

Appendix F, Modeling

Section 1-2 Callouts Tables

CalSim 3

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 without VAs (Alt2v1)	Alternative 2 with Delta VAs (Alt2v2)	Alternative 2 with VAs (Alt2v3)
GENERAL						
Planning horizon	Year 2040	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR
Period of simulation	100 years (1922-2021)	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR
Sea Level Rise	15 cm	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR
HYDROLOGY						
Climate Condition	2022±15 Median	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR
Inflows/Supplies	Modified inflows based on historical hydrology projected 2020 modifications for operations upstream of the rim reservoirs	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR
Level of development	Average historical land use (2004-2013) with urban demands based on 2020 Urban Water Management Plans	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR
DEMANDS, WATER RIGHTS, CVP/SWP CONTRACTS						
Sacramento River Region (excluding American River)						
CVP	Demands reflect land-use basis, limited by contract amounts. Settlement contractors may divert as possible, up to full contract amounts, given hydrologic conditions without CVP facility operations or hydraulic conditions consideration. No deliveries to CVP M&I or Ag service contractors.	Land-use based demands, deliveries limited by contract amounts. No deliveries to CVP M&I or Ag service contractors.	Land-use based applied water demands, 2020 Urban Water Management Plan based urban demands, deliveries limited by contract amounts	Same as NAA	Same as NAA	Same as NAA
SWP (FRSA)	Demands reflect land-use basis, limited by contract amounts. Deliveries to FRSA contractors are made as possible, up to full contract amounts, given hydrologic conditions, without SWP facility operations or hydraulic conditions consideration. No deliveries to SWP M&I service contractors.	Land-use based demands, deliveries limited by contract amounts. No deliveries to SWP M&I service contractors.	Land-use based applied water demands, deliveries limited by contract amounts	Same as NAA	Same as NAA	Same as NAA
Non-project	Land use based, limited by water rights and SWRCB Decisions for Existing Facilities. Deliveries to senior water rights are made as possible, given hydrologic conditions, without CVP facility operations or hydraulic conditions consideration.	Land use based demands, limited by water rights and SWRCB Decisions for Existing Facilities	Land use based applied water demands 2020 Urban Water Management Plan based urban demands	Same as NAA	Same as NAA	Same as NAA
Antioch Water Works	Pre-1914 water right	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 without VAs (Alt2v1)	Alternative 2 with Delta VAs (Alt2v2)	Alternative 2 with VAs (Alt2v3)
Federal refuges	Deliveries to refuges are made as possible, up to Level 1 supply needs, given hydrologic conditions, without CVP facility operations or hydraulic conditions consideration.	Firm Level 2 water supply needs	Firm Level 2 water supply needs	Same as NAA	Same as NAA	Same as NAA
Sacramento River Region - American River						
Water rights	Year 2025, full water rights and SWRCB Decisions for Existing Facilities. Deliveries to water rights are made as possible, given hydrologic conditions, without CVP facility operations or hydraulic conditions consideration.	Year 2025, full water rights	Demands based on 2020 Urban Water Management Plans, deliveries limited to 2025 water rights	Same as NAA	Same as NAA	Same as NAA
CVP	Year 2025, demands reflect full contracts. No deliveries to CVP M&I service contractors.	Same as ROR	Demands based on 2020 Urban Water Management Plans, deliveries limited to 2025 water rights, including Freeport Regional Water Project	Same as NAA	Same as NAA	Same as NAA
San Joaquin River Region						
Friant Unit	No deliveries to Friant Unit CVP M&I or Ag service contractors.	Same as ROR	Limited by contract amounts, based on current allocation policy	Same as NAA	Same as NAA	Same as NAA
Lower Basin	Land-use based demand, based on district level operations and constraints. Deliveries to water rights, exchange contractors, and refuges (up to Level 1) are made as possible, up to full contract amount, through San Joaquin River diversions, given hydrologic conditions, without CVP facility operations or hydraulic conditions consideration.	Land-use based demand, based on district level operations and constraints. Deliveries to water rights, exchange contractors, and refuges (firm Level 2) are made, up to full contract amount, through San Joaquin River diversions, with CVP facility operations but no hydraulic condition considerations.	Land-use based applied water demand, urban demands based on 2020 Urban Water Management Plans, deliveries based on district level operations and constraints	Same as NAA	Same as NAA	Same as NAA
Stanislaus River	Land-use based demand, based on district level operations and constraints. Deliveries to water rights are made as possible given hydrologic conditions, without CVP facility operations or hydraulic conditions consideration. No deliveries to Stanislaus Unit CVP M&I or Ag service contractors.	Land-use based demand, based on district level operations and constraints. Deliveries to water rights are made with CVP facility operations. No deliveries to Stanislaus Unit CVP M&I or Ag service contractors.	Land-use based demand, Stepped Release Plan (SRP)	Land-use based demand, Stepped Release Plan (SRP) with modified Winter Instability Flows and 90% exceedance San Joaquin 60-20-20 WY type	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs
San Francisco Bay, Central Coast, Tulare Lake, and South Coast Regions (CVP/SWP project facilities)						
CVP	No project deliveries	Same as ROR	Demand based on full contract amounts	Same as NAA	Same as NAA	Same as NAA

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 without VAs (Alt2v1)	Alternative 2 with Delta VAs (Alt2v2)	Alternative 2 with VAs (Alt2v3)
CCWD	Deliveries to water rights are made as possible given Delta hydrologic conditions, without CVP facility operations. No deliveries to CCWD M&I service contracts.	Same as ROR	195 TAF/yr CVP contract supply, water rights and in-Delta transfers	Same as NAA	Same as NAA	Same as NAA
SWP	No project deliveries	Same as ROR	Demand based on Table A amounts	Same as NAA	Same as NAA	Same as NAA
Article 56	n/a	n/a	Based on 2014-19 initial contractor requests	Same as NAA	Same as NAA	Same as NAA
Article 21	n/a	n/a	MWD delivery up to 286.17 TAF/year January-May subject to conveyance capacity, KCWA delivery up to 543.69 TAF/year November-June, and other contractor deliveries up to 333.45 TAF/year, subject to conveyance capacity. All Article 21 demands have been scaled up by 20% to not constrain deliveries strictly by historical data.	Same as NAA	Same as NAA	Same as NAA
North Bay Aqueduct (NBA)	No deliveries to SWP service contracts, up to 43.7 cfs of excess flow under Fairfield, Vacaville, and Benecia Settlement Agreement	Same as ROR	77 TAF/yr demand under SWP contracts, up to 43.7 cfs of excess flow under Fairfield, Vacaville, and Benecia Settlement Agreement	77 TAF/yr demand under SWP contracts, up to 43.7 cfs of excess flow under Fairfield, Vacaville, and Benecia Settlement Agreement; 100 cfs limit Jan-Mar of Dry and Critical Years	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs
Federal refuges	Deliveries to refuges are made as possible, up to Level 1 supply needs, through San Joaquin River diversions, given hydrologic conditions, without CVP facility operations or hydraulic conditions consideration.	Deliveries to refuges are made as possible, up to firm Level 2 supply needs, through San Joaquin River diversions, with CVP Friant facility operations but no hydraulic condition considerations.	Firm Level 2 water needs	Same as NAA	Same as NAA	Same as NAA
FACILITIES						
Systemwide						
Systemwide	Existing facilities operated only to maintain facility integrity. CalSim3 is a monthly timestep model and therefore results do not reflect reasonable storage or flow release conditions for sub-monthly flood events whenever storage is less than full capacity for the month	Existing facilities operated to store water and release stored water for non-discretionary obligations, subject to all other regulations and operation assumption callouts for this scenario.	Existing facilities	Same as NAA	Same as NAA	Same as NAA

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 without VAs (Alt2v1)	Alternative 2 with Delta VAs (Alt2v2)	Alternative 2 with VAs (Alt2v3)
Trinity River Region						
Trinity Lake	Pass through inflow, not limited to release capacity, subject to all other regulations and operation assumption callouts for this scenario. Release stored water as quickly as possible, limited by downstream channel capacity. Operated to dead pool capacity of 12.4 taf.	Store water and release stored water for local non-discretionary obligations, subject to all other regulations and operation assumption callouts for this scenario (no diversions to Carr PP). Operated up to existing capacity of 2,448 TAF	Operated up to existing capacity of 2,448 TAF	Same as NAA	Same as NAA	Same as NAA
Clear Creek Tunnel	Not operated	Same as ROR	Operated up to existing capacity of 3,300 cfs	Same as NAA	Same as NAA	Same as NAA
Spring Creek Tunnel	Not operated	Same as ROR	Operated up to a capacity of 4,200 cfs	Same as NAA	Same as NAA	Same as NAA
Whiskeytown Lake	Pass through inflow, not limited to release capacity, limited by downstream channel capacity, operated to dead pool capacity of 10 taf.	Pass through inflow, limited to release capacity, operated up to existing capacity of 240 TAF.	Operated up to existing capacity of 240 TAF.	Same as NAA	Same as NAA	Same as NAA
Sacramento River Region						
Shasta Lake	Pass through inflow, not limited to release capacity, subject to all other regulations and operation assumption callouts for this scenario. Release stored water as quickly as possible, limited by downstream channel capacity, operated to dead pool capacity of 116 taf.	Store water and release stored water for non-discretionary obligations, subject to all other regulations and operation assumption callouts for this scenario. Operated up to existing 4,552 TAF capacity.	Operated up to existing 4,552 TAF capacity	Same as NAA	Same as NAA	Same as NAA
Keswick Reservoir	Pass through inflow, not limited to release capacity, limited by downstream channel capacity, operated to dead pool capacity of 0.014 taf.	Pass through inflow, limited to release capacity, operated up to existing capacity of 23.8 TAF	Operated up to existing capacity of 23.8 TAF	Same as NAA	Same as NAA	Same as NAA
Red Bluff Diversion Dam	No pumping	Same as ROR	Diversion dam gates out all year. Pumping Plant operated to deliver CVP water with capacity of 2,000 cfs.	Same as NAA	Same as NAA	Same as NAA
Hamilton City Pump Station	Pumping plant with capacity of 3,000 cfs.	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR
Fremont Weir	Notched Fremont Weir as represented in Yolo Bypass Salmonid Habitat Restoration and Fish Passage EIS/EIR Alternative 1 (preferred alternative)	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 without VAs (Alt2v1)	Alternative 2 with Delta VAs (Alt2v2)	Alternative 2 with VAs (Alt2v3)
Colusa Basin	Existing conveyance and storage facilities, water rights and settlement contractor and Refuge Level 1 diversions, given hydrologic conditions, without CVP facility operations or hydraulic conditions consideration.	Existing conveyance and storage facilities	Existing conveyance and storage facilities	Same as NAA	Same as NAA	Same as NAA
Lake Oroville	Pass through inflow, not limited to release capacity, subject to all other regulations and operation assumptions callouts for this scenario. Release stored water as quickly as possible, limited by downstream channel capacity. Operated to dead pool capacity of 29.6 taf.	Store water and release stored water for non-discretionary obligations, subject to all other regulations and operation assumption callouts for this scenario. Operated up to existing capacity of 3,538 TAF.	Operated up to existing capacity of 3,538 TAF	Same as NAA	Same as NAA	Same as NAA
Thermalito Complex	Pass through inflow not limited to outlet works release capacity, limited by downstream channel capacity, operated to dead pool capacity of 13 taf.	Pass through inflow, limited to outlet works release capacity, operated up to existing capacity of 55 TAF	Operated up to existing capacity of 55 TAF	Same as NAA	Same as NAA	Same as NAA
Upper American River	PCWA American River Pump Station, water rights diversions only, given hydrologic conditions, and without hydraulic conditions consideration.	Same as ROR	PCWA American River Pump Station	Same as NAA	Same as NAA	Same as NAA
Folsom Lake	Pass through inflow, not limited to release capacity, subject to all other regulations and operation assumption callouts for this scenario. Release stored water as quickly as possible, limited by downstream channel capacity. Operated to dead pool capacity of 83 taf.	Store water and release stored water for non-discretionary obligations, subject to all other regulations and operation assumption callouts for this scenario, operated up to existing capacity of 976 TAF.	Operated up to existing capacity of 976 TAF including auxiliary spillway	Same as NAA	Same as NAA	Same as NAA
Folsom South Canal	None	Same as ROR	Operated up to existing capacity	Same as NAA	Same as NAA	Same as NAA
Lake Natoma	Pass through inflow, not limited to release capacity, limited by downstream channel capacity, operated to dead pool capacity of 1.75.	Pass through inflow, limited to release capacity, operated up to existing capacity of 8.8 TAF	Operated up to existing capacity of 8.8 TAF	Same as NAA	Same as NAA	Same as NAA
Lower Sacramento River	Water rights diversions only given hydrologic conditions, and without hydraulic conditions consideration. Freeport Regional Water Project only operated for water rights diversions.	Same as ROR	Full water rights diversions and Freeport Regional Water Project	Same as NAA	Same as NAA	Same as NAA

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San Joaquin River Region						
Millerton Lake (Friant Dam)	Pass through inflow, not limited to release capacity, subject to all other regulations and operation assumption callouts for this scenario. Release stored water as quickly as possible, limited by downstream channel capacity. Operated to dead pool capacity of 120 taf.	Store water and release stored water for non-discretionary obligations, subject to all other regulations and operation assumption callouts for this scenario. Operated up to existing capacity of 524 taf.	Operated up to existing capacity of 524 TAF	Same as NAA	Same as NAA	Same as NAA
Lower San Joaquin River	City of Stockton Delta Water Supply Project, 30-mgd capacity.	Same as ROR	City of Stockton Delta Water Supply Project, 30-mgd capacity. SJRRP Recapture simulated at West Stanislaus ID, Patterson ID, and Banta Carbona ID	Same as NAA	Same as NAA	Same as NAA
New Melones	Pass through inflow, not limited to release capacity, subject to all other regulations and operation assumption callouts for this scenario. Release stored water as quickly as possible, limited by downstream channel capacity. Operated to dead pool capacity of 80 taf.	Store water and release stored water for non-discretionary obligations, subject to all other regulations and operation assumption callouts for this scenario. Operated up to existing capacity up to 2420 TAF	Operated up to existing capacity up to 2420 TAF	Same as NAA	Same as NAA	Same as NAA
CVP and SWP San Luis	No storage operation	Same as ROR	San Luis operated to manage all exports up to existing 2041 TAF capacity	San Luis to be raised to CVP capacity of 1102 TAF; SWP capacity to remain the same	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs
SWP Banks Pumping Plant (South Delta)	No Pumping	Same as ROR	Physical capacity is 10,300 cfs but 6,680 cfs permitted capacity in all months. Pumping can be up to 10,300 cfs during Dec 15 – Mar 15 depending on Vernalis flow conditions; additional capacity of 500 cfs (up to 7,180 cfs) allowed Jul – Sep	Same as NAA	Same as NAA	Same as NAA
CVP C.W. Bill Jones Pumping Plant (Tracy PP)	No pumping	Same as ROR	Permit capacity is 4,600 cfs in all months (allowed for by the Delta-Mendota Canal-California Aqueduct Intertie)	Same as NAA	Same as NAA	Same as NAA
Upper Delta-Mendota Canal Capacity	Not operated	Same as ROR	Design capacity plus 400 cfs Delta-Mendota Canal-California Aqueduct Intertie	Design capacity plus 700 cfs Delta-Mendota Canal-California Aqueduct Intertie	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 without VAs (Alt2v1)	Alternative 2 with Delta VAs (Alt2v2)	Alternative 2 with VAs (Alt2v3)
CCWD Intakes	No pumping to store in Los Vaqueros Reservoir; only water right diversions for direct use by CCWD; no CVP M&I contract diversions.	Same as ROR	Los Vaqueros Reservoir with existing storage capacity (160 TAF), and existing intakes except for Mallard Slough Intake. Intake water quality conditions based on DSM2	Same as NAA	Same as NAA	Same as NAA
Suisun March Salinity Control Gates (SMSCG)	Not operated	Same as ROR	Delta salinity conditions are adjusted for months in which the salinity control gate is operated (see operations)	Same as NAA	Same as NAA	Same as NAA
San Francisco Bay Region						
South Bay Aqueduct (SBA)	Not operated	Same as ROR	Existing 430 cfs capacity	Same as NAA	Same as NAA	Same as NAA
South Coast Region						
California Aqueduct East Branch	Not operated	Same as ROR	Existing capacity	Same as NAA	Same as NAA	Same as NAA
REGULATORY STANDARDS						
North Coast Region						
<i>Trinity River</i>						
Minimum flow below Lewiston Dam	None	Same as ROR	Trinity EIS Preferred Alternative (369-815 TAF/yr)	Same as NAA	Same as NAA	Same as NAA
Trinity River Fall Augmentation Flows	None	Same as ROR	420 cfs August 1 through September 30 in all but wet years	Same as NAA	Same as NAA	Same as NAA
Trinity Reservoir end-of-September minimum storage	No target	Same as ROR	Trinity EIS Preferred Alternative (600 TAF as able)	Same as NAA	Same as NAA	Same as NAA
Sacramento River Region						
<i>Clear Creek</i>						
Minimum flow below Whiskeytown Dam	None	Downstream water rights, 1963 USBR Proposal to USFWS and NPS; and 200 cfs October through May or 150 cfs in Critical years and 150 cfs June through September with 10 TAF for channel maintenance in February of BN, AN and Wet years and 10 TAF for Spring pulse flows in June of non-Critical years; in June of Critical years, pulse of 900 cfs.	Downstream water rights, 1963 USBR Proposal to USFWS and NPS; and 200 cfs October through May or 150 cfs in Critical years and 150 cfs June through September with 10 TAF for channel maintenance in February of BN, AN and Wet years and 10 TAF for Spring pulse flows in June of non-Critical years; in June of Critical years, pulse of 900 cfs.	Clear Creek seasonally variable hydrograph minimum flows (200 cfs annual average; oscillating from 300 cfs in winter to 100 cfs in summer) with 10 TAF for pulse flows except in C years. 5 TAF for pulse flows in C years. Additionally: target 150 cfs in C years; not to exceed 840 cfs (safe outflow works capacity of Whiskeytown)	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs

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<i>Upper Sacramento River</i>						
Shasta Lake storage targets	No target	n/a	1,900 TAF end-of-September in non-critically dry years (not explicitly modeled - achieved through project allocation profiles when hydrologically feasible)	Carryover targets based upon May 1 fill and carryover projection – actions designed to help meet targets may not accomplish full intent.	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs. Carryover for Sacramento VA omitted from carryover target calculations
Minimum flow below Keswick Dam	None	SWRCB WR 90-5	SWRCB WR 90-5; and stabilize fall flows to reduce redd dewatering and rebuild cold water pool; and spring pulse flow up to 150 TAF if projected May 1 storage > 4.1 MAF	WR 90-5; 2019 BO Fall-Winter Base flows 3,250-5,000 cfs based on end of September Shasta storage; Up to 150 taf Spring Pulse in Wet & AN year types if 4.1 MAF fill likely by May 1	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs
<i>Feather River</i>						
Minimum flow below Thermalito Diversion Dam	None	2006 Settlement Agreement (700 / 800 cfs)	2006 Settlement Agreement (700 / 800 cfs)	Same as NAA	Same as NAA	Same as NAA
Minimum flow below Thermalito Afterbay outlet	None	1983 DWR, DFG Agreement (750-1,700 cfs)	1983 DWR, DFG Agreement (750-1,700 cfs)	Same as NAA	Same as NAA	Same as NAA
<i>Yuba River</i>						
Minimum flow below Daguerre Point Dam	D-1644 Operations (Lower Yuba River Accord)	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR
<i>American River</i>						
Minimum flow below Nimbus Dam	None	Same as ROR	American River Flow Management Standard, per 2017 Water Forum Agreement with a planning minimum end of December storage target modeled as 275 TAF	American River Flow Management Standard, per 2017 Water Forum Agreement using a 90% forecast, no reduction Apr-Jun for March pulse, with a planning minimum end of December storage target modeled as 275 TAF	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs
Minimum Flow at H Street Bridge	None	SWRCB D-893	SWRCB D-893	Same as NAA	Same as NAA	Same as NAA
<i>Lower Sacramento River</i>						
Minimum flow near Rio Vista	None	SWRCB D-1641	SWRCB D-1641	Same as NAA	Same as NAA	Same as NAA
San Joaquin River Region						
<i>Mokelumne River</i>						
Minimum flow below Camanche Dam	FERC 2916-029, 1996 (Joint Settlement Agreement) (100-325 cfs)	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR
Minimum flow below Woodbridge Diversion Dam	FERC 2916-029, 1996 (Joint Settlement Agreement) (25-300 cfs)	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 without VAs (Alt2v1)	Alternative 2 with Delta VAs (Alt2v2)	Alternative 2 with VAs (Alt2v3)
<i>Stanislaus River</i>						
Minimum flow below Goodwin Dam	None	Flows per New Melones SRP, as possible	Flows per New Melones SRP	Flows per New Melones SRP with modified Winter Instability Flows	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs
Minimum dissolved oxygen	None	SWRCB D-1422	SWRCB D-1422	Same as NAA	Same as NAA	Same as NAA
<i>Merced River</i>						
Minimum flow below Crocker-Huffman Diversion Dam	Cowell Agreement	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR
Minimum flow at Shaffer Bridge	FERC 2179 (25-100 cfs) with 12.5 TAF in October based on 2002 Merced ID and CDFW Memorandum of Understanding	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR
<i>Tuolumne River</i>						
Minimum flow at Lagrange Bridge	FERC 2299-024, 1995 (Settlement Agreement) (94-301 TAF/yr)	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR
<i>San Joaquin River</i>						
San Joaquin River below Friant Dam/ Mendota Pool	None (flow capacity for SJR to Mendota pool changed to 2600 cfs to accommodate deliveries to Exchange and Refuge contractors)	Same as ROR	5 cfs Gravelly Ford San Joaquin River Restoration-full flows, not constrained by current river capacity, model implementation includes recapture in the San Joaquin River and in the Delta	Same as NAA	Same as NAA	Same as NAA
Maximum salinity near Vernalis	None	Same as ROR	Stanislaus contribution per New Melones SRP	Same as NAA	Same as NAA	Same as NAA
Minimum flow near Vernalis	None	Stanislaus contribution per New Melones SRP, as possible	Stanislaus contribution per New Melones SRP	Same as NAA	Same as NAA	Same as NAA
Sacramento River–San Joaquin Delta Region						
Delta Outflow Index (Flow, NDOI)	None	SWRCB D-1641	SWRCB D-1641 and for Summer/Fall Delta Smelt habitat operate to meet X2 of 80 km for September and October of AN and Wet years with transitional flows in last half of August. SWP to allow up to 150 TAF of Delta outflow in April and May. Spring outflow action shall not exceed 150 TAF and is subject to a 44,500 cfs Delta Outflow off-ramp. SWP to release 100 TAF block of water in Jun through Sep of Wet and Above Normal years.	SWRCB D-1641 and for Summer/Fall Delta Smelt habitat operate to meet X2 of 80 km for September and October of AN and Wet years with transitional flows in last half of August.	Same as Alternative 2 without VAs with additional flow provided by Delta VA	Same as Alternative 2 without VAs with additional flow provided by VAs

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Delta Cross Channel gate operation	Gates closed	Same as ROR	Gate operations per Multi Year Study Program; model representation as SRWCB D-1641 with additional days closed from Oct 1 – Jan 31. Gates closed during flushing flows from Oct 1 – Nov 30 unless adverse water quality conditions would result, and always closed during Dec 1 – January 31.	Same as NAA	Same as NAA	Same as NAA
South Delta export limits (Jones PP and Banks PP)	No exports	Same as ROR	SWRCB D-1641 Vernalis flow-based export limits Apr 1 – May 31, (additional 500 cfs allowed for Jul – Sep for reducing impact on SWP)	Same as NAA	Same as NAA.	Same as NAA
Combined Flow in Old and Middle River (OMR)	No requirements	Same as ROR	OMR target of -5,000 cfs January through June except for 5 days of -2,000 cfs when turbidity bridge occurs (turbidity bridge consideration only January through March) and 7 days of -6,000 cfs when increased pumping due to storm is possible, followed by “first flush” action if it occurs in December or January (14 days of -2,000 cfs), and single year loss threshold limits OMR Index > -3,500 cfs for a portion of January-June. Health and Safety off-ramp when exports are low.	OMR target of -5,000 cfs January through June except for 10 days of -3,500 cfs when turbidity bridge occurs (turbidity bridge consideration only January through March) and 6 days of -6,250 cfs when increased pumping due to storm flex is possible, followed by “first flush” action if it occurs in December or January (14 days of -2,000 cfs). Actions triggered by salvage of fish limit OMR Index > -3,500 cfs for a portion of January-June. Health and Safety off-ramp when exports are low.	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs

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Temporary Urgency Change Petition	None	None	Spring and Summer relaxations of D1641 criteria triggered by low Shasta storage and/or SacIndex value; Feb-Apr 4000 cfs NDOI requirement in lieu of X2 standards; May-Sep (1) Emmaton EC standard moved to Threemile Slough via regression equation, (2) 4000 cfs NDOI requirement in lieu of X2 in May, (3) 3000 cfs NDOI standard Jun-Sep; (4) exports limited to H&S if NDOI is less than the full regulatory standard.	None (sensitivity performed with TUCPs)	None	None
OPERATIONS CRITERIA: RIVER-SPECIFIC						
Sacramento River Region						
Upper Sacramento River: Flow objective for navigation (Wilkins Slough)	None	3,250 cfs	Flow objective for Wilkins Slough based on month, CVP allocation, and Shasta storage condition to reflect CVP operations for local delivery	Same as NAA	Same as NAA	Same as NAA
American River: Folsom Dam flood control	Variable 400/600 flood control diagram (without outlet modifications)	Same as ROR	Same as ROR	Same as ROR	Same as ROR	Same as ROR
Feather River: Flow at Mouth of Feather River (above Verona)	None	Maintain DFW/DWR flow target of 2,800 cfs for Apr – Sep when flows available dependent on Oroville inflow and FRSA allocation	Maintain DFW/DWR flow target of 2,800 cfs for Apr – Sep when flows available dependent on Oroville inflow and FRSA allocation	Same as NAA	Same as NAA	Same as NAA
Sacramento VA	None	None	None	None	None	April-May pulse flows in Sac 40-30-30 WY type AN/BN/D years, protected through Delta. Source of water is 25,000 acres of land following. 95 taf total provided in AN/BN years. In Dry years water from reduced deliveries is carried over in Shasta and released in the following April-May (subject to spills).

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 without VAs (Alt2v1)	Alternative 2 with Delta VAs (Alt2v2)	Alternative 2 with VAs (Alt2v3)
Feather VA	None	None	None	None	None	April-May pulse flows of 60 taf in Sac 40-30-30 WY type AN/BN/D years, protected through Delta. Source of water is 10,000 acres of land following. Releases can continue later in year depending on spills.
American VA	None	None	None	None	None	Mar-May flows in all but Sac 40-30-30 WY type Wet years, protected through Delta. Water sources are GW substitution and reservoir reoperation. 10 taf in AN/BN years, 40 taf in D years, 30 taf in C years.
Mokelumne VA	None	None	None	None	None	Additional flow of 45 taf in AN years, 20 taf in BN years, 10 taf in D years, based on Mokelumne JSA WY type. 79% of water released in Mar-May and 21% in October. Water provided through reservoir reoperation. Not protected through Delta.
Yuba VA	None	None	None	None	None	April-June flows of 50 taf in Sac 40-30-30 WY type AN/BN/D years, provided through reservoir reoperation and protected through Delta. Timeseries of flows provided by Yuba Water Agency.
Putah Creek VA	None	None	None	None	None	Additional flow of 6 taf in November-May provided in all but Sac 40-30-30 WY type Wet years through reservoir reoperation. Not protected through Delta.

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 without VAs (Alt2v1)	Alternative 2 with Delta VAs (Alt2v2)	Alternative 2 with VAs (Alt2v3)
San Joaquin River Region						
Stanislaus River: Flow below Goodwin Dam	None	Flows per New Melones SRP, as possible	Flows per New Melones SRP	Flows per New Melones SRP with modified Winter Instability Flows, using 90% forecast of San Joaquin 60-20-20 WY type	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs
San Joaquin River: Salinity at Vernalis	None	Same as ROR	Grasslands Bypass Project (full implementation)	Same as NAA	Same as NAA	Same as NAA
Friant VA	None	None	None	None	None	50 taf flow contribution in February-May in SJRRP Dry, Normal-Dry, and Normal-Wet years, protected through Delta. Met through foregone SJRRP recapture and Friant flood releases. Foregone recapture is limited to 50% of total possible recapture, which can limit flow contribution.
Sacramento – San Joaquin River Delta Region						
Suisun Marsh Salinity Control Gates	Not operated	Same as ROR	Operate to meet SWRCB D-1641 water quality standards in Montezuma Slough during salinity control season October through May; and for Summer/Fall Delta Smelt habitat operate for up to 60 days June through October of Below Normal, Above Normal, and Wet years. SWP facilitates operations for up to 60 days in June through October of Dry years.	Operate to meet D-1641 water quality standards in Montezuma Slough during salinity control season October through May and 7-7 schedule	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs
Delta VA	None	None	None	None	Additional Delta outflow provided Mar-May through export cuts and PWA water purchase program, based on Sac 40-30-30 WY type. CVP provides a total of 27, 147, 107, 86, and 2 taf in W, AN, BN, D, and C years respectively. SWP provides a total of 117.5 taf in AN years and 92.5 taf in BN/D years.	Same as Alternative 2 with Delta VA

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 without VAs (Alt2v1)	Alternative 2 with Delta VAs (Alt2v2)	Alternative 2 with VAs (Alt2v3)
OPERATIONS CRITERIA: SYSTEMWIDE						
CVP water allocation						
Settlement / Exchange	Settlement and Exchange Contractors allocated at 100% (75% / 77% in Shasta critical years). Deliveries without CVP facility operations. Deliveries limited to given hydrologic conditions, without CVP facility operations.	100% (75%/77% in Shasta critical years)	100% (75%/77% in Shasta critical years)	Maximum potential allocation of 100% (75%/77% in Shasta critical years); Settlement allocation reduced to cut up to 500 TAF in Shasta Bin3B years as needed to meet Shasta carryover target to reflect SRSC contribution	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs
Refuges	Delivery of water supply needs, up to Level 1, given hydrologic conditions, without CVP facility operations or hydraulic conditions consideration.	100% Firm Level 2 (75% in Shasta critical years)	100% Firm Level 2 (75% in Shasta critical years)	NOD Refuge allocation reduced to SRSC level in Bin3B years if less than base refuge allocation	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs
Agriculture Service	None	Same as ROR	100%-0% based on supply, South-of-Delta allocations are additionally limited due to D-1641 and OMR action	100%-0% based on supply, South-of-Delta allocations are additionally limited due to D-1641 and OMR action; Additional allocation reductions taken to address Shasta action carryover target	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs
Municipal & Industrial Service	None	Same as ROR	100%-50% based on supply, South-of-Delta allocations are additionally limited due to D-1641 and OMR action; 25% in TUCP years	100%-50% based on supply, South-of-Delta allocations are additionally limited due to D-1641 and OMR action; 25% in TUCP years and Shasta Bin3B years	Same as Alternative 2 without VAs	Same as Alternative 2 without VAs
Friant Allocation	None	Same as ROR	Class 1, Class 2, and 215 water deliveries as allocated given water supply.	Same as NAA	Same as NAA	Same as NAA
SWP water allocation						
North of Delta (FRSA)	FRSA and water rights diversions off-the river, contract specific conditions. Deliveries limited to given hydrologic conditions, without SWP facility operations and hydraulic conditions consideration.	Contract specific	Contract specific	Same as NAA	Same as NAA	Same as NAA
South of Delta (including North Bay Aqueduct)	None	Same as ROR	Based on supply; equal prioritization between Ag and M&I based on Monterey Agreement; allocations are additionally limited due to D-1641 and OMR action and Spring Outflow Action.	Same as NAA	Same as NAA	Same as NAA

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 without VAs (Alt2v1)	Alternative 2 with Delta VAs (Alt2v2)	Alternative 2 with VAs (Alt2v3)
CVP-SWP coordinated operations						
Sharing of responsibility for in-basin-use	None	Revised Coordinated Operations Agreement	Revised Coordinated Operations Agreement	Same as NAA	Same as NAA	Same as NAA
Sharing of surplus flows	None	Same as ROR	Revised Coordinated Operations Agreement	Same as NAA	Same as NAA	Same as NAA
Sharing of restricted export capacity for project- specific priority pumping	None	Same as ROR	Revised Coordinated Operations Agreement	Same as NAA	Same as NAA	Same as NAA
Water transfers	None	Same as ROR	Acquisitions by SWP contractors are wheeled at priority in Banks Pumping Plant over non-SWP users; LYRA included for SWP contractors	Same as NAA	Same as NAA	Same as NAA
Sharing of export capacity for lesser priority and wheeling-related pumping	None	Same as ROR	Cross Valley Canal wheeling (max of 128 TAF/yr), CALFED ROD defined Joint Point of Diversion (JPOD)	Same as NAA	Same as NAA	Same as NAA
San Luis Reservoir	None	Same as ROR	San Luis Reservoir is allowed to operate to a minimum storage of 80 TAF	Same as NAA	Same as NAA	Same as NAA
CVPIA 3406(b)(2)						
Policy Decision	N/A	N/A	N/A			
Allocation	None	Same as ROR	No B2 Allocation modeled	Same as NAA	Same as NAA	Same as NAA
Actions	None	Same as ROR	Pre-determined upstream fish flow objectives below Whiskeytown Dam	Same as NAA	Same as NAA	Same as NAA
Accounting	None	Same as ROR	No B2 Accounting modeled	Same as NAA	Same as NAA	Same as NAA
WATER MANAGEMENT ACTIONS						
Water Transfer Supplies (long term programs)						
Lower Yuba River Accord	None	Same as ROR	Yuba River acquisitions for reducing impact of D-1641 and OMR Action export restrictions on SWP	Same as NAA	Same as NAA	Same as NAA
Phase 8	None	Same as ROR	None	Same as NAA	Same as NAA	Same as NAA

DSM2

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 ^h (ALT2)
Period of simulation	100 years (1922-2021) ^a	Same as ROR	Same as ROR	Same as ROR
BOUNDARY CONDITIONS				
Boundary flows	Monthly timeseries from CALSIM 3 output (alternatives provide different flows and exports) ^b	Monthly timeseries from CALSIM II output (alternatives provide different flows and exports) ^b	Monthly timeseries from CALSIM 3 output (alternatives provide different flows and exports) ^b	Monthly timeseries from CALSIM 3 output (alternatives provide different flows and exports) ^b
Ag flows (DICU) ^e	2020 Level, DWR Bulletin 160-98 ^c	Same as ROR	Same as ROR	Same as ROR
Martinez stage	15-minute adjusted astronomical tide ^a	Same as ROR	Same as ROR	Same as ROR
Vernalis EC	Monthly time series from CALSIM 3 output ^d	Monthly time series from CALSIM 3 output ^d	Monthly time series from CALSIM 3 output ^d	Monthly time series from CALSIM 3 output ^d
Agricultural Return EC	Municipal Water Quality Investigation Program analysis	Same as ROR	Same as ROR	Same as ROR
Martinez EC	Monthly net Delta Outflow from CALSIM output & G-model ^f	Monthly net Delta Outflow from CALSIM output & G-model ^f	Monthly net Delta Outflow from CALSIM output & G-model ^f	Monthly net Delta Outflow from CALSIM output & G-model ^f
FACILITIES				
Freeport Regional Water Project	Monthly output from CALSIM 3	Monthly output from CALSIM 3	Monthly output from CALSIM 3	Monthly output from CALSIM 3
Delta Cross Channel	Monthly time series of number of days open from CALSIM 3 output	Monthly time series of number of days open from CALSIM 3 output	Monthly time series of number of days open from CALSIM 3 output	Monthly time series of number of days open from CALSIM 3 output
Stockton Delta Water Supply Project	Monthly output from CALSIM 3	Monthly output from CALSIM 3	Monthly output from CALSIM 3	Monthly output from CALSIM 3
Barker Slough Pumping Plant	No pumping	Same as ROR	Pumping consistent with SWP contracts and excess flow under Fairfield, Vacaville, and Benicia Settlement Agreement	Same as NAA
Franks Tract Program	None	None	None	None
Veale Tract Drainage Relocation	The Veale Tract Water Quality Improvement Project, funded by CALFED, relocates the agricultural drainage outlet was relocated from Rock Slough channel to the southern end of Veale Tract, on Indian Slough ^f	Same as ROR	Same as ROR	Same as ROR
Clifton Court Forebay	Gates remain open	Same as ROR	Priority 3, gate operations synchronized with incoming tide to minimize impacts to low water levels in nearby channels	Same as NAA
Contra Costa Water District Delta Intakes	No pumping	Rock Slough Pumping Plant, Old River at Highway 4 Intake and Alternate Improvement Project Intake on Victoria Canal	Same as EXP3	Same as EXP3

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 ^h (ALT2)
South Delta barriers	No temporary barriers	Same as ROR	Temporary Barriers Project operated based on San Joaquin River flow time series from CALSIM 3 output; Head of Old River Barrier (HORB) is not installed; Agricultural barriers on Old and Middle Rivers are assumed to be installed starting from May 16 and on Grant Line Canal from June 1; All three barriers are allowed to be operated until November 30; May 16 to May 31; the tidal gates are assumed to be tied open for the barriers on Old and Middle Rivers.	Temporary Barriers Project operated based on San Joaquin River flow time series from CALSIM 3 output; Head of Old River Barrier (HORB) is not installed; Agricultural barriers on Old and Middle Rivers are assumed to be installed starting from May 16 and on Grant Line Canal from June 1; All three barriers are allowed to be operated until November 30; May 16 to May 31; the tidal gates are assumed to be tied open for the barriers on Old and Middle Rivers.
Antioch Water Works	Monthly output from CALSIM 3	Monthly output from CALSIM 3	Monthly output from CALSIM 3	Monthly output from CALSIM 3
Suisun Marsh Salinity Control Gates	Gates remain open	Same as ROR	Monthly output from CALSIM 3 ^g ; Gates open when upstream water level is 0.3 ft above downstream water level. Gates close when current is less than -0.1 fps	Monthly output from CALSIM 3 ^g ; Gates open when upstream water level is 0.3 ft above downstream water level. Gates close when current is less than -0.1 fps

Notes:

^a An adjusted astronomical tide for use in DSM2 planning studies has been developed by DWR's Bay Delta Office Modeling Support Branch Delta Modeling Section in cooperation with the Common Assumptions workgroup. This tide is based on a more extensive observed dataset and covers the entire 100-year period of record.

^b Although monthly CALSIM output was used as the DSM2-HYDRO input, the Sacramento and San Joaquin rivers were interpolated to daily values in order to smooth the transition from high to low and low to high flows. DSM2 then uses the daily flow values along with a 15-minute adjusted astronomical tide to simulate effect of the spring and neap tides.

^c The Delta Channel Depletion (DCD) model is used to calculate diversions and return flows for all Delta islands based on the level of development assumed. The projected 2020 land-use assumptions are found in Bulletin 160-98.

^d CALSIM 3 calculates monthly EC for the San Joaquin River, which was then converted to daily EC using the monthly EC and flow for the San Joaquin River. Fixed concentrations of 150, 175, and 125 µmhos/cm were assumed for the Sacramento River, Yolo Bypass, and eastside streams, respectively.

^e Net Delta outflow based on the CALSIM 3 flows was used with an updated G-model to calculate Martinez EC. Under changed climate conditions Martinez EC is modified to account for 15 cm sea level rise.

^f Information was obtained based on the information from the draft final "Delta Region Drinking Water Quality Management Plan" dated June 2005 prepared under the CALFED Water Quality Program and a presentation by David Briggs at SWRCB public workshop for periodic review. The presentation "Compliance location at Contra Costa Canal at Pumping Plant #1 – Addressing Local Degradation" notes that the Veale Tract drainage relocation project will be operational in June 2005. The DICU drainage currently simulated at node 204 is moved to node 202 in DSM2.

^g CalSim 3 determines the months during which Suisun Marsh Salinity Control Gates (SMSCG) operate to meet D-1641 water quality compliance in Montezuma Slough, or for Summer/Fall Delta Actions under the Baseline Conditions or the Proposed Project.

^h DSM2 assumptions are identical for all variations of Alternative 2: Alternative 2 without VAs, Alternative 2 with Delta VA, and Alternative 2 with VAs.

HEC-5Q

	Run of River (ROR)	Obligated Releases (EXP3)	No Action Alternative (NAA)	Alternative 2 ^a (ALT 2)
Period of simulation	100 years (1922-2003)	Same as ROR	100 years (1922-2003)	Same as ROR
Climate	2022 Median climate conditions	Same as ROR	Same as ROR	Same as ROR
Boundary flows and storages	Monthly timeseries (from CALSIM 3 output).	Monthly timeseries (from CALSIM 3 output).	Monthly timeseries (from CALSIM 3 output).	Monthly timeseries (from CALSIM 3 output).
Trinity Lake	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.
Lewistown Lake	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.
Whiskeytown Lake	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.
Shasta Lake	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.
Keswick Reservoir	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.
Black Butte Lake	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.
Shasta Temperature Management	No temperature management	Similar to 2009 NMFS BiOps Appendix 2D (See 2015 LTO for details).	Temperature schedules developed to match Shasta Summer Cold Water Pool Management in 2019 NMFS BiOp.	"Mixed" TCD management, detailed in Appendix F Modeling, Attachment 1-3, Model Updates.
Trinity Temperature Management	No temperature management	No temperature management	Releases allowed from lower, auxiliary outlet when normal outlet release are too warm.	Releases allowed from lower, auxiliary outlet when normal outlet release are too warm.
Lake Oroville	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.
Thermalito Afterbay	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.
Folsom Lake	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.
Lake Natoma	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.
Folsom Temperature Management	No temperature management	No temperature management	Similar to 2009 NMFS BiOp Appendix B (See 2015 LTO for details).	Similar to 2009 NMFS BiOp Appendix B (See 2015 LTO for details).
New Melones Lake	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.
Lake Tulloch	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.
Goodwin Reservoir	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.	Monthly timeseries (from CALSIM 3 output). Limited to physical specifications of reservoir.

^a HEC5Q assumptions are identical for all variations of Alternative 2: Alternative 2 without VAs, Alternative 2 with Delta VA, and Alternative 2 with VAs.