

May 13, 2014

State Water Resources Control Board
c/o Michael Buckman
P.O. Box 2000
Sacramento, California 95812-2000

VIA E-MAIL
michael.buckman@waterboards.ca.gov

Re: CVP/SWP Temporary Urgency Change – Comments on May 2 Order and Request for Folsom Reservoir Operations Plan

Dear Mr. Buckman:

As discussed in our March 10, 2014 and April 25, 2014 letters to the SWRCB, as well as in our presentation at the SWRCB's May 6, 2014 workshop on the temporary urgency order for Central Valley Project (CVP) and State Water Project (SWP) operations, we are extremely concerned about how Folsom Reservoir will be operated if the drought persists. The 500,000 people and thousands of businesses in our communities depend on the reservoir for their primary water supply. We therefore must take all necessary steps to ensure that there are adequate plans to meet our communities' water-supply needs if the drought does persist. To address this concern, we have requested that the SWRCB modify the temporary urgency order to require the Bureau of Reclamation to submit a Folsom Reservoir and Lower American River operations plan that explains how Reclamation will plan to operate that reservoir to ensure that it can provide water supplies to our agencies if next winter is dry. We repeat that request now and respectfully ask that the SWRCB insert in the temporary urgency order the following term, which we have updated to reflect the time since our initial request:

No later than June 1, 2014, Reclamation will deliver to the Deputy Director Reclamation's plan for operating Folsom Reservoir and the Lower American River, assuming 90% exceedance hydrologic conditions through March 15, 2015. The operations plan must demonstrate how Reclamation will meet the needs of water suppliers in the American River region, pursuant to their CVP contracts and water rights, and the lower American River during this water year and the 2014-2015 water year. To develop this plan, as soon as possible, Reclamation will consult with water suppliers adjacent to Folsom Reservoir and the lower American River, as well as the Water Forum, concerning: (1) Reclamation's operation of that reservoir this water year; (2) a storage target for September 30, 2014; and (3) operations during the 2014 fall salmon spawning season. Reclamation will continue to consult with affected American River stakeholders through at least March 15, 2015 and will deliver any amendments to its operations plan to the SWRCB promptly upon Reclamation's adoption of those amendments. Reclamation will operate Folsom Reservoir according to its operations plan until

Mr. Michael Buckman

May 13, 2014

Page 2

at least March 1, 2015. Reclamation will promptly deliver copies of its operations plan that is due June 1, 2014, and any amendments to that plan, to the affected water suppliers and the Water Forum.

While we have requested that very similar language be inserted into the temporary urgency order in our previous comments, recent developments emphasize the importance of Reclamation preparing an operations plan to address how it will meet municipal and industrial needs in the Sacramento region. During the May 6, 2014 workshop on the temporary urgency order, SWRCB members identified a need for agencies to plan for next year if it were to be dry. We believe that our proposed term would help address that need.

The Most Recent American River Operational Projections Do Not Show How Our Communities Would Be Able To Access Our Primary Water Source

We enclosed, with our March 10 and April 25 letters, what were then Reclamation's most current projections for how it would operate Folsom Reservoir and the Lower American River. Those projections specified the reservoir storage and downstream releases that Reclamation believed it would maintain during the November 2014-January 2015 period. Unfortunately, Reclamation's latest operational projection includes no information about how Reclamation may operate Folsom Reservoir and the Lower American River after September 30. (A copy of that latest projection, dated April 2014, is enclosed.) Our agencies need a more complete projection that extends through the winter that assumes dry conditions will continue. Our proposed addition to the urgency order would address that need.

Projections for streamflows during the November-January period are crucial for operations of the Lower American River and for our agencies' planning. The Lower American River's fall-run Chinook salmon spawn during that period. As the SWRCB is aware, it is at best difficult to change streamflows during that period because reducing streamflows during that period may lead to losses of salmon redds and juvenile salmon from dewatering and stranding. The maintenance of relatively high fall-run spawning streamflows last fall was one of the primary reasons that Folsom Reservoir was drained so low last winter. Last year of course was extremely dry, with Reclamation's March 2013 operational projections showing that, in a 90% exceedance scenario, Folsom Reservoir would be drawn below 200,000 acre-feet in December 2013. (A copy of this projection is enclosed.) This projection could have triggered the terms of NMFS's 2009 biological opinion that allow for Lower American River streamflows where Folsom Reservoir storage is projected to decline below 200,000 acre-feet at any time during the following 12 months. (2009 BiOp, Appendix 2-D, p. 1 (copy enclosed).) During the fall spawning season, however, releases from Folsom Reservoir and to the Lower American River from Nimbus Dam were approximately 1,300 to 1,400 cubic feet per second (cfs) through October, November and December 2013, until December 29, when releases were reduced to approximately 1,100 cfs. Releases then ramped down from that 1,100 cfs to approximately 600 cfs by January 13, 2014.

As the SWRCB is aware, at the May 6 workshop, we presented NASA's photograph of Folsom Reservoir on January 16, 2014, when it held only 170,000 acre-feet. (Our presentation from the workshop is enclosed for your ease of reference.) The reservoir continued to decline

Mr. Michael Buckman

May 13, 2014

Page 3

until February 6, when it held only 163,000 acre-feet and the reservoir's level was only 27 feet above our water-supply intake. Due to the 2013-2014 operations described above, the reservoir declined from approximately 361,000 acre-feet on September 30, 2013 to the 163,000 acre-feet on February 6, 2014. Approximately 175,000 acre-feet of this 198,000 acre-feet decline occurred during the October 2013-December 2013 period, when releases were primarily in the 1,300-1,400 cfs range. Without an operations plan that demonstrates how Reclamation will operate Folsom Reservoir and the Lower American River if conditions remain dry, we are extremely concerned about our ability to serve our communities next year. For example, we believe that our water-supply intake would be dry sometime in the late winter or spring of 2015 if: (1) the drought were to persist; (2) end-of-September storage were to be 304,000 acre-feet as stated in the latest operational projection we have seen, which is enclosed; and (3) October 2014-January 2015 releases from Folsom Reservoir were to be similar to October 2013-January 2014 releases. Of course, given California's usual hydrology, if our intake were to go dry in the late winter or early spring, it might then stay dry until the winter of 2015-2016. That result would be catastrophic for our communities.

It is imperative for both our water supplies and the American River's fisheries that this experience not be repeated in the coming water year. Particularly in light of the current absence of projections for American River operations after September 30, 2014, we respectfully repeat our request that the SWRCB modify the urgency order to include our proposed term, which would require Reclamation to produce an American River operations plan.

Development Of, And Operation To, A Folsom Reservoir And Lower American River Operations Plan Could Address Emerging Conflicts Among The Coordinated Operations Agreement, American River Settlement Contracts, Reclamation's Water-Right Permit Terms And The Area-Of-Origin Laws

Currently, in addition to the absence of projections for how Folsom Reservoir and the Lower American River will be operated after September 30, overall CVP and State Water Project (SWP) operations under the Coordinated Operations Agreement (COA) apparently are impacting Folsom Reservoir's storage and our water supplies. The most recent April 2014 projection of CVP operations shows elevated American River releases with streamflows of 2,000 cfs in June, 1,855 cfs in July and 1,316 cfs in August. Sufficient information for us to understand why American River releases would be so high during the summer, given the depressed state of Folsom Reservoir storage, has not been made available to us. What we understand, however, is that those elevated releases from the reservoir are being driven by the COA because: (1) the SWP's operations upstream of and within the Delta are increasing the amount of water that the CVP must release to address Delta conditions under the COA; and (2) concern for maintaining a cold-water pool in Shasta Reservoir to support winter-run salmon is causing releases from Folsom to be preferred to releases from Shasta, notwithstanding the potentially significant impacts on our primary water source and the American River's fisheries.

It causes us great concern that the basic water supply for our communities is being put at risk because of the interrelated operations of the SWP and the CVP, particularly given that: (A) Folsom and San Juan hold water rights that are senior to the SWP and the CVP; and (B) those rights are reflected in settlement contracts that have no dry-year reduction provisions. In

Mr. Michael Buckman

May 13, 2014

Page 4

addition, in issuing the CVP's water-right permits for Folsom Reservoir, the State Water Rights Board sought to protect Roseville and other local communities that had filed priority applications for American River water. In Decision 893 (p. 54), that board stated:

[A]vailability of water to such applicants is reasonably assured by the terms to be contained in the permits to be issued the United States restricting exportation of water under those permits insofar as exportation interferes [*sic*] with fulfillment of needs within Placer, Sacramento and San Joaquin Counties.

Moreover, CVP and SWP operations that would not make water available to meet the needs of our communities would be inconsistent with the area-of-origin laws, which apply to both the CVP and the SWP. Water Code section 11460 states (emphasis added):

In the construction and operation by the department of any project under the provisions of this part a watershed or area wherein water originates . . . shall not be deprived by the department directly or indirectly of the prior right to all of the water reasonably required to adequately supply the beneficial needs of the watershed, area, or any of the inhabitants of property owners therein.

(See also Water Code § 11128 (§ 11460 applies to the CVP).)

The operations plans for Folsom Reservoir that we are requesting could resolve these problems by demonstrating how Reclamation will operate that reservoir to ensure that the coordinated operation of the CVP and the SWP will not result in serious impacts to – or even the physical inability to access – our water supplies. We agree in large part with the concerns about coordinated CVP and SWP operations stated by Friant Water Authority in its April 28, 2014 protest. The CVP and SWP must not be operated so senior rightholders and water users protected by CVP permit terms and the area-of-origin laws are subjected to the serious risk that they will be unable to access water from the CVP while, through COA, water is being exported under the SWP's junior rights. While we do not agree with Friant that the CVP is not developing project water supplies this year, we agree that operations under the COA must not result in impacts on CVP settlement contractors and other CVP contractors specifically protected by the terms of CVP's water-right permits.

Conclusion

After the experience of this last year, when our communities' primary water source came perilously close to going dry, it is imperative that Reclamation and the other agencies involved in operating Folsom Reservoir demonstrate that they will be able to operate the reservoir to meet the needs of the 500,000 people and thousands of businesses that we serve. We respectfully request that the SWRCB modify the temporary urgency order for CVP and SWP operations to include our proposed term that would require Reclamation to produce an operations plan for the reservoir and the American River.

Mr. Michael Buckman

May 13, 2014


Page 5

Very truly yours,


CITY OF FOLSOM

CITY OF ROSEVILLE

SAN JUAN WATER
DISTRICT

By: 
Marcus Yasutake
Environmental and
Water Resources Director


By: _____
Ed Kriz
Director, Environmental
Utilities


By: _____
Shauna Lorange
General Manager

Enclosures

8618/American River/L051214rsb SWRCB Order

Cc (w/encl.): Hon. Tom McClintock
Hon. Ami Bera
Hon. Ted Gaines
Hon. Jim Nielsen
Hon. Darrell Steinberg
Hon. Lois Wolk
Hon. Ken Cooley
Hon. Beth Gaines
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April 2014 90% (b)(2) Water Operations Forecast Summary

Storages

Federal End of the Month Storage/Elevation (TAF/Feet)

		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Trinity		1307	1301	1201	1071	888	733	669					
	Elev.	2286	2276	2263	2242	2222	2213						
Whiskeytown		209	238	238	238	238	238	230					
	Elev.	1209	1209	1209	1209	1209	1207						
Shasta		2223	2409	2167	1849	1526	1264	1107					
	Elev.	980	967	948	927	908	895						
Folsom		436	544	565	489	413	353	304					
	Elev.	422	424	415	405	396	388						
New Melones		1037	915	779	674	561	451	366					
	Elev.	930	909	891	870	847	826						
San Luis		468	568	510	375	217	121	104					
	Elev.	448	440	413	381	355	363						
Total		5975	5461	4696	3842	3161	2780						

State End of the Month Reservoir Storage (TAF)

Oroville		1716	1859	1659	1446	1227	1050	1018					
	Elev.	769	748	724	697	672	667						
San Luis		388	386	365	259	164	93	157					
Total San Luis (TAF)		856	954	876	634	381	214	261					

Monthly River Releases (TAF/cfs)

Trinity	TAF	36	92	47	28	28	27						
	cfs	600	1,498	783	450	450	450						
Clear Creek	TAF	11	12	9	7	5	9						
	cfs	190	190	150	120	85	150						
Sacramento	TAF	209	462	542	592	503	309						
	cfs	3510	7510	9115	9631	8177	5195						
American	TAF	37	51	119	114	99	78						
	cfs	623	835	2000	1855	1604	1316						
Stanislaus	TAF	96	63	34	26	21	14						
	cfs	1622	1031	564	425	346	240						
Feather	TAF	48	73	104	109	89	49						
	cfs	800	1187	1750	1767	1447	823						

Trinity Diversions (TAF)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Carr PP	59	40	96	160	127	36						
Spring Crk. PP	33	35	89	152	120	34						

Delta Summary (TAF)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Tracy	175	81	10	45	45	57						
USBR Banks	0	0	30	0	0	0						
Contra Costa	6.4	6.4	6.4	4.9	5.6	6.4						
Total USBR	182	87	46	50	51	63						
State Export	34	38	61	18	33	98						
Total Export	216	125	107	68	84	161						
COA Balance	-105	-184	-184	-208	-217	-121						

Old/Middle River Std.												
Old/Middle R. calc.	-2,565	-1,534	-1,507	-1,037	-1,291	-2,329						

Computed DOI	7783	4002	4102	3091	3091	3093						
Excess Outflow	1899	0	67	0	0	0						
% Export/Inflow	28%	26%	19%	12%	16%	31%						
% Export/Inflow std.	35%	35%	35%	65%	65%	65%						

Hydrology

	Trinity	Shasta	Folsom	New Melones
Water Year Inflow (TAF)	399	2,650	932	290
Year to Date + Forecasted % of mean	33%	48%	34%	27%

Storages

Federal End of the Month Storage/Elevation (TAF/Feet)

		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	
Trinity		1986	2041	2085	1938	1803	1597	1446	1331	1212	1190	1183	1162	1194
	Elev.	2344	2347	2337	2327	2311	2299	2288	2277	2275	2275	2272	2276	
Whiskeytown		205	206	238	238	238	238	230	230	225	206	206	206	
	Elev.	1199	1209	1209	1209	1209	1209	1207	1207	1205	1199	1199	1199	
Shasta		3611	3772	3710	3435	2976	2437	2075	1840	1803	1761	1793	1941	2074
	Elev.	1039	1037	1026	1007	981	962	948	945	943	945	954	962	
Folsom		552	568	553	544	455	367	283	245	220	200	191	201	254
	Elev.	425	423	422	411	398	384	377	372	367	365	367	379	
New Melones		1600	1587	1529	1429	1316	1198	1082	998	969	971	974	978	987
	Elev.	1012	1006	995	982	968	954	942	938	938	939	939	941	
San Luis		760	779	672	489	230	100	26	99	179	316	484	614	589
	Elev.	478	458	426	371	364	374	384	396	419	448	469	462	
Total		8954	8786	8072	7019	5937	5150	4743	4614	4663	4832	5100	5304	

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Monthly River Releases (TAF/cfs)

Trinity	TAF	18	32	180	47	28	28	27	23	18	18	18	17
	cfs	300	540	2,924	783	450	450	450	373	300	300	300	300
Clear Creek	TAF	12	12	12	9	7	5	9	12	13	12	12	11
	cfs	200	200	200	150	120	85	150	200	225	200	200	200
Sacramento	TAF	277	393	572	729	842	596	446	323	280	246	200	250
	cfs	4500	6600	9300	12250	13700	9700	7500	5250	4700	4000	3250	4500
American	TAF	92	89	68	114	117	117	59	61	59	61	52	49
	cfs	1500	1493	1102	1922	1905	1899	1000	1000	1000	1000	850	874
Stanislaus	TAF	28	45	37	33	24	22	14	39	12	13	14	12
	cfs	450	762	608	561	396	352	240	635	210	210	220	220

Trinity Diversions (TAF)

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Carr PP	3	39	66	112	188	127	92	101	17	9	35	5
Spring Crk. PP	10	10	60	105	180	120	90	90	10	20	30	5

Delta Summary (TAF)

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Tracy	150	45	46	50	210	210	257	210	193	205	168	45
USBR Banks	0	0	0	0	9	9	9	0	0	0	0	0
Contra Costa	7	6.4	6.4	6.4	12.9	13.6	14.4	15	16.4	17.2	9.2	7
Total USBR	157	51	53	56	232	233	280	225	209	222	177	52
Total Export	307	96	116	187	643	623	448	425	421	427	345	119
COA Balance	0	5	-14	-7	-9	-10	-10	-10	-10	-10	-10	-8

Old/Middle River Std.												
Old/Middle R. calc.	-3,603	-1,044	-1,235	-2,529	-8,223	-8,025	-6,029	-5,108	-5,481	-5,385	-4,354	-1,574

Computed DOI	11111	7968	7109	7094	4002	2993	3026	3725	3631	4799	7532	11400
Excess Outflow	1513	0	0	0	0	0	17	732	134	1301	1529	0
% Export/Inflow	29%	13%	15%	21%	56%	64%	60%	63%	65%	63%	44%	15%
% Export/Inflow std.	35%	35%	35%	35%	65%	65%	65%	65%	65%	65%	65%	45%

Hydrology

Water Year Inflow (TAF)	Clair Engle	Shasta	Folsom	New Melones
Year to Date + Forecasted	769.3	3,802	1,441	570
% of mean	64%	69%	53%	54%

BIOLOGICAL OPINION AND CONFERENCE OPINION

ACTION AGENCY: U.S. Bureau of Reclamation
Central Valley Operations Office

ACTIVITY: Long-Term Operations of the Central Valley Project and State Water Project

CONSULTATION CONDUCTED BY: NOAA's National Marine Fisheries Service
Southwest Region

FILE NUMBER: 2008/09022

DATE ISSUED:

1.0 BACKGROUND AND CONSULTATION HISTORY

1.1 Purpose

The purpose of this document is to present NOAA's National Marine Fisheries Service's (NMFS) biological and conference opinion (Opinion), about whether the U.S. Bureau of Reclamation's (Reclamation) proposed long-term operations of the Central Valley Project (CVP), operated in coordination with the State Water Project (SWP; hereafter referred to as CVP/SWP operations, the proposed action, or the project), is likely to jeopardize the continued existence of the following species:

- Endangered Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*, hereafter referred to as winter-run)
- Threatened Central Valley spring-run Chinook salmon (*O. tshawytscha*, hereafter referred to as spring-run)
- Threatened Central Valley (CV) steelhead (*O. mykiss*)
- Threatened Central California Coast (CCC) steelhead (*O. mykiss*)
- Threatened Southern Distinct Population Segment (DPS) of North American green sturgeon (*Acipenser medirostris*, hereafter referred to as Southern DPS of green sturgeon)
- Endangered Southern Resident killer whales (*Orcinus orca*, hereafter referred to as Southern Residents)

or destroy or adversely modify the designated critical habitat of the above salmon and steelhead species, or proposed critical habitat for Southern DPS of green sturgeon. This Opinion is based on the best scientific and commercial information available.

Action I.7. Reduce Migratory Delays and Loss of Salmon, Steelhead, and Sturgeon at Fremont Weir and Other Structures in the Yolo Bypass

Objective: Reduce migratory delays and loss of adult and juvenile winter-run, spring-run, CV steelhead and Southern DPS of green sturgeon at Fremont Weir and other structures in the Yolo Bypass.

Description of Action: By December 31, 2011, as part of the plan described in Action I.6.1, Reclamation and/or DWR shall submit a plan to NMFS to provide for high quality, reliable migratory passage for Sacramento Basin adult and juvenile anadromous fishes through the Yolo Bypass. By June 30, 2011, Reclamation and/or DWR shall obtain NMFS concurrence and, to the maximum extent of their authorities, and in cooperation with other agencies and funding sources, begin implementation of the plan, including any physical modifications. By September 30, 2009, Reclamation shall request in writing that the Corps take necessary steps to alter Fremont Weir and/or any other facilities or operations requirements of the Sacramento River Flood Control Project or Yolo Bypass facility in order to provide fish passage and shall offer to enter into a Memorandum of Understanding, interagency agreement, or other similar mechanism, to provide technical assistance and funding for the necessary work. By June 30, 2010, Reclamation shall provide a written report to NMFS on the status of its efforts to complete this action, in cooperation with the Corps, including milestones and timelines to complete passage improvements.

Reclamation and/or DWR shall assess the performance of improved passage and flows through the bypass, to include an adult component for salmonids and sturgeon (*i.e.*, at a minimum, acoustic receivers placed at the head and tail of the bypass to detect use by adults).

Rationale: The Yolo Bypass and Fremont Weir has been a documented source of migratory delay to, and loss of, adult winter-run, spring-run, CV steelhead and Southern DPS of green sturgeon. The existing fish passage structure is inadequate to allow normal passage at most operational levels of the Sacramento River. The project agencies must work with the Corps, which owns and operates Fremont Weir, to achieve improvements for fish. Other structures within the Yolo Bypass, such as the toe drain, Lisbon Weir, and irrigation dams in the northern end of the Tule Canal, also can impede migration of adult anadromous fish. Additionally, stranding of juvenile salmonids and sturgeon has been reported in the Yolo Bypass in scoured areas behind the weir and in other areas. This action offsets unavoidable project effects on adult migration and minimizes the direct losses from flood management activities associated with operations.

II. AMERICAN RIVER DIVISION

Introduction to American River Actions: The CV steelhead DPS is the only species addressed in this Opinion with a spawning population in the American River. The DPS includes naturally spawned steelhead in the American River (and other Central Valley stocks) and excludes steelhead spawned and reared at Nimbus Fish Hatchery. The in-river population is small, with

observations of a few hundred adults returning to spawn in the American River each year. Limited observations made in 2003, 2004, 2005, and 2007 of whether in-river spawners were adipose fin-clipped or not indicate that some in-river spawners are of wild origin (Hannon and Deason 2008). This suggests that the listed stock has some ability to survive habitat conditions in the American River, Delta, and Ocean, even in their degraded state as described in preceding sections of this Opinion.

The in-river population is likely entirely made up of Nimbus Fish Hatchery steelhead or their descendents. Early Nimbus Fish Hatchery broodstock included naturally produced fish from the American River and stocks from the Washougal (Washington), Siletz (Oregon), Mad, Eel, Sacramento and Russian rivers, with the Eel River stock being the most heavily used (Staley 1976, McEwan and Jackson 1996).

Even though the American River steelhead population is small and is entirely influenced by hatchery fish with out-of-basin genetics, NMFS views the population as being important to the survival and recovery of the species. CV TRT shares this view by recommending that, “*every extant population be viewed as necessary for the recovery of the ESU*” (Lindley *et al.*, 2007). In addition, the steelhead population has presumably become somewhat locally adapted to the American River, and it has potential to substantially contribute to the viability of the DPS if water, habitat, and hatchery management efforts are coordinated and directed at achieving such a goal.

Key proposed project-related stressors include: (1) the provision of water temperatures warmer than steelhead life stage-specific requirements; (2) flow fluctuations that dewater redds, strand fry, and isolate fry and juveniles in off-channel pools where they are vulnerable to both predation and exposure to lethal and sub-lethal water temperatures; and (3) low flows limiting the availability of quality rearing habitat including predator refuge habitat.

The most influential baseline stressor to steelhead within the American River Division is the presence of Nimbus and Folsom dams, which block steelhead from all of their historic spawning and rearing habitat. This Opinion concludes that both increased water demands and effects of climate change will lead to further deterioration of suitable habitat conditions, including increased temperatures and decreased flows. Therefore, a passage program to expand the range of the American River steelhead population above Folsom Dam is necessary. If feasible, American River steelhead should be provided access to their full historic range. Given the long-term duration associated with the fish passage actions (see Fish Passage Program below, in Action V), it is necessary to plan and implement actions targeted at improving steelhead habitat below Nimbus Dam. NMFS concludes that coordinated management in four realms - water operations and associated structures, American River habitat, Nimbus Fish Hatchery operations, and in-river harvest – will substantially lower the extinction risk of American River steelhead

Action II.1. Lower American River Flow Management

Objective: To provide minimum flows for all steelhead life stages.

Action: Implement the flow schedule specified in the Water Forum's²⁹ Flow Management Standard (FMS), which is summarized in Appendix 2-D of this Opinion. The FMS flow schedule has been developed by the Water Forum, Reclamation, USFWS, NMFS, and CDFG in order to establish required minimum flows for anadromous salmonids in the lower American River. The flow schedule specifies minimum flows and does not preclude Reclamation from making higher releases at Nimbus Dam.

Reclamation shall ensure that flow, water temperature, steelhead spawning, and steelhead rearing monitoring is conducted annually in order to help inform the ARG process and to evaluate take associated with flow fluctuations and warm water temperatures. Steelhead monitoring surveys should follow the objectives and protocols specified in the FMS Monitoring and Evaluation Program relating to steelhead spawning and rearing.

Implementation procedures: Reclamation shall convene the American River Group (ARG), comprised of representatives from Reclamation, NMFS, USFWS, CDFG and the Water Forum, to make recommendations for management within the constraints of the FMS. If there is a lack of consensus, ARG shall advise NMFS, and NMFS will make a recommendation to the WOMT for a decision.

Rationale: Reclamation operates Folsom Dam and Reservoir to provide water for irrigation, municipal and industrial uses, hydroelectric power, recreation, water quality, flood control, and fish protection. Reclamation operates Folsom Dam and Reservoir under a state water right permit and fish protection requirements that were adopted in 1958 as SWRCB Decision 893 (D-893). This decision allows flows at the mouth of the American River to fall as low as 250 cfs from January through mid-September, with a minimum of 500 cfs required between September 15 and December 31.

Biological, socioeconomic, legal, and institutional conditions have changed substantially since the SWRCB adopted D-893 in 1958. For example, D-893 does not address requirements of the CVPIA, the 1995 Bay Delta Plan, or previous Opinions to protect Central Valley anadromous salmonids. The SWRCB, Reclamation and many diverse stakeholders (e.g., Water Forum) involved in various American River actions have agreed that the conditions specified in D-893 are not sufficiently protective of the fishery resources within the lower American River.

The flow schedule specified in Appendix 2-D was developed to require more protective minimum flows in the lower American River in consideration of the river's aquatic resources, particularly steelhead and fall-run.

The monitoring called for in this RPA action including flow, water temperature, steelhead spawning, and steelhead rearing monitoring is necessary for the ARG to responsibly carry

²⁹ In September 1993, the Water Forum, a diverse group of business and agricultural leaders, citizens groups, environmentalists, water managers, and local governments in the Sacramento Region, was formed to evaluate water resources and future water supply needs of the Sacramento metropolitan region.

out this mission. In addition, this monitoring is necessary to evaluate take associated with American River Division operations.

Action II.2. Lower American River Temperature Management

Objective: Maintain suitable temperatures to support over-summer rearing of juvenile steelhead in the lower American River.

Action: Each year, Reclamation shall prepare a draft Operations Forecast and Temperature Management Plan based on forecasted conditions and submit the draft Plan to NMFS for review by May 1 of each year. The information provided in the Operations Forecast will be used in the development of the Temperature Plan. The draft plan shall contain: (1) forecasts of hydrology and storage; (2) a modeling run or runs, using these forecasts, demonstrating that the temperature compliance point can be attained (see Coldwater Management Pool Model approach in Appendix 2-D); (3) a plan of operation based on this modeling run that demonstrates that all other non-discretionary requirements are met; and (4) allocations for discretionary deliveries that conform to the plan of operation. Reclamation shall use an iterative approach, varying proposed operations, with the objective to attain the temperature compliance point at Watt Avenue Bridge. Within ten calendar days of receiving the draft Temperature Plan, NMFS will provide a written review of this plan for the purpose of determining whether requirements in this Opinion are likely to be met. Reclamation shall produce a final plan prior to May 15 deliveries and implement the plan upon finalization. Reclamation may update the plan every month based on hydrology and must seek NMFS' concurrence on proposed deviations from the plan that may reduce the likelihood that the temperature objective will be met.

Temperature Requirement: Reclamation shall manage the Folsom/Nimbus Dam complex and the water temperature control shutters at Folsom Dam to maintain a daily average water temperature of 65°F or lower at Watt Avenue Bridge from May 15 through October 31, to provide suitable conditions for juvenile steelhead rearing in the lower American River. If this temperature is exceeded for three consecutive days, or is exceeded by more than 3°F for a single day, Reclamation shall notify NMFS in writing and will convene the ARG to make recommendations regarding potential cold water management alternatives to improve water temperature conditions for fish, including potential power bypasses. If there is a lack of consensus on actions to be taken, the ARG shall advise NMFS and be elevated through the WOMT standard operating procedures.

Exception: When preparing the Operations Forecast and Temperature Management Plan, Reclamation may submit to NMFS a written determination that, after taking all actions within its authorities, it is unlikely to meet the above temperature requirement. This determination must be supported by specific iterative modeling techniques that vary allocations and delivery schedules such as application of the Coldwater Management Pool model (see Appendix 2-D). In the event that Reclamation determines that other nondiscretionary requirements (*e.g.*, D-1641 or requirements of the USFWS' Delta smelt biological opinion) conflict with attainment of the temperature requirement, Reclamation will

APPENDIX 2-D – SUMMARY OF AMERICAN RIVER FLOW MANAGEMENT STANDARD

SUMMARY OF THE FLOW MANAGEMENT STANDARD PROGRAM

FOR THE LOWER AMERICAN RIVER

1.0 FLOW MANAGEMENT STANDARD DESCRIPTION

The Flow Management Standard (FMS) for the Lower American River includes provisions for: (1) minimum flow and water temperature requirements; (2) the lower American River Group (ARG) to play a consultative role in operational decisions; and (3) monitoring and evaluation to ascertain the biological and ecological status of the river, and to provide input into the river management process.

1.1 MINIMUM FLOW REQUIREMENTS

The Minimum Flow Requirements prescribe the minimum flows to be released from Nimbus Dam, and are the cornerstone of the FMS. The Minimum Flow Requirements do not preclude Reclamation from making higher releases at Nimbus Dam, and can vary throughout the year in response to the hydrology of the Sacramento and American river basins.

Minimum Release Requirements

The Minimum Release Requirements (MRR) range from 800 to 2,000 cfs based on a sequence of seasonal indices and adjustments. The minimum Nimbus Dam release requirement is determined by applying the appropriate water availability index (Index Flow). Three water availability indices (i.e., Four Reservoir Index (FRI), Sacramento River Index (SRI), and the Impaired Folsom Inflow Index (IFII)) are applied during different times of the year, which provides adaptive flexibility in response to changing hydrological and operational conditions.

During some months, Prescriptive Adjustments may be applied to the Index Flow, resulting in the MRR. If there is no Prescriptive Adjustment, the MRR is equal to the Index Flow.

Discretionary Adjustments for water conservation or fish protection may be applied during the period extending from June through October. If Discretionary Adjustments are applied, then the resultant flows are referred to as the Adjusted Minimum Release Requirement (Adjusted MRR).

The MRR and Adjusted MRR may be suspended in the event of extremely dry conditions, represented by “conference years” or “off-ramp criteria”. Conference years are defined when the projected March through November unimpaired inflow into Folsom Reservoir is less than 400,000 acre-feet. Off-ramp criteria are triggered if forecasted Folsom Reservoir storage at any time during the next twelve months is less than 200,000 acre-feet.

Water availability indices, Index Flows, Prescriptive Adjustments, MRRs, Discretionary Adjustments, and Adjusted MRRs are presented in **Table 1**.

Table 1. Flow Management Standard Indices and Flow Requirements

Month	Index	Index Flows (cfs)	Prescriptive Adjustments	Minimum Release Requirements (cfs)	Discretionary Adjustments	Adjusted Minimum Release Requirements (cfs)
October	FRI	800-1,500	NA	800-1,500	Fish Protection Adjustment	1,250-1,499
November	FRI	800-2,000	Spawning Flow Progression	800-2,000	NA	
December	FRI	800-2,000	NA	800-2,000	NA	
January	SRI If Above Normal or Wet Year (SRI ≥ 15.7 MAF) then release 1,750 cfs	1,750	December End-of-Month Storage Adjustment	800-1,750	NA	
	SRI If Dry or Below Normal Year (10.2 < SRI < 15.7 MAF) then maintain December MRR up to 1,750 cfs	800-1,750	When End-Of-December Storage is < 300 TAF, then January MRR is 85% of December MRR		NA	
	SRI If Critical Year (SRI < 10.2 MAF) then reduce MRR	85% of December MRR, but not less than 800	NA		NA	
February	SRI If Above Normal or Wet Year (SRI ≥ 15.7 MAF) then release 1,750 cfs	1,750	January End-of-Month Storage Adjustment	800-1,750	NA	
	SRI If Dry or Below Normal Year (10.2 < SRI < 15.7 MAF) then maintain January MRR up to 1,750 cfs	800-1,750	When End-Of-January Storage is < 350 TAF, then February MRR is 85% of January MRR		NA	
	SRI If Critical Year (SRI < 10.2 MAF) then reduce MRR	85% of January MRR, but not less than 800	NA		NA	
March through May	IFII	800-1,750	May End-of-Month Storage Adjustment When Calculated End-Of-May storage is < 700 TAF, then IFII Index Flow or February MRR, whichever is less	800-1,750	NA	
June through Labor Day	IFII	800-1,750	September End-of-Month Storage Adjustment When Calculated End-Of-September storage is < 300 TAF, then IFII Index Flow or Calculated Storage-Based Flow, whichever is less	800-1,750	Water Conservation or Fish Protection Adjustment	1,500-1,749
Post-Labor Day through September 30	IFII	June through Labor Day MRR, but not more than	NA	800-1,500	Fish Protection Adjustment	1,250-1,499

Table 1. Flow Management Standard Indices and Flow Requirements

Month	Index	Index Flows (cfs)	Prescriptive Adjustments	Minimum Release Requirements (cfs)	Discretionary Adjustments	Adjusted Minimum Release Requirements (cfs)
		1,500				

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Water Availability Indices and Other Definitions

Four Reservoir Index

The FRI is an index of the end-of-September combined carryover storage in Folsom, French Meadows, Hell Hole, and Union Valley reservoirs and is used to calculate the Index Flow for October through December.

Sacramento River Index

The SRI is an index of forecasted water year runoff for the Sacramento River Basin, and is used to calculate the Index Flow for the months of January and February.

Impaired Folsom Inflow Index

The IFII is an index of the forecasted volume of flow into Folsom Reservoir from May through September, and is used to calculate the Index Flow from March through September.

Index Flows

Index Flows are the initial flows (nominal flows) identified by application of the various water availability indices, and are subject to Prescriptive and Discretionary Adjustments, which result in Minimum Release Requirements (defined below). Year-round water availability indices and corresponding Index Flows are presented in **Figure 2**. The October 1 through December 31 Index Flows range between 800 and 2,000 cfs. The January 1 through Labor Day Index Flows range between 800 and 1,750 cfs. The post-Labor Day through September 30 Index Flows range between 800 and 1,500 cfs.

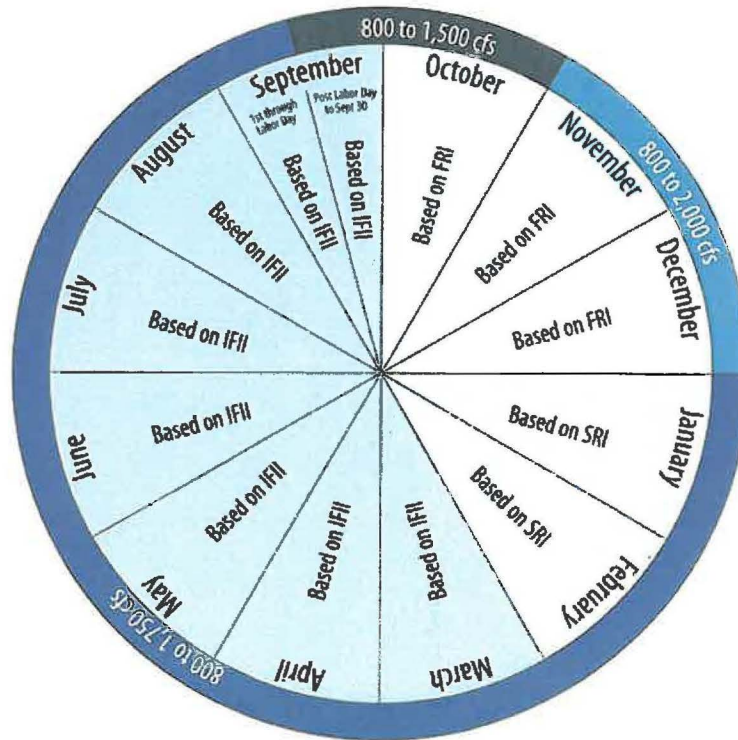


Figure 2. Index Flow Requirements

Prescriptive Adjustments

The FMS includes five Prescriptive (non-discretionary) Adjustments to the Index Flows in consideration of Folsom Reservoir storage and water conservation.

- Chinook Salmon Spawning Flow Progression Adjustment
- December End-of-Month Storage Adjustment
- January End-of-Month Storage Adjustment
- May End-of-Month Storage Adjustment
- September End-of-Month Storage Adjustment

When Prescriptive Adjustments are applicable, the MRR is equal to the value that results from applying the given adjustment to the Index Flow. When Prescriptive Adjustments are not applicable, the MRR is equal to the Index Flow.

Discretionary Adjustments

Two types of discretionary adjustments are possible: (1) water conservation; and (2) fish protection. A water conservation Discretionary Adjustment may be implemented in consideration of Folsom Reservoir storage, but will not be permitted if it would be likely to cause or exacerbate harmful water temperature-related impacts to rearing juvenile steelhead or spawning fall-run Chinook salmon. Fish protection includes conservation of remaining cold water reserves, taking into account effects of the Discretionary Adjustment on in-river water temperature and habitat.

Overview of the Coldwater Pool Management Model and the Automated Temperature Selection Procedure

Coldwater Pool Management Model

Flexibility to meet the Flow Management Standard (FMS) water temperature objectives may be promoted by using the Coldwater Pool Management Model (CPMM) in the development and updating of the Annual Water Temperature Management Plan. The CPMM may be used to select the most beneficial seasonal target temperature objectives for the lower American River during a given year. Selection of seasonal water temperatures is:

- Characterized by the rate and duration with which available cold water will be released from Folsom Reservoir to control water temperatures
- Based on the biological benefit expected from controlling lower American River water temperatures
- Limited by the amount of cold water available in Folsom Reservoir.

The CPMM requires:

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DISTINCTIVE BY NATURE



STATE WATER RESOURCES CONTROL BOARD WORKSHOP ON CVP/SWP TEMPORARY URGENCY CHANGE PETITION

MAY 6, 2014

Folsom Lake - Low Point

(February 6, 2014 – 162,617 Acre-Feet)



Folsom Lake at 273,000 Acre-Feet

(Picture taken February 13, 2014 – 272,488 AF)

