normal years. See ERP Plan, Sacramento River Zone, Central Valley Stream-flow, Action 1 / Target 1.
4. Provide a March Delta outflow that occurs from the natural late-winter and early-spring peak inflow from the Sacramento River. This outflow should be at least 20,000 cfs for 10 days in dry years, at least 30,000 cfs for 10 days in below-normal water years, and 40,000 cfs for 10 days in above-normal water years. Wet-year outflow is generally adequate under the present level of development. See ERP Plan, Sac-SJ Delta Zone, Central Valley Stream-flow, Target 1.
5. Provide a minimum flow of 13,000 cfs on the Sacramento River below Sacramento in May of all but critical years (U.S. Fish and Wildlife Service 1995). See ERP Plan, Sac-SJ Delta Zone, Central Valley Stream-flow, Target 4.

Table 3
ERP-3 (Ecosystem Restoration Actions) List

1. Table 1 ERP-1 action list, with the following modifications:
2. Stabilize fall flows to avoid abrupt reductions - Keswick to Red Bluff: Assume Nov. 1997 AFRP flow targets. This is intended to reduce adverse conditions for spawning fall-run Chinook salmon. See ERP Plan, Sacramento River Zone, Central Valley Stream-flow, Target 2 / Action 2.