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April 11, 2017

VIA CALIFORNIA WATERFIX SERVICE LIST

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Mr. Tripp Mizell
Senior Attorney
Office of the Chief Counsel
California Department of Water Resources
1416 Ninth Street, Room 1118-D
Sacramento, California 95814

Re: California WaterFix – Hydrologic Modeling Supporting Petitioners' Rebuttal Testimony

Dear Ms. Aufdemberge and Mr. Mizell:

As you know, the Bureau of Reclamation (Reclamation) and the Department of Water Resources (DWR) have submitted rebuttal testimony that concerns, among other things, hydrologic modeling of the possible operations of the Central Valley Project (CVP) and the State Water Project (SWP) that could occur with California WaterFix in place. Based on our preliminary review of Reclamation's and DWR's rebuttal testimony, it appears that this testimony is incomplete or not supported by adequate information to allow other parties to understand the relevant modeling and its results. This letter is an attempt to resolve these issues quickly in a manner that will allow for expeditious testimony and cross-examination during the SWRCB's upcoming hearing sessions.

Exhibit DOI-33 – Missing Data in Table 1

Exhibit DOI-33 contains, on page 22, a Table 1 in which a figure has been laid over a data table. As a result, it is not possible to view the data for the years 1938 through 1972. This appears to be only a technical error, but it limits understanding of the related testimony. As soon as possible, please arrange for Reclamation to submit to the SWRCB, and serve on the other parties, a revised exhibit DOI-33 that corrects this error and makes the data for the years 1938 through 1972 visible.

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Biological Assessment/H3+ Modeling Results

On page 33 of its October 30, 2015 notice of this hearing, the SWRCB established the following requirement: "Exhibits based on technical studies or models shall be accompanied by sufficient information to clearly identify and explain the logic, assumptions, development, and operation of the studies or models." Reclamation's and DWR's rebuttal testimony relies extensively on characterizations of results from "BA modeling" and modeling of the "CWF H3+" scenario. (See, e.g., exhibit DOI-33, pp. 1 ("Rerunning BA modeling using the same hydrology as MBK models eliminates this adverse comparison to MBK results"), 19 ("Petitioners' BA model results show Folsom at or near dead pool in 5 of the 82 years of simulation"), 24 ("Examination of BA results to discern the reason for the difference between the NAA and WaterFix scenario reveals that the opposite of Mr. Weaver's criticism is true"); exhibit DWR-86, pp. 33-37 (discussing "CWF H3+" and "No Action Alternative" modeling "under the CWF BA").)

This testimony does not clearly identify or explain what models are the sources of these results. It appears that at least some of these results may derive from the modeling whose results are presented in Section 5A.A.3 of the California WaterFix biological assessment that is staff exhibit SWRCB-104 in this hearing. (See exhibit DWR-86, p. 34:20-25.) To date, however, Reclamation and DWR have not made available, in this hearing, the operable modeling files that reflect "BA" or "CWF H3+" modeling. In fact, earlier in the hearing, your agencies represented that they were not presenting the biological assessment/H3+ modeling in this hearing. (See exhibit DWR-1, p. 10; July 29, 2016 transcript, p. 232:16-19 (DWR evidentiary objection on grounds that "a Draft BA . . . is not part of the modeling analysis presented in front of the Board").) My understanding, however, is that DWR and Reclamation have made the biological assessment modeling that reflects an "H3+" Delta outflow scenario available upon request and that it is possible to generate comparative results from that modeling's "no action" and "H3+" scenarios.

Accordingly, in order to expedite the upcoming presentation of DWR's and Reclamation's rebuttal testimony and cross-examination of DWR's and Reclamation's witnesses, attached to this letter are comparative results from the biological assessment/"H3+" modeling that DWR and Reclamation have made available. The attached results address the following parameters: (1) Trinity Reservoir storage; (2) Shasta Reservoir storage; (3) Oroville Reservoir storage; (4) Folsom Reservoir storage; (5) Sacramento River flow below Keswick; (6) Feather River flow below Thermalito Afterbay; and (7) American River flow below Nimbus. The attached results reflect the Q5 (central tendency) climate-change scenario.

Please confirm by 5 p.m. on Monday, April 17, that the attached results are the results of the biological assessment/"H3+" modeling on which DWR and Reclamation are relying in your rebuttal testimony. (Disclosure by 5 p.m. Monday will provide all parties one week before the hearing recurrences to review key modeling information.) Such confirmation will avoid the need for elongated cross-examination concerning on what biological assessment/H3+ model results DWR and Reclamation are relying in your rebuttal testimony and possible sur-rebuttal to

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authenticate certain model results that may be used in cross-examination. We can provide Microsoft Excel files containing the attached results that can be electronically compared with DWR's and Reclamation's modeling files, if that would simplify your agencies' confirmation that the attached results reflect the biological assessment modeling. If your agencies dispute whether the attached results are the results of the biological assessment/"H3+" modeling on which your agencies' rebuttal testimony relies, by 5 p.m. on Monday, April 17, please: (1) post to the SWRCB's ftp site for this hearing the modeling files that reflect the biological assessment/"H3+" modeling on which your agencies rely; and (2) notify the other parties to this hearing that those files have been posted.

"NoCC" Modeling Results

Reclamation's rebuttal testimony – specifically exhibit DOI-33 – relies extensively on descriptions of modeling of "no action" and "with action" scenarios without assumed climate change – called the "NoCC" modeling – and compares that modeling's results to results about which MBK Engineers previously has testified in this hearing. Reclamation and DWR do not appear to have previously introduced this "NoCC" modeling in this hearing. Reclamation and DWR also apparently have not made any such modeling available outside of this hearing. To make information about the "NoCC" modeling reflected in Reclamation's rebuttal testimony available, consistent with the SWRCB's October 30, 2015 notice of this hearing, by 5 p.m. on Monday, April 17, please do the following:

- Post to the SWRCB's website for this hearing, the operable modeling files for the NoCC modeling's no action and proposed action/H3+ scenarios, similar to the manner in which Reclamation and DWR previously posted the modeling files for the scenarios about which your agencies' witnesses testified in Part 1A of this hearing.
- Post, to the SWRCB's website for this hearing, monthly time-step CalSim II modeling results from the NoCC modeling's no action and H3+ scenarios, as well as results comparing those scenarios' results, for the following parameters: (1) Trinity Reservoir storage; (2) Shasta Reservoir storage; (3) Oroville Reservoir storage; (4) Folsom Reservoir storage; (5) Sacramento River flow below Keswick; (6) Feather River flow below Thermalito Afterbay; and (7) American River flow below Nimbus. In addition to the monthly results, please submit and post tables of those results categorized by progressive 10% exceedances and also water-year types in the same manner as modeling results are depicted in Appendix 5A, Section C, in Reclamation's and DWR's December 2016 final environmental impact report/environmental impact statement for California WaterFix. (See, e.g., FEIR/EIS, Appendix 5A, Section, page 5A-C11 (Table C-1-1 (Trinity Lake, End of Month Storage).) Please notify the other parties to this hearing via the SWRCB's e-mail service list when these materials have been posted.

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Conclusion

To date, Reclamation and DWR do not appear to have complied with the SWRCB's requirement, in its October 30, 2015 notice of hearing, to provide sufficient information for the other parties to understand the modeling on which your witnesses rely in their rebuttal testimony. The above requests are intended to expedite the forthcoming Part 1 rebuttal portion of the hearing by creating a common base of information for the parties to understand the technical support for Reclamation's and DWR's rebuttal testimony. If you have any questions, please do not hesitate to contact the counsel below. If you have such questions, or would otherwise like to discuss this letter, please contact the counsel below as promptly as possible in light of the fact that rebuttal proceedings, and cross-examination of your agencies' witnesses, will begin on April 25, 2017.

Kind regards,

BARTKIEWICZ, KRONICK & SHANAHAN DOWNEY BRAND LLP

By:
Ryan S. Bezerra



By: /s/ David Aladjem
David Aladjem

SOMACH, SIMMONS & DUNN

MINASIAN, MEITH, SOARES, SEXTON &
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By: /s/ Andy Hitchings
Andy Hitchings

By: /s/ Dustin Cooper
Dustin Cooper

8618/CWF/WR Change/L041117rsb DWR DOI modeling
Enclosures

Cc: California WaterFix service list

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

Long-Term and Water Year-Type Average of Trinity Reservoir Under BA - No Action Alternative (Q5) and BA - Proposed Action (Q5)

Analysis Period	Average Storage (TAF)											
	October	November	December	January	February	March	April	May	June	July	August	September
Full Simulation Period												
BA - No Action Alternative (Q5)	1,230	1,239	1,303	1,381	1,506	1,633	1,776	1,753	1,685	1,547	1,402	1,282
BA - Proposed Action (Q5)	1,242	1,257	1,323	1,401	1,525	1,651	1,794	1,771	1,703	1,554	1,408	1,291
Difference	13	17	20	20	19	18	18	18	18	8	6	9
Percent Difference	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	1%
Water Year-Types												
Wet												
BA - No Action Alternative (Q5)	1,450	1,489	1,611	1,742	1,918	2,055	2,227	2,247	2,187	2,066	1,937	1,782
BA - Proposed Action (Q5)	1,451	1,495	1,619	1,748	1,924	2,054	2,228	2,249	2,188	2,060	1,933	1,779
Difference	2	6	7	7	5	-1	1	2	0	-7	-4	-3
Percent Difference	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal												
BA - No Action Alternative (Q5)	1,248	1,240	1,315	1,475	1,667	1,851	2,015	1,997	1,917	1,785	1,632	1,508
BA - Proposed Action (Q5)	1,275	1,274	1,360	1,511	1,697	1,880	2,048	2,030	1,947	1,807	1,649	1,519
Difference	27	34	45	37	29	30	33	33	30	22	17	11
Percent Difference	2%	3%	3%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Below Normal												
BA - No Action Alternative (Q5)	1,154	1,163	1,191	1,263	1,350	1,452	1,622	1,585	1,514	1,370	1,233	1,137
BA - Proposed Action (Q5)	1,170	1,177	1,207	1,281	1,368	1,470	1,638	1,601	1,533	1,376	1,244	1,148
Difference	16	14	17	17	18	19	17	16	19	5	11	11
Percent Difference	1%	1%	1%	1%	1%	1%	1%	1%	1%	0%	1%	1%
Dry												
BA - No Action Alternative (Q5)	1,196	1,194	1,227	1,241	1,332	1,463	1,590	1,522	1,430	1,258	1,091	986
BA - Proposed Action (Q5)	1,211	1,217	1,250	1,271	1,361	1,494	1,620	1,553	1,465	1,290	1,112	1,009
Difference	15	23	23	30	28	31	30	30	35	32	21	23
Percent Difference	1%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Critical												
BA - No Action Alternative (Q5)	874	856	871	856	898	969	1,018	978	943	820	675	583
BA - Proposed Action (Q5)	889	876	890	877	920	993	1,040	999	960	812	665	593
Difference	15	20	19	21	23	24	21	21	17	-8	-10	10
Percent Difference	2%	2%	2%	2%	3%	2%	2%	2%	2%	-1%	-1%	2%

Trinity Reservoir

BA - No Action Alternative (Q5)

Statistic	End-of-Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,850	1,847	1,850	1,900	2,000	2,100	2,295	2,349	2,313	2,270	2,150	1,946
20%	1,779	1,764	1,807	1,900	2,000	2,100	2,253	2,276	2,205	2,065	1,927	1,768
30%	1,548	1,582	1,680	1,773	1,959	2,081	2,217	2,168	2,064	1,919	1,782	1,636
40%	1,388	1,382	1,553	1,673	1,777	1,988	2,123	2,024	1,916	1,781	1,592	1,431
50%	1,207	1,235	1,370	1,500	1,651	1,763	1,912	1,825	1,698	1,558	1,404	1,291
60%	1,121	1,148	1,230	1,277	1,500	1,661	1,789	1,715	1,618	1,422	1,259	1,147
70%	1,012	1,005	1,089	1,126	1,246	1,354	1,483	1,441	1,385	1,272	1,123	1,042
80%	807	842	864	949	1,030	1,122	1,282	1,227	1,204	1,054	910	815
90%	511	526	561	613	684	857	984	925	862	733	584	525
Long Term												
Full Simulation Period	1,230	1,239	1,303	1,381	1,506	1,633	1,776	1,753	1,685	1,547	1,402	1,282
Water Year Types												
Wet	1,450	1,489	1,611	1,742	1,918	2,055	2,227	2,247	2,187	2,066	1,937	1,782
Above Normal	1,248	1,240	1,315	1,475	1,667	1,851	2,015	1,997	1,917	1,785	1,632	1,508
Below Normal	1,154	1,163	1,191	1,263	1,350	1,452	1,622	1,585	1,514	1,370	1,233	1,137
Dry	1,196	1,194	1,227	1,241	1,332	1,463	1,590	1,522	1,430	1,258	1,091	986
Critical	874	856	871	856	898	969	1,018	978	943	820	675	583

BA - Proposed Action (Q5)

Statistic	End-of-Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	1,850	1,847	1,850	1,900	2,000	2,100	2,299	2,351	2,313	2,249	2,137	1,944
20%	1,767	1,799	1,830	1,900	2,000	2,100	2,257	2,283	2,210	2,078	1,928	1,786
30%	1,578	1,600	1,711	1,774	1,969	2,074	2,215	2,166	2,075	1,928	1,784	1,645
40%	1,405	1,422	1,559	1,674	1,827	2,023	2,146	2,030	1,906	1,756	1,590	1,444
50%	1,241	1,276	1,405	1,551	1,673	1,799	1,938	1,895	1,774	1,586	1,411	1,300
60%	1,159	1,189	1,229	1,285	1,498	1,679	1,779	1,749	1,649	1,475	1,330	1,220
70%	1,052	1,045	1,110	1,137	1,270	1,417	1,523	1,549	1,423	1,298	1,099	1,029
80%	822	848	872	984	1,055	1,145	1,330	1,309	1,222	1,058	937	836
90%	514	544	609	615	702	878	987	932	869	748	593	528
Long Term												
Full Simulation Period	1,242	1,257	1,323	1,401	1,525	1,651	1,794	1,771	1,703	1,554	1,408	1,291
Water Year Types												
Wet	1,451	1,495	1,619	1,748	1,924	2,054	2,228	2,249	2,188	2,060	1,933	1,779
Above Normal	1,275	1,274	1,360	1,511	1,697	1,880	2,048	2,030	1,947	1,807	1,649	1,519
Below Normal	1,170	1,177	1,207	1,281	1,368	1,470	1,638	1,601	1,533	1,376	1,244	1,148
Dry	1,211	1,217	1,250	1,271	1,361	1,494	1,620	1,553	1,465	1,290	1,112	1,009
Critical	889	876	890	877	920	993	1,040	999	960	812	665	593

BA - Proposed Action (Q5) Minus BA - No Action Alternative (Q5)

Statistic	End-of-Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	0	0	0	0	4	3	0	-21	-13	-2
20%	-12	35	23	0	0	0	4	7	4	13	2	19
30%	29	18	31	1	9	-7	-2	-1	11	9	3	9
40%	17	40	6	1	51	35	23	6	-10	-25	-2	12
50%	34	41	35	51	22	36	26	70	76	28	7	9
60%	38	41	-1	8	-2	17	-10	34	31	52	71	73
70%	40	40	20	11	25	64	40	108	38	27	-24	-14
80%	15	7	9	35	25	24	48	81	18	4	27	21
90%	3	18	48	2	18	21	3	7	7	15	9	3
Long Term												
Full Simulation Period	13	17	20	20	19	18	18	18	18	8	6	9
Water Year Types												
Wet	2	6	7	7	5	-1	1	2	0	-7	-4	-3
Above Normal	27	34	45	37	29	30	33	33	30	22	17	11
Below Normal	16	14	17	17	18	19	17	16	19	5	11	11
Dry	15	23	23	30	28	31	30	30	35	32	21	23
Critical	15	20	19	21	23	24	21	21	17	-8	-10	10

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

Trinity Reservoir (TAF)
BA - No Action Alternative (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September
1922	Above Normal	1,830	1,676	1,678	1,675	1,697	1,752	1,847	1,935	1,965	1,846	1,723	1,574
1923	Below Normal	1,488	1,460	1,465	1,498	1,518	1,562	1,667	1,687	1,613	1,426	1,259	1,145
1924	Critical	1,121	1,109	1,100	1,000	1,031	1,022	990	905	844	721	599	500
1925	Dry	502	588	645	561	909	1,052	1,333	1,316	1,222	1,062	975	900
1926	Dry	873	865	874	875	1,028	1,139	1,327	1,200	1,148	1,043	870	785
1927	Wet	757	954	1,169	1,300	1,600	1,784	2,008	2,002	1,893	1,810	1,660	1,517
1928	Above Normal	1,456	1,490	1,499	1,554	1,663	1,863	2,015	1,927	1,819	1,660	1,507	1,385
1929	Critical	1,273	1,228	1,220	1,029	1,047	1,095	1,100	1,123	1,106	990	869	783
1930	Dry	750	732	876	893	1,002	1,130	1,225	1,123	1,053	935	797	713
1931	Critical	681	672	668	691	712	767	781	730	695	644	412	322
1932	Dry	240	240	245	262	292	447	530	537	531	476	369	329
1933	Critical	287	275	270	266	268	416	561	532	610	583	462	263
1934	Critical	240	240	254	330	415	561	624	574	527	395	240	206
1935	Below Normal	217	287	324	377	465	527	716	726	712	598	557	519
1936	Below Normal	505	499	502	628	800	917	1,064	969	904	794	694	656
1937	Below Normal	638	627	617	609	614	753	981	1,040	1,048	942	858	790
1938	Wet	765	941	1,181	1,294	1,509	1,760	2,065	2,256	2,177	2,040	1,922	1,808
1939	Dry	1,731	1,723	1,740	1,745	1,760	1,865	1,931	1,772	1,554	1,322	1,088	871
1940	Above Normal	700	689	709	902	1,326	1,683	1,925	1,828	1,690	1,507	1,372	1,262
1941	Wet	1,206	1,188	1,400	1,662	1,973	2,100	2,300	2,420	2,440	2,270	2,150	1,975
1942	Wet	1,850	1,833	1,850	1,900	2,000	2,085	2,243	2,287	2,187	2,144	2,028	1,884
1943	Wet	1,821	1,815	1,850	1,900	2,000	2,100	2,251	2,128	2,039	1,899	1,779	1,633
1944	Dry	1,545	1,362	1,351	1,241	1,286	1,341	1,368	1,406	1,363	1,200	1,021	937
1945	Below Normal	905	937	1,014	1,072	1,248	1,298	1,439	1,381	1,272	1,121	1,034	965
1946	Below Normal	971	1,065	1,343	1,496	1,551	1,677	1,888	1,867	1,760	1,586	1,438	1,325
1947	Dry	1,264	1,255	1,268	1,215	1,275	1,391	1,470	1,365	1,316	1,143	915	807
1948	Below Normal	839	849	848	1,057	1,080	1,110	1,303	1,296	1,330	1,276	1,162	1,138
1949	Dry	1,114	1,119	1,119	1,111	1,153	1,355	1,613	1,612	1,543	1,392	1,259	1,145
1950	Below Normal	1,114	1,104	1,090	1,117	1,210	1,342	1,476	1,445	1,406	1,276	1,141	1,072
1951	Above Normal	1,202	1,339	1,615	1,716	1,981	2,092	2,204	2,101	1,920	1,816	1,665	1,520
1952	Wet	1,466	1,476	1,661	1,733	1,959	2,100	2,300	2,408	2,315	2,270	2,150	1,975
1953	Wet	1,850	1,814	1,850	1,900	2,000	2,100	2,268	2,211	2,307	2,270	2,150	1,932
1954	Above Normal	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,237	2,146	1,994	1,805	1,667
1955	Dry	1,579	1,599	1,645	1,665	1,695	1,688	1,728	1,713	1,674	1,530	1,363	1,249
1956	Wet	1,187	1,197	1,555	1,900	2,000	2,100	2,267	2,345	2,229	2,094	1,977	1,852
1957	Above Normal	1,765	1,742	1,721	1,713	1,886	2,085	2,212	2,191	2,141	1,989	1,870	1,731
1958	Wet	1,821	1,850	1,850	1,900	2,178	2,100	2,300	2,420	2,376	2,270	2,150	1,962
1959	Below Normal	1,850	1,820	1,806	1,900	2,000	2,100	2,260	2,144	2,022	1,789	1,569	1,400
1960	Dry	1,337	1,298	1,277	1,276	1,446	1,657	1,787	1,707	1,680	1,501	1,337	1,223
1961	Dry	1,162	1,174	1,252	1,296	1,498	1,604	1,795	1,811	1,774	1,620	1,425	1,313
1962	Below Normal	1,253	1,232	1,244	1,262	1,398	1,470	1,800	1,777	1,693	1,629	1,483	1,371
1963	Wet	1,520	1,572	1,745	1,788	2,000	2,077	2,300	2,291	2,208	2,055	1,933	1,728
1964	Dry	1,634	1,708	1,735	1,773	1,781	1,808	1,827	1,711	1,640	1,418	1,259	1,151
1965	Wet	1,127	1,156	1,756	1,900	1,991	2,050	2,243	2,123	2,031	1,882	1,744	1,605
1966	Below Normal	1,514	1,580	1,606	1,710	1,789	1,991	2,247	2,202	2,036	1,815	1,600	1,434
1967	Wet	1,375	1,477	1,638	1,778	1,925	2,062	2,171	2,272	2,320	2,270	2,150	1,975
1968	Below Normal	1,850	1,850	1,900	2,000	2,100	2,163	2,029	1,899	1,712	1,534	1,422	
1969	Wet	1,364	1,356	1,421	1,593	1,736	1,907	2,233	2,420	2,301	2,160	2,041	1,926
1970	Wet	1,850	1,850	1,952	2,000	2,100	2,155	2,030	1,936	1,752	1,571	1,350	
1971	Wet	1,206	1,307	1,478	1,765	1,886	2,059	2,215	2,235	2,231	2,189	2,067	1,952
1972	Below Normal	1,850	1,818	1,823	1,900	2,000	2,100	2,215	2,111	2,032	1,875	1,726	1,582
1973	Above Normal	1,528	1,567	1,673	1,847	2,000	2,100	2,251	2,286	2,203	2,056	1,859	1,716
1974	Wet	1,681	1,850	1,850	1,900	2,000	2,100	2,300	2,350	2,262	2,135	2,015	1,901
1975	Wet	1,837	1,801	1,810	1,824	1,962	2,100	2,237	2,354	2,435	2,270	2,150	1,931
1976	Critical	1,850	1,850	1,850	1,662	1,691	1,727	1,780	1,724	1,564	1,378	1,222	1,111
1977	Critical	1,077	1,000	982	971	961	947	914	855	811	694	474	440
1978	Above Normal	285	311	536	988	1,195	1,489	1,675	1,665	1,555	1,439	1,309	1,221
1979	Below Normal	1,159	1,147	1,136	1,160	1,227	1,380	1,487	1,522	1,473	1,347	1,213	1,100
1980	Above Normal	1,110	1,170	1,241	1,494	1,838	1,976	2,127	2,003	1,888	1,748	1,598	1,454
1981	Dry	1,391	1,351	1,389	1,503	1,637	1,751	1,843	1,746	1,677	1,496	1,265	1,152
1982	Wet	1,122	1,387	1,751	1,850	2,000	2,100	2,300	2,282	2,107	1,971	1,855	1,741
1983	Wet	1,759	1,798	1,850	1,900	2,000	2,100	2,300	2,420	2,447	2,270	2,150	1,975
1984	Wet	1,850	1,850	1,900	1,996	2,100	2,198	2,145	2,062	1,918	1,769	1,625	
1985	Dry	1,535	1,645	1,699	1,693	1,725	1,769	1,898	1,798	1,650	1,421	1,192	1,051
1986	Wet	1,017	1,005	1,023	1,172	1,724	2,080	2,092	1,951	1,811	1,618	1,438	1,326
1987	Dry	1,272	1,238	1,228	1,238	1,326	1,542	1,683	1,597	1,387	1,161	979	897
1988	Critical	855	840	1,046	1,150	1,249	1,327	1,388	1,311	1,279	1,113	995	913
1989	Dry	881	910	928	917	942	1,292	1,484	1,350	1,218	1,020	903	821
1990	Critical	843	843	838	915	940	1,024	1,055	993	987	878	761	680
1991	Critical	664	655	639	623	625	693	724	737	726	615	577	541
1992	Critical	526	500	500	505	671	836	1,052	1,017	982	762	537	373
1993	Above Normal	240	240	271	358	519	906	1,092	1,224	1,270	1,234	1,127	1,100
1994	Critical	1,071	1,061	1,082	1,127	1,159	1,216	1,249	1,230	1,182	1,065	948	866
1995	Wet	835	820	804	1,282	1,541	2,000	2,239	2,299	2,217	2,199	2,150	1,975
1996	Wet	1,850	1,839	1,850	1,900	2,000	2,100	2,255	2,165	2,077	1,926	1,804	1,689
1997	Wet	1,626	1,630	1,850	1,900	1,985	2,062	2,107	1,900	1,689	1,504	1,338	1,224
1998	Wet	1,100	1,100	1,145	1,496	1,904	2,100	2,270	2,384	2,447	2,270	2,150	1,975
1999	Wet	1,850	1,850	1,900	2,000	2,100	2,284	2,335	2,323	2,269	2,081	1,894	
2000	Above Normal	1,799	1,635	1,598	1,776	2,000	2,100	2,267	2,246	2,209	2,066	1,868	1,727
2001	Dry	1,637	1,554	1,543	1,544	1,589	1,766	1,854	1,812	1,611	1,397	1,239	1,130
2002	Dry	1,081	1,132	1,269	1,524	1,639	1,743	1,928	1,8				

Trinity Reservoir (TAF)
BA - Proposed Action (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September
1922	Above Normal	1,830	1,771	1,773	1,770	1,792	1,847	1,941	2,029	2,059	1,940	1,816	1,668
1923	Below Normal	1,582	1,553	1,558	1,591	1,620	1,668	1,773	1,786	1,715	1,525	1,358	1,244
1924	Critical	1,188	1,176	1,166	1,021	1,067	1,058	1,000	916	854	731	609	500
1925	Dry	502	588	645	560	908	1,052	1,333	1,315	1,222	1,061	974	900
1926	Dry	872	864	873	874	1,027	1,150	1,338	1,211	1,159	1,054	868	782
1927	Wet	755	951	1,166	1,297	1,597	1,778	2,002	1,996	1,888	1,748	1,598	1,455
1928	Above Normal	1,394	1,428	1,446	1,510	1,620	1,820	1,972	1,884	1,775	1,586	1,433	1,318
1929	Critical	1,255	1,231	1,224	1,071	1,090	1,138	1,142	1,165	1,148	1,032	911	824
1930	Dry	791	773	917	928	1,037	1,159	1,241	1,138	1,063	944	798	714
1931	Critical	681	673	669	692	713	776	790	739	704	550	357	240
1932	Dry	240	240	245	262	292	447	530	537	531	479	372	332
1933	Critical	290	278	273	270	271	419	564	535	613	500	277	240
1934	Critical	240	240	254	330	415	561	624	574	527	352	240	206
1935	Below Normal	218	287	324	377	465	527	717	726	712	599	557	519
1936	Below Normal	505	499	503	629	800	917	1,064	970	905	794	694	656
1937	Below Normal	638	627	617	609	614	753	981	1,040	1,049	943	859	791
1938	Wet	767	942	1,182	1,295	1,510	1,761	2,066	2,257	2,178	2,041	1,923	1,809
1939	Dry	1,732	1,724	1,741	1,755	1,771	1,869	1,933	1,781	1,563	1,332	1,098	931
1940	Above Normal	802	712	785	979	1,402	1,759	2,001	1,904	1,766	1,582	1,432	1,322
1941	Wet	1,266	1,248	1,459	1,722	2,000	2,100	2,300	2,420	2,442	2,270	2,150	1,975
1942	Wet	1,850	1,833	1,850	1,900	2,000	2,085	2,243	2,287	2,187	2,143	2,028	1,914
1943	Wet	1,821	1,815	1,850	1,900	2,000	2,100	2,251	2,128	2,039	1,899	1,779	1,633
1944	Dry	1,545	1,475	1,464	1,405	1,442	1,496	1,523	1,561	1,517	1,298	1,080	995
1945	Below Normal	963	995	1,073	1,131	1,306	1,362	1,502	1,444	1,334	1,168	1,081	1,011
1946	Below Normal	1,017	1,106	1,384	1,537	1,591	1,723	1,934	1,912	1,805	1,632	1,483	1,370
1947	Dry	1,299	1,297	1,310	1,274	1,325	1,441	1,521	1,416	1,367	1,193	964	830
1948	Below Normal	862	872	871	1,080	1,103	1,132	1,326	1,319	1,353	1,298	1,183	1,133
1949	Dry	1,109	1,114	1,114	1,106	1,148	1,350	1,608	1,607	1,505	1,354	1,221	1,108
1950	Below Normal	1,076	1,066	1,053	1,079	1,172	1,299	1,433	1,402	1,364	1,234	1,099	1,031
1951	Above Normal	1,147	1,284	1,560	1,661	1,926	2,037	2,191	2,087	1,906	1,758	1,607	1,463
1952	Wet	1,408	1,418	1,603	1,675	1,901	2,073	2,300	2,408	2,315	2,270	2,150	1,975
1953	Wet	1,850	1,814	1,850	1,900	2,000	2,100	2,268	2,212	2,307	2,270	2,150	1,932
1954	Above Normal	1,850	1,850	1,850	1,900	2,000	2,100	2,300	2,237	2,144	1,992	1,803	1,666
1955	Dry	1,577	1,598	1,643	1,663	1,693	1,720	1,760	1,745	1,706	1,562	1,380	1,266
1956	Wet	1,203	1,189	1,548	1,900	2,000	2,100	2,267	2,345	2,229	2,094	1,977	1,826
1957	Above Normal	1,739	1,715	1,707	1,699	1,873	2,072	2,198	2,178	2,130	1,978	1,782	1,643
1958	Wet	1,780	1,850	1,850	1,900	2,178	2,100	2,300	2,420	2,376	2,270	2,150	1,949
1959	Below Normal	1,831	1,801	1,796	1,900	2,000	2,100	2,260	2,144	2,022	1,789	1,558	1,388
1960	Dry	1,326	1,287	1,265	1,264	1,435	1,646	1,776	1,696	1,646	1,467	1,334	1,220
1961	Dry	1,159	1,171	1,249	1,293	1,495	1,601	1,792	1,808	1,772	1,587	1,383	1,271
1962	Below Normal	1,211	1,190	1,211	1,230	1,366	1,438	1,768	1,745	1,661	1,508	1,378	1,266
1963	Wet	1,415	1,468	1,640	1,683	1,980	2,057	2,300	2,291	2,210	2,057	1,935	1,727
1964	Dry	1,633	1,707	1,743	1,836	1,836	1,865	1,883	1,768	1,696	1,554	1,330	1,222
1965	Wet	1,167	1,195	1,795	1,900	1,991	2,050	2,243	2,123	2,031	1,882	1,744	1,605
1966	Below Normal	1,544	1,611	1,652	1,762	1,841	2,043	2,272	2,226	2,074	1,853	1,711	1,574
1967	Wet	1,484	1,586	1,748	1,887	2,000	2,100	2,209	2,310	2,357	2,270	2,150	1,975
1968	Below Normal	1,850	1,850	1,900	2,000	2,100	2,163	2,029	1,925	1,689	1,511	1,399	
1969	Wet	1,342	1,333	1,398	1,571	1,713	1,885	2,211	2,420	2,301	2,160	2,041	1,926
1970	Wet	1,850	1,850	1,952	2,000	2,100	2,155	2,030	1,902	1,718	1,537	1,316	
1971	Wet	1,183	1,308	1,480	1,766	1,887	2,061	2,216	2,237	2,230	2,188	2,066	1,951
1972	Below Normal	1,850	1,829	1,834	1,900	2,000	2,100	2,215	2,111	2,032	1,837	1,688	1,545
1973	Above Normal	1,491	1,529	1,635	1,809	2,000	2,100	2,251	2,286	2,203	2,038	1,840	1,698
1974	Wet	1,662	1,850	1,850	1,900	2,000	2,100	2,300	2,350	2,262	2,135	2,015	1,901
1975	Wet	1,837	1,830	1,849	1,872	2,000	2,100	2,237	2,354	2,437	2,270	2,150	1,931
1976	Critical	1,850	1,850	1,850	1,689	1,719	1,754	1,808	1,746	1,581	1,389	1,233	1,121
1977	Critical	1,090	1,037	1,000	988	979	964	931	872	828	711	492	463
1978	Above Normal	354	380	605	1,057	1,264	1,558	1,743	1,733	1,623	1,506	1,377	1,288
1979	Below Normal	1,227	1,190	1,179	1,203	1,271	1,423	1,530	1,565	1,516	1,389	1,255	1,142
1980	Above Normal	1,152	1,218	1,289	1,542	1,887	2,029	2,181	2,056	1,905	1,765	1,614	1,470
1981	Dry	1,407	1,367	1,405	1,519	1,653	1,767	1,859	1,762	1,693	1,464	1,295	1,182
1982	Wet	1,151	1,423	1,787	1,886	2,000	2,100	2,300	2,282	2,107	1,971	1,855	1,741
1983	Wet	1,759	1,798	1,850	1,900	2,000	2,100	2,300	2,420	2,447	2,270	2,150	1,975
1984	Wet	1,850	1,850	1,900	1,996	2,100	2,198	2,145	2,062	1,918	1,769	1,625	
1985	Dry	1,535	1,645	1,690	1,667	1,699	1,743	1,872	1,773	1,624	1,445	1,215	1,088
1986	Wet	1,056	1,046	1,063	1,212	1,764	2,100	2,097	1,956	1,816	1,633	1,483	1,372
1987	Dry	1,318	1,284	1,273	1,283	1,363	1,579	1,721	1,634	1,424	1,198	970	888
1988	Critical	844	828	1,034	1,138	1,237	1,315	1,376	1,299	1,267	1,102	983	901
1989	Dry	870	898	916	927	952	1,302	1,488	1,353	1,221	1,024	922	840
1990	Critical	862	862	857	934	958	1,043	1,074	1,018	1,012	903	786	704
1991	Critical	673	664	648	632	634	702	733	746	735	624	586	550
1992	Critical	535	526	522	530	697	861	1,078	1,042	1,008	787	562	500
1993	Above Normal	485	384	415	501	662	1,049	1,234	1,365	1,411	1,371	1,300	1,190
1994	Critical	1,161	1,151	1,178	1,228	1,267	1,323	1,356	1,335	1,244	1,065	948	866
1995	Wet	835	820	805	1,283	1,541	2,000	2,239	2,299	2,217	2,199	2,105	1,975
1996	Wet	1,850	1,839	1,850	1,900	2,000	2,100	2,255	2,165	2,077	1,926	1,804	1,689
1997	Wet	1,595	1,600	1,850	1,900	1,985	2,062	2,108	1,901	1,691	1,506	1,339	1,226
1998	Wet	1,148	1,163	1,208	1,559	1,967	2,100	2,270	2,384	2,447	2,270	2,150	1,975
1999	Wet	1,850	1,850	1,900	2,000	2,100	2,284	2,335	2,323	2,176	2,066	1,879	
2000	Above Normal	1,815	1,817	1,828	1,900	2,000	2,100	2,268	2,246	2,209	2,066	1,868	1,728
2001	Dry	1,637	1,605	1,594	1,594	1,647	1,833	1,931	1,889	1,828	1,614	1,405	1,296
2002	Dry	1,242	1,269	1,406	1,661	1,770	1						

Trinity Reservoir (TAF)

Difference Between BA - Proposed Action (Q5) and BA - No Action Alternative (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September
1922	Above Normal	0	95	95	95	95	95	95	95	94	94	94	93
1923	Below Normal	93	93	93	93	101	106	106	100	102	99	98	98
1924	Critical	67	67	66	21	36	36	10	10	10	10	10	0
1925	Dry	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1
1926	Dry	-1	-1	-1	-1	-1	11	11	11	11	11	-3	-3
1927	Wet	-3	-3	-3	-3	-3	-6	-6	-6	-6	-62	-62	-62
1928	Above Normal	-62	-62	-53	-44	-43	-43	-43	-43	-43	-74	-73	-68
1929	Critical	-17	4	4	42	42	42	42	42	42	42	41	41
1930	Dry	41	41	41	35	35	29	15	15	10	10	1	1
1931	Critical	1	1	1	1	1	9	9	9	9	-94	-56	-82
1932	Dry	0	0	0	0	0	0	0	0	0	3	3	3
1933	Critical	3	3	3	3	3	3	3	3	3	-83	-186	-23
1934	Critical	0	0	0	0	0	0	0	0	0	-43	0	0
1935	Below Normal	0	0	0	0	0	0	0	0	0	0	0	0
1936	Below Normal	0	0	0	0	0	0	0	0	0	0	0	0
1937	Below Normal	0	0	0	0	0	0	0	0	1	1	1	1
1938	Wet	1	1	1	1	1	1	1	1	1	1	1	1
1939	Dry	1	1	1	10	10	4	2	10	10	10	10	60
1940	Above Normal	102	23	77	76	76	76	76	76	76	75	60	60
1941	Wet	60	60	60	59	27	0	0	0	2	0	0	0
1942	Wet	0	0	0	0	0	0	0	0	0	-1	-1	31
1943	Wet	0	0	0	0	0	0	0	0	0	0	0	0
1944	Dry	0	113	113	164	155	155	155	154	154	98	58	58
1945	Below Normal	58	58	58	58	58	63	63	63	63	47	47	47
1946	Below Normal	47	41	41	41	41	46	46	46	46	45	45	45
1947	Dry	35	42	42	59	51	51	51	50	50	50	50	23
1948	Below Normal	23	23	23	23	23	23	23	23	23	22	22	-5
1949	Dry	-5	-5	-5	-5	-5	-5	-5	-5	-38	-38	-38	-38
1950	Below Normal	-38	-38	-38	-38	-38	-42	-42	-42	-42	-42	-42	-41
1951	Above Normal	-55	-55	-55	-55	-55	-55	-14	-14	-14	-58	-58	-58
1952	Wet	-58	-58	-58	-58	-58	-27	0	0	0	0	0	0
1953	Wet	0	0	0	0	0	0	0	0	0	0	0	0
1954	Above Normal	0	0	0	0	0	0	0	0	-2	-2	-2	-2
1955	Dry	-2	-2	-2	-2	-2	32	32	32	32	32	17	17
1956	Wet	16	-7	-7	0	0	0	0	0	0	0	0	-26
1957	Above Normal	-26	-26	-14	-14	-14	-14	-14	-14	-11	-11	-88	-88
1958	Wet	-41	0	0	0	0	0	0	0	0	0	0	-13
1959	Below Normal	-19	-19	-10	0	0	0	0	0	0	0	-11	-11
1960	Dry	-11	-11	-11	-11	-11	-11	-11	-11	-34	-34	-3	-3
1961	Dry	-3	-3	-3	-3	-3	-3	-3	-3	-2	-33	-41	-41
1962	Below Normal	-41	-41	-32	-32	-32	-32	-32	-32	-32	-121	-105	-105
1963	Wet	-105	-105	-105	-105	-20	-20	0	0	2	2	2	-1
1964	Dry	-1	-1	8	63	55	56	56	56	56	136	71	70
1965	Wet	40	40	39	0	0	0	0	0	0	0	0	0
1966	Below Normal	31	31	46	52	52	52	25	25	38	38	111	140
1967	Wet	109	109	109	109	75	38	38	37	37	0	0	0
1968	Below Normal	0	0	0	0	0	0	0	0	27	-23	-23	-23
1969	Wet	-23	-23	-23	-22	-22	-22	-22	0	0	0	0	0
1970	Wet	0	0	0	0	0	0	0	0	-34	-34	-34	-34
1971	Wet	-23	1	1	1	1	1	1	1	-1	-1	-1	-1
1972	Below Normal	0	11	11	0	0	0	0	0	0	-38	-38	-38
1973	Above Normal	-38	-38	-38	-38	0	0	0	0	0	-19	-19	-19
1974	Wet	-19	0	0	0	0	0	0	0	0	0	0	0
1975	Wet	0	30	39	48	38	0	0	0	2	0	0	0
1976	Critical	0	0	0	27	27	27	27	22	16	11	11	11
1977	Critical	13	37	18	18	18	17	17	17	17	17	23	23
1978	Above Normal	69	69	69	69	69	69	68	68	68	68	67	67
1979	Below Normal	67	43	43	43	43	43	43	43	43	43	42	42
1980	Above Normal	42	48	48	48	48	54	54	54	16	16	16	16
1981	Dry	16	16	16	16	16	16	16	16	16	-32	30	30
1982	Wet	30	35	35	35	0	0	0	0	0	0	0	0
1983	Wet	0	0	0	0	0	0	0	0	0	0	0	0
1984	Wet	0	0	0	0	0	0	0	0	0	0	0	0
1985	Dry	0	0	-9	-26	-26	-26	-26	-26	-26	23	23	37
1986	Wet	39	40	40	40	40	20	5	5	5	15	46	46
1987	Dry	46	46	46	46	37	37	37	37	37	37	-9	-9
1988	Critical	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
1989	Dry	-12	-12	-12	10	10	10	4	4	4	4	19	19
1990	Critical	19	19	19	19	19	19	25	25	25	25	24	24
1991	Critical	9	9	9	9	9	9	9	9	9	9	9	9
1992	Critical	9	26	22	26	26	26	26	25	25	25	25	127
1993	Above Normal	245	144	144	144	144	143	141	141	140	137	173	90
1994	Critical	90	90	96	102	107	107	107	105	62	0	0	0
1995	Wet	0	0	0	0	0	0	0	0	0	-45	0	0
1996	Wet	0	0	0	0	0	0	0	0	0	0	0	0
1997	Wet	-31	-31	0	0	0	0	2	2	2	2	2	2
1998	Wet	48	63	63	63	0	0	0	0	0	0	0	0
1999	Wet	0	0	0	0	0	0	0	0	0	-92	-15	-15
2000	Above Normal	16	182	230	124	0	0	0	0	0	0	0	0
2001	Dry	0	50	50	50	59	68	77	77	218	217	166	166
2002	Dry	161	137	137	131	131	131	131	130	130	80	34	34
2003	Above Normal	34	34	34	34	34	34	34	34	34	33	33	33
Average:		13	17	20	20	19	18	18	18	18	8	6	9
Minimum:		-105	-105	-105	-105	-58	-55	-43	-43	-43	-121	-186	-105
Maximum:		245	182	230	164	155	155	155	154	218	217	173	166
Wet:		2	6	7	7	5	-1	1	2	0	-7	-4	-3
Above Normal:		27	34	45	37	29	30	33	33	30	22	17	11
Below Normal:		16	14	17	17	18	19	17	16	19	5	11	11
Dry:		15	23	23	30	28	31	30	30	35	32	21	23
Critical:		15	20	19	21	23	24	21	21	17	-8	-10	10

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

Long-Term and Water Year-Type Average of Shasta Reservoir Under BA - No Action Alternative (Q5) and BA - Proposed Action (Q5)

Analysis Period	Average Storage (TAF)											
	October	November	December	January	February	March	April	May	June	July	August	September
Full Simulation Period												
BA - No Action Alternative (Q5)	2,398	2,376	2,590	2,897	3,182	3,550	3,831	3,844	3,515	2,980	2,672	2,480
BA - Proposed Action (Q5)	2,423	2,469	2,674	2,956	3,228	3,582	3,860	3,865	3,504	2,984	2,677	2,505
Difference	25	93	84	58	46	31	29	22	-11	3	5	25
Percent Difference	1%	4%	3%	2%	1%	1%	1%	1%	0%	0%	0%	1%
Water Year-Types												
Wet												
BA - No Action Alternative (Q5)	2,681	2,719	3,088	3,404	3,596	3,850	4,306	4,460	4,244	3,728	3,404	2,989
BA - Proposed Action (Q5)	2,714	2,811	3,135	3,420	3,597	3,850	4,305	4,461	4,234	3,720	3,387	2,981
Difference	33	92	47	16	1	0	-1	1	-10	-8	-16	-9
Percent Difference	1%	3%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Above Normal												
BA - No Action Alternative (Q5)	2,367	2,314	2,520	3,080	3,409	3,980	4,399	4,448	4,057	3,436	3,103	2,857
BA - Proposed Action (Q5)	2,387	2,417	2,639	3,168	3,458	3,981	4,396	4,443	4,012	3,399	3,074	2,891
Difference	20	104	119	88	49	2	-3	-5	-45	-37	-30	34
Percent Difference	1%	4%	5%	3%	1%	0%	0%	0%	-1%	-1%	-1%	1%
Below Normal												
BA - No Action Alternative (Q5)	2,461	2,396	2,471	2,824	3,202	3,619	3,956	3,978	3,623	3,089	2,768	2,696
BA - Proposed Action (Q5)	2,447	2,484	2,579	2,899	3,245	3,643	3,987	4,009	3,605	3,067	2,769	2,727
Difference	-14	89	108	75	43	25	31	31	-18	-22	1	31
Percent Difference	-1%	4%	4%	3%	1%	1%	1%	1%	-1%	-1%	0%	1%
Dry												
BA - No Action Alternative (Q5)	2,290	2,272	2,468	2,655	3,065	3,525	3,654	3,540	3,145	2,604	2,293	2,260
BA - Proposed Action (Q5)	2,318	2,371	2,561	2,741	3,147	3,602	3,720	3,577	3,135	2,617	2,314	2,298
Difference	28	99	93	86	82	77	66	37	-9	13	21	38
Percent Difference	1%	4%	4%	3%	3%	2%	2%	1%	0%	0%	1%	2%
Critical												
BA - No Action Alternative (Q5)	1,906	1,831	1,902	2,064	2,210	2,429	2,356	2,203	1,826	1,343	1,111	1,079
BA - Proposed Action (Q5)	1,958	1,909	1,989	2,126	2,297	2,498	2,422	2,262	1,853	1,425	1,176	1,143
Difference	53	78	86	62	87	69	66	59	28	82	65	64
Percent Difference	3%	4%	5%	3%	4%	3%	3%	3%	2%	6%	6%	6%

Shasta Reservoir

BA - No Action Alternative (Q5)

Statistic	End-of-Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,200	3,251	3,326	3,620	3,837	4,223	4,489	4,552	4,486	3,921	3,580	3,207
20%	3,016	2,945	3,290	3,529	3,716	4,117	4,437	4,552	4,293	3,797	3,483	3,045
30%	2,853	2,757	3,252	3,371	3,638	4,010	4,377	4,548	4,201	3,588	3,231	2,972
40%	2,714	2,670	3,023	3,263	3,492	3,950	4,268	4,423	4,009	3,327	3,026	2,852
50%	2,588	2,536	2,792	3,153	3,380	3,756	4,139	4,196	3,774	3,182	2,842	2,729
60%	2,498	2,443	2,532	3,000	3,283	3,567	3,989	3,974	3,550	2,975	2,712	2,612
70%	2,233	2,239	2,321	2,612	3,174	3,416	3,728	3,526	3,274	2,715	2,514	2,337
80%	1,914	1,917	2,122	2,428	2,717	3,137	3,347	3,126	2,780	2,310	2,022	1,967
90%	862	987	1,158	1,677	2,136	2,362	2,393	2,194	1,815	1,443	1,041	954
Long Term												
Full Simulation Period	2,398	2,376	2,590	2,897	3,182	3,550	3,831	3,844	3,515	2,980	2,672	2,480
Water Year Types												
Wet	2,681	2,719	3,088	3,404	3,596	3,850	4,306	4,460	4,244	3,728	3,404	2,989
Above Normal	2,367	2,314	2,520	3,080	3,409	3,980	4,399	4,448	4,057	3,436	3,103	2,857
Below Normal	2,461	2,396	2,471	2,824	3,202	3,619	3,956	3,978	3,623	3,089	2,768	2,696
Dry	2,290	2,272	2,468	2,655	3,065	3,525	3,654	3,540	3,145	2,604	2,293	2,260
Critical	1,906	1,831	1,902	2,064	2,210	2,429	2,356	2,203	1,826	1,343	1,111	1,079

BA - Proposed Action (Q5)

Statistic	End-of-Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	3,200	3,224	3,335	3,623	3,883	4,223	4,496	4,552	4,480	3,906	3,555	3,200
20%	3,046	3,109	3,312	3,535	3,743	4,129	4,447	4,552	4,293	3,790	3,434	3,081
30%	2,912	2,981	3,253	3,434	3,654	4,015	4,376	4,545	4,200	3,582	3,212	2,992
40%	2,753	2,825	3,194	3,349	3,535	3,963	4,280	4,410	3,875	3,297	2,998	2,806
50%	2,601	2,687	3,038	3,252	3,463	3,784	4,157	4,200	3,714	3,152	2,809	2,729
60%	2,509	2,493	2,720	3,084	3,316	3,666	3,998	3,982	3,513	3,001	2,727	2,642
70%	2,308	2,324	2,472	2,771	3,252	3,428	3,820	3,696	3,359	2,802	2,579	2,465
80%	1,888	2,003	2,145	2,518	2,766	3,243	3,488	3,268	2,812	2,331	2,002	1,970
90%	986	965	1,228	1,663	2,164	2,450	2,493	2,280	1,848	1,502	1,177	1,094
Long Term												
Full Simulation Period	2,423	2,469	2,674	2,956	3,228	3,582	3,860	3,865	3,504	2,984	2,677	2,505
Water Year Types												
Wet	2,714	2,811	3,135	3,420	3,597	3,850	4,305	4,461	4,234	3,720	3,387	2,981
Above Normal	2,387	2,417	2,639	3,168	3,458	3,981	4,396	4,443	4,012	3,399	3,074	2,891
Below Normal	2,447	2,484	2,579	2,899	3,245	3,643	3,987	4,009	3,605	3,067	2,769	2,727
Dry	2,318	2,371	2,561	2,741	3,147	3,602	3,720	3,577	3,135	2,617	2,314	2,298
Critical	1,958	1,909	1,989	2,126	2,297	2,498	2,422	2,262	1,853	1,425	1,176	1,143

BA - Proposed Action (Q5) Minus BA - No Action Alternative (Q5)

Statistic	End-of-Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	-28	8	3	46	0	7	0	-6	-15	-25	-7
20%	29	163	22	6	27	12	10	0	1	-7	-49	36
30%	59	223	1	63	16	5	0	-2	-1	-7	-19	21
40%	39	155	170	86	43	12	13	-14	-134	-29	-28	-45
50%	12	150	246	99	83	27	18	5	-60	-30	-33	0
60%	11	50	189	84	32	99	9	7	-37	26	15	30
70%	75	86	151	159	78	12	92	170	85	87	64	128
80%	-26	86	23	90	50	106	142	142	32	21	-20	3
90%	125	-22	70	-14	28	89	100	86	33	59	136	140
Long Term												
Full Simulation Period	25	93	84	58	46	31	29	22	-11	3	5	25
Water Year Types												
Wet	33	92	47	16	1	0	-1	1	-10	-8	-16	-9
Above Normal	20	104	119	88	49	2	-3	-5	-45	-37	-30	34
Below Normal	-14	89	108	75	43	25	31	31	-18	-22	1	31
Dry	28	99	93	86	82	77	66	37	-9	13	21	38
Critical	53	78	86	62	87	69	66	59	28	82	65	64

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

Shasta Reservoir (TAF)

BA - No Action Alternative (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September
1922	Above Normal	2,534	2,500	2,676	2,845	3,314	3,783	4,360	4,552	4,142	3,620	3,208	2,762
1923	Below Normal	2,659	2,464	2,640	2,881	3,049	3,174	3,605	3,386	3,067	2,603	2,328	2,337
1924	Critical	2,270	2,216	2,229	2,372	2,555	2,536	2,283	1,981	1,595	1,152	726	637
1925	Dry	690	875	993	1,351	2,885	3,274	3,900	3,974	3,688	3,096	2,712	2,626
1926	Dry	2,506	2,479	2,513	2,556	3,389	3,516	3,741	3,460	2,984	2,375	2,061	1,980
1927	Wet	1,919	2,420	2,896	3,368	3,462	4,139	4,552	4,552	4,185	3,471	3,093	2,861
1928	Above Normal	2,695	2,826	2,941	3,189	3,672	3,965	4,510	4,404	3,818	3,159	2,716	2,346
1929	Critical	2,173	2,128	2,213	2,489	2,665	2,813	2,861	2,691	2,327	1,801	1,515	1,438
1930	Dry	1,325	1,253	1,850	2,070	2,437	2,886	2,992	2,947	2,589	2,204	1,963	1,947
1931	Critical	1,863	1,851	1,842	1,936	2,006	2,143	1,797	1,518	1,154	650	595	552
1932	Dry	550	550	788	970	1,129	1,577	1,636	1,741	1,473	1,139	872	772
1933	Critical	668	639	626	652	696	1,316	1,461	1,498	1,311	790	550	550
1934	Critical	550	550	677	965	1,256	1,484	1,456	1,294	786	572	550	550
1935	Below Normal	541	626	663	1,012	1,332	1,710	2,693	2,981	2,670	2,314	1,951	1,856
1936	Below Normal	1,788	1,754	1,745	2,432	3,346	3,613	3,798	3,723	3,458	2,879	2,523	2,400
1937	Below Normal	2,247	2,141	2,116	2,095	2,227	2,990	3,647	3,841	3,599	3,180	2,830	2,718
1938	Wet	2,666	3,243	3,310	3,644	3,560	3,416	4,058	4,501	4,323	3,927	3,563	2,920
1939	Dry	2,931	2,810	2,904	3,052	3,181	3,560	3,388	3,151	2,788	2,225	1,663	1,700
1940	Above Normal	1,681	1,503	1,712	2,617	3,252	3,435	4,140	4,137	3,755	3,137	2,732	2,456
1941	Wet	2,308	2,182	3,293	3,317	3,423	3,940	4,456	4,552	4,351	3,987	3,618	3,116
1942	Wet	2,979	2,669	3,316	3,389	3,516	3,775	4,385	4,552	4,434	3,905	3,514	3,030
1943	Wet	2,749	2,539	2,787	3,541	3,848	4,118	4,507	4,552	4,257	3,607	3,202	2,635
1944	Dry	2,463	2,246	2,255	2,422	2,751	3,051	3,080	3,088	2,834	2,414	2,191	2,156
1945	Below Normal	2,072	2,241	2,527	2,742	3,483	3,738	3,901	4,044	3,818	3,281	2,944	2,846
1946	Below Normal	2,921	3,252	3,265	3,622	3,808	4,135	4,253	4,175	3,783	3,184	2,826	2,473
1947	Dry	2,236	2,194	2,322	2,386	2,629	3,151	3,284	2,999	2,761	2,229	1,912	1,891
1948	Below Normal	2,083	2,114	2,126	2,692	2,777	3,116	4,101	4,552	4,500	3,902	3,495	3,400
1949	Dry	3,202	3,153	3,172	3,162	3,347	4,071	4,376	4,430	4,014	3,333	3,031	3,009
1950	Below Normal	2,839	2,705	2,655	2,921	3,334	3,680	4,007	3,975	3,665	3,299	3,009	2,955
1951	Above Normal	3,200	3,252	3,322	3,624	3,794	4,214	4,271	4,377	3,989	3,263	2,879	2,615
1952	Wet	2,519	2,482	3,306	3,604	3,739	4,022	4,290	4,552	4,431	4,017	3,682	3,320
1953	Wet	3,093	2,752	3,345	3,366	3,675	4,116	4,457	4,552	4,500	3,857	3,526	3,037
1954	Above Normal	2,846	2,670	2,788	3,552	3,661	4,106	4,546	4,501	4,163	3,536	3,228	2,949
1955	Dry	2,830	2,755	3,031	3,141	3,317	3,495	3,716	3,847	3,475	2,885	2,714	2,748
1956	Wet	2,676	2,774	3,252	3,252	3,288	3,994	4,456	4,552	4,309	3,878	3,581	2,970
1957	Above Normal	2,941	2,549	2,500	2,586	3,282	4,129	4,432	4,552	4,234	3,607	3,217	3,042
1958	Wet	3,220	3,154	3,338	3,531	3,252	3,416	4,173	4,552	4,500	4,083	3,700	3,175
1959	Below Normal	3,098	2,722	2,710	3,556	3,777	4,190	4,188	4,047	3,545	2,972	2,615	2,612
1960	Dry	2,497	2,338	2,338	2,563	3,376	4,011	4,050	4,168	3,576	2,985	2,672	2,584
1961	Dry	2,502	2,611	3,122	3,328	3,914	4,280	4,407	4,371	3,965	3,302	2,846	2,740
1962	Below Normal	2,567	2,701	3,032	3,145	3,675	4,256	4,441	4,382	4,041	3,284	2,926	2,907
1963	Wet	3,250	3,252	3,349	3,475	3,944	4,226	4,137	4,531	4,219	3,612	3,259	2,739
1964	Dry	2,751	2,929	2,995	3,449	3,663	3,805	3,645	3,519	3,290	2,765	2,519	2,528
1965	Wet	2,451	2,548	3,252	3,368	3,701	3,834	4,494	4,548	4,222	3,595	3,375	2,983
1966	Below Normal	2,769	2,906	3,039	3,674	4,037	4,229	4,417	4,239	3,722	3,154	2,740	2,642
1967	Wet	2,522	2,915	3,335	3,551	3,920	4,033	4,479	4,552	4,500	3,950	3,613	3,229
1968	Below Normal	3,157	2,840	2,937	3,200	3,654	4,171	4,200	4,093	3,571	2,955	2,750	2,682
1969	Wet	2,681	2,748	3,150	3,358	3,480	4,030	4,434	4,552	4,284	3,855	3,475	3,200
1970	Wet	3,200	2,970	3,317	3,252	3,431	3,988	4,032	3,970	3,542	2,951	2,685	2,209
1971	Wet	2,106	2,545	3,319	3,515	3,812	3,873	4,352	4,552	4,454	3,765	3,476	3,046
1972	Below Normal	2,851	2,500	2,664	3,002	3,384	4,226	4,455	4,400	3,836	3,200	2,977	3,070
1973	Above Normal	3,136	3,252	3,346	3,552	3,636	4,162	4,409	4,432	3,917	3,252	3,003	2,852
1974	Wet	2,981	3,252	3,267	3,252	3,694	3,416	4,289	4,470	4,201	3,810	3,539	3,200
1975	Wet	3,052	2,694	2,887	3,045	3,900	3,756	4,375	4,552	4,306	3,860	3,565	3,110
1976	Critical	3,200	3,055	3,158	3,393	3,494	3,681	3,729	3,389	3,084	2,680	2,682	2,752
1977	Critical	2,563	2,441	2,308	2,283	2,308	2,287	1,854	1,721	1,188	650	550	550
1978	Above Normal	550	583	1,087	3,266	3,567	4,000	4,552	4,552	4,118	3,542	3,201	3,087
1979	Below Normal	2,865	2,577	2,473	2,565	2,949	3,432	3,681	3,848	3,445	3,030	2,838	2,852
1980	Above Normal	2,992	3,123	3,290	3,528	3,292	3,980	4,245	4,216	3,804	3,343	3,037	3,045
1981	Dry	2,975	2,657	2,797	3,098	3,466	4,014	4,217	4,019	3,342	2,718	2,429	2,337
1982	Wet	2,328	3,249	3,276	3,616	3,530	3,953	4,094	4,428	4,224	3,853	3,576	3,400
1983	Wet	3,250	3,252	3,328	3,371	3,252	3,417	4,074	4,552	4,500	4,150	3,700	3,400
1984	Wet	3,250	3,252	3,285	3,650	3,997	4,246	4,475	4,468	4,133	3,496	3,272	2,702
1985	Dry	2,593	3,043	3,285	3,373	3,540	3,724	3,806	3,526	3,135	2,600	2,142	2,165
1986	Wet	2,123	2,107	2,309	2,859	3,252	3,534	3,943	3,904	3,464	2,915	2,640	2,635
1987	Dry	2,654	2,430	2,444	2,595	2,918	3,640	3,569	3,264	2,768	2,305	2,108	2,056
1988	Critical	1,907	1,898	2,548	3,034	3,001	3,114	3,072	2,995	2,511	1,946	1,693	1,642
1989	Dry	1,508	1,735	1,827	1,990	2,097	3,416	3,834	3,487	3,120	2,481	2,098	2,154
1990	Critical	2,317	2,283	2,270	2,513	2,606	2,849	2,652	2,774	2,567	1,980	1,638	1,594
1991	Critical	1,515	1,483	1,461	1,455	1,369	1,776	1,920	1,876	1,591	1,289	888	782
1992	Critical	683	648	635	674	1,347	1,780	2,002	1,658	1,295	787	550	550
1993	Above Normal	550	550	793	1,566	2,376	3,757	4,315	4,552	4,500	3,788	3,578	3,210
1994	Critical	3,158	2,784	2,860	2,999	3,215	3,366	3,184	3,037	2,501	1,824	1,397	1,353
1995	Wet	1,263	1,247	1,325	3,252	3,743	3,417	4,217	4,552	4,500	4,118	3,700	3,341
1996	Wet	3,208	2,724	3,249	3,706	3,503	4,010	4,421	4,552	4,306	3,718	3,434	3,023
1997	Wet	2,719	2,533	3,252	3,252	3,745	3,939	3,985	3,767	3,420	2,813	2,642	2,073
1998	Wet	1,944	1,930	2,204	3,339	3,252	3,504	4,314	4,552	4,500	4,150	3,700	3,400
1999	Wet	3,250	3,252	3,349	3,640	3,570	3,980	4,505	4,552	4,276	3,587	3,368	2,964
2000	Above												

Shasta Reservoir (TAF)

BA - Proposed Action (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September
1922	Above Normal	2,503	2,500	2,676	2,845	3,314	3,783	4,360	4,552	4,142	3,618	3,206	2,808
1923	Below Normal	2,678	2,646	2,821	3,062	3,221	3,342	3,772	3,558	3,235	2,775	2,493	2,500
1924	Critical	2,386	2,326	2,342	2,531	2,699	2,634	2,404	2,072	1,624	1,166	714	633
1925	Dry	687	873	991	1,350	2,884	3,272	3,898	3,971	3,611	3,111	2,723	2,636
1926	Dry	2,509	2,481	2,515	2,558	3,392	3,507	3,732	3,357	2,837	2,335	2,035	1,993
1927	Wet	1,883	2,384	2,861	3,333	3,462	4,142	4,552	4,552	4,182	3,580	3,184	2,973
1928	Above Normal	2,765	3,071	3,177	3,415	3,898	3,965	4,510	4,406	3,746	3,118	2,805	2,507
1929	Critical	2,285	2,282	2,368	2,605	2,780	2,928	2,975	2,766	2,370	1,919	1,471	1,377
1930	Dry	1,271	1,181	1,778	2,004	2,372	2,826	2,946	2,900	2,558	2,191	1,952	1,934
1931	Critical	1,792	1,767	1,758	1,852	1,922	2,051	1,705	1,426	1,056	650	550	550
1932	Dry	550	550	788	970	1,137	1,577	1,630	1,736	1,469	1,147	880	780
1933	Critical	676	646	634	659	704	1,272	1,347	1,370	1,055	649	550	550
1934	Critical	550	550	677	965	1,256	1,484	1,456	1,294	745	570	550	550
1935	Below Normal	550	634	672	1,020	1,341	1,718	2,701	2,990	2,676	2,299	1,928	1,833
1936	Below Normal	1,766	1,731	1,722	2,410	3,324	3,591	3,775	3,701	3,436	2,948	2,590	2,465
1937	Below Normal	2,311	2,205	2,180	2,159	2,290	3,054	3,711	3,903	3,657	3,171	2,809	2,698
1938	Wet	2,628	3,205	3,310	3,644	3,560	3,416	4,058	4,499	4,324	3,928	3,558	2,915
1939	Dry	2,927	2,895	3,067	3,206	3,335	3,720	3,534	3,272	2,889	2,325	1,940	1,934
1940	Above Normal	1,836	1,716	1,872	2,777	3,252	3,435	4,140	4,102	3,680	3,150	2,737	2,505
1941	Wet	2,336	2,305	3,293	3,317	3,423	3,940	4,456	4,552	4,349	3,924	3,546	3,087
1942	Wet	2,952	2,846	3,316	3,389	3,516	3,775	4,385	4,552	4,434	3,862	3,444	2,937
1943	Wet	2,810	2,776	3,023	3,541	3,848	4,118	4,507	4,552	4,263	3,612	3,210	2,680
1944	Dry	2,523	2,375	2,384	2,500	2,838	3,138	3,165	3,169	2,795	2,475	2,202	2,166
1945	Below Normal	2,052	2,222	2,508	2,723	3,464	3,713	3,876	4,019	3,795	3,159	2,809	2,737
1946	Below Normal	2,693	3,102	3,265	3,622	3,808	4,130	4,246	4,168	3,745	3,132	2,782	2,497
1947	Dry	2,249	2,292	2,420	2,465	2,716	3,238	3,368	3,038	2,810	2,225	1,861	1,865
1948	Below Normal	2,051	2,082	2,094	2,660	2,745	3,083	4,069	4,552	4,500	3,834	3,457	3,374
1949	Dry	3,200	3,185	3,204	3,193	3,379	4,071	4,345	4,365	3,848	3,178	2,849	2,798
1950	Below Normal	2,610	2,549	2,511	2,776	3,190	3,541	3,868	3,836	3,506	3,115	2,838	2,786
1951	Above Normal	3,025	3,252	3,322	3,624	3,794	4,214	4,231	4,338	3,881	3,200	2,819	2,589
1952	Wet	2,541	2,674	3,306	3,604	3,739	4,022	4,290	4,552	4,431	4,017	3,681	3,242
1953	Wet	3,121	3,004	3,345	3,366	3,675	4,116	4,457	4,552	4,500	3,830	3,508	3,023
1954	Above Normal	2,953	3,023	3,184	3,552	3,661	4,106	4,546	4,529	4,063	3,436	3,115	2,873
1955	Dry	2,808	2,966	3,241	3,351	3,527	3,671	3,825	3,918	3,514	2,928	2,716	2,749
1956	Wet	2,629	2,750	3,252	3,252	3,288	3,994	4,456	4,552	4,310	3,806	3,506	2,921
1957	Above Normal	2,976	2,836	2,851	2,937	3,632	4,129	4,426	4,552	4,201	3,574	3,298	3,200
1958	Wet	3,250	3,218	3,338	3,531	3,252	3,416	4,173	4,552	4,500	4,023	3,660	3,151
1959	Below Normal	3,146	3,034	3,052	3,648	3,777	4,190	4,192	4,053	3,416	2,844	2,546	2,714
1960	Dry	2,539	2,478	2,478	2,704	3,516	4,151	4,238	4,267	3,675	3,075	2,804	2,780
1961	Dry	2,610	2,718	3,229	3,435	3,914	4,280	4,322	4,285	3,786	3,154	2,736	2,721
1962	Below Normal	2,579	2,739	3,061	3,174	3,675	4,256	4,441	4,383	3,988	3,321	3,000	2,985
1963	Wet	3,250	3,252	3,349	3,475	3,944	4,226	4,137	4,531	4,214	3,607	3,254	2,737
1964	Dry	2,800	3,120	3,176	3,576	3,797	3,938	3,777	3,649	3,373	2,745	2,453	2,461
1965	Wet	2,329	2,425	3,252	3,368	3,701	3,834	4,494	4,548	4,220	3,593	3,373	3,079
1966	Below Normal	2,875	3,200	3,318	3,725	4,037	4,229	4,480	4,305	3,684	3,117	2,813	2,783
1967	Wet	2,585	2,978	3,335	3,551	3,920	4,033	4,479	4,552	4,500	3,988	3,651	3,179
1968	Below Normal	3,156	3,074	3,196	3,459	3,654	4,171	4,200	4,093	3,422	2,856	2,724	2,719
1969	Wet	2,632	2,699	3,101	3,358	3,480	4,030	4,434	4,552	4,285	3,855	3,464	3,200
1970	Wet	3,200	3,118	3,317	3,252	3,431	3,988	4,032	3,973	3,397	2,804	2,598	2,162
1971	Wet	2,083	2,492	3,319	3,515	3,812	3,873	4,318	4,552	4,424	3,735	3,413	3,069
1972	Below Normal	2,958	2,760	2,924	3,273	3,655	4,249	4,497	4,411	3,798	3,200	2,990	3,085
1973	Above Normal	3,134	3,252	3,346	3,552	3,636	4,162	4,409	4,431	3,819	3,200	2,954	2,883
1974	Wet	3,004	3,252	3,267	3,252	3,694	3,416	4,289	4,469	4,200	3,813	3,541	3,200
1975	Wet	3,200	3,055	3,239	3,388	3,936	3,756	4,375	4,552	4,309	3,848	3,557	3,105
1976	Critical	3,200	3,200	3,316	3,523	3,624	3,811	3,857	3,519	3,195	2,759	2,710	2,779
1977	Critical	2,592	2,531	2,478	2,396	2,421	2,372	1,968	1,837	1,272	726	550	562
1978	Above Normal	550	570	1,074	3,253	3,567	4,000	4,552	4,552	4,118	3,498	3,150	3,087
1979	Below Normal	2,830	2,804	2,779	2,871	3,254	3,737	3,985	4,152	3,605	3,167	2,993	3,002
1980	Above Normal	3,076	3,200	3,366	3,528	3,292	3,974	4,240	4,209	3,834	3,370	3,063	3,049
1981	Dry	2,962	2,837	2,977	3,278	3,647	4,194	4,395	4,191	3,513	2,937	2,582	2,580
1982	Wet	2,571	3,252	3,276	3,616	3,530	3,953	4,094	4,428	4,224	3,828	3,550	3,334
1983	Wet	3,250	3,252	3,328	3,371	3,252	3,417	4,074	4,552	4,500	4,150	3,700	3,400
1984	Wet	3,250	3,252	3,285	3,650	3,997	4,246	4,475	4,468	4,035	3,398	3,088	2,519
1985	Dry	2,508	2,958	3,210	3,315	3,482	3,665	3,770	3,531	3,123	2,530	2,245	2,295
1986	Wet	2,184	2,191	2,392	2,942	3,252	3,534	3,957	3,919	3,478	3,043	2,743	2,692
1987	Dry	2,707	2,544	2,558	2,709	3,040	3,762	3,668	3,263	2,813	2,352	2,054	2,032
1988	Critical	1,891	1,885	2,535	3,020	3,210	3,246	3,192	3,084	2,546	2,100	1,728	1,673
1989	Dry	1,543	1,770	1,862	2,003	2,110	3,430	3,853	3,494	3,051	2,538	2,249	2,294
1990	Critical	2,401	2,367	2,359	2,602	2,695	2,938	2,740	2,857	2,611	2,077	1,764	1,735
1991	Critical	1,676	1,609	1,588	1,369	1,381	1,788	1,933	1,889	1,604	1,324	1,051	972
1992	Critical	864	701	701	740	1,413	1,845	2,068	1,756	1,395	1,030	725	638
1993	Above Normal	550	550	809	1,582	2,392	3,785	4,333	4,552	4,500	3,779	3,375	3,200
1994	Critical	3,189	3,041	3,111	3,244	3,454	3,604	3,420	3,273	2,768	2,135	1,748	1,702
1995	Wet	1,599	1,582	1,660	3,252	3,743	3,417	4,217	4,552	4,500	4,116	3,700	3,267
1996	Wet	3,179	2,969	3,368	3,723	3,503	4,010	4,421	4,552	4,306	3,712	3,428	2,998
1997	Wet	2,789	2,826	3,252	3,252	3,745	3,939	3,990	3,766	3,423	2,816	2,652	2,170
1998	Wet	2,067	2,105	2,380	3,339	3,252	3,504	4,314	4,552	4,500	4,150	3,700	3,400
1999	Wet	3,250	3,226	3,349	3,640	3,570	3,980	4,505	4,552	4,275	3,678	3,360	3,056
2000	Above Normal	2,											

Shasta Reservoir (TAF)

Difference Between BA - Proposed Action (Q5) and BA - No Action Alternative (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September
1922	Above Normal	-32	0	0	0	0	0	0	0	0	-2	-2	47
1923	Below Normal	19	181	181	181	173	168	167	172	168	172	165	164
1924	Critical	116	111	113	159	144	98	121	92	29	14	-12	-4
1925	Dry	-2	-2	-2	-2	-2	-2	-2	-3	-77	15	12	10
1926	Dry	3	2	2	2	2	-9	-9	-102	-147	-40	-26	13
1927	Wet	-36	-36	-36	-36	0	3	0	0	-2	110	91	112
1928	Above Normal	69	245	236	226	226	0	0	1	-72	-41	89	161
1929	Critical	112	155	155	116	116	116	115	74	43	118	-44	-61
1930	Dry	-54	-72	-72	-66	-65	-60	-46	-47	-31	-13	-11	-13
1931	Critical	-71	-84	-84	-84	-84	-92	-92	-92	-98	0	-45	-2
1932	Dry	0	0	0	0	8	0	-6	-5	-4	7	8	8
1933	Critical	8	8	8	8	8	-44	-114	-127	-256	-141	0	0
1934	Critical	0	0	0	0	0	0	0	0	-42	-1	0	0
1935	Below Normal	9	9	9	9	9	9	9	9	6	-15	-23	-23
1936	Below Normal	-22	-22	-22	-22	-23	-22	-22	-22	-21	69	68	65
1937	Below Normal	64	64	64	64	64	63	63	62	58	-10	-21	-20
1938	Wet	-38	-38	0	0	0	0	0	-2	0	0	-5	-5
1939	Dry	-5	86	163	154	154	160	146	121	101	100	277	234
1940	Above Normal	155	214	160	160	0	0	0	-35	-75	13	5	50
1941	Wet	28	123	0	0	0	0	0	0	-2	-62	-72	-30
1942	Wet	-27	178	0	0	0	0	0	0	0	-43	-70	-93
1943	Wet	61	236	236	0	0	0	0	0	6	6	8	44
1944	Dry	60	129	129	78	87	86	85	81	-39	62	11	10
1945	Below Normal	-19	-19	-19	-19	-19	-25	-25	-25	-23	-122	-134	-109
1946	Below Normal	-228	-150	0	0	0	-5	-6	-8	-39	-52	-44	24
1947	Dry	13	98	98	79	87	87	84	39	49	-4	-51	-26
1948	Below Normal	-32	-32	-32	-32	-32	-32	-32	0	0	-67	-38	-26
1949	Dry	-2	32	31	31	31	0	-30	-64	-166	-155	-182	-211
1950	Below Normal	-229	-156	-144	-144	-144	-139	-139	-138	-159	-185	-171	-168
1951	Above Normal	-175	0	0	0	0	0	-40	-39	-108	-63	-60	-26
1952	Wet	22	193	0	0	0	0	0	0	0	0	0	-78
1953	Wet	28	252	0	0	0	0	1	0	0	-27	-17	-14
1954	Above Normal	107	353	397	0	0	0	0	28	-100	-99	-113	-76
1955	Dry	-22	211	211	211	210	176	109	71	39	43	2	2
1956	Wet	-47	-24	0	0	0	0	0	0	0	-72	-75	-49
1957	Above Normal	34	288	351	351	350	0	-6	0	-34	-34	81	158
1958	Wet	30	64	0	0	0	0	0	0	0	-60	-40	-24
1959	Below Normal	48	312	342	92	0	0	3	6	-129	-129	-70	102
1960	Dry	42	140	140	140	140	140	188	99	100	90	132	196
1961	Dry	107	107	107	107	0	0	-85	-85	-180	-148	-110	-18
1962	Below Normal	11	38	29	30	0	0	0	1	-52	37	74	78
1963	Wet	0	0	0	0	0	0	0	0	-5	-5	-2	-2
1964	Dry	49	191	181	126	134	133	133	130	83	-19	-67	-67
1965	Wet	-123	-122	0	0	0	0	0	0	-2	-2	-1	95
1966	Below Normal	106	294	278	51	0	0	63	66	-38	-38	73	141
1967	Wet	63	63	0	0	0	0	0	0	0	38	38	-50
1968	Below Normal	-1	234	260	260	0	0	0	0	-149	-99	-26	37
1969	Wet	-49	-49	-49	0	0	0	0	0	1	0	-10	0
1970	Wet	0	149	0	0	0	0	0	2	-145	-146	-87	-47
1971	Wet	-23	-53	0	0	0	0	-34	0	-30	-30	-62	23
1972	Below Normal	107	260	260	271	270	23	42	10	-38	0	14	15
1973	Above Normal	-3	0	0	0	0	0	0	-1	-98	-52	-49	31
1974	Wet	24	0	0	0	0	0	0	0	-1	3	3	0
1975	Wet	148	361	352	343	36	0	0	0	4	-12	-8	-5
1976	Critical	0	145	158	130	130	130	127	131	110	79	27	27
1977	Critical	28	90	170	114	113	85	114	117	84	76	0	12
1978	Above Normal	0	-12	-12	-12	0	0	0	0	0	-43	-52	1
1979	Below Normal	-35	227	306	306	305	305	304	303	160	137	155	150
1980	Above Normal	84	77	77	0	0	-5	-5	-6	30	28	26	4
1981	Dry	-13	180	180	180	180	180	178	172	171	218	154	243
1982	Wet	243	3	0	0	0	0	0	0	0	-25	-26	-66
1983	Wet	0	0	0	0	0	0	0	0	0	0	0	0
1984	Wet	0	0	0	0	0	0	0	0	-98	-98	-184	-183
1985	Dry	-85	-85	-75	-58	-58	-58	-36	5	-11	-69	103	130
1986	Wet	61	83	83	83	0	0	15	15	14	128	103	57
1987	Dry	53	114	114	114	122	122	99	-2	45	47	-53	-24
1988	Critical	-16	-13	-13	-13	209	131	120	89	35	155	35	31
1989	Dry	35	35	35	13	13	13	19	7	-69	57	150	140
1990	Critical	84	84	89	89	89	89	89	82	44	97	126	141
1991	Critical	161	126	127	-86	12	12	12	12	13	35	163	190
1992	Critical	181	53	66	66	65	65	65	99	100	243	175	88
1993	Above Normal	0	0	16	16	17	28	18	0	0	-9	-203	-10
1994	Critical	31	257	251	245	239	239	236	235	267	311	350	348
1995	Wet	336	335	335	0	0	0	0	0	0	-2	0	-74
1996	Wet	-30	245	118	16	0	0	0	0	0	-6	-6	-25
1997	Wet	71	293	0	0	0	0	4	-1	3	3	10	97
1998	Wet	123	175	175	0	0	0	0	0	0	0	0	0
1999	Wet	0	-26	0	0	0	0	0	0	-1	91	-8	92
2000	Above Normal	105	172	207	312	0	0	1	-4	-82	-73	-45	55
2001	Dry	113	367	435	435	426	416	399	338	166	223	157	180
2002	Dry	218	242	0	0	0	0	-34	-81	-198	-182	-132	-126
2003	Above Normal	-107	-93	0	0	0	0	0	0	-73	-36	14	14
Average:		25	93	84	58	46	31	29	22	-11	3	5	25
Minimum:		-229	-156	-144	-144	-144	-139	-139	-138	-256	-185	-203	-211
Maximum:		336	367	435	435	426	416	399	338	267	311	350	348
Wet:		33	92	47	16	1	0	-1	1	-10	-8	-16	-9
Above Normal:		20	104	119	88	49	2	-3	-5	-45	-37	-30	34
Below Normal:		-14	89	108	75	43	25	31	31	-18	-22	1	31
Dry:		28	99	93	86	82	77	66	37	-9	13	21	38
Critical:		53	78	86	62	87	69	66	59	28	82	65	64

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

Long-Term and Water Year-Type Average of Oroville Reservoir Under BA - No Action Alternative (Q5) and BA - Proposed Action (Q5)

Analysis Period	Average Storage (TAF)											
	October	November	December	January	February	March	April	May	June	July	August	September
Full Simulation Period												
BA - No Action Alternative (Q5)	1,399	1,390	1,565	1,830	2,146	2,387	2,654	2,749	2,602	2,118	1,817	1,512
BA - Proposed Action (Q5)	1,480	1,470	1,644	1,912	2,209	2,435	2,695	2,793	2,593	2,108	1,815	1,601
Difference	81	80	79	81	64	47	41	43	-9	-10	-2	89
Percent Difference	6%	6%	5%	4%	3%	2%	2%	2%	0%	0%	0%	6%
Water Year-Types												
Wet												
BA - No Action Alternative (Q5)	1,637	1,690	2,145	2,518	2,831	2,945	3,298	3,486	3,438	2,954	2,613	2,100
BA - Proposed Action (Q5)	1,705	1,758	2,208	2,598	2,859	2,945	3,298	3,488	3,381	2,874	2,546	2,165
Difference	68	69	64	80	28	0	0	1	-57	-79	-66	65
Percent Difference	4%	4%	3%	3%	1%	0%	0%	0%	-2%	-3%	-3%	3%
Above Normal												
BA - No Action Alternative (Q5)	1,399	1,409	1,531	2,000	2,514	2,889	3,258	3,400	3,245	2,620	2,144	1,681
BA - Proposed Action (Q5)	1,526	1,547	1,661	2,125	2,610	2,920	3,268	3,412	3,142	2,511	2,060	1,724
Difference	127	138	129	126	96	31	10	12	-103	-109	-84	43
Percent Difference	9%	10%	8%	6%	4%	1%	0%	0%	-3%	-4%	-4%	3%
Below Normal												
BA - No Action Alternative (Q5)	1,373	1,315	1,350	1,592	2,000	2,322	2,686	2,843	2,638	2,032	1,600	1,331
BA - Proposed Action (Q5)	1,463	1,402	1,449	1,681	2,098	2,439	2,799	2,953	2,653	2,042	1,676	1,569
Difference	90	87	99	89	98	116	113	111	15	10	77	237
Percent Difference	7%	7%	7%	6%	5%	5%	4%	4%	1%	0%	5%	18%
Dry												
BA - No Action Alternative (Q5)	1,210	1,177	1,224	1,343	1,598	1,938	2,109	2,088	1,848	1,373	1,216	1,116
BA - Proposed Action (Q5)	1,293	1,249	1,286	1,404	1,664	2,001	2,170	2,157	1,911	1,466	1,264	1,189
Difference	83	72	62	61	66	63	61	69	63	93	48	74
Percent Difference	7%	6%	5%	5%	4%	3%	3%	3%	3%	7%	4%	7%
Critical												
BA - No Action Alternative (Q5)	1,196	1,130	1,106	1,180	1,283	1,427	1,432	1,385	1,236	1,024	923	875
BA - Proposed Action (Q5)	1,246	1,180	1,172	1,242	1,349	1,489	1,481	1,434	1,292	1,085	974	910
Difference	50	50	66	62	66	61	50	49	56	61	51	35
Percent Difference	4%	4%	6%	5%	5%	4%	3%	4%	5%	6%	6%	4%

Oroville Reservoir

BA - No Action Alternative (Q5)

Statistic	End-of-Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,111	2,147	2,748	2,788	2,923	3,051	3,353	3,538	3,538	3,042	2,787	2,251
20%	1,792	1,814	2,043	2,682	2,788	2,964	3,300	3,538	3,538	2,965	2,525	1,966
30%	1,622	1,664	1,806	2,292	2,788	2,918	3,272	3,487	3,360	2,747	2,334	1,876
40%	1,376	1,393	1,591	1,943	2,564	2,788	3,208	3,318	3,110	2,474	1,986	1,526
50%	1,257	1,249	1,391	1,703	2,176	2,646	2,925	3,018	2,831	2,201	1,718	1,331
60%	1,165	1,136	1,252	1,594	1,885	2,255	2,599	2,690	2,446	1,819	1,507	1,254
70%	1,096	1,019	1,089	1,278	1,675	1,999	2,195	2,281	2,012	1,421	1,246	1,195
80%	993	954	971	1,141	1,416	1,703	1,859	1,834	1,667	1,241	1,122	1,059
90%	903	886	884	1,006	1,240	1,432	1,643	1,498	1,258	1,089	963	880
Long Term												
Full Simulation Period	1,399	1,390	1,565	1,830	2,146	2,387	2,654	2,749	2,602	2,118	1,817	1,512
Water Year Types												
Wet	1,637	1,690	2,145	2,518	2,831	2,945	3,298	3,486	3,438	2,954	2,613	2,100
Above Normal	1,399	1,409	1,531	2,000	2,514	2,889	3,258	3,400	3,245	2,620	2,144	1,681
Below Normal	1,373	1,315	1,350	1,592	2,000	2,322	2,686	2,843	2,638	2,032	1,600	1,331
Dry	1,210	1,177	1,224	1,343	1,598	1,938	2,109	2,088	1,848	1,373	1,216	1,116
Critical	1,196	1,130	1,106	1,180	1,283	1,427	1,432	1,385	1,236	1,024	923	875

BA - Proposed Action (Q5)

Statistic	End-of-Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,153	2,202	2,760	2,803	2,924	3,056	3,353	3,538	3,538	3,008	2,651	2,261
20%	1,930	1,962	2,186	2,788	2,974	3,300	3,538	3,535	2,900	2,450	2,101	
30%	1,775	1,764	1,990	2,358	2,788	2,936	3,275	3,487	3,223	2,653	2,220	1,870
40%	1,526	1,498	1,729	2,209	2,664	2,813	3,216	3,381	3,002	2,386	2,049	1,736
50%	1,378	1,355	1,524	1,875	2,449	2,777	3,044	3,078	2,798	2,166	1,802	1,545
60%	1,248	1,237	1,256	1,602	1,973	2,324	2,639	2,778	2,419	1,859	1,513	1,379
70%	1,158	1,113	1,196	1,337	1,710	2,127	2,282	2,296	2,077	1,607	1,263	1,243
80%	1,053	995	1,072	1,217	1,451	1,719	1,818	1,895	1,733	1,287	1,212	1,131
90%	914	919	918	1,054	1,252	1,490	1,635	1,552	1,321	1,167	1,028	962
Long Term												
Full Simulation Period	1,480	1,470	1,644	1,912	2,209	2,435	2,695	2,793	2,593	2,108	1,815	1,601
Water Year Types												
Wet	1,705	1,758	2,208	2,598	2,859	2,945	3,298	3,488	3,381	2,874	2,546	2,165
Above Normal	1,526	1,547	1,661	2,125	2,610	2,920	3,268	3,412	3,142	2,511	2,060	1,724
Below Normal	1,463	1,402	1,449	1,681	2,098	2,439	2,799	2,953	2,653	2,042	1,676	1,569
Dry	1,293	1,249	1,286	1,404	1,664	2,001	2,170	2,157	1,911	1,466	1,264	1,189
Critical	1,246	1,180	1,172	1,242	1,349	1,489	1,481	1,434	1,292	1,085	974	910

BA - Proposed Action (Q5) Minus BA - No Action Alternative (Q5)

Statistic	End-of-Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	41	54	13	15	1	5	0	0	0	-34	-137	10
20%	138	147	144	106	0	10	0	0	-3	-65	-75	135
30%	154	100	184	66	0	18	2	0	-137	-94	-114	-6
40%	150	105	137	266	100	25	8	63	-108	-87	63	210
50%	121	107	133	172	272	132	120	60	-32	-35	84	213
60%	83	100	4	8	88	68	40	88	-26	39	6	125
70%	62	94	107	59	35	128	87	15	66	186	17	48
80%	59	41	101	76	35	16	-42	61	66	46	90	72
90%	11	33	34	47	12	59	-8	54	63	78	64	81
Long Term												
Full Simulation Period	81	80	79	81	64	47	41	43	-9	-10	-2	89
Water Year Types												
Wet	68	69	64	80	28	0	0	1	-57	-79	-66	65
Above Normal	127	138	129	126	96	31	10	12	-103	-109	-84	43
Below Normal	90	87	99	89	98	116	113	111	15	10	77	237
Dry	83	72	62	61	66	63	61	69	63	93	48	74
Critical	50	50	66	62	66	61	50	49	56	61	51	35

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

Oroville Reservoir (TAF)
BA - No Action Alternative (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September
1922	Above Normal	2,277	2,162	2,165	2,291	2,769	2,922	3,446	3,538	3,538	2,978	2,530	1,954
1923	Below Normal	1,766	1,671	1,871	2,141	2,275	2,482	2,818	2,917	2,744	2,129	1,612	1,269
1924	Critical	1,141	957	818	845	1,017	1,012	967	872	754	737	726	698
1925	Dry	707	754	824	973	1,635	1,914	2,196	2,263	2,053	1,592	1,420	1,264
1926	Dry	1,186	1,095	1,024	1,137	1,675	1,948	2,550	2,342	2,003	1,525	1,241	1,144
1927	Wet	1,073	1,292	1,252	1,508	2,788	2,999	3,396	3,538	3,518	2,869	2,368	1,885
1928	Above Normal	1,605	1,638	1,558	1,710	1,824	2,797	3,218	3,228	2,961	2,317	1,794	1,298
1929	Critical	1,163	1,009	938	967	1,116	1,251	1,239	1,209	1,088	900	768	738
1930	Dry	705	690	1,383	1,688	1,877	2,345	2,644	2,732	2,433	1,827	1,506	1,244
1931	Critical	1,158	1,066	1,004	1,115	1,243	1,389	1,294	1,244	1,127	932	790	760
1932	Dry	715	726	759	1,008	1,239	1,518	1,744	2,006	1,945	1,393	1,279	1,241
1933	Critical	1,112	967	917	1,001	1,110	1,104	1,156	1,156	1,050	847	751	718
1934	Critical	674	669	749	983	1,091	1,313	1,296	1,230	1,038	846	751	717
1935	Below Normal	669	718	782	1,046	1,252	1,543	2,599	3,007	2,703	2,120	1,670	1,290
1936	Below Normal	1,173	1,019	934	1,413	2,301	2,705	3,054	3,180	3,140	2,508	1,993	1,619
1937	Below Normal	1,286	1,142	1,029	1,038	1,280	1,710	2,109	2,382	2,013	1,568	1,249	1,179
1938	Wet	1,063	1,183	2,057	2,335	2,788	2,788	3,277	3,538	3,538	3,125	2,763	2,224
1939	Dry	2,054	1,956	1,822	1,891	1,991	2,159	2,105	1,954	1,737	1,383	1,242	1,162
1940	Above Normal	1,050	936	901	1,404	2,611	2,788	3,238	3,357	3,117	2,479	1,959	1,498
1941	Wet	1,267	1,173	1,767	2,427	2,788	2,918	3,334	3,538	3,538	3,007	2,574	1,997
1942	Wet	1,812	1,730	2,641	2,788	2,806	3,058	3,281	3,538	3,538	3,015	2,547	1,975
1943	Wet	1,750	1,761	2,019	2,788	2,890	2,937	3,350	3,454	3,357	2,715	2,212	1,628
1944	Dry	1,401	1,271	1,227	1,280	1,501	1,800	1,922	2,079	1,811	1,240	1,112	1,003
1945	Below Normal	905	944	1,092	1,250	1,912	2,229	2,475	2,633	2,443	1,835	1,346	1,234
1946	Below Normal	1,132	1,135	1,843	2,280	2,521	2,843	3,147	3,294	3,078	2,450	1,925	1,439
1947	Dry	1,248	1,197	1,225	1,253	1,489	1,822	1,961	1,777	1,563	1,240	1,116	1,005
1948	Below Normal	1,011	983	961	1,248	1,300	1,490	2,185	2,666	2,772	2,210	1,680	1,339
1949	Dry	1,207	1,071	1,017	1,037	1,129	1,406	1,679	1,801	1,559	1,241	1,119	1,023
1950	Below Normal	934	885	867	1,144	1,669	2,146	2,601	2,842	2,699	2,124	1,756	1,389
1951	Above Normal	1,387	1,923	2,829	2,846	2,925	3,105	3,319	3,481	3,275	2,636	2,133	1,675
1952	Wet	1,501	1,411	2,033	2,605	2,832	2,988	3,452	3,538	3,538	3,273	3,023	2,490
1953	Wet	2,256	2,161	2,409	2,809	3,095	3,059	3,284	3,538	3,538	2,956	2,463	1,891
1954	Above Normal	1,686	1,664	1,511	1,714	2,125	2,689	3,292	3,324	3,082	2,445	1,959	1,503
1955	Dry	1,271	1,237	1,254	1,383	1,501	1,649	1,714	1,827	1,665	1,323	1,216	1,138
1956	Wet	996	892	2,694	2,788	2,788	3,018	3,427	3,538	3,538	3,013	2,558	2,003
1957	Above Normal	1,846	1,767	1,518	1,602	2,077	2,554	2,715	2,968	2,809	2,170	1,679	1,250
1958	Wet	1,237	1,146	1,282	1,600	2,788	2,788	3,235	3,538	3,538	3,039	2,822	2,262
1959	Below Normal	2,029	1,921	1,703	2,022	2,395	2,653	2,719	2,690	2,490	1,817	1,304	1,239
1960	Dry	1,097	950	877	1,007	1,682	2,250	2,363	2,393	2,126	1,503	1,281	1,215
1961	Dry	1,080	1,027	1,058	1,159	1,431	1,700	1,807	1,828	1,668	1,240	1,095	1,004
1962	Below Normal	924	890	959	1,083	1,949	2,390	2,866	3,030	2,853	2,192	1,675	1,322
1963	Wet	1,994	2,004	2,299	2,612	3,057	2,927	3,180	3,538	3,356	2,745	2,269	1,705
1964	Dry	1,489	1,583	1,557	1,706	1,860	2,005	2,003	1,967	1,839	1,240	1,153	1,073
1965	Wet	970	937	2,762	2,788	2,997	3,096	3,354	3,538	3,413	2,786	2,436	1,877
1966	Below Normal	1,691	1,738	1,804	2,003	2,126	2,372	2,630	2,549	2,267	1,636	1,241	1,129
1967	Wet	972	1,036	1,399	2,182	2,700	2,847	3,236	3,538	3,538	3,311	2,993	2,440
1968	Below Normal	2,225	2,115	2,021	2,207	2,913	3,036	3,138	3,155	2,880	2,221	1,782	1,419
1969	Wet	1,315	1,275	1,467	2,788	2,788	3,027	3,470	3,538	3,538	3,043	2,804	2,283
1970	Wet	2,136	2,079	2,714	2,787	2,787	3,163	3,210	3,221	2,983	2,300	1,833	1,263
1971	Wet	1,230	1,319	1,745	2,156	2,494	3,162	3,433	3,538	3,538	2,988	2,521	1,960
1972	Below Normal	1,777	1,693	1,754	1,936	2,226	2,638	2,772	2,763	2,485	1,832	1,511	1,448
1973	Above Normal	1,329	1,413	1,633	2,301	2,788	2,951	3,275	3,538	3,233	2,568	2,153	1,704
1974	Wet	1,525	2,413	2,800	2,870	3,009	2,788	3,292	3,538	3,524	3,001	2,641	2,098
1975	Wet	1,884	1,825	1,817	1,866	2,331	2,833	3,320	3,538	3,538	2,991	2,709	2,154
1976	Critical	1,987	1,973	1,834	1,902	2,023	2,126	2,106	1,975	1,804	1,338	1,246	1,251
1977	Critical	1,166	1,044	920	870	850	827	756	722	666	603	591	587
1978	Above Normal	566	588	821	1,945	2,575	2,944	3,218	3,460	3,409	2,794	2,345	1,959
1979	Below Normal	1,701	1,556	1,274	1,482	1,878	2,278	2,489	2,692	2,364	1,804	1,649	1,324
1980	Above Normal	1,312	1,260	1,319	2,507	2,788	3,028	3,272	3,392	3,316	2,764	2,332	1,876
1981	Dry	1,615	1,453	1,433	1,592	1,853	2,124	2,269	2,196	1,870	1,250	1,167	1,109
1982	Wet	1,164	2,238	2,788	2,943	2,987	2,936	3,303	3,538	3,538	3,052	2,798	2,361
1983	Wet	2,449	2,637	2,930	2,854	2,788	2,788	3,208	3,538	3,538	3,522	3,497	3,351
1984	Wet	3,122	2,950	2,788	3,091	3,078	3,120	3,336	3,443	3,230	2,583	2,194	1,618
1985	Dry	1,440	1,574	1,680	1,752	1,984	2,242	2,459	2,340	2,022	1,373	1,242	1,197
1986	Wet	1,099	998	1,031	1,343	2,917	2,788	3,091	3,124	3,037	2,378	1,951	1,507
1987	Dry	1,328	1,251	1,196	1,187	1,320	1,641	1,662	1,466	1,242	1,038	917	878
1988	Critical	914	1,015	1,338	1,623	1,641	1,708	1,719	1,660	1,458	1,241	1,116	1,038
1989	Dry	1,023	1,161	1,222	1,253	1,392	2,622	2,984	2,844	2,455	1,817	1,535	1,273
1990	Critical	1,230	1,246	1,252	1,339	1,436	1,705	1,670	1,664	1,550	1,240	1,124	1,031
1991	Critical	989	960	930	900	867	1,251	1,423	1,544	1,382	1,230	1,117	1,086
1992	Critical	1,040	990	977	1,006	1,257	1,504	1,660	1,509	1,297	1,128	974	886
1993	Above Normal	902	866	1,066	1,699	2,371	2,964	3,456	3,538	3,538	2,938	2,459	1,974
1994	Critical	1,779	1,664	1,600	1,613	1,744	1,935	1,894	1,837	1,617	1,241	1,116	988
1995	Wet	924	935	1,097	2,842	2,788	2,788	3,208	3,538	3,538	3,480	3,305	2,777
1996	Wet	2,538	2,423	2,619	2,788	2,788	2,995	3,352	3,538	3,504	2,907	2,549	2,016
1997	Wet	1,828	1,807	2,788	2,788	2,952	3,123	3,258	3,223	3,016	2,438	2,112	1,531
1998	Wet	1,325	1,305	1,452	2,339	2,788	2,817	3,298	3,538	3,538	3,519	3,495	3,351
1999	Wet	3,136	3,008	3,107	2,788	2,788	2,817	3,165	3,416	3,387	2,746	2,496	1,944
2000	Above Normal	1,712	1,622	1,367	1,623	2,624	2,964	3,298	3,436	3,145	2,491	2,003	1,5

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

Oroville Reservoir (TAF)
BA - Proposed Action (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September
1922	Above Normal	2,277	2,162	2,165	2,291	2,769	2,922	3,446	3,538	3,538	2,920	2,431	2,070
1923	Below Normal	1,882	1,787	1,988	2,257	2,396	2,602	2,938	3,036	2,968	2,268	1,675	1,611
1924	Critical	1,397	1,251	1,112	1,140	1,272	1,251	1,222	1,126	969	804	751	723
1925	Dry	732	779	849	999	1,661	1,939	2,221	2,290	2,169	1,851	1,589	1,523
1926	Dry	1,363	1,271	1,241	1,314	1,893	2,107	2,709	2,589	2,229	1,679	1,366	1,244
1927	Wet	1,162	1,357	1,270	1,547	2,788	2,999	3,396	3,538	3,494	2,865	2,382	2,115
1928	Above Normal	1,833	1,839	1,760	1,912	2,027	2,797	3,218	3,226	2,756	2,114	1,808	1,486
1929	Critical	1,248	1,113	1,042	1,071	1,220	1,324	1,303	1,273	1,182	993	850	819
1930	Dry	786	770	1,464	1,769	1,958	2,427	2,725	2,781	2,403	1,891	1,516	1,441
1931	Critical	1,248	1,154	1,092	1,202	1,291	1,478	1,360	1,288	1,194	1,000	868	772
1932	Dry	727	736	759	1,008	1,238	1,518	1,744	2,005	1,926	1,752	1,489	1,361
1933	Critical	1,248	1,107	1,057	1,142	1,251	1,245	1,257	1,257	1,190	986	863	757
1934	Critical	713	702	759	1,002	1,113	1,335	1,293	1,227	1,036	844	751	717
1935	Below Normal	669	718	782	1,046	1,252	1,543	2,599	3,006	2,608	2,084	1,797	1,657
1936	Below Normal	1,356	1,241	1,156	1,636	2,523	2,926	3,275	3,400	3,148	2,505	2,217	2,109
1937	Below Normal	1,775	1,544	1,253	1,257	1,540	1,969	2,368	2,640	2,332	1,804	1,512	1,363
1938	Wet	1,248	1,303	2,199	2,472	2,788	2,788	3,277	3,538	3,538	3,075	2,618	2,079
1939	Dry	1,909	1,810	1,696	1,764	1,864	2,032	1,947	1,788	1,575	1,272	1,171	1,092
1940	Above Normal	1,002	918	903	1,408	2,615	2,788	3,238	3,357	3,060	2,422	1,990	1,749
1941	Wet	1,516	1,373	2,007	2,667	2,788	2,918	3,334	3,538	3,538	2,913	2,316	1,739
1942	Wet	1,553	1,470	2,381	2,788	2,806	3,058	3,281	3,538	3,538	2,917	2,588	2,243
1943	Wet	2,050	2,059	2,317	2,788	2,890	2,937	3,350	3,454	3,421	2,778	2,166	1,739
1944	Dry	1,513	1,383	1,252	1,305	1,526	1,825	1,948	2,087	1,925	1,417	1,242	1,133
1945	Below Normal	1,014	1,028	1,157	1,267	1,969	2,286	2,532	2,690	2,379	1,706	1,387	1,289
1946	Below Normal	1,226	1,229	1,937	2,374	2,615	2,937	3,240	3,387	2,929	2,389	2,128	1,864
1947	Dry	1,556	1,475	1,504	1,537	1,809	2,142	2,280	2,135	1,986	1,286	1,195	1,083
1948	Below Normal	1,089	1,060	1,039	1,286	1,378	1,568	2,263	2,744	2,850	2,213	1,615	1,520
1949	Dry	1,280	1,184	1,130	1,151	1,243	1,520	1,792	1,914	1,754	1,536	1,264	1,204
1950	Below Normal	1,069	960	902	1,165	1,691	2,167	2,622	2,863	2,463	1,890	1,619	1,548
1951	Above Normal	1,548	2,083	2,866	2,846	2,925	3,105	3,319	3,481	3,040	2,474	2,155	1,954
1952	Wet	1,780	1,690	2,312	2,788	2,832	2,988	3,452	3,538	3,538	3,085	2,670	2,097
1953	Wet	1,864	1,768	2,015	2,809	3,095	3,059	3,284	3,538	3,538	3,042	2,797	2,446
1954	Above Normal	2,237	2,214	2,065	2,269	2,681	2,943	3,292	3,351	2,920	2,326	1,826	1,583
1955	Dry	1,351	1,251	1,284	1,414	1,531	1,680	1,745	1,858	1,701	1,467	1,261	1,223
1956	Wet	1,060	929	2,718	2,788	2,788	3,018	3,427	3,538	3,538	2,944	2,421	2,107
1957	Above Normal	1,950	1,871	1,637	1,721	2,196	2,673	2,834	3,087	2,845	2,199	1,697	1,508
1958	Wet	1,455	1,367	1,544	1,862	2,788	2,788	3,235	3,538	3,538	2,944	2,604	2,305
1959	Below Normal	2,071	1,963	1,816	2,135	2,509	2,767	2,833	2,778	2,582	1,909	1,262	1,239
1960	Dry	1,082	934	861	991	1,665	2,234	2,385	2,415	2,220	1,613	1,315	1,244
1961	Dry	1,108	1,054	1,086	1,187	1,459	1,727	1,835	1,866	1,698	1,242	1,139	1,043
1962	Below Normal	963	928	997	1,121	1,987	2,427	2,903	3,067	2,787	2,103	1,725	1,624
1963	Wet	2,295	2,305	2,600	2,913	3,057	2,927	3,180	3,538	3,161	2,532	2,252	1,929
1964	Dry	1,713	1,763	1,737	1,887	2,041	2,186	2,140	2,113	1,981	1,323	1,231	1,151
1965	Wet	1,027	970	2,778	2,788	2,997	3,096	3,354	3,538	3,220	2,663	2,548	2,232
1966	Below Normal	2,044	2,091	2,157	2,356	2,480	2,726	2,984	2,909	2,475	1,844	1,447	1,317
1967	Wet	1,176	1,219	1,566	2,347	2,865	2,847	3,236	3,538	3,538	3,139	2,655	2,075
1968	Below Normal	1,858	1,747	1,737	1,922	2,628	3,006	3,064	3,069	2,625	2,070	1,856	1,746
1969	Wet	1,527	1,485	1,678	2,788	2,788	3,027	3,470	3,538	3,538	3,035	2,641	2,113
1970	Wet	1,967	1,910	2,545	2,787	2,787	3,163	3,210	3,221	2,731	2,180	1,961	1,611
1971	Wet	1,393	1,520	1,945	2,356	2,693	3,162	3,433	3,538	3,534	2,942	2,704	2,373
1972	Below Normal	2,188	2,104	2,166	2,348	2,639	3,051	3,185	3,179	2,906	2,204	1,852	1,788
1973	Above Normal	1,670	1,753	1,974	2,642	2,788	2,951	3,275	3,538	3,010	2,493	2,301	2,065
1974	Wet	1,894	2,781	2,800	2,870	3,009	2,788	3,292	3,538	3,252	2,865	2,743	2,442
1975	Wet	2,228	2,174	2,178	2,228	2,693	2,833	3,320	3,538	3,538	2,924	2,479	2,190
1976	Critical	2,061	2,053	2,014	2,083	2,203	2,307	2,286	2,133	1,963	1,609	1,365	1,334
1977	Critical	1,248	1,128	1,004	954	935	912	773	739	683	620	608	604
1978	Above Normal	583	605	838	1,962	2,592	2,944	3,218	3,459	3,409	2,678	2,073	1,541
1979	Below Normal	1,282	1,233	1,200	1,369	1,765	2,164	2,375	2,577	2,088	1,595	1,375	1,287
1980	Above Normal	1,248	1,217	1,252	2,423	2,788	3,028	3,272	3,392	3,316	2,653	2,062	1,785
1981	Dry	1,524	1,362	1,438	1,597	1,858	2,129	2,274	2,197	1,800	1,260	1,169	1,110
1982	Wet	1,165	2,239	2,788	2,943	2,987	2,936	3,303	3,538	3,538	2,910	2,491	1,974
1983	Wet	2,062	2,250	2,789	2,854	2,788	2,788	3,208	3,538	3,538	3,522	3,497	3,351
1984	Wet	3,163	2,950	2,788	3,091	3,078	3,120	3,336	3,443	3,105	2,459	2,092	1,745
1985	Dry	1,588	1,722	1,828	1,900	2,132	2,391	2,608	2,493	2,133	1,465	1,242	1,199
1986	Wet	1,103	1,002	1,036	1,348	2,922	2,788	3,091	3,124	3,037	2,376	1,808	1,540
1987	Dry	1,360	1,267	1,235	1,226	1,360	1,681	1,707	1,542	1,309	1,145	996	957
1988	Critical	976	1,050	1,357	1,635	1,712	1,780	1,791	1,760	1,557	1,338	1,242	1,162
1989	Dry	1,123	1,236	1,252	1,276	1,433	2,664	3,025	2,878	2,409	1,694	1,241	1,246
1990	Critical	1,248	1,245	1,252	1,339	1,436	1,705	1,649	1,643	1,537	1,245	1,176	1,083
1991	Critical	1,041	1,013	982	915	923	1,280	1,478	1,600	1,480	1,241	1,159	1,128
1992	Critical	1,059	985	954	974	1,252	1,473	1,629	1,481	1,263	1,094	947	849
1993	Above Normal	881	912	1,112	1,745	2,417	2,964	3,456	3,538	3,538	2,892	2,275	1,666
1994	Critical	1,470	1,353	1,439	1,452	1,582	1,773	1,733	1,676	1,457	1,241	1,106	973
1995	Wet	910	920	1,082	2,828	2,788	2,788	3,208	3,538	3,538	3,480	3,237	2,698
1996	Wet	2,458	2,343	2,539	2,788	2,788	2,995	3,352	3,538	3,504	2,874	2,409	2,106
1997	Wet	1,917	1,895	2,788	2,788	2,952	3,123	3,258	3,260	2,810	2,151	2,077	1,727
1998	Wet	1,520	1,501	1,648	2,535	2,788	2,817	3,298	3,538	3,538	3,524	3,500	3,050
1999	Wet	2,835	2,939	3,107	2,788	2,788	2,817	3,164	3,415	3,105	2,593	2,552	2,269
2000	Above Normal	2,034	1,961	1,693	1,950	2,856	2,964	3,298					

Oroville Reservoir (TAF)

Difference Between BA - Proposed Action (Q5) and BA - No Action Alternative (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September
1922	Above Normal	0	0	0	0	0	0	0	0	0	-59	-99	116
1923	Below Normal	116	116	116	116	120	120	120	119	224	139	62	342
1924	Critical	255	294	294	295	255	239	254	254	215	67	25	25
1925	Dry	25	25	26	26	26	26	25	27	115	259	169	259
1926	Dry	177	176	217	177	218	159	159	248	226	154	125	100
1927	Wet	89	65	17	39	0	0	0	0	-24	-4	14	230
1928	Above Normal	229	202	202	202	0	0	0	-2	-205	-203	14	189
1929	Critical	84	104	104	104	73	65	64	94	93	82	80	
1930	Dry	80	81	81	81	81	81	81	50	-30	64	10	197
1931	Critical	90	88	88	88	48	89	66	44	67	68	78	12
1932	Dry	12	10	0	0	0	0	0	0	-19	360	210	120
1933	Critical	136	140	140	140	141	141	101	101	140	139	112	39
1934	Critical	39	33	11	19	22	22	-3	-3	-2	-3	0	0
1935	Below Normal	0	0	0	0	0	0	0	-1	-95	-36	126	368
1936	Below Normal	182	222	222	222	222	222	221	221	8	-3	224	490
1937	Below Normal	489	402	223	219	259	259	259	258	320	237	263	184
1938	Wet	185	120	143	137	0	0	0	0	0	-50	-145	-145
1939	Dry	-145	-145	-127	-127	-127	-127	-158	-165	-161	-111	-71	-70
1940	Above Normal	-48	-18	2	5	5	0	0	-1	-58	-58	31	251
1941	Wet	249	200	240	240	0	0	0	0	0	-94	-259	
1942	Wet	-259	-260	-260	0	0	0	0	0	0	-98	41	268
1943	Wet	299	298	0	0	0	0	0	0	64	64	-46	111
1944	Dry	111	111	25	25	25	25	25	8	114	176	129	129
1945	Below Normal	109	84	66	17	57	57	57	57	-65	-129	41	54
1946	Below Normal	94	94	95	94	94	94	93	93	-149	-62	203	424
1947	Dry	308	279	279	283	320	320	320	359	423	46	79	78
1948	Below Normal	78	77	77	38	78	78	78	78	78	3	-65	181
1949	Dry	73	113	114	114	114	114	114	113	195	295	145	181
1950	Below Normal	135	75	34	21	21	21	21	21	-236	-234	-137	159
1951	Above Normal	160	160	37	0	0	0	0	0	-235	-162	22	279
1952	Wet	279	279	279	183	0	0	0	0	0	-188	-353	-393
1953	Wet	-393	-393	-394	0	-1	0	0	0	0	86	334	554
1954	Above Normal	551	550	554	555	555	254	0	27	-161	-120	-133	80
1955	Dry	80	15	30	31	31	31	31	31	36	144	45	85
1956	Wet	64	36	24	0	0	0	0	0	0	-68	-137	104
1957	Above Normal	104	104	119	119	119	119	119	119	36	30	18	258
1958	Wet	218	222	262	262	0	0	0	0	0	-95	-218	42
1959	Below Normal	42	42	113	114	114	114	113	88	92	91	-42	0
1960	Dry	-15	-16	-16	-16	-16	-16	22	22	94	110	34	29
1961	Dry	28	28	28	28	28	28	28	37	30	2	44	38
1962	Below Normal	39	38	37	38	38	37	37	36	-66	-89	50	302
1963	Wet	301	301	301	0	0	0	0	-195	-213	-17	225	
1964	Dry	224	181	181	181	181	181	137	146	142	82	78	78
1965	Wet	57	33	16	0	0	0	0	0	-193	-123	112	355
1966	Below Normal	353	353	353	353	354	354	354	360	208	208	206	187
1967	Wet	204	183	167	165	165	0	0	0	0	-172	-339	-365
1968	Below Normal	-367	-368	-284	-285	-285	-30	-73	-86	-255	-151	74	327
1969	Wet	212	211	210	0	0	0	0	0	0	-8	-162	-169
1970	Wet	-169	-169	-169	0	0	0	0	0	-253	-120	128	348
1971	Wet	164	201	200	199	198	0	0	0	-4	-46	183	412
1972	Below Normal	412	411	412	412	413	413	412	417	421	372	341	341
1973	Above Normal	340	341	341	342	0	0	0	0	-223	-74	148	361
1974	Wet	368	369	0	0	0	0	0	0	-272	-135	102	344
1975	Wet	343	348	361	362	362	0	0	0	0	-67	-231	36
1976	Critical	73	79	180	180	180	181	181	158	159	270	119	83
1977	Critical	82	84	84	84	84	84	17	17	17	17	17	17
1978	Above Normal	17	17	17	17	0	0	0	0	-1	-116	-272	-418
1979	Below Normal	-419	-323	-73	-114	-114	-114	-114	-114	-277	-209	-274	-36
1980	Above Normal	-64	-43	-66	-83	0	0	0	0	0	-111	-270	-91
1981	Dry	-91	-91	5	5	5	5	5	1	-70	10	2	2
1982	Wet	1	0	0	0	0	0	0	0	0	-142	-307	-387
1983	Wet	-387	-387	-141	0	0	0	0	0	0	0	0	0
1984	Wet	41	0	0	0	0	0	0	0	-124	-124	-102	128
1985	Dry	148	148	148	148	148	149	149	153	111	92	0	2
1986	Wet	3	5	5	5	5	0	0	0	-1	-2	-143	33
1987	Dry	32	16	40	40	40	40	45	76	68	108	79	79
1988	Critical	62	36	19	12	71	72	72	100	98	97	126	124
1989	Dry	100	74	31	22	41	41	41	34	-46	-123	-294	-27
1990	Critical	18	-1	0	0	0	0	-20	-20	-13	5	52	52
1991	Critical	52	52	52	15	56	29	56	56	97	11	43	43
1992	Critical	19	-5	-23	-32	-6	-32	-32	-28	-34	-34	-27	-37
1993	Above Normal	-21	45	46	46	45	0	0	0	0	-45	-184	-308
1994	Critical	-310	-311	-161	-161	-161	-161	-161	-161	-161	0	-10	-14
1995	Wet	-14	-14	-14	-14	0	0	0	0	0	0	-68	-79
1996	Wet	-79	-80	-80	0	0	0	0	0	0	-32	-140	90
1997	Wet	89	88	0	0	0	0	0	38	-206	-286	-35	196
1998	Wet	195	196	196	196	0	0	0	0	0	6	6	-301
1999	Wet	-301	-69	0	0	0	0	-1	-282	-153	56	325	
2000	Above Normal	323	339	326	327	232	0	0	0	-195	-194	42	244
2001	Dry	244	244	22	63	63	63	62	82	107	144	143	142
2002	Dry	106	57	26	14	14	14	14	13	-201	-138	-58	-92
2003	Above Normal	-70	-42	-29	-22	-22	0	-1	0	-197	-198	-331	-443
Average:													
Minimum:													
Maximum:													
Wet:													
Above Normal:													
Below Normal:													
Dry:													
Critical:													

Long-Term and Water Year-Type Average of Folsom Reservoir Under BA - No Action Alternative (Q5) and BA - Proposed Action (Q5)

Analysis Period	Average Storage (TAF)											
	October	November	December	January	February	March	April	May	June	July	August	September
Full Simulation Period												
BA - No Action Alternative (Q5)	408	394	439	461	489	589	712	820	764	591	524	455
BA - Proposed Action (Q5)	400	401	442	465	490	589	713	820	742	576	506	445
Difference	-8	7	3	4	1	0	1	0	-22	-16	-18	-11
Percent Difference	-2%	2%	1%	1%	0%	0%	0%	0%	-3%	-3%	-3%	-2%
Water Year-Types												
Wet												
BA - No Action Alternative (Q5)	451	441	521	524	515	631	785	951	941	795	706	574
BA - Proposed Action (Q5)	446	456	525	526	515	631	785	952	928	780	690	569
Difference	-6	15	4	2	0	0	0	1	-13	-15	-16	-6
Percent Difference	-1%	3%	1%	0%	0%	0%	0%	0%	-1%	-2%	-2%	-1%
Above Normal												
BA - No Action Alternative (Q5)	376	352	404	497	530	640	786	945	889	636	574	487
BA - Proposed Action (Q5)	383	374	421	514	538	640	786	945	864	636	571	494
Difference	7	22	17	17	8	0	0	0	-24	0	-4	7
Percent Difference	2%	6%	4%	3%	2%	0%	0%	0%	-3%	0%	-1%	2%
Below Normal												
BA - No Action Alternative (Q5)	430	414	436	479	541	626	779	908	855	616	549	515
BA - Proposed Action (Q5)	404	408	430	489	543	628	779	909	794	583	512	482
Difference	-25	-6	-5	10	2	2	0	1	-61	-33	-37	-32
Percent Difference	-6%	-1%	-1%	2%	0%	0%	0%	0%	-7%	-5%	-7%	-6%
Dry												
BA - No Action Alternative (Q5)	376	375	415	418	477	584	687	735	620	457	406	384
BA - Proposed Action (Q5)	376	378	419	424	482	586	690	734	593	423	376	358
Difference	0	3	4	5	5	2	3	-1	-27	-34	-31	-26
Percent Difference	0%	1%	1%	1%	1%	0%	0%	0%	-4%	-7%	-8%	-7%
Critical												
BA - No Action Alternative (Q5)	365	335	336	330	352	410	440	437	367	279	224	203
BA - Proposed Action (Q5)	349	330	330	319	341	404	440	434	376	293	231	213
Difference	-16	-5	-6	-11	-11	-5	0	-3	10	14	7	10
Percent Difference	-4%	-2%	-2%	-3%	-3%	-1%	0%	-1%	3%	5%	3%	5%

Folsom Reservoir

BA - No Action Alternative (Q5)

Statistic	End-of-Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	592	546	567	567	567	661	792	967	967	915	792	670
20%	544	495	567	565	565	656	792	967	967	835	760	602
30%	498	461	538	557	558	652	792	967	967	742	686	562
40%	448	426	497	541	553	646	792	967	939	667	609	522
50%	411	407	446	475	530	633	792	953	872	592	514	447
60%	352	393	417	448	494	621	789	859	758	520	451	399
70%	329	352	392	423	449	593	734	749	671	423	376	374
80%	290	308	346	367	410	531	613	655	540	379	349	324
90%	221	228	236	289	384	431	451	468	420	305	221	220
Long Term												
Full Simulation Period	408	394	439	461	489	589	712	820	764	591	524	455
Water Year Types												
Wet	451	441	521	524	515	631	785	951	941	795	706	574
Above Normal	376	352	404	497	530	640	786	945	889	636	574	487
Below Normal	430	414	436	479	541	626	779	908	855	616	549	515
Dry	376	375	415	418	477	584	687	735	620	457	406	384
Critical	365	335	336	330	352	410	440	437	367	279	224	203

BA - Proposed Action (Q5)

Statistic	End-of-Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	581	550	567	567	567	661	792	967	967	863	781	625
20%	538	513	567	567	566	656	792	967	967	788	702	589
30%	478	481	554	562	560	652	792	967	957	725	632	550
40%	436	448	511	550	556	646	792	967	894	657	574	500
50%	398	410	471	507	542	636	792	965	784	581	525	476
60%	371	375	412	449	499	621	785	862	727	528	471	421
70%	322	351	373	425	453	593	734	761	625	429	388	364
80%	286	310	321	360	419	529	634	641	514	369	321	324
90%	203	243	243	275	361	460	469	483	391	298	202	191
Long Term												
Full Simulation Period	400	401	442	465	490	589	713	820	742	576	506	445
Water Year Types												
Wet	446	456	525	526	515	631	785	952	928	780	690	569
Above Normal	383	374	421	514	538	640	786	945	864	636	571	494
Below Normal	404	408	430	489	543	628	779	909	794	583	512	482
Dry	376	378	419	424	482	586	690	734	593	423	376	358
Critical	349	330	330	319	341	404	440	434	376	293	231	213

BA - Proposed Action (Q5) Minus BA - No Action Alternative (Q5)

Statistic	End-of-Month Storage (TAF)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-11	4	0	0	0	0	0	0	0	-52	-11	-45
20%	-6	18	0	2	1	0	0	0	0	-46	-57	-14
30%	-20	19	16	4	2	0	0	0	-10	-17	-54	-12
40%	-12	22	14	9	3	0	0	0	-44	-11	-35	-22
50%	-13	3	25	32	13	2	0	11	-88	-10	11	29
60%	20	-18	-5	1	5	0	-4	2	-31	8	20	23
70%	-7	-1	-19	2	4	0	0	11	-46	6	12	-10
80%	-4	2	-26	-7	9	-1	20	-14	-27	-10	-28	0
90%	-18	15	7	-14	-23	29	18	15	-29	-7	-19	-29
Long Term												
Full Simulation Period	-8	7	3	4	1	0	1	0	-22	-16	-18	-11
Water Year Types												
Wet	-6	15	4	2	0	0	0	1	-13	-15	-16	-6
Above Normal	7	22	17	17	8	0	0	0	-24	0	-4	7
Below Normal	-25	-6	-5	10	2	2	0	1	-61	-33	-37	-32
Dry	0	3	4	5	5	2	3	-1	-27	-34	-31	-26
Critical	-16	-5	-6	-11	-11	-5	0	-3	10	14	7	10

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

Folsom Reservoir (TAF)
BA - No Action Alternative (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September
1922	Above Normal	409	362	420	431	567	662	792	967	967	830	774	526
1923	Below Normal	445	396	567	567	564	643	792	967	960	733	667	629
1924	Critical	538	482	426	361	418	405	432	438	381	339	306	273
1925	Dry	285	325	392	454	567	656	792	967	783	572	521	484
1926	Dry	431	390	374	327	481	595	792	736	550	392	358	358
1927	Wet	318	494	567	565	553	647	792	967	960	689	611	499
1928	Above Normal	449	478	497	499	515	635	785	880	770	459	416	380
1929	Critical	322	305	297	261	275	326	393	461	433	357	315	294
1930	Dry	264	260	463	567	567	659	792	833	669	444	423	410
1931	Critical	320	311	264	222	200	269	310	339	329	291	184	94
1932	Dry	90	94	213	314	567	664	784	967	961	910	792	666
1933	Critical	595	522	477	423	382	399	363	408	288	255	90	90
1934	Critical	90	98	212	319	410	536	502	349	307	135	90	90
1935	Below Normal	90	144	188	297	392	474	792	967	967	860	751	711
1936	Below Normal	592	567	540	567	562	651	792	967	967	728	683	653
1937	Below Normal	545	491	457	417	567	664	792	967	941	691	638	592
1938	Wet	541	547	567	567	567	662	792	967	967	925	792	752
1939	Dry	592	474	446	395	369	484	570	548	466	225	191	205
1940	Above Normal	215	220	235	567	557	626	792	967	873	597	484	396
1941	Wet	346	349	567	567	566	658	792	967	967	869	792	569
1942	Wet	516	402	567	564	556	650	792	967	967	865	792	547
1943	Wet	468	409	567	556	529	625	792	923	915	651	582	437
1944	Dry	379	345	313	285	336	477	546	664	557	426	365	324
1945	Below Normal	296	410	527	559	558	656	792	967	872	622	564	501
1946	Below Normal	473	567	567	564	558	649	792	967	875	586	484	397
1947	Dry	345	399	446	410	473	651	756	687	538	377	361	358
1948	Below Normal	347	351	343	427	429	439	792	967	961	850	710	671
1949	Dry	598	556	542	486	479	644	792	953	827	614	546	505
1950	Below Normal	446	413	376	567	565	658	792	967	967	758	681	639
1951	Above Normal	592	449	367	384	407	599	792	962	878	576	505	430
1952	Wet	356	412	567	567	566	661	792	967	967	942	792	627
1953	Wet	563	460	533	566	560	629	792	967	967	834	722	606
1954	Above Normal	495	441	432	446	532	656	792	851	770	458	421	385
1955	Dry	327	313	404	476	495	538	621	750	671	511	447	406
1956	Wet	350	332	524	460	458	616	792	967	967	842	785	718
1957	Above Normal	521	412	400	364	541	652	732	954	940	668	602	549
1958	Wet	512	505	561	567	557	656	792	967	967	917	792	723
1959	Below Normal	564	453	416	457	567	660	723	729	678	351	308	321
1960	Dry	280	245	219	223	512	654	696	738	693	522	447	423
1961	Dry	360	352	356	304	311	360	417	456	416	201	170	182
1962	Below Normal	179	209	248	253	567	664	792	910	899	608	508	468
1963	Wet	707	567	567	544	499	629	792	967	967	702	634	592
1964	Dry	469	502	538	567	567	566	633	694	621	475	422	381
1965	Wet	330	366	428	425	443	612	792	967	967	741	708	533
1966	Below Normal	474	497	523	553	563	661	792	805	743	422	397	398
1967	Wet	350	426	567	563	552	636	792	967	967	934	792	600
1968	Below Normal	575	481	485	513	547	640	736	762	699	380	372	374
1969	Wet	331	381	508	543	527	637	792	967	967	937	792	592
1970	Wet	577	496	567	453	446	611	686	743	681	398	350	270
1971	Wet	256	426	567	567	558	648	792	951	967	783	723	550
1972	Below Normal	496	400	472	493	567	646	734	809	726	461	417	386
1973	Above Normal	342	403	558	559	555	652	792	967	799	520	465	437
1974	Wet	404	567	567	505	499	622	792	967	967	817	773	592
1975	Wet	544	446	445	442	567	662	792	967	957	835	787	700
1976	Critical	592	532	534	469	421	428	427	437	411	382	359	332
1977	Critical	308	283	239	224	207	185	158	145	111	90	90	90
1978	Above Normal	90	94	239	567	567	657	792	967	967	718	643	561
1979	Below Normal	493	418	388	474	567	657	792	967	717	570	503	465
1980	Above Normal	438	482	552	481	457	621	792	967	967	800	734	592
1981	Dry	538	437	420	423	425	563	641	640	542	411	377	370
1982	Wet	358	546	433	459	402	590	792	967	967	905	792	667
1983	Wet	712	565	565	556	543	628	792	967	967	942	792	752
1984	Wet	712	472	406	427	458	615	767	967	877	611	548	403
1985	Dry	373	510	567	545	567	662	792	821	579	371	347	348
1986	Wet	308	353	496	551	440	593	792	946	906	639	580	437
1987	Dry	414	393	387	361	410	525	569	530	441	365	312	306
1988	Critical	270	264	335	442	449	475	503	483	431	371	318	294
1989	Dry	258	351	417	448	502	642	782	776	576	401	344	324
1990	Critical	329	375	402	448	478	590	663	668	561	424	370	362
1991	Critical	294	259	215	200	190	332	431	500	443	173	180	176
1992	Critical	190	134	185	206	403	534	600	484	230	190	90	90
1993	Above Normal	90	90	219	567	553	637	792	967	967	809	747	595
1994	Critical	537	459	448	384	388	437	497	530	475	338	291	255
1995	Wet	233	274	407	546	530	618	792	967	967	942	792	633
1996	Wet	581	450	566	557	494	621	792	967	967	783	720	543
1997	Wet	421	360	512	370	394	591	747	858	794	528	467	324
1998	Wet	283	298	348	567	555	646	792	967	967	936	792	744
1999	Wet	655	567	567	560	560	654	788	967	967	704	655	527
2000	Above Normal	450	394	363	535	558	656	792	920	835	536	485	456
2001	Dry	413	395	403	379	402	518	602	600	506	420	370	375
2002	Dry	358	412	567	567	563	655	792	865	755	587	520	481
2003	Above Normal	421	405	567	562	551	632	792	967	933	665	617	533
Average:		408	394	439	461	489	589	712	820	764	591	524	455
Minimum:		90	90	185	200	190	185	158	145	111	90	90	90
Maximum:		712	567	567	567	664	792	967	967	967	942	792	752
Wet:		451	441	521	524	515	631	785	951	941	795	706	574
Above Normal:		376	352	404	497	530	640	786	945	889	636	574	487
Below Normal:		430	414	436	479	541	626	779	908	855	616	549	515
Dry:		376	375	415	418	477	584	687	735	620	457	406	384
Critical:		365	335	336	330	352	410	440	437	367	279	224	203

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

Folsom Reservoir (TAF)
BA - Proposed Action (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September
1922	Above Normal	401	353	411	422	567	662	792	967	967	746	691	485
1923	Below Normal	438	435	567	567	646	792	967	960	733	538	501	
1924	Critical	389	335	280	214	271	276	302	314	303	298	294	264
1925	Dry	276	315	383	445	567	656	792	967	763	575	523	486
1926	Dry	403	361	345	300	453	531	782	705	529	398	364	363
1927	Wet	321	495	567	565	553	647	792	967	960	732	589	530
1928	Above Normal	473	520	540	541	557	635	784	880	749	549	506	402
1929	Critical	344	320	304	260	269	318	382	449	425	352	313	296
1930	Dry	265	260	463	567	567	659	792	833	592	414	393	379
1931	Critical	315	308	272	239	224	293	333	361	334	300	90	90
1932	Dry	90	90	202	303	561	664	784	967	954	721	592	545
1933	Critical	439	365	320	269	228	307	338	387	361	298	90	90
1934	Critical	90	90	211	318	409	526	492	339	304	133	90	90
1935	Below Normal	90	144	188	297	392	474	792	967	852	593	544	504
1936	Below Normal	371	347	320	567	562	651	792	967	967	728	592	562
1937	Below Normal	419	365	333	294	567	664	792	967	792	586	534	495
1938	Wet	394	401	567	567	567	662	792	967	967	865	735	666
1939	Dry	592	494	466	415	389	504	598	570	485	174	145	160
1940	Above Normal	170	191	206	567	557	626	792	967	800	580	477	401
1941	Wet	350	351	567	567	566	658	792	967	967	859	792	561
1942	Wet	506	457	567	564	556	650	792	967	967	836	690	520
1943	Wet	463	466	567	556	529	625	792	925	917	667	596	449
1944	Dry	392	353	321	291	340	479	546	662	537	430	369	327
1945	Below Normal	298	410	526	557	558	656	792	967	778	584	526	488
1946	Below Normal	453	552	567	564	558	649	792	967	749	460	401	364
1947	Dry	312	374	433	407	478	655	691	636	522	339	323	319
1948	Below Normal	324	342	350	446	450	460	792	967	960	826	695	642
1949	Dry	582	550	536	480	473	638	792	967	779	588	533	493
1950	Below Normal	430	400	367	567	565	658	792	967	926	661	592	550
1951	Above Normal	529	449	367	384	407	599	792	962	789	559	470	424
1952	Wet	374	430	567	567	566	661	792	967	967	942	792	604
1953	Wet	563	520	567	566	560	629	792	967	967	800	713	592
1954	Above Normal	524	508	499	513	567	656	792	851	770	592	554	502
1955	Dry	442	409	479	532	541	567	634	746	679	519	455	413
1956	Wet	354	333	524	460	458	616	792	967	967	815	749	690
1957	Above Normal	569	480	476	440	563	652	733	955	881	724	631	592
1958	Wet	556	549	567	567	557	656	792	967	967	906	776	699
1959	Below Normal	592	527	491	532	567	660	723	730	629	359	317	330
1960	Dry	286	247	218	220	506	653	734	775	729	560	520	477
1961	Dry	413	401	400	345	348	397	454	492	448	205	173	186
1962	Below Normal	182	212	251	256	567	664	792	910	819	591	529	489
1963	Wet	712	567	567	544	499	629	792	967	898	696	629	592
1964	Dry	544	567	567	567	567	566	633	694	642	476	413	373
1965	Wet	322	361	428	425	443	612	792	967	943	731	698	559
1966	Below Normal	503	526	553	567	567	661	792	811	672	450	419	420
1967	Wet	372	447	567	563	552	636	792	967	967	934	792	586
1968	Below Normal	561	537	551	567	547	640	736	763	577	451	443	445
1969	Wet	396	437	549	543	527	637	792	967	967	835	766	592
1970	Wet	577	542	567	453	446	611	686	743	649	430	380	350
1971	Wet	309	448	567	567	558	648	792	967	967	769	708	556
1972	Below Normal	507	462	533	554	567	646	735	810	727	551	507	475
1973	Above Normal	429	481	567	559	555	652	792	967	771	531	477	449
1974	Wet	416	567	567	505	499	622	792	967	943	818	774	592
1975	Wet	544	506	505	502	567	662	792	967	957	831	783	685
1976	Critical	592	567	567	502	453	461	460	469	442	412	389	362
1977	Critical	338	310	268	229	212	189	163	149	115	90	90	90
1978	Above Normal	90	94	239	567	567	657	792	967	967	709	634	561
1979	Below Normal	491	454	424	509	567	657	792	967	709	583	527	489
1980	Above Normal	461	499	562	481	457	621	792	967	967	744	671	550
1981	Dry	496	444	426	429	431	569	646	645	349	169	168	184
1982	Wet	208	546	433	459	402	590	792	967	967	905	792	631
1983	Wet	712	565	565	556	543	628	792	967	967	942	792	752
1984	Wet	712	472	406	427	458	615	767	967	822	556	493	360
1985	Dry	334	481	567	562	567	662	792	789	577	412	364	365
1986	Wet	319	357	492	551	440	593	792	946	906	639	580	453
1987	Dry	429	410	402	375	422	537	580	528	445	370	316	310
1988	Critical	272	264	334	439	446	471	499	479	427	368	316	293
1989	Dry	258	350	417	448	502	642	781	774	563	415	357	336
1990	Critical	336	377	398	439	465	578	651	657	554	427	375	367
1991	Critical	297	260	214	199	189	331	430	499	483	365	304	242
1992	Critical	244	275	313	309	508	639	705	554	266	225	194	168
1993	Above Normal	90	90	224	567	553	637	792	967	967	725	662	593
1994	Critical	535	488	476	411	414	463	522	555	502	248	221	205
1995	Wet	200	241	373	546	530	618	792	967	967	930	792	611
1996	Wet	574	504	567	557	494	621	792	967	967	781	717	536
1997	Wet	443	444	512	370	394	591	748	861	671	420	361	328
1998	Wet	286	301	350	567	555	646	792	967	967	936	792	743
1999	Wet	603	559	567	560	560	654	788	967	966	703	654	552
2000	Above Normal	477	424	393	564	558	656	792	920	811	512	462	433
2001	Dry	390	393	400	376	399	514	598	601	376	318	271	280
2002	Dry	263	310	508	567	563	655	792	864	698	527	479	441
2003	Above Normal	381	403	567	562	551	631	792	967	933	665	614	535
	Average:	400	401	442	465	490	589	713	820	742	576	506	445
	Minimum:	90	90	188	199	189	189	163	149	115	90	90	90
	Maximum:	712	567	567	567	567	664	792	967	967	942	792	752
	Wet:	446	456	525	526	515	631	785	952	928	780	690	569
	Above Normal:	383	374	421	514	538	640	786	945	864	636	571	494
	Below Normal:	404	408	430	489	543	628	779	909	794	583	512	482
	Dry:	376	378	419	424	482	586	690	734	593	423	376	358
	Critical:	349	330	330	319	341	404	440	434	376	293	231	213

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

Folsom Reservoir (TAF)

Difference Between BA - Proposed Action (Q5) and BA - No Action Alternative (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September
1922	Above Normal	-9	-9	-9	-9	0	0	0	0	0	-84	-84	-41
1923	Below Normal	-7	38	0	0	3	3	0	0	0	0	-128	-128
1924	Critical	-149	-147	-147	-147	-146	-129	-130	-124	-78	-41	-12	-9
1925	Dry	-9	-9	-9	-9	0	0	0	0	-20	3	2	2
1926	Dry	-28	-28	-28	-27	-29	-63	-10	-31	-21	7	6	6
1927	Wet	3	1	0	0	0	0	0	0	0	43	-22	31
1928	Above Normal	24	42	42	42	42	0	0	0	-21	91	90	22
1929	Critical	22	15	7	-1	-6	-8	-11	-13	-8	-5	-2	1
1930	Dry	1	0	-1	0	0	0	0	0	-77	-30	-30	-30
1931	Critical	-6	-2	8	17	24	24	23	23	5	9	-94	-4
1932	Dry	0	-4	-11	-11	-6	0	0	0	-6	-189	-200	-121
1933	Critical	-157	-157	-157	-155	-154	-92	-26	-21	73	43	0	0
1934	Critical	0	-8	-1	-1	-1	-10	-10	-10	-3	-2	0	0
1935	Below Normal	0	0	0	0	0	0	0	0	-115	-267	-208	-207
1936	Below Normal	-221	-220	-220	0	0	0	0	0	0	0	-91	-91
1937	Below Normal	-126	-126	-124	-124	0	0	0	0	-148	-105	-104	-97
1938	Wet	-146	-146	0	0	0	0	0	0	0	-60	-57	-86
1939	Dry	0	20	20	20	20	20	28	23	18	-51	-46	-45
1940	Above Normal	-45	-29	-29	0	0	0	0	0	-73	-17	-7	6
1941	Wet	4	2	0	0	0	0	0	0	0	-11	0	-8
1942	Wet	-9	55	0	0	0	0	0	0	0	-29	-102	-27
1943	Wet	-6	56	0	0	0	0	0	1	3	16	14	12
1944	Dry	13	8	8	6	4	2	0	-3	-20	4	4	4
1945	Below Normal	2	1	-1	-3	0	0	0	0	-93	-38	-38	-13
1946	Below Normal	-20	-15	0	0	0	0	0	0	-126	-126	-84	-33
1947	Dry	-33	-25	-13	-3	5	5	-64	-51	-16	-38	-38	-38
1948	Below Normal	-23	-9	6	19	21	21	0	0	-1	-25	-15	-29
1949	Dry	-15	-6	-6	-6	-6	-6	0	14	-48	-27	-12	-12
1950	Below Normal	-16	-12	-9	0	0	0	0	0	-41	-97	-89	-90
1951	Above Normal	-63	0	0	0	0	0	0	0	-88	-17	-35	-6
1952	Wet	18	18	0	0	0	0	0	0	0	0	0	-23
1953	Wet	1	60	34	0	0	0	0	0	0	-34	-10	-14
1954	Above Normal	29	67	67	67	35	0	0	0	0	134	133	118
1955	Dry	115	96	75	56	46	29	13	-4	8	8	8	8
1956	Wet	3	1	0	0	0	0	0	0	0	-26	-36	-29
1957	Above Normal	48	69	76	76	22	0	1	1	-59	56	29	43
1958	Wet	44	44	6	0	0	0	0	0	0	-11	-16	-24
1959	Below Normal	28	74	74	74	0	0	1	1	-49	8	9	9
1960	Dry	6	3	-1	-3	-6	-1	38	37	36	38	73	54
1961	Dry	53	49	44	41	38	37	37	37	33	3	3	3
1962	Below Normal	3	3	3	3	0	0	0	0	-79	-18	20	20
1963	Wet	5	0	0	0	0	0	0	0	-69	-6	-6	0
1964	Dry	75	65	29	0	0	0	0	0	21	0	-9	-8
1965	Wet	-8	-5	0	0	0	0	0	0	-24	-10	-9	26
1966	Below Normal	29	30	30	14	4	0	0	6	-71	28	22	23
1967	Wet	22	21	0	0	0	0	0	0	0	0	0	-14
1968	Below Normal	-14	56	66	54	0	0	0	1	-122	71	71	71
1969	Wet	64	56	41	0	0	0	0	0	-102	-26	0	0
1970	Wet	0	46	0	0	0	0	0	0	-32	32	30	80
1971	Wet	53	22	0	0	0	0	0	16	0	-13	-15	6
1972	Below Normal	10	62	62	61	0	0	0	0	1	90	89	89
1973	Above Normal	86	78	9	0	0	0	0	0	-28	12	12	12
1974	Wet	12	0	0	0	0	0	0	0	-24	1	1	0
1975	Wet	0	60	60	60	0	0	0	0	0	-4	-4	-16
1976	Critical	0	35	33	33	33	33	32	32	31	31	30	30
1977	Critical	30	27	29	5	4	4	4	4	0	0	0	0
1978	Above Normal	0	0	0	0	0	0	0	0	0	-9	-9	0
1979	Below Normal	-2	36	36	36	0	0	0	0	-8	12	24	24
1980	Above Normal	24	17	10	0	0	0	0	0	0	-56	-63	-42
1981	Dry	-42	6	6	6	6	6	5	5	-193	-242	-208	-187
1982	Wet	-150	0	0	0	0	0	0	0	0	0	0	-37
1983	Wet	0	0	0	0	0	0	0	0	0	0	0	0
1984	Wet	0	0	0	0	0	0	0	0	-55	-55	-55	-43
1985	Dry	-39	-29	0	17	0	0	0	-33	-2	41	17	17
1986	Wet	10	4	-3	0	0	0	0	0	0	0	0	16
1987	Dry	16	17	15	13	12	12	11	-3	4	5	4	4
1988	Critical	2	0	-1	-3	-4	-4	-4	-4	-4	-3	-2	-1
1989	Dry	-1	0	0	0	0	0	-1	-2	-13	14	13	12
1990	Critical	7	2	-4	-8	-12	-12	-12	-12	-7	3	5	5
1991	Critical	3	1	-1	-1	-1	-1	-1	-1	40	192	125	65
1992	Critical	55	141	128	103	105	105	104	70	36	35	104	78
1993	Above Normal	0	0	5	0	0	0	0	0	0	-84	-85	-1
1994	Critical	-2	29	28	27	26	26	25	25	27	-90	-70	-50
1995	Wet	-33	-33	-33	0	0	0	0	0	0	-12	0	-21
1996	Wet	-8	54	1	0	0	0	0	0	0	-2	-2	-7
1997	Wet	23	84	0	0	0	0	2	3	-123	-108	-106	4
1998	Wet	4	3	2	0	0	0	0	0	0	0	0	0
1999	Wet	-52	-8	0	0	0	0	0	0	-1	-1	-1	25
2000	Above Normal	27	31	31	29	0	0	0	0	-24	-24	-23	-23
2001	Dry	-23	-3	-3	-3	-3	-3	-4	1	-130	-101	-99	-95
2002	Dry	-95	-102	-59	0	0	0	0	-1	-57	-59	-41	-40
2003	Above Normal	-41	-1	0	0	0	0	0	0	0	0	-3	2
	Average:	-8	7	3	4	1	0	1	0	-22	-16	-18	-11
	Minimum:	-221	-220	-220	-155	-154	-129	-130	-124	-193	-267	-208	-207
	Maximum:	115	141	128	103	105	105	104	70	73	192	133	118
	Wet:	-6	15	4	2	0	0	0	1	-13	-15	-16	-6
	Above Normal:	7	22	17	17	8	0	0	0	-24	0	-4	7
	Below Normal:	-25	-6	-5	10	2	2	0	1	-61	-33	-37	-32
	Dry:	0	3	4	5	5	2	3	-1	-27	-34	-31	-26
	Critical:	-16	-5	-6	-11	-11	-5	0	-3	10	14	7	10

Long-Term and Water Year-Type Average of Sacramento River Below Keswick Under BA - No Action Alternative (Q5) and BA - Proposed Action (Q5)

Analysis Period	Average Flow (cfs)												Total (TAF)
	October	November	December	January	February	March	April	May	June	July	August	September	
Full Simulation Period													
BA - No Action Alternative (Q5)	6,206	6,938	7,064	8,770	11,398	8,324	6,599	7,357	10,517	13,423	9,965	8,035	6,306
BA - Proposed Action (Q5)	6,142	5,733	7,160	9,163	11,596	8,542	6,641	7,468	11,063	13,360	9,956	7,647	6,299
Difference	-64	-1,205	96	393	198	218	42	111	546	-63	-10	-387	-7
Percent Difference	-1%	-17%	1%	4%	2%	3%	1%	2%	5%	0%	0%	-5%	0%
Water Year-Types													
Wet													
BA - No Action Alternative (Q5)	6,632	8,232	12,019	17,440	21,515	15,964	8,851	8,181	10,024	13,472	10,371	12,775	8,744
BA - Proposed Action (Q5)	6,597	7,180	12,695	17,926	21,732	15,991	8,853	8,147	10,222	13,557	10,465	12,624	8,777
Difference	-34	-1,052	677	486	217	27	2	-33	198	85	95	-151	32
Percent Difference	-1%	-13%	6%	3%	1%	0%	0%	0%	2%	1%	1%	-1%	0%
Above Normal													
BA - No Action Alternative (Q5)	6,731	7,469	5,744	7,755	15,033	8,277	5,801	7,348	11,220	14,561	10,488	9,206	6,600
BA - Proposed Action (Q5)	6,601	5,990	5,344	8,396	15,699	9,057	5,807	7,383	11,945	14,572	10,444	8,240	6,591
Difference	-130	-1,479	-401	641	666	781	6	35	725	11	-44	-966	-9
Percent Difference	-2%	-20%	-7%	8%	4%	9%	0%	0%	6%	0%	0%	-10%	0%
Below Normal													
BA - No Action Alternative (Q5)	6,060	6,622	5,994	4,127	6,232	4,187	4,972	6,399	10,501	13,101	9,800	5,399	5,039
BA - Proposed Action (Q5)	6,010	4,914	5,638	4,662	6,676	4,475	4,902	6,396	11,278	13,383	9,337	4,904	4,990
Difference	-50	-1,708	-355	535	444	288	-70	-3	777	283	-463	-495	-50
Percent Difference	-1%	-26%	-6%	13%	7%	7%	-1%	0%	7%	2%	-5%	-9%	-1%
Dry													
BA - No Action Alternative (Q5)	6,105	6,188	3,875	4,080	3,430	3,783	5,380	7,151	11,171	13,761	10,000	4,803	4,829
BA - Proposed Action (Q5)	5,899	4,868	3,962	4,082	3,542	3,812	5,564	7,610	11,885	13,446	10,037	4,481	4,796
Difference	-206	-1,320	87	2	113	28	184	459	714	-316	37	-322	-32
Percent Difference	-3%	-21%	2%	0%	3%	1%	3%	6%	6%	-2%	0%	-7%	-1%
Critical													
BA - No Action Alternative (Q5)	5,077	5,096	3,680	3,452	3,823	3,454	6,241	7,010	9,923	12,050	8,704	4,515	4,419
BA - Proposed Action (Q5)	5,214	4,592	3,553	3,817	3,353	3,730	6,322	7,119	10,521	11,565	8,962	4,223	4,418
Difference	137	-504	-127	365	-469	276	81	109	598	-485	258	-293	-1
Percent Difference	3%	-10%	-3%	11%	-12%	8%	1%	2%	6%	-4%	3%	-6%	0%

Sacramento River Below Keswick

BA - No Action Alternative (Q5)

Statistic	Oct	Nov	Dec	Jan	Average Monthly Flow (cfs)							
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,851	11,503	17,920	22,979	30,956	19,492	10,297	9,714	13,183	15,000	11,733	14,750
20%	7,965	9,872	9,273	12,357	22,599	12,182	7,933	8,739	11,908	15,000	11,054	12,150
30%	7,226	8,575	5,412	8,096	11,565	8,214	6,822	8,296	11,293	15,000	10,778	10,425
40%	6,810	7,031	4,353	4,500	5,199	4,500	5,853	7,610	10,579	14,534	10,324	8,869
50%	6,020	5,932	4,000	4,126	4,500	4,214	5,372	7,224	10,228	14,082	10,015	6,066
60%	5,284	4,707	3,968	3,639	3,772	3,512	4,994	6,520	9,955	13,298	9,615	5,317
70%	4,974	4,239	3,524	3,250	3,250	3,250	4,500	6,099	9,396	12,692	9,162	4,790
80%	4,605	4,000	3,257	3,250	3,250	3,250	4,500	5,579	8,824	11,870	8,783	4,397
90%	4,000	3,428	3,250	3,250	3,250	3,250	3,436	5,092	8,387	10,508	8,023	4,095
Long Term												
Full Simulation Period	6,206	6,938	7,064	8,770	11,398	8,324	6,599	7,357	10,517	13,423	9,965	8,035
Water Year Types												
Wet	6,632	8,232	12,019	17,440	21,515	15,964	8,851	8,181	10,024	13,472	10,371	12,775
Above Normal	6,731	7,469	5,744	7,755	15,033	8,277	5,801	7,348	11,220	14,561	10,488	9,206
Below Normal	6,060	6,622	5,994	4,127	6,232	4,187	4,972	6,399	10,501	13,101	9,800	5,399
Dry	6,105	6,188	3,875	4,080	3,430	3,783	5,380	7,151	11,171	13,761	10,000	4,803
Critical	5,077	5,096	3,680	3,452	3,823	3,454	6,241	7,010	9,923	12,050	8,704	4,515

BA - Proposed Action (Q5)

Statistic	Oct	Nov	Dec	Jan	Average Monthly Flow (cfs)							
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	8,252	7,812	18,025	22,417	31,811	19,492	10,229	10,316	14,503	15,000	11,456	14,115
20%	7,422	6,796	10,501	15,190	22,599	12,697	8,005	9,207	12,882	15,000	11,118	12,247
30%	7,149	6,206	5,012	8,946	13,589	8,708	6,786	8,256	12,154	15,000	10,540	9,586
40%	6,504	5,637	4,039	4,500	5,219	4,549	6,089	7,674	11,308	14,722	10,349	8,206
50%	6,157	5,188	4,000	4,482	4,500	4,500	5,412	7,218	10,796	13,802	10,035	5,573
60%	5,716	4,480	3,797	3,755	3,429	3,993	4,972	6,576	10,088	13,007	9,693	4,889
70%	5,132	4,196	3,488	3,250	3,250	3,250	4,500	6,289	9,542	12,154	9,498	4,446
80%	4,809	4,000	3,250	3,250	3,250	3,250	4,500	5,827	9,193	11,626	8,927	4,221
90%	4,315	3,557	3,250	3,250	3,250	3,250	3,455	5,186	8,413	10,689	8,215	3,972
Long Term												
Full Simulation Period	6,142	5,733	7,160	9,163	11,596	8,542	6,641	7,468	11,063	13,360	9,956	7,647
Water Year Types												
Wet	6,597	7,180	12,695	17,926	21,732	15,991	8,853	8,147	10,222	13,557	10,465	12,624
Above Normal	6,601	5,990	5,344	8,396	15,699	9,057	5,807	7,383	11,945	14,572	10,444	8,240
Below Normal	6,010	4,914	5,638	4,662	6,676	4,475	4,902	6,396	11,278	13,383	9,337	4,904
Dry	5,899	4,868	3,962	4,082	3,542	3,812	5,564	7,610	11,885	13,446	10,037	4,481
Critical	5,214	4,592	3,553	3,817	3,353	3,730	6,322	7,119	10,521	11,565	8,962	4,223

BA - Proposed Action (Q5) Minus BA - No Action Alternative (Q5)

Statistic	Oct	Nov	Dec	Jan	Average Monthly Flow (cfs)							
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-600	-3,691	105	-562	856	0	-68	601	1,320	0	-277	-635
20%	-544	-3,076	1,228	2,834	0	515	73	469	974	0	64	97
30%	-77	-2,370	-400	849	2,024	495	-35	-40	860	0	-238	-840
40%	-306	-1,395	-314	0	20	49	236	64	729	188	26	-663
50%	137	-744	0	356	0	286	40	-5	568	-280	19	-493
60%	432	-227	-171	117	-344	481	-22	56	133	-291	78	-428
70%	157	-43	-35	0	0	0	0	189	146	-538	336	-344
80%	204	0	-7	0	0	0	0	248	368	-244	144	-176
90%	315	129	0	0	0	0	19	94	26	181	191	-123
Long Term												
Full Simulation Period	-64	-1,205	96	393	198	218	42	111	546	-63	-10	-387
Water Year Types												
Wet	-34	-1,052	677	486	217	27	2	-33	198	85	95	-151
Above Normal	-130	-1,479	-401	641	666	781	6	35	725	11	-44	-966
Below Normal	-50	-1,708	-355	535	444	288	-70	-3	777	283	-463	-495
Dry	-206	-1,320	87	2	113	28	184	459	714	-316	37	-322
Critical	137	-504	-127	365	-469	276	81	109	598	-485	258	-293

Sacramento River Below Keswick (cfs)
BA - No Action Alternative (Q5)

Water Year Year Type	October	November	December	January	February	March	April	May	June	July	August	September	Total (TAF)
1922 Above Normal	9,767	7,312	3,744	3,250	4,500	4,500	5,004	8,117	12,576	13,311	11,465	12,893	5,828
1923 Below Normal	6,990	8,783	4,000	3,638	3,250	3,250	3,250	9,337	10,397	13,252	9,516	4,420	4,852
1924 Critical	4,925	4,495	3,682	3,250	3,250	4,004	7,611	7,616	9,222	11,255	11,042	5,525	4,599
1925 Dry	3,828	3,250	3,250	3,250	3,250	3,422	3,719	6,102	9,657	13,983	10,048	5,723	4,209
1926 Dry	5,644	4,349	3,493	3,250	3,250	4,134	3,990	8,324	10,559	13,394	9,667	4,808	4,537
1927 Wet	4,339	3,481	4,378	4,500	29,347	4,250	9,742	7,714	10,769	15,000	10,828	8,822	6,719
1928 Above Normal	6,675	6,951	4,000	4,465	3,414	11,909	3,700	7,254	13,033	15,000	11,753	10,577	5,989
1929 Critical	7,528	5,686	3,251	3,250	3,250	3,250	5,473	7,209	9,539	12,448	8,521	4,801	4,493
1930 Dry	4,978	4,207	3,250	3,250	3,250	3,250	4,313	5,165	9,584	10,149	7,996	3,921	3,830
1931 Critical	4,607	3,405	3,250	3,250	3,250	3,250	9,291	7,238	8,828	10,738	7,641	3,989	4,157
1932 Dry	3,908	3,046	3,250	3,250	3,250	3,250	5,891	4,754	7,873	9,434	7,900	4,170	3,633
1933 Critical	4,539	3,526	3,250	3,250	3,250	5,178	5,503	7,366	11,086	8,851	5,295	3,895	
1934 Critical	3,229	2,761	3,250	3,250	3,250	3,250	5,376	6,073	11,248	8,420	4,898	2,787	3,490
1935 Below Normal	2,611	3,250	3,250	3,250	3,250	3,250	3,250	3,842	9,152	9,845	8,507	4,333	3,494
1936 Below Normal	3,995	3,499	3,490	3,250	4,146	4,500	4,500	5,964	8,381	12,865	9,279	4,627	4,154
1937 Below Normal	5,106	4,455	3,250	3,250	3,250	3,250	3,250	5,146	8,669	10,409	8,956	4,933	3,869
1938 Wet	4,000	4,000	18,818	4,500	37,196	35,340	11,215	8,392	9,970	11,671	10,807	15,602	10,244
1939 Dry	5,483	7,263	4,515	3,250	3,250	3,250	8,153	9,383	11,828	15,000	15,000	5,350	5,556
1940 Above Normal	5,879	6,108	3,472	3,250	25,084	21,912	4,500	5,917	10,744	15,000	11,071	9,114	7,345
1941 Wet	6,693	6,793	7,034	27,204	24,622	14,015	13,347	11,197	10,057	13,295	11,254	14,715	9,616
1942 Wet	8,050	10,120	11,826	19,439	30,876	4,500	4,500	8,187	8,820	12,260	11,095	13,673	8,557
1943 Wet	9,202	9,283	4,000	5,919	8,457	10,984	4,500	6,443	9,734	15,000	11,155	14,743	6,602
1944 Dry	7,698	11,310	4,000	3,979	3,250	3,250	5,836	5,121	9,255	12,271	8,984	4,406	4,806
1945 Below Normal	5,143	4,242	3,650	3,250	4,500	4,500	4,627	5,060	8,976	13,081	9,292	5,316	4,332
1946 Below Normal	4,639	5,203	31,540	8,941	4,500	4,500	6,748	7,625	11,070	15,000	10,883	10,408	7,350
1947 Dry	8,017	6,977	3,250	3,642	3,250	3,250	4,616	8,598	10,470	14,142	11,263	4,576	4,973
1948 Below Normal	3,746	3,885	3,764	3,255	3,250	3,250	4,046	5,883	8,323	12,707	10,682	4,507	4,084
1949 Dry	6,840	4,696	4,000	3,629	4,207	8,384	4,261	5,629	10,309	15,000	9,143	4,383	4,877
1950 Below Normal	5,992	5,756	4,115	4,025	4,500	4,500	3,747	6,015	8,847	10,028	8,900	4,243	4,274
1951 Above Normal	6,262	10,520	15,823	8,993	17,767	4,048	7,156	5,413	11,289	15,000	10,878	9,264	7,345
1952 Wet	6,101	8,590	9,084	12,036	21,603	12,078	16,481	7,205	7,849	10,786	10,022	11,822	8,044
1953 Wet	9,071	10,347	6,035	31,940	4,500	4,500	5,131	7,954	8,764	14,550	10,124	14,751	7,746
1954 Above Normal	8,148	11,256	4,719	7,284	17,874	10,674	10,967	7,456	10,136	15,000	11,203	10,189	7,489
1955 Dry	7,011	7,911	4,498	4,202	3,250	3,250	5,472	5,079	10,640	14,473	7,745	4,038	4,695
1956 Wet	5,181	4,000	27,318	34,001	24,136	4,500	4,500	8,733	9,509	11,811	9,623	15,345	9,594
1957 Above Normal	7,076	12,118	5,419	4,082	4,451	4,177	4,992	8,702	10,024	15,000	10,906	8,881	5,794
1958 Wet	5,636	8,990	10,520	15,258	60,491	21,723	11,542	6,985	8,232	12,728	11,688	15,452	11,189
1959 Below Normal	7,081	11,122	5,023	3,417	14,025	3,250	7,786	7,552	12,725	15,000	11,887	6,570	6,324
1960 Dry	6,286	6,859	4,048	3,502	3,488	3,602	6,920	4,537	14,278	14,509	10,237	6,050	5,103
1961 Dry	5,717	4,473	3,250	3,250	5,245	6,304	5,774	7,570	11,344	15,000	12,946	6,228	5,269
1962 Below Normal	7,103	4,822	4,000	3,504	18,570	3,422	5,449	6,952	10,164	15,000	10,577	4,688	5,635
1963 Wet	7,180	5,563	9,093	4,500	9,723	6,279	30,893	5,058	9,951	15,000	10,390	15,000	7,730
1964 Dry	5,174	6,388	4,000	4,500	3,250	3,250	8,437	6,522	9,326	14,331	8,771	4,136	4,732
1965 Wet	4,829	4,000	19,611	24,981	4,500	4,500	4,500	6,306	9,404	15,000	8,622	11,787	7,172
1966 Below Normal	8,332	7,742	4,000	4,500	5,726	10,676	6,613	8,298	13,487	15,000	12,755	7,217	6,312
1967 Wet	6,100	4,279	10,038	10,612	8,074	14,069	10,210	12,507	8,492	12,558	10,484	12,594	7,261
1968 Below Normal	7,300	9,596	4,418	4,500	11,351	3,510	6,261	6,673	12,948	15,000	9,392	6,083	5,852
1969 Wet	4,805	4,000	3,609	24,244	25,682	6,466	9,670	9,728	10,017	12,075	10,775	9,985	7,839
1970 Wet	5,278	8,266	15,812	58,978	13,491	4,500	6,323	6,470	11,330	14,966	10,264	14,750	10,318
1971 Wet	7,987	5,121	7,086	16,862	4,500	16,022	5,243	7,031	8,731	15,000	9,111	12,120	6,971
1972 Below Normal	8,982	11,474	4,000	4,500	3,250	3,517	6,834	6,436	13,431	15,000	8,961	4,078	5,478
1973 Above Normal	4,316	6,243	6,932	15,146	20,652	8,195	4,500	6,401	12,231	15,448	9,838	7,911	7,060
1974 Wet	5,001	29,514	23,948	39,202	5,399	34,994	5,857	6,336	10,071	11,910	9,753	10,971	11,720
1975 Wet	7,409	11,664	3,250	3,250	4,500	27,693	4,500	8,747	10,902	13,259	10,009	15,054	7,283
1976 Critical	5,163	8,143	3,607	3,926	4,491	3,979	5,341	11,356	10,584	12,177	5,972	3,864	4,760
1977 Critical	7,217	7,045	5,873	4,087	3,250	4,094	10,323	5,313	12,028	12,983	9,184	4,320	5,184
1978 Above Normal	6,048	3,250	3,250	3,712	15,702	14,030	5,367	8,296	11,469	14,023	10,398	6,980	6,157
1979 Below Normal	7,825	8,880	5,411	4,500	3,679	3,250	3,250	4,805	10,446	11,223	7,610	4,168	4,539
1980 Above Normal	4,000	4,000	3,439	18,371	32,212	4,500	4,500	6,636	11,228	12,010	9,647	5,280	6,944
1981 Dry	5,257	9,504	4,000	4,040	3,250	3,250	3,323	5,857	15,000	15,000	10,351	5,818	5,225
1982 Wet	4,464	4,492	25,037	8,480	24,094	13,234	24,914	4,336	8,401	11,248	9,164	7,898	8,729
1983 Wet	7,337	6,318	15,233	20,026	41,920	50,123	10,237	9,426	12,852	13,465	13,370	12,195	12,734
1984 Wet	9,042	13,822	33,201	9,873	4,500	8,939	5,032	7,255	10,528	15,000	8,791	15,000	8,563
1985 Dry	7,326	4,000	4,000	3,250	3,250	5,273	8,434	11,557	14,854	13,699	5,062	5,168	
1986 Wet	4,937	4,750	3,690	3,584	43,792	19,852	4,500	7,265	11,339	14,525	10,144	5,659	7,929
1987 Dry	4,370	8,095	3,959	3,250	3,250	3,250	6,800	8,831	14,041	13,825	8,160	4,934	5,003
1988 Critical	6,145	4,072	3,494	4,165	7,113	3,374	5,518	6,520	12,738	13,917	8,088	4,802	4,834
1989 Dry	5,613	3,250	3,471	3,250	3,250	3,250	10,417	9,512	15,000	10,267	3,254	4,479	
1990 Critical	3,848	4,590	3,527	3,250	3,250	3,250	7,117	5,421	8,562	13,711	9,786	4,600	4,292
1991 Critical	4,425	3,841	3,261	3,250	5,016	3,250	5,894	7,907	8,851	9,235	4,625	3,793	
1992 Critical	4,691	3,883	3,463	3,250	3,250	3,250	9,682	9,301	14,276	10,338	5,321	4,491	
1993 Above Normal	5,309	3,188	3,250	3,250	3,250	3,250	4,500	5,346	8,367	14,802	7,842	9,330	4,338
1994 Critical	4,609	9,707	4,252	3,250	3,250	3,250	7,165	6,292	11,749	14,739	10,896	4,256	5,044
1995 Wet	4,603	4,018	3,250	12,321	7,113	47,351	6,9						

Sacramento River Below Keswick (cfs)

BA - Proposed Action (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September	Total (TAF)
1922	Above Normal	10,284	5,182	3,744	3,250	4,500	4,500	5,011	8,111	12,578	13,337	11,467	12,078	5,686
1923	Below Normal	7,444	6,048	4,000	3,638	3,250	3,250	3,250	9,347	10,407	13,220	9,625	4,425	4,723
1924	Critical	6,200	4,575	3,654	3,250	3,250	4,746	7,644	8,091	10,266	11,506	11,457	5,568	4,863
1925	Dry	3,796	3,250	3,250	3,250	3,250	3,422	3,719	6,130	10,893	12,500	10,095	5,755	4,196
1926	Dry	5,754	4,358	3,493	3,250	3,250	4,134	3,990	9,838	11,317	11,669	9,656	4,156	4,537
1927	Wet	5,133	3,481	4,378	4,500	28,705	4,250	9,795	7,714	10,810	14,099	11,121	8,474	6,679
1928	Above Normal	7,356	4,000	4,000	4,465	3,414	15,581	3,700	7,231	14,273	15,000	9,627	9,268	5,945
1929	Critical	7,498	4,620	3,251	3,250	3,250	3,250	5,488	7,863	10,063	11,225	11,143	5,091	4,603
1930	Dry	4,872	4,506	3,250	3,250	3,250	3,250	4,315	5,184	9,410	9,854	8,122	3,941	3,823
1931	Critical	5,561	3,627	3,250	3,250	3,250	3,250	9,292	7,251	8,926	10,837	7,644	4,105	4,248
1932	Dry	2,653	3,046	3,250	3,250	3,250	3,250	5,891	4,754	7,941	9,201	7,885	4,174	3,545
1933	Critical	4,541	3,527	3,250	3,250	3,250	4,092	6,348	5,732	9,544	10,647	8,250	3,250	3,974
1934	Critical	2,615	2,761	3,250	3,250	3,250	3,250	5,376	6,072	11,955	8,458	4,548	2,784	3,475
1935	Below Normal	2,469	3,250	3,250	3,250	3,250	3,250	3,250	3,841	9,191	10,201	8,638	4,325	3,517
1936	Below Normal	3,989	3,499	3,490	3,250	4,146	4,500	4,500	5,958	8,373	11,397	9,294	4,659	4,065
1937	Below Normal	5,122	4,463	3,250	3,250	3,250	3,250	3,250	5,158	8,725	11,509	9,141	4,910	3,952
1938	Wet	4,302	4,000	18,198	4,500	37,196	35,340	11,215	8,390	9,968	11,669	10,890	15,605	10,229
1939	Dry	5,479	5,747	3,250	3,250	3,250	3,250	8,410	9,670	12,151	15,000	12,109	5,202	5,253
1940	Above Normal	6,488	6,433	3,472	3,250	27,865	21,912	4,500	6,490	11,411	13,576	11,453	8,360	7,528
1941	Wet	7,047	5,193	9,031	27,204	24,622	14,015	13,347	11,197	10,056	14,315	11,419	14,001	9,696
1942	Wet	8,006	6,683	13,129	19,439	30,876	4,500	4,500	8,187	8,821	12,964	11,546	13,531	8,492
1943	Wet	7,205	6,329	4,000	9,383	8,457	10,984	4,500	6,443	9,637	15,000	11,116	14,131	6,472
1944	Dry	7,448	8,241	4,000	3,979	3,250	3,250	5,853	5,190	11,274	11,525	10,437	4,425	4,778
1945	Below Normal	5,621	4,242	3,650	3,250	4,500	4,500	4,627	5,064	8,940	14,952	9,503	4,898	4,463
1946	Below Normal	6,576	4,000	29,102	8,941	4,500	4,500	6,765	7,643	11,592	15,228	10,757	9,263	7,219
1947	Dry	8,357	5,423	3,250	3,683	3,250	3,250	4,666	9,322	10,300	15,000	12,029	4,606	5,043
1948	Below Normal	3,850	3,885	3,764	3,255	3,250	3,250	4,048	5,358	8,323	13,813	10,203	4,775	4,113
1949	Dry	6,452	4,125	4,000	3,629	4,207	8,896	4,774	6,181	12,578	14,826	9,603	4,886	5,097
1950	Below Normal	6,290	4,526	3,929	4,025	4,500	4,500	3,747	6,013	9,194	10,467	8,693	4,204	4,240
1951	Above Normal	6,597	7,585	15,823	8,993	17,767	4,048	7,140	5,393	12,456	15,000	10,839	8,689	7,222
1952	Wet	5,318	5,725	12,217	12,036	21,603	11,584	16,022	7,205	7,853	10,787	10,021	13,133	8,038
1953	Wet	7,347	6,585	10,127	31,940	4,500	4,500	5,116	7,964	8,764	15,000	9,962	14,692	7,681
1954	Above Normal	6,176	7,129	4,000	13,734	17,874	10,674	10,967	7,037	12,277	15,000	11,436	9,561	7,553
1955	Dry	6,138	4,000	4,498	4,202	3,250	3,250	6,592	5,694	11,178	14,403	8,658	4,046	4,597
1956	Wet	5,978	4,000	26,935	34,001	24,136	4,500	4,500	8,733	9,505	12,983	9,686	15,354	9,695
1957	Above Normal	5,722	7,854	4,182	4,082	4,451	9,872	5,094	8,603	10,550	15,000	10,285	7,590	5,648
1958	Wet	6,966	7,712	11,566	15,277	60,491	21,723	11,542	6,985	8,232	13,701	11,376	15,406	11,298
1959	Below Normal	5,997	6,692	4,376	7,318	15,684	3,250	7,735	7,505	15,000	15,000	11,121	3,688	6,197
1960	Dry	7,261	5,200	4,048	3,502	3,488	3,602	6,109	5,973	14,649	14,647	9,051	4,968	4,997
1961	Dry	7,153	4,473	3,250	3,250	7,174	6,304	7,204	7,579	12,926	15,000	12,467	4,694	5,524
1962	Below Normal	6,623	4,377	4,000	3,488	19,103	3,422	5,444	6,944	11,059	15,000	9,724	4,618	5,603
1963	Wet	8,444	5,563	9,093	4,500	8,197	6,279	30,893	5,059	10,004	15,000	10,387	15,000	7,726
1964	Dry	4,351	4,000	4,000	4,500	3,250	3,250	8,435	6,557	10,114	14,684	10,601	4,139	4,723
1965	Wet	6,240	4,000	17,621	24,981	4,500	4,500	4,500	6,301	9,446	15,000	8,609	10,159	7,041
1966	Below Normal	7,656	4,583	4,000	8,103	6,637	10,676	6,008	8,252	15,000	9,760	9,579	6,124	
1967	Wet	7,862	4,279	11,061	10,612	8,683	14,682	10,210	12,507	8,492	12,552	10,479	14,061	7,590
1968	Below Normal	6,509	5,645	4,000	4,500	14,469	3,510	6,252	6,690	15,000	15,000	8,208	5,032	5,709
1969	Wet	6,204	4,000	3,609	23,441	25,682	6,466	9,670	9,364	10,002	12,093	10,942	9,809	7,853
1970	Wet	5,278	5,764	18,230	58,978	13,491	4,500	6,320	6,434	14,384	15,000	9,311	14,080	10,401
1971	Wet	7,407	5,236	6,222	16,862	4,500	16,022	5,818	6,476	9,276	15,000	9,638	10,690	6,869
1972	Below Normal	7,601	8,711	4,000	4,500	3,250	7,542	6,502	6,957	14,246	15,000	8,741	4,050	5,522
1973	Above Normal	4,604	6,200	6,932	15,146	20,652	8,195	4,500	6,419	13,867	15,000	9,794	6,570	7,063
1974	Wet	5,121	29,913	23,948	39,202	5,399	34,994	5,857	6,344	10,082	11,847	9,752	11,018	11,751
1975	Wet	5,007	7,565	3,250	3,250	9,924	28,273	4,500	8,747	10,803	13,546	9,947	15,001	7,233
1976	Critical	5,085	5,710	3,394	3,926	4,491	3,979	5,380	11,383	11,011	12,761	6,812	3,872	4,715
1977	Critical	7,149	5,606	4,897	5,000	3,250	4,561	9,818	5,270	12,562	13,107	10,415	3,512	5,154
1978	Above Normal	5,714	3,734	3,250	3,712	15,479	14,030	5,367	8,296	11,468	14,731	10,537	6,100	6,153
1979	Below Normal	8,400	4,881	4,128	4,500	3,679	3,250	3,250	8,209	12,846	11,578	7,316	4,232	4,409
1980	Above Normal	5,077	4,014	3,439	19,618	32,212	4,500	4,500	6,650	11,251	12,038	9,670	5,657	7,116
1981	Dry	5,523	6,256	4,000	4,040	3,250	3,250	3,350	7,675	15,000	15,000	10,386	4,304	4,967
1982	Wet	4,464	8,413	25,089	8,480	24,094	13,234	24,914	4,332	8,398	11,658	9,184	8,576	9,031
1983	Wet	6,264	6,318	15,233	20,026	41,920	50,123	10,237	9,426	12,852	13,465	13,370	12,195	12,668
1984	Dry	9,042	13,822	33,201	9,873	4,500	8,939	5,030	7,253	12,182	15,000	10,202	15,000	8,748
1985	Dry	5,730	4,000	4,000	3,250	3,250	4,900	7,764	11,837	15,000	10,898	4,378	4,820	
1986	Wet	6,013	4,357	3,690	3,584	45,287	19,852	4,500	7,265	11,344	12,504	10,042	6,431	7,970
1987	Dry	4,436	7,064	3,959	3,250	3,250	3,250	7,180	10,465	13,249	13,792	10,536	4,449	5,136
1988	Critical	6,056	4,025	3,494	4,165	3,250	4,634	5,704	7,013	13,642	11,967	10,027	4,863	4,779
1989	Dry	5,550	3,250	3,471	3,250	3,250	3,250	10,615	10,789	12,959	8,487	3,422	4,339	
1990	Critical	4,757	4,583	3,447	3,250	3,250	3,250	7,115	5,418	9,199	12,850	9,310	4,330	4,281
1991	Critical	4,343	4,420	3,250	6,712	3,250	3,250	3,250	5,889	7,903	8,492	7,142	4,157	3,757
1992	Critical	4,821	5,750	3,250	3,250	3,250	3,250	9,13						

**Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)**

Sacramento River Below Keswick (cfs)

Difference Between BA - Proposed Action (Q5) and BA - No Action Alternative (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September	Total (TAF)
1922	Above Normal	516	-2,130	0	0	0	0	7	-7	2	26	2	-815	-142
1923	Below Normal	454	-2,735	0	0	0	0	0	11	10	-32	108	5	-129
1924	Critical	1,275	79	-29	0	0	742	33	475	1,044	250	415	43	264
1925	Dry	-32	0	0	0	0	0	0	27	1,236	-1,482	47	32	-13
1926	Dry	111	9	0	0	0	0	0	1,514	757	-1,726	-11	-653	0
1927	Wet	794	0	0	0	-642	0	53	0	41	-901	293	-348	-39
1928	Above Normal	682	-2,951	0	0	0	3,673	0	-22	1,240	0	-2,125	-1,309	-44
1929	Critical	-30	-1,066	0	0	0	0	16	654	523	-1,223	2,622	290	110
1930	Dry	-106	298	0	0	0	0	3	19	-174	-295	126	20	-7
1931	Critical	955	222	0	0	0	0	1	13	99	98	4	115	92
1932	Dry	-1,255	0	0	0	0	0	0	0	68	-233	-15	4	-88
1933	Critical	2	0	0	0	0	842	1,170	229	2,178	-439	-601	-2,045	80
1934	Critical	-614	0	0	0	0	0	0	-1	707	38	-350	-4	-15
1935	Below Normal	-142	0	0	0	0	0	0	-1	39	356	131	-8	23
1936	Below Normal	-6	0	0	0	0	0	0	-6	-7	-1,468	15	32	-89
1937	Below Normal	16	8	0	0	0	0	0	12	55	1,099	184	-23	83
1938	Wet	302	0	-621	0	0	0	0	-2	-2	-2	82	3	-15
1939	Dry	-4	-1,516	-1,265	0	0	0	257	287	323	0	-2,891	-148	-303
1940	Above Normal	609	325	0	0	2,781	0	0	573	667	-1,424	382	-753	183
1941	Wet	354	-1,599	1,997	0	0	0	0	0	-1	1,020	165	-715	80
1942	Wet	-45	-3,437	1,303	0	0	0	0	0	1	704	451	-142	-64
1943	Wet	-1,997	-2,955	0	3,464	0	0	0	0	0	-97	0	-39	-612
1944	Dry	-250	-3,069	0	0	0	0	16	70	2,019	-746	1,453	19	-28
1945	Below Normal	478	0	0	0	0	0	0	4	-36	1,871	211	-418	131
1946	Below Normal	1,937	-1,203	-2,438	0	0	0	17	19	522	228	-126	-1,146	-131
1947	Dry	340	-1,554	0	41	0	0	50	724	-171	858	767	31	70
1948	Below Normal	103	0	0	0	0	0	2	-525	0	1,106	-479	268	29
1949	Dry	-388	-571	0	0	0	511	513	552	2,268	-174	459	503	221
1950	Below Normal	298	-1,230	-186	0	0	0	0	-2	347	440	-207	-39	-34
1951	Above Normal	335	-2,935	0	0	0	0	-16	-20	1,166	0	-39	-574	-123
1952	Wet	-783	-2,864	3,133	0	0	-495	-459	0	3	0	-1	1,312	-6
1953	Wet	-1,724	-3,762	4,093	0	0	0	-14	10	0	450	-162	-59	-64
1954	Above Normal	-1,972	-4,128	-719	6,450	0	0	0	-418	2,141	0	234	-628	64
1955	Dry	-873	-3,911	0	0	0	0	1,120	615	538	-70	913	8	-98
1956	Wet	797	0	-383	0	0	0	0	0	-4	1,172	62	9	102
1957	Above Normal	-1,355	-4,264	-1,237	0	0	5,695	102	-99	525	0	-620	-1,291	-147
1958	Wet	1,329	-1,278	1,046	19	0	0	0	0	0	972	-312	-46	109
1959	Below Normal	-1,084	-4,430	-647	3,901	1,659	0	-51	-47	2,275	0	-766	-2,882	-127
1960	Dry	975	-1,659	0	0	0	0	-811	1,436	371	138	-1,187	-1,081	-106
1961	Dry	1,436	0	0	0	1,929	0	1,430	9	1,582	0	-478	-1,533	255
1962	Below Normal	-480	-446	0	-16	532	0	-5	-8	894	0	-853	-70	-32
1963	Wet	1,265	0	0	0	-1,525	0	0	1	53	0	-3	0	-4
1964	Dry	-823	-2,388	0	0	0	0	-2	36	788	353	1,830	4	-9
1965	Wet	1,411	0	-1,990	0	0	0	0	-5	41	0	-13	-1,628	-131
1966	Below Normal	-676	-3,159	0	3,603	911	0	-604	-46	1,513	0	-2,996	-1,638	-188
1967	Wet	1,763	0	1,023	0	609	613	0	0	0	-6	-5	1,467	329
1968	Below Normal	-792	-3,951	-418	0	3,119	0	-9	17	2,052	0	-1,184	-1,051	-143
1969	Wet	1,399	0	0	-803	0	0	0	-365	-15	18	167	-176	14
1970	Wet	0	-2,502	2,419	0	0	0	-3	-36	3,054	34	-953	-670	83
1971	Wet	-580	115	-863	0	0	0	575	-555	544	0	527	-1,429	-102
1972	Below Normal	-1,381	-2,763	0	0	0	4,025	-332	521	815	0	-220	-28	44
1973	Above Normal	288	-43	0	0	0	0	0	18	1,636	-448	-45	-1,341	3
1974	Wet	119	399	0	0	0	0	0	8	11	-63	-1	47	31
1975	Wet	-2,402	-4,100	0	0	5,424	579	0	0	-99	288	-62	-53	-50
1976	Critical	-77	-2,433	-213	0	0	0	39	27	427	584	841	9	-45
1977	Critical	-69	-1,439	-977	913	0	468	-505	-43	535	124	1,230	-808	-31
1978	Above Normal	-334	484	0	0	-223	0	0	0	-2	708	139	-880	-4
1979	Below Normal	575	-3,999	-1,283	0	0	0	0	4	2,399	355	-294	64	-131
1980	Above Normal	1,077	14	0	1,247	0	0	0	15	22	28	23	377	172
1981	Dry	267	-3,248	0	0	0	0	27	88	0	0	36	-1,515	-258
1982	Wet	0	3,922	52	0	0	0	0	-4	-4	410	20	678	303
1983	Wet	-1,074	0	0	0	0	0	0	0	0	0	0	0	-66
1984	Wet	0	0	0	0	0	0	-2	-2	1,654	0	1,411	0	185
1985	Dry	-1,596	0	0	0	0	0	-373	-670	280	146	-2,801	-684	-349
1986	Wet	1,075	-394	0	0	1,495	0	0	0	4	-2,021	-102	772	41
1987	Dry	65	-1,031	0	0	0	0	380	1,634	-792	-34	2,376	-486	134
1988	Critical	-89	-47	0	0	-3,863	1,260	186	494	904	-1,950	1,940	61	-55
1989	Dry	-63	0	0	0	0	0	0	198	1,278	-2,041	-1,781	168	-141
1990	Critical	909	-7	-80	0	0	0	-3	-3	638	-862	-476	-270	-10
1991	Critical	-82	580	-11	3,462	-1,766	0	0	-5	-4	-359	-2,093	-469	-36
1992	Critical	130	1,868	-213	0	0	0	0	-551	-37	-2,341	225	-442	-86
1993	Above Normal	-372	2,043	0	0	0	0	0	291	0	198	2,559	-1,853	176
1994	Critical	-662	-3,804	0	0	0	0	39	24	167	261	-664	9	-278
1995	Wet	189	13	0	5,442	0	0	0	0	0	34	692	497	421
1996	Wet	-719	-4,613	2,052	1,658	286	0	0	0	-3	101	-4	324	-49
1997	Wet	-1,054	-3,735	4,756	0	0	0	-101	85	-63	0	-110	-1,470	-93
1998	Wet	-1,310	-1,007	0	2,847	0	0	0	0	0	0	0	0	35
1999	Wet	0	441	-426	0	0	0	0	0	15	0	365	-1,684	-77
2000	Above Normal	-717	-3,938	-1,339	0	5,430	0	-22	87	1,307	-141	-451	-1,685	-103
2001	Dry	-945	-5,116	-1,109	0	0	0	124	957	504	-935	1,865	-392	-301
2002	Dry	-566	0	3,934	0	100	0	574	763	1,977	558	-46	-95	437
2003	Above Normal	-317	-226	-1,512	0	0	0	0	0	-2	1,184	-586	-844	-139
Average:														
Minimum:														
Maximum:														
Wet:														
Above Normal:														
Below Normal:														
Dry:														
Critical:														

Long-Term and Water Year-Type Average of Feather River Below Thermalito Afterbay Under BA - No Action Alternative (Q5) and BA - Proposed Action (Q5)

Analysis Period	Average Flow (cfs)												Total (TAF)
	October	November	December	January	February	March	April	May	June	July	August	September	
Full Simulation Period													
BA - No Action Alternative (Q5)	2,557	2,011	2,777	4,336	5,166	6,047	3,073	3,465	3,348	7,306	4,805	5,344	3,033
BA - Proposed Action (Q5)	2,696	1,976	2,767	4,270	5,513	6,310	3,164	3,428	4,218	7,272	4,695	3,790	3,024
Difference	138	-35	-11	-66	347	263	91	-36	870	-33	-110	-1,553	-9
Percent Difference	5%	-2%	0%	-2%	7%	4%	3%	-1%	26%	0%	-2%	-29%	0%
Water Year-Types													
Wet													
BA - No Action Alternative (Q5)	2,806	2,629	4,111	10,241	11,892	13,211	6,655	6,406	3,712	7,856	5,871	9,183	5,090
BA - Proposed Action (Q5)	2,928	2,502	4,193	9,986	12,817	13,664	6,652	6,379	4,693	8,205	5,654	6,964	5,091
Difference	122	-127	82	-256	924	453	-2	-27	981	348	-217	-2,219	1
Percent Difference	4%	-5%	2%	-2%	8%	3%	0%	0%	26%	4%	-4%	-24%	0%
Above Normal													
BA - No Action Alternative (Q5)	2,547	1,976	2,684	2,464	3,948	7,031	1,884	3,396	3,189	9,486	7,608	7,989	3,283
BA - Proposed Action (Q5)	2,583	1,894	2,843	2,515	4,477	8,085	2,238	3,360	5,119	9,585	7,200	5,828	3,374
Difference	36	-83	159	51	529	1,054	354	-37	1,931	98	-409	-2,161	90
Percent Difference	1%	-4%	6%	2%	13%	15%	19%	-1%	61%	1%	-5%	-27%	3%
Below Normal													
BA - No Action Alternative (Q5)	2,704	1,841	2,179	1,468	1,463	1,704	1,132	1,366	3,615	8,967	6,705	4,312	2,274
BA - Proposed Action (Q5)	2,866	1,826	1,921	1,468	1,457	1,407	1,184	1,396	5,215	9,022	5,548	1,518	2,114
Difference	162	-14	-258	0	-6	-297	52	30	1,600	55	-1,156	-2,794	-159
Percent Difference	6%	-1%	-12%	0%	0%	-17%	5%	2%	44%	1%	-17%	-65%	-7%
Dry													
BA - No Action Alternative (Q5)	2,584	1,645	2,034	1,394	1,556	1,455	1,379	2,034	3,446	6,618	2,109	1,538	1,684
BA - Proposed Action (Q5)	2,728	1,757	2,176	1,394	1,556	1,508	1,409	1,908	3,458	6,043	2,951	1,108	1,697
Difference	144	112	143	0	0	53	30	-126	13	-574	841	-430	13
Percent Difference	6%	7%	7%	0%	0%	4%	2%	-6%	0%	-9%	40%	-28%	1%
Critical													
BA - No Action Alternative (Q5)	1,816	1,455	1,794	1,175	1,543	1,494	1,308	1,755	2,259	3,027	1,522	1,290	1,236
BA - Proposed Action (Q5)	2,058	1,420	1,472	1,226	1,391	1,524	1,477	1,756	2,267	2,742	1,736	1,552	1,247
Difference	242	-35	-323	51	-152	29	169	1	7	-285	214	262	11
Percent Difference	13%	-2%	-18%	4%	-10%	2%	13%	0%	0%	-9%	14%	20%	1%

Feather River Below Thermalito Afterbay

BA - No Action Alternative (Q5)

Statistic	Oct	Nov	Dec	Jan	Average Monthly Flow (cfs)							
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,000	2,500	5,355	13,983	15,346	15,231	8,728	8,482	5,479	10,000	8,163	10,000
20%	4,000	2,500	3,777	2,404	10,124	9,084	3,694	5,749	4,295	9,925	7,724	9,681
30%	4,000	2,500	1,925	1,700	3,877	6,889	2,720	2,809	3,920	9,318	7,427	8,223
40%	4,000	2,033	1,700	1,700	1,700	4,630	1,822	2,446	3,664	8,955	6,424	7,673
50%	1,897	1,700	1,700	1,700	1,700	1,700	1,111	1,931	3,265	8,517	5,015	5,650
60%	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,463	2,796	8,160	3,920	2,542
70%	1,676	1,200	1,700	1,200	1,700	1,700	1,000	1,000	2,527	6,247	2,186	1,322
80%	1,200	1,200	1,200	900	1,200	1,000	1,000	1,000	1,931	4,307	1,586	1,145
90%	905	900	900	900	900	800	753	1,000	1,302	1,998	1,213	1,000
Long Term												
Full Simulation Period	2,557	2,011	2,777	4,336	5,166	6,047	3,073	3,465	3,348	7,306	4,805	5,344
Water Year Types												
Wet	2,806	2,629	4,111	10,241	11,892	13,211	6,655	6,406	3,712	7,856	5,871	9,183
Above Normal	2,547	1,976	2,684	2,464	3,948	7,031	1,884	3,396	3,189	9,486	7,608	7,989
Below Normal	2,704	1,841	2,179	1,468	1,463	1,704	1,132	1,366	3,615	8,967	6,705	4,312
Dry	2,584	1,645	2,034	1,394	1,556	1,455	1,379	2,034	3,446	6,618	2,109	1,538
Critical	1,816	1,455	1,794	1,175	1,543	1,494	1,308	1,755	2,259	3,027	1,522	1,290

BA - Proposed Action (Q5)

Statistic	Oct	Nov	Dec	Jan	Average Monthly Flow (cfs)							
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	4,000	2,500	4,942	12,055	17,796	15,229	8,726	8,472	7,440	10,000	9,074	9,955
20%	4,000	2,500	3,397	2,800	11,450	10,921	3,794	5,732	6,824	10,000	7,874	6,220
30%	4,000	2,500	1,803	1,700	4,622	7,675	2,878	2,689	5,886	10,000	6,362	5,474
40%	4,000	2,500	1,700	1,700	1,700	4,878	1,966	2,416	4,964	9,622	4,778	4,145
50%	2,779	1,700	1,700	1,700	1,700	1,894	1,332	2,024	3,929	8,447	4,236	2,028
60%	1,850	1,700	1,700	1,700	1,700	1,700	1,000	1,446	2,787	7,388	3,666	1,601
70%	1,700	1,200	1,697	1,200	1,700	1,700	1,000	1,000	2,507	6,801	2,626	1,224
80%	1,200	1,164	1,200	1,080	1,200	1,000	1,000	1,000	1,923	2,825	1,665	1,098
90%	975	900	900	900	900	800	776	1,000	1,306	2,011	1,143	1,000
Long Term												
Full Simulation Period	2,696	1,976	2,767	4,270	5,513	6,310	3,164	3,428	4,218	7,272	4,695	3,790
Water Year Types												
Wet	2,928	2,502	4,193	9,986	12,817	13,664	6,652	6,379	4,693	8,205	5,654	6,964
Above Normal	2,583	1,894	2,843	2,515	4,477	8,085	2,238	3,360	5,119	9,585	7,200	5,828
Below Normal	2,866	1,826	1,921	1,468	1,457	1,407	1,184	1,396	5,215	9,022	5,548	1,518
Dry	2,728	1,757	2,176	1,394	1,556	1,508	1,409	1,908	3,458	6,043	2,951	1,108
Critical	2,058	1,420	1,472	1,226	1,391	1,524	1,477	1,756	2,267	2,742	1,736	1,552

BA - Proposed Action (Q5) Minus BA - No Action Alternative (Q5)

Statistic	Oct	Nov	Dec	Jan	Average Monthly Flow (cfs)							
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	0	0	-413	-1,928	2,451	-1	-1	-11	1,961	0	911	-45
20%	0	0	-380	396	1,326	1,837	100	-17	2,529	75	150	-3,462
30%	0	0	-122	0	745	786	158	-120	1,966	682	-1,065	-2,749
40%	0	467	0	0	0	248	145	-30	1,300	668	-1,646	-3,528
50%	882	0	0	0	0	194	220	93	664	-70	-778	-3,622
60%	150	0	0	0	0	0	0	-17	-9	-772	-254	-941
70%	24	0	-3	0	0	0	0	0	-20	554	441	-98
80%	0	-36	0	180	0	0	0	0	-8	-1,482	78	-48
90%	70	0	0	0	0	0	23	0	4	13	-70	0
Long Term												
Full Simulation Period	138	-35	-11	-66	347	263	91	-36	870	-33	-110	-1,553
Water Year Types												
Wet	122	-127	82	-256	924	453	-2	-27	981	348	-217	-2,219
Above Normal	36	-83	159	51	529	1,054	354	-37	1,931	98	-409	-2,161
Below Normal	162	-14	-258	0	-6	-297	52	30	1,600	55	-1,156	-2,794
Dry	144	112	143	0	0	53	30	-126	13	-574	841	-430
Critical	242	-35	-323	51	-152	29	169	1	7	-285	214	262

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

Feather River Below Thermalito Afterbay (cfs)

BA - No Action Alternative (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September	Total (TAF)
1922	Above Normal	4,000	2,500	2,903	1,700	1,700	5,788	2,719	17,444	5,099	9,060	7,591	10,000	4,285
1923	Below Normal	4,000	2,500	1,700	1,700	1,777	1,700	1,000	1,000	2,765	8,637	7,609	5,714	2,431
1924	Critical	1,770	1,700	1,784	1,700	1,700	2,506	1,746	2,010	2,137	1,093	982	1,228	1,231
1925	Dry	900	900	914	900	900	800	750	1,134	3,302	6,142	2,203	2,310	1,281
1926	Dry	900	900	1,683	900	900	1,129	750	4,360	4,581	6,433	4,187	1,252	1,700
1927	Wet	900	900	4,058	900	1,517	7,876	4,295	2,906	1,000	10,000	8,160	7,692	3,050
1928	Above Normal	4,000	2,080	2,796	1,700	4,499	4,368	1,000	2,044	4,042	10,000	8,172	7,759	3,178
1929	Critical	1,700	2,026	1,700	1,700	1,700	1,700	1,838	1,808	2,225	1,613	1,364	773	1,215
1930	Dry	900	900	3,472	900	3,808	800	750	957	4,466	8,573	4,588	3,993	2,054
1931	Critical	916	900	900	900	900	800	2,726	2,168	2,527	2,683	2,273	986	1,129
1932	Dry	1,343	973	3,779	900	900	2,632	1,032	750	1,580	7,794	1,326	783	1,451
1933	Critical	900	1,275	900	900	4,681	840	2,452	1,912	1,915	907	773	1,114	
1934	Critical	1,299	1,023	1,749	900	3,554	800	2,418	2,744	3,347	2,704	1,625	1,174	1,398
1935	Below Normal	1,458	900	900	900	800	1,000	1,000	5,666	8,112	6,573	5,627	2,049	
1936	Below Normal	1,700	1,700	1,700	1,700	1,700	1,700	1,000	1,000	1,404	8,965	7,696	5,673	2,184
1937	Below Normal	4,000	1,772	1,700	1,700	1,700	1,700	1,000	1,000	6,888	5,833	4,495	1,054	1,988
1938	Wet	1,700	1,700	1,700	1,700	8,952	23,316	15,012	15,650	6,041	7,374	6,354	10,000	6,000
1939	Dry	4,000	2,500	4,101	1,700	1,700	2,238	3,054	2,778	4,615	2,317	1,000	1,922	
1940	Above Normal	1,200	1,200	1,200	1,200	21,049	3,709	1,000	3,797	10,000	8,466	8,154	3,785	
1941	Wet	4,000	2,379	1,700	1,700	14,353	12,259	3,218	7,313	1,259	8,542	7,161	10,000	4,424
1942	Wet	4,000	2,500	1,700	14,011	22,340	3,665	10,110	5,409	4,310	8,440	7,913	10,000	5,618
1943	Wet	4,000	2,500	1,700	4,859	8,359	16,739	3,104	1,000	2,338	10,000	8,232	10,000	4,393
1944	Dry	4,000	2,500	1,777	1,700	1,700	1,700	1,867	1,753	4,656	8,474	1,743	1,265	2,010
1945	Below Normal	1,745	1,700	1,700	1,700	1,700	1,700	1,000	1,511	3,656	8,970	7,575	2,055	2,126
1946	Below Normal	1,922	1,700	1,700	1,700	1,700	1,700	1,000	1,000	3,869	10,000	8,641	7,897	2,595
1947	Dry	2,820	2,039	1,700	1,700	1,700	1,700	1,000	3,006	3,176	4,552	1,520	1,183	1,580
1948	Below Normal	1,200	1,200	1,345	1,200	1,000	1,000	1,000	1,000	9,031	8,164	5,122	1,975	
1949	Dry	1,770	1,700	1,700	1,700	1,700	1,700	1,405	1,451	3,743	4,926	1,528	1,049	1,473
1950	Below Normal	900	900	900	900	900	800	1,000	1,000	3,095	8,872	5,980	6,080	1,899
1951	Above Normal	1,873	1,700	11,852	11,509	4,683	1,000	1,000	3,389	10,000	8,261	8,016	3,899	
1952	Wet	4,000	2,500	1,700	1,700	12,573	9,047	19,401	18,811	6,784	5,125	4,597	9,380	5,754
1953	Wet	4,000	2,500	1,700	14,766	1,700	6,848	3,940	2,423	3,866	9,646	8,439	10,000	4,243
1954	Above Normal	4,000	2,500	5,115	2,818	1,700	1,700	1,430	2,546	4,284	10,000	8,154	8,000	3,170
1955	Dry	4,000	1,700	1,700	1,700	1,700	1,759	1,325	2,632	4,411	1,889	1,000	1,545	
1956	Wet	1,700	1,700	22,907	13,557	7,814	2,624	8,954	2,524	8,902	7,551	10,000	5,443	
1957	Above Normal	4,000	2,500	5,956	1,700	3,585	1,700	1,000	3,235	9,883	7,542	8,040	3,032	
1958	Wet	1,700	2,035	1,700	1,700	6,310	13,444	8,465	8,123	4,034	8,493	3,828	9,833	4,198
1959	Below Normal	4,000	2,500	5,653	1,700	1,700	1,700	1,993	2,287	2,611	10,000	7,848	2,093	2,682
1960	Dry	1,200	1,200	1,200	1,200	1,200	1,000	3,012	1,515	3,811	9,128	2,930	1,189	1,735
1961	Dry	1,200	1,200	1,302	1,200	1,200	1,038	1,335	1,588	2,673	6,482	1,886	1,016	1,341
1962	Below Normal	928	900	900	900	900	800	750	1,258	3,911	9,646	7,835	5,377	2,070
1963	Wet	1,200	1,200	1,258	9,755	8,263	13,849	2,563	4,413	9,735	7,664	9,913	4,250	
1964	Dry	4,000	1,804	1,700	1,700	1,700	1,700	2,579	2,601	2,068	8,656	1,216	1,000	1,868
1965	Wet	1,700	1,700	21,981	5,753	5,280	6,778	2,216	2,879	10,000	6,492	10,000	4,626	
1966	Below Normal	4,000	2,500	1,700	1,700	1,700	1,700	1,000	2,798	3,782	10,000	6,950	1,325	2,380
1967	Wet	1,700	1,700	1,700	1,700	10,858	2,867	7,780	5,633	3,634	5,267	9,614	3,280	
1968	Below Normal	4,000	2,500	3,776	1,700	1,700	5,860	2,107	1,411	3,995	10,000	7,414	6,268	3,083
1969	Wet	2,195	1,700	1,700	8,605	15,554	8,129	7,775	10,661	2,106	7,675	4,262	9,729	4,790
1970	Wet	4,000	2,500	1,700	43,030	10,678	3,632	1,561	1,000	3,024	9,987	7,693	10,000	5,978
1971	Wet	1,700	2,628	2,128	2,128	4,426	3,304	7,373	3,617	9,105	8,319	10,000	3,445	
1972	Below Normal	4,000	2,500	1,700	1,700	1,700	1,700	1,000	1,852	3,294	9,221	4,762	1,000	2,095
1973	Above Normal	1,700	1,700	1,700	3,125	7,255	1,000	1,069	4,113	9,247	6,037	7,022	2,762	
1974	Wet	3,825	1,700	4,695	22,519	6,313	28,157	8,840	4,508	2,399	9,546	6,552	9,572	6,597
1975	Wet	4,000	2,613	1,902	1,700	1,700	5,154	1,097	8,146	3,998	8,911	5,353	9,887	3,304
1976	Critical	4,000	2,759	4,977	1,700	1,700	1,700	1,000	2,309	1,944	6,259	1,000	1,000	1,846
1977	Critical	1,200	1,200	1,200	1,200	1,200	1,000	759	776	1,495	1,481	1,476	1,485	
1978	Above Normal	954	900	900	900	900	8,936	4,064	1,000	1,000	8,150	7,198	7,596	2,581
1979	Below Normal	4,000	2,500	5,277	1,200	1,200	1,000	1,000	1,000	4,668	8,253	2,320	5,087	2,273
1980	Above Normal	1,700	1,700	1,700	1,700	14,860	5,697	1,000	1,000	1,000	8,201	6,441	7,593	3,152
1981	Dry	4,000	2,500	3,262	1,700	1,700	1,700	1,000	1,401	4,167	8,395	1,000	1,000	1,930
1982	Wet	1,200	1,200	12,715	9,632	20,526	13,590	21,317	6,397	1,710	7,774	4,455	8,714	6,529
1983	Wet	1,700	1,700	5,705	14,362	28,333	39,935	9,469	9,576	7,411	1,000	3,806	7,411	
1984	Wet	4,000	14,155	31,043	6,720	9,663	9,138	1,000	1,000	3,901	10,000	6,315	10,000	6,479
1985	Dry	4,000	1,700	1,700	1,700	1,700	1,700	1,000	2,531	3,667	9,689	1,853	1,000	1,958
1986	Wet	1,700	1,700	1,700	21,072	23,337	1,000	1,000	1,000	10,000	6,858	10,000	4,832	
1987	Dry	4,000	2,500	1,828	1,700	1,700	1,700	1,601	3,031	3,343	2,192	1,102	1,571	
1988	Critical	1,272	1,200	1,200	2,232	1,346	750	1,813	2,802	3,473	1,755	1,548	1,245	
1989	Dry	900	900	900	900	800	750	2,424	5,121	8,760	3,853	5,247	1,905	
1990	Critical	2,814	900	1,079	900	900	800	1,125	750	1,143	4,152	1,211	1,297	1,035
1991	Critical	1,022	900	1,351	900	1,636	800	750	750	2,951	3,114	2,033	1,398	1,061
1992	Critical	900	1,072	900	900	900	800	750	2,483	2,865	2,823	2,357	1,887	1,129
1993	Above Normal	1,378	2,023	900	900	900	12,615	3,685	6,221	2,556	9,293	7,765	7,973	3,419
1994	Critical	4,000	2,500	3,792	1,200	1,200	1,000	1,000	1,000	1,762	5,012	1,278	1,932	1,557
1995	Wet	2,042	1,200	1,200	1,200	13,496	38,180	12,996	14,273	7,9				

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

Feather River Below Thermalito Afterbay (cfs)

BA - Proposed Action (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September	Total (TAF)
1922	Above Normal	4,000	2,500	2,903	1,700	1,700	5,790	2,719	17,443	5,098	10,000	8,257	6,410	4,170
1923	Below Normal	4,000	2,500	1,700	1,700	1,700	1,000	1,000	1,000	10,000	8,840	1,000	2,201	
1924	Critical	2,518	1,722	1,785	1,700	1,700	2,877	2,047	2,003	2,782	2,385	1,093	1,228	1,444
1925	Dry	900	900	901	900	900	800	750	1,105	1,799	3,785	3,652	773	1,042
1926	Dry	1,564	900	1,674	900	900	2,088	750	2,916	4,941	7,593	4,322	1,854	1,847
1927	Wet	900	900	4,054	900	2,210	7,871	4,292	2,900	1,398	9,678	7,852	4,055	2,856
1928	Above Normal	4,000	2,500	2,796	1,700	4,497	7,658	1,000	2,072	7,460	10,000	4,649	4,813	3,219
1929	Critical	3,399	1,700	1,700	1,700	1,700	1,836	1,815	2,384	1,621	1,544	773	1,321	
1930	Dry	900	900	3,469	900	3,805	800	750	1,446	5,778	7,027	5,435	773	1,928
1931	Critical	2,666	900	900	900	900	800	3,122	2,167	2,521	2,681	2,135	2,117	1,318
1932	Dry	1,368	1,029	3,946	900	900	2,624	1,025	750	1,883	1,614	3,722	1,599	1,299
1933	Critical	1,169	1,287	900	900	900	4,679	837	2,450	1,905	1,938	1,213	1,948	1,220
1934	Critical	1,299	1,109	1,965	900	3,497	800	2,835	2,743	3,345	2,712	1,568	1,161	1,434
1935	Below Normal	1,459	900	900	900	800	1,000	1,000	1,000	7,245	7,131	3,924	1,541	1,677
1936	Below Normal	4,000	1,700	1,700	1,700	1,700	1,700	1,000	1,000	4,970	9,132	4,000	1,177	2,053
1937	Below Normal	4,000	2,500	4,697	1,700	1,700	1,700	1,000	1,000	5,836	7,161	4,039	1,692	2,245
1938	Wet	1,989	1,700	1,700	1,700	11,416	23,316	15,012	15,650	6,041	8,193	7,907	10,000	6,300
1939	Dry	4,000	2,500	3,799	1,700	1,700	1,700	2,676	3,179	2,729	3,812	1,688	1,000	1,852
1940	Above Normal	1,200	1,200	1,200	1,200	21,111	3,703	1,000	4,743	10,000	7,011	4,415	3,533	
1941	Wet	4,000	2,500	1,700	1,700	18,671	12,251	3,217	7,307	1,255	10,000	9,812	10,000	4,923
1942	Wet	4,000	2,500	1,700	9,777	22,333	3,654	10,103	5,397	4,293	10,000	5,639	6,183	5,083
1943	Wet	3,489	2,500	1,700	9,703	8,358	16,734	3,104	1,000	1,267	10,000	10,000	7,410	4,550
1944	Dry	4,000	2,500	3,184	1,700	1,700	1,700	1,866	2,045	2,874	6,982	2,981	1,272	1,993
1945	Below Normal	1,745	1,700	1,700	1,700	1,700	1,700	1,000	1,510	5,706	10,000	4,810	1,162	2,088
1946	Below Normal	1,916	1,700	1,700	1,700	1,700	1,700	1,000	1,000	7,910	8,588	4,325	4,143	2,259
1947	Dry	4,000	2,500	1,700	1,700	1,700	1,700	1,000	2,356	2,083	10,000	1,630	1,179	1,916
1948	Below Normal	1,200	1,200	1,200	1,347	1,200	1,000	1,000	1,000	1,000	10,000	9,093	1,000	1,846
1949	Dry	2,892	1,700	1,700	1,700	1,700	1,700	1,401	1,446	2,344	2,607	3,936	1,068	1,465
1950	Below Normal	900	900	900	900	900	800	1,000	1,000	7,425	8,847	4,414	1,107	1,763
1951	Above Normal	1,841	1,700	3,703	12,460	11,509	4,683	1,000	1,000	7,337	8,834	5,267	3,702	3,780
1952	Wet	4,000	2,500	1,700	3,263	15,756	9,039	19,399	18,809	6,782	8,189	7,288	10,000	6,423
1953	Wet	4,000	2,500	1,700	8,355	1,700	6,831	3,931	2,409	3,847	8,225	4,377	6,275	3,287
1954	Above Normal	4,000	2,500	5,047	2,819	1,700	6,596	5,697	2,109	7,447	9,337	8,367	4,420	3,642
1955	Dry	4,000	2,500	1,700	1,700	1,700	1,700	1,757	1,324	2,551	2,655	2,845	1,000	1,538
1956	Wet	1,700	1,700	23,277	13,557	7,828	2,624	8,954	2,524	10,000	8,671	5,992	5,364	
1957	Above Normal	4,000	2,500	5,716	1,700	3,586	1,700	1,000	1,000	4,624	10,000	7,726	4,012	2,879
1958	Wet	1,700	1,978	1,700	1,700	11,030	13,444	8,465	8,116	4,029	10,000	5,849	5,473	4,413
1959	Below Normal	4,000	2,500	4,494	1,700	1,700	1,700	1,992	2,693	2,532	10,000	10,000	1,620	2,735
1960	Dry	1,200	1,200	1,200	1,200	1,200	1,000	2,367	1,509	2,602	8,855	4,151	1,269	1,687
1961	Dry	1,200	1,200	1,300	1,200	1,200	1,033	1,332	1,420	2,777	6,279	1,831	1,089	1,324
1962	Below Normal	900	900	900	900	900	800	750	1,266	5,621	10,000	5,568	1,125	1,800
1963	Wet	1,200	1,200	1,258	15,176	8,257	13,852	2,559	7,691	10,000	4,471	5,837	4,323	
1964	Dry	4,000	2,500	1,700	1,700	1,700	1,700	3,333	2,447	2,136	9,399	1,525	1,000	2,013
1965	Wet	1,700	1,700	22,147	5,744	5,272	6,773	2,209	6,111	8,873	2,650	5,922	4,278	
1966	Below Normal	4,000	2,500	1,700	1,700	1,700	1,700	1,000	2,689	6,335	10,000	6,316	1,629	2,505
1967	Wet	1,700	1,700	1,700	1,700	13,527	2,861	7,771	5,619	6,423	7,973	10,000	3,803	
1968	Below Normal	4,000	2,500	2,399	1,700	1,700	1,700	2,830	1,605	6,821	8,306	3,728	1,968	2,379
1969	Wet	4,000	1,700	1,700	12,029	15,554	8,129	7,775	10,661	2,106	7,809	6,774	9,849	5,281
1970	Wet	4,000	2,500	1,700	40,272	10,673	3,626	1,558	1,000	7,266	7,835	3,647	6,310	5,459
1971	Wet	4,000	2,644	2,144	2,144	2,144	7,653	3,302	7,370	3,687	9,769	4,590	6,163	3,375
1972	Below Normal	4,000	2,500	1,700	1,700	1,700	1,700	1,000	1,777	3,206	10,000	5,248	1,000	2,163
1973	Above Normal	1,700	1,700	1,700	9,277	7,255	1,000	1,069	7,859	6,843	2,416	3,438	2,743	
1974	Wet	3,697	1,700	10,693	22,518	6,310	28,153	8,838	4,504	6,967	7,326	2,683	5,486	6,611
1975	Wet	4,000	2,500	1,700	1,700	1,700	11,058	1,103	8,154	4,010	10,000	8,038	5,432	3,616
1976	Critical	3,444	2,674	3,349	1,700	1,700	1,700	1,000	2,673	1,935	4,443	3,461	1,610	1,804
1977	Critical	1,200	1,200	1,200	1,200	1,200	1,000	1,331	948	1,495	1,482	1,477	1,486	918
1978	Above Normal	954	900	900	900	900	9,200	4,059	1,000	1,000	10,000	9,705	10,000	3,008
1979	Below Normal	4,000	1,571	1,200	1,200	1,200	1,000	1,000	1,000	7,398	7,149	3,369	1,088	1,888
1980	Above Normal	2,422	1,700	1,700	1,700	13,411	5,697	1,000	1,000	1,000	10,000	9,029	4,582	3,204
1981	Dry	4,000	2,500	1,700	1,700	1,700	1,700	1,000	1,462	5,352	7,082	1,120	1,000	1,834
1982	Wet	1,200	1,200	12,717	9,630	20,521	13,589	21,317	6,397	1,710	10,000	7,148	10,000	6,907
1983	Wet	1,700	1,700	12,067	28,333	39,935	9,469	9,576	7,411	1,000	1,000	3,806	7,024	
1984	Wet	3,405	14,839	31,043	6,720	9,663	9,138	1,000	1,000	5,991	10,000	5,962	6,181	6,359
1985	Dry	3,715	1,700	1,700	1,700	1,700	1,700	1,000	2,475	4,384	10,000	3,370	1,000	2,092
1986	Wet	1,700	1,700	1,700	1,700	21,073	23,411	1,000	1,000	1,000	10,000	9,145	7,078	4,803
1987	Dry	4,000	2,500	1,700	1,700	1,700	1,700	1,520	2,522	2,805	2,183	1,749	1,104	1,523
1988	Critical	1,200	1,200	1,200	1,200	1,330	750	1,353	2,820	2,823	1,923	1,551	1,123	
1989	Dry	900	900	958	900	900	800	750	2,541	6,465	10,000	7,157	773	2,009
1990	Critical	1,883	900	1,067	900	900	800	1,467	750	1,027	3,203	1,084	1,297	925
1991	Critical	1,022	900	1,351	900	900	800	750	750	2,252	4,139	1,883	1,399	1,070
1992	Critical	900	944	900	900	900	800	750	2,418	2,972	2,826	2,256	2,053	1,128
1993	Above Normal	1,123	900	900	900	900	13,343	3,679	6,211	2,543	10,000	10,000	10,000	3,681
1994	Critical	4,000	2,500	1,343	1,200	1,200	1,000	1,000	1,000	1,762	2,651	1,196	2,003	1,261
1995	Wet	2,041												

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

Feather River Below Thermalito Afterbay (cfs)

Difference Between BA - Proposed Action (Q5) and BA - No Action Alternative (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September	Total (TAF)	
1922	Above Normal	0	0	0	0	0	2	-1	-1	-1	940	666	-3,590	-115	
1923	Below Normal	0	0	0	0	-77	0	0	0	-1,765	1,363	1,231	-4,714	-230	
1924	Critical	749	22	1	0	0	372	301	-7	645	1,292	111	0	212	
1925	Dry	0	0	-14	0	0	0	0	-29	-1,503	-2,357	1,450	-1,537	-239	
1926	Dry	664	0	-9	0	0	959	0	-1,444	360	1,160	135	602	147	
1927	Wet	0	0	-4	0	694	-5	-3	-5	398	-322	-308	-3,637	-194	
1928	Above Normal	0	420	0	0	-1	3,290	0	29	3,417	0	-3,524	-2,946	40	
1929	Critical	1,699	-326	0	0	0	0	-2	6	158	8	180	0	106	
1930	Dry	0	0	-3	0	-4	0	0	489	1,312	-1,545	848	-3,219	-127	
1931	Critical	1,750	0	0	0	0	0	396	-1	-7	-2	-139	1,130	189	
1932	Dry	25	56	167	0	0	-9	-6	0	303	-6,181	2,397	815	-152	
1933	Critical	269	12	0	0	0	-2	-2	-2	-7	22	306	1,175	107	
1934	Critical	0	86	216	0	-57	0	417	-1	-2	8	-57	-14	36	
1935	Below Normal	2	0	0	0	0	0	0	0	1,580	-981	-2,649	-4,085	-372	
1936	Below Normal	2,300	0	0	0	0	0	0	0	3,566	167	-3,696	-4,497	-131	
1937	Below Normal	0	728	2,997	0	0	0	0	0	-1,051	1,328	-456	638	257	
1938	Wet	289	0	0	0	2,463	0	0	0	0	818	1,552	0	300	
1939	Dry	0	0	-302	0	0	0	529	125	-50	-803	-629	0	-70	
1940	Above Normal	0	0	0	0	0	62	-7	0	947	0	-1,455	-3,739	-252	
1941	Wet	0	121	0	0	4,318	-8	-1	-6	-3	1,458	2,651	0	499	
1942	Wet	0	0	0	-4,235	-6	-11	-8	-12	-18	1,560	-2,274	-3,817	-535	
1943	Wet	-511	0	0	4,844	-1	-5	1	0	-1,071	0	1,768	-2,590	157	
1944	Dry	0	0	1,407	0	0	0	-1	292	-1,783	-1,493	1,238	6	-17	
1945	Below Normal	0	0	0	0	0	0	0	-1	2,050	1,030	-2,765	-893	-38	
1946	Below Normal	-6	0	0	0	0	0	0	0	4,042	-1,412	-4,316	-3,754	-336	
1947	Dry	1,180	461	0	0	0	0	0	-650	-1,094	5,448	110	-4	336	
1948	Below Normal	0	0	0	2	0	0	0	0	0	969	929	-4,122	-129	
1949	Dry	1,122	0	0	0	0	0	0	-5	-5	-1,399	-2,319	2,408	18	-8
1950	Below Normal	0	0	0	0	0	0	0	0	4,330	-25	-1,566	-4,973	-136	
1951	Above Normal	-31	0	2,003	608	0	0	0	0	0	3,948	-1,166	-2,994	-4,315	-119
1952	Wet	0	0	0	1,563	3,183	-8	-2	-2	-2	3,064	2,691	620	669	
1953	Wet	0	0	0	-6,411	0	-17	-9	-13	-19	-1,421	-4,062	-3,725	-957	
1954	Above Normal	0	0	-68	2	0	4,896	4,267	-438	3,162	-663	213	-3,580	471	
1955	Dry	0	800	0	0	0	0	-2	-1	-81	-1,756	956	0	-7	
1956	Wet	0	0	0	370	0	14	0	0	0	1,098	1,119	-4,008	-79	
1957	Above Normal	0	0	-240	0	0	0	0	0	1,389	117	183	-4,028	-153	
1958	Wet	0	-57	0	0	4,719	0	0	-7	-5	1,507	2,020	-4,361	215	
1959	Below Normal	0	0	-1,159	0	0	0	-1	406	-80	0	2,152	-473	53	
1960	Dry	0	0	0	0	0	0	-645	-6	-1,209	-274	1,220	79	-48	
1961	Dry	0	0	-3	0	0	-4	-4	-168	104	-203	-56	72	-16	
1962	Below Normal	-28	0	0	0	0	0	0	8	1,709	354	-2,266	-4,253	-270	
1963	Wet	0	0	0	0	5,421	-6	3	-4	3,278	265	-3,193	-4,076	73	
1964	Dry	0	696	0	0	0	0	754	-153	68	744	309	0	146	
1965	Wet	0	0	0	166	-8	-8	-5	-8	3,232	-1,127	-3,842	-4,078	-347	
1966	Below Normal	0	0	0	0	0	0	0	-109	2,553	0	-634	304	124	
1967	Wet	0	0	0	0	0	2,669	-6	-10	-14	2,789	2,705	386	523	
1968	Below Normal	0	0	-1,377	0	0	-4,160	723	194	2,826	-1,694	-3,686	-4,301	-704	
1969	Wet	1,805	0	0	3,424	0	0	0	0	0	134	2,512	119	491	
1970	Wet	0	0	0	-2,759	-5	-6	-3	0	4,242	-2,152	-4,046	-3,690	-519	
1971	Wet	2,300	15	15	15	15	3,227	-3	-4	70	664	-3,729	-3,837	-70	
1972	Below Normal	0	0	0	0	0	0	0	-75	-88	779	486	0	68	
1973	Above Normal	0	0	0	0	6,153	0	0	0	3,745	-2,404	-3,621	-3,584	-19	
1974	Wet	-128	0	5,998	-2	-3	-4	-2	-4	4,569	-2,220	-3,870	-4,086	14	
1975	Wet	0	-113	-202	0	0	5,903	6	9	12	1,089	2,686	-4,454	312	
1976	Critical	-556	-85	-1,628	0	0	0	0	364	-9	-1,816	2,461	610	-42	
1977	Critical	0	0	0	0	0	0	572	172	1	1	1	1	45	
1978	Above Normal	0	0	0	0	0	264	-5	0	0	1,850	2,507	2,404	427	
1979	Below Normal	0	-929	-4,077	0	0	0	0	0	2,730	-1,104	1,049	-3,999	-385	
1980	Above Normal	722	0	0	0	-1,449	0	0	0	0	1,799	2,588	-3,010	52	
1981	Dry	0	0	-1,562	0	0	0	62	1,185	-1,313	120	0	-95		
1982	Wet	0	0	3	-2	-6	-1	0	0	0	2,226	2,693	1,286	379	
1983	Wet	0	0	-4,005	-2,295	0	0	0	0	0	0	0	0	-387	
1984	Wet	-595	684	0	0	0	0	0	0	2,090	0	-353	-3,819	-120	
1985	Dry	-285	0	0	0	0	0	0	-56	717	312	1,518	0	134	
1986	Wet	0	0	0	0	2	75	0	0	0	0	2,288	-2,922	-28	
1987	Dry	0	0	-128	0	0	0	-82	-509	-538	-10	460	2	-48	
1988	Critical	-72	0	0	0	-1,032	-16	0	-460	18	-650	168	3	-121	
1989	Dry	0	0	58	0	0	0	0	118	1,344	1,240	3,304	-4,474	104	
1990	Critical	-931	0	-12	0	0	0	341	0	-116	-948	-128	-1	-111	
1991	Critical	0	0	0	609	-736	0	0	0	-698	1,026	-150	1	9	
1992	Critical	0	-128	0	0	0	0	0	-65	106	3	-101	166	-1	
1993	Above Normal	-255	-1,123	0	0	0	728	-6	-9	-13	707	2,235	2,027	262	
1994	Critical	0	0	-2,450	0	0	0	0	0	0	-2,361	-82	71	-297	
1995	Wet	-1	0	0	-263	-11	-3	-5	-7	-4	1,102	161	61		
1996	Wet	0	0	0	-1,312	-6	-8	-3	-6	-15	447	1,751	-3,884	-179	
1997	Wet	0	0	1,432	-2	-2	-3	0	-613	4,099	1,318	-4,086	-3,870	-107	
1998	Wet	0	0	1	0	3,533	-2	-27	-23	-66	-18	0	5,120	493	
1999	Wet	0	-3,941	-1,118	-9	-12	-6	0	0	4,725	-2,114	-3,408	-4,543	-634	
2000	Above Normal	0	-289	212	0	1,646	3,782	0	0	3,272	0	-3,839	-3,407	79	
2001	Dry	0	0	2,957	0	0	0	0	-325	-1,111	38	0	0	98	
2002	Dry	-120	0	0	0	0	0	0	0	3,602	-1,026	-644	-106	98	
2003	Above Normal	-1	0	0	0	-374	0	-22	3,300	0	2,135	1,832	412		
Average:		138	-35	-11	-66	347	263	91	-36	870	-33	-110	-1,553	-9	
Minimum:		-931	-3,941	-4,077	-6,411	-1,449	-4,160	-645	-1,444	-1,783	-6,181	-4,316	-4,973	-957	
Maximum:		2,300	800	5,998	4,844	6,153	5,903	4,267	489	4,725	5,448	3,304	5,120	669	
Wet:		122	-127	82	-256	924	453	-2	-27	981	348	-217	-2,219	1	
Above Normal:		36	-83	159	51	529	1,054	354	-37	1,931	98	-409	-2,161	90	
Below Normal:		162	-14	-258	0	-6	-297	52	30	1,600	55	-1,156	-2,794	-159	
Dry:		144	112	143	0	0	53	30	-126	13	-574	841	-430	13	
Critical:		242	-35	-323	51	-152	29	169	1	7	-285	214	262	11	

Long-Term and Water Year-Type Average of American River below Nimbus Under BA - No Action Alternative (Q5) and BA - Proposed Action (Q5)

Analysis Period	Average Flow (cfs)												Total (TAF)
	October	November	December	January	February	March	April	May	June	July	August	September	
Full Simulation Period													
BA - No Action Alternative (Q5)	1,617	2,501	3,645	5,038	5,868	4,266	3,395	3,102	2,836	3,370	1,789	2,027	2,373
BA - Proposed Action (Q5)	1,565	2,257	3,713	5,010	5,930	4,281	3,382	3,113	3,210	3,263	1,822	1,904	2,372
Difference	-53	-245	68	-29	62	15	-13	11	374	-107	33	-123	-1
Percent Difference	-3%	-10%	2%	-1%	1%	0%	0%	0%	13%	-3%	2%	-6%	0%
Water Year-Types													
Wet													
BA - No Action Alternative (Q5)	1,688	3,389	6,818	10,579	10,906	7,245	5,589	5,366	4,013	3,600	2,329	3,283	3,891
BA - Proposed Action (Q5)	1,664	3,041	7,001	10,609	10,948	7,246	5,589	5,355	4,239	3,645	2,348	3,105	3,890
Difference	-24	-349	182	30	42	1	0	-11	226	45	19	-178	-1
Percent Difference	-1%	-10%	3%	0%	0%	0%	0%	0%	6%	1%	1%	-5%	0%
Above Normal													
BA - No Action Alternative (Q5)	1,727	2,998	2,998	5,220	7,239	6,186	3,433	2,958	2,677	4,640	1,835	2,405	2,666
BA - Proposed Action (Q5)	1,639	2,744	3,088	5,214	7,397	6,318	3,429	2,953	3,087	4,237	1,895	2,214	2,659
Difference	-88	-254	90	-6	158	132	-4	-5	410	-403	60	-191	-7
Percent Difference	-5%	-8%	3%	0%	2%	2%	0%	0%	15%	-9%	3%	-8%	0%
Below Normal													
BA - No Action Alternative (Q5)	1,654	2,059	2,843	2,403	4,700	2,825	3,211	2,565	2,387	4,340	1,839	1,487	1,945
BA - Proposed Action (Q5)	1,603	1,728	2,838	2,156	4,828	2,831	3,241	2,559	3,426	3,899	1,908	1,407	1,950
Difference	-51	-331	-5	-246	128	6	30	-6	1,039	-442	70	-80	5
Percent Difference	-3%	-16%	0%	-10%	3%	0%	1%	0%	44%	-10%	4%	-5%	0%
Dry													
BA - No Action Alternative (Q5)	1,467	1,714	1,586	1,557	1,860	2,047	1,894	1,657	2,440	2,707	1,347	1,212	1,296
BA - Proposed Action (Q5)	1,327	1,648	1,574	1,531	1,872	2,085	1,874	1,708	2,874	2,820	1,297	1,135	1,312
Difference	-140	-67	-12	-26	12	38	-20	51	435	114	-50	-77	15
Percent Difference	-10%	-4%	-1%	-2%	1%	2%	-1%	3%	18%	4%	-4%	-6%	1%
Critical													
BA - No Action Alternative (Q5)	1,537	1,776	1,442	1,149	958	899	1,068	1,133	1,564	1,467	1,179	779	904
BA - Proposed Action (Q5)	1,587	1,600	1,447	1,221	962	803	978	1,169	1,352	1,386	1,298	723	879
Difference	50	-176	5	72	4	-96	-90	35	-212	-82	119	-55	-25
Percent Difference	3%	-10%	0%	6%	0%	-11%	-8%	3%	-14%	-6%	10%	-7%	-3%

American River below Nimbus

BA - No Action Alternative (Q5)

Statistic	Oct	Nov	Dec	Jan	Average Monthly Flow (cfs)							
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,739	3,837	10,678	12,881	14,846	10,280	6,847	7,558	4,893	5,000	3,139	3,977
20%	2,001	3,381	4,116	7,832	11,145	7,021	5,155	4,551	3,876	5,000	2,393	3,296
30%	1,604	2,561	2,125	5,352	7,380	5,062	4,491	3,563	3,612	4,866	1,979	2,435
40%	1,500	2,022	2,000	3,674	5,762	4,177	3,496	2,898	2,746	3,919	1,750	1,930
50%	1,500	1,925	2,000	1,750	3,152	3,057	2,552	2,164	2,295	3,561	1,750	1,580
60%	1,500	1,683	1,828	1,700	1,778	1,953	2,090	1,750	1,974	2,823	1,750	1,533
70%	1,471	1,525	1,562	1,700	1,445	1,732	1,741	1,612	1,750	2,476	1,602	1,450
80%	1,120	1,197	1,244	1,321	1,264	925	1,035	1,092	1,413	2,216	884	800
90%	730	800	800	852	851	800	800	800	886	1,064	800	784
Long Term												
Full Simulation Period	1,617	2,501	3,645	5,038	5,868	4,266	3,395	3,102	2,836	3,370	1,789	2,027
Water Year Types												
Wet	1,688	3,389	6,818	10,579	10,906	7,245	5,589	5,366	4,013	3,600	2,329	3,283
Above Normal	1,727	2,998	2,998	5,220	7,239	6,186	3,433	2,958	2,677	4,640	1,835	2,405
Below Normal	1,654	2,059	2,843	2,403	4,700	2,825	3,211	2,565	2,387	4,340	1,839	1,487
Dry	1,467	1,714	1,586	1,557	1,860	2,047	1,894	1,657	2,440	2,707	1,347	1,212
Critical	1,537	1,776	1,442	1,149	958	899	1,068	1,133	1,564	1,467	1,179	779

BA - Proposed Action (Q5)

Statistic	Oct	Nov	Dec	Jan	Average Monthly Flow (cfs)							
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	2,408	3,194	10,678	12,881	14,846	10,280	6,847	7,558	5,000	5,000	3,132	4,047
20%	1,868	2,491	4,237	7,958	11,147	7,016	5,155	4,551	4,575	4,779	2,661	2,903
30%	1,568	1,925	2,529	5,318	7,251	5,063	4,501	3,563	3,842	4,102	1,864	2,202
40%	1,500	1,925	2,000	3,138	5,763	4,176	3,496	2,893	3,613	3,738	1,750	1,683
50%	1,500	1,855	2,000	1,750	3,267	3,056	2,511	2,179	3,131	3,400	1,750	1,533
60%	1,500	1,683	1,921	1,700	2,311	1,962	1,980	1,750	2,402	2,865	1,750	1,533
70%	1,476	1,476	1,667	1,656	1,445	1,732	1,744	1,612	2,097	2,597	1,568	1,513
80%	1,172	1,207	1,172	1,332	1,280	989	1,038	1,115	1,712	2,256	943	800
90%	800	800	800	851	841	800	800	800	947	1,010	647	530
Long Term												
Full Simulation Period	1,565	2,257	3,713	5,010	5,930	4,281	3,382	3,113	3,210	3,263	1,822	1,904
Water Year Types												
Wet	1,664	3,041	7,001	10,609	10,948	7,246	5,589	5,355	4,239	3,645	2,348	3,105
Above Normal	1,639	2,744	3,088	5,214	7,397	6,318	3,429	2,953	3,087	4,237	1,895	2,214
Below Normal	1,603	1,728	2,838	2,156	4,828	2,831	3,241	2,559	3,426	3,899	1,908	1,407
Dry	1,327	1,648	1,574	1,531	1,872	2,085	1,874	1,708	2,874	2,820	1,297	1,135
Critical	1,587	1,600	1,447	1,221	962	803	978	1,169	1,352	1,386	1,298	723

BA - Proposed Action (Q5) Minus BA - No Action Alternative (Q5)

Statistic	Oct	Nov	Dec	Jan	Average Monthly Flow (cfs)							
					Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Probability of Exceedance												
10%	-332	-643	0	0	0	0	0	0	107	0	-6	70
20%	-133	-890	121	127	2	-5	0	0	700	-221	269	-394
30%	-36	-636	404	-34	-129	1	10	0	229	-764	-115	-232
40%	0	-97	0	-536	0	-1	0	-5	867	-181	0	-247
50%	0	-70	0	0	115	-1	-41	16	836	-161	0	-47
60%	0	0	93	0	532	8	-110	0	427	42	0	0
70%	5	-49	105	-44	0	0	3	0	347	121	-34	63
80%	53	10	-72	11	16	64	3	22	300	41	60	0
90%	69	0	0	-1	-10	0	0	0	61	-54	-153	-254
Long Term												
Full Simulation Period	-53	-245	68	-29	62	15	-13	11	374	-107	33	-123
Water Year Types												
Wet	-24	-349	182	30	42	1	0	-11	226	45	19	-178
Above Normal	-88	-254	90	-6	158	132	-4	-5	410	-403	60	-191
Below Normal	-51	-331	-5	-246	128	6	30	-6	1,039	-442	70	-80
Dry	-140	-67	-12	-26	12	38	-20	51	435	114	-50	-77
Critical	50	-176	5	72	4	-96	-90	35	-212	-82	119	-55

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

American River below Nimbus (cfs)

BA - No Action Alternative (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September	Total (TAF)
1922	Above Normal	2,747	1,925	2,000	1,700	6,772	4,426	5,089	9,434	7,380	3,597	1,750	5,000	3,108
1923	Below Normal	2,054	3,048	7,382	5,316	3,163	1,750	4,483	3,652	1,750	5,000	1,750	1,533	2,473
1924	Critical	2,039	1,925	2,000	1,700	379	672	354	428	1,124	920	806	836	801
1925	Dry	500	500	504	323	7,398	2,789	4,526	2,934	4,671	4,356	1,750	1,533	1,888
1926	Dry	1,500	1,925	2,000	1,700	1,445	800	1,700	2,019	3,007	2,409	800	800	1,213
1927	Wet	1,398	1,398	1,933	3,879	16,947	5,285	6,768	4,548	3,622	5,000	2,011	2,749	3,285
1928	Above Normal	1,500	2,236	2,000	1,750	1,750	11,479	3,531	1,478	1,824	5,000	1,478	1,478	2,158
1929	Critical	1,500	1,527	1,537	1,307	1,111	1,111	1,111	1,111	1,168	1,30	1,130	1,130	898
1930	Dry	978	978	978	1,077	2,829	2,969	1,553	1,065	3,242	3,615	1,065	1,065	1,286
1931	Critical	1,904	1,683	1,750	1,488	1,264	409	375	351	527	800	1,981	1,720	860
1932	Dry	701	619	800	800	886	2,683	3,477	3,501	3,612	2,010	2,684	2,962	1,496
1933	Critical	1,622	2,256	2,000	1,700	1,445	1,445	2,836	1,613	3,742	512	3,470	778	1,412
1934	Critical	800	1,216	800	800	800	1,009	1,960	2,753	594	2,587	674	467	876
1935	Below Normal	627	500	611	800	800	1,750	6,289	4,555	3,070	2,506	2,693	1,623	1,560
1936	Below Normal	2,722	1,936	2,000	6,415	19,150	5,662	6,022	3,562	3,901	5,000	1,750	1,533	3,565
1937	Below Normal	2,307	1,925	2,000	1,700	4,112	5,007	3,781	3,843	1,750	4,606	1,750	1,645	2,074
1938	Wet	1,500	1,925	6,787	3,311	14,703	12,202	7,757	9,718	6,855	2,420	3,093	1,683	4,301
1939	Dry	3,273	3,429	2,000	1,700	1,445	800	1,019	991	1,162	3,756	522	453	1,243
1940	Above Normal	512	800	800	2,622	13,734	12,649	5,581	1,969	2,701	5,000	2,764	2,434	3,093
1941	Wet	1,500	1,681	5,153	6,040	8,381	5,060	3,501	4,051	2,108	2,429	2,000	4,604	2,786
1942	Wet	1,542	3,607	6,660	11,051	11,516	3,458	5,689	5,724	4,664	3,029	1,870	5,000	3,817
1943	Wet	1,847	4,731	2,668	12,283	7,589	11,336	5,046	1,750	1,750	5,000	1,750	3,255	3,554
1944	Dry	1,500	1,683	1,750	1,488	1,264	1,264	1,264	1,264	2,757	2,379	1,750	1,533	1,204
1945	Below Normal	1,169	1,169	1,169	1,169	10,872	2,343	2,666	2,377	3,241	4,584	1,750	1,953	2,036
1946	Below Normal	1,500	2,011	12,315	5,908	2,582	3,025	3,668	2,339	2,633	5,000	2,429	2,376	2,779
1947	Dry	1,500	1,683	1,750	1,488	1,264	800	800	2,340	2,604	2,384	800	800	1,101
1948	Below Normal	1,390	1,390	1,390	1,182	1,005	1,750	1,918	3,782	3,663	2,740	3,162	1,533	1,511
1949	Dry	1,722	2,094	2,000	1,700	1,445	1,750	2,949	2,322	2,797	3,625	1,978	1,533	1,566
1950	Below Normal	1,500	1,897	1,971	1,797	5,818	3,486	5,068	3,177	2,561	4,088	2,013	1,597	2,094
1951	Above Normal	1,930	15,568	17,790	10,696	7,564	4,359	1,846	1,750	1,750	5,000	2,020	2,184	4,368
1952	Wet	2,248	1,683	4,429	9,622	10,897	7,560	9,750	10,905	7,804	2,884	3,448	3,809	4,525
1953	Wet	1,877	3,205	2,000	7,360	2,476	1,750	2,434	2,236	3,613	3,570	2,692	2,830	2,177
1954	Above Normal	2,434	2,560	2,000	1,700	1,700	3,565	3,693	1,483	1,483	5,000	1,483	1,483	1,729
1955	Dry	1,500	1,548	1,565	1,330	1,229	1,131	1,131	1,131	1,949	2,807	1,750	1,533	1,124
1956	Wet	1,500	1,649	16,790	18,476	7,170	3,394	2,731	4,975	3,809	3,084	1,777	1,807	4,081
1957	Above Normal	4,079	3,576	2,122	1,700	1,445	4,263	1,750	1,750	1,750	5,000	2,022	1,836	1,898
1958	Wet	1,500	1,925	2,000	2,791	12,094	7,916	11,244	7,509	4,529	1,836	2,993	2,205	3,488
1959	Below Normal	3,168	3,123	2,000	1,700	1,725	800	1,047	800	800	5,000	800	800	1,316
1960	Dry	1,157	1,157	1,157	984	836	3,290	2,611	888	888	2,588	1,861	1,198	1,130
1961	Dry	1,500	1,683	1,750	1,488	1,264	800	800	800	732	3,279	443	461	908
1962	Below Normal	532	500	800	800	4,129	2,337	4,497	1,750	1,750	5,000	2,369	1,533	1,558
1963	Wet	1,500	4,576	3,906	4,613	12,477	2,454	7,236	6,309	2,001	5,000	1,876	1,653	3,191
1964	Dry	2,797	3,444	2,000	2,316	1,761	1,612	1,612	1,612	2,161	2,446	1,684	1,515	1,510
1965	Wet	1,500	1,532	21,494	14,772	5,749	1,885	4,691	3,027	2,270	5,000	1,750	4,276	4,118
1966	Below Normal	1,602	1,934	2,000	1,750	1,750	1,033	996	872	885	5,000	888	800	1,180
1967	Wet	1,500	1,614	3,769	8,014	5,729	7,023	5,254	7,579	6,158	2,445	3,158	4,399	3,414
1968	Below Normal	1,500	3,470	2,167	1,700	5,902	2,227	840	840	1,101	5,000	840	840	1,589
1969	Wet	1,500	1,503	1,504	23,260	11,923	5,491	7,491	8,429	4,975	1,750	3,237	4,461	4,536
1970	Wet	1,500	3,287	5,301	25,092	6,892	3,831	1,750	1,750	1,750	5,000	1,750	2,448	3,652
1971	Wet	825	825	5,405	5,675	3,835	4,327	2,330	3,466	2,536	3,960	1,750	3,726	2,336
1972	Below Normal	1,580	3,359	2,000	1,700	2,001	4,204	1,608	1,608	1,608	4,437	1,608	1,514	1,650
1973	Above Normal	1,500	1,560	1,581	9,489	8,468	4,178	2,553	3,155	3,233	5,000	1,750	1,533	2,637
1974	Wet	1,500	4,418	8,500	13,137	5,473	10,502	6,234	2,980	2,107	3,977	1,750	4,113	3,912
1975	Wet	1,500	2,927	2,000	1,700	3,141	5,082	2,550	5,099	3,663	2,751	1,750	2,317	2,079
1976	Critical	3,867	3,413	2,000	1,700	1,445	800	800	800	800	800	800	800	1,091
1977	Critical	800	800	800	408	411	401	360	305	357	362	346	375	346
1978	Above Normal	481	500	517	3,765	5,766	7,019	4,811	2,410	2,375	4,851	1,750	2,438	2,201
1979	Below Normal	1,500	2,567	2,000	1,700	2,790	4,180	2,070	2,753	4,702	2,799	1,940	1,533	1,839
1980	Above Normal	1,500	1,734	1,802	18,370	15,243	5,307	2,818	1,941	2,287	3,660	1,750	3,276	3,589
1981	Dry	1,500	2,734	2,000	1,750	1,750	800	800	800	1,385	1,864	878	800	1,027
1982	Wet	1,473	5,659	18,221	10,820	17,980	9,764	17,852	8,748	4,490	2,023	2,785	3,663	6,193
1983	Wet	3,146	8,507	11,611	10,332	15,805	19,927	6,881	10,168	9,094	3,552	3,580	2,416	6,310
1984	Wet	1,975	16,600	22,909	7,710	6,456	4,171	1,750	1,794	2,637	5,000	1,750	3,327	4,604
1985	Dry	1,500	1,683	2,310	1,750	1,848	1,123	2,173	1,166	4,115	3,258	940	940	1,374
1986	Wet	1,334	1,334	1,334	4,545	37,305	12,221	2,457	1,750	1,750	5,000	1,750	3,894	4,351
1987	Dry	1,500	1,898	1,750	1,488	1,264	800	800	990	1,248	1,035	800	800	867
1988	Critical	1,063	1,063	1,063	1,082	800	800	800	745	701	701	701	701	640
1989	Dry	975	975	975	829	9,554	3,573	3,134	3,859	2,884	1,740	1,532	1,882	
1990	Critical	1,294	1,294	1,294	1,100	935	800	876	800	1,968	1,997	1,365	800	878
1991	Critical	1,422	1,422	1,422	429	375	1,745	1,745	1,745	2,274	5,000	517	560	1,133
1992	Critical	636	636	396	800	800	800	2,091	4,073	454	1,555	375	896	
1993	Above Normal	500	571	800	4,399	8,371	9,683	4,612	4,263	3,789	3,570	1,750	3,384	2,735
1994	Critical	1,500	2,460	2,000	1,700	1,445	800	800	800	1,393	2,345	800	800	1,016
1995	Wet	800	800	14,562	6,573	19,730	7,712	9,169	7,887	2,924	3,275	3,977	4,729	
1996	Wet	1,												

American River below Nimbus (cfs)

BA - Proposed Action (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September	Total (TAF)
1922	Above Normal	2,889	1,925	2,000	1,700	6,616	4,426	5,089	9,434	7,380	4,967	1,750	4,293	3,150
1923	Below Normal	1,500	2,283	8,005	5,316	3,101	1,750	4,541	3,652	1,750	5,000	3,843	1,533	2,561
1924	Critical	2,400	1,925	2,000	1,700	379	396	348	347	368	367	351	756	689
1925	Dry	500	500	504	323	7,237	2,789	4,526	2,928	5,000	3,977	1,750	1,533	1,875
1926	Dry	1,987	1,925	2,000	1,700	1,445	1,363	800	2,352	2,827	1,959	800	800	1,206
1927	Wet	1,434	1,434	1,942	3,875	16,943	5,285	6,768	4,548	3,622	4,298	3,063	1,870	3,259
1928	Above Normal	1,610	1,925	2,000	1,750	1,750	12,162	3,537	1,478	2,169	3,184	1,478	2,621	2,166
1929	Critical	1,500	1,630	1,678	1,426	1,212	1,144	1,144	1,144	1,086	1,074	1,074	1,074	917
1930	Dry	986	986	986	1,063	2,827	2,969	1,547	1,065	4,517	2,860	1,065	1,065	1,316
1931	Critical	1,500	1,621	1,576	1,340	1,139	408	375	351	811	696	3,766	447	849
1932	Dry	516	797	800	800	2,582	3,476	3,501	3,716	5,000	2,870	1,648	1,648	1,608
1933	Critical	2,211	2,268	2,000	1,700	1,445	392	1,734	1,542	2,118	1,019	4,170	778	1,292
1934	Critical	800	1,472	567	800	800	1,155	1,958	2,751	490	2,574	633	466	876
1935	Below Normal	627	500	611	800	800	1,750	6,289	4,554	5,000	5,000	1,750	1,633	1,771
1936	Below Normal	2,953	1,925	2,000	2,843	19,150	5,662	6,022	3,562	3,901	5,000	3,235	1,533	3,451
1937	Below Normal	2,893	1,925	2,000	1,700	1,847	5,005	3,781	3,843	4,246	3,916	1,750	1,533	2,084
1938	Wet	2,308	1,915	4,421	3,311	14,703	12,202	7,757	9,718	6,855	3,392	3,052	2,183	4,291
1939	Dry	1,870	3,085	2,000	1,700	1,445	800	890	1,072	1,236	4,877	457	452	1,203
1940	Above Normal	512	532	800	2,155	13,734	12,639	5,558	1,943	3,895	4,060	2,579	2,197	3,033
1941	Wet	1,500	1,683	5,208	6,028	8,368	5,060	3,501	4,051	2,108	2,600	1,836	4,734	2,796
1942	Wet	1,561	2,525	7,555	11,051	11,516	3,458	5,689	5,724	4,664	3,507	3,063	3,736	3,837
1943	Wet	1,500	3,689	3,585	12,283	7,589	11,346	5,061	1,750	1,750	4,803	1,804	3,300	3,522
1944	Dry	1,500	1,731	1,800	1,530	1,300	1,300	1,300	1,300	3,047	1,981	1,750	1,533	1,214
1945	Below Normal	1,193	1,193	1,193	10,823	2,343	2,666	2,377	4,814	3,691	1,750	1,533	2,053	
1946	Below Normal	1,621	1,925	12,072	5,908	2,582	3,023	3,664	2,334	4,753	5,000	1,750	1,533	2,800
1947	Dry	1,500	1,540	1,554	1,321	1,123	800	1,954	2,123	2,002	2,727	800	800	1,103
1948	Below Normal	1,141	1,141	1,141	970	972	1,750	2,257	3,774	3,663	3,120	2,994	1,757	1,496
1949	Dry	1,500	1,925	2,000	1,700	1,445	1,750	2,843	2,096	3,836	3,282	1,750	1,533	1,549
1950	Below Normal	1,556	1,840	1,912	1,657	5,818	3,487	5,069	3,177	3,260	5,000	1,884	1,625	2,173
1951	Above Normal	1,500	14,511	17,790	10,696	7,564	4,362	1,852	1,750	3,248	3,861	2,315	1,703	4,288
1952	Wet	1,867	1,683	4,724	9,625	10,900	7,560	9,750	10,905	7,804	2,884	3,448	4,191	4,543
1953	Wet	1,500	2,213	2,415	7,913	2,476	1,750	2,442	2,236	3,613	4,127	2,295	2,896	2,169
1954	Above Normal	1,734	1,925	2,000	1,700	2,284	4,126	3,693	1,483	1,483	2,815	1,483	1,729	1,596
1955	Dry	1,500	1,866	1,939	1,648	1,401	1,401	1,401	1,401	1,750	2,796	1,750	1,533	1,232
1956	Wet	1,568	1,683	16,807	18,475	7,168	3,394	2,731	4,975	3,809	3,515	1,930	1,691	4,118
1957	Above Normal	2,826	3,233	2,000	1,700	2,418	4,619	1,750	1,750	2,790	3,137	2,472	1,611	1,830
1958	Wet	1,500	1,925	2,631	2,887	12,100	7,909	11,244	7,509	4,529	2,021	3,072	2,333	3,557
1959	Below Normal	2,326	2,343	2,000	1,700	3,061	805	1,049	800	1,655	4,099	800	800	1,288
1960	Dry	1,216	1,216	1,216	1,034	879	3,204	1,955	888	888	2,531	1,282	1,504	1,081
1961	Dry	1,500	1,747	1,816	1,544	1,312	800	800	800	800	3,750	447	461	955
1962	Below Normal	532	500	800	800	4,184	2,337	4,498	1,750	3,091	4,001	1,750	1,533	1,541
1963	Wet	1,747	4,665	3,907	4,613	12,478	2,454	7,236	6,309	3,171	3,977	1,864	1,560	3,212
1964	Dry	1,569	3,624	2,577	2,788	1,761	1,612	1,612	1,612	1,820	2,775	1,833	1,515	1,519
1965	Wet	1,488	1,488	21,414	14,772	5,750	1,885	4,691	3,027	2,679	4,763	1,750	3,677	4,084
1966	Below Normal	1,553	1,925	2,000	2,011	1,923	1,111	1,022	800	2,212	3,427	1,012	800	1,194
1967	Wet	1,500	1,683	4,114	8,026	5,743	7,023	5,254	7,579	6,158	2,445	3,158	4,635	3,455
1968	Below Normal	1,500	2,295	2,000	1,889	6,849	2,227	840	840	3,175	1,873	840	840	1,506
1969	Wet	1,563	1,683	1,750	23,929	11,925	5,491	7,491	8,429	4,975	3,408	2,006	4,030	4,608
1970	Wet	1,500	2,512	6,050	25,092	6,892	3,831	1,750	1,750	2,286	3,967	1,750	1,533	3,565
1971	Wet	1,347	1,347	5,763	5,675	3,835	4,320	2,309	3,182	2,783	4,153	1,750	3,357	2,406
1972	Below Normal	1,500	2,477	2,000	1,700	3,049	4,206	1,608	1,608	1,608	2,986	1,608	1,514	1,564
1973	Above Normal	1,500	1,744	2,703	9,634	8,470	4,177	2,553	3,155	3,710	4,348	1,750	1,533	2,715
1974	Wet	1,500	4,613	8,500	13,137	5,473	10,502	6,234	2,980	2,509	3,574	1,750	4,130	3,923
1975	Wet	1,500	1,925	2,000	1,700	4,212	5,093	2,550	5,099	3,663	2,823	1,750	2,506	2,095
1976	Critical	3,614	2,832	2,025	1,700	1,445	800	800	800	800	800	800	800	1,042
1977	Critical	800	800	800	800	419	401	360	305	357	362	323	375	369
1978	Above Normal	481	500	517	3,765	5,766	7,011	4,811	2,410	2,375	5,000	1,750	2,282	2,201
1979	Below Normal	1,543	1,925	2,000	1,700	3,433	4,181	2,070	2,753	4,839	2,466	1,750	1,533	1,815
1980	Above Normal	1,500	1,844	1,917	18,533	15,243	5,304	2,813	1,936	2,280	4,564	1,865	2,913	3,653
1981	Dry	1,500	1,925	2,000	1,750	1,750	800	800	800	4,711	2,720	439	458	1,182
1982	Wet	800	3,103	18,216	10,815	17,975	9,764	17,852	8,748	4,490	2,023	2,785	4,279	6,035
1983	Wet	2,552	8,507	11,611	10,332	15,805	19,927	6,881	10,168	9,094	3,552	3,580	2,416	6,273
1984	Wet	1,975	16,600	22,909	7,710	6,456	4,171	1,750	1,794	3,569	5,000	1,750	3,145	4,649
1985	Dry	1,475	1,475	1,834	1,475	2,153	1,123	2,173	1,698	3,606	2,543	1,332	940	1,313
1986	Wet	1,445	1,445	1,445	4,492	37,305	12,221	2,457	1,750	1,750	5,000	1,750	3,631	4,352
1987	Dry	1,500	1,865	1,787	1,519	1,291	800	800	1,207	1,136	1,006	800	800	875
1988	Critical	1,088	1,088	1,088	1,088	800	800	800	800	734	679	679	642	
1989	Dry	970	970	970	824	9,554	3,573	3,144	4,024	2,412	1,740	1,532	1,862	
1990	Critical	1,375	1,375	1,375	1,169	994	800	872	800	1,887	1,830	1,333	800	883
1991	Critical	1,456	1,456	1,456	430	375	1,745	1,745	1,745	1,578	2,481	1,578	1,578	1,069
1992	Critical	800	800	800	800	800	800	800	2,639	4,645	459	411	465	858
1993	Above Normal	1,605	571	800	4,476	8,371	9,683	4,587	4,237	3,759	4,905	1,750	1,953	2,800
1994	Critical	1,500	1,925	2,000	1,700	1,445	800	800	800	1,348	4,286	452	463	1,060
1995	Wet	521	800	800	14,022	6,570	19,721	7,712	9,169	7,887	3,127	3,072	4,338	4,700
1996														

Reclamation/DWR California Water Fix Biological Assessment Modeling
Comparison of No Action Alternative (Q5 Central Tendency Climate Change) and Proposed Action (Q5 Central Tendency Climate Change)

American River below Nimbus (cfs)

Difference Between BA - Proposed Action (Q5) and BA - No Action Alternative (Q5)

Water Year	Year Type	October	November	December	January	February	March	April	May	June	July	August	September	Total (TAF)
1922	Above Normal	142	0	0	0	-156	0	0	0	0	1,371	0	-707	42
1923	Below Normal	-554	-765	623	0	-62	0	58	0	0	0	2,093	0	87
1924	Critical	361	0	0	0	0	-276	-6	-81	-756	-553	-456	-81	-112
1925	Dry	0	0	0	0	-160	0	0	-6	329	-379	0	0	-13
1926	Dry	487	0	0	0	0	563	-900	333	-180	-449	0	0	-7
1927	Wet	36	36	9	-3	-3	0	0	0	0	-702	1,052	-879	-26
1928	Above Normal	110	-311	0	0	0	683	6	0	345	-1,816	0	1,143	8
1929	Critical	0	103	141	119	102	33	33	33	-82	-56	-56	-56	19
1930	Dry	8	8	8	-13	-2	0	-6	0	1,275	-756	0	0	30
1931	Critical	-404	-62	-174	-148	-126	-1	0	0	284	-104	1,785	-1,274	-11
1932	Dry	-184	178	0	0	-86	-101	-1	0	104	2,990	186	-1,314	111
1933	Critical	589	11	0	0	0	-1,053	-1,102	-72	-1,624	507	700	0	-120
1934	Critical	0	256	-233	0	0	147	-2	-2	-104	-12	-40	-1	0
1935	Below Normal	0	0	0	0	0	0	0	0	1,930	2,494	-943	9	211
1936	Below Normal	231	-11	0	-3,572	0	0	0	0	0	0	1,485	0	-115
1937	Below Normal	586	0	0	0	-2,265	-2	0	0	2,496	-690	0	-112	10
1938	Wet	808	-10	-2,366	0	0	0	0	0	0	973	-41	500	-9
1939	Dry	-1,403	-344	0	0	0	0	-129	81	74	1,121	-65	-2	-40
1940	Above Normal	0	-268	0	-467	0	-9	-23	-25	1,194	-940	-185	-238	-60
1941	Wet	0	2	54	-12	-13	0	0	0	0	171	-164	130	10
1942	Wet	19	-1,082	895	0	0	0	0	0	0	478	1,193	-1,264	19
1943	Wet	-347	-1,041	917	0	0	10	15	0	0	-197	54	45	-32
1944	Dry	0	48	50	42	36	36	36	36	291	-398	0	0	10
1945	Below Normal	24	24	24	24	-49	0	0	0	1,574	-893	0	-420	17
1946	Below Normal	121	-86	-243	0	0	-2	-4	-4	2,119	0	-679	-842	21
1947	Dry	0	-144	-196	-166	-141	0	1,154	-217	-602	343	0	0	2
1948	Below Normal	-249	-249	-212	-33	0	340	-8	0	380	-168	224	-14	
1949	Dry	-222	-169	0	0	0	0	-106	-226	1,039	-343	-228	0	-17
1950	Below Normal	56	-57	-59	-141	0	1	0	0	698	912	-129	28	79
1951	Above Normal	-430	-1,057	0	0	0	3	6	0	1,498	-1,139	294	-481	-80
1952	Wet	-381	0	294	3	3	0	0	0	0	0	0	381	18
1953	Wet	-377	-992	415	553	0	0	9	0	0	557	-397	66	-8
1954	Above Normal	-700	-635	0	0	584	561	0	0	0	-2,185	0	246	-134
1955	Dry	0	318	374	318	172	270	270	270	-199	-12	0	0	108
1956	Wet	68	34	16	-1	-1	0	0	0	0	431	153	-116	36
1957	Above Normal	-1,252	-343	-122	0	973	356	0	0	1,040	-1,863	450	-226	-67
1958	Wet	0	0	631	96	7	-7	0	0	0	184	79	128	68
1959	Below Normal	-841	-780	0	0	1,336	5	2	0	855	-901	0	0	-28
1960	Dry	59	59	59	50	43	-86	-656	0	0	-56	-579	306	-49
1961	Dry	0	64	66	56	48	0	0	0	68	471	4	0	47
1962	Below Normal	0	0	0	0	55	0	1	0	1,341	-999	-619	0	-17
1963	Wet	247	89	1	1	1	0	0	0	1,170	-1,023	-12	-93	21
1964	Dry	-1,228	180	577	473	0	0	0	0	-341	329	149	0	9
1965	Wet	-12	-44	-80	1	1	0	0	0	409	-237	0	-599	-34
1966	Below Normal	-49	-9	0	261	173	78	26	-72	1,327	-1,573	125	0	14
1967	Wet	0	69	345	12	13	0	0	0	0	0	0	236	41
1968	Below Normal	0	-1,175	-167	189	947	0	0	0	2,075	-3,127	0	0	-83
1969	Wet	63	181	246	669	3	0	0	0	0	1,658	-1,230	-431	72
1970	Wet	0	-776	750	0	0	0	0	0	536	-1,033	0	-915	-86
1971	Wet	522	522	358	0	0	-7	-21	-284	248	193	0	-369	71
1972	Below Normal	-80	-882	0	0	1,048	2	0	0	0	-1,451	0	0	-86
1973	Above Normal	0	185	1,122	145	1	-1	0	0	478	-652	0	0	77
1974	Wet	0	195	0	0	0	0	0	0	402	-403	0	17	12
1975	Wet	0	-1,002	0	0	1,071	12	0	0	0	71	0	189	16
1976	Critical	-253	-581	25	0	0	0	0	0	0	0	0	0	-49
1977	Critical	0	0	0	392	9	0	0	0	0	0	-23	0	23
1978	Above Normal	0	0	0	0	0	-8	0	0	0	149	0	-156	-1
1979	Below Normal	43	-642	0	0	642	0	0	0	137	-334	-190	0	-24
1980	Above Normal	0	110	114	163	0	-3	-5	-5	-6	904	115	-362	64
1981	Dry	0	-809	0	0	0	0	0	0	3,326	855	-439	-342	155
1982	Wet	-673	-2,556	-5	-5	-5	0	0	0	0	0	616	-158	
1983	Wet	-594	0	0	0	0	0	0	0	0	0	0	0	-37
1984	Wet	0	0	0	0	0	0	0	0	932	0	0	-183	45
1985	Dry	-25	-208	-476	-275	304	0	0	532	-509	-714	391	0	-61
1986	Wet	111	111	111	-53	0	0	0	0	0	0	0	-263	1
1987	Dry	0	-33	37	31	27	0	0	217	-113	-29	0	0	9
1988	Critical	25	25	25	25	6	0	0	0	-10	-22	-22	-22	2
1989	Dry	-5	-5	-5	-5	-4	0	0	9	165	-472	0	0	-20
1990	Critical	81	81	81	69	59	0	-3	0	-81	-167	-32	0	5
1991	Critical	34	34	34	0	0	0	0	0	-696	-2,519	1,061	1,017	-64
1992	Critical	164	-1,452	164	404	0	0	0	548	572	5	-1,144	90	-38
1993	Above Normal	1,105	-1	0	77	0	0	-25	-26	-30	1,335	0	-1,431	65
1994	Critical	0	-535	0	0	0	0	0	0	-45	1,942	-348	-337	43
1995	Wet	-279	0	0	-540	-3	-9	0	0	0	204	-203	361	-29
1996	Wet	-224	-1,041	866	17	0	0	0	0	0	36	0	78	-15
1997	Wet	-482	-1,038	1,373	0	0	18	0	0	2,163	-195	0	-1,817	3
1998	Wet	27	27	42	14	0	0	0	0	0	0	8	9	
1999	Wet	839	-746	-123	0	0	0	0	0	19	0	0	-443	-26
2000	Above Normal	-29	-64	0	21	508	0	0	0	399	0	0	0	49
2001	Dry	0	-341	0	0	0	0	0	-111	2,185	-469	0	0	74
2002	Dry	0	0	-706	-976	-10	-1	-24	0	911	14	-320	-39	-72
2003	Above Normal	0	-668	-35	-11	-12	0	-6	0	0	42	-76	-46	
<hr/>														
Average:														
Minimum:														
Maximum:														
Wet:														
Above Normal:														
Below Normal:														
Dry:														
Critical:														

STATEMENT OF SERVICE

CALIFORNIA WATERFIX PETITION HEARING
Department of Water Resources and U.S. Bureau of Reclamation (Petitioners)

I hereby certify that I have this day submitted to the State Water Resources Control Board and caused a true and correct copy of the following document(s):

California WaterFix Hearing – Letter to DOI and DWR regarding Hydrologic Modeling
Supporting Petitioners' Rebuttal Testimony

to be served by **Electronic Mail** (email) upon the parties listed in Table 1 of the Current Service List for the California WaterFix Petition hearing, dated March 30, 2017, posted by the State Water Resources Control Board at

http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/service_list.shtml:

I certify that the foregoing is true and correct and that this document was executed on April 11, 2017.

Signature: Terry M. Olson
Name: Terry M. Olson
Title: Legal Assistant
Party/Affiliation: Cities of Folsom, Roseville, Sacramento Suburban Water District, San Juan Water District
Address: 1011 22nd Street
Sacramento, CA 95816