Appendix H1a2
Sacramento Water Allocation Model Results for Revised Proposed Plan Amendments

H1a2.1 Introduction

This appendix summarizes results from the Sacramento Water Allocation Model (SacWAM) for model scenarios that represent changes in hydrology and water supply that could occur as a result of the revised proposed Plan amendments described in Chapter 13, *Revised Proposed Plan Amendments*. Model scenarios presented in this appendix were built upon similar scenarios documented and analyzed in the 2023 *Draft Staff Report/Substitute Environmental Document in Support of Potential Updates to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary for the Sacramento River and its Tributaries, Delta Eastside Tributaries, and Delta* (2023 Draft Staff Report), and reflect subsequent model updates and a new scenario described in Appendix H1a, *Sacramento Water Allocation Model Methods*.

New modeling to represent the starting point for the regulatory pathway is represented by the 55% unimpaired flow (UF) with water supply adjustments (WSAs) scenario, labeled "55 w/WSAs" in the summary of results that follows. Revised modeling to represent the voluntary agreement pathway is represented by the Voluntary Agreement scenario, labeled "VA" in the summary of results that follows. Additionally, results are presented for the baseline scenario, labeled "Baseline," used throughout the Staff Report to represent hydrological and water supply conditions associated with the project baseline described in Chapter 6.2.1, *Baseline Conditions*, and Chapter 7.1.5.2, *Baseline, Evaluation Approach, and Modeling Tools*. Model results are also presented for two additional relevant points of comparison, the 2008-2009 Biological Opinions and the 2019 Biological Opinions, labeled "2008-2009 BiOps," and "2019 BiOps," respectively, in the summary of results that follows. Earlier modeling of the 2008-2009 Biological Opinions scenario was used as a point of reference for evaluating potential biological benefits of changes in hydrology in the *Scientific Basis Report in Support of Possible New and Modified Requirements for Inflows from the Sacramento River and Its Tributaries and Eastside Tributaries to the Delta, Delta Outflows, Cold Water Habitat, and Interior Delta Flows* (^SWRCB 2017) and *Scientific Basis Report Supplement in Support of proposed Voluntary Agreements for the Sacramento River, Delta, and Tributaries Update to the San Francisco Bay/Sacramento-San Joaquin Delta Water Quality Control Plan* (Appendix G2). The 2019 Biological Opinions scenario is the base modeling scenario on which the Voluntary Agreement scenario is built (see Appendix G3a) and is included here to allow the reader to evaluate the incremental effect of the VA relative to its base scenario.

In addition to the 55% UF with WSAs scenario, the regulatory pathway is represented by the range of effects analyzed for the 45, 55, and 65 scenarios in the 2023 Draft Staff Report and Chapter 13. Model results for updated unimpaired flow scenarios are presented in Appendix H1a3, *Sacramento Water Allocation Model Results for Updated Unimpaired Flow Scenarios*. Additionally, because a proposed new objective incorporating the San Joaquin River Inflow to Export (I:E) constraint was not retained in the revised proposed Plan amendments (see Chapter 13.3, *Revised Proposed Plan*

Amendments), model results evaluating the effects of removing that constraint are provided. Appendix H1a4, *Sacramento Water Allocation Model Results for CVP Export Constraint Sensitivity Analysis* provides results for scenarios in which the State Water Project (SWP) continues to operate to the I:E requirement but the Central Valley Project (CVP) does not. Appendix H1a5, *Sacramento Water Allocation Model Results for Export Constraint Sensitivity Analysis* provides results for scenarios in which neither the SWP nor CVP continues to operate to the I:E requirement.

Please refer to Chapter 6 and Appendix A1 for discussions of the approach to modeling baseline and percent unimpaired flow scenarios. Please refer to Chapter 9, Chapter 13.4.2, and Appendix G3a for discussions of the modeling approach to the 2008-2009 and 2019 Biological Opinions and Voluntary Agreement scenarios. Please refer to Appendix H1a for a discussion of model updates since the 2023 Draft Staff Report and to Chapter 13.4.2 and Appendix H1a for a description of model assumptions for the 55% UF with WSAs scenario.

All results presented in this appendix were produced using the model version SacWAM_2025.08.28 using historical hydrology for the period of record of water years 1922 through 2021. Because the "Current Accounts" year of 1922 is identical for all years within a given version of SacWAM, results are reported for water years 1923 through 2021.

H1a2.2 Streamflows

Simulated streamflow data are presented for each location where new SWRCB instream flow requirements were added to the model and for other locations that may be of interest along the Sacramento River. For each location, a monthly boxplot is presented followed by tables of cumulative distributions for each scenario and results summarized by water year type.

H1a2.2.1 American River below Folsom Reservoir (SWRCB Folsom)

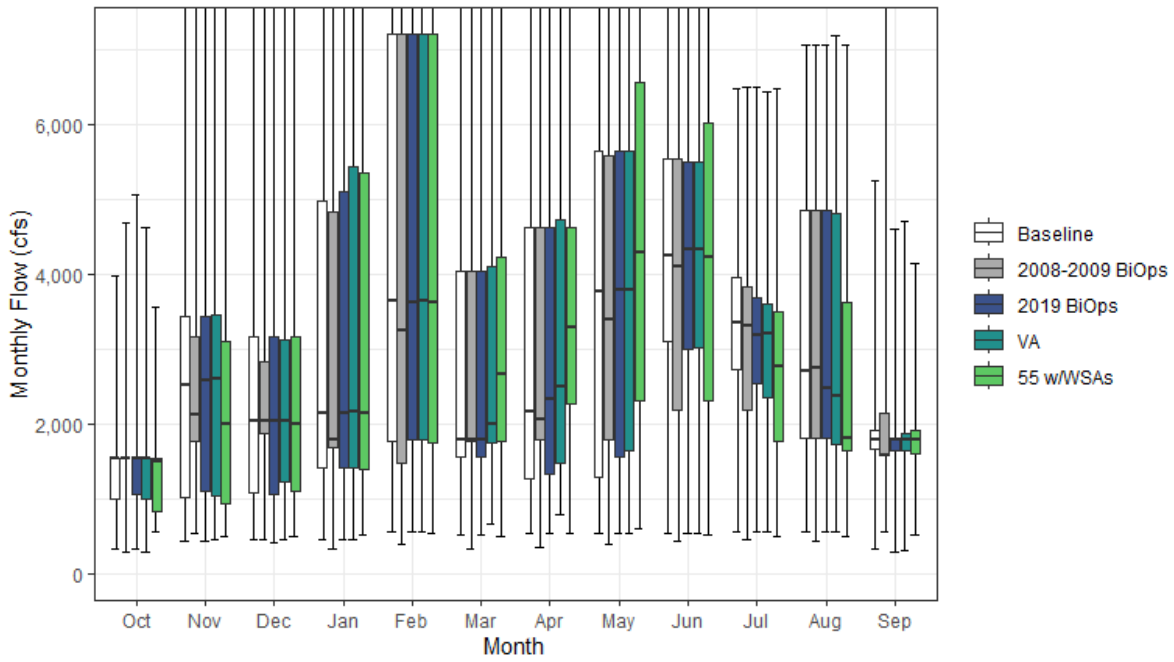

Figure H1a2-1. American River Streamflow below Folsom Reservoir Monthly Boxplot (cfs)

Table H1a2-1. Cumulative Distribution of Monthly Flow (cfs) — American River below Folsom Reservoir (SWRCB Folsom)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	317	426	461	461	563	524	534	538	544	559	549	319	477
10%	760	690	672	626	1,374	1,080	986	994	1,050	1,600	1,572	1,532	1,128
25%	1,000	1,017	1,069	1,411	1,755	1,563	1,257	1,294	3,094	2,720	1,798	1,660	1,469
50%	1,539	2,510	2,031	2,132	3,633	1,780	2,159	3,774	4,246	3,354	2,694	1,791	2,036
75%	1,541	3,424	3,170	4,979	7,203	4,030	4,619	5,640	5,533	3,948	4,843	1,914	3,296
90%	1,776	4,561	8,885	9,650	11,266	8,402	6,938	8,666	7,900	4,761	5,459	2,660	4,306
100%	3,978	16,784	20,728	26,148	31,620	14,563	15,497	13,635	14,215	6,483	7,059	5,236	6,983
Mean	1,422	2,751	3,483	4,077	5,195	3,424	3,280	4,136	4,547	3,257	3,142	1,972	2,448
2008-2009 BiOps													
0%	276	527	461	322	395	323	348	384	427	458	437	551	396
10%	1,071	1,000	808	827	1,193	1,326	1,472	1,406	1,491	1,469	1,457	1,487	1,144
25%	1,526	1,759	1,877	1,683	1,473	1,760	1,782	1,790	2,187	2,187	1,798	1,574	1,400
50%	1,540	2,125	2,030	1,794	3,247	1,781	2,066	3,384	4,103	3,304	2,742	1,576	1,999
75%	1,541	3,171	2,825	4,838	7,203	4,030	4,621	5,571	5,531	3,829	4,843	2,143	3,532
90%	1,761	4,108	8,885	9,650	11,266	8,403	6,935	8,666	7,900	4,486	5,456	3,876	4,308
100%	4,686	16,999	19,016	26,148	31,620	14,558	15,497	13,635	14,215	6,487	7,058	9,274	7,007
Mean	1,552	2,755	3,466	4,077	4,999	3,424	3,416	4,177	4,442	3,102	3,127	2,185	2,451
2019 BiOps													
0%	317	426	414	461	563	524	534	538	544	559	549	284	480
10%	761	690	672	626	1,374	1,081	987	995	1,188	1,552	1,587	1,442	1,162
25%	1,058	1,106	1,049	1,410	1,776	1,563	1,318	1,552	2,994	2,538	1,798	1,638	1,413
50%	1,539	2,583	2,031	2,132	3,623	1,780	2,318	3,778	4,321	3,191	2,466	1,791	2,043
75%	1,541	3,443	3,170	5,095	7,203	4,028	4,617	5,642	5,494	3,683	4,843	1,811	3,306
90%	1,795	4,649	8,885	9,650	11,266	8,402	6,936	8,666	7,900	4,233	5,456	2,463	4,271
100%	5,066	16,783	20,813	26,148	31,621	14,563	15,493	13,635	14,215	6,487	7,060	4,593	7,033
Mean	1,434	2,830	3,486	4,086	5,187	3,426	3,322	4,298	4,533	3,065	3,126	1,891	2,448
VA													
0%	276	449	460	461	563	662	786	538	544	559	549	300	492
10%	760	699	677	715	1,403	1,243	1,208	1,051	1,188	1,583	1,547	1,527	1,167
25%	1,001	1,040	1,216	1,420	1,782	1,736	1,479	1,638	3,018	2,348	1,733	1,637	1,412
50%	1,539	2,608	2,031	2,156	3,635	1,994	2,487	3,778	4,323	3,199	2,363	1,790	2,032
75%	1,541	3,455	3,124	5,442	7,204	4,109	4,723	5,643	5,496	3,602	4,806	1,862	3,293
90%	1,757	4,695	8,809	9,653	11,267	8,402	6,939	8,667	7,902	4,162	5,524	2,467	4,245
100%	4,615	16,878	20,791	26,151	31,622	14,563	15,497	13,637	14,217	6,444	7,193	4,714	6,986
Mean	1,406	2,797	3,442	4,123	5,213	3,522	3,426	4,351	4,551	2,992	3,079	1,935	2,457
55 w/WSAs													
0%	550	497	485	522	531	497	544	608	504	504	504	513	423
10%	673	660	744	788	1,391	1,331	1,509	1,319	1,087	1,551	1,332	1,438	1,109
25%	829	936	1,101	1,392	1,750	1,771	2,265	2,315	2,300	1,765	1,640	1,600	1,425
50%	1,503	2,001	1,999	2,131	3,629	2,664	3,288	4,283	4,215	2,774	1,801	1,791	2,091
75%	1,540	3,096	3,160	5,352	7,203	4,225	4,617	6,557	6,009	3,502	3,610	1,915	3,306
90%	1,792	4,100	8,873	9,649	11,266	8,402	6,925	8,987	8,233	4,307	5,389	2,979	4,267
100%	3,556	13,935	20,158	26,148	31,620	14,563	15,497	13,631	14,215	6,483	7,059	4,140	6,997
Mean	1,371	2,431	3,418	4,097	5,227	3,698	3,917	4,678	4,584	2,816	2,683	1,892	2,455

Table H1a2-2. Water Year Average of Monthly Flows (cfs) — American River below Folsom Reservoir (SWRCB Folsom)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	1,303	1,819	1,379	1,045	1,350	1,043	1,417	1,181	1,912	1,274	1,319	1,378
D	1,285	2,203	1,873	1,384	2,475	1,919	1,605	2,008	3,454	3,068	2,363	1,686
BN	1,382	2,526	2,441	2,223	4,049	2,397	2,730	3,494	3,903	3,804	2,838	1,892
AN	1,291	3,593	3,259	4,960	6,339	4,779	3,163	4,627	4,357	3,642	3,316	2,897
W	1,665	3,457	6,536	8,490	9,508	5,904	5,898	7,484	7,237	3,954	4,809	2,179
All	1,422	2,751	3,483	4,077	5,195	3,424	3,280	4,136	4,547	3,257	3,142	1,972
2008-2009 BiOps												
C	1,517	1,981	1,630	1,391	1,229	1,064	1,323	1,194	1,585	1,314	1,288	1,345
D	1,415	2,041	2,007	1,413	1,944	1,902	2,094	2,320	3,130	2,730	2,416	1,629
BN	1,430	2,553	2,476	2,388	3,829	2,433	2,865	3,393	4,000	3,433	2,692	1,652
AN	1,401	3,493	3,215	4,774	6,208	4,730	3,235	4,556	4,356	3,602	3,329	2,536
W	1,809	3,524	6,242	8,254	9,507	5,904	5,923	7,476	7,244	3,920	4,823	3,236
All	1,552	2,755	3,466	4,077	4,999	3,424	3,416	4,177	4,442	3,102	3,127	2,185
2019 BiOps												
C	1,298	1,873	1,340	1,018	1,350	1,042	1,558	1,287	1,743	1,195	1,425	1,327
D	1,286	2,201	1,874	1,414	2,465	1,929	1,689	2,412	3,442	2,708	2,177	1,643
BN	1,425	2,648	2,462	2,221	4,019	2,397	2,734	3,733	3,942	3,371	2,869	1,767
AN	1,274	3,605	3,259	5,020	6,339	4,779	3,163	4,704	4,327	3,678	3,269	2,701
W	1,686	3,608	6,553	8,489	9,508	5,904	5,898	7,484	7,278	3,885	4,835	2,128
All	1,434	2,830	3,486	4,086	5,187	3,426	3,322	4,298	4,533	3,065	3,126	1,891
VA												
C	1,283	1,829	1,283	1,056	1,475	1,205	1,747	1,302	1,785	1,312	1,340	1,341
D	1,288	2,259	1,887	1,414	2,489	2,136	1,903	2,628	3,446	2,518	2,053	1,638
BN	1,364	2,643	2,380	2,326	4,020	2,474	2,814	3,734	3,960	3,317	2,778	1,798
AN	1,269	3,590	3,229	5,023	6,339	4,854	3,240	4,706	4,381	3,436	3,252	3,000
W	1,639	3,488	6,493	8,524	9,509	5,905	5,899	7,491	7,280	3,852	4,882	2,130
All	1,406	2,797	3,442	4,123	5,213	3,522	3,426	4,351	4,551	2,992	3,079	1,935
55 w/WSAs												
C	1,201	1,511	1,247	1,065	1,413	1,215	1,513	1,764	1,932	1,391	1,134	1,153
D	1,227	1,886	1,880	1,486	2,548	2,233	2,490	2,913	2,830	2,079	2,024	1,615
BN	1,419	2,262	2,349	2,228	4,100	2,870	3,766	4,191	3,903	3,174	2,298	1,822
AN	1,249	2,751	3,170	4,988	6,323	4,860	3,895	5,045	5,037	3,338	2,913	2,373
W	1,585	3,300	6,479	8,456	9,500	6,156	6,351	7,688	7,535	3,680	4,144	2,341
All	1,371	2,431	3,418	4,097	5,227	3,698	3,917	4,678	4,584	2,816	2,683	1,892

H1a2.2.2 American River above Confluence with Sacramento River (SWRCB American River)

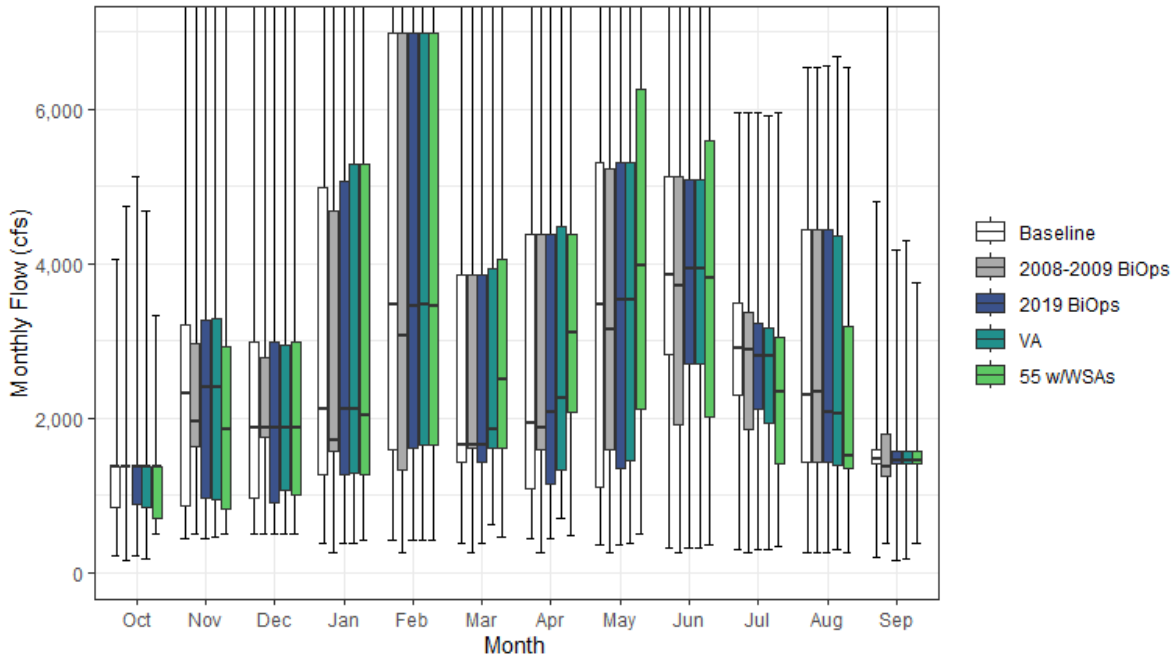

Figure H1a2-2. American River Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-3. Cumulative Distribution of Monthly Flow (cfs) — American River above Confluence with Sacramento River (SWRCB American River)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	224	431	500	386	416	383	430	353	312	297	252	190	367
10%	583	567	596	539	1,277	931	812	806	818	1,258	1,262	1,275	983
25%	839	865	961	1,277	1,597	1,426	1,094	1,099	2,825	2,290	1,434	1,415	1,320
50%	1,365	2,308	1,865	2,111	3,462	1,651	1,930	3,469	3,855	2,908	2,302	1,464	1,866
75%	1,366	3,214	2,993	4,993	6,982	3,849	4,382	5,302	5,119	3,487	4,435	1,597	3,117
90%	1,608	4,368	8,777	9,418	11,171	8,214	6,671	8,275	7,446	4,278	4,992	2,347	4,109
100%	4,049	16,514	20,399	26,156	31,483	14,478	15,081	13,158	13,649	5,956	6,550	4,811	6,784
Mean	1,250	2,585	3,348	3,971	5,079	3,279	3,086	3,867	4,190	2,833	2,758	1,683	2,282
2008-2009 BiOps													
0%	155	500	500	250	251	250	250	250	250	250	250	375	286
10%	892	849	713	767	1,088	1,169	1,274	1,199	1,245	1,083	1,168	1,243	1,002
25%	1,365	1,624	1,755	1,572	1,325	1,617	1,595	1,589	1,906	1,850	1,426	1,245	1,249
50%	1,366	1,954	1,865	1,702	3,071	1,653	1,872	3,156	3,713	2,879	2,347	1,359	1,824
75%	1,367	2,957	2,787	4,682	6,982	3,849	4,384	5,235	5,117	3,370	4,435	1,798	3,341
90%	1,557	3,892	8,775	9,418	11,171	8,215	6,667	8,275	7,446	4,011	4,989	3,485	4,115
100%	4,744	16,726	18,716	26,156	31,483	14,474	15,081	13,157	13,649	5,960	6,550	8,743	6,808
Mean	1,377	2,589	3,331	3,972	4,885	3,280	3,220	3,907	4,088	2,682	2,743	1,890	2,284
2019 BiOps													
0%	224	431	500	386	416	383	430	353	312	298	251	156	372
10%	584	567	596	539	1,277	932	813	808	953	1,155	1,259	1,198	1,015
25%	892	973	900	1,276	1,616	1,426	1,154	1,355	2,704	2,114	1,426	1,403	1,266
50%	1,365	2,401	1,865	2,108	3,444	1,651	2,085	3,526	3,928	2,803	2,083	1,456	1,885
75%	1,366	3,262	2,991	5,058	6,982	3,847	4,380	5,304	5,080	3,227	4,435	1,570	3,127
90%	1,626	4,445	8,775	9,418	11,171	8,214	6,668	8,275	7,446	3,765	4,989	2,120	4,079
100%	5,118	16,513	20,482	26,156	31,483	14,478	15,077	13,158	13,649	5,960	6,551	4,185	6,834
Mean	1,262	2,663	3,351	3,980	5,071	3,281	3,127	4,026	4,177	2,646	2,742	1,604	2,282
VA													
0%	184	454	500	387	417	613	699	381	313	297	295	174	389
10%	584	583	628	578	1,279	1,146	1,060	865	954	1,165	1,187	1,262	1,034
25%	845	936	1,066	1,278	1,647	1,619	1,320	1,439	2,705	1,928	1,393	1,405	1,258
50%	1,366	2,405	1,866	2,112	3,464	1,853	2,248	3,527	3,931	2,805	2,053	1,457	1,866
75%	1,368	3,290	2,947	5,290	6,983	3,930	4,488	5,306	5,084	3,165	4,357	1,573	3,115
90%	1,609	4,492	8,701	9,422	11,173	8,215	6,672	8,277	7,448	3,696	5,056	2,116	4,054
100%	4,675	16,607	20,460	26,160	31,485	14,480	15,082	13,160	13,651	5,918	6,683	4,303	6,788
Mean	1,235	2,630	3,308	4,018	5,098	3,384	3,237	4,088	4,195	2,575	2,698	1,648	2,292
55 w/WSAs													
0%	500	500	500	417	416	449	469	502	363	347	250	375	338
10%	544	566	656	656	1,279	1,219	1,351	1,135	855	1,215	1,010	1,224	982
25%	696	814	1,012	1,276	1,641	1,619	2,068	2,110	2,012	1,406	1,341	1,398	1,275
50%	1,365	1,861	1,864	2,042	3,458	2,509	3,103	3,969	3,808	2,344	1,516	1,457	1,945
75%	1,366	2,914	2,983	5,292	6,982	4,051	4,379	6,261	5,588	3,051	3,191	1,576	3,112
90%	1,614	3,870	8,686	9,417	11,170	8,214	6,657	8,614	7,772	3,836	4,923	2,612	4,079
100%	3,322	13,714	19,838	26,156	31,483	14,478	15,081	13,153	13,649	5,956	6,550	3,744	6,798
Mean	1,217	2,286	3,300	3,999	5,116	3,553	3,715	4,406	4,236	2,414	2,323	1,618	2,296

Table H1a2-4. Water Year Average of Monthly Flows (cfs) — American River above Confluence with Sacramento River (SWRCB American River)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	1,123	1,661	1,259	923	1,250	919	1,238	982	1,631	958	1,012	1,143
D	1,116	2,039	1,763	1,263	2,350	1,778	1,434	1,794	3,142	2,647	2,015	1,445
BN	1,222	2,349	2,290	2,118	3,948	2,263	2,546	3,234	3,561	3,360	2,461	1,619
AN	1,125	3,425	3,119	4,915	6,243	4,621	2,961	4,340	3,998	3,189	2,913	2,552
W	1,485	3,293	6,386	8,378	9,372	5,746	5,677	7,138	6,797	3,494	4,359	1,837
All	1,250	2,585	3,348	3,971	5,079	3,279	3,086	3,867	4,190	2,833	2,758	1,683
2008-2009 BiOps												
C	1,331	1,820	1,506	1,266	1,130	939	1,146	994	1,315	996	983	1,112
D	1,246	1,880	1,895	1,292	1,826	1,761	1,914	2,101	2,823	2,317	2,067	1,390
BN	1,267	2,376	2,325	2,281	3,730	2,297	2,679	3,134	3,656	2,998	2,319	1,385
AN	1,229	3,325	3,076	4,732	6,113	4,572	3,032	4,271	3,997	3,150	2,926	2,200
W	1,626	3,360	6,096	8,146	9,372	5,746	5,702	7,130	6,804	3,461	4,373	2,866
All	1,377	2,589	3,331	3,972	4,885	3,280	3,220	3,907	4,088	2,682	2,743	1,890
2019 BiOps												
C	1,118	1,714	1,220	897	1,250	918	1,374	1,084	1,468	883	1,115	1,094
D	1,117	2,037	1,764	1,293	2,340	1,788	1,516	2,191	3,130	2,296	1,834	1,404
BN	1,263	2,468	2,311	2,116	3,919	2,262	2,550	3,469	3,600	2,938	2,491	1,497
AN	1,108	3,438	3,119	4,975	6,243	4,620	2,961	4,416	3,968	3,224	2,867	2,361
W	1,506	3,442	6,402	8,377	9,372	5,746	5,677	7,138	6,837	3,427	4,384	1,787
All	1,262	2,663	3,351	3,980	5,071	3,281	3,127	4,026	4,177	2,646	2,742	1,604
VA												
C	1,104	1,670	1,165	936	1,374	1,090	1,572	1,116	1,509	994	1,036	1,109
D	1,120	2,093	1,777	1,295	2,365	2,012	1,751	2,434	3,134	2,111	1,714	1,400
BN	1,205	2,463	2,231	2,221	3,920	2,340	2,629	3,470	3,617	2,886	2,404	1,529
AN	1,105	3,423	3,090	4,979	6,244	4,696	3,038	4,418	4,022	2,988	2,853	2,653
W	1,461	3,325	6,343	8,413	9,374	5,749	5,678	7,146	6,840	3,395	4,431	1,790
All	1,235	2,630	3,308	4,018	5,098	3,384	3,237	4,088	4,195	2,575	2,698	1,648
55 w/WSAs												
C	1,046	1,378	1,153	961	1,329	1,102	1,347	1,576	1,686	1,119	877	961
D	1,083	1,745	1,793	1,378	2,433	2,091	2,305	2,697	2,545	1,701	1,705	1,397
BN	1,268	2,103	2,218	2,130	4,003	2,730	3,564	3,920	3,563	2,746	1,938	1,559
AN	1,095	2,613	3,049	4,944	6,227	4,700	3,681	4,751	4,666	2,893	2,521	2,050
W	1,424	3,151	6,336	8,347	9,364	5,995	6,122	7,339	7,090	3,228	3,711	1,995
All	1,217	2,286	3,300	3,999	5,116	3,553	3,715	4,406	4,236	2,414	2,323	1,618

H1a2.2.3 Antelope Creek above Confluence with Sacramento River (SWRCB Antelope Creek)

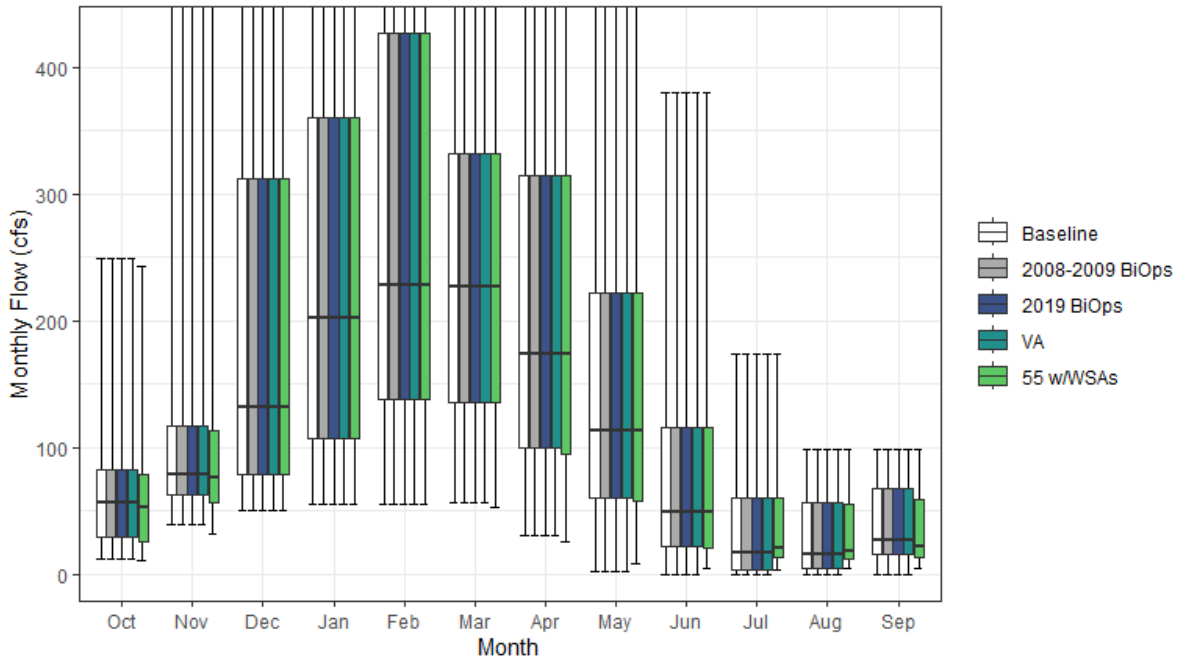

Figure H1a2-3. Antelope Creek Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-5. Cumulative Distribution of Monthly Flow (cfs) — Antelope Creek above Confluence with Sacramento River (SWRCB Antelope Creek)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	12	39	50	55	56	56	31	3	0	0	0	0	24
10%	20	51	64	71	97	101	68	36	10	0	0	6	41
25%	29	63	78	107	138	136	100	60	22	4	5	16	59
50%	57	78	131	202	229	227	174	113	49	17	16	27	88
75%	82	117	311	360	427	332	315	221	116	60	56	67	151
90%	91	184	506	579	625	532	435	296	173	78	69	74	200
100%	249	541	743	1,220	1,190	872	611	529	380	174	99	98	242
Mean	59	105	215	280	316	271	219	145	76	35	31	39	108
2008-2009 BiOps													
0%	12	39	50	55	56	56	31	3	0	0	0	0	24
10%	20	51	64	71	97	101	68	36	10	0	0	6	41
25%	29	63	78	107	138	136	100	60	22	4	5	16	59
50%	57	78	131	202	229	227	174	113	49	17	16	27	88
75%	82	117	311	360	427	332	315	221	116	60	56	67	151
90%	91	184	506	579	625	532	435	296	173	78	69	74	200
100%	249	541	743	1,220	1,190	872	611	529	380	174	99	98	242
Mean	59	105	215	280	316	271	219	145	76	35	31	39	108
2019 BiOps													
0%	12	39	50	55	56	56	31	3	0	0	0	0	24
10%	20	51	64	71	97	101	68	36	10	0	0	6	41
25%	29	63	78	107	138	136	100	60	22	4	5	16	59
50%	57	78	131	202	229	227	174	113	49	17	16	27	88
75%	82	117	311	360	427	332	315	221	116	60	56	67	151
90%	91	184	506	579	625	532	435	296	173	78	69	74	200
100%	249	541	743	1,220	1,190	872	611	529	380	174	99	98	242
Mean	59	105	215	280	316	271	219	145	76	35	31	39	108
VA													
0%	12	39	50	55	56	56	31	3	0	0	0	0	24
10%	20	51	64	71	97	101	68	36	10	0	0	6	41
25%	29	63	78	107	138	136	100	60	22	4	5	16	59
50%	57	78	131	202	229	227	174	113	49	17	16	27	88
75%	82	117	311	360	427	332	315	221	116	60	56	67	151
90%	91	184	506	579	625	532	435	296	173	78	69	74	200
100%	249	541	743	1,220	1,190	872	611	529	380	174	99	98	242
Mean	59	105	215	280	316	271	219	145	76	35	31	39	108
55 w/WSAs													
0%	11	31	50	55	56	52	25	9	5	4	4	5	25
10%	18	45	64	71	96	100	67	34	11	8	8	8	42
25%	26	57	78	107	138	136	94	58	21	13	12	14	59
50%	52	76	131	202	229	227	173	113	49	20	19	21	87
75%	78	113	311	360	427	332	315	221	116	60	56	58	151
90%	85	182	506	579	625	532	435	296	173	82	67	69	199
100%	243	540	743	1,220	1,190	872	611	529	380	174	98	98	241
Mean	54	101	215	280	316	271	218	145	76	39	32	36	107

Table H1a2-6. Water Year Average of Monthly Flows (cfs) — Antelope Creek above Confluence with Sacramento River (SWRCB Antelope Creek)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	35	56	99	99	116	114	64	35	9	0	1	6
D	51	85	142	127	188	202	123	69	23	6	7	18
BN	57	87	151	208	274	237	214	114	56	17	15	26
AN	58	105	180	361	416	355	262	185	97	51	49	59
W	78	156	384	502	504	395	359	262	156	81	67	73
All	59	105	215	280	316	271	219	145	76	35	31	39
2008-2009 BiOps												
C	35	56	99	99	116	114	64	35	9	0	1	6
D	51	85	142	127	188	202	123	69	23	6	7	18
BN	57	87	151	208	274	237	214	114	56	17	15	26
AN	58	105	180	361	416	355	262	185	97	51	49	59
W	78	156	384	502	504	395	359	262	156	81	67	73
All	59	105	215	280	316	271	219	145	76	35	31	39
2019 BiOps												
C	35	56	99	99	116	114	64	35	9	0	1	6
D	51	85	142	127	188	202	123	69	23	6	7	18
BN	57	87	151	208	274	237	214	114	56	17	15	26
AN	58	105	180	361	416	355	262	185	97	51	49	59
W	78	156	384	502	504	395	359	262	156	81	67	73
All	59	105	215	280	316	271	219	145	76	35	31	39
VA												
C	35	56	99	99	116	114	64	35	9	0	1	6
D	51	85	142	127	188	202	123	69	23	6	7	18
BN	57	87	151	208	274	237	214	114	56	17	15	26
AN	58	105	180	361	416	355	262	185	97	51	49	59
W	78	156	384	502	504	395	359	262	156	81	67	73
All	59	105	215	280	316	271	219	145	76	35	31	39
55 w/WSAs												
C	31	53	99	99	116	113	61	34	12	7	7	9
D	47	81	142	127	187	202	122	69	23	13	12	15
BN	52	82	151	208	274	237	212	115	54	20	18	21
AN	52	100	180	361	416	355	262	185	96	50	46	54
W	73	154	384	502	504	395	359	262	156	81	64	67
All	54	101	215	280	316	271	218	145	76	39	32	36

H1a2.2.4 Battle Creek above Confluence with Sacramento River (SWRCB Battle Creek)

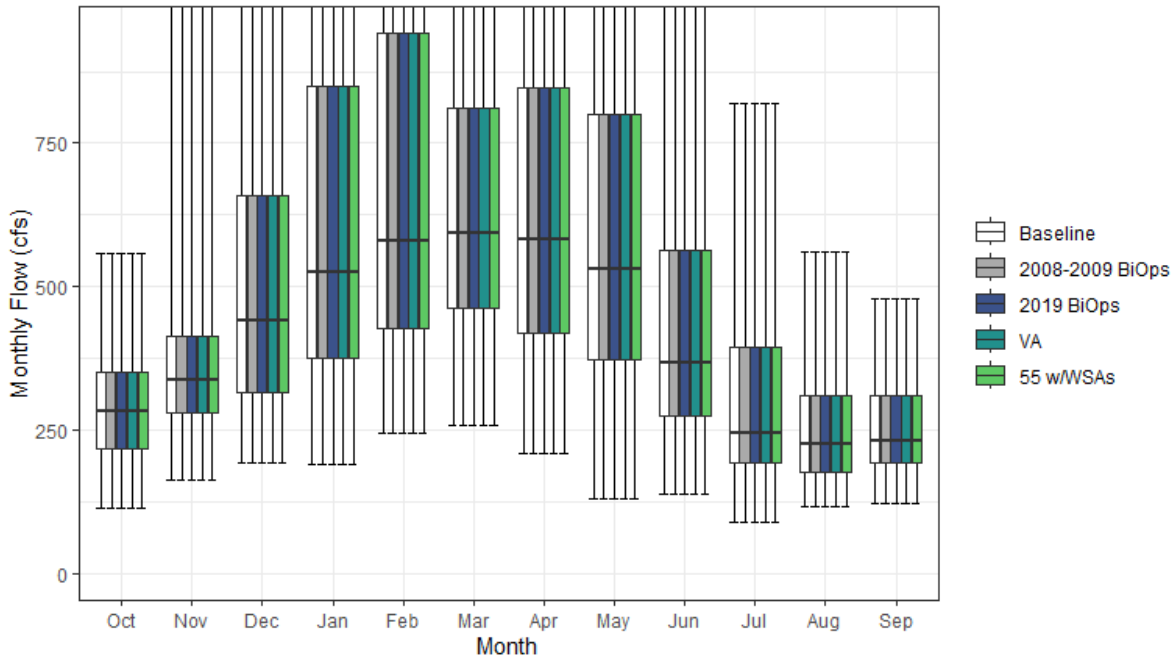

Figure H1a2-4. Battle Creek Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-7. Cumulative Distribution of Monthly Flow (cfs) — Battle Creek above Confluence with Sacramento River (SWRCB Battle Creek)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	113	162	192	191	246	259	209	131	139	89	116	122	161
10%	183	222	258	288	346	372	339	301	219	163	153	169	207
25%	217	279	314	376	427	462	418	373	273	194	176	192	253
50%	282	336	441	524	579	592	584	531	368	244	225	232	304
75%	350	414	658	848	942	811	846	800	563	395	311	309	431
90%	401	539	1,019	1,144	1,279	1,148	1,054	975	755	459	357	345	530
100%	559	1,041	1,561	2,384	1,886	1,772	1,707	1,590	1,462	819	562	480	678
Mean	286	372	542	664	723	685	652	587	445	294	244	250	346
2008-2009 BiOps													
0%	113	162	192	191	246	259	209	131	139	89	116	122	161
10%	183	222	258	288	346	372	339	301	219	163	153	169	207
25%	217	279	314	376	427	462	418	373	273	194	176	192	253
50%	282	336	441	524	579	592	584	531	368	244	225	232	304
75%	350	414	658	848	942	811	846	800	563	395	311	309	431
90%	401	539	1,019	1,144	1,279	1,148	1,054	975	755	459	357	345	530
100%	559	1,041	1,561	2,384	1,886	1,772	1,707	1,590	1,462	819	562	480	678
Mean	286	372	542	664	723	685	652	587	445	294	244	250	346
2019 BiOps													
0%	113	162	192	191	246	259	209	131	139	89	116	122	161
10%	183	222	258	288	346	372	339	301	219	163	153	169	207
25%	217	279	314	376	427	462	418	373	273	194	176	192	253
50%	282	336	441	524	579	592	584	531	368	244	225	232	304
75%	350	414	658	848	942	811	846	800	563	395	311	309	431
90%	401	539	1,019	1,144	1,279	1,148	1,054	975	755	459	357	345	530
100%	559	1,041	1,561	2,384	1,886	1,772	1,707	1,590	1,462	819	562	480	678
Mean	286	372	542	664	723	685	652	587	445	294	244	250	346
VA													
0%	113	162	192	191	246	259	209	131	139	89	116	122	161
10%	183	222	258	288	346	372	339	301	219	163	153	169	207
25%	217	279	314	376	427	462	418	373	273	194	176	192	253
50%	282	336	441	524	579	592	584	531	368	244	225	232	304
75%	350	414	658	848	942	811	846	800	563	395	311	309	431
90%	401	539	1,019	1,144	1,279	1,148	1,054	975	755	459	357	345	530
100%	559	1,041	1,561	2,384	1,886	1,772	1,707	1,590	1,462	819	562	480	678
Mean	286	372	542	664	723	685	652	587	445	294	244	250	346
55 w/WSAs													
0%	113	162	192	191	246	259	209	131	139	89	116	122	161
10%	183	222	258	288	346	372	339	301	219	163	153	169	207
25%	217	279	314	376	427	462	418	373	273	194	176	192	253
50%	282	336	441	524	579	592	584	531	368	244	225	232	304
75%	350	414	658	848	942	811	846	800	563	395	311	309	431
90%	401	539	1,019	1,144	1,279	1,148	1,054	975	755	459	357	345	530
100%	559	1,041	1,561	2,384	1,886	1,772	1,707	1,590	1,462	819	562	480	678
Mean	286	372	542	664	723	685	652	587	445	294	244	250	346

Table H1a2-8. Water Year Average of Monthly Flows (cfs) — Battle Creek above Confluence with Sacramento River (SWRCB Battle Creek)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	241	260	354	349	395	400	311	276	212	157	154	173
D	282	335	455	403	524	544	495	389	286	198	183	203
BN	269	323	421	541	620	591	639	521	385	243	206	215
AN	274	367	474	768	835	866	716	680	489	324	263	277
W	329	491	810	1,059	1,063	927	931	903	706	459	352	338
All	286	372	542	664	723	685	652	587	445	294	244	250
2008-2009 BiOps												
C	241	260	354	349	395	400	311	276	212	157	154	173
D	282	335	455	403	524	544	495	389	286	198	183	203
BN	269	323	421	541	620	591	639	521	385	243	206	215
AN	274	367	474	768	835	866	716	680	489	324	263	277
W	329	491	810	1,059	1,063	927	931	903	706	459	352	338
All	286	372	542	664	723	685	652	587	445	294	244	250
2019 BiOps												
C	241	260	354	349	395	400	311	276	212	157	154	173
D	282	335	455	403	524	544	495	389	286	198	183	203
BN	269	323	421	541	620	591	639	521	385	243	206	215
AN	274	367	474	768	835	866	716	680	489	324	263	277
W	329	491	810	1,059	1,063	927	931	903	706	459	352	338
All	286	372	542	664	723	685	652	587	445	294	244	250
VA												
C	241	260	354	349	395	400	311	276	212	157	154	173
D	282	335	455	403	524	544	495	389	286	198	183	203
BN	269	323	421	541	620	591	639	521	385	243	206	215
AN	274	367	474	768	835	866	716	680	489	324	263	277
W	329	491	810	1,059	1,063	927	931	903	706	459	352	338
All	286	372	542	664	723	685	652	587	445	294	244	250
55 w/WSAs												
C	241	260	354	349	395	400	311	276	212	157	155	173
D	282	335	455	403	524	544	495	389	286	198	183	203
BN	269	323	421	541	620	591	639	521	385	243	206	215
AN	274	367	474	768	835	866	716	680	489	324	263	277
W	329	491	810	1,059	1,063	927	931	903	706	459	352	338
All	286	372	542	664	723	685	652	587	445	294	244	250

H1a2.2.5 Bear River below Camp Far West Reservoir (SWRCB Camp Far West)

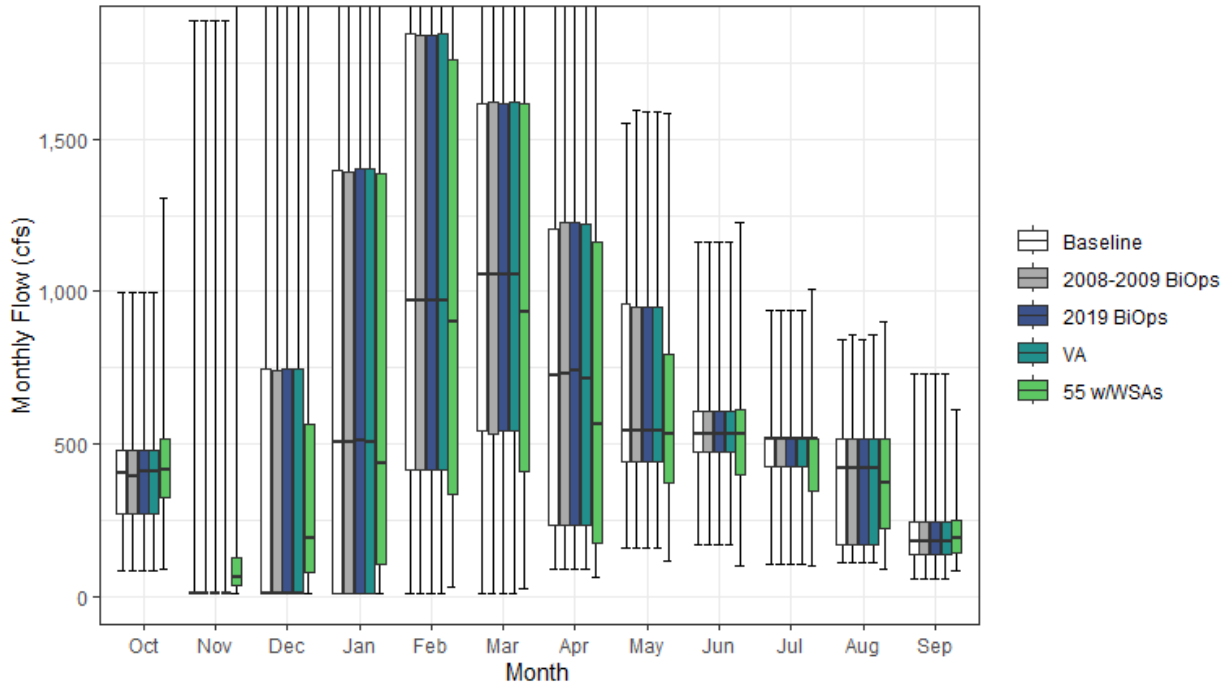

Figure H1a2-5. Bear River Streamflow below Camp Far West Reservoir Monthly Boxplot (cfs)

Table H1a2-9. Cumulative Distribution of Monthly Flow (cfs) — Bear River below Camp Far West Reservoir (SWRCB Camp Far West)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	85	10	10	10	10	10	88	158	172	106	109	56	69
10%	217	10	10	10	10	117	126	310	314	291	124	106	144
25%	272	10	10	10	417	541	236	441	472	426	171	135	223
50%	402	10	10	506	972	1,059	727	542	530	515	418	178	401
75%	477	10	745	1,395	1,846	1,616	1,204	958	609	523	515	242	681
90%	515	449	2,198	2,680	3,029	2,592	1,678	1,228	885	694	554	304	867
100%	997	1,891	3,993	4,748	6,332	4,154	3,723	1,551	1,162	939	841	733	1,228
Mean	380	157	590	986	1,303	1,194	868	685	564	493	376	199	469
2008-2009 BiOps													
0%	85	10	10	10	10	10	88	158	172	106	109	56	69
10%	217	10	10	10	10	105	126	310	314	291	124	106	143
25%	272	10	10	10	417	534	236	440	472	426	171	135	223
50%	393	10	10	505	972	1,059	730	542	530	515	418	178	401
75%	477	10	738	1,395	1,841	1,623	1,224	947	609	523	515	242	682
90%	515	449	2,198	2,680	3,029	2,604	1,699	1,228	885	694	554	304	867
100%	997	1,891	3,993	4,748	6,332	4,139	3,723	1,596	1,162	939	856	733	1,231
Mean	379	158	589	987	1,302	1,193	869	687	564	493	376	199	469
2019 BiOps													
0%	85	10	10	10	10	10	88	158	172	106	109	56	69
10%	217	10	10	10	10	117	126	310	314	291	124	106	144
25%	272	10	10	10	417	541	236	441	472	426	171	135	223
50%	410	10	10	513	972	1,059	740	542	530	515	418	178	400
75%	477	10	745	1,402	1,840	1,615	1,224	947	609	524	515	242	680
90%	515	452	2,198	2,680	3,029	2,604	1,688	1,228	885	694	554	304	866
100%	997	1,891	3,993	4,748	6,332	4,154	3,723	1,588	1,162	939	841	733	1,231
Mean	380	158	590	987	1,302	1,194	870	687	564	493	376	199	469
VA													
0%	85	10	10	10	10	10	88	158	172	106	109	56	69
10%	217	10	10	10	10	118	126	310	314	291	124	106	142
25%	272	10	10	10	417	541	236	441	472	426	172	135	225
50%	410	10	10	508	972	1,056	714	542	530	515	418	178	400
75%	477	10	745	1,402	1,846	1,623	1,224	948	609	524	515	242	681
90%	515	452	2,198	2,680	3,029	2,604	1,693	1,228	885	697	554	304	867
100%	997	1,891	3,993	4,735	6,332	4,139	3,736	1,590	1,162	940	856	733	1,232
Mean	380	158	590	987	1,302	1,194	871	684	564	493	376	199	469
55 w/WSAs													
0%	91	10	10	10	33	25	60	117	102	102	90	81	78
10%	252	16	31	51	124	134	112	248	280	255	152	112	146
25%	323	33	80	106	334	412	174	372	400	345	222	144	214
50%	414	65	189	436	904	931	565	530	530	515	370	189	372
75%	515	128	564	1,388	1,760	1,619	1,164	795	611	515	515	251	655
90%	549	521	2,086	2,670	3,024	2,604	1,676	1,085	906	655	527	300	844
100%	1,306	2,813	3,868	4,643	6,332	4,154	3,764	1,586	1,226	1,009	901	613	1,231
Mean	418	215	574	954	1,272	1,154	805	598	542	477	359	207	455

Table H1a2-10. Water Year Average of Monthly Flows (cfs) — Bear River below Camp Far West Reservoir (SWRCB Camp Far West)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	362	45	51	62	247	258	165	314	332	329	174	120
D	326	54	181	266	514	733	406	493	463	436	249	151
BN	360	43	328	497	1,112	1,099	800	601	542	475	389	180
AN	370	212	522	1,414	1,714	1,525	939	929	691	575	440	255
W	445	344	1,370	2,145	2,401	1,959	1,597	981	725	602	542	265
All	380	157	590	986	1,303	1,194	868	685	564	493	376	199
2008-2009 BiOps												
C	362	45	51	62	246	258	165	314	332	329	174	120
D	326	55	180	268	514	729	406	492	463	436	249	151
BN	353	42	329	497	1,112	1,102	804	603	542	475	389	180
AN	376	214	522	1,414	1,710	1,522	950	933	691	574	440	255
W	445	346	1,368	2,146	2,402	1,959	1,594	982	725	602	542	266
All	379	158	589	987	1,302	1,193	869	687	564	493	376	199
2019 BiOps												
C	362	46	51	61	247	258	165	314	332	329	174	120
D	326	54	181	268	514	731	407	492	463	436	249	151
BN	360	43	328	499	1,111	1,099	804	602	542	475	389	180
AN	376	214	521	1,414	1,709	1,526	952	934	691	575	440	255
W	445	346	1,371	2,146	2,401	1,959	1,596	984	725	602	542	265
All	380	158	590	987	1,302	1,194	870	687	564	493	376	199
VA												
C	362	46	51	61	244	260	165	314	332	329	174	120
D	326	55	181	268	514	734	409	492	463	436	249	151
BN	360	43	329	499	1,112	1,100	801	599	542	475	389	180
AN	376	214	522	1,414	1,710	1,521	950	921	690	575	440	255
W	445	344	1,369	2,145	2,401	1,959	1,599	981	725	602	545	266
All	380	158	590	987	1,302	1,194	871	684	564	493	376	199
55 w/WSAs												
C	403	70	112	110	261	226	143	248	296	300	192	127
D	355	90	242	282	467	663	322	415	416	391	287	166
BN	389	79	319	471	1,037	1,054	692	510	518	472	383	202
AN	415	240	535	1,296	1,665	1,478	865	763	683	573	376	239
W	492	458	1,240	2,066	2,393	1,942	1,561	911	725	601	480	269
All	418	215	574	954	1,272	1,154	805	598	542	477	359	207

H1a2.2.6 Bear River above Confluence with Feather River (SWRCB Bear River)

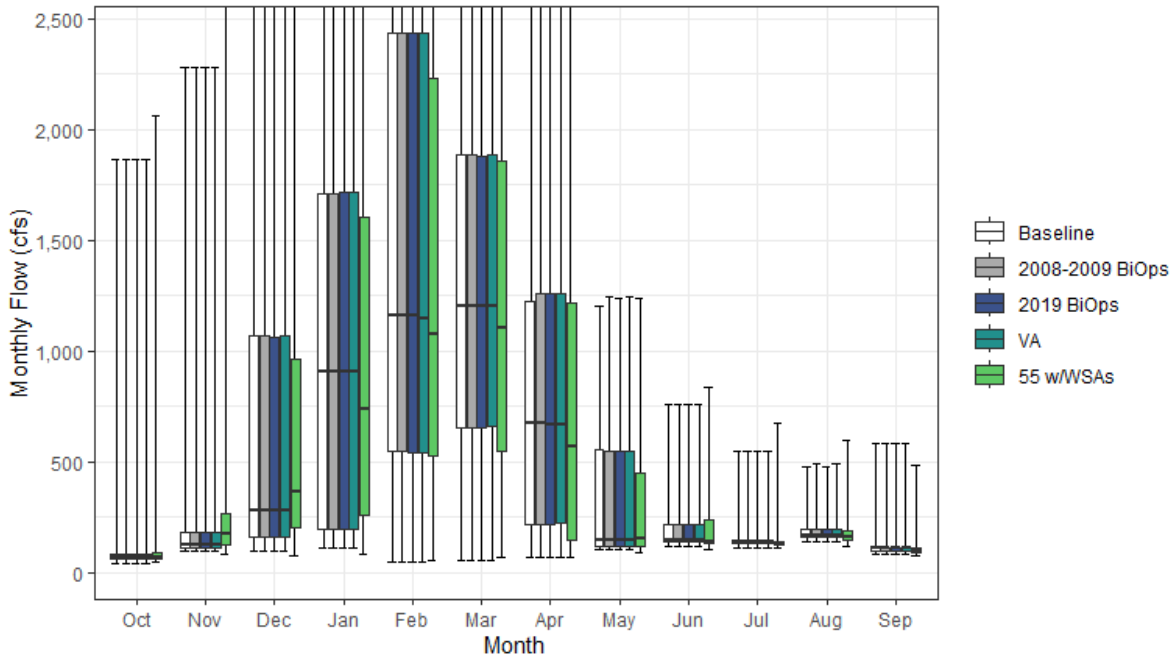

Figure H1a2-6. Bear River Streamflow above Confluence with Feather River Monthly Boxplot (cfs)

Table H1a2-11. Cumulative Distribution of Monthly Flow (cfs) — Bear River above Confluence with Feather River (SWRCB Bear River)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	42	94	99	108	45	57	70	102	121	111	142	79	77
10%	52	104	117	145	140	199	93	108	128	125	150	93	141
25%	59	110	159	193	546	653	219	118	137	132	157	96	202
50%	67	126	281	903	1,156	1,203	672	148	147	136	166	107	360
75%	83	182	1,069	1,708	2,434	1,885	1,220	554	215	145	193	112	691
90%	112	595	2,716	3,390	3,821	3,021	1,797	814	474	299	203	128	863
100%	1,867	2,277	4,471	6,013	7,651	5,444	4,272	1,204	757	546	475	584	1,305
Mean	96	288	868	1,341	1,715	1,455	872	339	224	172	188	121	460
2008-2009 BiOps													
0%	42	94	99	108	45	57	70	102	121	111	142	79	77
10%	52	104	117	145	140	199	93	108	128	125	150	93	141
25%	60	110	159	193	546	651	219	118	137	132	157	96	202
50%	67	126	281	903	1,156	1,203	672	145	147	136	166	107	360
75%	83	182	1,069	1,708	2,434	1,885	1,258	546	215	145	193	112	693
90%	112	607	2,716	3,390	3,821	3,033	1,805	814	474	299	203	128	863
100%	1,867	2,277	4,471	6,013	7,651	5,430	4,272	1,247	757	546	490	584	1,307
Mean	96	289	868	1,342	1,714	1,455	873	340	224	172	188	121	460
2019 BiOps													
0%	42	94	99	108	45	57	70	102	121	111	142	79	77
10%	52	104	117	145	140	199	93	108	128	125	150	93	142
25%	59	110	159	193	540	653	219	118	137	132	157	96	202
50%	67	126	281	903	1,156	1,203	668	148	147	136	166	107	360
75%	83	183	1,064	1,714	2,434	1,878	1,258	546	215	145	193	112	693
90%	112	598	2,716	3,390	3,821	3,033	1,805	814	474	299	203	128	863
100%	1,867	2,277	4,471	6,013	7,651	5,444	4,272	1,240	757	546	475	584	1,308
Mean	96	289	868	1,342	1,714	1,455	874	340	224	172	188	121	460
VA													
0%	42	94	99	108	45	57	70	102	121	111	142	79	77
10%	52	104	117	144	140	199	93	108	128	125	150	93	141
25%	59	110	159	193	539	660	224	118	137	132	157	96	202
50%	67	126	281	903	1,145	1,203	665	148	147	136	166	107	360
75%	83	182	1,069	1,714	2,434	1,885	1,258	547	215	145	193	112	692
90%	112	598	2,716	3,390	3,821	3,033	1,797	814	474	300	203	128	863
100%	1,867	2,277	4,471	6,013	7,651	5,430	4,284	1,241	757	547	490	584	1,308
Mean	96	288	868	1,342	1,713	1,456	875	337	224	172	189	121	460
55 w/WSAs													
0%	44	79	76	84	53	70	67	92	101	107	120	78	73
10%	56	99	148	200	246	201	91	104	121	118	138	84	139
25%	63	124	203	257	529	545	145	117	132	125	148	91	185
50%	69	172	365	735	1,073	1,105	570	151	142	132	160	99	346
75%	90	268	959	1,607	2,230	1,858	1,219	446	237	142	185	108	680
90%	118	613	2,639	3,251	3,805	3,033	1,848	748	508	325	266	149	845
100%	2,063	3,143	4,337	6,022	7,651	5,444	4,370	1,237	835	676	597	484	1,307
Mean	102	332	840	1,299	1,673	1,415	833	317	234	181	184	113	450

Table H1a2-12. Water Year Average of Monthly Flows (cfs) — Bear River above Confluence with Feather River (SWRCB Bear River)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	74	146	230	237	426	380	144	111	136	141	188	110
D	70	172	407	452	745	920	387	169	141	154	193	117
BN	70	159	519	753	1,495	1,322	785	215	166	138	157	100
AN	72	354	767	1,923	2,290	1,839	923	533	295	195	189	154
W	152	504	1,808	2,721	3,021	2,352	1,651	585	341	213	204	130
All	96	288	868	1,341	1,715	1,455	872	339	224	172	188	121
2008-2009 BiOps												
C	74	146	230	237	424	380	144	111	136	141	188	110
D	70	173	406	454	745	916	387	168	141	154	193	117
BN	70	158	520	754	1,494	1,325	789	217	166	138	157	100
AN	72	356	766	1,923	2,286	1,836	934	537	295	195	189	154
W	152	507	1,806	2,722	3,022	2,352	1,648	587	341	213	205	131
All	96	289	868	1,342	1,714	1,455	873	340	224	172	188	121
2019 BiOps												
C	74	147	230	236	426	380	144	111	136	141	188	110
D	70	172	407	454	745	919	388	168	141	154	193	117
BN	70	158	519	755	1,494	1,323	789	216	166	138	157	100
AN	72	356	766	1,923	2,285	1,840	936	537	295	195	189	154
W	152	506	1,809	2,722	3,021	2,352	1,650	588	341	213	204	130
All	96	289	868	1,342	1,714	1,455	874	340	224	172	188	121
VA												
C	74	147	230	237	423	382	144	111	136	141	188	110
D	70	173	407	454	745	921	390	168	141	154	193	117
BN	70	159	520	755	1,494	1,324	785	213	166	138	157	100
AN	72	356	767	1,923	2,286	1,835	934	525	295	195	189	154
W	152	504	1,808	2,721	3,021	2,352	1,653	585	341	213	207	131
All	96	288	868	1,342	1,713	1,456	875	337	224	172	189	121
55 w/WSAs												
C	75	159	274	270	426	346	124	108	127	131	168	97
D	71	196	451	456	683	851	317	165	133	143	180	109
BN	78	185	501	718	1,409	1,278	710	195	175	155	167	100
AN	76	368	763	1,789	2,230	1,793	892	449	326	218	190	119
W	164	604	1,672	2,639	3,008	2,336	1,644	564	365	237	204	132
All	102	332	840	1,299	1,673	1,415	833	317	234	181	184	113

H1a2.2.7 Big Chico Creek above Confluence with Sacramento River (SWRCB Big Chico)

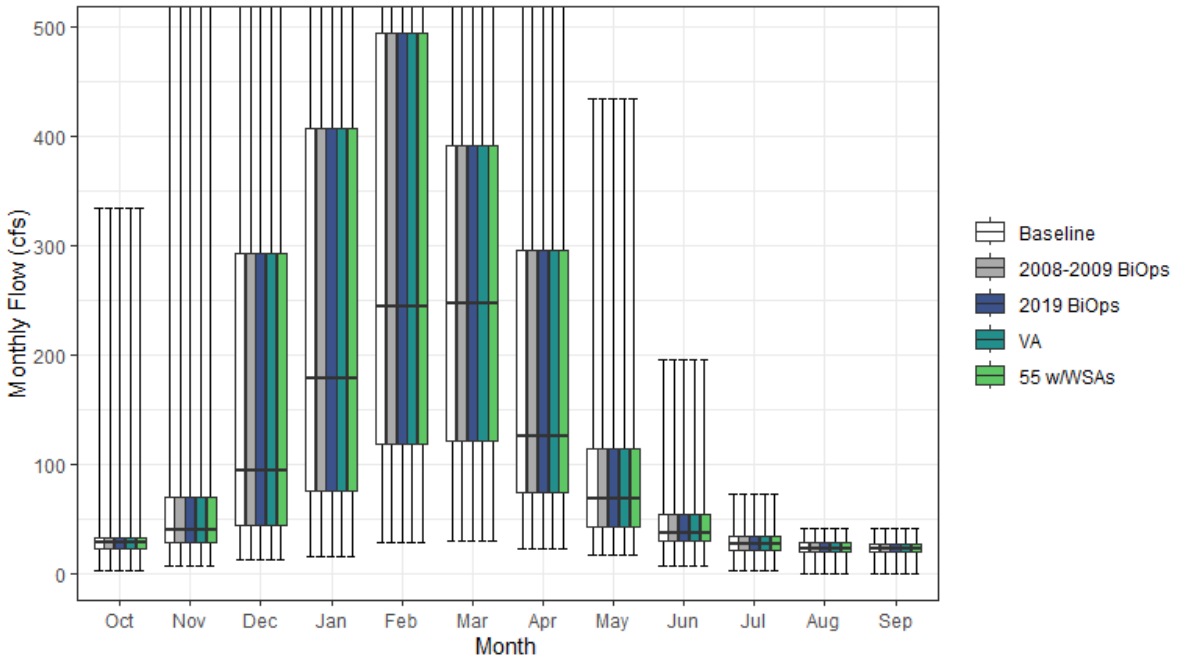

Figure H1a2-7. Big Chico Creek Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-13. Cumulative Distribution of Monthly Flow (cfs) — Big Chico Creek above Confluence with Sacramento River (SWRCB Big Chico)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	3	7	12	16	27	29	22	17	7	2	0	0	18
10%	18	23	28	42	70	79	51	31	23	16	14	14	37
25%	23	28	44	76	118	120	74	43	29	21	19	20	53
50%	28	40	94	178	244	247	125	68	37	27	23	23	83
75%	32	69	293	407	494	391	296	114	54	35	28	27	134
90%	42	137	483	718	789	646	414	185	74	42	33	31	198
100%	334	651	1,006	1,503	1,421	1,332	892	434	196	72	41	40	246
Mean	32	68	185	292	357	311	201	92	45	28	23	23	99
2008-2009 BiOps													
0%	3	7	12	16	27	29	22	17	7	2	0	0	18
10%	18	23	28	42	70	79	51	31	23	16	14	14	37
25%	23	28	44	76	118	120	74	43	29	21	19	20	53
50%	28	40	94	178	244	247	125	68	37	27	23	23	83
75%	32	69	293	407	494	391	296	114	54	35	28	27	134
90%	42	137	483	718	789	646	414	185	74	42	33	31	198
100%	334	651	1,006	1,503	1,421	1,332	892	434	196	72	41	40	246
Mean	32	68	185	292	357	311	201	92	45	28	23	23	99
2019 BiOps													
0%	3	7	12	16	27	29	22	17	7	2	0	0	18
10%	18	23	28	42	70	79	51	31	23	16	14	14	37
25%	23	28	44	76	118	120	74	43	29	21	19	20	53
50%	28	40	94	178	244	247	125	68	37	27	23	23	83
75%	32	69	293	407	494	391	296	114	54	35	28	27	134
90%	42	137	483	718	789	646	414	185	74	42	33	31	198
100%	334	651	1,006	1,503	1,421	1,332	892	434	196	72	41	40	246
Mean	32	68	185	292	357	311	201	92	45	28	23	23	99
VA													
0%	3	7	12	16	27	29	22	17	7	2	0	0	18
10%	18	23	28	42	70	79	51	31	23	16	14	14	37
25%	23	28	44	76	118	120	74	43	29	21	19	20	53
50%	28	40	94	178	244	247	125	68	37	27	23	23	83
75%	32	69	293	407	494	391	296	114	54	35	28	27	134
90%	42	137	483	718	789	646	414	185	74	42	33	31	198
100%	334	651	1,006	1,503	1,421	1,332	892	434	196	72	41	40	246
Mean	32	68	185	292	357	311	201	92	45	28	23	23	99
55 w/WSAs													
0%	3	7	12	16	27	29	22	17	7	2	0	0	18
10%	18	23	28	42	70	79	51	31	23	16	14	14	37
25%	23	28	44	76	118	120	74	43	29	21	19	20	53
50%	28	40	94	178	244	247	125	68	37	27	23	23	83
75%	32	69	293	407	494	391	296	114	54	35	28	27	134
90%	42	137	483	718	789	646	414	185	74	42	33	31	198
100%	334	651	1,006	1,503	1,421	1,332	892	434	196	72	41	40	246
Mean	32	68	185	292	357	311	201	92	45	28	23	23	99

Table H1a2-14. Water Year Average of Monthly Flows (cfs) — Big Chico Creek above Confluence with Sacramento River (SWRCB Big Chico)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	22	25	68	80	129	116	57	36	26	14	12	12
D	27	51	114	101	181	203	107	56	31	22	19	21
BN	29	51	114	198	293	251	193	73	39	25	22	23
AN	32	68	135	417	490	373	218	122	53	33	26	25
W	42	116	365	555	596	507	343	147	67	40	30	28
All	32	68	185	292	357	311	201	92	45	28	23	23
2008-2009 BiOps												
C	22	25	68	80	129	116	57	36	26	14	12	12
D	27	51	114	101	181	203	107	56	31	22	19	21
BN	29	51	114	198	293	251	193	73	39	25	22	23
AN	32	68	135	417	490	373	218	122	53	33	26	25
W	42	116	365	555	596	507	343	147	67	40	30	28
All	32	68	185	292	357	311	201	92	45	28	23	23
2019 BiOps												
C	22	25	68	80	129	116	57	36	26	14	12	12
D	27	51	114	101	181	203	107	56	31	22	19	21
BN	29	51	114	198	293	251	193	73	39	25	22	23
AN	32	68	135	417	490	373	218	122	53	33	26	25
W	42	116	365	555	596	507	343	147	67	40	30	28
All	32	68	185	292	357	311	201	92	45	28	23	23
VA												
C	22	25	68	80	129	116	57	36	26	14	12	12
D	27	51	114	101	181	203	107	56	31	22	19	21
BN	29	51	114	198	293	251	193	73	39	25	22	23
AN	32	68	135	417	490	373	218	122	53	33	26	25
W	42	116	365	555	596	507	343	147	67	40	30	28
All	32	68	185	292	357	311	201	92	45	28	23	23
55 w/WSAs												
C	22	25	68	80	129	116	57	36	26	14	12	12
D	27	51	114	101	181	203	107	56	31	22	19	21
BN	29	51	114	198	293	251	193	73	39	25	22	23
AN	32	68	135	417	490	373	218	122	53	33	26	25
W	42	116	365	555	596	507	343	147	67	40	30	28
All	32	68	185	292	357	311	201	92	45	28	23	23

H1a2.2.8 Butte Creek above Butte Slough (SWRCB Butte Creek)

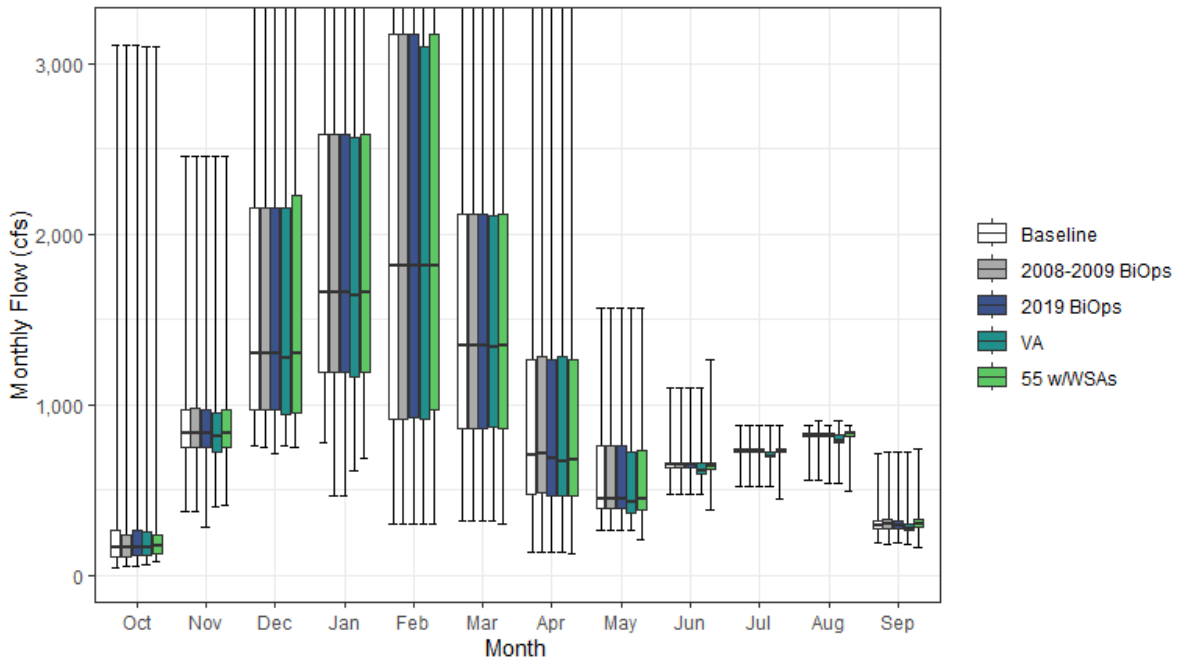

Figure H1a2-8. Butte Creek Streamflow above Butte Slough Monthly Boxplot (cfs)

Table H1a2-15. Cumulative Distribution of Monthly Flow (cfs) — Butte Creek above Butte Slough (SWRCB Butte Creek)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	43	374	757	772	304	314	132	261	471	520	557	186	329
10%	98	692	841	940	534	532	327	361	593	654	743	247	496
25%	112	753	966	1,188	918	857	472	390	627	721	815	272	580
50%	159	835	1,300	1,656	1,810	1,341	705	446	645	728	825	292	709
75%	260	972	2,153	2,582	3,169	2,113	1,265	757	661	737	833	318	957
90%	368	1,241	3,235	3,866	4,680	3,015	1,757	1,107	758	750	840	361	1,121
100%	3,103	2,457	5,343	7,889	8,501	6,622	3,482	1,568	1,096	879	880	715	1,525
Mean	228	918	1,711	2,111	2,326	1,614	921	599	667	717	808	302	776
2008-2009 BiOps													
0%	50	372	752	462	304	314	132	261	471	519	557	179	329
10%	98	692	841	939	533	532	325	361	593	655	743	261	498
25%	112	753	966	1,188	918	857	481	390	627	721	814	275	584
50%	159	835	1,300	1,656	1,811	1,341	713	446	645	729	825	296	711
75%	239	978	2,153	2,580	3,169	2,112	1,278	757	661	738	833	325	962
90%	346	1,253	3,235	3,866	4,672	3,015	1,757	1,107	758	754	843	353	1,121
100%	3,103	2,457	5,346	7,889	8,462	6,622	3,494	1,568	1,096	879	909	719	1,525
Mean	225	918	1,712	2,108	2,322	1,613	922	604	665	721	808	306	776
2019 BiOps													
0%	56	277	708	462	304	314	132	261	471	520	537	186	328
10%	102	694	841	939	534	532	325	361	593	654	743	254	494
25%	115	753	966	1,187	919	857	462	388	627	723	815	272	583
50%	160	835	1,300	1,656	1,810	1,341	685	448	645	728	825	288	700
75%	260	972	2,153	2,582	3,169	2,115	1,265	762	661	738	833	316	962
90%	368	1,241	3,238	3,865	4,680	3,015	1,757	1,107	755	753	840	362	1,118
100%	3,103	2,457	5,343	7,889	8,501	6,622	3,554	1,568	1,096	878	880	718	1,523
Mean	229	919	1,709	2,108	2,323	1,614	916	601	665	720	807	301	776
VA													
0%	64	397	754	615	304	314	132	261	471	519	543	184	331
10%	100	660	814	909	533	531	321	351	584	654	741	240	483
25%	119	726	945	1,163	916	872	464	367	594	690	772	259	566
50%	159	811	1,274	1,641	1,810	1,334	666	431	611	698	785	276	683
75%	256	950	2,153	2,567	3,093	2,106	1,278	720	657	725	820	302	952
90%	367	1,205	3,223	3,865	4,641	3,009	1,697	1,038	755	752	837	337	1,120
100%	3,099	2,458	5,343	7,888	8,462	6,659	3,482	1,568	1,096	878	909	719	1,525
Mean	228	898	1,697	2,094	2,310	1,612	903	576	642	702	784	290	765
55 w/WSAs													
0%	77	414	752	684	304	303	130	205	384	444	489	160	304
10%	104	698	841	899	528	532	325	282	456	545	629	232	487
25%	126	753	955	1,187	966	857	461	385	619	720	814	278	576
50%	169	832	1,300	1,656	1,811	1,341	680	442	641	729	830	301	700
75%	238	972	2,227	2,582	3,169	2,114	1,264	729	661	738	838	329	963
90%	360	1,293	3,236	3,865	4,672	3,015	1,703	1,108	759	753	845	349	1,123
100%	3,099	2,457	5,343	7,885	8,462	6,622	3,482	1,568	1,261	879	881	737	1,518
Mean	232	927	1,716	2,102	2,315	1,614	904	581	646	701	795	308	771

Table H1a2-16. Water Year Average of Monthly Flows (cfs) — Butte Creek above Butte Slough (SWRCB Butte Creek)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	150	737	1,213	1,221	1,149	888	313	348	565	626	705	235
D	170	844	1,428	1,239	1,413	1,213	611	424	639	730	828	341
BN	186	836	1,285	1,735	2,122	1,416	952	535	661	726	821	299
AN	206	880	1,559	2,717	3,111	1,884	1,037	695	678	730	824	323
W	348	1,137	2,515	3,219	3,439	2,313	1,408	863	741	746	832	303
All	228	918	1,711	2,111	2,326	1,614	921	599	667	717	808	302
2008-2009 BiOps												
C	150	736	1,213	1,201	1,136	885	313	348	564	627	705	241
D	163	838	1,426	1,240	1,413	1,210	608	424	639	730	826	344
BN	183	845	1,285	1,737	2,122	1,413	958	537	652	728	819	298
AN	199	885	1,574	2,720	3,111	1,886	1,048	725	678	729	824	315
W	347	1,134	2,514	3,219	3,434	2,313	1,403	869	741	757	837	313
All	225	918	1,712	2,108	2,322	1,613	922	604	665	721	808	306
2019 BiOps												
C	146	737	1,213	1,201	1,136	885	313	348	564	626	703	237
D	165	849	1,420	1,239	1,409	1,213	592	423	639	729	826	342
BN	190	835	1,283	1,736	2,122	1,415	942	530	661	726	820	296
AN	215	876	1,558	2,717	3,111	1,886	1,038	737	659	733	824	325
W	350	1,137	2,516	3,219	3,437	2,313	1,409	858	742	754	834	300
All	229	919	1,709	2,108	2,323	1,614	916	601	665	720	807	301
VA												
C	147	737	1,213	1,222	1,149	897	317	348	564	627	703	236
D	166	803	1,391	1,193	1,379	1,207	578	397	600	695	782	321
BN	188	802	1,254	1,712	2,101	1,411	912	487	614	693	777	280
AN	211	844	1,556	2,699	3,079	1,880	995	635	620	696	777	297
W	349	1,135	2,516	3,219	3,436	2,312	1,410	862	741	754	836	300
All	228	898	1,697	2,094	2,310	1,612	903	576	642	702	784	290
55 w/WSAs												
C	152	749	1,204	1,194	1,122	883	312	294	469	534	621	221
D	169	868	1,445	1,222	1,397	1,211	588	412	606	714	815	341
BN	197	844	1,275	1,736	2,119	1,421	934	533	661	728	828	318
AN	216	895	1,601	2,724	3,106	1,884	1,011	680	678	736	834	347
W	348	1,132	2,513	3,215	3,433	2,313	1,390	850	747	748	837	308
All	232	927	1,716	2,102	2,315	1,614	904	581	646	701	795	308

H1a2.2.9 Cache Creek below Clear Lake (SWRCB Clear Lake)

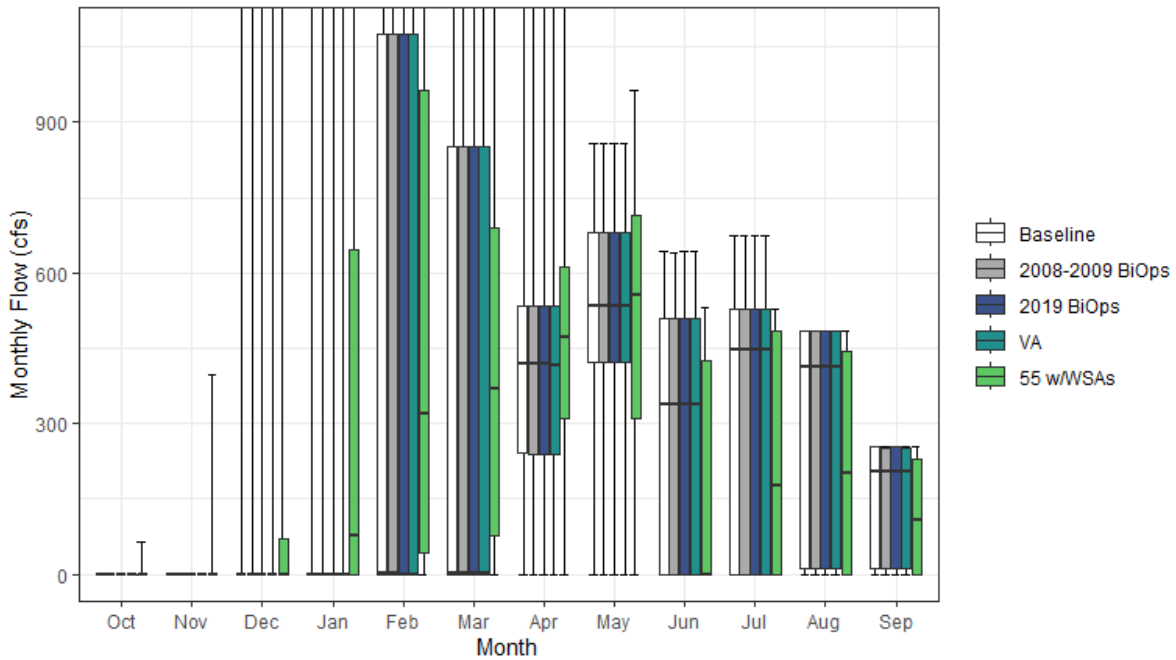

Figure H1a2-9. Cache Creek Streamflow below Clear Lake Monthly Boxplot (cfs)

Table H1a2-17. Cumulative Distribution of Monthly Flow (cfs) — Cache Creek below Clear Lake (SWRCB Clear Lake)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	0	0	0	0	0	0	0	0	0	0	0	0	0
10%	0	0	0	0	0	0	82	132	0	0	0	0	17
25%	0	0	0	0	0	0	240	423	0	0	11	11	61
50%	0	0	0	0	1	1	418	534	340	448	413	206	165
75%	0	0	0	1	1,075	851	536	681	510	529	485	253	368
90%	1	1	1	1,644	3,366	2,150	1,288	795	510	529	485	253	563
100%	1	1	3,077	5,209	7,686	6,042	3,128	857	642	674	485	253	970
Mean	0	0	55	432	806	641	537	515	267	309	290	150	240
2008-2009 BiOps													
0%	0	0	0	0	0	0	0	0	0	0	0	0	0
10%	0	0	0	0	0	0	82	132	0	0	0	0	17
25%	0	0	0	0	0	0	240	423	0	0	12	11	61
50%	0	0	0	0	1	1	418	534	339	448	412	206	165
75%	0	0	0	1	1,075	851	535	681	510	529	485	253	368
90%	1	1	1	1,644	3,365	2,150	1,288	795	510	529	485	253	563
100%	1	1	3,076	5,209	7,686	6,042	3,128	858	641	674	485	253	970
Mean	0	0	55	432	806	641	537	515	267	309	290	149	240
2019 BiOps													
0%	0	0	0	0	0	0	0	0	0	0	0	0	0
10%	0	0	0	0	0	0	82	132	0	0	0	0	17
25%	0	0	0	0	0	0	240	423	0	0	12	11	61
50%	0	0	0	0	1	1	418	534	339	448	412	205	165
75%	0	0	0	1	1,075	852	536	681	510	529	485	253	368
90%	1	1	1	1,644	3,365	2,150	1,288	795	510	529	485	253	563
100%	1	1	3,076	5,209	7,686	6,042	3,128	858	642	674	485	253	970
Mean	0	0	55	432	806	641	537	515	267	309	290	150	240
VA													
0%	0	0	0	0	0	0	0	0	0	0	0	0	0
10%	0	0	0	0	0	0	82	132	0	0	0	0	17
25%	0	0	0	0	0	0	240	423	0	0	12	11	61
50%	0	0	0	0	1	1	417	534	340	448	412	206	165
75%	0	0	0	1	1,075	851	535	681	510	529	485	253	368
90%	1	0	1	1,644	3,366	2,150	1,288	795	510	529	485	253	563
100%	1	1	3,076	5,209	7,686	6,042	3,128	857	642	674	485	253	970
Mean	0	0	55	432	806	641	537	515	267	309	290	150	240
55 w/WSAs													
0%	0	0	0	0	0	0	0	0	0	0	0	0	0
10%	0	0	0	0	0	1	103	103	0	0	0	0	17
25%	0	0	0	0	42	78	309	310	0	0	0	0	66
50%	0	0	0	77	321	370	472	555	0	176	202	109	149
75%	0	0	70	646	965	689	613	715	426	486	445	229	365
90%	1	1	387	1,331	2,641	2,059	1,142	849	510	529	485	253	572
100%	64	396	2,358	5,209	7,331	6,042	3,128	963	531	530	485	253	999
Mean	1	8	131	499	828	698	586	517	190	231	219	117	241

Table H1a2-18. Water Year Average of Monthly Flows (cfs) — Cache Creek below Clear Lake (SWRCB Clear Lake)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	0	0	0	0	1	0	146	216	1	17	16	8
D	0	0	0	0	0	6	385	523	74	117	139	77
BN	0	0	10	58	276	121	360	595	228	309	291	153
AN	0	0	0	71	912	701	596	537	453	496	455	237
W	0	0	173	1,359	2,119	1,754	944	607	502	530	479	241
All	0	0	55	432	806	641	537	515	267	309	290	150
2008-2009 BiOps												
C	0	0	0	0	1	0	146	216	1	17	16	8
D	0	0	0	0	0	6	385	523	74	117	139	77
BN	0	0	11	58	276	121	360	595	228	309	292	153
AN	0	0	0	71	912	701	596	537	453	496	455	237
W	0	0	173	1,359	2,119	1,754	944	607	502	530	479	241
All	0	0	55	432	806	641	537	515	267	309	290	149
2019 BiOps												
C	0	0	0	0	1	0	146	216	1	17	16	8
D	0	0	0	0	0	6	386	523	74	117	139	77
BN	0	0	10	58	276	121	360	595	228	309	291	153
AN	0	0	0	71	912	701	596	537	453	496	455	237
W	0	0	173	1,359	2,119	1,754	944	607	502	530	479	241
All	0	0	55	432	806	641	537	515	267	309	290	150
VA												
C	0	0	0	0	0	0	146	217	1	17	16	8
D	0	0	0	0	0	6	385	523	74	117	139	77
BN	0	0	10	57	276	121	360	595	228	309	291	153
AN	0	0	0	71	912	701	596	537	453	496	455	237
W	0	0	173	1,359	2,119	1,753	944	607	502	530	479	241
All	0	0	55	432	806	641	537	515	267	309	290	150
55 w/WSAs												
C	0	0	0	48	65	36	132	173	0	0	0	0
D	0	1	21	40	162	229	392	465	25	47	53	34
BN	0	0	52	178	440	283	487	526	76	142	150	88
AN	0	1	62	339	939	670	678	604	266	362	342	182
W	3	25	359	1,343	1,926	1,668	996	700	455	494	452	232
All	1	8	131	499	828	698	586	517	190	231	219	117

H1a2.2.10 Cache Creek above Yolo Bypass (SWRCB Cache Creek)

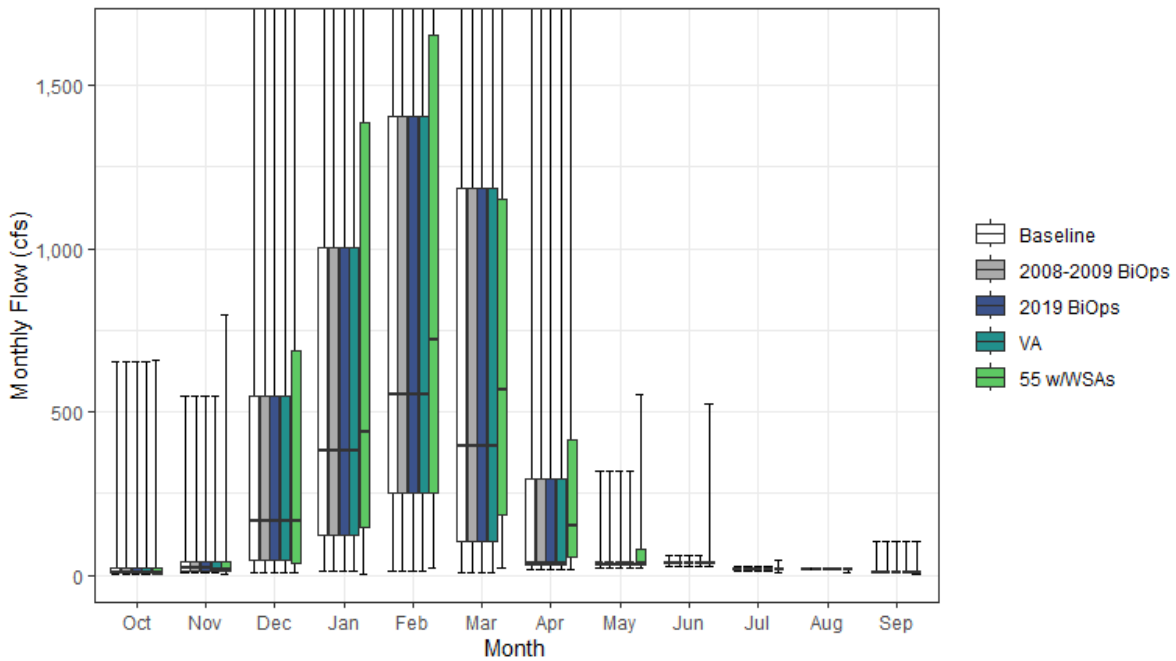

Figure H1a2-10. Cache Creek Streamflow above Yolo Bypass Monthly Boxplot (cfs)

Table H1a2-19. Cumulative Distribution of Monthly Flow (cfs) — Cache Creek above Yolo Bypass (SWRCB Cache Creek)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	3	8	9	11	12	10	20	24	27	15	16	7	16
10%	5	10	18	42	45	39	23	28	30	16	17	9	39
25%	6	12	46	123	251	105	31	33	36	17	18	9	65
50%	9	20	165	380	554	395	36	35	37	18	19	9	123
75%	23	40	550	1,004	1,404	1,184	293	37	39	19	20	10	366
90%	35	123	896	2,445	4,344	2,510	1,385	51	40	19	20	11	630
100%	656	548	4,636	6,823	11,644	8,616	3,815	320	60	26	23	103	1,247
Mean	26	47	381	947	1,389	946	367	47	37	18	18	11	252
2008-2009 BiOps													
0%	3	8	9	11	12	10	20	24	27	15	16	7	16
10%	5	10	18	42	46	38	23	28	30	16	17	9	39
25%	6	12	46	123	250	105	30	33	36	17	18	9	65
50%	10	20	165	380	554	394	36	35	37	18	19	9	124
75%	23	41	550	1,005	1,404	1,184	293	37	39	19	19	10	366
90%	35	124	896	2,445	4,344	2,510	1,385	51	40	19	20	11	630
100%	656	547	4,636	6,823	11,644	8,616	3,815	320	60	26	23	103	1,247
Mean	26	47	381	947	1,389	946	367	47	37	18	18	11	252
2019 BiOps													
0%	3	8	9	11	12	10	20	24	27	15	16	6	16
10%	5	10	18	42	45	38	23	28	30	16	17	9	39
25%	6	12	46	123	250	105	31	33	36	17	18	9	65
50%	10	20	165	380	555	395	36	35	37	18	19	9	123
75%	23	41	550	1,004	1,404	1,184	293	37	39	19	19	10	366
90%	35	124	897	2,446	4,344	2,510	1,385	51	40	19	20	11	630
100%	656	548	4,635	6,823	11,644	8,616	3,815	320	60	26	23	103	1,247
Mean	26	47	381	947	1,389	946	367	47	37	18	18	11	252
VA													
0%	3	8	9	11	12	10	20	24	27	15	16	7	16
10%	5	10	18	42	45	38	23	28	30	16	17	9	39
25%	6	12	46	123	250	106	31	33	36	17	18	9	65
50%	10	20	165	380	554	395	36	35	37	18	18	9	123
75%	23	40	550	1,004	1,404	1,184	293	37	39	19	19	10	366
90%	35	123	896	2,445	4,345	2,510	1,384	51	40	19	20	11	630
100%	656	549	4,635	6,823	11,644	8,616	3,815	320	60	26	23	103	1,247
Mean	26	47	381	947	1,389	946	367	47	37	18	18	11	252
55 w/WSAs													
0%	2	4	7	5	23	21	19	23	25	10	9	3	17
10%	4	7	18	53	65	65	31	29	29	15	13	7	47
25%	6	11	39	148	253	186	56	34	35	17	16	8	91
50%	9	19	168	440	722	567	152	38	37	18	18	9	167
75%	24	39	689	1,385	1,654	1,153	416	78	39	19	19	9	385
90%	35	118	1,258	2,513	3,868	2,417	1,138	216	57	26	20	10	622
100%	661	799	4,080	6,677	10,447	8,616	3,815	552	526	46	21	103	1,288
Mean	27	48	452	1,014	1,368	957	417	87	47	19	17	11	266

Table H1a2-20. Water Year Average of Monthly Flows (cfs) — Cache Creek above Yolo Bypass (SWRCB Cache Creek)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	13	13	151	217	242	130	26	30	29	18	19	10
D	10	32	248	187	335	194	98	39	38	18	18	12
BN	28	23	185	408	737	377	103	36	38	18	18	14
AN	26	57	350	920	1,717	1,003	300	57	38	17	19	10
W	44	89	738	2,246	3,056	2,270	939	64	38	18	19	9
All	26	47	381	947	1,389	946	367	47	37	18	18	11
2008-2009 BiOps												
C	13	13	151	217	242	130	26	30	29	18	19	9
D	10	32	248	187	335	194	98	39	38	18	18	12
BN	28	23	185	407	737	377	103	36	38	18	18	14
AN	26	57	350	920	1,717	1,003	300	57	38	18	19	9
W	44	89	738	2,245	3,056	2,270	939	64	38	18	19	10
All	26	47	381	947	1,389	946	367	47	37	18	18	11
2019 BiOps												
C	13	13	151	217	242	130	26	30	29	18	19	9
D	10	32	248	187	335	194	98	39	38	18	18	12
BN	28	23	185	407	737	377	103	36	38	18	18	14
AN	26	57	350	920	1,717	1,003	300	57	38	17	19	9
W	44	89	738	2,246	3,056	2,270	939	64	38	18	19	9
All	26	47	381	947	1,389	946	367	47	37	18	18	11
VA												
C	13	13	151	217	242	130	26	30	29	18	19	9
D	10	32	248	187	335	194	98	39	38	18	18	12
BN	28	23	185	407	738	377	103	36	38	18	18	14
AN	26	57	350	920	1,718	1,003	300	57	38	18	19	9
W	44	89	738	2,246	3,056	2,270	939	64	38	18	18	10
All	26	47	381	947	1,389	946	367	47	37	18	18	11
55 w/WSAs												
C	12	12	146	250	288	156	33	31	29	17	17	9
D	10	30	259	214	456	376	124	51	37	17	15	11
BN	27	21	223	497	861	498	242	49	64	17	15	13
AN	24	53	389	1,180	1,698	964	363	115	43	22	19	9
W	47	96	927	2,269	2,802	2,096	968	156	54	21	18	10
All	27	48	452	1,014	1,368	957	417	87	47	19	17	11

H1a2.2.11 Calaveras River below New Hogan Reservoir (SWRCB New Hogan)

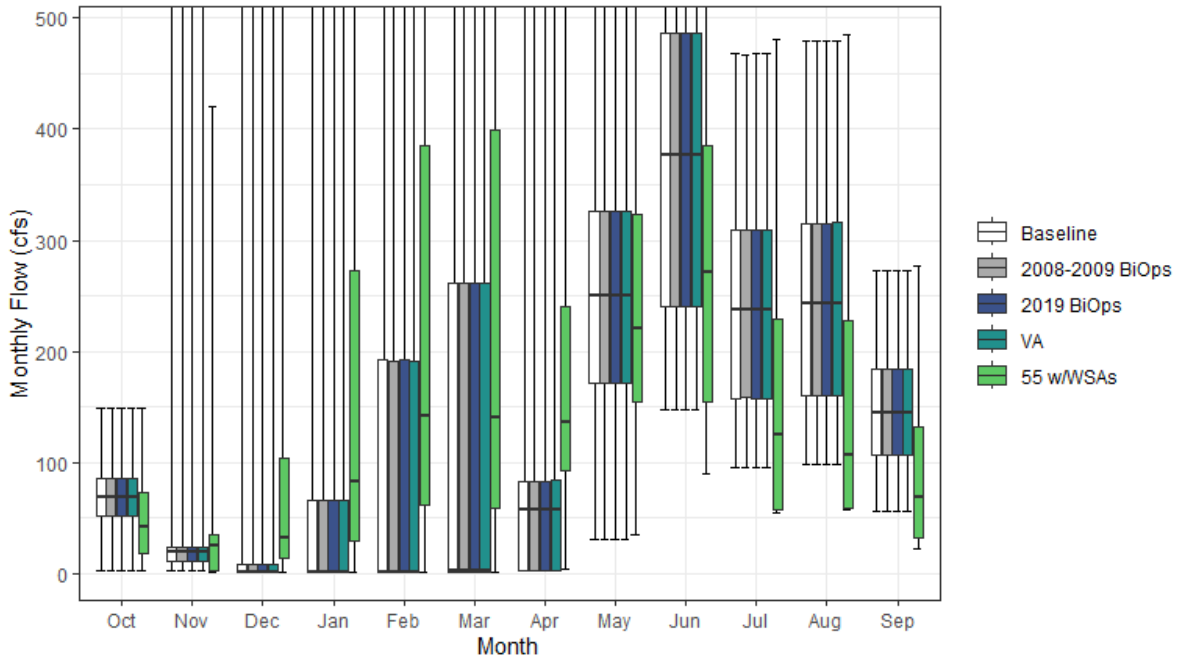

Figure H1a2-11. Calaveras River Streamflow below New Hogan Reservoir Monthly Boxplot (cfs)

Table H1a2-21. Cumulative Distribution of Monthly Flow (cfs) — Calaveras River below New Hogan Reservoir (SWRCB New Hogan)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	3	2	1	1	1	2	2	30	147	95	98	56	36
10%	35	2	1	1	1	2	2	121	175	115	116	78	48
25%	51	11	1	1	1	2	3	171	240	158	160	107	63
50%	68	19	1	1	2	2	58	250	377	237	243	144	94
75%	85	24	8	65	192	262	83	326	486	309	315	184	207
90%	113	31	141	787	1,267	1,116	104	384	561	362	361	234	294
100%	149	862	1,411	3,005	3,679	2,697	1,370	542	749	467	479	273	539
Mean	71	36	83	209	327	278	85	250	379	242	245	149	142
2008-2009 BiOps													
0%	3	2	1	1	1	2	2	30	147	95	98	56	36
10%	35	2	1	1	1	2	2	121	175	115	116	79	48
25%	51	11	1	1	1	2	3	171	240	158	160	107	63
50%	68	19	2	1	2	2	58	250	377	237	243	144	94
75%	85	24	8	66	192	262	83	326	486	309	315	184	207
90%	113	31	142	787	1,266	1,116	104	384	560	362	361	234	294
100%	149	861	1,411	3,005	3,679	2,697	1,370	542	749	467	479	273	539
Mean	71	36	83	209	327	278	85	250	379	242	245	149	142
2019 BiOps													
0%	3	2	1	1	1	2	2	30	147	95	98	56	36
10%	36	2	1	1	1	2	2	121	175	115	116	79	48
25%	51	11	1	1	1	2	3	171	240	158	160	107	63
50%	68	19	1	1	2	2	57	250	377	237	243	144	94
75%	85	24	8	65	192	262	83	326	486	309	315	184	207
90%	113	31	141	787	1,266	1,116	104	384	560	362	361	234	294
100%	149	863	1,411	3,005	3,679	2,697	1,370	542	749	467	479	273	539
Mean	71	36	83	209	327	278	85	250	379	242	245	149	142
VA													
0%	3	2	1	1	1	2	2	30	147	95	98	56	36
10%	36	2	1	1	1	2	2	121	175	115	116	78	48
25%	51	11	1	1	1	2	3	171	240	158	160	107	63
50%	68	19	1	1	2	2	58	250	377	237	243	144	94
75%	85	24	8	65	191	261	83	326	486	309	316	184	207
90%	113	31	141	786	1,266	1,116	104	384	561	362	361	234	294
100%	149	862	1,412	3,005	3,679	2,697	1,370	542	749	468	479	273	539
Mean	71	36	83	209	327	278	85	251	379	242	245	149	142
55 w/WSAs													
0%	2	1	1	1	1	1	4	35	89	54	57	22	21
10%	14	2	5	14	21	29	71	89	91	57	59	32	36
25%	17	3	14	29	61	58	93	154	154	57	59	32	55
50%	41	24	32	82	141	141	135	221	271	125	107	69	92
75%	73	34	103	273	385	399	240	324	385	229	227	132	209
90%	89	52	279	681	1,101	1,004	393	386	506	312	295	172	304
100%	149	420	1,348	3,005	3,679	2,697	1,505	636	798	480	485	277	547
Mean	47	31	126	275	392	343	211	244	288	163	154	88	142

Table H1a2-22. Water Year Average of Monthly Flows (cfs) — Calaveras River below New Hogan Reservoir (SWRCB New Hogan)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	61	19	7	2	2	7	62	134	183	121	122	84
D	71	20	13	1	9	15	71	209	285	183	186	117
BN	76	17	33	28	171	102	41	264	376	238	243	143
AN	71	16	87	157	383	253	40	307	443	279	285	167
W	74	77	206	606	811	736	152	312	528	337	337	204
All	71	36	83	209	327	278	85	250	379	242	245	149
2008-2009 BiOps												
C	61	19	7	2	2	7	62	133	183	121	122	84
D	71	20	13	1	9	15	71	209	285	184	187	117
BN	76	17	33	28	170	102	41	264	376	238	243	143
AN	71	16	87	157	383	253	40	307	443	279	285	166
W	74	77	205	606	810	736	152	312	529	337	337	204
All	71	36	83	209	327	278	85	250	379	242	245	149
2019 BiOps												
C	61	19	7	2	2	7	62	134	184	121	122	84
D	71	20	13	1	9	15	71	209	285	183	186	117
BN	76	17	33	28	171	102	41	264	376	238	243	143
AN	71	16	87	157	383	253	40	307	443	279	285	166
W	74	77	205	606	811	736	152	312	528	337	337	204
All	71	36	83	209	327	278	85	250	379	242	245	149
VA												
C	61	19	7	2	2	7	62	134	183	121	122	84
D	71	20	13	1	8	15	71	209	285	184	187	117
BN	76	17	33	28	171	102	41	264	376	238	243	143
AN	71	16	87	157	383	253	40	307	443	279	285	166
W	74	77	206	606	810	736	152	312	528	337	337	204
All	71	36	83	209	327	278	85	251	379	242	245	149
55 w/WSAs												
C	27	8	15	32	63	32	63	102	97	57	58	32
D	47	22	40	57	134	113	128	236	269	94	60	32
BN	53	24	67	117	303	210	151	183	223	141	135	78
AN	38	46	141	286	451	354	181	267	323	201	198	116
W	56	48	279	662	791	759	401	355	431	269	267	155
All	47	31	126	275	392	343	211	244	288	163	154	88

H1a2.2.12 Calaveras River above Delta (SWRCB Calaveras River)

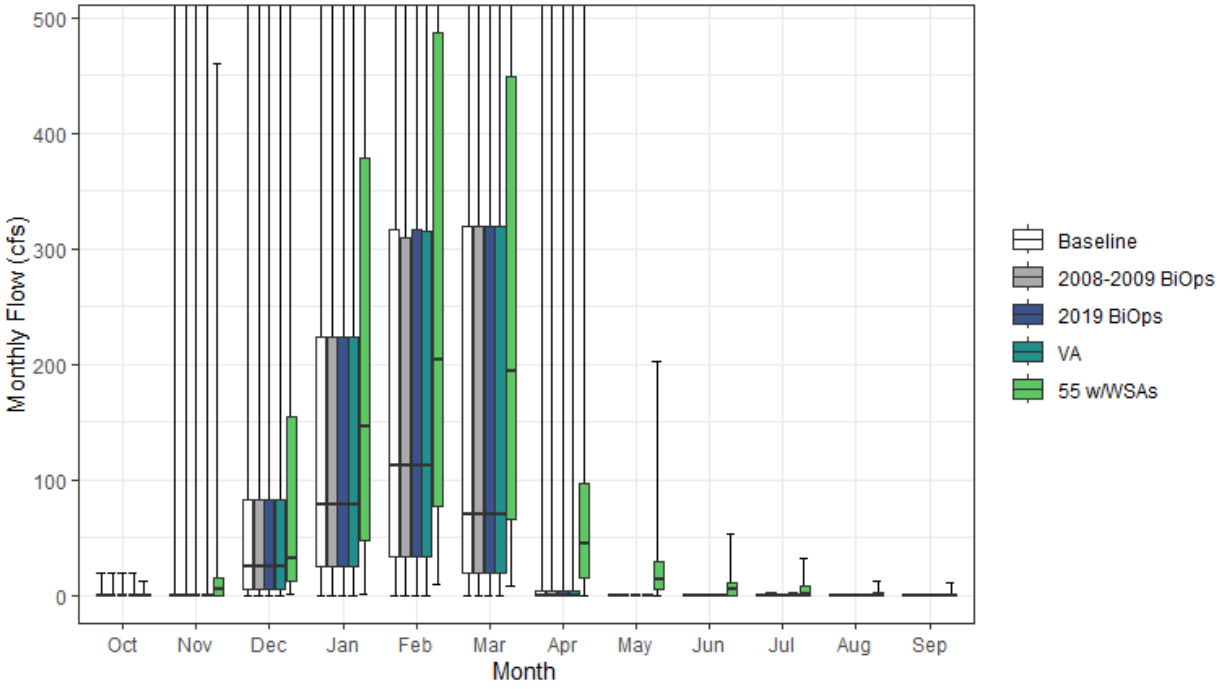

Figure H1a2-12. Calaveras River Streamflow above Delta Monthly Boxplot (cfs)

Table H1a2-23. Cumulative Distribution of Monthly Flow (cfs) — Calaveras River above Delta (SWRCB Calaveras River)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	0	0	0	0	0	0	0	0	0	0	0	0	1
10%	0	0	0	12	9	0	0	0	0	0	0	0	6
25%	0	0	6	25	33	19	0	0	0	0	0	0	12
50%	0	0	24	78	113	70	0	0	0	0	0	0	22
75%	0	0	83	223	317	320	4	0	0	0	0	0	121
90%	0	14	236	862	1,303	1,185	36	0	0	0	0	0	191
100%	19	654	1,371	2,882	3,533	2,620	884	0	0	1	1	1	416
Mean	0	21	117	284	400	314	31	0	0	0	0	0	70
2008-2009 BiOps													
0%	0	0	0	0	0	0	0	0	0	0	0	0	1
10%	0	0	0	12	9	0	0	0	0	0	0	0	6
25%	0	0	6	25	33	19	0	0	0	0	0	0	12
50%	0	0	24	78	113	70	0	0	0	0	0	0	22
75%	0	0	83	223	309	320	4	0	0	0	0	0	121
90%	0	14	236	863	1,303	1,185	35	0	0	0	0	0	191
100%	19	652	1,371	2,882	3,533	2,619	884	0	0	1	1	0	416
Mean	0	21	117	284	400	314	31	0	0	0	0	0	70
2019 BiOps													
0%	0	0	0	0	0	0	0	0	0	0	0	0	1
10%	0	0	0	12	9	0	0	0	0	0	0	0	6
25%	0	0	6	25	33	19	0	0	0	0	0	0	12
50%	0	0	24	78	112	70	0	0	0	0	0	0	22
75%	0	0	83	223	316	320	4	0	0	0	0	0	121
90%	0	14	237	863	1,303	1,185	35	0	0	0	0	0	191
100%	19	654	1,370	2,882	3,533	2,620	884	0	0	1	1	1	416
Mean	0	21	117	284	400	314	31	0	0	0	0	0	70
VA													
0%	0	0	0	0	0	0	0	0	0	0	0	0	1
10%	0	0	0	12	9	0	0	0	0	0	0	0	6
25%	0	0	6	25	33	19	0	0	0	0	0	0	12
50%	0	0	24	78	112	70	0	0	0	0	0	0	22
75%	0	0	83	223	316	320	4	0	0	0	0	0	121
90%	0	14	236	862	1,303	1,185	36	0	0	0	0	0	191
100%	19	654	1,371	2,882	3,533	2,620	884	0	0	1	1	1	416
Mean	0	21	117	284	400	314	31	0	0	0	0	0	70
55 w/WSAs													
0%	0	0	1	1	9	7	0	0	0	0	0	0	2
10%	0	0	7	27	31	26	9	0	0	0	0	0	14
25%	0	0	12	47	77	65	14	5	0	0	0	0	25
50%	0	5	32	146	203	195	44	14	5	0	0	0	48
75%	0	15	154	379	487	449	97	29	11	8	2	0	128
90%	0	35	352	893	1,168	1,040	221	56	15	14	6	1	205
100%	12	460	1,269	2,876	3,528	2,620	949	202	53	33	13	11	437
Mean	0	21	146	335	450	366	94	24	7	5	2	1	86

Table H1a2-24. Water Year Average of Monthly Flows (cfs) — Calaveras River above Delta (SWRCB Calaveras River)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	1	1	22	41	58	28	0	0	0	0	0	0
D	0	2	42	50	81	62	1	0	0	0	0	0
BN	0	2	63	106	278	160	9	0	0	0	0	0
AN	0	14	125	302	476	324	7	0	0	0	0	0
W	0	62	255	693	864	745	93	0	0	0	0	0
All	0	21	117	284	400	314	31	0	0	0	0	0
2008-2009 BiOps												
C	1	1	22	41	58	28	0	0	0	0	0	0
D	0	2	42	50	81	62	1	0	0	0	0	0
BN	0	2	63	106	277	160	9	0	0	0	0	0
AN	0	14	125	302	476	324	7	0	0	0	0	0
W	0	62	255	693	863	745	93	0	0	0	0	0
All	0	21	117	284	400	314	31	0	0	0	0	0
2019 BiOps												
C	1	1	22	41	58	28	0	0	0	0	0	0
D	0	2	42	50	81	62	1	0	0	0	0	0
BN	0	2	63	106	278	160	9	0	0	0	0	0
AN	0	14	125	302	476	324	7	0	0	0	0	0
W	0	62	255	693	864	745	93	0	0	0	0	0
All	0	21	117	284	400	314	31	0	0	0	0	0
VA												
C	1	1	22	41	58	27	0	0	0	0	0	0
D	0	2	42	50	81	62	1	0	0	0	0	0
BN	0	2	63	106	277	160	9	0	0	0	0	0
AN	0	14	125	302	476	324	7	0	0	0	0	0
W	0	62	255	693	863	745	93	0	0	0	0	0
All	0	21	117	284	400	314	31	0	0	0	0	0
55 w/WSAs												
C	1	2	30	63	105	49	8	1	0	0	0	0
D	0	8	57	91	180	140	26	7	1	0	0	0
BN	0	10	86	174	380	244	64	14	5	3	0	0
AN	0	42	161	401	529	403	80	26	8	5	3	0
W	1	39	304	734	845	761	214	53	16	11	5	2
All	0	21	146	335	450	366	94	24	7	5	2	1

H1a2.2.13 Clear Creek above Confluence with Sacramento River (SWRCB Clear Creek)

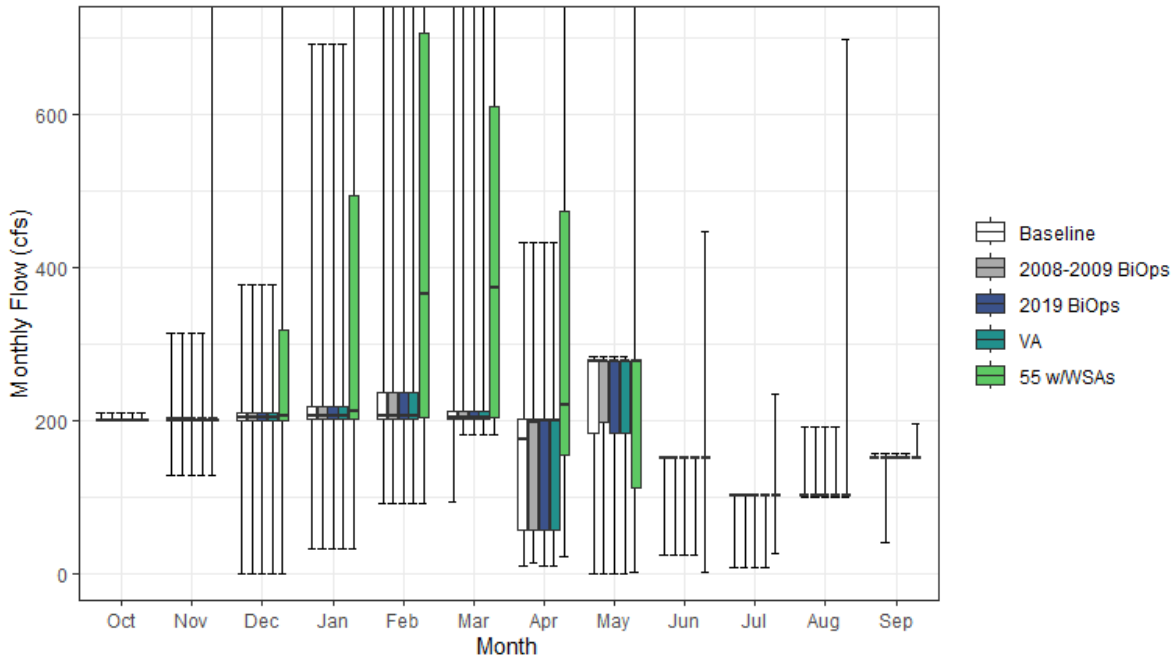

Figure H1a2-13. Clear Creek Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-25. Cumulative Distribution of Monthly Flow (cfs) — Clear Creek above Confluence with Sacramento River (SWRCB Clear Creek)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	200	129	0	32	92	93	9	0	24	7	100	150	86
10%	200	194	96	200	200	200	30	27	86	100	100	150	102
25%	200	200	200	202	201	201	57	183	150	101	101	150	116
50%	201	201	204	206	206	203	175	278	151	101	101	151	129
75%	202	202	210	219	236	212	202	278	151	101	101	151	142
90%	203	204	227	305	386	314	217	278	151	101	101	151	152
100%	210	314	378	693	1,572	1,341	432	284	152	102	191	156	232
Mean	201	198	192	228	262	238	143	220	138	98	102	151	131
2008-2009 BiOps													
0%	200	129	0	32	92	181	15	0	24	7	100	40	86
10%	200	197	83	200	200	200	32	50	77	100	100	150	105
25%	200	200	200	202	201	201	57	197	150	101	101	150	118
50%	201	201	203	206	206	203	198	278	150	101	101	151	128
75%	202	202	210	219	236	213	202	278	151	101	101	151	142
90%	203	204	227	305	386	314	217	278	151	101	101	151	151
100%	210	314	378	693	1,572	1,341	432	284	152	102	191	156	232
Mean	201	199	191	228	261	239	143	225	136	98	102	150	131
2019 BiOps													
0%	200	129	0	32	92	181	9	0	24	7	100	150	82
10%	200	194	84	200	200	200	30	27	86	100	100	150	102
25%	200	200	200	202	201	201	57	183	150	101	101	150	117
50%	201	201	204	207	206	203	200	278	151	101	101	151	129
75%	202	202	210	219	236	212	202	278	151	101	101	151	142
90%	203	204	227	305	386	314	217	278	151	101	101	151	152
100%	210	314	378	693	1,572	1,341	432	284	152	102	191	156	232
Mean	201	198	191	228	262	239	144	220	138	98	102	151	131
VA													
0%	200	129	0	32	92	181	9	0	24	7	100	150	82
10%	200	194	84	200	200	200	30	27	86	100	100	150	102
25%	200	200	200	202	201	201	57	183	150	101	101	150	117
50%	201	201	204	207	206	203	200	278	151	101	101	151	129
75%	202	202	210	219	236	213	202	278	151	101	101	151	142
90%	203	204	227	305	386	314	217	278	151	101	101	151	152
100%	210	314	378	693	1,572	1,341	432	284	152	102	191	156	232
Mean	201	198	191	228	262	239	144	220	138	98	102	151	131
55 w/WSAs													
0%	200	129	0	32	92	181	21	0	1	26	100	150	87
10%	200	194	84	200	200	201	69	46	69	100	100	150	110
25%	200	200	200	202	203	204	154	112	150	101	101	150	133
50%	201	201	206	213	366	374	220	278	150	101	101	151	171
75%	202	203	319	495	706	610	473	279	152	101	101	151	236
90%	203	295	664	1,021	1,020	938	724	360	190	101	101	152	296
100%	209	931	1,310	1,834	2,601	3,080	1,562	788	446	234	697	196	576
Mean	201	226	301	430	537	496	349	237	149	103	110	151	198

Table H1a2-26. Water Year Average of Monthly Flows (cfs) — Clear Creek above Confluence with Sacramento River (SWRCB Clear Creek)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	201	190	158	185	191	196	65	170	137	101	101	151
D	201	198	172	202	216	212	94	195	143	101	101	151
BN	201	192	161	200	218	210	132	194	129	95	101	151
AN	202	201	214	248	277	235	192	272	142	101	101	151
W	202	206	236	279	356	299	208	261	139	95	104	151
All	201	198	192	228	262	238	143	220	138	98	102	151
2008-2009 BiOps												
C	201	194	157	185	191	201	66	186	137	101	101	144
D	201	198	170	202	216	212	98	199	141	101	101	151
BN	201	192	161	200	212	210	132	200	122	95	101	151
AN	202	201	206	248	277	235	192	272	142	101	101	151
W	202	206	236	279	356	299	206	261	139	95	104	151
All	201	199	191	228	261	239	143	225	136	98	102	150
2019 BiOps												
C	201	190	151	180	191	201	65	170	137	101	101	151
D	201	198	172	202	216	212	100	196	143	101	101	151
BN	201	192	161	205	221	210	132	194	129	95	101	151
AN	202	201	213	248	277	235	192	272	142	101	101	151
W	202	206	236	279	356	299	207	259	139	95	104	151
All	201	198	191	228	262	239	144	220	138	98	102	151
VA												
C	201	190	151	180	191	201	65	170	137	101	101	151
D	201	198	172	202	216	212	100	196	143	101	101	151
BN	201	192	161	205	221	210	132	194	129	95	101	151
AN	202	201	213	248	277	235	192	272	142	101	101	151
W	202	206	236	279	356	299	207	259	139	95	104	151
All	201	198	191	228	262	239	144	220	138	98	102	151
55 w/WSAs												
C	201	190	173	187	239	222	100	168	125	101	100	151
D	201	216	198	235	324	355	182	175	143	101	101	151
BN	201	211	198	318	405	338	269	169	128	99	101	151
AN	201	226	290	523	710	598	396	314	170	101	109	151
W	202	263	514	736	866	805	638	330	171	109	127	152
All	201	226	301	430	537	496	349	237	149	103	110	151

H1a2.2.14 Cosumnes River above Confluence with Delta (SWRCB Cosumnes River)

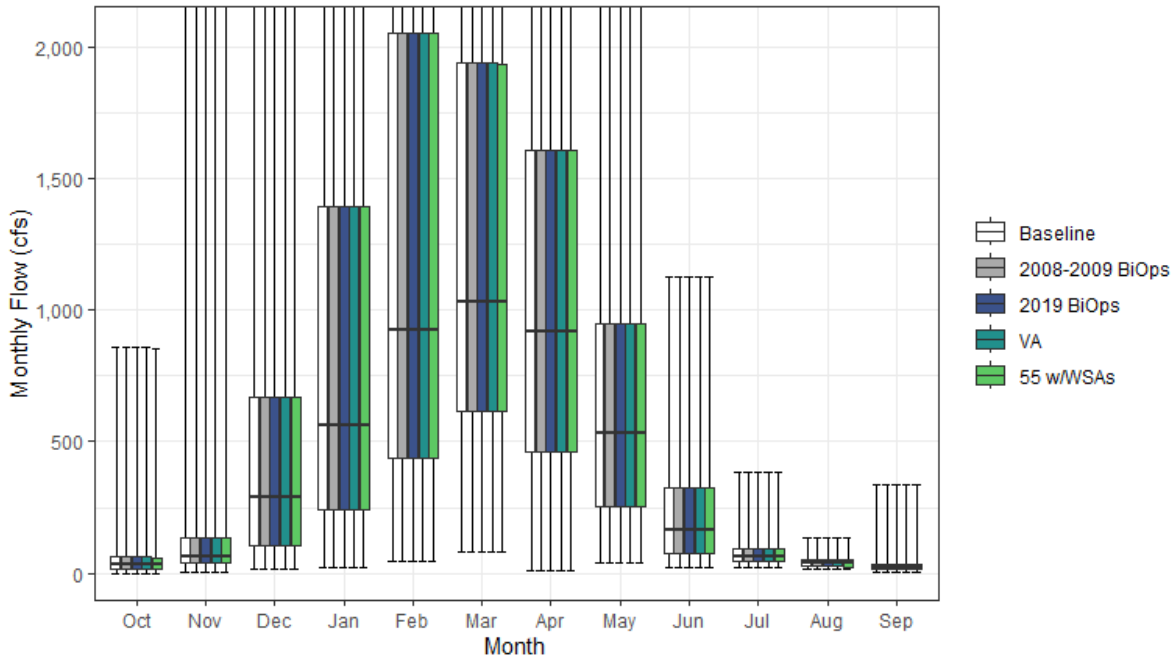

Figure H1a2-14. Cosumnes River Streamflow above Confluence with Delta Monthly Boxplot (cfs)

Table H1a2-27. Cumulative Distribution of Monthly Flow (cfs) — Cosumnes River above Confluence with Delta (SWRCB Cosumnes River)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	1	3	13	22	48	79	10	39	21	24	18	5	23
10%	11	23	59	136	210	337	241	96	51	31	22	14	121
25%	19	38	103	242	438	618	463	252	77	44	26	18	188
50%	33	65	291	565	923	1,029	921	535	165	62	38	24	366
75%	62	135	671	1,392	2,052	1,937	1,609	946	325	91	50	35	617
90%	134	325	1,888	3,219	3,749	3,057	2,212	1,426	582	141	64	48	874
100%	862	2,873	4,651	8,844	9,471	6,484	5,808	2,404	1,126	386	136	337	1,531
Mean	60	168	669	1,197	1,519	1,457	1,152	674	249	81	41	32	437
2008-2009 BiOps													
0%	1	3	13	22	48	79	10	39	21	24	18	5	23
10%	11	23	59	136	210	337	241	96	51	31	22	14	121
25%	19	38	103	242	438	618	463	252	77	44	26	17	188
50%	33	66	291	565	923	1,029	921	535	165	62	38	24	366
75%	62	135	671	1,392	2,052	1,937	1,609	946	325	91	50	35	617
90%	134	325	1,888	3,219	3,749	3,057	2,212	1,426	582	141	64	48	874
100%	862	2,876	4,651	8,844	9,471	6,484	5,808	2,404	1,126	386	136	337	1,531
Mean	60	168	669	1,197	1,519	1,457	1,152	674	249	81	41	32	437
2019 BiOps													
0%	1	3	13	22	48	79	10	39	21	24	18	5	23
10%	11	23	59	136	210	337	241	96	51	31	22	14	121
25%	18	38	103	242	438	618	463	252	77	44	26	18	188
50%	33	65	291	565	923	1,029	921	535	165	62	38	24	366
75%	62	135	671	1,392	2,052	1,937	1,609	946	325	91	50	35	617
90%	134	325	1,888	3,219	3,749	3,057	2,212	1,426	582	141	64	48	874
100%	862	2,875	4,651	8,844	9,471	6,484	5,808	2,404	1,126	386	136	337	1,531
Mean	60	168	669	1,197	1,519	1,457	1,152	674	249	81	41	32	437
VA													
0%	1	3	13	22	48	79	10	39	21	24	18	5	23
10%	11	23	59	136	210	337	241	96	51	31	22	14	121
25%	19	38	103	242	438	618	463	252	77	44	26	17	188
50%	33	65	291	565	923	1,029	921	535	165	62	38	24	366
75%	62	135	671	1,392	2,052	1,937	1,609	946	325	91	50	35	617
90%	134	325	1,888	3,219	3,749	3,057	2,212	1,426	582	141	64	48	873
100%	862	2,870	4,651	8,844	9,471	6,484	5,808	2,404	1,126	386	136	337	1,531
Mean	60	168	669	1,197	1,519	1,457	1,152	674	249	81	41	32	437
55 w/WSAs													
0%	1	5	13	21	46	80	10	39	21	24	15	5	22
10%	10	24	59	137	210	337	241	96	51	31	22	14	121
25%	17	37	103	242	438	618	463	252	77	44	25	16	188
50%	34	65	291	565	923	1,028	921	535	165	62	38	24	365
75%	60	135	671	1,392	2,051	1,936	1,609	946	325	91	50	35	616
90%	134	324	1,887	3,219	3,749	3,058	2,212	1,426	582	141	64	48	873
100%	854	2,866	4,651	8,844	9,471	6,484	5,808	2,404	1,126	386	136	337	1,531
Mean	60	167	668	1,197	1,519	1,457	1,152	674	249	81	41	32	437

Table H1a2-28. Water Year Average of Monthly Flows (cfs) — Cosumnes River above Confluence with Delta (SWRCB Cosumnes River)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	44	38	170	232	415	386	235	157	73	36	25	15
D	42	91	312	345	704	826	645	368	105	45	30	38
BN	41	104	412	648	1,255	1,222	1,217	594	210	66	36	28
AN	56	318	597	1,745	1,921	1,906	1,165	747	235	79	41	28
W	95	273	1,388	2,467	2,713	2,461	1,966	1,196	479	142	60	41
All	60	168	669	1,197	1,519	1,457	1,152	674	249	81	41	32
2008-2009 BiOps												
C	44	38	170	232	415	386	235	157	73	36	25	15
D	42	91	312	345	704	826	645	368	105	45	30	37
BN	41	104	412	648	1,255	1,222	1,217	594	210	66	36	28
AN	56	318	597	1,745	1,921	1,906	1,165	747	235	79	41	28
W	95	273	1,388	2,467	2,713	2,461	1,966	1,196	479	142	60	41
All	60	168	669	1,197	1,519	1,457	1,152	674	249	81	41	32
2019 BiOps												
C	44	38	170	232	415	386	235	157	73	36	25	15
D	42	91	312	345	704	826	645	368	105	45	30	38
BN	41	104	412	648	1,255	1,222	1,217	594	210	66	36	28
AN	56	319	597	1,745	1,921	1,906	1,165	747	235	79	41	28
W	95	273	1,388	2,467	2,713	2,461	1,966	1,196	479	142	60	41
All	60	168	669	1,197	1,519	1,457	1,152	674	249	81	41	32
VA												
C	44	38	170	232	415	386	235	157	73	36	25	15
D	42	91	312	345	704	826	645	368	105	45	30	38
BN	41	104	412	648	1,255	1,222	1,217	594	210	66	36	28
AN	56	318	597	1,745	1,921	1,906	1,165	747	235	79	41	28
W	95	273	1,388	2,467	2,713	2,461	1,966	1,196	479	142	60	41
All	60	168	669	1,197	1,519	1,457	1,152	674	249	81	41	32
55 w/WSAs												
C	43	38	168	230	414	387	235	156	73	36	24	15
D	42	91	311	344	703	825	644	368	105	44	30	37
BN	41	104	411	647	1,254	1,221	1,217	594	210	66	36	28
AN	56	317	595	1,744	1,921	1,906	1,165	746	235	79	41	28
W	95	272	1,388	2,466	2,713	2,461	1,966	1,196	479	142	60	41
All	60	167	668	1,197	1,519	1,457	1,152	674	249	81	41	32

H1a2.2.15 Cottonwood Creek above Confluence with Sacramento River (SWRCB Cottonwood Creek)

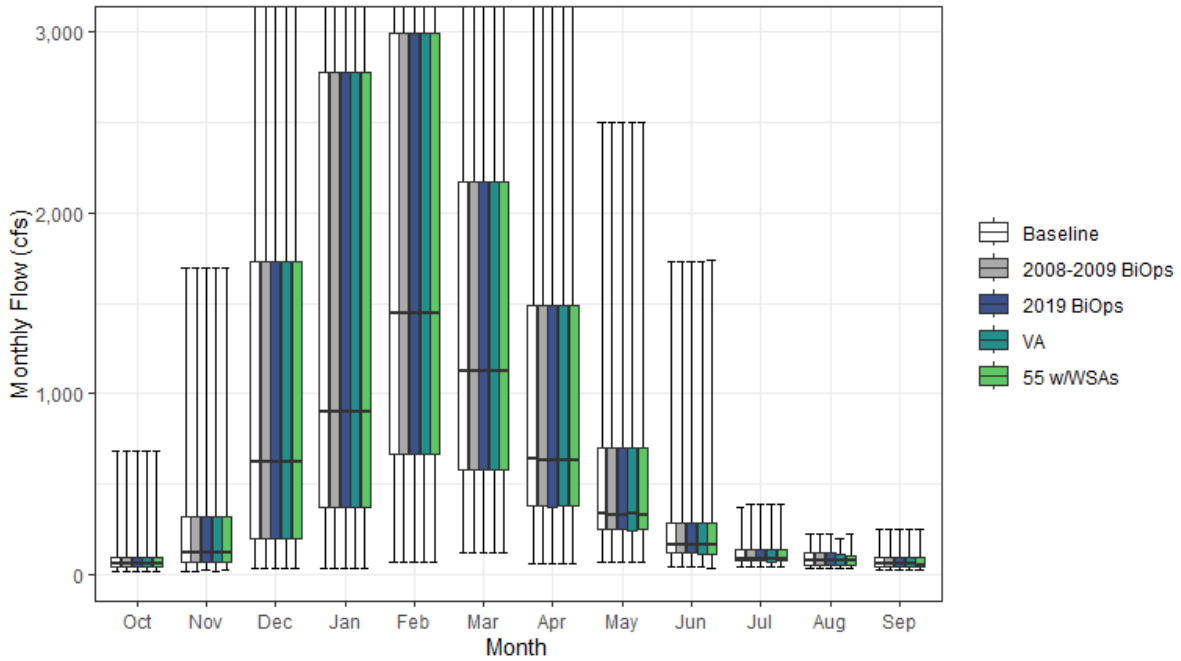

Figure H1a2-15. Cottonwood Creek Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-29. Cumulative Distribution of Monthly Flow (cfs) — Cottonwood Creek above Confluence with Sacramento River (SWRCB Cottonwood Creek)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	14	17	34	28	63	116	54	66	39	40	36	20	51
10%	27	47	79	197	265	296	202	151	80	53	46	32	146
25%	41	70	192	370	666	577	380	245	115	72	52	40	251
50%	59	122	617	899	1,444	1,123	635	337	162	87	75	54	423
75%	94	315	1,726	2,776	2,994	2,173	1,491	699	280	135	117	92	767
90%	150	647	3,161	4,389	5,082	3,571	2,081	976	410	184	135	110	1,062
100%	686	1,693	5,158	10,169	12,295	10,471	4,887	2,499	1,733	367	221	250	1,896
Mean	89	270	1,186	1,835	2,180	1,653	980	521	233	110	84	69	551
2008-2009 BiOps													
0%	14	17	34	28	63	116	54	66	39	40	36	20	51
10%	27	47	79	197	265	296	202	151	80	53	46	32	146
25%	41	70	192	370	666	577	380	245	115	72	52	40	251
50%	58	122	617	899	1,444	1,123	628	328	162	87	75	54	423
75%	89	315	1,726	2,776	2,994	2,173	1,491	699	280	135	117	92	766
90%	150	647	3,161	4,389	5,082	3,571	2,081	976	394	184	138	105	1,062
100%	686	1,693	5,158	10,169	12,295	10,471	4,887	2,499	1,733	391	221	250	1,896
Mean	88	270	1,186	1,835	2,180	1,653	981	522	233	110	84	69	551
2019 BiOps													
0%	12	20	34	28	63	116	54	66	39	40	36	20	51
10%	27	47	79	197	265	296	202	151	80	53	46	32	146
25%	41	70	192	370	666	577	373	245	115	72	52	40	251
50%	59	122	617	899	1,444	1,123	627	328	162	87	75	54	423
75%	94	315	1,726	2,776	2,994	2,173	1,491	698	280	135	117	92	767
90%	150	647	3,161	4,389	5,082	3,571	2,081	976	410	184	138	110	1,062
100%	686	1,693	5,158	10,169	12,295	10,471	4,887	2,499	1,733	391	221	250	1,895
Mean	89	270	1,186	1,835	2,180	1,653	979	521	233	111	84	69	551
VA													
0%	13	17	34	28	63	116	54	66	39	40	36	19	52
10%	26	47	79	197	265	296	202	149	78	51	43	32	146
25%	39	70	192	370	666	577	381	243	114	70	49	38	250
50%	59	122	618	899	1,444	1,123	626	337	160	83	71	54	422
75%	94	315	1,726	2,776	2,994	2,173	1,491	697	280	134	113	93	768
90%	150	647	3,161	4,389	5,082	3,571	2,081	976	394	184	135	109	1,062
100%	686	1,693	5,158	10,169	12,295	10,471	4,887	2,499	1,733	391	198	248	1,894
Mean	88	270	1,186	1,835	2,180	1,653	979	519	231	109	82	68	551
55 w/WSAs													
0%	15	20	34	28	63	116	54	65	32	41	34	20	50
10%	27	47	79	197	265	296	202	151	80	53	46	32	146
25%	41	70	192	370	666	577	378	245	114	72	52	39	251
50%	59	122	617	899	1,444	1,123	627	328	162	87	75	47	423
75%	88	315	1,726	2,776	2,994	2,173	1,491	699	280	135	104	93	767
90%	150	647	3,161	4,389	5,082	3,571	2,081	984	410	178	130	110	1,064
100%	686	1,693	5,158	10,169	12,295	10,471	4,887	2,500	1,738	391	221	250	1,896
Mean	88	270	1,186	1,835	2,180	1,653	979	520	232	110	83	69	551

Table H1a2-30. Water Year Average of Monthly Flows (cfs) — Cottonwood Creek above Confluence with Sacramento River (SWRCB Cottonwood Creek)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	66	74	441	507	748	537	256	177	100	58	54	39
D	63	241	697	625	1,213	1,008	474	272	133	72	55	57
BN	70	180	615	1,320	1,595	1,087	795	374	181	82	61	46
AN	113	287	1,232	2,589	2,954	2,127	1,110	811	305	141	99	93
W	122	445	2,285	3,455	3,713	2,890	1,804	864	383	171	130	100
All	89	270	1,186	1,835	2,180	1,653	980	521	233	110	84	69
2008-2009 BiOps												
C	65	74	441	507	748	538	256	177	100	58	54	39
D	62	241	697	625	1,213	1,008	473	272	133	72	55	57
BN	70	180	615	1,320	1,595	1,087	797	375	179	82	61	46
AN	111	287	1,232	2,589	2,954	2,127	1,110	816	305	141	99	93
W	120	445	2,285	3,455	3,713	2,890	1,804	865	383	172	130	98
All	88	270	1,186	1,835	2,180	1,653	981	522	233	110	84	69
2019 BiOps												
C	66	74	441	507	748	538	256	177	100	58	54	39
D	63	241	697	625	1,213	1,008	470	272	133	72	55	57
BN	70	180	615	1,320	1,595	1,087	794	374	181	82	61	46
AN	113	287	1,232	2,589	2,954	2,127	1,108	820	302	141	99	91
W	122	445	2,285	3,455	3,713	2,890	1,804	862	383	173	130	100
All	89	270	1,186	1,835	2,180	1,653	979	521	233	111	84	69
VA												
C	63	74	441	507	748	541	255	178	98	60	52	41
D	62	241	697	625	1,213	1,008	470	270	130	69	52	54
BN	69	180	615	1,320	1,595	1,087	792	371	177	79	59	44
AN	112	287	1,232	2,589	2,954	2,127	1,108	808	300	137	92	89
W	123	445	2,285	3,455	3,713	2,890	1,806	863	383	173	130	99
All	88	270	1,186	1,835	2,180	1,653	979	519	231	109	82	68
55 w/WSAs												
C	66	74	441	507	748	540	256	175	93	58	54	39
D	62	242	697	625	1,213	1,008	471	272	132	72	55	57
BN	71	180	615	1,319	1,595	1,087	792	374	181	82	61	46
AN	112	287	1,232	2,589	2,954	2,127	1,108	812	305	141	96	91
W	121	445	2,285	3,455	3,713	2,890	1,804	864	383	171	126	101
All	88	270	1,186	1,835	2,180	1,653	979	520	232	110	83	69

H1a2.2.16 Cow Creek above Confluence with Sacramento River (SWRCB Cow Creek)

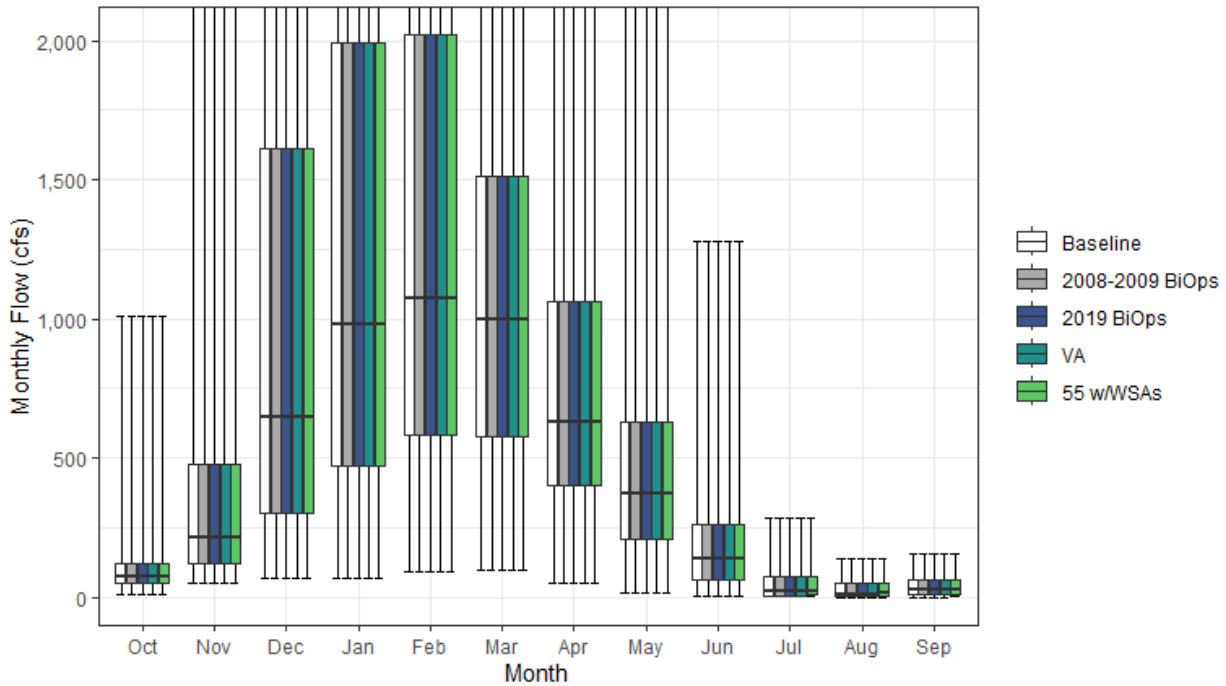

Figure H1a2-16. Cow Creek Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-31. Cumulative Distribution of Monthly Flow (cfs) — Cow Creek above Confluence with Sacramento River (SWRCB Cow Creek)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	10	51	67	66	94	98	52	17	1	1	1	1	43
10%	29	89	121	267	302	351	234	103	24	2	2	3	168
25%	49	119	302	471	580	576	399	211	62	5	4	8	232
50%	76	215	645	981	1,073	1,000	627	373	139	21	9	29	366
75%	120	477	1,614	1,992	2,020	1,512	1,061	630	258	76	48	64	564
90%	165	681	2,475	2,979	2,937	2,407	1,659	942	381	107	68	76	743
100%	1,012	2,304	3,707	5,391	5,418	4,973	3,217	2,185	1,276	284	139	158	1,108
Mean	99	352	1,031	1,365	1,434	1,188	799	471	188	43	28	39	422
2008-2009 BiOps													
0%	10	51	67	66	94	98	52	17	1	1	1	1	43
10%	29	89	121	267	302	351	234	103	24	2	2	3	168
25%	49	119	302	471	580	576	399	211	62	5	4	8	232
50%	76	215	645	981	1,073	1,000	627	373	139	21	9	29	366
75%	120	477	1,614	1,992	2,020	1,512	1,061	630	258	76	48	64	564
90%	165	681	2,475	2,979	2,937	2,407	1,659	942	381	107	68	76	743
100%	1,012	2,304	3,707	5,391	5,418	4,973	3,217	2,185	1,276	284	139	158	1,108
Mean	99	352	1,031	1,365	1,434	1,188	799	471	188	43	28	39	422
2019 BiOps													
0%	10	51	67	66	94	98	52	17	1	1	1	1	43
10%	29	89	121	267	302	351	234	103	24	2	2	3	168
25%	49	119	302	471	580	576	399	211	62	5	4	8	232
50%	76	215	645	981	1,073	1,000	627	373	139	21	9	29	366
75%	120	477	1,614	1,992	2,020	1,512	1,061	630	258	76	48	64	564
90%	165	681	2,475	2,979	2,937	2,407	1,659	942	381	107	68	76	743
100%	1,012	2,304	3,707	5,391	5,418	4,973	3,217	2,185	1,276	284	139	158	1,108
Mean	99	352	1,031	1,365	1,434	1,188	799	471	188	43	28	39	422
VA													
0%	10	51	67	66	94	98	52	17	1	1	1	1	43
10%	29	89	121	267	302	351	234	103	24	2	2	3	168
25%	49	119	302	471	580	576	399	211	62	5	4	8	232
50%	76	215	645	981	1,073	1,000	627	373	139	21	9	29	366
75%	120	477	1,614	1,992	2,020	1,512	1,061	630	258	76	48	64	564
90%	165	681	2,475	2,979	2,937	2,407	1,659	942	381	107	68	76	743
100%	1,012	2,304	3,707	5,391	5,418	4,973	3,217	2,185	1,276	284	139	158	1,108
Mean	99	352	1,031	1,365	1,434	1,188	799	471	188	43	28	39	422
55 w/WSAs													
0%	10	51	67	66	94	98	52	17	3	1	1	1	43
10%	29	89	121	267	302	351	234	103	24	5	4	6	168
25%	49	119	302	471	580	576	399	211	62	10	7	10	233
50%	76	215	645	981	1,073	1,000	627	373	139	21	13	29	366
75%	120	477	1,614	1,992	2,020	1,512	1,061	630	258	76	48	64	564
90%	165	681	2,475	2,979	2,937	2,407	1,659	942	381	107	68	76	743
100%	1,012	2,304	3,707	5,391	5,418	4,973	3,217	2,185	1,276	284	139	158	1,108
Mean	99	352	1,031	1,365	1,434	1,188	799	471	188	45	29	39	422

Table H1a2-32. Water Year Average of Monthly Flows (cfs) — Cow Creek above Confluence with Sacramento River (SWRCB Cow Creek)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	83	122	440	460	614	487	232	155	52	6	6	7
D	74	322	731	572	912	844	507	249	72	7	5	21
BN	77	232	638	1,140	1,277	983	802	395	139	18	12	20
AN	108	317	969	1,851	1,804	1,575	880	638	228	53	39	63
W	135	587	1,839	2,379	2,205	1,789	1,282	783	360	101	62	71
All	99	352	1,031	1,365	1,434	1,188	799	471	188	43	28	39
2008-2009 BiOps												
C	83	122	440	460	614	487	232	155	52	6	6	7
D	74	322	731	572	912	844	507	249	72	7	5	21
BN	77	232	638	1,140	1,277	983	802	395	139	18	12	20
AN	108	317	969	1,851	1,804	1,575	880	638	228	53	39	63
W	135	587	1,839	2,379	2,205	1,789	1,282	783	360	101	62	71
All	99	352	1,031	1,365	1,434	1,188	799	471	188	43	28	39
2019 BiOps												
C	83	122	440	460	614	487	232	155	52	6	6	7
D	74	322	731	572	912	844	507	249	72	7	5	21
BN	77	232	638	1,140	1,277	983	802	395	139	18	12	20
AN	108	317	969	1,851	1,804	1,575	880	638	228	53	39	63
W	135	587	1,839	2,379	2,205	1,789	1,282	783	360	101	62	71
All	99	352	1,031	1,365	1,434	1,188	799	471	188	43	28	39
VA												
C	83	122	440	460	614	487	232	155	52	6	6	7
D	74	322	731	572	912	844	507	249	72	7	5	21
BN	77	232	638	1,140	1,277	983	802	395	139	18	12	20
AN	108	317	969	1,851	1,804	1,575	880	638	228	53	39	63
W	135	587	1,839	2,379	2,205	1,789	1,282	783	360	101	62	71
All	99	352	1,031	1,365	1,434	1,188	799	471	188	43	28	39
55 w/WSAs												
C	83	122	440	460	614	487	232	155	52	8	7	9
D	74	322	731	572	912	844	507	249	72	11	7	22
BN	77	232	638	1,140	1,277	983	802	395	139	22	14	20
AN	108	317	969	1,851	1,804	1,575	880	638	228	53	39	63
W	135	587	1,839	2,379	2,205	1,789	1,282	783	360	101	62	71
All	99	352	1,031	1,365	1,434	1,188	799	471	188	45	29	39

H1a2.2.17 Deer Creek above Confluence with Sacramento River (SWRCB Deer Creek)

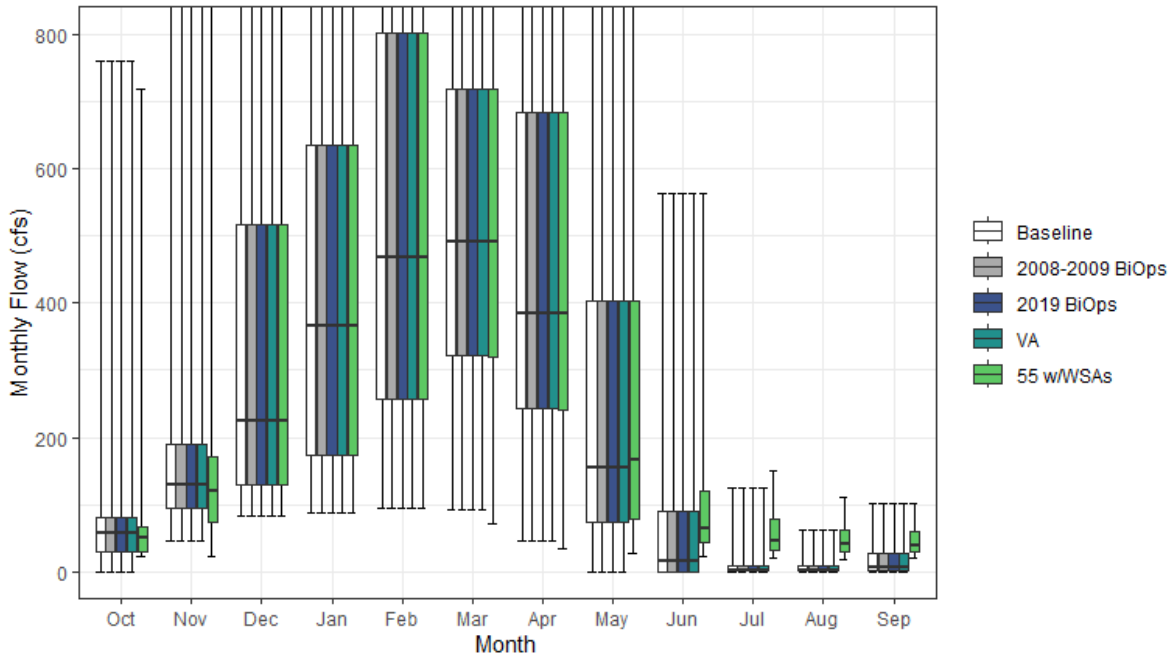

Figure H1a2-17. Deer Creek Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-33. Cumulative Distribution of Monthly Flow (cfs) — Deer Creek above Confluence with Sacramento River (SWRCB Deer Creek)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	0	47	82	87	95	92	45	0	0	0	0	0	33
10%	15	78	100	129	161	210	131	1	0	0	0	0	73
25%	29	95	129	173	257	321	243	73	0	1	1	1	100
50%	58	130	223	365	468	491	386	155	15	1	1	6	156
75%	80	189	517	635	802	719	684	404	89	9	9	26	258
90%	119	312	899	1,180	1,284	1,141	1,009	661	235	31	9	41	356
100%	761	969	1,797	2,427	2,567	2,079	1,696	1,102	563	125	63	101	463
Mean	67	178	380	510	616	588	494	261	69	11	7	15	192
2008-2009 BiOps													
0%	0	47	82	87	95	92	45	0	0	0	0	0	33
10%	15	78	100	129	161	210	131	1	0	0	0	0	73
25%	29	95	129	173	257	321	243	73	0	1	1	1	100
50%	58	130	223	365	468	491	386	155	15	1	1	6	156
75%	80	189	517	635	802	719	684	404	89	9	9	26	258
90%	119	312	899	1,180	1,284	1,141	1,009	661	235	31	9	41	356
100%	761	969	1,797	2,427	2,567	2,079	1,696	1,102	563	125	63	101	463
Mean	67	178	380	510	616	588	494	261	69	11	7	15	192
2019 BiOps													
0%	0	47	82	87	95	92	45	0	0	0	0	0	33
10%	15	78	100	129	161	210	131	1	0	0	0	0	73
25%	29	95	129	173	257	321	243	73	0	1	1	1	100
50%	58	130	223	365	468	491	386	155	15	1	1	6	156
75%	80	189	517	635	802	719	684	404	89	9	9	26	258
90%	119	312	899	1,180	1,284	1,141	1,009	661	235	31	9	41	356
100%	761	969	1,797	2,427	2,567	2,079	1,696	1,102	563	125	63	101	463
Mean	67	178	380	510	616	588	494	261	69	11	7	15	192
VA													
0%	0	47	82	87	95	92	45	0	0	0	0	0	33
10%	15	78	100	129	161	210	131	1	0	0	0	0	73
25%	29	95	129	173	257	321	243	73	0	1	1	1	100
50%	58	130	223	365	468	491	386	155	15	1	1	6	156
75%	80	189	517	635	802	719	684	404	89	9	9	26	258
90%	119	312	899	1,180	1,284	1,141	1,009	661	235	31	9	41	356
100%	761	969	1,797	2,427	2,567	2,079	1,696	1,102	563	125	63	101	463
Mean	67	178	380	510	616	588	494	261	69	11	7	15	192
55 w/WSAs													
0%	22	23	82	87	95	70	34	27	23	19	19	19	34
10%	24	40	100	129	161	204	124	47	34	26	23	23	76
25%	30	74	129	173	256	320	241	79	44	31	29	29	106
50%	50	120	223	365	468	491	386	166	64	45	41	40	159
75%	66	171	517	635	802	719	684	404	120	79	62	61	267
90%	76	312	899	1,180	1,284	1,141	1,009	661	235	104	81	73	362
100%	720	969	1,797	2,427	2,567	2,079	1,696	1,102	563	151	111	101	474
Mean	57	158	380	510	616	586	487	269	104	57	48	46	199

Table H1a2-34. Water Year Average of Monthly Flows (cfs) — Deer Creek above Confluence with Sacramento River (SWRCB Deer Creek)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	41	90	168	170	242	246	131	37	0	0	0	1
D	51	148	256	212	354	415	297	95	3	1	1	6
BN	57	140	236	355	492	496	494	191	36	1	2	4
AN	69	182	312	642	800	748	553	310	55	8	9	17
W	98	269	703	956	1,012	892	808	527	181	31	17	35
All	67	178	380	510	616	588	494	261	69	11	7	15
2008-2009 BiOps												
C	41	90	168	170	242	246	131	37	0	0	0	1
D	51	148	256	212	354	415	297	95	3	1	1	6
BN	57	140	236	355	492	496	494	191	36	1	2	4
AN	69	182	312	642	800	748	553	310	55	8	9	17
W	98	269	703	956	1,012	892	808	527	181	31	17	35
All	67	178	380	510	616	588	494	261	69	11	7	15
2019 BiOps												
C	41	90	168	170	242	246	131	37	0	0	0	1
D	51	148	256	212	354	415	297	95	3	1	1	6
BN	57	140	236	355	492	496	494	191	36	1	2	4
AN	69	182	312	642	800	748	553	310	55	8	9	17
W	98	269	703	956	1,012	892	808	527	181	31	17	35
All	67	178	380	510	616	588	494	261	69	11	7	15
VA												
C	41	90	168	170	242	246	131	37	0	0	0	1
D	51	148	256	212	354	415	297	95	3	1	1	6
BN	57	140	236	355	492	496	494	191	36	1	2	4
AN	69	182	312	642	800	748	553	310	55	8	9	17
W	98	269	703	956	1,012	892	808	527	181	31	17	35
All	67	178	380	510	616	588	494	261	69	11	7	15
55 w/WSAs												
C	38	69	168	170	242	241	117	52	33	25	23	23
D	48	129	256	212	353	411	289	110	46	34	31	31
BN	49	113	236	355	492	495	483	200	76	45	38	37
AN	49	153	312	642	800	748	550	308	100	62	53	53
W	84	256	703	956	1,012	892	808	528	204	98	77	70
All	57	158	380	510	616	586	487	269	104	57	48	46

H1a2.2.18 Elder Creek above Confluence with Sacramento River

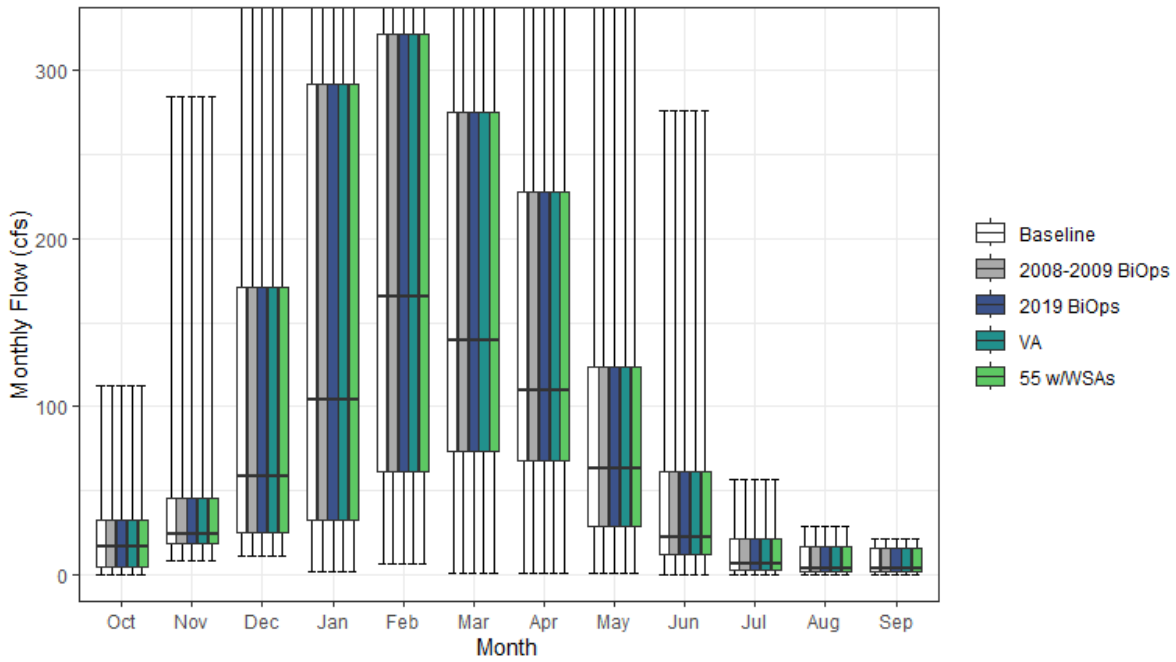

Figure H1a2-18. Elder Creek Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-35. Cumulative Distribution of Monthly Flow (cfs) — Elder Creek above Confluence with Sacramento River

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	0	8	11	1	6	1	1	0	0	0	0	0	3
10%	2	13	18	14	22	32	25	13	5	1	0	0	15
25%	4	18	25	32	61	73	68	28	12	3	1	1	29
50%	17	24	59	104	165	139	110	63	22	6	4	4	52
75%	32	45	171	292	322	276	228	123	61	21	16	15	96
90%	35	107	309	423	556	400	304	196	82	28	19	17	127
100%	112	284	580	1,118	1,513	1,088	666	462	276	56	28	21	213
Mean	19	44	122	186	237	194	152	87	41	13	8	8	67
2008-2009 BiOps													
0%	0	8	11	1	6	1	1	0	0	0	0	0	3
10%	2	13	18	14	22	32	25	13	5	1	0	0	15
25%	4	18	25	32	61	73	68	28	12	3	1	1	29
50%	17	24	59	104	165	139	110	63	22	6	4	4	52
75%	32	45	171	292	322	276	228	123	61	21	16	15	96
90%	35	107	309	423	556	400	304	196	82	28	19	17	127
100%	112	284	580	1,118	1,513	1,088	666	462	276	56	28	21	213
Mean	19	44	122	186	237	194	152	87	41	13	8	8	67
2019 BiOps													
0%	0	8	11	1	6	1	1	0	0	0	0	0	3
10%	2	13	18	14	22	32	25	13	5	1	0	0	15
25%	4	18	25	32	61	73	68	28	12	3	1	1	29
50%	17	24	59	104	165	139	110	63	22	6	4	4	52
75%	32	45	171	292	322	276	228	123	61	21	16	15	96
90%	35	107	309	423	556	400	304	196	82	28	19	17	127
100%	112	284	580	1,118	1,513	1,088	666	462	276	56	28	21	213
Mean	19	44	122	186	237	194	152	87	41	13	8	8	67
VA													
0%	0	8	11	1	6	1	1	0	0	0	0	0	3
10%	2	13	18	14	22	32	25	13	5	1	0	0	15
25%	4	18	25	32	61	73	68	28	12	3	1	1	29
50%	17	24	59	104	165	139	110	63	22	6	4	4	52
75%	32	45	171	292	322	276	228	123	61	21	16	15	96
90%	35	107	309	423	556	400	304	196	82	28	19	17	127
100%	112	284	580	1,118	1,513	1,088	666	462	276	56	28	21	213
Mean	19	44	122	186	237	194	152	87	41	13	8	8	67
55 w/WSAs													
0%	0	8	11	1	6	1	1	0	0	0	0	0	3
10%	2	13	18	14	22	32	25	13	5	1	0	0	15
25%	4	18	25	32	61	73	68	28	12	3	1	1	29
50%	17	24	59	104	165	139	110	63	22	6	4	4	52
75%	32	45	171	292	322	276	228	123	61	21	16	15	96
90%	35	107	309	423	556	400	304	196	82	28	19	17	127
100%	112	284	580	1,118	1,513	1,088	666	462	276	56	28	21	213
Mean	19	44	122	186	237	194	152	87	41	13	8	8	67

Table H1a2-36. Water Year Average of Monthly Flows (cfs) — Elder Creek above Confluence with Sacramento River

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	9	15	51	44	71	71	42	25	8	2	0	0
D	17	38	71	68	127	127	72	36	13	4	2	2
BN	18	36	65	132	155	121	133	51	21	5	3	3
AN	20	51	134	288	364	258	186	137	65	20	14	14
W	26	67	227	342	409	329	268	162	83	26	18	16
All	19	44	122	186	237	194	152	87	41	13	8	8
2008-2009 BiOps												
C	9	15	51	44	71	71	42	25	8	2	0	0
D	17	38	71	68	127	127	72	36	13	4	2	2
BN	18	36	65	132	155	121	133	51	21	5	3	3
AN	20	51	134	288	364	258	186	137	65	20	14	14
W	26	67	227	342	409	329	268	162	83	26	18	16
All	19	44	122	186	237	194	152	87	41	13	8	8
2019 BiOps												
C	9	15	51	44	71	71	42	25	8	2	0	0
D	17	38	71	68	127	127	72	36	13	4	2	2
BN	18	36	65	132	155	121	133	51	21	5	3	3
AN	20	51	134	288	364	258	186	137	65	20	14	14
W	26	67	227	342	409	329	268	162	83	26	18	16
All	19	44	122	186	237	194	152	87	41	13	8	8
VA												
C	9	15	51	44	71	71	42	25	8	2	0	0
D	17	38	71	68	127	127	72	36	13	4	2	2
BN	18	36	65	132	155	121	133	51	21	5	3	3
AN	20	51	134	288	364	258	186	137	65	20	14	14
W	26	67	227	342	409	329	268	162	83	26	18	16
All	19	44	122	186	237	194	152	87	41	13	8	8
55 w/WSAs												
C	9	15	51	44	71	71	42	25	8	2	0	0
D	17	38	71	68	127	127	72	36	13	4	2	2
BN	18	36	65	132	155	121	133	51	21	5	3	3
AN	20	51	134	288	364	258	186	137	65	20	14	14
W	26	67	227	342	409	329	268	162	83	26	18	16
All	19	44	122	186	237	194	152	87	41	13	8	8

H1a2.2.19 Feather River below Oroville Reservoir (SWRCB Oroville)

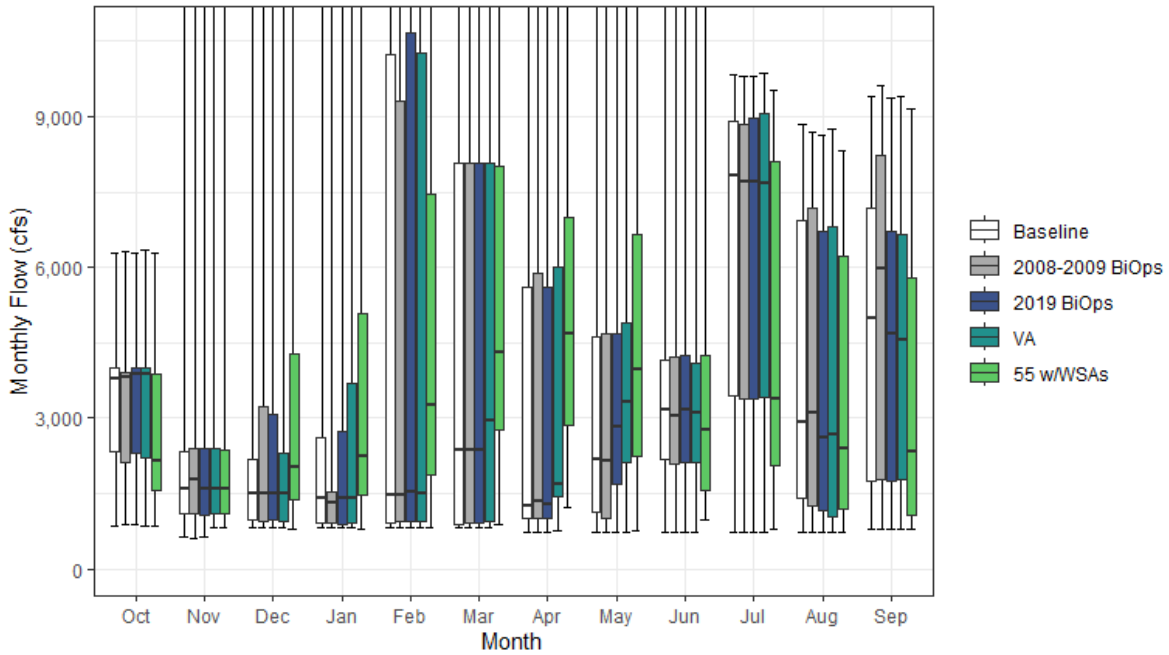

Figure H1a2-19. Feather River Streamflow below Oroville Reservoir Monthly Boxplot (cfs)

Table H1a2-37. Cumulative Distribution of Monthly Flow (cfs) — Feather River below Oroville Reservoir (SWRCB Oroville)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	868	635	812	811	815	811	718	726	732	717	716	788	685
10%	1,399	829	841	823	840	821	763	981	1,422	2,287	719	959	1,387
25%	2,342	1,094	973	912	930	889	995	1,122	2,182	3,435	1,417	1,749	1,866
50%	3,789	1,592	1,494	1,410	1,469	2,355	1,266	2,183	3,160	7,833	2,908	5,000	2,603
75%	4,007	2,327	2,186	2,598	10,249	8,083	5,603	4,621	4,151	8,919	6,918	7,194	4,140
90%	4,730	2,404	8,355	12,174	17,893	17,071	11,069	9,726	6,629	9,400	8,082	8,886	5,548
100%	6,299	15,494	24,353	38,957	47,868	37,169	22,208	21,120	13,401	9,821	8,833	9,406	8,218
Mean	3,333	1,965	3,158	4,205	6,081	6,204	3,938	3,925	3,700	6,425	3,959	4,786	3,116
2008-2009 BiOps													
0%	875	619	812	811	815	811	717	724	735	717	716	789	826
10%	1,265	829	840	826	837	821	766	973	988	2,280	719	996	1,336
25%	2,121	1,096	960	902	941	914	997	1,024	2,080	3,389	1,247	1,780	1,881
50%	3,817	1,774	1,493	1,303	1,464	2,355	1,357	2,152	3,054	7,703	3,106	5,990	2,640
75%	3,903	2,398	3,215	1,535	9,308	8,083	5,875	4,688	4,203	8,850	7,172	8,220	4,104
90%	4,029	2,408	6,524	12,174	17,900	17,063	11,068	9,726	6,630	9,251	7,866	9,472	5,595
100%	6,301	15,558	24,353	38,957	47,868	37,550	22,208	21,120	13,401	9,796	8,679	9,623	8,226
Mean	3,192	2,127	3,182	4,039	5,923	6,084	3,958	3,887	3,647	6,288	4,060	5,304	3,116
2019 BiOps													
0%	875	635	813	810	816	811	717	724	738	717	717	788	693
10%	1,425	827	840	826	838	820	769	981	990	1,869	719	958	1,362
25%	2,298	1,083	978	901	940	913	1,001	1,682	2,119	3,382	1,174	1,759	1,903
50%	3,868	1,595	1,505	1,409	1,528	2,355	1,300	2,819	3,161	7,705	2,605	4,666	2,600
75%	4,007	2,390	3,077	2,741	10,664	8,083	5,604	4,688	4,236	8,961	6,703	6,724	4,080
90%	4,730	2,405	8,658	12,174	18,114	17,071	11,068	9,726	6,629	9,406	7,825	8,620	5,545
100%	6,299	15,494	24,353	38,957	47,870	37,630	22,154	21,120	13,401	9,814	8,625	9,378	8,218
Mean	3,350	1,998	3,428	4,269	6,146	6,236	3,953	4,233	3,658	6,190	3,770	4,457	3,117
VA													
0%	869	811	814	810	814	811	753	737	724	717	716	790	737
10%	1,414	831	840	824	841	822	1,161	1,458	987	2,288	719	956	1,386
25%	2,199	1,104	961	902	947	948	1,436	2,104	2,119	3,418	1,051	1,792	1,987
50%	3,867	1,596	1,498	1,411	1,490	2,949	1,673	3,316	3,106	7,682	2,675	4,544	2,712
75%	4,006	2,392	2,298	3,686	10,278	8,082	6,021	4,886	4,088	9,048	6,823	6,646	4,166
90%	4,730	2,405	8,756	12,575	17,892	17,071	11,069	9,726	6,630	9,431	7,875	8,731	5,546
100%	6,360	15,558	24,353	38,957	47,879	37,518	22,208	21,120	13,401	9,873	8,758	9,408	8,222
Mean	3,326	2,008	3,226	4,296	6,093	6,313	4,238	4,507	3,611	6,304	3,837	4,419	3,146
55 w/WSAs													
0%	868	811	808	808	815	884	1,235	746	976	806	729	792	1,040
10%	1,128	825	840	960	1,375	1,875	1,778	1,745	1,102	1,318	994	932	1,232
25%	1,558	1,099	1,374	1,464	1,858	2,771	2,855	2,254	1,550	2,066	1,208	1,061	1,587
50%	2,136	1,607	2,021	2,244	3,255	4,303	4,681	3,964	2,753	3,386	2,406	2,337	2,707
75%	3,868	2,370	4,292	5,095	7,466	8,015	6,989	6,664	4,260	8,118	6,229	5,780	4,144
90%	3,959	2,401	7,674	12,278	12,626	13,828	10,834	9,400	6,542	8,778	7,556	8,239	5,732
100%	6,299	15,494	24,353	36,838	40,561	30,830	22,208	20,819	12,989	9,512	8,307	9,146	8,220
Mean	2,653	2,017	3,622	4,900	5,892	6,354	5,734	5,053	3,458	4,779	3,608	3,604	3,116

Table H1a2-38. Water Year Average of Monthly Flows (cfs) — Feather River below Oroville Reservoir (SWRCB Oroville)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	3,291	1,658	1,254	1,047	999	1,081	1,378	1,886	2,995	4,031	3,037	1,996
D	3,186	1,573	1,473	1,222	1,649	1,517	963	1,860	3,351	7,959	5,583	2,189
BN	3,518	1,886	1,919	1,862	2,963	3,869	1,747	1,703	2,636	8,818	6,737	5,867
AN	3,027	1,573	2,573	2,991	7,361	7,554	3,577	3,186	2,680	7,743	4,083	8,703
W	3,470	2,624	6,429	10,045	13,503	13,313	9,017	8,228	5,414	4,535	1,452	5,927
All	3,333	1,965	3,158	4,205	6,081	6,204	3,938	3,925	3,700	6,425	3,959	4,786
2008-2009 BiOps												
C	2,999	1,443	1,256	1,018	999	1,013	1,391	1,922	3,002	4,030	2,926	1,712
D	3,101	1,732	1,771	1,197	1,663	1,462	998	1,730	3,113	7,392	6,387	2,186
BN	3,101	2,122	2,340	1,326	2,913	3,495	1,750	1,621	2,624	8,723	6,556	6,137
AN	2,743	1,798	2,947	2,698	6,100	7,483	3,656	3,195	2,687	7,626	3,941	7,970
W	3,599	2,916	5,870	9,990	13,507	13,257	9,019	8,228	5,415	4,604	1,425	7,910
All	3,192	2,127	3,182	4,039	5,923	6,084	3,958	3,887	3,647	6,288	4,060	5,304
2019 BiOps												
C	3,307	1,695	1,350	1,016	1,041	1,082	1,385	2,279	2,920	4,021	2,935	1,666
D	3,186	1,593	1,493	1,222	1,738	1,614	1,014	2,434	3,397	7,844	5,434	2,122
BN	3,498	1,955	2,407	1,864	3,029	3,803	1,747	2,345	2,524	8,808	6,294	4,809
AN	3,071	1,603	2,682	3,191	7,297	7,482	3,600	3,139	2,465	7,095	4,072	8,388
W	3,509	2,641	6,901	10,193	13,616	13,417	9,016	8,229	5,440	4,115	1,275	5,864
All	3,350	1,998	3,428	4,269	6,146	6,236	3,953	4,233	3,658	6,190	3,770	4,457
VA												
C	3,310	1,629	1,127	986	999	1,101	1,437	2,285	2,856	4,039	2,990	1,673
D	3,162	1,579	1,466	1,224	1,651	1,559	1,528	2,964	3,346	8,031	5,507	2,058
BN	3,570	2,032	1,943	1,907	2,876	4,012	2,262	2,838	2,532	8,749	6,229	4,754
AN	2,811	1,475	2,652	3,138	7,414	7,800	4,114	3,632	2,246	7,644	4,501	8,408
W	3,508	2,725	6,679	10,289	13,575	13,440	9,021	8,230	5,437	4,161	1,284	5,808
All	3,326	2,008	3,226	4,296	6,093	6,313	4,238	4,507	3,611	6,304	3,837	4,419
55 w/WSAs												
C	2,466	1,301	1,429	1,197	1,515	1,874	1,753	1,577	1,565	1,868	2,130	1,756
D	2,475	1,765	2,221	1,571	2,638	3,253	3,165	2,625	1,638	2,962	3,009	1,631
BN	2,896	1,791	2,449	2,517	3,837	4,595	5,078	4,039	2,884	7,098	4,909	2,889
AN	2,235	1,682	2,991	4,806	6,296	7,071	5,757	5,356	3,573	6,565	5,059	6,297
W	2,896	2,861	6,816	10,862	11,753	11,846	10,149	9,210	6,119	5,481	3,431	5,412
All	2,653	2,017	3,622	4,900	5,892	6,354	5,734	5,053	3,458	4,779	3,608	3,604

H1a2.2.20 Feather River above Confluence with Sacramento River (SWRCB Feather River)

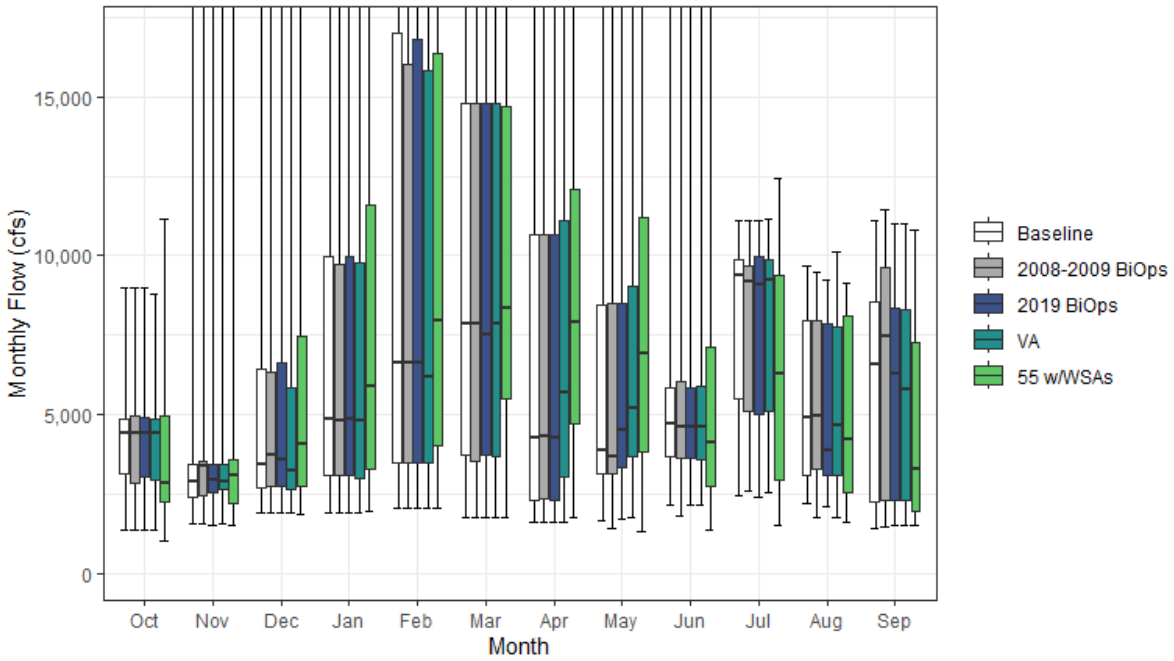

Figure H1a2-20. Feather River Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-39. Cumulative Distribution of Monthly Flow (cfs) — Feather River above Confluence with Sacramento River (SWRCB Feather River)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	1,350	1,537	1,913	1,924	2,042	1,755	1,597	1,637	2,152	2,427	2,186	1,415	1,618
10%	2,034	1,854	2,166	2,353	2,728	2,572	1,907	2,374	2,765	3,631	2,931	1,712	2,114
25%	3,127	2,373	2,683	3,091	3,452	3,705	2,293	3,144	3,683	5,469	3,097	2,268	3,087
50%	4,402	2,869	3,432	4,829	6,619	7,864	4,273	3,864	4,686	9,401	4,901	6,587	4,216
75%	4,874	3,414	6,405	9,980	16,997	14,809	10,672	8,452	5,843	9,888	7,939	8,537	6,933
90%	6,144	3,911	19,033	23,276	28,751	27,426	17,942	15,745	10,734	10,272	8,778	10,374	8,942
100%	8,965	21,701	39,711	66,522	78,623	57,569	36,791	29,829	22,723	11,096	9,661	11,088	13,342
Mean	4,138	3,427	6,580	9,422	11,951	11,492	7,499	6,811	5,931	7,821	5,415	5,959	5,204
2008-2009 BiOps													
0%	1,349	1,536	1,913	1,924	2,043	1,755	1,602	1,410	1,786	2,575	1,750	1,440	1,580
10%	1,873	1,854	2,152	2,422	2,729	2,573	1,902	2,189	2,735	3,508	2,970	1,734	2,116
25%	2,850	2,461	2,720	3,081	3,482	3,518	2,337	3,131	3,607	5,085	3,267	2,279	3,009
50%	4,398	3,397	3,709	4,790	6,619	7,863	4,292	3,680	4,626	9,167	4,929	7,453	4,278
75%	4,962	3,527	6,315	9,734	16,010	14,810	10,660	8,511	6,034	9,690	7,933	9,618	7,197
90%	5,102	4,725	19,137	23,953	28,922	27,426	17,916	15,712	10,773	10,258	8,573	10,907	9,114
100%	8,982	21,761	39,712	66,552	78,603	58,009	36,781	29,827	22,723	11,093	9,468	11,446	13,345
Mean	4,010	3,583	6,599	9,267	11,801	11,380	7,519	6,773	5,880	7,690	5,513	6,465	5,206
2019 BiOps													
0%	1,350	1,534	1,913	1,923	2,043	1,755	1,597	1,726	2,152	2,399	2,090	1,488	1,671
10%	2,047	1,854	2,181	2,422	2,728	2,573	1,932	2,825	2,712	3,351	2,710	1,725	2,092
25%	3,052	2,530	2,739	3,091	3,460	3,705	2,290	3,312	3,627	5,012	3,075	2,300	3,083
50%	4,402	2,926	3,577	4,830	6,619	7,501	4,274	4,519	4,610	9,093	3,857	6,261	4,209
75%	4,896	3,429	6,639	9,985	16,809	14,809	10,663	8,496	5,841	9,955	7,847	8,355	6,957
90%	6,103	3,992	20,091	24,679	29,126	27,427	17,916	15,755	10,733	10,251	8,505	10,100	9,055
100%	8,964	21,701	39,712	66,520	78,602	57,999	36,654	29,830	22,723	11,097	9,227	10,993	13,343
Mean	4,154	3,459	6,832	9,483	12,012	11,522	7,513	7,111	5,892	7,595	5,232	5,643	5,205
VA													
0%	1,350	1,536	1,913	1,912	2,042	1,737	1,602	1,732	2,146	2,532	1,764	1,492	1,645
10%	2,029	1,899	2,153	2,360	2,730	2,617	2,092	2,999	2,702	3,525	2,603	1,920	2,109
25%	2,956	2,633	2,640	2,982	3,455	3,696	3,044	3,652	3,560	5,121	3,094	2,274	3,148
50%	4,404	2,894	3,232	4,791	6,172	7,864	5,691	5,192	4,589	9,252	4,654	5,794	4,319
75%	4,878	3,419	5,818	9,778	15,808	14,811	11,114	9,016	5,871	9,869	7,764	8,318	6,955
90%	6,117	3,911	18,999	22,626	29,126	27,372	17,934	15,747	10,729	10,272	8,724	10,228	8,973
100%	8,810	21,762	39,768	66,584	78,656	57,989	36,841	29,834	22,721	11,151	10,138	10,987	13,347
Mean	4,129	3,447	6,528	9,389	11,923	11,566	8,140	7,423	5,819	7,691	5,309	5,612	5,237
55 w/WSAs													
0%	1,016	1,520	1,842	1,935	2,035	1,764	1,763	1,313	1,343	1,512	1,615	1,491	1,428
10%	1,629	1,845	2,066	2,521	2,971	3,447	3,039	2,437	1,867	1,996	1,991	1,671	2,030
25%	2,232	2,202	2,717	3,256	4,027	5,475	4,710	3,814	2,758	2,915	2,539	1,928	2,777
50%	2,840	3,100	4,042	5,883	7,936	8,368	7,914	6,917	4,121	6,275	4,202	3,295	4,184
75%	4,961	3,556	7,458	11,603	16,345	14,694	12,060	11,178	7,123	9,364	8,094	7,261	7,394
90%	5,095	4,805	14,156	22,285	24,844	23,370	17,701	15,434	10,819	10,168	8,526	9,745	9,331
100%	11,130	22,179	39,264	63,532	71,739	50,739	36,576	29,981	21,160	12,432	9,138	10,829	13,356
Mean	3,519	3,633	6,944	9,970	11,739	11,733	9,616	8,373	5,604	6,159	5,012	4,781	5,243

Table H1a2-40. Water Year Average of Monthly Flows (cfs) — Feather River above Confluence with Sacramento River (SWRCB Feather River)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	3,780	2,714	2,688	2,713	2,903	2,739	2,118	2,580	3,421	4,333	3,501	2,457
D	3,910	2,796	3,408	3,501	4,509	4,795	2,671	3,314	4,339	8,584	6,398	2,998
BN	4,246	3,045	3,943	5,365	7,852	8,102	5,191	4,122	4,448	9,688	7,837	6,763
AN	3,717	3,293	5,783	9,522	14,505	14,758	7,642	6,704	5,063	9,373	5,926	10,203
W	4,595	4,565	12,970	19,872	23,807	21,911	15,313	13,377	9,724	7,318	3,978	7,792
All	4,138	3,427	6,580	9,422	11,951	11,492	7,499	6,811	5,931	7,821	5,415	5,959
2008-2009 BiOps												
C	3,514	2,515	2,688	2,686	2,902	2,673	2,129	2,614	3,427	4,332	3,397	2,190
D	3,835	2,951	3,689	3,475	4,522	4,748	2,707	3,188	4,110	8,036	7,176	2,997
BN	3,861	3,273	4,336	4,861	7,805	7,751	5,193	4,040	4,435	9,598	7,664	7,026
AN	3,452	3,507	6,123	9,250	13,324	14,695	7,711	6,707	5,070	9,262	5,790	9,494
W	4,721	4,842	12,443	19,822	23,807	21,859	15,318	13,377	9,725	7,391	3,948	9,720
All	4,010	3,583	6,599	9,267	11,801	11,380	7,519	6,773	5,880	7,690	5,513	6,465
2019 BiOps												
C	3,794	2,749	2,777	2,686	2,941	2,738	2,124	2,953	3,351	4,324	3,406	2,147
D	3,911	2,820	3,433	3,500	4,593	4,888	2,728	3,881	4,384	8,472	6,253	2,934
BN	4,231	3,109	4,399	5,366	7,913	8,040	5,193	4,748	4,336	9,679	7,408	5,740
AN	3,760	3,323	5,884	9,714	14,441	14,691	7,659	6,655	4,858	8,747	5,915	9,898
W	4,632	4,584	13,409	20,010	23,915	22,008	15,309	13,374	9,751	6,915	3,806	7,729
All	4,154	3,459	6,832	9,483	12,012	11,522	7,513	7,111	5,892	7,595	5,232	5,643
VA												
C	3,797	2,685	2,568	2,626	2,889	2,738	2,143	2,934	3,253	4,318	3,435	2,145
D	3,886	2,804	3,392	3,379	4,432	4,793	3,761	4,411	4,268	8,597	6,404	2,893
BN	4,297	3,182	3,901	5,220	7,716	8,210	6,478	5,395	4,293	9,578	7,317	5,690
AN	3,518	3,131	5,668	9,615	14,548	14,922	8,859	7,261	4,695	9,364	6,353	9,920
W	4,623	4,619	12,948	19,954	23,850	22,025	15,314	13,376	9,741	6,960	3,817	7,681
All	4,129	3,447	6,528	9,389	11,923	11,566	8,140	7,423	5,819	7,691	5,309	5,612
55 w/WSAs												
C	3,012	2,371	2,906	2,889	3,455	3,662	2,836	2,490	2,154	2,315	2,637	2,201
D	3,246	3,047	4,214	3,763	5,500	6,615	5,384	4,467	2,647	3,672	3,806	2,343
BN	3,680	3,014	4,441	5,929	8,535	8,995	8,748	6,824	4,605	7,891	5,982	3,888
AN	2,981	3,573	6,072	11,198	13,430	14,115	10,076	9,384	5,863	8,113	6,761	7,834
W	4,103	5,153	13,035	20,365	22,087	20,572	16,700	14,954	10,143	8,153	5,849	7,289
All	3,519	3,633	6,944	9,970	11,739	11,733	9,616	8,373	5,604	6,159	5,012	4,781

H1a2.2.21 Mill Creek above Confluence with Sacramento River (SWRCB Mill Creek)

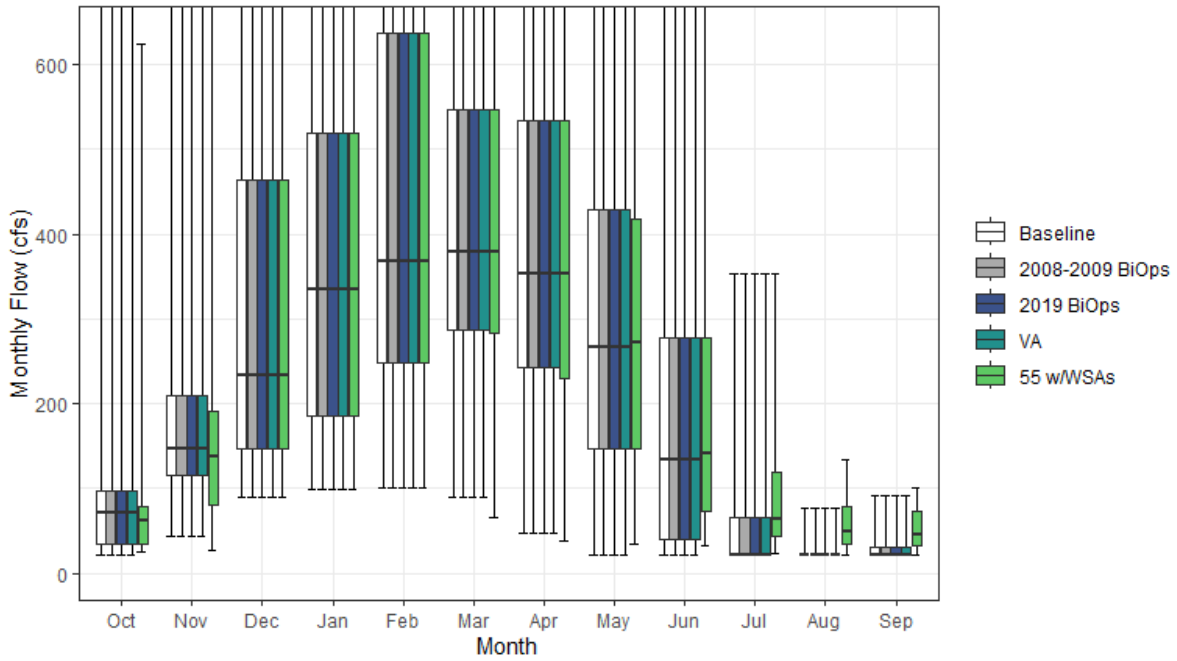

Figure H1a2-21. Mill Creek Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-41. Cumulative Distribution of Monthly Flow (cfs) — Mill Creek above Confluence with Sacramento River (SWRCB Mill Creek)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	21	43	90	100	101	90	48	21	21	21	21	21	39
10%	21	93	119	142	176	191	166	70	21	21	21	21	88
25%	34	115	147	185	247	287	243	147	40	21	21	21	109
50%	71	147	234	334	368	378	354	266	135	21	21	21	147
75%	98	209	464	519	637	547	533	429	277	66	21	31	239
90%	134	314	776	895	873	795	716	598	401	139	29	52	301
100%	671	1,026	1,345	1,816	1,725	1,266	1,101	804	668	353	77	91	383
Mean	79	192	349	422	476	448	399	304	175	56	25	29	177
2008-2009 BiOps													
0%	21	43	90	100	101	90	48	21	21	21	21	21	39
10%	21	93	119	142	176	191	166	70	21	21	21	21	88
25%	34	115	147	185	247	287	243	147	40	21	21	21	109
50%	71	147	234	334	368	378	354	266	135	21	21	21	147
75%	98	209	464	519	637	547	533	429	277	66	21	31	239
90%	134	314	776	895	873	795	716	598	401	139	29	52	301
100%	671	1,026	1,345	1,816	1,725	1,266	1,101	804	668	353	77	91	383
Mean	79	192	349	422	476	448	399	304	175	56	25	29	177
2019 BiOps													
0%	21	43	90	100	101	90	48	21	21	21	21	21	39
10%	21	93	119	142	176	191	166	70	21	21	21	21	88
25%	34	115	147	185	247	287	243	147	40	21	21	21	109
50%	71	147	234	334	368	378	354	266	135	21	21	21	147
75%	98	209	464	519	637	547	533	429	277	66	21	31	239
90%	134	314	776	895	873	795	716	598	401	139	29	52	301
100%	671	1,026	1,345	1,816	1,725	1,266	1,101	804	668	353	77	91	383
Mean	79	192	349	422	476	448	399	304	175	56	25	29	177
VA													
0%	21	43	90	100	101	90	48	21	21	21	21	21	39
10%	21	93	119	142	176	191	166	70	21	21	21	21	88
25%	34	115	147	185	247	287	243	147	40	21	21	21	109
50%	71	147	234	334	368	378	354	266	135	21	21	21	147
75%	98	209	464	519	637	547	533	429	277	66	21	31	239
90%	134	314	776	895	873	795	716	598	401	139	29	52	301
100%	671	1,026	1,345	1,816	1,725	1,266	1,101	804	668	353	77	91	383
Mean	79	192	349	422	476	448	399	304	175	56	25	29	177
55 w/WSAs													
0%	24	28	90	100	101	66	38	35	32	23	21	22	36
10%	29	49	119	142	176	199	158	83	50	35	28	27	87
25%	34	81	147	185	247	283	229	147	73	44	34	33	111
50%	62	138	234	334	368	378	354	272	141	65	49	46	154
75%	78	191	464	519	637	547	533	418	277	120	78	73	244
90%	86	314	776	895	873	795	716	598	401	165	96	83	305
100%	624	1,026	1,345	1,816	1,725	1,266	1,101	804	668	353	135	101	390
Mean	66	169	349	422	476	446	392	304	188	89	58	52	181

Table H1a2-42. Water Year Average of Monthly Flows (cfs) — Mill Creek above Confluence with Sacramento River (SWRCB Mill Creek)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	54	108	184	180	232	238	150	89	30	21	21	21
D	62	158	245	214	319	356	291	173	59	21	21	25
BN	69	154	235	334	399	397	412	260	143	28	21	21
AN	82	195	300	535	597	566	458	384	209	45	23	31
W	110	285	605	715	721	612	579	510	343	123	32	41
All	79	192	349	422	476	448	399	304	175	56	25	29
2008-2009 BiOps												
C	54	108	184	180	232	238	150	89	30	21	21	21
D	62	158	245	214	319	356	291	173	59	21	21	25
BN	69	154	235	334	399	397	412	260	143	28	21	21
AN	82	195	300	535	597	566	458	384	209	45	23	31
W	110	285	605	715	721	612	579	510	343	123	32	41
All	79	192	349	422	476	448	399	304	175	56	25	29
2019 BiOps												
C	54	108	184	180	232	238	150	89	30	21	21	21
D	62	158	245	214	319	356	291	173	59	21	21	25
BN	69	154	235	334	399	397	412	260	143	28	21	21
AN	82	195	300	535	597	566	458	384	209	45	23	31
W	110	285	605	715	721	612	579	510	343	123	32	41
All	79	192	349	422	476	448	399	304	175	56	25	29
VA												
C	54	108	184	180	232	238	150	89	30	21	21	21
D	62	158	245	214	319	356	291	173	59	21	21	25
BN	69	154	235	334	399	397	412	260	143	28	21	21
AN	82	195	300	535	597	566	458	384	209	45	23	31
W	110	285	605	715	721	612	579	510	343	123	32	41
All	79	192	349	422	476	448	399	304	175	56	25	29
55 w/WSAs												
C	45	84	184	180	232	232	134	92	51	33	29	27
D	56	137	245	214	318	352	282	172	84	46	37	36
BN	58	123	235	334	399	395	400	265	156	66	47	43
AN	57	162	300	535	597	566	454	380	217	98	68	64
W	92	270	605	715	721	612	579	508	346	161	93	79
All	66	169	349	422	476	446	392	304	188	89	58	52

H1a2.2.22 Mokelumne River above Pardee Reservoir (SWRCB Pardee Inflow)

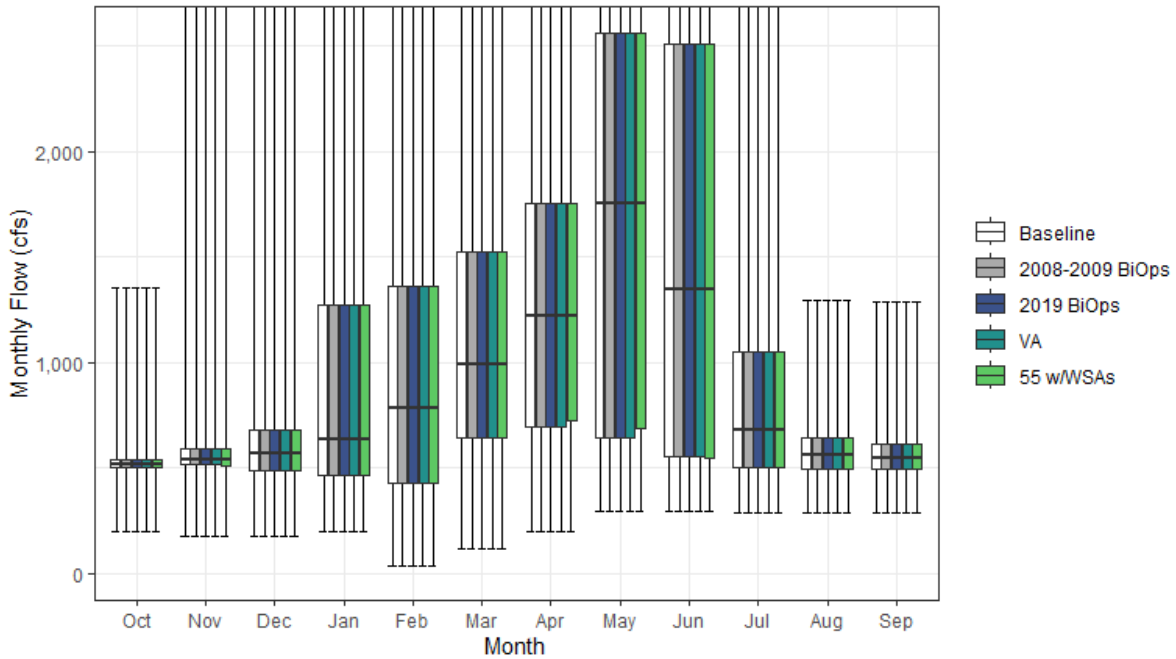

Figure H1a2-22. Mokelumne River Streamflow above Pardee Reservoir Monthly Boxplot (cfs)

Table H1a2-43. Cumulative Distribution of Monthly Flow (cfs) — Mokelumne River above Pardee Reservoir (SWRCB Pardee Inflow)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	195	178	179	196	33	116	201	295	291	287	285	288	170
10%	350	250	307	270	264	362	347	341	500	493	475	414	301
25%	504	513	488	466	429	642	694	645	552	505	496	497	412
50%	519	541	567	636	785	989	1,224	1,756	1,343	677	563	550	656
75%	539	593	681	1,269	1,360	1,523	1,756	2,561	2,509	1,048	641	615	961
90%	554	792	1,660	1,926	2,128	2,149	2,194	3,265	3,472	1,435	786	724	1,252
100%	1,356	3,382	3,947	5,738	6,921	3,360	4,481	5,075	6,506	3,644	1,297	1,285	1,947
Mean	513	598	801	971	1,049	1,152	1,308	1,777	1,779	862	594	571	722
2008-2009 BiOps													
0%	195	178	179	196	33	116	201	295	291	287	285	288	170
10%	350	250	307	270	264	362	347	341	500	493	475	414	301
25%	504	513	488	466	429	642	694	645	552	505	496	497	412
50%	519	541	567	636	785	989	1,224	1,756	1,343	677	563	550	656
75%	539	593	681	1,269	1,360	1,523	1,756	2,561	2,509	1,048	641	615	961
90%	554	792	1,660	1,926	2,128	2,149	2,194	3,265	3,472	1,435	786	724	1,252
100%	1,356	3,382	3,947	5,738	6,921	3,360	4,481	5,075	6,506	3,644	1,297	1,285	1,947
Mean	513	598	801	971	1,049	1,152	1,308	1,777	1,779	862	594	571	722
2019 BiOps													
0%	195	178	179	196	33	116	201	295	291	287	285	288	170
10%	350	250	307	270	264	362	347	341	500	493	475	414	301
25%	504	513	488	466	429	642	694	645	552	505	496	497	412
50%	519	541	567	636	785	989	1,224	1,756	1,343	677	563	550	656
75%	539	593	681	1,269	1,360	1,523	1,756	2,561	2,509	1,048	641	615	961
90%	554	792	1,660	1,926	2,128	2,149	2,194	3,264	3,472	1,435	786	724	1,252
100%	1,356	3,382	3,947	5,738	6,921	3,360	4,481	5,075	6,506	3,644	1,297	1,285	1,947
Mean	513	598	801	971	1,049	1,152	1,308	1,777	1,779	862	594	571	722
VA													
0%	195	178	179	196	33	116	201	295	291	287	285	288	170
10%	350	250	307	270	264	362	347	341	500	493	475	414	301
25%	504	513	488	466	429	642	694	645	552	505	496	497	412
50%	519	541	567	636	785	989	1,224	1,756	1,343	677	563	550	656
75%	539	593	681	1,269	1,360	1,523	1,756	2,561	2,509	1,048	641	615	961
90%	554	792	1,660	1,926	2,128	2,149	2,194	3,264	3,472	1,435	786	724	1,252
100%	1,356	3,382	3,947	5,738	6,920	3,360	4,481	5,075	6,506	3,644	1,297	1,285	1,947
Mean	513	598	801	971	1,049	1,152	1,308	1,777	1,779	862	594	571	722
55 w/WSAs													
0%	195	178	179	196	33	116	201	295	291	287	285	288	165
10%	335	238	304	270	264	362	399	484	499	486	397	362	302
25%	503	510	488	466	429	642	723	690	549	505	496	497	417
50%	519	537	567	636	785	989	1,224	1,756	1,343	677	563	549	656
75%	539	590	681	1,269	1,360	1,523	1,756	2,561	2,509	1,048	641	615	961
90%	554	792	1,660	1,926	2,128	2,149	2,194	3,265	3,470	1,435	786	724	1,252
100%	1,356	3,382	3,947	5,738	6,920	3,360	4,481	5,075	6,506	3,644	1,297	1,285	1,947
Mean	508	591	799	970	1,048	1,152	1,324	1,788	1,777	859	591	567	722

Table H1a2-44. Water Year Average of Monthly Flows (cfs) — Mokelumne River above Pardee Reservoir (SWRCB Pardee Inflow)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	474	411	385	342	279	365	363	430	587	428	403	401
D	492	518	549	484	564	764	844	955	912	554	506	506
BN	494	549	606	662	893	1,018	1,254	1,514	1,440	704	563	545
AN	490	732	835	1,253	1,260	1,496	1,509	2,230	1,871	894	598	591
W	571	735	1,316	1,747	1,828	1,804	2,105	3,082	3,230	1,408	777	716
All	513	598	801	971	1,049	1,152	1,308	1,777	1,779	862	594	571
2008-2009 BiOps												
C	474	411	385	342	279	365	363	430	587	428	403	401
D	492	518	549	484	564	764	844	955	912	554	506	506
BN	494	549	606	662	893	1,018	1,254	1,514	1,440	704	563	545
AN	490	732	835	1,253	1,260	1,496	1,509	2,230	1,871	894	598	591
W	571	735	1,316	1,747	1,828	1,804	2,105	3,082	3,230	1,408	777	716
All	513	598	801	971	1,049	1,152	1,308	1,777	1,779	862	594	571
2019 BiOps												
C	474	411	385	342	279	365	363	430	587	428	403	401
D	492	518	549	484	564	764	844	955	912	554	506	506
BN	494	549	606	662	893	1,018	1,254	1,514	1,440	704	563	545
AN	490	732	835	1,253	1,260	1,496	1,509	2,230	1,871	894	598	591
W	571	735	1,316	1,747	1,828	1,804	2,105	3,082	3,230	1,408	777	716
All	513	598	801	971	1,049	1,152	1,308	1,777	1,779	862	594	571
VA												
C	474	411	385	342	279	365	363	430	587	428	403	401
D	492	518	549	484	564	764	844	955	912	554	506	506
BN	494	549	606	662	893	1,018	1,254	1,514	1,440	704	563	545
AN	490	732	835	1,253	1,260	1,497	1,509	2,230	1,871	894	598	591
W	571	735	1,316	1,747	1,828	1,804	2,105	3,082	3,230	1,408	777	716
All	513	598	801	971	1,049	1,152	1,308	1,777	1,779	862	594	571
55 w/WSAs												
C	458	407	380	345	279	365	381	449	586	421	395	391
D	484	507	549	484	564	764	882	996	903	545	502	498
BN	494	540	604	662	892	1,018	1,271	1,517	1,440	704	563	545
AN	487	732	835	1,253	1,260	1,496	1,520	2,220	1,872	893	598	590
W	569	726	1,316	1,743	1,828	1,803	2,105	3,081	3,229	1,408	777	716
All	508	591	799	970	1,048	1,152	1,324	1,788	1,777	859	591	567

H1a2.2.23 Mokelumne River below Camanche Reservoir (SWRCB Camanche)

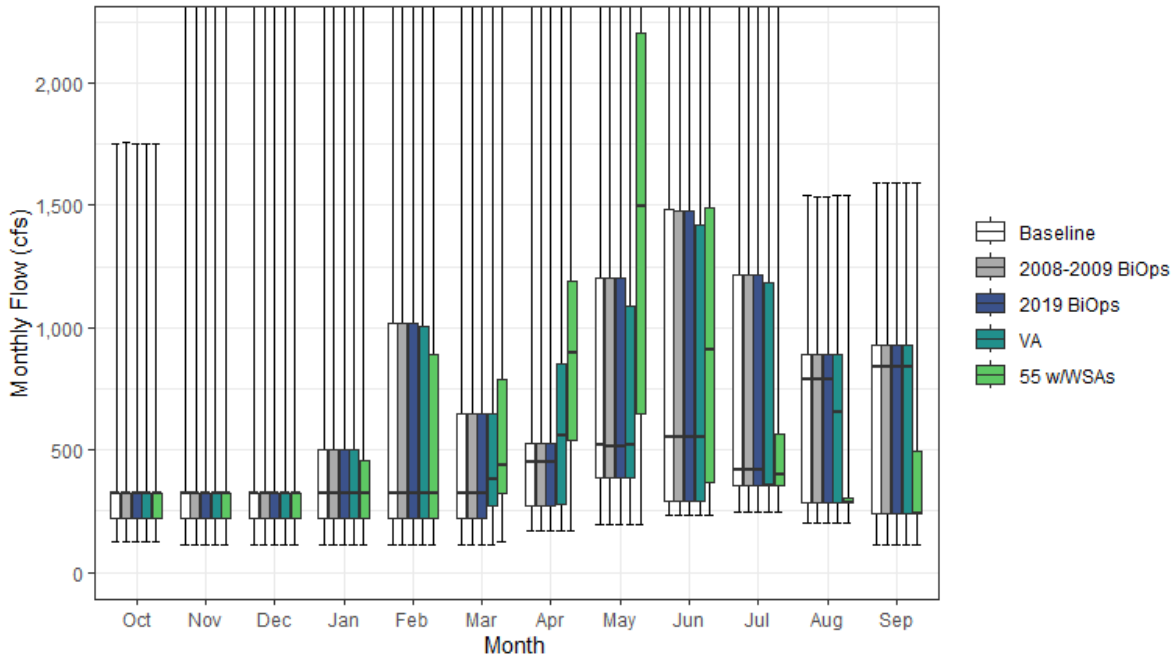

Figure H1a2-23. Mokelumne River Streamflow below Camanche Reservoir Monthly Boxplot (cfs)

Table H1a2-45. Cumulative Distribution of Monthly Flow (cfs) — Mokelumne River below Camanche Reservoir (SWRCB Camanche)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	124	115	115	115	115	116	169	198	234	245	204	115	116
10%	220	220	220	220	220	220	170	198	234	286	233	190	172
25%	220	221	220	220	221	221	270	388	292	355	287	239	224
50%	326	326	325	325	326	325	450	518	553	417	787	838	345
75%	326	326	326	503	1,019	649	526	1,204	1,481	1,214	889	929	700
90%	552	409	1,683	1,977	2,173	1,629	1,818	2,616	2,153	1,559	1,021	1,040	1,028
100%	1,754	4,173	3,898	6,084	7,129	3,423	4,346	4,141	4,432	2,998	1,538	1,593	1,751
Mean	344	389	591	724	792	626	655	988	960	807	618	630	490
2008-2009 BiOps													
0%	124	115	115	115	115	116	169	198	234	245	204	115	116
10%	220	220	220	220	220	220	170	198	234	286	233	190	172
25%	220	220	220	220	221	221	270	388	292	355	287	239	224
50%	326	326	325	325	326	326	450	518	553	419	787	838	345
75%	326	326	326	503	1,019	648	526	1,203	1,480	1,214	889	929	700
90%	552	409	1,683	1,977	2,173	1,630	1,819	2,616	2,153	1,559	1,022	1,040	1,028
100%	1,755	4,173	3,898	6,084	7,129	3,424	4,347	4,141	4,433	2,999	1,537	1,592	1,751
Mean	344	389	591	724	792	626	655	988	960	807	618	630	490
2019 BiOps													
0%	124	115	115	115	115	116	169	198	234	245	204	115	116
10%	220	220	220	220	220	220	170	198	234	286	233	190	172
25%	220	220	220	220	221	221	270	388	292	355	287	239	224
50%	325	326	325	325	326	325	450	518	553	419	787	838	345
75%	326	326	326	503	1,019	648	526	1,204	1,480	1,214	889	928	700
90%	551	409	1,683	1,977	2,173	1,629	1,818	2,617	2,152	1,559	1,021	1,040	1,028
100%	1,754	4,173	3,898	6,085	7,129	3,423	4,347	4,141	4,432	2,999	1,537	1,593	1,751
Mean	344	389	591	724	792	626	655	988	960	807	618	630	490
VA													
0%	124	115	115	115	115	116	169	198	234	245	204	115	116
10%	220	220	220	220	220	220	170	199	234	286	233	190	175
25%	220	221	220	220	220	275	277	388	292	355	287	239	230
50%	326	326	325	325	325	380	558	518	553	356	653	838	345
75%	326	326	326	502	1,004	649	850	1,086	1,418	1,186	889	929	700
90%	551	409	1,683	1,976	2,173	1,630	1,819	2,616	2,153	1,559	1,022	1,040	1,027
100%	1,754	4,173	3,898	6,084	7,128	3,438	4,348	4,137	4,432	2,998	1,539	1,592	1,751
Mean	342	389	590	722	791	643	727	954	941	797	612	624	490
55 w/WSAs													
0%	124	115	115	115	115	127	169	198	234	245	204	116	150
10%	220	220	220	220	220	220	244	333	234	286	233	190	172
25%	220	220	220	220	221	325	539	649	368	355	287	239	279
50%	326	325	325	325	325	437	899	1,497	912	401	288	240	379
75%	326	326	326	458	893	792	1,191	2,204	1,488	566	307	493	692
90%	546	331	1,530	1,950	1,892	1,630	1,877	2,790	2,549	1,146	997	1,040	1,006
100%	1,754	3,887	3,898	6,085	7,129	3,412	4,345	4,140	4,432	2,998	1,538	1,592	1,684
Mean	327	369	553	698	753	687	979	1,558	1,079	585	422	429	509

Table H1a2-46. Water Year Average of Monthly Flows (cfs) — Mokelumne River below Camanche Reservoir (SWRCB Camanche)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	261	247	246	246	247	247	205	269	241	282	230	189
D	284	295	277	277	278	278	295	430	368	392	330	290
BN	351	328	388	337	435	377	465	606	725	635	548	631
AN	292	602	579	779	798	696	563	972	1,009	923	769	850
W	449	486	1,138	1,530	1,684	1,213	1,317	2,029	1,905	1,454	1,021	1,025
All	344	389	591	724	792	626	655	988	960	807	618	630
2008-2009 BiOps												
C	261	247	246	246	247	247	205	269	241	282	230	189
D	284	295	277	277	278	278	295	430	368	392	330	290
BN	351	328	388	337	435	377	465	606	725	635	548	631
AN	292	602	579	779	798	696	563	972	1,009	923	768	850
W	450	486	1,138	1,530	1,683	1,213	1,317	2,029	1,906	1,454	1,021	1,025
All	344	389	591	724	792	626	655	988	960	807	618	630
2019 BiOps												
C	261	247	246	246	246	247	205	269	241	282	230	189
D	284	295	277	277	278	278	295	430	368	392	330	290
BN	351	328	388	337	435	377	465	606	725	635	548	631
AN	292	602	579	779	797	696	562	972	1,009	923	768	850
W	449	486	1,138	1,530	1,684	1,213	1,317	2,029	1,905	1,455	1,021	1,025
All	344	389	591	724	792	626	655	988	960	807	618	630
VA												
C	261	247	246	246	246	256	210	269	241	282	230	189
D	284	295	278	277	278	301	325	429	365	387	330	286
BN	351	328	388	336	433	402	516	599	690	629	544	614
AN	278	602	579	766	795	706	697	939	961	890	747	833
W	447	486	1,136	1,527	1,684	1,228	1,443	1,936	1,887	1,441	1,010	1,025
All	342	389	590	722	791	643	727	954	941	797	612	624
55 w/WSAs												
C	260	247	246	246	246	247	254	310	251	282	230	189
D	275	278	269	272	274	347	646	934	524	365	280	230
BN	340	309	369	321	427	489	970	1,390	882	417	290	272
AN	265	561	563	700	775	754	1,056	1,938	1,143	566	407	489
W	416	462	1,037	1,490	1,572	1,271	1,586	2,636	2,028	1,022	718	780
All	327	369	553	698	753	687	979	1,558	1,079	585	422	429

H1a2.2.24 Mokelumne River above Confluence with Delta (SWRCB Mokelumne River)

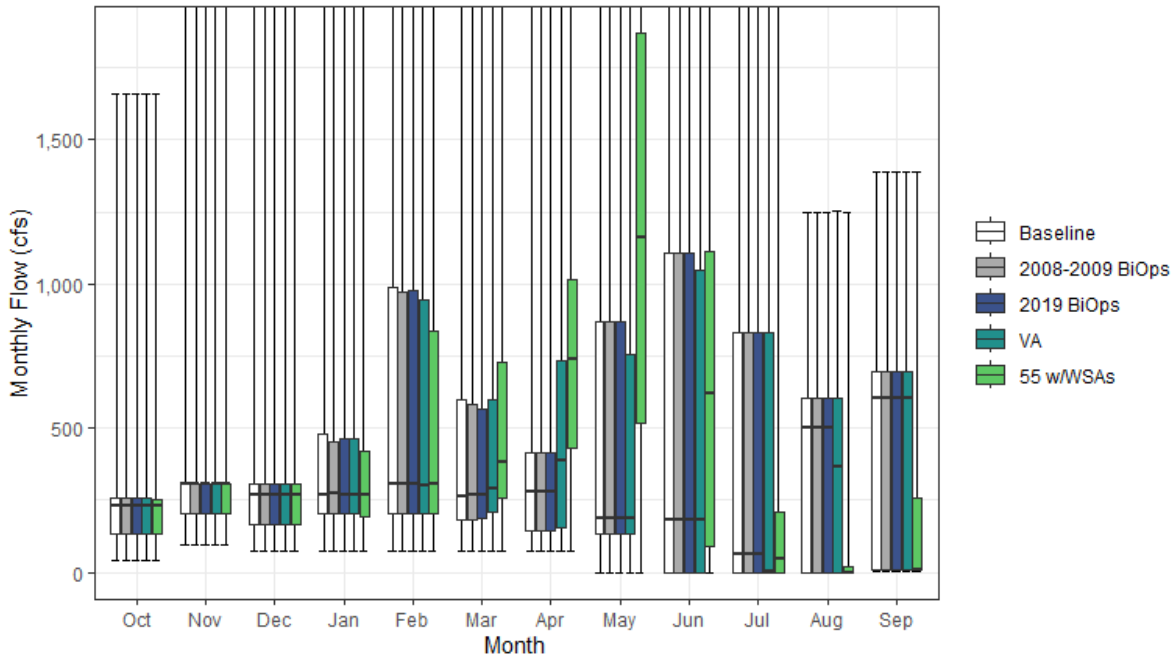

Figure H1a2-24. Mokelumne River Streamflow above Confluence with Delta Monthly Boxplot (cfs)

Table H1a2-47. Cumulative Distribution of Monthly Flow (cfs) — Mokelumne River above Confluence with Delta (SWRCB Mokelumne River)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	42	97	75	75	75	75	72	0	0	0	0	2	35
10%	125	185	162	163	164	156	73	1	0	0	0	7	78
25%	136	202	164	205	205	184	147	135	1	1	0	7	116
50%	231	305	267	268	308	264	279	186	182	62	499	605	229
75%	260	306	308	481	988	596	415	871	1,108	830	602	699	578
90%	473	387	1,635	1,932	2,134	1,557	1,707	2,300	1,779	1,123	734	828	903
100%	1,658	4,108	3,879	6,063	7,106	3,328	4,241	3,806	4,057	2,560	1,250	1,390	1,629
Mean	257	361	549	683	759	559	529	687	636	450	342	413	375
2008-2009 BiOps													
0%	42	98	75	75	75	75	72	0	0	0	0	2	33
10%	125	164	162	163	164	153	73	1	0	0	0	7	79
25%	136	202	164	204	205	182	147	135	1	1	0	7	117
50%	231	305	267	276	307	266	279	185	182	63	499	605	227
75%	260	306	308	452	970	585	415	870	1,108	830	602	699	575
90%	473	377	1,633	1,931	2,140	1,569	1,707	2,300	1,779	1,123	735	828	902
100%	1,659	4,108	3,879	6,064	7,106	3,369	4,242	3,806	4,057	2,561	1,250	1,390	1,627
Mean	257	362	548	685	757	561	529	687	636	450	342	413	375
2019 BiOps													
0%	42	98	75	75	75	75	72	0	0	0	0	2	33
10%	125	200	162	163	164	149	73	1	0	0	0	7	78
25%	136	202	164	204	204	187	147	135	1	1	0	7	116
50%	231	305	267	268	308	266	280	185	182	64	499	605	228
75%	260	306	308	465	978	568	415	871	1,108	830	602	698	578
90%	472	357	1,629	1,932	2,134	1,556	1,707	2,301	1,779	1,123	734	828	901
100%	1,658	4,108	3,878	6,064	7,106	3,368	4,242	3,806	4,057	2,561	1,250	1,390	1,627
Mean	257	361	549	683	758	559	528	687	636	450	342	413	375
VA													
0%	42	97	75	75	75	75	72	0	0	0	0	2	35
10%	125	200	162	163	174	147	73	1	0	0	0	7	78
25%	136	202	164	202	204	211	154	135	1	0	0	7	118
50%	231	305	267	268	303	291	387	186	181	2	366	605	227
75%	260	306	308	464	947	597	733	753	1,046	830	602	698	579
90%	472	350	1,648	1,926	2,133	1,555	1,707	2,300	1,780	1,123	734	828	900
100%	1,658	4,108	3,879	6,063	7,105	3,383	4,243	3,802	4,057	2,560	1,251	1,390	1,628
Mean	255	359	550	678	757	575	600	654	618	440	336	407	375
55 w/WSAs													
0%	42	98	75	75	75	75	72	0	0	0	0	2	64
10%	125	200	162	163	168	158	147	135	0	0	0	7	79
25%	133	201	164	192	205	258	429	519	92	1	0	7	178
50%	231	305	267	268	306	382	742	1,164	620	46	1	8	268
75%	251	306	308	419	835	730	1,017	1,870	1,115	210	20	260	566
90%	465	312	1,504	1,914	1,863	1,567	1,725	2,455	2,175	718	709	828	881
100%	1,658	3,822	3,871	6,064	7,106	3,329	4,240	3,805	4,057	2,560	1,250	1,390	1,560
Mean	239	346	515	656	718	627	853	1,275	771	236	146	211	397

Table H1a2-48. Water Year Average of Monthly Flows (cfs) — Mokelumne River above Confluence with Delta (SWRCB Mokelumne River)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	174	227	203	200	214	204	105	59	0	1	2	6
D	197	268	232	236	251	209	156	138	77	47	51	71
BN	267	304	347	296	401	308	320	287	387	279	261	404
AN	204	571	541	732	765	621	436	639	657	541	481	629
W	361	452	1,099	1,492	1,648	1,140	1,197	1,698	1,533	1,055	734	800
All	257	361	549	683	759	559	529	687	636	450	342	413
2008-2009 BiOps												
C	174	227	200	206	211	203	105	59	0	1	2	6
D	197	269	233	237	246	213	156	138	78	47	50	71
BN	267	304	349	297	409	305	320	286	387	279	261	404
AN	204	573	541	737	758	628	435	639	657	541	481	628
W	361	454	1,096	1,493	1,643	1,141	1,197	1,698	1,533	1,055	734	800
All	257	362	548	685	757	561	529	687	636	450	342	413
2019 BiOps												
C	174	227	203	202	213	203	105	59	0	1	2	6
D	197	270	232	232	251	210	156	138	77	47	51	71
BN	267	306	344	298	401	308	320	287	387	279	261	404
AN	204	566	544	735	754	623	435	639	657	541	481	629
W	361	452	1,098	1,493	1,647	1,138	1,197	1,698	1,532	1,056	734	800
All	257	361	549	683	758	559	528	687	636	450	342	413
VA												
C	174	225	203	197	213	205	110	59	0	1	2	6
D	197	268	233	237	249	227	186	137	74	41	51	67
BN	267	298	349	289	397	329	371	279	356	273	257	387
AN	190	570	545	722	757	641	570	606	609	508	460	612
W	358	452	1,098	1,487	1,646	1,156	1,323	1,606	1,517	1,044	723	800
All	255	359	550	678	757	575	600	654	618	440	336	407
55 w/WSAs												
C	172	227	207	197	213	201	153	117	10	1	2	6
D	187	258	234	235	239	286	516	690	236	19	0	7
BN	255	285	335	270	397	427	818	1,091	577	62	4	42
AN	178	538	526	665	741	691	923	1,604	824	204	120	268
W	327	436	994	1,449	1,532	1,206	1,466	2,305	1,670	642	430	553
All	239	346	515	656	718	627	853	1,275	771	236	146	211

H1a2.2.25 Paynes Creek above Confluence with Sacramento River

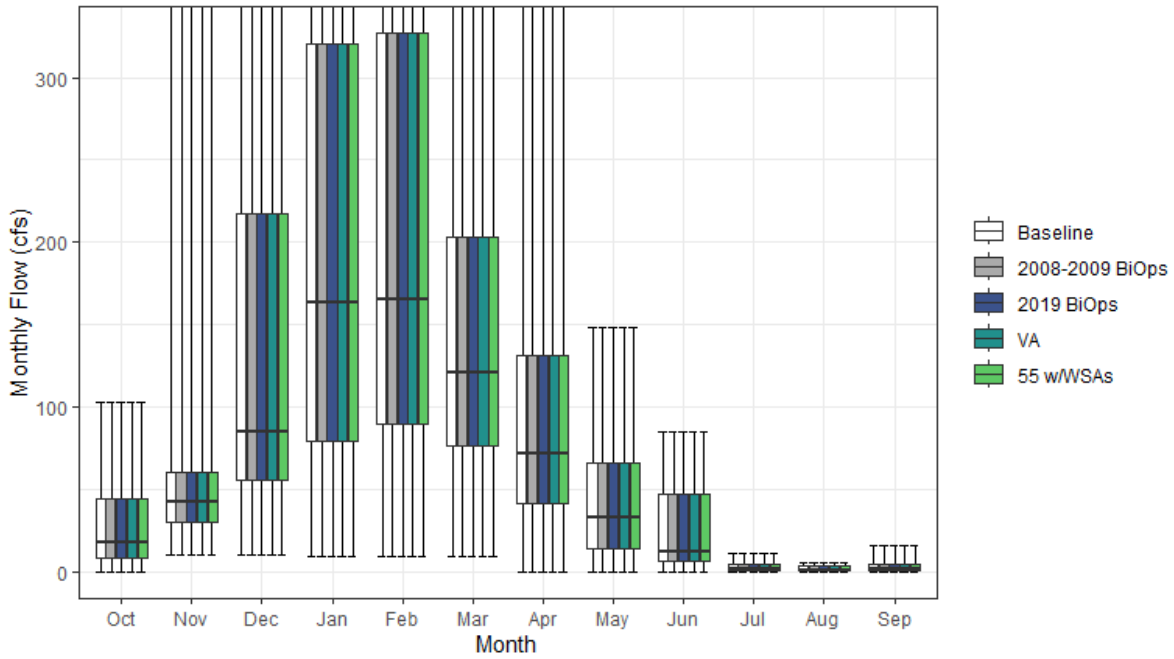

Figure H1a2-25. Paynes Creek Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-49. Cumulative Distribution of Monthly Flow (cfs) — Paynes Creek above Confluence with Sacramento River

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	0	10	10	9	9	9	0	0	0	0	0	0	3
10%	5	22	36	49	64	50	23	8	3	0	0	0	23
25%	8	30	55	79	90	76	41	13	6	1	1	1	35
50%	17	43	84	164	165	121	71	33	12	2	1	2	52
75%	44	60	217	321	327	203	131	66	47	4	4	5	85
90%	48	100	371	466	477	337	183	91	53	5	4	5	110
100%	102	381	572	934	900	594	430	148	84	11	5	16	139
Mean	26	57	150	216	234	161	94	44	25	3	2	3	61
2008-2009 BiOps													
0%	0	10	10	9	9	9	0	0	0	0	0	0	3
10%	5	22	36	49	64	50	23	8	3	0	0	0	23
25%	8	30	55	79	90	76	41	13	6	1	1	1	35
50%	17	43	84	164	165	121	71	33	12	2	1	2	52
75%	44	60	217	321	327	203	131	66	47	4	4	5	85
90%	48	100	371	466	477	337	183	91	53	5	4	5	110
100%	102	381	572	934	900	594	430	148	84	11	5	16	139
Mean	26	57	150	216	234	161	94	44	25	3	2	3	61
2019 BiOps													
0%	0	10	10	9	9	9	0	0	0	0	0	0	3
10%	5	22	36	49	64	50	23	8	3	0	0	0	23
25%	8	30	55	79	90	76	41	13	6	1	1	1	35
50%	17	43	84	164	165	121	71	33	12	2	1	2	52
75%	44	60	217	321	327	203	131	66	47	4	4	5	85
90%	48	100	371	466	477	337	183	91	53	5	4	5	110
100%	102	381	572	934	900	594	430	148	84	11	5	16	139
Mean	26	57	150	216	234	161	94	44	25	3	2	3	61
VA													
0%	0	10	10	9	9	9	0	0	0	0	0	0	3
10%	5	22	36	49	64	50	23	8	3	0	0	0	23
25%	8	30	55	79	90	76	41	13	6	1	1	1	35
50%	17	43	84	164	165	121	71	33	12	2	1	2	52
75%	44	60	217	321	327	203	131	66	47	4	4	5	85
90%	48	100	371	466	477	337	183	91	53	5	4	5	110
100%	102	381	572	934	900	594	430	148	84	11	5	16	139
Mean	26	57	150	216	234	161	94	44	25	3	2	3	61
55 w/WSAs													
0%	0	10	10	9	9	9	0	0	0	0	0	0	3
10%	5	22	36	49	64	50	23	8	3	0	0	0	23
25%	8	30	55	79	90	76	41	13	6	1	1	1	35
50%	17	43	84	164	165	121	71	33	12	2	1	2	52
75%	44	60	217	321	327	203	131	66	47	4	4	5	85
90%	48	100	371	466	477	337	183	91	53	5	4	5	110
100%	102	381	572	934	900	594	430	148	84	11	5	16	139
Mean	26	57	150	216	234	161	94	44	25	3	2	3	61

Table H1a2-50. Water Year Average of Monthly Flows (cfs) — Paynes Creek above Confluence with Sacramento River

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	14	31	61	63	70	57	22	8	2	1	0	0
D	24	51	104	95	145	117	47	18	7	1	1	1
BN	25	44	102	161	220	152	97	31	12	1	1	2
AN	23	51	119	280	294	205	105	63	40	4	3	5
W	36	86	275	397	370	237	162	84	54	5	4	5
All	26	57	150	216	234	161	94	44	25	3	2	3
2008-2009 BiOps												
C	14	31	61	63	70	57	22	8	2	1	0	0
D	24	51	104	95	145	117	47	18	7	1	1	1
BN	25	44	102	161	220	152	97	31	12	1	1	2
AN	23	51	119	280	294	205	105	63	40	4	3	5
W	36	86	275	397	370	237	162	84	54	5	4	5
All	26	57	150	216	234	161	94	44	25	3	2	3
2019 BiOps												
C	14	31	61	63	70	57	22	8	2	1	0	0
D	24	51	104	95	145	117	47	18	7	1	1	1
BN	25	44	102	161	220	152	97	31	12	1	1	2
AN	23	51	119	280	294	205	105	63	40	4	3	5
W	36	86	275	397	370	237	162	84	54	5	4	5
All	26	57	150	216	234	161	94	44	25	3	2	3
VA												
C	14	31	61	63	70	57	22	8	2	1	0	0
D	24	51	104	95	145	117	47	18	7	1	1	1
BN	25	44	102	161	220	152	97	31	12	1	1	2
AN	23	51	119	280	294	205	105	63	40	4	3	5
W	36	86	275	397	370	237	162	84	54	5	4	5
All	26	57	150	216	234	161	94	44	25	3	2	3
55 w/WSAs												
C	14	31	61	63	70	57	22	8	2	1	0	0
D	24	51	104	95	145	117	47	18	7	1	1	1
BN	25	44	102	161	220	152	97	31	12	1	1	2
AN	23	51	119	280	294	205	105	63	40	4	3	5
W	36	86	275	397	370	237	162	84	54	5	4	5
All	26	57	150	216	234	161	94	44	25	3	2	3

H1a2.2.26 Putah Creek below Lake Berryessa (SWRCB Lake Berryessa)

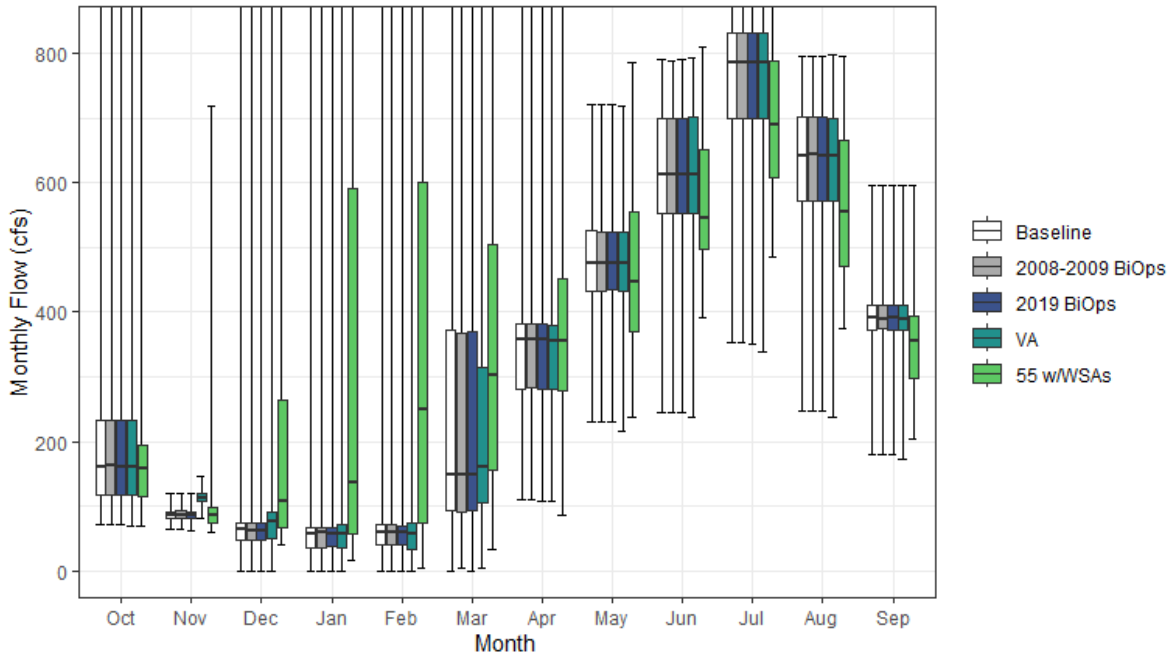

Figure H1a2-26. Putah Creek Streamfow below Lake Berryessa Monthly Boxplot (cfs)

Table H1a2-51. Cumulative Distribution of Monthly Flow (cfs) — Putah Creek below Lake Berryessa (SWRCB Lake Berryessa)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	71	63	0	0	0	0	110	229	245	352	246	180	112
10%	110	77	22	2	4	68	143	397	526	660	535	337	218
25%	117	81	47	36	40	93	280	433	552	700	572	373	225
50%	161	85	64	57	59	148	357	475	613	786	642	390	233
75%	232	92	74	67	71	372	382	526	700	831	701	410	252
90%	266	102	79	127	713	1,057	693	597	752	860	731	431	474
100%	1,246	120	2,006	5,183	6,718	6,316	3,624	720	792	955	794	596	1,050
Mean	182	87	77	214	375	462	475	481	626	765	630	388	288
2008-2009 BiOps													
0%	71	63	0	0	0	4	111	229	245	352	246	180	112
10%	110	78	20	3	4	67	140	398	527	658	536	337	218
25%	118	81	47	36	39	92	282	433	552	700	572	374	225
50%	162	85	63	59	60	148	357	474	613	786	643	390	233
75%	233	92	74	67	70	368	381	524	699	831	701	410	251
90%	266	102	79	129	713	1,057	693	599	752	860	731	433	473
100%	1,246	120	2,003	5,174	6,710	6,316	3,624	720	789	955	794	596	1,050
Mean	183	87	77	214	375	462	475	481	626	765	630	389	288
2019 BiOps													
0%	71	62	0	0	0	0	107	229	244	352	246	180	112
10%	110	78	20	2	4	67	140	397	526	660	535	338	218
25%	117	81	47	37	40	93	280	434	552	699	572	373	225
50%	161	85	62	57	59	148	357	474	613	786	642	391	233
75%	233	91	74	67	69	369	381	524	700	831	701	410	252
90%	266	102	79	127	713	1,057	693	600	753	861	731	431	474
100%	1,246	120	2,001	5,184	6,724	6,316	3,624	720	791	955	794	596	1,050
Mean	182	87	77	214	375	462	475	481	626	765	631	388	288
VA													
0%	70	82	0	0	0	4	107	216	236	339	237	174	109
10%	110	103	22	4	4	71	142	397	527	659	535	342	221
25%	117	107	49	35	33	105	280	433	551	700	572	373	228
50%	161	113	76	57	58	160	354	474	613	786	643	390	236
75%	232	118	92	71	74	314	380	524	701	831	699	410	253
90%	265	130	98	119	713	947	693	600	752	861	733	431	455
100%	1,246	147	1,973	5,155	6,664	6,316	3,624	718	792	955	799	596	1,050
Mean	182	114	87	211	368	447	474	481	625	764	630	388	288
55 w/WSAs													
0%	69	60	40	16	4	32	85	238	390	484	375	205	166
10%	92	67	54	43	47	82	225	322	433	535	441	286	178
25%	116	74	67	57	74	156	278	371	498	608	471	299	208
50%	158	86	107	136	249	303	354	448	545	690	555	354	260
75%	194	97	263	590	601	503	452	554	651	789	666	395	331
90%	238	167	716	750	750	750	680	630	731	838	711	424	422
100%	1,254	717	1,186	2,698	5,464	6,316	2,516	786	811	935	794	596	1,001
Mean	167	112	224	324	451	442	416	464	569	690	570	351	289

Table H1a2-52. Water Year Average of Monthly Flows (cfs) — Putah Creek below Lake Berryessa (SWRCB Lake Berryessa)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	154	90	64	53	83	208	307	462	582	689	598	373
D	176	89	58	59	62	149	330	469	649	766	604	378
BN	183	85	65	46	173	151	303	476	642	775	625	382
AN	171	89	59	33	38	257	317	459	676	750	662	400
W	207	85	112	594	1,021	1,105	844	512	601	803	658	404
All	182	87	77	214	375	462	475	481	626	765	630	388
2008-2009 BiOps												
C	154	90	64	53	83	208	307	462	582	689	597	373
D	176	89	59	58	62	148	331	469	649	766	604	378
BN	183	85	65	45	173	150	302	475	642	775	625	381
AN	172	90	59	32	38	259	317	458	675	750	662	400
W	207	85	112	594	1,021	1,105	845	511	601	803	658	405
All	183	87	77	214	375	462	475	481	626	765	630	389
2019 BiOps												
C	154	90	64	53	83	208	307	462	582	689	597	373
D	176	89	59	58	62	149	331	470	649	766	604	378
BN	183	85	65	45	173	151	303	476	642	775	625	382
AN	171	89	59	33	38	258	316	458	676	750	663	400
W	207	85	112	594	1,022	1,105	844	511	601	803	658	404
All	182	87	77	214	375	462	475	481	626	765	631	388
VA												
C	152	116	77	54	84	217	306	461	580	686	595	371
D	176	116	70	60	64	161	329	469	648	765	603	377
BN	182	112	78	45	166	161	303	476	642	775	625	381
AN	171	116	68	33	38	236	316	459	676	750	663	400
W	207	112	117	583	1,001	1,045	841	511	602	803	658	405
All	182	114	87	211	368	447	474	481	625	764	630	388
55 w/WSAs												
C	143	81	88	123	106	190	274	408	518	615	526	331
D	154	99	155	150	213	231	333	448	611	719	570	355
BN	165	87	162	197	260	219	293	397	524	630	510	310
AN	157	107	219	324	433	409	411	426	599	660	587	352
W	194	158	390	640	937	886	631	564	583	758	624	383
All	167	112	224	324	451	442	416	464	569	690	570	351

H1a2.2.27 Putah Creek above Yolo Bypass (SWRCB Putah Creek)

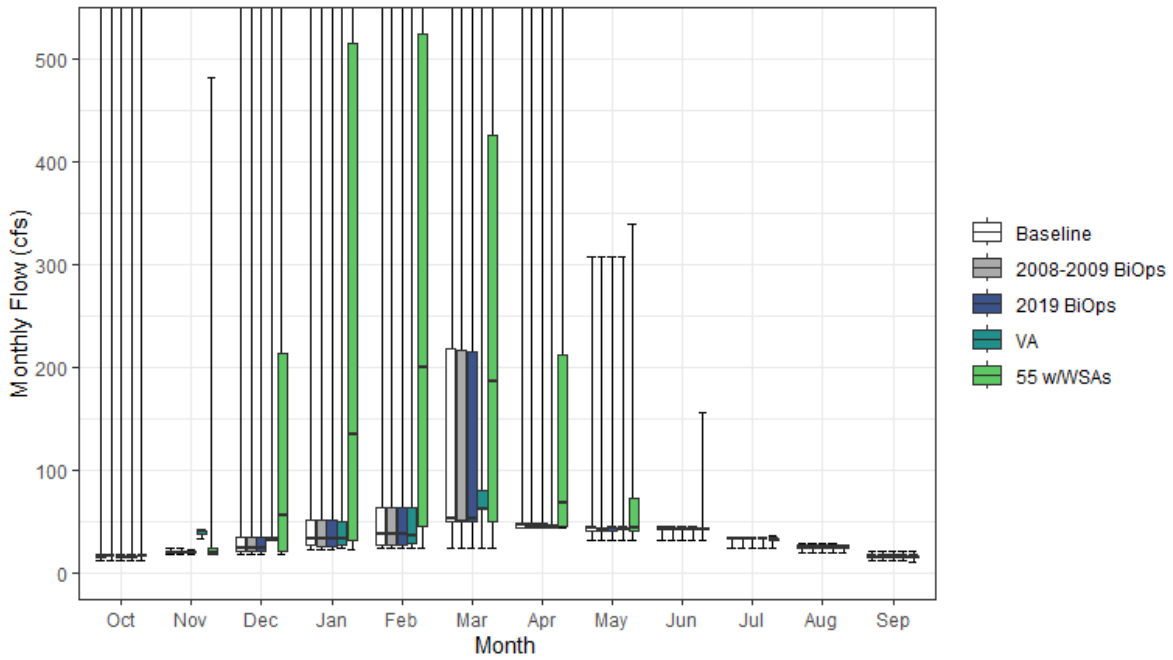

Figure H1a2-27. Putah Creek Streamflow above Yolo Bypass Monthly Boxplot (cfs)

Table H1a2-53. Cumulative Distribution of Monthly Flow (cfs) — Putah Creek above Yolo Bypass (SWRCB Putah Creek)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	11	18	18	22	23	24	43	31	31	24	19	11	18
10%	14	18	20	24	23	50	43	33	33	25	20	12	21
25%	15	19	21	26	26	50	44	40	42	32	25	14	23
50%	16	20	24	32	37	52	46	43	43	33	26	16	24
75%	17	20	34	51	63	218	48	44	44	34	27	17	49
90%	17	21	51	250	600	934	392	45	44	34	27	17	268
100%	942	23	1,491	4,834	6,207	5,724	3,391	307	45	34	28	21	773
Mean	26	20	47	198	333	351	226	46	42	32	25	15	81
2008-2009 BiOps													
0%	11	18	18	22	23	24	43	31	31	24	19	11	18
10%	14	18	20	23	23	50	43	33	33	25	20	12	21
25%	16	19	21	26	27	50	44	40	41	32	25	14	23
50%	16	20	24	32	37	50	46	43	43	33	26	16	24
75%	17	21	34	52	63	217	47	43	44	33	27	17	49
90%	17	21	50	251	600	934	392	44	44	34	27	17	267
100%	942	23	1,490	4,826	6,200	5,724	3,391	307	45	34	28	21	773
Mean	26	20	47	197	333	351	226	45	42	32	25	16	81
2019 BiOps													
0%	11	18	18	22	23	24	43	32	31	24	19	11	18
10%	14	18	20	23	23	50	43	33	33	25	20	12	21
25%	15	19	21	25	26	50	44	40	42	32	25	14	23
50%	16	20	24	32	37	52	46	43	43	33	26	16	24
75%	17	20	34	51	63	216	47	44	44	33	27	16	49
90%	17	21	50	251	600	934	392	45	44	34	27	17	268
100%	942	23	1,488	4,835	6,213	5,724	3,391	307	45	34	28	21	773
Mean	26	20	47	198	333	351	226	46	42	32	25	15	81
VA													
0%	11	33	32	24	23	24	43	31	31	24	19	11	19
10%	14	37	32	27	28	62	43	39	39	30	24	14	24
25%	15	38	32	27	29	62	43	42	42	32	25	14	25
50%	16	40	33	32	36	62	46	43	43	33	26	16	26
75%	17	40	35	50	63	80	47	44	44	34	27	17	42
90%	17	41	50	250	600	827	392	45	44	34	27	17	241
100%	942	42	1,468	4,810	6,159	5,724	3,391	307	45	34	28	21	773
Mean	26	39	54	195	327	338	225	46	42	32	25	15	81
55 w/WSAs													
0%	11	18	18	22	23	24	43	31	31	24	19	11	19
10%	14	18	19	23	28	50	43	40	40	31	25	14	22
25%	16	18	21	31	46	50	44	40	42	31	25	15	30
50%	16	20	55	134	200	186	68	43	42	32	25	16	70
75%	17	24	214	516	524	426	212	72	44	33	26	16	127
90%	17	83	531	692	746	683	508	155	50	34	27	17	189
100%	960	481	900	2,610	5,085	5,724	2,324	339	156	36	28	21	723
Mean	26	43	157	300	406	341	193	72	46	32	25	15	99

Table H1a2-54. Water Year Average of Monthly Flows (cfs) — Putah Creek above Yolo Bypass (SWRCB Putah Creek)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	15	20	27	35	34	48	45	39	39	30	24	14
D	16	20	29	29	35	49	46	42	42	32	26	16
BN	17	20	24	37	143	78	46	41	41	32	25	16
AN	16	19	36	57	54	190	47	65	43	33	26	16
W	48	20	90	565	942	971	640	47	43	33	26	15
All	26	20	47	198	333	351	226	46	42	32	25	15
2008-2009 BiOps												
C	15	20	27	35	35	48	45	39	39	30	24	14
D	16	20	29	29	35	49	46	42	42	32	26	16
BN	17	20	24	37	144	78	45	40	41	32	25	15
AN	16	20	36	57	54	193	47	64	42	33	26	16
W	49	20	90	565	942	970	640	47	43	33	26	16
All	26	20	47	197	333	351	226	45	42	32	25	16
2019 BiOps												
C	15	20	27	36	34	48	45	39	39	30	24	14
D	16	20	29	29	35	49	46	42	42	32	26	16
BN	17	19	24	37	143	78	46	41	41	32	25	16
AN	16	19	36	57	54	191	46	64	43	33	26	16
W	48	20	90	566	943	970	640	47	43	33	26	15
All	26	20	47	198	333	351	226	46	42	32	25	15
VA												
C	15	39	37	37	36	56	46	40	39	30	23	14
D	16	40	37	30	37	60	45	43	42	32	26	16
BN	17	39	33	37	137	87	46	42	41	32	25	15
AN	15	38	42	57	54	171	46	65	43	33	26	16
W	48	39	94	555	924	917	636	47	43	33	26	16
All	26	39	54	195	327	338	225	46	42	32	25	15
55 w/WSAs												
C	15	19	48	103	63	50	44	39	39	30	24	14
D	16	33	103	116	174	133	63	44	41	31	25	15
BN	17	26	98	177	228	144	83	44	41	31	25	15
AN	17	37	155	321	412	331	166	80	43	33	26	16
W	50	76	293	610	870	778	448	124	56	33	26	16
All	26	43	157	300	406	341	193	72	46	32	25	15

H1a2.2.28 Sacramento River below Shasta Reservoir (SWRCB Shasta)

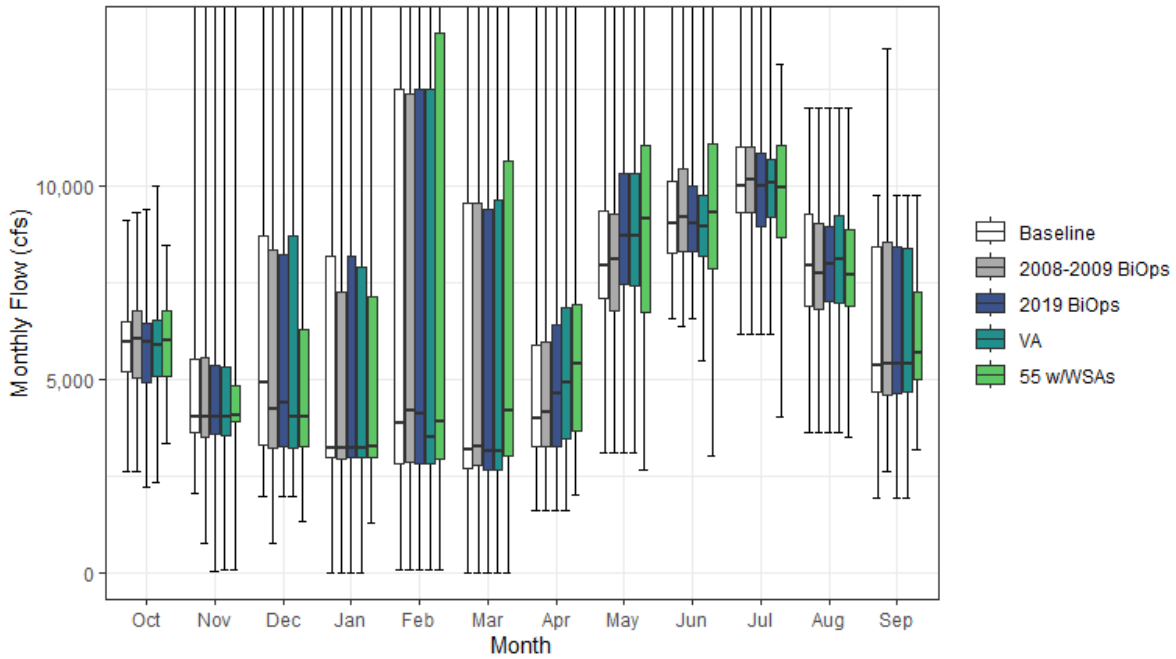

Figure H1a2-28. Sacramento River Streamflow below Shasta Reservoir Monthly Boxplot (cfs)

Table H1a2-55. Cumulative Distribution of Monthly Flow (cfs) — Sacramento River below Shasta Reservoir (SWRCB Shasta)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	2,612	2,042	1,959	0	55	0	1,594	3,107	6,578	6,144	3,628	1,943	3,186
10%	4,518	3,251	2,971	2,327	2,014	2,143	3,195	5,770	7,681	8,434	5,794	3,809	3,750
25%	5,185	3,630	3,283	2,977	2,821	2,680	3,253	7,108	8,250	9,328	6,879	4,668	4,111
50%	5,972	4,035	4,899	3,228	3,877	3,194	3,999	7,951	9,026	10,010	7,923	5,360	4,865
75%	6,465	5,510	8,702	8,198	12,512	9,533	5,873	9,363	10,108	11,024	9,288	8,413	6,472
90%	7,021	7,312	16,111	18,606	28,490	17,885	10,673	10,992	11,976	12,756	10,844	8,873	8,283
100%	9,119	26,467	27,665	48,623	50,384	44,066	28,864	17,628	29,676	16,013	12,022	9,772	10,669
Mean	5,802	4,954	7,089	7,392	9,734	7,499	5,845	8,327	9,521	10,257	8,090	6,209	5,473
2008-2009 BiOps													
0%	2,612	737	767	0	55	0	1,594	3,104	6,371	6,144	3,628	2,590	3,186
10%	4,323	3,187	2,924	2,368	2,023	2,084	3,157	5,841	7,874	8,379	5,802	4,014	3,815
25%	5,038	3,518	3,224	2,942	2,850	2,762	3,253	6,772	8,307	9,313	6,809	4,590	4,086
50%	6,027	4,026	4,224	3,209	4,187	3,267	4,155	8,092	9,182	10,144	7,755	5,395	4,861
75%	6,781	5,566	8,346	7,259	12,380	9,533	5,944	9,278	10,433	10,993	9,040	8,527	6,483
90%	7,344	7,881	15,752	18,606	28,490	17,885	10,673	10,992	12,230	12,182	10,747	8,979	8,306
100%	9,296	26,467	27,648	48,623	49,891	44,066	28,864	17,628	29,676	15,254	12,022	13,564	10,669
Mean	5,891	5,109	6,852	7,240	9,663	7,514	5,814	8,298	9,762	10,209	8,035	6,341	5,473
2019 BiOps													
0%	2,226	18	1,959	0	55	0	1,594	3,086	6,577	6,144	3,629	1,943	3,085
10%	4,205	3,246	2,973	2,348	1,953	2,063	3,171	5,693	7,808	8,249	5,812	3,949	3,758
25%	4,900	3,560	3,260	2,977	2,831	2,642	3,265	7,457	8,282	8,957	7,001	4,635	4,116
50%	5,952	4,028	4,380	3,236	4,100	3,148	4,638	8,711	9,035	10,015	7,996	5,403	4,843
75%	6,443	5,367	8,205	8,198	12,512	9,401	6,399	10,311	9,982	10,829	8,961	8,404	6,479
90%	7,021	7,152	16,111	18,606	28,490	17,885	10,673	11,633	11,500	12,525	10,747	8,841	8,117
100%	9,380	26,467	27,665	48,623	49,683	44,066	28,864	17,628	29,676	15,452	12,022	9,772	10,669
Mean	5,696	4,835	6,896	7,399	9,703	7,480	6,136	8,646	9,514	10,171	8,071	6,174	5,473
VA													
0%	2,317	70	1,959	0	55	0	1,594	3,089	5,478	6,144	3,628	1,943	3,078
10%	4,382	3,247	2,965	2,327	1,918	2,019	3,195	5,686	7,512	8,077	5,997	3,897	3,784
25%	5,086	3,528	3,224	2,977	2,831	2,642	3,476	7,414	8,160	9,183	6,987	4,686	4,093
50%	5,867	4,022	4,043	3,232	3,499	3,148	4,893	8,711	8,940	10,066	8,116	5,392	4,881
75%	6,512	5,323	8,705	7,885	12,512	9,617	6,846	10,316	9,771	10,681	9,243	8,378	6,491
90%	6,998	6,551	16,111	18,611	28,494	17,885	12,122	11,595	11,466	12,170	10,747	8,979	8,067
100%	10,002	26,068	27,665	48,623	49,683	44,080	28,864	20,582	29,676	14,683	12,022	9,772	10,669
Mean	5,770	4,764	6,785	7,325	9,634	7,448	6,447	8,770	9,376	10,087	8,143	6,177	5,473
55 w/WSAs													
0%	3,334	85	1,332	1,298	55	0	1,986	2,667	2,996	4,036	3,502	3,187	2,880
10%	4,078	3,352	3,022	2,425	2,315	2,699	3,252	5,547	6,625	5,921	5,978	4,484	3,516
25%	5,075	3,888	3,261	2,985	2,919	3,000	3,671	6,738	7,859	8,674	6,885	5,002	4,153
50%	6,015	4,068	4,011	3,249	3,902	4,197	5,393	9,167	9,309	9,935	7,695	5,672	4,807
75%	6,778	4,842	6,282	7,143	13,947	10,637	6,919	11,059	11,075	11,034	8,877	7,232	6,558
90%	7,269	5,773	14,366	18,434	28,708	18,031	10,673	12,173	12,035	11,787	9,743	8,617	8,063
100%	8,471	24,203	27,665	48,623	49,683	44,066	28,864	17,628	29,676	13,142	12,022	9,772	10,669
Mean	5,893	4,582	6,341	7,252	9,811	8,030	6,584	9,062	9,506	9,464	7,884	6,230	5,467

Table H1a2-56. Water Year Average of Monthly Flows (cfs) — Sacramento River below Shasta Reservoir (SWRCB Shasta)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	5,189	4,062	4,462	3,704	2,615	3,395	4,153	7,594	9,076	8,773	7,457	4,999
D	6,058	4,385	4,745	3,324	2,919	3,566	3,975	7,933	10,336	10,000	7,385	4,434
BN	5,715	4,516	5,226	3,422	7,516	3,617	4,284	7,725	9,754	11,521	7,699	5,027
AN	5,604	5,320	5,651	6,910	13,926	8,677	4,934	9,173	8,687	11,669	7,199	7,354
W	6,077	5,979	11,964	15,049	18,255	14,559	9,474	9,049	9,348	9,873	9,549	8,445
All	5,802	4,954	7,089	7,392	9,734	7,499	5,845	8,327	9,521	10,257	8,090	6,209
2008-2009 BiOps												
C	5,441	3,862	4,228	3,248	2,784	3,469	4,318	7,610	9,689	8,705	7,396	5,041
D	6,123	4,641	4,581	3,299	3,009	3,432	3,796	7,813	10,999	10,234	7,149	4,543
BN	5,729	4,576	5,077	3,360	7,315	3,719	4,186	7,700	9,701	11,348	7,641	4,975
AN	5,671	6,342	5,154	6,731	13,332	8,799	4,933	9,190	8,749	11,278	7,254	7,368
W	6,153	5,962	11,722	14,919	18,230	14,554	9,474	9,042	9,339	9,843	9,586	8,806
All	5,891	5,109	6,852	7,240	9,663	7,514	5,814	8,298	9,762	10,209	8,035	6,341
2019 BiOps												
C	5,108	3,880	3,994	3,552	2,747	3,437	4,443	8,097	9,142	8,493	7,453	5,003
D	6,023	4,243	4,602	3,360	2,812	3,457	4,809	8,866	10,264	9,824	7,277	4,374
BN	5,737	4,424	5,179	3,756	7,492	3,617	4,466	7,868	9,659	11,441	7,644	5,000
AN	5,577	5,268	5,387	6,897	13,991	8,693	5,118	9,197	8,777	11,867	7,205	7,241
W	5,791	5,866	11,816	14,921	18,152	14,546	9,476	9,051	9,366	9,839	9,601	8,437
All	5,696	4,835	6,896	7,399	9,703	7,480	6,136	8,646	9,514	10,171	8,071	6,174
VA												
C	5,291	3,855	3,975	3,457	2,465	3,138	4,088	7,841	8,969	8,590	7,602	5,026
D	5,926	4,295	4,646	3,328	2,881	3,464	5,044	8,797	10,375	10,162	7,800	4,650
BN	5,819	4,210	4,967	3,431	7,405	3,616	5,320	8,459	9,354	10,951	7,610	4,688
AN	5,686	5,098	5,271	6,901	14,007	8,820	6,386	9,751	8,151	11,153	6,753	7,116
W	5,914	5,809	11,610	14,954	18,073	14,546	9,472	9,050	9,364	9,858	9,577	8,477
All	5,770	4,764	6,785	7,325	9,634	7,448	6,447	8,770	9,376	10,087	8,143	6,177
55 w/WSAs												
C	5,712	3,951	3,395	3,151	2,839	3,527	3,775	5,701	6,473	5,606	7,064	5,720
D	5,567	4,271	4,418	3,508	2,972	4,173	5,414	8,169	8,370	9,795	7,666	5,119
BN	6,029	4,243	5,064	3,429	7,392	4,839	5,370	9,466	10,305	10,882	7,907	5,154
AN	5,756	4,141	5,334	6,772	15,124	9,273	5,540	11,188	10,608	10,368	6,955	7,250
W	6,196	5,537	10,535	14,797	17,951	14,783	10,128	10,404	11,009	10,019	8,839	7,589
All	5,893	4,582	6,341	7,252	9,811	8,030	6,584	9,062	9,506	9,464	7,884	6,230

H1a2.2.29 Sacramento River above Bend Bridge (SWRCB Sac Abv Bend Bridge)

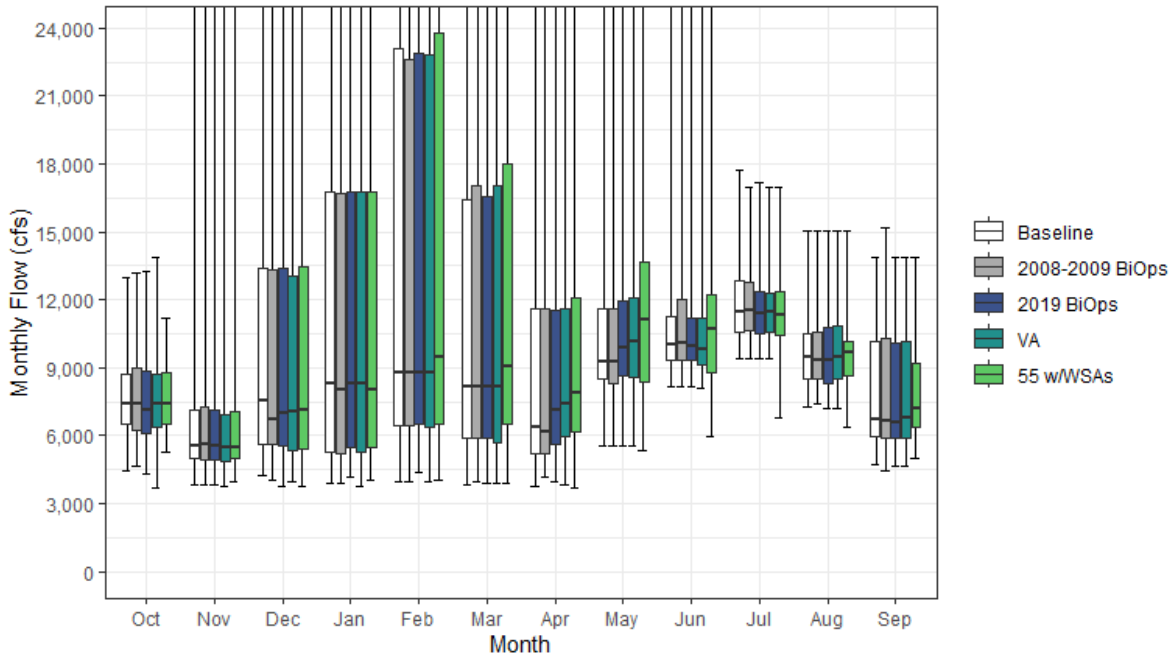

Figure H1a2-29. Sacramento River Streamflow above Bend Bridge Monthly Boxplot (cfs)

Table H1a2-57. Cumulative Distribution of Monthly Flow (cfs) — Sacramento River above Bend Bridge (SWRCB Sac Abv Bend Bridge)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	4,484	3,837	4,236	3,880	3,997	3,829	3,775	5,573	8,181	9,428	7,298	4,703	4,264
10%	5,393	4,236	4,778	4,564	5,401	5,057	4,734	7,414	8,916	10,097	8,058	5,353	5,086
25%	6,537	4,987	5,607	5,272	6,470	5,872	5,236	8,488	9,348	10,555	8,515	5,952	5,591
50%	7,399	5,544	7,524	8,330	8,793	8,168	6,354	9,234	10,000	11,494	9,477	6,687	7,053
75%	8,733	7,109	13,395	16,801	23,091	16,446	11,593	11,636	11,266	12,814	10,477	10,172	9,755
90%	9,698	10,422	26,946	33,909	43,532	29,990	18,217	14,815	13,540	14,688	12,638	11,341	12,594
100%	13,016	35,458	42,071	74,705	83,601	73,277	44,397	26,534	30,912	17,710	15,072	13,888	17,709
Mean	7,588	6,879	11,768	14,214	17,690	13,930	9,608	10,399	10,755	11,927	9,892	7,916	7,985
2008-2009 BiOps													
0%	4,643	3,837	4,032	3,882	4,001	3,935	4,166	5,571	8,181	9,428	7,417	4,475	4,268
10%	5,385	4,261	4,975	4,524	5,205	5,127	4,778	7,404	8,884	10,060	7,987	5,353	5,200
25%	6,269	4,935	5,592	5,219	6,473	5,900	5,224	8,317	9,361	10,637	8,498	5,908	5,636
50%	7,422	5,602	6,710	8,046	8,792	8,168	6,170	9,277	10,072	11,549	9,326	6,656	6,843
75%	9,001	7,301	13,339	16,674	22,634	17,070	11,577	11,636	12,033	12,745	10,548	10,291	9,742
90%	10,242	11,839	26,999	33,909	43,532	29,990	18,218	14,815	13,185	14,335	12,628	11,611	12,598
100%	13,189	35,458	42,071	74,705	83,601	73,277	44,397	26,534	30,912	16,967	15,072	15,160	17,709
Mean	7,629	7,076	11,606	14,061	17,604	13,933	9,580	10,375	10,953	11,914	9,864	8,021	7,988
2019 BiOps													
0%	4,332	3,837	3,753	4,169	4,355	3,927	3,983	5,582	8,188	9,428	7,177	4,680	4,269
10%	5,289	4,153	4,631	4,564	5,404	5,055	4,850	7,617	8,898	10,094	7,961	5,374	5,154
25%	6,114	4,963	5,520	5,482	6,529	5,872	5,647	8,629	9,344	10,482	8,329	5,924	5,675
50%	7,147	5,521	7,022	8,330	8,793	8,168	7,143	9,905	9,978	11,419	9,362	6,609	6,976
75%	8,825	7,143	13,395	16,801	22,917	16,586	11,507	11,969	11,205	12,335	10,802	10,111	9,710
90%	9,758	10,333	26,713	33,909	43,531	29,990	18,217	14,513	13,087	14,693	12,628	11,341	12,434
100%	13,272	35,458	42,071	74,705	83,601	73,277	44,397	26,534	30,912	17,159	15,072	13,888	17,709
Mean	7,465	6,810	11,578	14,218	17,665	13,909	9,900	10,709	10,728	11,864	9,825	7,895	7,985
VA													
0%	3,670	3,743	3,956	3,782	3,986	3,914	3,821	5,522	8,066	9,428	7,178	4,648	4,281
10%	5,467	4,096	4,618	4,544	4,925	5,039	4,626	7,452	8,729	10,107	8,020	5,371	5,179
25%	6,348	4,885	5,352	5,293	6,405	5,713	5,952	8,602	9,144	10,563	8,478	5,926	5,707
50%	7,432	5,484	7,068	8,330	8,793	8,169	7,433	10,160	9,818	11,467	9,442	6,788	6,872
75%	8,702	6,962	13,067	16,801	22,820	17,070	11,608	12,077	11,184	12,328	10,835	10,173	9,690
90%	9,700	10,329	26,929	33,913	43,536	29,990	18,868	14,850	12,923	14,160	12,623	11,349	12,374
100%	13,884	35,066	42,104	74,705	83,601	73,277	44,397	29,440	30,912	16,959	15,073	13,888	17,709
Mean	7,541	6,740	11,469	14,145	17,597	13,876	10,206	10,836	10,601	11,790	9,902	7,902	7,987
55 w/WSAs													
0%	5,277	3,947	3,754	4,063	4,009	3,932	3,689	5,340	5,983	6,809	6,352	4,995	3,904
10%	5,733	4,793	4,515	4,619	5,426	5,297	4,680	6,538	7,246	7,697	7,896	6,143	4,763
25%	6,517	4,995	5,421	5,476	6,545	6,521	6,150	8,350	8,785	10,428	8,646	6,350	5,665
50%	7,422	5,478	7,128	8,046	9,499	9,082	7,884	11,101	10,706	11,328	9,660	7,237	7,173
75%	8,771	7,099	13,463	16,801	23,780	18,004	12,082	13,703	12,236	12,395	10,137	9,229	9,781
90%	9,707	8,987	25,093	33,909	43,638	29,978	18,218	15,006	13,251	13,706	11,617	11,061	12,611
100%	11,202	33,234	42,071	74,705	83,601	73,277	44,397	26,489	30,912	16,959	15,072	13,888	17,709
Mean	7,653	6,560	11,033	14,073	17,771	14,449	10,385	11,107	10,733	11,187	9,648	7,950	7,983

Table H1a2-58. Water Year Average of Monthly Flows (cfs) — Sacramento River above Bend Bridge (SWRCB Sac Abv Bend Bridge)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	6,499	5,024	6,550	6,006	6,010	5,808	4,960	8,285	9,689	10,535	8,714	5,650
D	7,662	6,115	7,838	6,100	8,425	8,039	5,725	8,886	11,149	11,458	9,195	6,054
BN	7,517	5,935	8,004	9,012	13,716	8,656	7,660	9,205	10,689	12,575	9,237	6,470
AN	7,478	7,179	10,268	16,332	23,598	17,138	9,576	12,164	10,039	13,352	9,214	9,380
W	8,202	8,908	20,416	26,989	30,867	24,639	16,183	12,686	11,364	12,032	11,717	10,819
All	7,588	6,879	11,768	14,214	17,690	13,930	9,608	10,399	10,755	11,927	9,892	7,916
2008-2009 BiOps												
C	6,566	5,040	6,320	5,547	6,052	5,827	5,115	8,313	10,147	10,616	8,711	5,737
D	7,658	6,427	7,789	6,087	8,568	7,932	5,553	8,771	11,792	11,747	9,064	6,032
BN	7,553	5,994	7,863	9,024	13,482	8,715	7,583	9,190	10,601	12,405	9,184	6,419
AN	7,502	8,233	10,156	16,017	23,013	17,253	9,571	12,180	10,038	12,969	9,227	9,352
W	8,273	8,861	20,175	26,859	30,837	24,634	16,182	12,680	11,356	11,997	11,753	11,181
All	7,629	7,076	11,606	14,061	17,604	13,933	9,580	10,375	10,953	11,914	9,864	8,021
2019 BiOps												
C	6,420	4,861	6,083	5,851	6,139	5,804	5,241	8,753	9,722	10,427	8,485	5,768
D	7,616	6,035	7,698	6,125	8,333	7,927	6,554	9,809	11,078	11,263	9,052	5,988
BN	7,474	5,997	7,958	9,341	13,692	8,655	7,840	9,346	10,596	12,496	9,182	6,417
AN	7,422	7,168	10,016	16,319	23,661	17,154	9,795	12,187	10,065	13,546	9,220	9,269
W	7,922	8,789	20,270	26,864	30,774	24,646	16,184	12,686	11,358	11,999	11,756	10,813
All	7,465	6,810	11,578	14,218	17,665	13,909	9,900	10,709	10,728	11,864	9,825	7,895
VA												
C	6,612	4,836	6,066	5,758	5,862	5,503	4,897	8,506	9,559	10,519	8,631	5,788
D	7,525	6,086	7,741	6,093	8,401	7,934	6,783	9,749	11,201	11,609	9,578	6,273
BN	7,558	5,788	7,750	9,021	13,607	8,655	8,679	9,936	10,311	12,034	9,161	6,120
AN	7,533	7,001	9,902	16,323	23,677	17,279	11,043	12,739	9,464	12,864	8,790	9,156
W	8,039	8,733	20,067	26,896	30,696	24,646	16,181	12,685	11,356	12,017	11,732	10,852
All	7,541	6,740	11,469	14,145	17,597	13,876	10,206	10,836	10,601	11,790	9,902	7,902
55 w/WSAs												
C	7,007	4,930	5,495	5,457	6,230	5,887	4,625	6,450	7,188	7,701	8,150	6,484
D	7,171	6,060	7,516	6,270	8,490	8,631	7,200	9,102	9,223	11,247	9,438	6,717
BN	7,746	5,819	7,845	9,018	13,594	9,858	8,788	10,884	11,220	11,939	9,442	6,568
AN	7,588	6,061	9,964	16,195	24,777	17,724	10,246	14,114	11,867	12,076	8,975	9,278
W	8,319	8,466	19,011	26,741	30,577	24,879	16,859	14,000	12,970	12,171	11,001	9,981
All	7,653	6,560	11,033	14,073	17,771	14,449	10,385	11,107	10,733	11,187	9,648	7,950

H1a2.2.30 Sacramento River below Wilkins Slough (SWRCB Sac Blw Wilkins Slough)

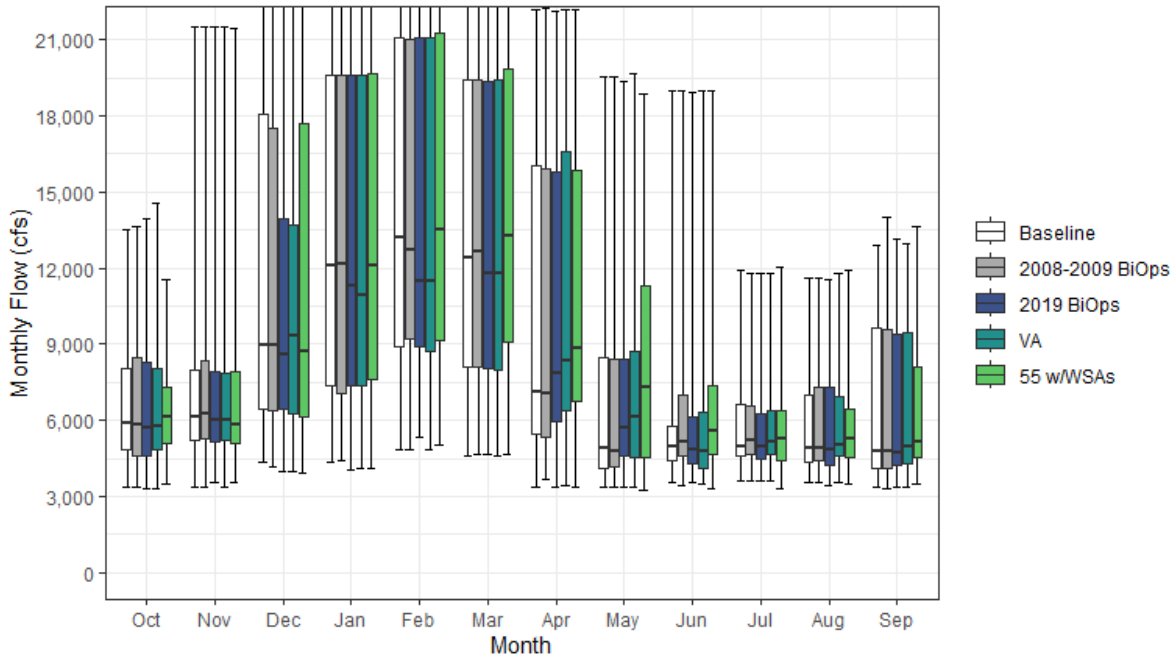

Figure H1a2-30. Sacramento River Streamflow below Wilkins Slough Monthly Boxplot (cfs)

Table H1a2-59. Cumulative Distribution of Monthly Flow (cfs) — Sacramento River below Wilkins Slough (SWRCB Sac Blw Wilkins Slough)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	3,335	3,351	4,351	4,353	4,818	4,576	3,361	3,357	3,518	3,604	3,520	3,348	3,229
10%	3,723	4,146	5,592	5,688	6,952	6,700	4,693	3,562	3,753	3,789	3,706	3,460	3,955
25%	4,834	5,193	6,467	7,335	8,875	8,105	5,475	4,117	4,379	4,588	4,355	4,126	4,813
50%	5,873	6,155	8,959	12,105	13,174	12,415	7,104	4,900	4,950	4,987	4,873	4,793	6,062
75%	8,066	7,973	18,038	19,590	21,102	19,385	16,018	8,485	5,778	6,641	6,998	9,647	8,076
90%	9,422	12,080	21,238	21,856	22,473	21,584	19,734	13,778	7,909	8,701	9,042	10,164	9,298
100%	13,488	21,521	22,570	23,658	24,653	23,824	22,181	19,529	19,010	11,921	11,623	12,893	11,890
Mean	6,501	7,405	11,568	13,393	14,659	13,653	9,956	7,001	5,666	5,698	5,715	6,507	6,485
2008-2009 BiOps													
0%	3,335	3,356	4,148	4,415	4,823	4,677	3,643	3,357	3,454	3,605	3,518	3,275	3,244
10%	3,791	4,348	5,561	5,604	6,704	6,778	4,650	3,562	3,750	3,827	3,712	3,586	4,031
25%	4,604	5,295	6,403	7,049	9,175	8,110	5,327	4,149	4,585	4,673	4,379	4,106	4,791
50%	5,844	6,242	8,970	12,133	12,724	12,664	7,022	4,801	5,158	5,182	4,873	4,763	6,045
75%	8,488	8,318	17,530	19,588	21,035	19,384	15,893	8,427	6,995	6,585	7,298	9,548	8,051
90%	9,787	12,339	21,252	21,856	22,472	21,585	19,770	13,860	8,236	8,329	8,958	10,611	9,291
100%	13,652	21,489	22,620	23,609	24,651	23,823	22,230	19,529	19,010	11,762	11,623	14,025	11,878
Mean	6,525	7,577	11,434	13,299	14,631	13,668	9,929	6,968	5,900	5,689	5,697	6,602	6,496
2019 BiOps													
0%	3,324	3,538	3,950	4,030	5,313	4,669	3,359	3,357	3,518	3,637	3,403	3,375	3,226
10%	3,725	4,266	5,421	5,790	6,851	6,774	4,879	3,562	3,685	3,771	3,654	3,572	3,984
25%	4,583	5,138	6,425	7,336	8,874	8,062	5,969	4,613	4,311	4,460	4,250	4,226	4,767
50%	5,704	6,002	8,618	11,294	11,460	11,784	7,853	5,724	4,858	4,956	4,858	4,736	5,952
75%	8,274	7,942	13,912	19,620	21,072	19,322	15,788	8,425	6,120	6,225	7,288	9,394	7,850
90%	9,521	12,041	21,254	21,867	22,483	21,589	19,734	13,511	7,761	8,746	9,017	10,164	9,250
100%	13,930	21,489	22,630	23,619	24,661	23,829	22,135	19,374	18,947	11,762	11,541	13,160	11,925
Mean	6,419	7,334	11,038	12,784	14,157	13,310	10,249	7,300	5,649	5,649	5,677	6,488	6,385
VA													
0%	3,325	3,350	3,957	4,127	4,808	4,622	3,417	3,357	3,516	3,637	3,518	3,375	3,124
10%	4,050	4,156	5,328	5,730	6,453	6,673	4,787	3,703	3,877	3,789	3,927	3,619	4,018
25%	4,818	5,194	6,265	7,352	8,712	7,964	6,361	4,539	4,119	4,678	4,590	4,257	4,863
50%	5,770	5,981	9,356	10,911	11,460	11,760	8,363	6,140	4,766	5,149	5,026	4,945	5,979
75%	8,028	7,831	13,693	19,598	21,105	19,384	16,610	8,723	6,294	6,406	6,951	9,457	7,941
90%	9,614	12,105	21,297	21,868	22,483	21,590	19,771	13,760	7,825	8,332	9,034	10,309	9,243
100%	14,560	21,476	22,632	23,619	24,661	23,829	22,181	19,687	18,991	11,762	11,781	12,939	11,913
Mean	6,521	7,312	10,968	12,724	14,093	13,272	10,495	7,598	5,677	5,709	5,858	6,521	6,427
55 w/WSAs													
0%	3,517	3,529	3,937	4,080	5,010	4,631	3,347	3,266	3,291	3,287	3,498	3,464	3,188
10%	4,610	4,344	4,937	5,677	7,313	7,053	4,642	3,684	3,771	3,774	3,866	4,161	4,186
25%	5,108	5,107	6,159	7,576	9,155	9,094	6,740	4,517	4,632	4,427	4,523	4,531	4,935
50%	6,157	5,836	8,727	12,101	13,484	13,251	8,816	7,296	5,584	5,269	5,292	5,136	6,297
75%	7,277	7,884	17,698	19,632	21,254	19,839	15,824	11,302	7,336	6,372	6,416	8,079	8,348
90%	9,645	9,963	21,120	21,882	22,511	21,585	19,773	13,318	9,258	7,311	8,341	10,117	9,362
100%	11,563	21,447	22,568	23,608	24,651	23,824	22,181	18,846	19,005	12,046	11,910	13,634	11,992
Mean	6,535	6,975	11,252	13,279	14,825	14,060	10,770	8,145	6,330	5,558	5,734	6,504	6,620

Table H1a2-60. Water Year Average of Monthly Flows (cfs) — Sacramento River below Wilkins Slough (SWRCB Sac Blw Wilkins Slough)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	4,864	5,012	7,602	7,823	8,257	7,506	4,585	3,942	4,431	3,980	4,065	3,613
D	6,334	6,682	9,340	8,146	11,169	10,524	5,899	4,514	5,399	4,723	4,594	4,328
BN	6,471	6,536	8,432	12,733	14,044	12,291	9,136	5,444	5,218	5,772	4,623	4,776
AN	6,513	8,048	11,286	17,508	18,594	18,140	12,078	8,652	5,214	7,447	5,508	8,479
W	7,509	9,504	17,415	18,983	19,448	18,294	15,466	10,782	6,985	6,583	8,190	9,957
All	6,501	7,405	11,568	13,393	14,659	13,653	9,956	7,001	5,666	5,698	5,715	6,507
2008-2009 BiOps												
C	4,948	5,080	7,391	7,415	8,296	7,536	4,785	4,032	4,833	4,056	4,045	3,702
D	6,308	6,986	9,158	8,087	11,296	10,501	5,731	4,400	6,165	5,026	4,445	4,326
BN	6,478	6,536	8,352	12,728	14,049	12,370	9,017	5,387	5,198	5,580	4,661	4,697
AN	6,449	9,021	11,203	17,369	18,086	18,162	12,062	8,605	5,199	7,090	5,609	8,457
W	7,585	9,424	17,304	18,994	19,443	18,286	15,476	10,764	7,000	6,554	8,187	10,280
All	6,525	7,577	11,434	13,299	14,631	13,668	9,929	6,968	5,900	5,689	5,697	6,602
2019 BiOps												
C	4,821	4,909	7,088	7,353	8,088	7,477	4,856	4,413	4,465	3,871	3,967	3,680
D	6,270	6,581	8,873	8,047	10,472	10,185	6,740	5,435	5,310	4,570	4,416	4,304
BN	6,530	6,501	8,308	11,548	13,513	11,645	9,371	5,521	5,218	5,666	4,658	4,711
AN	6,502	7,919	10,715	16,723	18,161	17,563	12,228	8,667	5,125	7,642	5,518	8,377
W	7,276	9,474	16,589	18,362	18,901	18,067	15,462	10,786	7,012	6,579	8,224	9,958
All	6,419	7,334	11,038	12,784	14,157	13,310	10,249	7,300	5,649	5,649	5,677	6,488
VA												
C	4,990	4,887	6,986	7,210	7,806	7,173	4,539	4,196	4,270	3,931	4,094	3,708
D	6,293	6,683	8,887	8,043	10,481	10,177	6,964	5,607	5,677	5,140	5,049	4,642
BN	6,643	6,379	8,158	11,369	13,391	11,657	10,119	6,463	5,319	5,541	4,832	4,479
AN	6,645	7,843	10,692	16,750	18,182	17,640	13,107	9,503	4,786	7,196	5,424	8,292
W	7,378	9,446	16,509	18,347	18,904	18,068	15,455	10,828	7,010	6,586	8,215	9,983
All	6,521	7,312	10,968	12,724	14,093	13,272	10,495	7,598	5,677	5,709	5,858	6,521
55 w/WSAs												
C	5,373	4,737	6,584	7,255	8,589	7,688	4,467	3,909	4,279	4,011	4,907	4,107
D	5,956	6,403	9,192	8,259	11,413	11,080	7,463	5,135	4,602	4,841	4,725	4,849
BN	6,627	6,168	8,306	12,659	14,102	13,165	10,362	7,134	6,006	5,219	4,804	4,824
AN	6,378	6,646	11,024	17,179	18,786	18,152	12,745	10,673	6,936	6,297	5,459	8,339
W	7,582	9,232	17,209	19,007	19,528	18,573	16,025	12,240	8,654	6,830	7,615	9,324
All	6,535	6,975	11,252	13,279	14,825	14,060	10,770	8,145	6,330	5,558	5,734	6,504

H1a2.2.31 Sacramento River at Knights Landing (SWRCB Sac at Knights Landing)

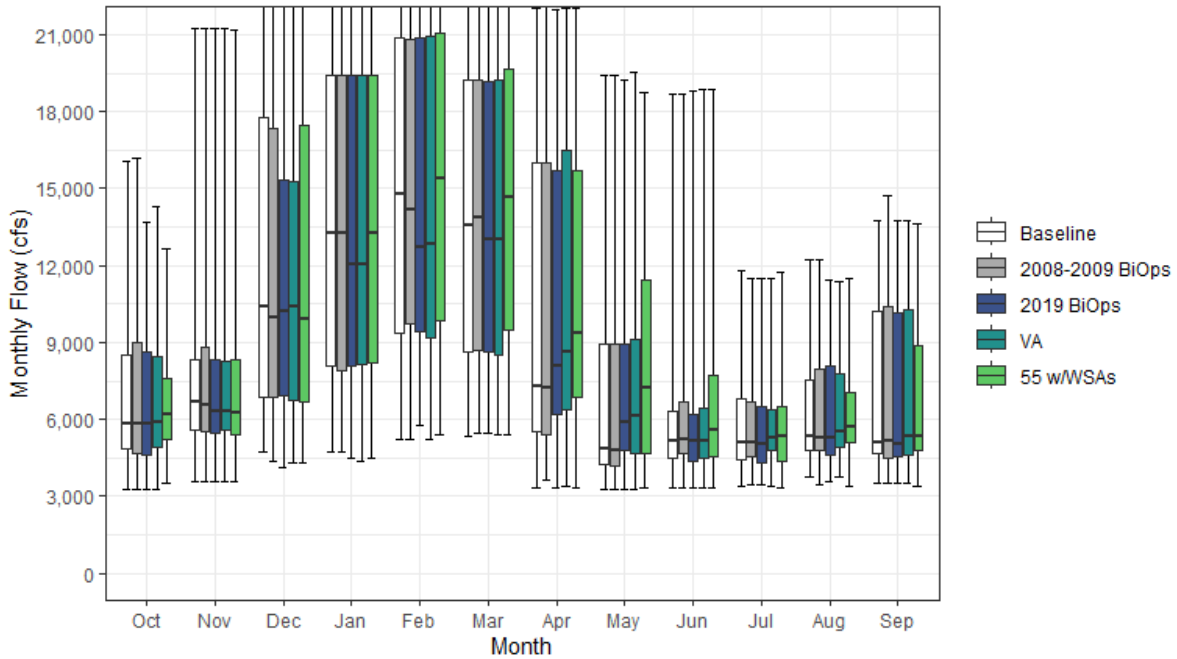

Figure H1a2-31. Sacramento River Streamflow at Knights Landing Monthly Boxplot (cfs)

Table H1a2-61. Cumulative Distribution of Monthly Flow (cfs) — Sacramento River at Knights Landing (SWRCB Sac at Knights Landing)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	3,260	3,598	4,704	4,704	5,224	5,354	3,356	3,284	3,354	3,402	3,785	3,532	3,361
10%	3,802	4,411	5,941	6,596	7,509	7,014	4,785	3,490	3,646	3,567	4,153	3,716	4,294
25%	4,871	5,556	6,848	8,101	9,345	8,627	5,549	4,271	4,479	4,443	4,774	4,647	5,092
50%	5,852	6,662	10,396	13,232	14,787	13,585	7,313	4,848	5,148	5,093	5,342	5,110	6,220
75%	8,503	8,323	17,776	19,397	20,901	19,208	16,011	8,905	6,333	6,831	7,540	10,231	8,384
90%	9,982	12,459	20,956	21,628	22,250	21,375	19,607	13,539	7,772	8,652	9,911	10,925	9,438
100%	16,048	21,267	22,301	23,406	24,394	23,579	22,041	19,405	18,660	11,779	12,246	13,717	12,001
Mean	6,784	7,723	12,072	13,869	15,111	13,996	10,114	7,040	5,742	5,697	6,250	7,020	6,708
2008-2009 BiOps													
0%	3,261	3,604	4,387	4,705	5,232	5,448	3,663	3,284	3,321	3,423	3,440	3,533	3,379
10%	3,774	4,608	6,106	6,375	7,469	7,140	4,658	3,518	3,730	3,628	4,044	3,782	4,330
25%	4,664	5,518	6,838	7,914	9,720	8,718	5,390	4,200	4,700	4,565	4,779	4,515	5,094
50%	5,822	6,532	9,950	13,267	14,163	13,841	7,219	4,813	5,247	5,115	5,264	5,182	6,183
75%	9,009	8,835	17,323	19,395	20,835	19,207	16,009	8,907	6,655	6,682	7,981	10,378	8,368
90%	10,389	12,798	20,999	21,628	22,249	21,377	19,642	13,765	7,996	8,295	9,826	11,387	9,434
100%	16,208	21,235	22,350	23,357	24,392	23,577	22,090	19,405	18,660	11,465	12,246	14,694	12,014
Mean	6,817	7,893	11,946	13,768	15,099	14,011	10,085	7,021	5,954	5,702	6,227	7,123	6,721
2019 BiOps													
0%	3,260	3,591	4,120	4,467	5,778	5,447	3,354	3,284	3,321	3,422	3,589	3,533	3,338
10%	3,659	4,425	5,852	6,506	7,539	7,234	4,873	3,505	3,576	3,594	4,124	3,796	4,199
25%	4,626	5,440	6,942	8,102	9,431	8,644	6,178	4,787	4,382	4,328	4,627	4,552	5,051
50%	5,841	6,294	10,197	12,043	12,728	13,019	8,097	5,867	5,149	5,054	5,277	5,046	6,082
75%	8,647	8,329	15,320	19,408	20,872	19,149	15,678	8,905	6,194	6,491	8,065	10,135	8,145
90%	10,063	12,435	20,971	21,638	22,259	21,380	19,606	13,417	7,610	8,574	9,832	10,916	9,415
100%	13,692	21,235	22,360	23,368	24,402	23,584	21,995	19,251	18,818	11,465	11,427	13,717	11,947
Mean	6,676	7,649	11,611	13,393	14,719	13,692	10,395	7,308	5,707	5,639	6,210	6,991	6,622
VA													
0%	3,248	3,596	4,317	4,373	5,216	5,401	3,412	3,284	3,321	3,392	3,777	3,528	3,234
10%	3,886	4,465	5,763	6,501	7,059	6,942	4,762	3,565	3,631	3,600	4,144	3,807	4,173
25%	4,918	5,559	6,716	8,114	9,184	8,495	6,363	4,662	4,512	4,792	4,896	4,608	5,165
50%	5,904	6,340	10,400	12,022	12,822	13,020	8,649	6,147	5,142	5,263	5,498	5,332	6,230
75%	8,459	8,238	15,263	19,405	20,904	19,211	16,506	9,106	6,442	6,372	7,799	10,277	8,184
90%	10,092	12,477	21,014	21,639	22,260	21,382	19,643	13,665	7,959	8,415	9,742	11,000	9,406
100%	14,310	21,222	22,362	23,368	24,402	23,584	22,041	19,548	18,862	11,465	11,387	13,763	11,944
Mean	6,776	7,636	11,585	13,334	14,642	13,652	10,624	7,622	5,787	5,724	6,316	7,043	6,668
55 w/WSAs													
0%	3,536	3,573	4,314	4,510	5,410	5,404	3,342	3,304	3,349	3,343	3,388	3,373	3,312
10%	4,682	4,566	5,463	6,529	7,869	7,458	4,610	3,590	3,665	3,722	4,206	4,342	4,444
25%	5,222	5,430	6,687	8,219	9,853	9,462	6,877	4,663	4,572	4,350	5,101	4,767	5,154
50%	6,224	6,239	9,883	13,235	15,413	14,685	9,366	7,241	5,575	5,318	5,697	5,341	6,493
75%	7,601	8,327	17,489	19,398	21,051	19,659	15,701	11,457	7,686	6,497	7,046	8,873	8,595
90%	10,202	10,308	20,828	21,656	22,287	21,376	19,645	13,433	9,818	7,484	8,825	10,896	9,541
100%	12,653	21,194	22,299	23,357	24,392	23,579	22,041	18,726	18,855	11,745	11,514	13,652	11,960
Mean	6,776	7,297	11,746	13,725	15,243	14,382	10,915	8,199	6,466	5,583	6,188	6,944	6,831

Table H1a2-62. Water Year Average of Monthly Flows (cfs) — Sacramento River at Knights Landing (SWRCB Sac at Knights Landing)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	4,969	5,331	8,211	8,589	9,338	8,113	4,564	3,741	4,155	3,734	4,242	3,801
D	6,526	7,007	10,149	8,954	11,857	11,115	6,043	4,500	5,316	4,581	5,012	4,777
BN	6,757	6,910	9,019	13,447	14,603	12,880	9,374	5,432	5,210	5,613	5,042	5,138
AN	6,710	8,337	11,979	17,683	18,803	18,114	12,310	8,907	5,508	7,576	6,279	9,168
W	7,987	9,793	17,511	19,031	19,423	18,307	15,650	10,934	7,332	6,865	8,981	10,715
All	6,784	7,723	12,072	13,869	15,111	13,996	10,114	7,040	5,742	5,697	6,250	7,020
2008-2009 BiOps												
C	5,036	5,359	7,981	8,187	9,377	8,138	4,756	3,806	4,580	3,816	4,258	3,879
D	6,524	7,276	10,008	8,885	11,982	11,093	5,879	4,391	5,967	4,873	4,846	4,762
BN	6,787	6,886	8,931	13,447	14,607	12,958	9,252	5,409	5,164	5,467	5,020	5,129
AN	6,686	9,275	11,909	17,552	18,427	18,137	12,282	8,902	5,492	7,293	6,327	9,147
W	8,054	9,784	17,405	19,017	19,418	18,300	15,661	10,934	7,362	6,829	9,015	11,039
All	6,817	7,893	11,946	13,768	15,099	14,011	10,085	7,021	5,954	5,702	6,227	7,123
2019 BiOps												
C	4,907	5,176	7,684	8,387	9,172	8,086	4,835	4,201	4,166	3,653	4,168	3,843
D	6,510	6,936	9,718	8,845	11,392	10,781	6,865	5,342	5,222	4,406	4,878	4,694
BN	6,829	6,834	8,879	12,409	14,198	12,356	9,609	5,567	5,150	5,545	5,042	5,107
AN	6,706	8,233	11,429	17,014	18,499	17,547	12,466	8,879	5,539	7,798	6,310	9,075
W	7,631	9,774	16,897	18,572	18,935	18,119	15,620	10,881	7,306	6,800	8,975	10,714
All	6,676	7,649	11,611	13,393	14,719	13,692	10,395	7,308	5,707	5,639	6,210	6,991
VA												
C	5,079	5,197	7,613	8,232	8,894	7,784	4,502	3,981	4,016	3,709	4,266	3,897
D	6,520	7,010	9,859	8,848	11,343	10,771	7,058	5,653	5,715	5,080	5,453	5,032
BN	6,926	6,748	8,746	12,235	14,072	12,366	10,336	6,485	5,217	5,418	5,155	4,906
AN	6,872	8,146	11,426	17,046	18,517	17,624	13,313	9,699	5,275	7,425	6,017	9,034
W	7,735	9,756	16,830	18,556	18,938	18,120	15,609	10,896	7,350	6,786	8,899	10,752
All	6,776	7,636	11,585	13,334	14,642	13,652	10,624	7,622	5,787	5,724	6,316	7,043
55 w/WSAs												
C	5,420	5,009	7,188	8,023	9,647	8,294	4,465	3,869	4,226	3,996	4,784	4,078
D	6,104	6,703	10,000	9,018	12,090	11,653	7,607	5,133	4,615	4,683	5,086	5,178
BN	6,883	6,511	8,896	13,245	14,547	13,637	10,580	7,120	5,918	5,064	5,378	5,174
AN	6,560	6,989	11,726	17,468	18,991	18,218	12,958	10,915	7,409	6,508	6,116	9,040
W	8,011	9,574	17,270	19,025	19,481	18,569	16,174	12,353	8,989	7,050	8,289	10,050
All	6,776	7,297	11,746	13,725	15,243	14,382	10,915	8,199	6,466	5,583	6,188	6,944

H1a2.2.32 Sacramento River at Freeport (SWRCB Sac at Freeport)

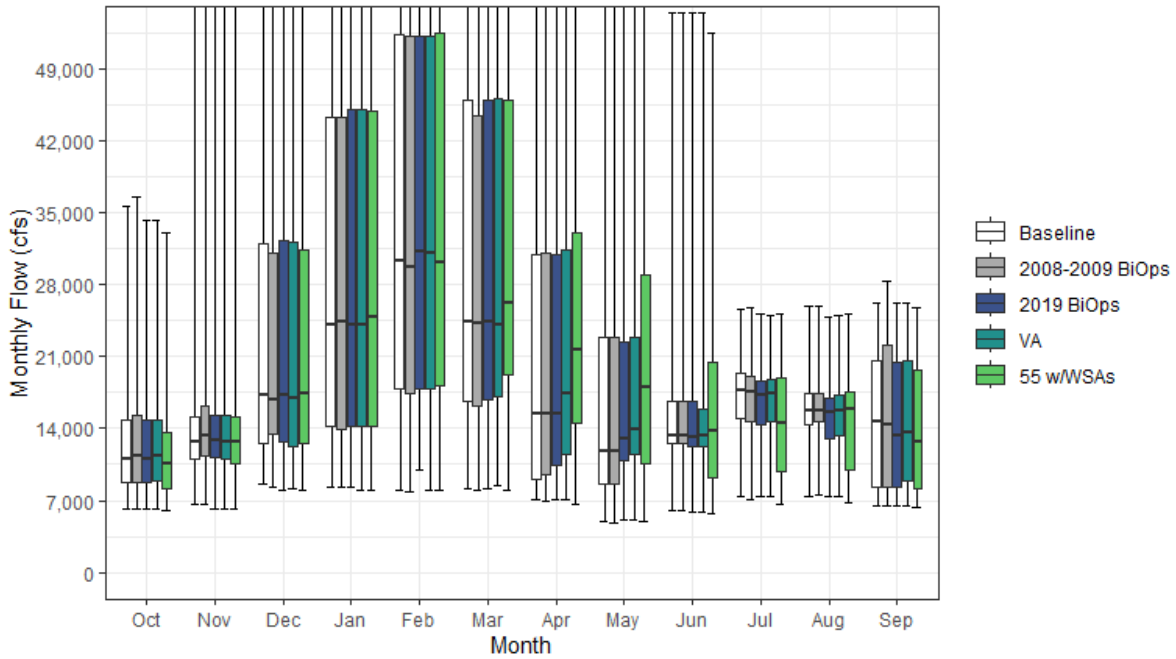

Figure H1a2-32. Sacramento River Streamflow at Freeport Monthly Boxplot (cfs)

Table H1a2-63. Cumulative Distribution of Monthly Flow (cfs) — Sacramento River at Freeport (SWRCB Sac at Freeport)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	6,203	6,571	8,552	8,255	8,052	8,084	7,013	4,895	5,952	7,387	7,427	6,537	5,899
10%	6,729	8,542	11,505	11,372	12,755	11,985	8,095	7,837	9,922	8,295	9,417	6,948	7,935
25%	8,781	11,072	12,499	14,178	17,804	16,598	9,100	8,556	12,507	14,953	14,387	8,299	10,024
50%	11,078	12,748	17,296	24,151	30,337	24,353	15,426	11,728	13,277	17,651	15,733	14,689	12,870
75%	14,821	15,148	31,929	44,205	52,222	45,885	30,886	22,805	16,690	19,397	17,468	20,660	19,837
90%	17,388	23,172	53,741	60,496	66,611	57,080	50,784	40,543	25,840	21,686	18,918	22,588	24,216
100%	35,589	56,904	72,293	75,591	77,015	74,297	70,682	55,797	54,413	25,593	25,828	26,223	32,365
Mean	12,098	15,026	25,072	30,493	35,214	30,671	22,016	17,828	16,190	16,664	15,225	14,873	15,129
2008-2009 BiOps													
0%	6,132	6,684	8,308	8,309	7,891	7,974	7,006	4,843	5,947	7,151	7,610	6,540	5,955
10%	6,729	8,204	11,518	11,735	13,054	11,990	8,246	8,008	9,915	8,581	9,273	7,008	8,023
25%	8,723	11,364	13,417	13,902	17,470	16,114	9,586	8,582	12,514	14,728	14,653	8,295	10,196
50%	11,361	13,340	16,743	24,344	29,762	24,156	15,426	11,748	13,309	17,585	15,694	14,369	12,769
75%	15,207	16,114	30,997	44,205	52,220	44,388	31,004	22,813	16,595	19,034	17,340	22,043	20,060
90%	16,852	21,849	53,859	60,427	65,542	57,038	50,777	40,695	25,781	20,905	18,973	25,297	24,292
100%	36,458	56,905	72,295	75,592	77,015	74,296	70,681	55,807	54,414	25,736	25,828	28,400	32,371
Mean	12,139	15,366	24,989	30,230	34,958	30,578	22,141	17,799	16,242	16,399	15,287	15,679	15,154
2019 BiOps													
0%	6,191	6,182	7,924	8,270	10,017	8,174	7,010	5,121	5,868	7,388	7,428	6,539	5,990
10%	6,730	8,460	11,152	11,415	12,725	12,020	8,660	8,950	9,914	8,117	9,370	7,000	7,914
25%	8,825	11,233	12,652	14,261	17,798	16,790	10,464	10,816	12,252	14,419	13,064	8,282	10,241
50%	11,064	12,884	17,287	24,037	31,216	24,338	15,437	12,985	13,181	17,189	15,546	13,289	12,981
75%	14,809	15,348	32,256	44,964	52,213	45,896	30,876	22,451	16,654	18,656	16,918	20,460	19,664
90%	17,133	23,054	53,645	60,497	66,649	57,060	50,777	39,917	25,742	21,040	18,920	22,233	24,133
100%	34,176	56,904	72,295	75,591	77,015	74,297	70,659	55,798	54,413	25,141	24,840	26,223	32,275
Mean	12,013	15,052	25,130	30,654	35,330	30,688	22,354	18,582	16,104	16,189	14,970	14,456	15,137
VA													
0%	6,153	6,248	8,185	7,980	8,022	8,400	7,086	5,066	5,865	7,382	7,441	6,536	6,062
10%	6,733	8,228	11,095	11,373	12,404	11,858	8,902	8,493	9,478	8,279	9,262	6,986	7,886
25%	8,898	11,035	12,313	14,218	17,797	17,027	11,418	11,535	12,253	14,614	13,354	8,858	10,406
50%	11,262	12,763	16,903	24,076	31,125	24,024	17,348	13,850	13,337	17,365	15,663	13,625	13,041
75%	14,759	15,248	32,047	44,970	52,200	46,021	31,367	22,798	15,944	18,740	17,177	20,560	19,665
90%	17,363	23,129	53,656	60,498	66,647	57,126	50,780	39,982	25,778	20,382	18,995	22,342	24,199
100%	34,185	56,933	72,261	75,595	77,017	74,297	70,696	55,818	54,415	25,060	25,011	26,212	32,279
Mean	12,063	14,930	24,840	30,526	35,237	30,789	23,355	19,278	16,104	16,280	15,091	14,495	15,226
55 w/WSAs													
0%	6,044	6,108	7,989	8,017	7,940	7,945	6,689	4,947	5,741	6,615	6,779	6,398	5,559
10%	6,625	7,858	10,136	11,479	13,678	13,369	8,996	8,086	8,460	7,392	9,127	7,330	8,085
25%	8,172	10,518	12,484	14,277	18,096	19,214	14,544	10,554	9,203	9,743	9,955	8,175	9,871
50%	10,506	12,650	17,459	24,765	30,105	26,210	21,635	18,008	13,781	14,510	15,925	12,731	13,486
75%	13,625	15,149	31,353	44,915	52,437	45,899	32,964	28,932	20,445	18,977	17,504	19,633	20,494
90%	16,504	20,564	52,971	59,903	64,723	56,623	50,825	40,271	27,360	20,280	18,491	21,038	24,187
100%	33,001	57,001	72,174	75,504	76,816	74,296	70,616	55,579	52,487	25,204	25,082	25,752	32,256
Mean	11,419	14,380	24,801	30,660	35,580	31,909	25,470	21,064	16,593	14,437	14,203	13,575	15,290

Table H1a2-64. Water Year Average of Monthly Flows (cfs) — Sacramento River at Freeport (SWRCB Sac at Freeport)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	9,576	10,624	14,128	14,137	15,403	12,983	8,103	7,068	9,239	8,874	9,116	7,234
D	11,356	12,858	17,890	15,824	21,623	19,940	10,710	9,437	13,037	16,098	14,221	9,472
BN	12,086	13,278	17,856	23,917	31,659	25,369	18,221	12,686	13,444	18,909	16,176	13,706
AN	11,444	16,059	23,356	40,122	46,611	40,884	24,243	20,483	14,839	20,598	16,116	22,211
W	14,256	19,658	41,431	50,288	53,439	47,246	39,241	31,913	24,490	18,237	18,262	20,711
All	12,098	15,026	25,072	30,493	35,214	30,671	22,016	17,828	16,190	16,664	15,225	14,873
2008-2009 BiOps												
C	9,598	10,577	14,149	14,005	15,303	12,947	8,164	7,154	9,358	9,000	9,008	7,016
D	11,418	13,096	18,247	15,798	21,243	19,780	11,068	9,474	13,135	15,518	14,878	9,394
BN	11,771	13,585	18,133	23,594	31,322	25,111	18,281	12,496	13,467	18,358	15,830	13,699
AN	11,292	17,135	23,589	39,426	45,556	40,988	24,374	20,425	14,849	20,139	16,011	21,141
W	14,597	20,003	40,615	49,991	53,562	47,198	39,268	31,889	24,507	18,255	18,302	23,978
All	12,139	15,366	24,989	30,230	34,958	30,578	22,141	17,799	16,242	16,399	15,287	15,679
2019 BiOps												
C	9,520	10,548	13,751	14,182	15,537	12,975	8,512	7,998	9,029	8,724	9,048	6,934
D	11,318	12,833	17,827	15,858	21,816	19,934	11,664	11,298	12,976	15,450	13,741	9,303
BN	12,168	13,412	18,127	24,316	31,736	25,404	18,416	13,726	13,318	18,430	15,729	12,543
AN	11,473	16,037	23,277	40,353	46,642	40,861	24,477	20,562	14,641	20,206	16,076	21,617
W	13,969	19,725	41,732	50,423	53,549	47,298	39,220	31,853	24,521	17,688	18,105	20,593
All	12,013	15,052	25,130	30,654	35,330	30,688	22,354	18,582	16,104	16,189	14,970	14,456
VA												
C	9,676	10,439	13,488	14,072	15,372	12,875	8,394	7,778	8,815	8,886	9,091	6,995
D	11,312	12,864	17,892	15,673	21,615	20,078	13,086	12,382	13,284	15,994	14,290	9,536
BN	12,287	13,343	17,464	23,969	31,493	25,644	20,556	15,266	13,338	18,119	15,612	12,289
AN	11,401	15,677	23,014	40,323	46,683	41,183	26,919	22,098	14,267	20,214	16,192	21,847
W	14,010	19,547	41,391	50,427	53,614	47,300	39,213	31,882	24,546	17,694	18,109	20,586
All	12,063	14,930	24,840	30,526	35,237	30,789	23,355	19,278	16,104	16,280	15,091	14,495
55 w/WSAs												
C	9,164	9,643	13,150	13,673	16,219	14,216	8,738	7,556	7,913	7,220	8,394	7,030
D	10,204	12,453	18,323	16,181	22,621	22,371	15,774	12,134	9,922	10,347	11,312	9,179
BN	11,668	12,585	17,876	24,192	31,757	27,310	23,911	17,795	14,278	15,982	14,045	10,923
AN	10,505	14,205	23,513	40,467	46,865	41,615	28,024	25,528	18,202	17,969	16,273	19,288
W	13,722	19,528	40,667	50,512	53,316	47,370	41,470	35,103	26,937	18,894	18,694	19,683
All	11,419	14,380	24,801	30,660	35,580	31,909	25,470	21,064	16,593	14,437	14,203	13,575

H1a2.2.33 Sacramento River at Rio Vista (SWRCB Sac at Rio Vista)

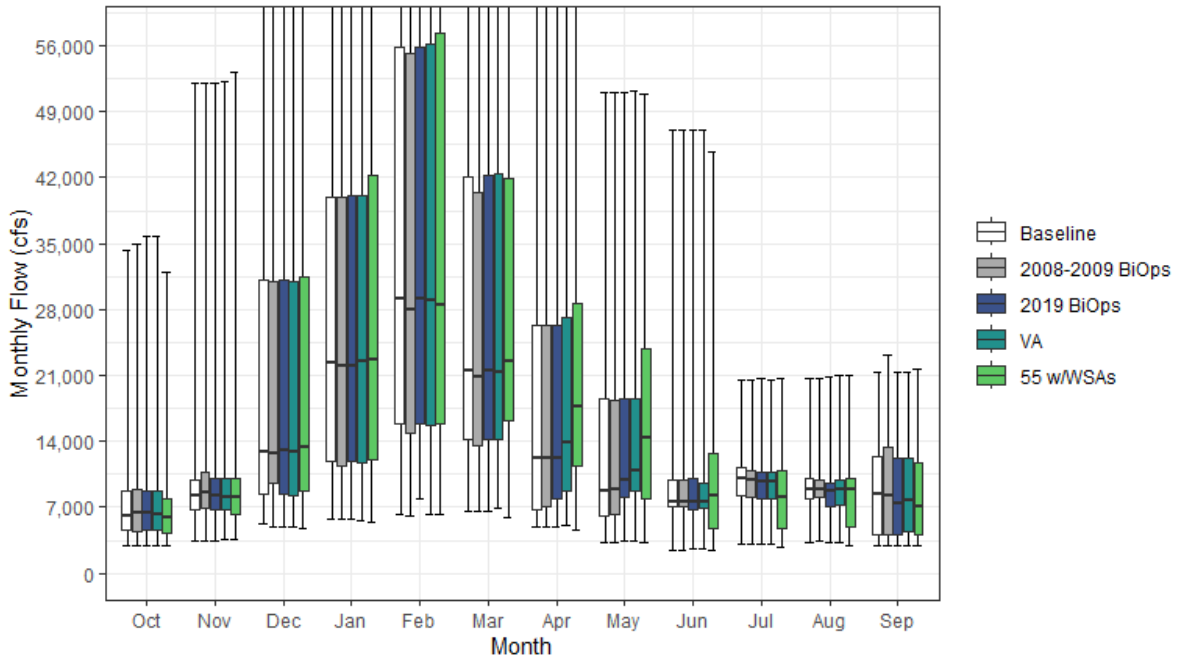

Figure H1a2-33. Sacramento River Streamflow at Rio Vista Monthly Boxplot (cfs)

Table H1a2-65. Cumulative Distribution of Monthly Flow (cfs) — Sacramento River at Rio Vista (SWRCB Sac at Rio Vista)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	3,000	3,511	5,184	5,751	6,278	6,599	4,867	3,233	2,506	3,143	3,295	3,001	3,619
10%	3,125	4,781	7,714	8,786	10,392	9,765	5,927	5,579	5,290	3,690	4,595	3,143	5,787
25%	4,576	6,713	8,435	11,862	15,806	14,177	6,699	6,113	7,024	8,254	7,978	4,074	6,939
50%	6,075	8,264	12,903	22,266	29,088	21,591	12,182	8,817	7,639	10,058	8,832	8,332	9,542
75%	8,739	9,967	31,170	40,001	55,918	42,041	26,295	18,538	9,975	11,174	10,030	12,377	18,595
90%	10,281	15,944	55,573	79,702	105,307	73,060	46,410	33,734	20,740	12,673	10,985	13,729	25,496
100%	34,269	52,117	121,047	177,089	201,265	175,683	108,681	51,048	47,062	20,501	20,732	21,353	39,775
Mean	7,019	10,390	23,920	34,836	43,873	33,267	20,194	14,332	10,445	9,418	8,568	8,567	13,485
2008-2009 BiOps													
0%	3,000	3,504	4,995	5,732	6,141	6,505	4,873	3,194	2,504	3,035	3,419	3,001	3,658
10%	3,145	4,524	7,930	9,006	10,520	9,599	5,992	5,632	5,283	3,925	4,509	3,211	5,662
25%	4,442	6,833	9,595	11,400	14,862	13,620	7,114	6,221	7,053	8,047	8,137	4,049	7,113
50%	6,430	8,572	12,714	21,972	28,030	20,876	12,182	8,887	7,649	9,921	8,834	8,189	9,451
75%	8,836	10,767	30,913	39,946	55,246	40,432	26,264	18,419	9,961	10,937	9,954	13,353	18,580
90%	10,021	15,103	54,655	79,754	105,472	72,407	46,393	33,785	20,689	12,206	11,035	20,570	25,545
100%	35,014	52,118	121,048	177,088	201,267	175,660	108,673	51,086	47,063	20,541	20,731	23,159	39,775
Mean	7,051	10,577	23,772	34,575	43,482	33,172	20,304	14,317	10,477	9,226	8,611	9,707	13,511
2019 BiOps													
0%	3,000	3,501	4,933	5,698	7,971	6,632	4,870	3,504	2,526	3,144	3,295	3,001	3,726
10%	3,121	4,777	7,459	8,778	10,396	9,805	6,498	6,529	5,370	3,614	4,549	3,164	5,779
25%	4,583	6,726	8,357	11,818	15,806	14,150	7,906	8,092	6,827	7,857	7,079	4,102	7,135
50%	6,376	8,260	13,066	21,929	29,088	21,575	12,194	9,912	7,622	9,688	8,741	7,442	9,500
75%	8,803	10,060	31,156	40,127	55,830	42,266	26,294	18,509	9,998	10,741	9,604	12,298	18,625
90%	10,209	15,984	58,507	80,553	104,886	72,750	46,393	33,817	20,727	12,313	10,985	13,486	25,316
100%	35,847	52,118	121,046	177,088	201,267	175,683	108,592	51,048	47,062	20,625	20,891	21,353	39,792
Mean	6,987	10,377	23,981	34,868	43,871	33,269	20,498	15,017	10,397	9,158	8,410	8,286	13,503
VA													
0%	3,000	3,541	4,913	5,644	6,251	6,835	5,081	3,389	2,526	3,139	3,257	3,000	3,761
10%	3,157	4,584	7,313	8,734	9,966	9,438	6,683	6,182	5,066	3,688	4,507	3,151	5,677
25%	4,670	6,721	8,285	11,697	15,770	14,276	8,800	8,685	6,874	7,967	7,241	4,461	7,340
50%	6,286	8,073	12,917	22,528	28,923	21,322	13,965	10,902	7,630	9,752	8,839	7,662	9,725
75%	8,698	10,137	30,970	40,132	56,190	42,357	27,110	18,522	9,492	10,744	9,876	12,304	18,646
90%	10,304	16,002	56,873	81,318	104,235	73,483	46,398	33,874	20,686	11,763	11,049	13,596	25,257
100%	35,849	52,166	121,078	177,161	200,973	175,683	108,730	51,129	47,061	20,553	21,040	21,357	39,795
Mean	7,031	10,306	23,577	34,753	43,729	33,359	21,369	15,611	10,381	9,169	8,538	8,314	13,565
55 w/WSAs													
0%	3,000	3,537	4,726	5,451	6,183	5,896	4,526	3,191	2,431	2,735	2,914	3,003	3,361
10%	3,089	4,332	6,863	8,756	11,175	10,795	6,615	5,636	4,422	3,114	4,488	3,439	5,647
25%	4,187	6,223	8,657	12,084	15,864	16,192	11,446	7,933	4,812	4,770	4,990	4,018	7,069
50%	5,909	8,062	13,467	22,700	28,484	22,561	17,732	14,441	8,204	8,076	8,979	7,002	10,356
75%	7,953	9,997	31,471	42,304	57,330	41,892	28,607	23,840	12,689	10,973	10,105	11,704	19,049
90%	9,784	14,082	53,645	79,410	99,293	67,839	46,667	34,302	22,216	11,767	10,794	12,690	25,778
100%	32,020	53,121	119,429	171,374	194,702	175,670	106,466	50,863	44,761	20,689	21,067	21,737	39,831
Mean	6,559	9,829	23,607	35,233	43,761	34,167	23,253	17,191	10,795	7,969	7,971	7,714	13,680

Table H1a2-66. Water Year Average of Monthly Flows (cfs) — Sacramento River at Rio Vista (SWRCB Sac at Rio Vista)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	5,105	6,331	10,837	12,213	13,622	10,784	5,895	4,919	4,827	4,116	4,399	3,354
D	6,302	8,354	14,365	13,270	19,796	17,150	8,302	6,911	7,489	8,993	7,817	4,870
BN	6,868	8,413	14,727	21,563	31,661	22,271	14,890	9,712	7,730	10,880	9,160	7,751
AN	6,476	11,197	21,062	41,909	55,745	41,745	20,409	16,600	8,700	12,010	9,156	13,470
W	8,878	14,976	44,870	68,295	80,650	60,650	39,813	26,815	18,027	10,596	10,732	12,613
All	7,019	10,390	23,920	34,836	43,873	33,267	20,194	14,332	10,445	9,418	8,568	8,567
2008-2009 BiOps												
C	5,119	6,325	10,873	12,097	13,536	10,756	5,957	4,980	4,912	4,180	4,303	3,208
D	6,346	8,393	14,649	13,261	19,467	17,015	8,610	6,962	7,560	8,600	8,311	4,834
BN	6,660	8,666	14,945	21,283	31,230	22,049	14,943	9,556	7,743	10,487	8,919	7,741
AN	6,376	12,039	21,209	41,269	54,049	41,721	20,525	16,558	8,707	11,669	9,089	12,748
W	9,116	15,073	43,958	67,934	80,595	60,600	39,837	26,809	18,022	10,600	10,742	16,776
All	7,051	10,577	23,772	34,575	43,482	33,172	20,304	14,317	10,477	9,226	8,611	9,707
2019 BiOps												
C	5,068	6,291	10,547	11,974	13,736	10,776	6,247	5,720	4,691	3,993	4,326	3,150
D	6,275	8,316	14,256	13,313	19,736	17,145	9,148	8,570	7,470	8,564	7,519	4,764
BN	6,924	8,545	15,092	21,777	31,648	22,189	15,062	10,610	7,627	10,530	8,853	6,961
AN	6,496	11,176	20,939	42,094	55,722	41,685	20,609	16,677	8,558	12,148	9,135	13,072
W	8,769	14,908	45,123	68,284	80,643	60,741	39,821	26,830	18,076	10,284	10,672	12,534
All	6,987	10,377	23,981	34,868	43,871	33,269	20,498	15,017	10,397	9,158	8,410	8,286
VA												
C	5,179	6,214	10,340	11,912	13,597	10,701	6,161	5,531	4,542	4,116	4,356	3,190
D	6,275	8,375	14,242	13,145	19,645	17,280	10,379	9,453	7,645	8,889	7,974	4,925
BN	7,012	8,466	14,476	21,480	31,361	22,404	16,919	11,963	7,632	10,333	8,829	6,795
AN	6,462	10,914	20,485	42,004	55,776	42,031	22,732	18,005	8,289	11,727	9,258	13,227
W	8,812	14,827	44,484	68,285	80,477	60,705	39,813	26,855	18,079	10,308	10,710	12,529
All	7,031	10,306	23,577	34,753	43,729	33,359	21,369	15,611	10,381	9,169	8,538	8,314
55 w/WSAs												
C	4,827	5,610	10,079	11,891	14,372	11,851	6,435	5,335	3,934	3,059	4,056	3,306
D	5,529	7,861	14,807	13,707	21,012	19,856	12,698	9,286	5,347	5,161	5,973	4,698
BN	6,584	7,896	14,966	22,113	32,498	24,784	19,980	14,148	8,336	8,920	7,694	5,867
AN	5,853	9,737	20,707	43,695	55,965	41,767	23,846	21,011	11,060	10,250	9,315	11,497
W	8,504	14,783	43,909	68,391	78,369	59,465	41,799	29,711	19,900	11,133	11,160	11,934
All	6,559	9,829	23,607	35,233	43,761	34,167	23,253	17,191	10,795	7,969	7,971	7,714

H1a2.2.34 Stony Creek below Black Butte Reservoir (SWRCB Black Butte)

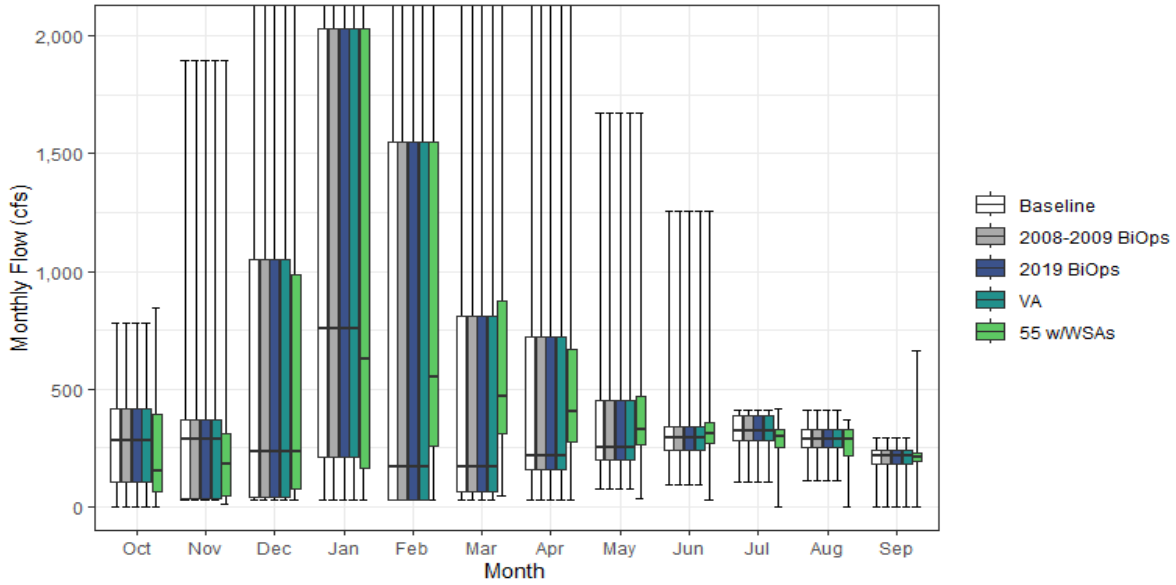

Figure H1a2-34. Stony Creek Streamflow below Black Butte Reservoir Monthly Boxplot (cfs)

Table H1a2-67. Cumulative Distribution of Monthly Flow (cfs) — Stony Creek below Black Butte Reservoir (SWRCB Black Butte)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	0	30	30	30	30	30	30	73	94	104	108	0	44
10%	53	30	30	64	30	54	89	182	211	248	219	112	125
25%	102	31	42	209	30	61	159	199	238	279	248	182	165
50%	279	284	231	755	169	167	213	248	293	320	284	213	283
75%	416	366	1,052	2,031	1,549	809	724	451	342	384	326	239	590
90%	532	680	2,192	3,933	3,202	1,744	1,336	888	383	410	385	255	753
100%	778	1,895	4,949	8,485	9,018	6,740	3,880	1,672	1,254	410	410	294	1,396
Mean	284	320	776	1,384	1,096	686	569	400	306	324	289	199	399
2008-2009 BiOps													
0%	0	30	30	30	30	30	30	73	94	104	108	0	44
10%	53	30	30	64	30	54	89	182	211	248	219	112	125
25%	102	31	42	209	30	61	159	199	239	279	248	182	165
50%	279	284	231	755	169	167	213	248	293	320	284	213	283
75%	416	366	1,052	2,031	1,549	809	724	451	342	384	326	239	590
90%	532	680	2,192	3,933	3,202	1,744	1,336	888	383	410	385	255	753
100%	778	1,895	4,949	8,485	9,018	6,740	3,880	1,672	1,254	410	410	294	1,396
Mean	284	320	776	1,384	1,096	687	569	400	306	324	289	199	399
2019 BiOps													
0%	0	30	30	30	30	30	30	73	94	104	108	0	44
10%	53	30	30	64	30	54	89	182	211	248	219	112	125
25%	102	31	42	209	30	61	159	199	238	279	248	182	165
50%	279	284	231	755	169	167	213	248	293	320	284	213	283
75%	416	366	1,052	2,031	1,549	809	724	451	342	384	326	239	590
90%	531	679	2,192	3,933	3,202	1,744	1,336	888	383	410	385	255	753
100%	778	1,895	4,949	8,485	9,018	6,740	3,880	1,672	1,254	410	410	294	1,396
Mean	284	320	776	1,384	1,096	686	569	400	306	324	289	199	399
VA													
0%	0	30	30	30	30	30	30	73	94	104	108	0	44
10%	53	30	30	64	30	54	89	182	211	248	219	112	125
25%	102	31	42	209	30	61	159	199	238	279	248	182	165
50%	279	284	231	755	169	167	213	248	293	320	285	213	283
75%	416	366	1,052	2,031	1,549	809	724	451	342	384	326	239	590
90%	531	679	2,192	3,933	3,202	1,744	1,336	888	383	410	385	255	753
100%	778	1,895	4,949	8,485	9,018	6,740	3,880	1,672	1,254	410	410	294	1,396
Mean	284	320	776	1,384	1,096	686	569	400	306	324	289	199	399
55 w/WSAs													
0%	0	8	30	30	30	43	30	33	30	0	0	0	20
10%	34	31	45	89	135	203	209	209	219	188	93	146	153
25%	64	48	73	164	256	308	277	261	271	251	217	190	194
50%	150	182	234	629	551	470	405	327	307	299	285	209	298
75%	393	313	988	2,031	1,549	875	669	468	356	329	325	229	607
90%	765	446	2,097	3,825	3,202	1,621	1,271	729	399	357	338	255	729
100%	847	1,895	4,949	7,937	9,018	6,740	3,880	1,672	1,254	418	369	660	1,398
Mean	247	239	727	1,312	1,231	828	622	427	318	279	255	220	403

Table H1a2-68. Water Year Average of Monthly Flows (cfs) — Stony Creek below Black Butte Reservoir (SWRCB Black Butte)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	162	111	153	292	123	134	135	187	227	285	246	155
D	255	270	373	385	236	184	210	251	274	317	268	182
BN	305	289	404	786	538	259	345	269	290	305	299	210
AN	282	341	848	2,077	1,734	855	556	475	314	350	299	221
W	358	478	1,611	2,801	2,345	1,553	1,212	676	378	353	317	220
All	284	320	776	1,384	1,096	686	569	400	306	324	289	199
2008-2009 BiOps												
C	162	111	153	292	123	134	135	187	227	285	246	155
D	255	270	373	385	236	184	210	251	274	317	268	182
BN	305	289	404	786	538	259	345	269	290	305	299	210
AN	282	341	848	2,077	1,734	855	556	475	314	350	299	221
W	358	478	1,611	2,801	2,345	1,553	1,212	676	378	353	317	220
All	284	320	776	1,384	1,096	687	569	400	306	324	289	199
2019 BiOps												
C	162	111	153	292	123	134	135	187	227	285	246	155
D	255	270	373	385	236	184	210	251	274	317	268	182
BN	305	289	404	786	538	259	345	269	290	305	299	210
AN	282	341	848	2,077	1,734	855	556	475	314	350	299	221
W	358	478	1,611	2,801	2,345	1,553	1,212	676	378	353	317	219
All	284	320	776	1,384	1,096	686	569	400	306	324	289	199
VA												
C	162	111	153	292	123	134	135	187	227	285	246	155
D	255	270	373	385	236	184	210	251	274	317	268	182
BN	305	289	404	786	538	259	345	269	290	305	299	210
AN	282	341	848	2,077	1,734	855	556	475	314	350	299	221
W	358	478	1,611	2,801	2,345	1,553	1,212	676	378	353	317	220
All	284	320	776	1,384	1,096	686	569	400	306	324	289	199
55 w/WSAs												
C	124	81	142	228	260	258	197	214	214	252	190	105
D	260	203	342	374	403	397	311	293	282	306	282	194
BN	250	177	377	679	692	457	449	323	310	310	306	210
AN	128	178	735	1,947	1,794	937	580	485	350	318	297	226
W	350	412	1,541	2,724	2,471	1,638	1,202	683	393	239	222	305
All	247	239	727	1,312	1,231	828	622	427	318	279	255	220

H1a2.2.35 Stony Creek above Confluence with Sacramento River (SWRCB Stony Creek)

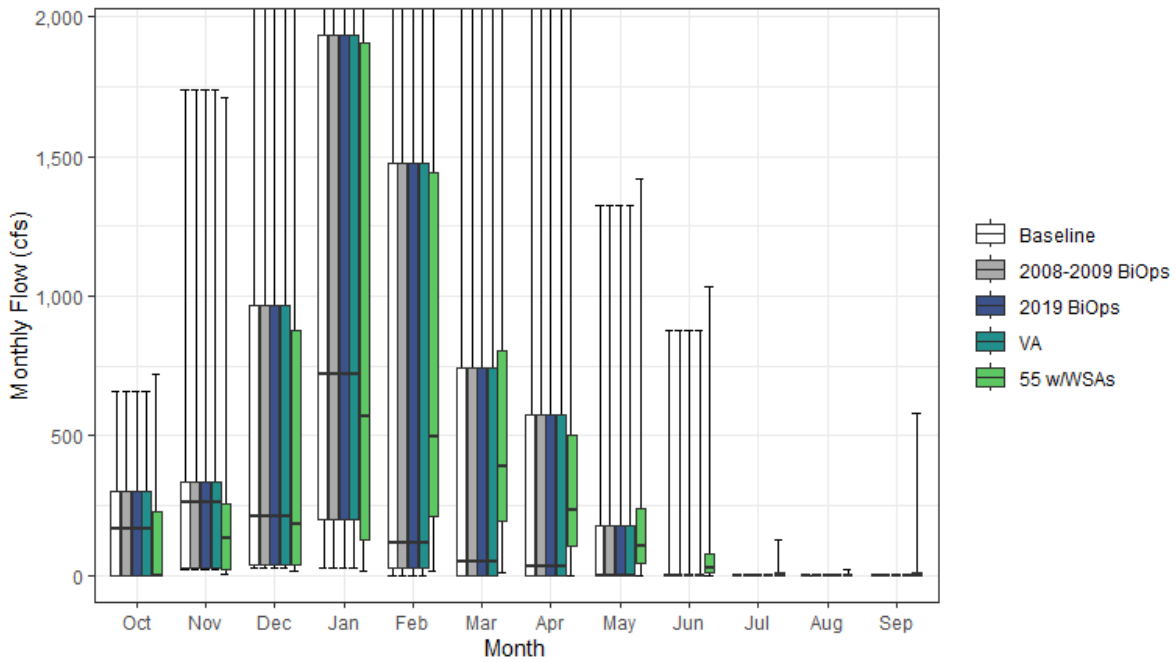

Figure H1a2-35. Stony Creek Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-69. Cumulative Distribution of Monthly Flow (cfs) — Stony Creek above Confluence with Sacramento River (SWRCB Stony Creek)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	0	23	27	29	0	0	0	0	0	0	0	0	5
10%	0	27	27	61	29	0	0	0	0	0	0	0	30
25%	0	28	37	199	29	0	0	0	0	0	0	0	63
50%	169	260	211	719	115	49	34	1	0	0	0	0	180
75%	302	335	964	1,934	1,475	741	573	177	1	0	0	0	455
90%	433	622	2,010	3,745	3,048	1,632	1,111	536	3	0	0	0	606
100%	658	1,738	4,538	8,078	8,586	6,389	3,344	1,325	874	0	0	0	1,204
Mean	182	292	711	1,318	1,040	598	394	156	21	0	0	0	283
2008-2009 BiOps													
0%	0	23	27	29	0	0	0	0	0	0	0	0	5
10%	0	27	27	61	29	0	0	0	0	0	0	0	30
25%	0	28	37	199	29	0	0	0	0	0	0	0	63
50%	169	260	211	719	115	49	34	1	0	0	0	0	180
75%	302	335	964	1,934	1,474	741	573	177	1	0	0	0	455
90%	433	622	2,010	3,745	3,048	1,632	1,111	536	3	0	0	0	606
100%	658	1,738	4,538	8,078	8,586	6,389	3,344	1,325	874	0	0	0	1,204
Mean	182	292	711	1,318	1,040	598	394	156	21	0	0	0	283
2019 BiOps													
0%	0	23	27	29	0	0	0	0	0	0	0	0	5
10%	0	27	27	61	29	0	0	0	0	0	0	0	30
25%	0	28	37	199	29	0	0	0	0	0	0	0	63
50%	169	260	211	719	115	49	34	1	0	0	0	0	180
75%	302	335	964	1,934	1,475	741	573	177	1	0	0	0	455
90%	433	622	2,010	3,745	3,048	1,632	1,111	536	3	0	0	0	606
100%	658	1,738	4,538	8,078	8,586	6,389	3,344	1,325	874	0	0	0	1,205
Mean	182	292	711	1,318	1,040	598	394	156	21	0	0	0	283
VA													
0%	0	23	27	29	0	0	0	0	0	0	0	0	5
10%	0	27	27	61	29	0	0	0	0	0	0	0	30
25%	0	28	37	199	29	0	0	0	0	0	0	0	63
50%	169	260	211	719	115	49	34	1	0	0	0	0	180
75%	302	335	964	1,934	1,475	741	573	177	1	0	0	0	455
90%	433	622	2,010	3,745	3,048	1,632	1,111	536	3	0	0	0	606
100%	658	1,738	4,538	8,078	8,586	6,389	3,344	1,325	874	2	0	0	1,205
Mean	182	292	711	1,318	1,040	598	394	156	21	0	0	0	283
55 w/WSAs													
0%	0	5	15	15	15	7	1	1	0	0	0	0	6
10%	0	15	20	55	90	93	44	19	1	0	0	0	48
25%	0	23	37	126	209	194	105	43	8	0	0	1	83
50%	0	134	184	569	494	392	231	103	28	0	0	3	181
75%	226	254	876	1,904	1,444	803	500	239	75	12	0	8	468
90%	587	371	1,893	3,612	3,018	1,508	1,062	513	153	23	4	23	602
100%	721	1,708	4,508	7,526	8,556	6,387	3,340	1,422	1,036	129	23	578	1,274
Mean	138	192	639	1,219	1,138	728	437	215	70	9	1	42	289

Table H1a2-70. Water Year Average of Monthly Flows (cfs) — Stony Creek above Confluence with Sacramento River (SWRCB Stony Creek)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	82	101	140	278	103	25	2	4	1	0	0	0
D	157	246	342	366	222	103	67	35	0	0	0	0
BN	192	263	370	748	507	201	179	43	1	0	0	0
AN	187	312	777	1,978	1,651	779	397	212	8	0	0	0
W	247	438	1,477	2,667	2,232	1,445	976	375	64	0	0	0
All	182	292	711	1,318	1,040	598	394	156	21	0	0	0
2008-2009 BiOps												
C	82	101	140	278	103	25	2	4	1	0	0	0
D	157	246	342	366	222	103	67	35	0	0	0	0
BN	192	263	370	748	507	201	179	43	1	0	0	0
AN	187	312	777	1,978	1,651	779	397	212	8	0	0	0
W	247	438	1,477	2,667	2,232	1,445	976	375	64	0	0	0
All	182	292	711	1,318	1,040	598	394	156	21	0	0	0
2019 BiOps												
C	82	101	140	278	103	25	2	4	1	0	0	0
D	157	246	342	366	222	103	67	35	0	0	0	0
BN	192	263	370	748	507	201	179	43	1	0	0	0
AN	187	312	777	1,978	1,651	779	397	212	8	0	0	0
W	247	438	1,477	2,667	2,232	1,445	976	375	64	0	0	0
All	182	292	711	1,318	1,040	598	394	156	21	0	0	0
VA												
C	82	101	140	278	103	25	2	4	1	0	0	0
D	157	246	342	366	222	103	67	35	0	0	0	0
BN	192	263	370	748	507	201	179	43	1	0	0	0
AN	187	312	777	1,978	1,651	779	397	212	8	0	0	0
W	247	438	1,477	2,667	2,232	1,445	976	375	64	0	0	0
All	182	292	711	1,318	1,040	598	394	156	21	0	0	0
55 w/WSAs												
C	55	57	108	191	203	148	52	27	9	0	0	2
D	137	159	284	326	350	298	136	73	14	2	1	3
BN	131	134	319	616	624	378	267	107	31	3	0	2
AN	31	137	643	1,823	1,678	857	424	258	67	10	1	5
W	231	347	1,383	2,563	2,322	1,524	977	469	168	22	4	130
All	138	192	639	1,219	1,138	728	437	215	70	9	1	42

H1a2.2.36 Sutter Bypass near Karnak

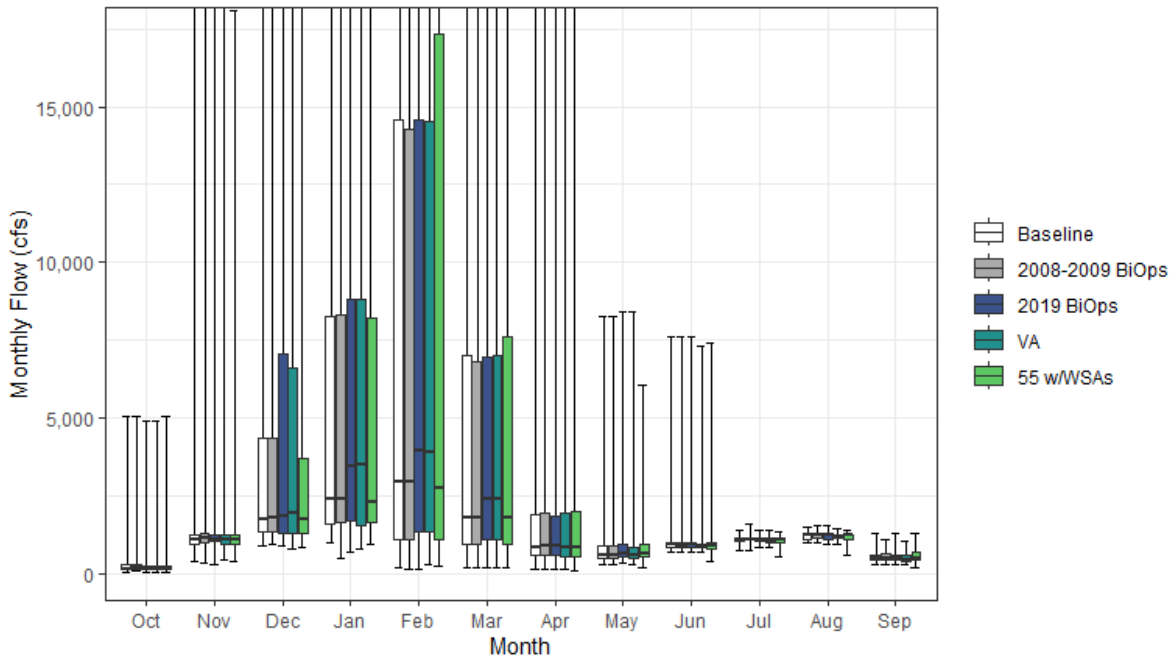

Figure H1a2-36. Sutter Bypass Streamflow near Karnak Monthly Boxplot (cfs)

Table H1a2-71. Cumulative Distribution of Monthly Flow (cfs) — Sutter Bypass near Karnak

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	59	396	908	997	174	177	132	283	673	741	975	292	472
10%	104	843	1,145	1,233	587	577	363	355	775	877	1,061	363	676
25%	122	962	1,333	1,569	1,091	927	569	473	829	1,060	1,098	436	835
50%	155	1,100	1,729	2,372	2,945	1,769	836	603	922	1,097	1,248	481	1,391
75%	264	1,248	4,352	8,277	14,606	7,008	1,905	910	1,000	1,152	1,291	605	3,569
90%	539	1,495	17,897	27,589	38,972	21,497	7,847	1,177	1,106	1,223	1,443	689	6,432
100%	5,072	20,109	41,198	71,772	103,813	74,776	37,338	8,274	7,619	1,390	1,503	1,265	10,125
Mean	288	1,419	5,393	9,117	12,378	7,065	2,941	864	1,044	1,092	1,229	521	2,586
2008-2009 BiOps													
0%	64	360	928	476	127	173	132	283	673	740	976	285	483
10%	105	845	1,144	1,259	682	568	321	355	775	913	1,060	387	673
25%	121	993	1,315	1,655	1,091	939	569	465	819	1,069	1,116	437	839
50%	160	1,115	1,810	2,370	2,936	1,769	890	592	908	1,106	1,256	493	1,405
75%	303	1,282	4,324	8,313	14,258	6,791	1,932	910	986	1,156	1,302	615	3,537
90%	538	1,565	17,652	27,590	38,971	21,498	7,771	1,184	1,107	1,277	1,392	699	6,419
100%	5,072	20,139	41,151	71,819	103,815	74,742	37,290	8,274	7,619	1,588	1,542	1,071	10,114
Mean	296	1,443	5,369	9,060	12,319	7,052	2,942	852	1,040	1,102	1,232	526	2,579
2019 BiOps													
0%	56	278	908	664	127	177	134	325	673	820	936	292	515
10%	105	852	1,053	1,211	682	576	370	453	775	887	1,061	375	686
25%	122	1,020	1,301	1,668	1,347	1,078	568	551	842	1,056	1,089	443	902
50%	150	1,103	1,819	3,466	3,939	2,386	891	634	927	1,095	1,238	497	1,483
75%	259	1,253	7,043	8,799	14,560	6,980	1,861	932	995	1,142	1,280	599	3,793
90%	526	1,500	16,927	27,579	38,962	21,493	7,853	1,154	1,082	1,176	1,308	666	6,436
100%	4,882	20,142	41,141	71,818	103,806	74,771	37,433	8,427	7,618	1,389	1,515	1,268	10,086
Mean	279	1,414	5,731	9,705	12,835	7,375	2,943	899	1,045	1,081	1,205	520	2,687
VA													
0%	56	430	796	804	310	170	127	296	664	818	951	292	517
10%	101	822	1,081	1,128	656	572	342	440	780	875	1,066	352	661
25%	119	917	1,288	1,518	1,341	1,090	521	493	813	1,003	1,125	399	869
50%	148	1,083	1,948	3,488	3,904	2,377	822	587	864	1,030	1,179	452	1,434
75%	252	1,234	6,625	8,792	14,532	6,986	1,951	856	914	1,143	1,231	592	3,744
90%	531	1,470	16,444	27,601	38,916	21,491	7,777	1,195	987	1,187	1,345	659	6,350
100%	4,880	19,788	41,169	71,810	103,810	74,736	37,337	8,426	7,328	1,389	1,435	1,053	10,086
Mean	277	1,359	5,687	9,682	12,816	7,379	2,981	881	998	1,053	1,186	492	2,672
55 w/WSAs													
0%	47	406	848	924	228	163	95	189	392	524	589	201	384
10%	97	818	1,120	1,187	568	572	352	295	534	782	894	380	626
25%	114	938	1,277	1,635	1,111	930	527	515	809	1,004	1,068	450	780
50%	144	1,075	1,726	2,315	2,743	1,783	841	637	905	1,080	1,214	504	1,356
75%	253	1,245	3,700	8,235	17,336	7,597	1,986	952	1,004	1,120	1,255	663	3,556
90%	547	1,541	15,645	26,980	38,828	21,479	7,787	1,177	1,169	1,167	1,289	713	6,173
100%	5,037	18,095	41,170	71,746	103,702	74,774	37,335	6,074	7,403	1,328	1,396	1,280	10,075
Mean	276	1,345	4,928	8,977	12,349	7,254	2,950	865	1,006	1,028	1,143	554	2,545

Table H1a2-72. Water Year Average of Monthly Flows (cfs) — Sutter Bypass near Karnak

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	157	994	1,895	1,764	1,634	1,161	405	526	815	918	1,108	379
D	221	1,095	2,550	1,958	2,794	2,132	705	543	957	1,119	1,296	528
BN	240	1,037	3,238	2,805	6,766	1,994	1,256	584	905	1,095	1,316	501
AN	258	1,041	3,782	10,790	16,743	8,154	1,570	1,222	936	1,167	1,257	589
W	450	2,276	11,354	21,616	26,945	16,607	7,548	1,315	1,362	1,134	1,177	577
All	288	1,419	5,393	9,117	12,378	7,065	2,941	864	1,044	1,092	1,229	521
2008-2009 BiOps												
C	162	954	1,894	1,710	1,615	1,145	358	501	827	930	1,114	370
D	228	1,077	2,664	1,997	2,801	2,057	711	506	957	1,119	1,302	521
BN	229	1,121	3,181	2,817	6,545	1,971	1,303	599	892	1,136	1,302	479
AN	287	1,095	3,766	10,631	16,695	8,234	1,589	1,234	955	1,131	1,225	583
W	461	2,316	11,234	21,484	26,915	16,610	7,535	1,301	1,342	1,148	1,201	618
All	296	1,443	5,369	9,060	12,319	7,052	2,942	852	1,040	1,102	1,232	526
2019 BiOps												
C	150	981	1,985	2,065	1,897	1,180	407	533	827	929	1,093	383
D	198	1,117	2,856	2,073	3,378	2,357	705	611	958	1,101	1,268	545
BN	218	1,069	3,318	4,250	7,255	2,617	1,213	635	910	1,113	1,256	489
AN	257	1,086	4,087	11,529	17,219	8,725	1,633	1,301	941	1,133	1,243	574
W	453	2,211	12,024	22,102	27,385	16,833	7,557	1,311	1,353	1,107	1,169	572
All	279	1,414	5,731	9,705	12,835	7,375	2,943	899	1,045	1,081	1,205	520
VA												
C	150	958	2,052	2,128	1,933	1,197	385	499	816	931	1,096	380
D	190	1,030	2,847	1,998	3,389	2,366	653	547	849	1,025	1,218	490
BN	232	1,008	3,251	4,107	7,265	2,600	1,279	581	849	1,051	1,195	443
AN	254	1,007	4,029	11,497	17,171	8,756	1,971	1,381	896	1,116	1,222	528
W	447	2,176	11,914	22,148	27,308	16,829	7,555	1,318	1,341	1,115	1,189	571
All	277	1,359	5,687	9,682	12,816	7,379	2,981	881	998	1,053	1,186	492
55 w/WSAs												
C	150	997	1,854	1,682	1,560	1,128	333	346	567	740	844	365
D	185	1,087	2,316	1,931	2,698	2,297	670	572	814	1,047	1,217	588
BN	227	1,040	3,121	2,741	6,687	2,420	1,223	680	906	1,099	1,243	590
AN	245	1,084	3,621	10,799	17,631	8,738	1,590	1,228	984	1,129	1,212	642
W	454	2,017	10,151	21,256	26,655	16,625	7,654	1,328	1,453	1,082	1,158	571
All	276	1,345	4,928	8,977	12,349	7,254	2,950	865	1,006	1,028	1,143	554

H1a2.2.37 Thomes Creek above Confluence with Sacramento River (SWRCB Thomes Creek)

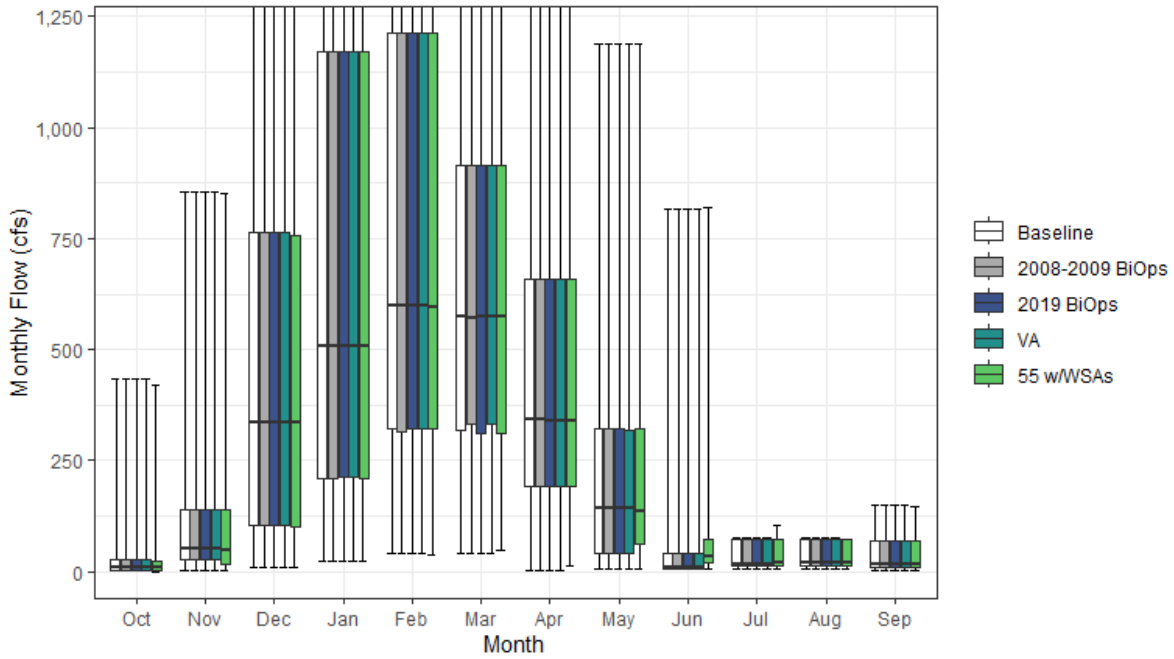

Figure H1a2-37. Thomes Creek Streamflow above Confluence with Sacramento River Monthly Boxplot (cfs)

Table H1a2-73. Cumulative Distribution of Monthly Flow (cfs) — Thomes Creek above Confluence with Sacramento River (SWRCB Thomes Creek)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	1	4	9	25	39	43	3	5	6	6	5	4	20
10%	2	12	37	115	152	193	85	14	6	8	7	5	73
25%	3	27	102	211	320	318	191	42	7	14	14	11	128
50%	10	52	335	509	600	576	342	144	9	18	19	17	195
75%	25	140	762	1,170	1,213	914	660	321	41	71	71	69	331
90%	64	286	1,241	1,784	2,097	1,471	920	609	137	73	73	70	450
100%	435	854	2,757	4,180	5,326	2,975	2,054	1,187	816	75	75	148	700
Mean	29	120	519	781	931	702	463	242	50	37	37	37	236
2008-2009 BiOps													
0%	1	4	9	25	39	43	3	5	6	6	5	4	20
10%	2	12	37	115	152	174	85	14	6	8	7	5	73
25%	3	27	102	211	316	331	191	42	7	14	14	11	128
50%	10	52	335	509	600	572	342	144	9	18	19	17	195
75%	25	140	762	1,170	1,213	914	660	321	41	71	71	69	331
90%	64	285	1,241	1,784	2,097	1,471	920	609	137	73	73	70	449
100%	435	854	2,757	4,180	5,326	2,975	2,054	1,190	816	75	75	148	699
Mean	29	120	519	781	930	701	463	242	50	37	37	37	236
2019 BiOps													
0%	1	4	9	25	39	43	3	5	6	6	5	4	20
10%	2	12	37	115	152	193	85	14	6	8	7	5	73
25%	3	27	102	211	320	312	191	42	7	14	14	11	128
50%	10	52	335	509	600	576	341	144	9	18	19	17	195
75%	25	140	762	1,170	1,213	914	660	321	41	71	71	69	331
90%	64	286	1,241	1,784	2,097	1,471	920	609	137	73	73	70	450
100%	435	854	2,757	4,180	5,326	2,975	2,055	1,187	816	75	75	148	700
Mean	29	120	519	781	931	702	463	242	50	37	37	37	236
VA													
0%	1	4	9	25	39	43	3	5	6	6	5	4	24
10%	2	12	37	115	152	193	85	14	6	8	7	5	74
25%	3	27	102	211	320	331	191	42	7	14	14	11	128
50%	10	52	335	509	600	576	341	144	9	18	19	17	195
75%	25	140	762	1,170	1,213	914	659	320	41	71	71	69	331
90%	64	286	1,241	1,784	2,097	1,471	920	609	137	73	73	70	450
100%	435	854	2,757	4,180	5,326	2,975	2,054	1,187	816	75	75	148	700
Mean	29	120	519	781	931	706	463	242	50	37	37	37	237
55 w/WSAs													
0%	1	3	10	22	39	48	14	7	6	6	6	4	22
10%	3	11	35	114	151	193	81	37	13	8	7	5	72
25%	4	16	100	211	320	310	191	63	21	14	14	11	129
50%	10	48	335	509	597	575	341	136	35	19	18	17	198
75%	25	139	759	1,170	1,213	914	660	320	71	72	71	69	332
90%	58	282	1,240	1,784	2,096	1,471	918	609	137	73	73	69	453
100%	419	853	2,756	4,180	5,326	2,975	2,054	1,187	820	103	74	147	700
Mean	28	116	517	780	929	700	461	246	68	38	37	37	237

Table H1a2-74. Water Year Average of Monthly Flows (cfs) — Thomes Creek above Confluence with Sacramento River (SWRCB Thomes Creek)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	17	25	253	295	402	296	119	48	14	7	7	6
D	14	107	336	286	583	485	258	104	9	14	14	19
BN	23	66	268	631	634	558	462	147	26	18	19	20
AN	34	129	556	1,116	1,246	896	500	337	55	61	60	59
W	49	211	940	1,363	1,530	1,091	781	468	112	72	72	69
All	29	120	519	781	931	702	463	242	50	37	37	37
2008-2009 BiOps												
C	17	25	253	295	399	299	119	48	14	7	7	6
D	14	107	336	286	583	478	258	104	9	14	14	19
BN	23	66	268	631	634	558	462	147	25	18	19	20
AN	34	129	556	1,116	1,246	896	500	338	55	61	60	59
W	49	210	940	1,363	1,530	1,091	781	468	112	72	72	69
All	29	120	519	781	930	701	463	242	50	37	37	37
2019 BiOps												
C	17	25	253	295	402	299	119	48	14	7	7	6
D	14	107	336	286	583	484	258	104	9	14	14	19
BN	23	67	268	631	634	559	462	147	26	18	19	20
AN	34	129	556	1,116	1,246	896	500	338	55	61	60	59
W	49	211	940	1,363	1,530	1,091	781	468	113	72	72	69
All	29	120	519	781	931	702	463	242	50	37	37	37
VA												
C	17	25	253	295	402	312	119	48	14	7	7	6
D	14	107	336	286	583	488	258	104	9	14	14	19
BN	23	67	268	631	634	560	462	146	25	18	19	20
AN	34	129	556	1,116	1,246	896	499	336	55	61	60	59
W	49	211	940	1,363	1,530	1,092	782	468	112	72	72	69
All	29	120	519	781	931	706	463	242	50	37	37	37
55 w/WSAs												
C	15	20	251	293	401	296	119	55	17	8	7	6
D	14	101	334	285	579	479	251	111	26	16	14	19
BN	22	64	267	630	632	556	461	151	43	19	19	20
AN	33	127	554	1,115	1,246	896	498	337	83	61	60	59
W	47	207	938	1,363	1,529	1,091	781	471	136	75	72	69
All	28	116	517	780	929	700	461	246	68	38	37	37

H1a2.2.38 Trinity River below Lewiston Reservoir (SWRCB Trinity)

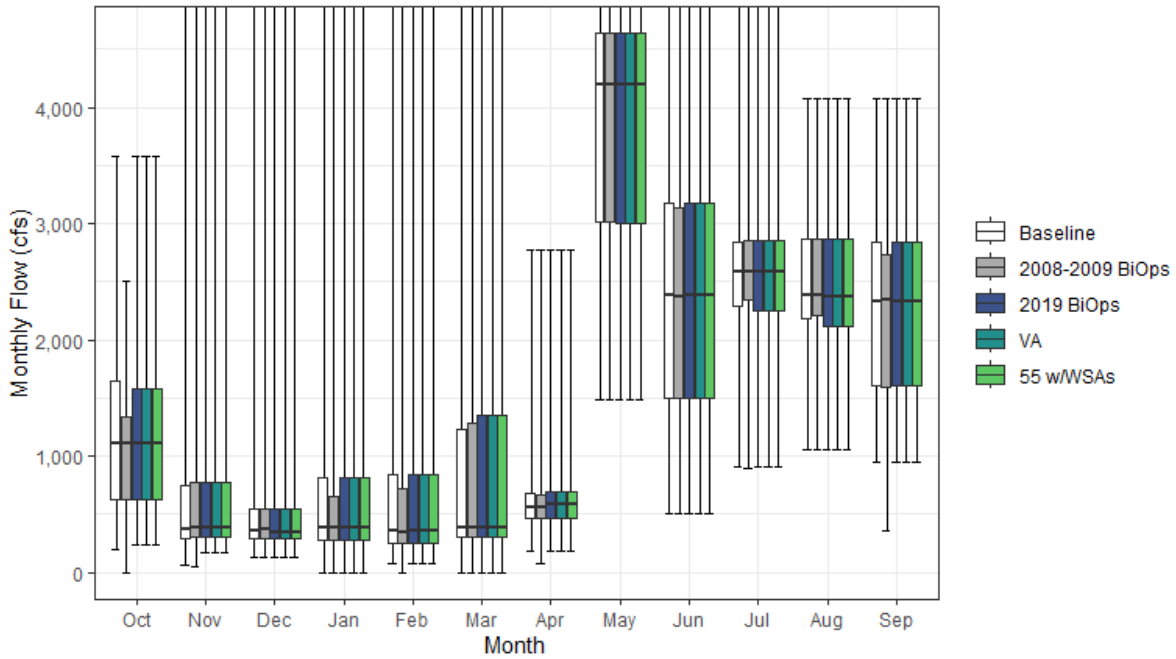

Figure H1a2-38. Trinity River Streamflow below Lewiston Reservoir Monthly Boxplot (cfs)

Table H1a2-75. Cumulative Distribution of Monthly Flow (cfs) — Trinity River below Lewiston Reservoir (SWRCB Trinity)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	199	59	134	0	74	0	177	1,481	511	904	1,060	954	657
10%	375	277	243	225	175	230	389	2,779	1,005	1,112	1,868	1,175	810
25%	625	297	288	281	253	301	463	3,010	1,505	2,295	2,184	1,601	941
50%	1,112	378	357	384	355	381	565	4,193	2,379	2,580	2,378	2,335	1,091
75%	1,649	749	550	818	840	1,236	680	4,638	3,181	2,842	2,866	2,836	1,339
90%	2,199	801	1,859	2,036	2,692	2,133	1,005	4,808	4,448	3,836	3,568	2,897	1,663
100%	3,576	6,095	5,637	7,952	9,461	6,170	2,779	8,633	7,808	6,611	4,079	4,075	2,824
Mean	1,204	588	758	883	894	920	722	3,944	2,509	2,612	2,523	2,188	1,197
2008-2009 BiOps													
0%	1	52	134	0	0	0	80	1,481	511	896	1,060	357	670
10%	376	275	232	224	181	230	377	2,779	999	1,112	1,868	1,175	808
25%	626	298	288	275	253	301	463	3,021	1,503	2,340	2,207	1,599	951
50%	1,109	387	366	382	351	381	564	4,193	2,370	2,581	2,378	2,340	1,091
75%	1,336	769	549	658	723	1,287	660	4,638	3,135	2,858	2,866	2,738	1,333
90%	2,190	801	2,313	2,098	2,691	2,106	1,286	4,808	4,448	4,052	3,696	2,879	1,663
100%	2,501	6,095	5,507	7,952	9,461	6,170	2,779	8,633	7,808	6,611	4,079	4,075	2,824
Mean	1,156	633	822	870	860	904	721	3,950	2,468	2,648	2,551	2,159	1,197
2019 BiOps													
0%	239	165	134	0	74	0	177	1,481	511	904	1,060	954	661
10%	375	282	243	225	175	230	404	2,696	1,005	1,112	1,840	1,160	812
25%	625	300	288	281	252	301	467	3,000	1,505	2,251	2,121	1,607	946
50%	1,112	387	347	382	355	380	580	4,193	2,379	2,580	2,378	2,337	1,091
75%	1,573	772	550	818	840	1,357	689	4,638	3,181	2,856	2,866	2,844	1,339
90%	2,190	801	1,859	2,036	2,692	2,068	1,004	4,808	4,448	4,052	3,409	2,926	1,663
100%	3,576	6,095	5,637	7,952	9,461	6,170	2,779	8,633	7,808	6,611	4,079	4,075	2,824
Mean	1,185	638	758	880	897	919	729	3,943	2,489	2,634	2,473	2,202	1,197
VA													
0%	239	165	134	0	74	0	177	1,481	511	904	1,060	954	661
10%	375	282	243	225	175	230	404	2,696	1,005	1,112	1,840	1,160	812
25%	625	300	288	281	252	301	467	3,000	1,505	2,251	2,121	1,607	946
50%	1,112	387	347	382	355	380	580	4,193	2,379	2,580	2,378	2,337	1,091
75%	1,573	772	550	818	840	1,357	689	4,638	3,181	2,856	2,866	2,844	1,339
90%	2,190	801	1,859	2,036	2,692	2,068	1,004	4,808	4,448	4,052	3,409	2,926	1,663
100%	3,576	6,095	5,637	7,952	9,461	6,170	2,779	8,633	7,808	6,611	4,079	4,075	2,824
Mean	1,185	638	758	880	897	919	729	3,943	2,489	2,634	2,473	2,202	1,197
55 w/WSAs													
0%	239	165	134	0	74	0	177	1,481	511	904	1,060	954	661
10%	375	282	243	225	175	230	404	2,696	1,005	1,112	1,840	1,160	812
25%	625	300	288	281	252	301	467	3,000	1,505	2,251	2,121	1,607	946
50%	1,112	387	347	382	355	380	580	4,193	2,379	2,580	2,378	2,337	1,091
75%	1,573	772	550	818	840	1,357	689	4,638	3,181	2,856	2,866	2,844	1,339
90%	2,190	801	1,859	2,036	2,692	2,068	1,004	4,808	4,448	4,052	3,409	2,926	1,663
100%	3,576	6,095	5,637	7,952	9,461	6,170	2,779	8,633	7,808	6,611	4,079	4,075	2,824
Mean	1,185	638	758	880	897	919	729	3,943	2,489	2,634	2,473	2,202	1,197

Table H1a2-76. Water Year Average of Monthly Flows (cfs) — Trinity River below Lewiston Reservoir (SWRCB Trinity)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	961	429	407	423	820	582	684	2,499	1,541	3,093	2,524	1,628
D	1,122	520	433	422	941	520	555	3,306	1,858	2,648	2,877	2,360
BN	1,306	431	465	703	662	820	648	3,939	2,405	2,253	2,515	2,168
AN	1,230	530	530	601	796	619	792	4,575	2,734	2,421	2,459	2,247
W	1,319	845	1,461	1,694	1,085	1,578	882	4,932	3,480	2,632	2,295	2,351
All	1,204	588	758	883	894	920	722	3,944	2,509	2,612	2,523	2,188
2008-2009 BiOps												
C	776	645	407	411	693	526	676	2,519	1,395	3,247	2,583	1,646
D	1,052	582	547	433	996	544	554	3,312	1,847	2,708	2,979	2,228
BN	1,320	431	471	776	626	779	673	3,944	2,365	2,253	2,519	2,168
AN	1,193	582	913	410	605	613	781	4,575	2,671	2,421	2,417	2,206
W	1,315	813	1,430	1,678	1,101	1,564	875	4,934	3,480	2,626	2,295	2,358
All	1,156	633	822	870	860	904	721	3,950	2,468	2,648	2,551	2,159
2019 BiOps												
C	961	445	401	417	819	534	673	2,486	1,512	3,262	2,288	1,750
D	1,111	580	433	411	954	514	564	3,312	1,858	2,625	2,840	2,353
BN	1,237	595	465	703	662	820	648	3,939	2,405	2,253	2,515	2,142
AN	1,201	572	537	601	777	597	831	4,575	2,671	2,421	2,459	2,247
W	1,319	836	1,461	1,696	1,093	1,613	891	4,932	3,455	2,632	2,283	2,352
All	1,185	638	758	880	897	919	729	3,943	2,489	2,634	2,473	2,202
VA												
C	961	445	401	417	819	534	673	2,486	1,512	3,262	2,288	1,750
D	1,111	580	433	411	954	514	564	3,312	1,858	2,625	2,840	2,353
BN	1,237	595	465	703	662	820	648	3,939	2,405	2,253	2,515	2,142
AN	1,201	572	537	601	777	597	831	4,575	2,671	2,421	2,459	2,247
W	1,319	836	1,461	1,696	1,093	1,613	891	4,932	3,455	2,632	2,283	2,352
All	1,185	638	758	880	897	919	729	3,943	2,489	2,634	2,473	2,202
55 w/WSAs												
C	961	445	401	417	819	534	673	2,486	1,512	3,262	2,288	1,750
D	1,111	580	433	411	954	514	564	3,312	1,858	2,625	2,840	2,353
BN	1,237	595	465	703	662	820	648	3,939	2,405	2,253	2,515	2,142
AN	1,201	572	537	601	777	597	831	4,575	2,671	2,421	2,459	2,247
W	1,319	836	1,461	1,696	1,093	1,613	891	4,932	3,455	2,632	2,283	2,352
All	1,185	638	758	880	897	919	729	3,943	2,489	2,634	2,473	2,202

H1a2.2.39 Yolo Bypass below Putah Creek Inflow

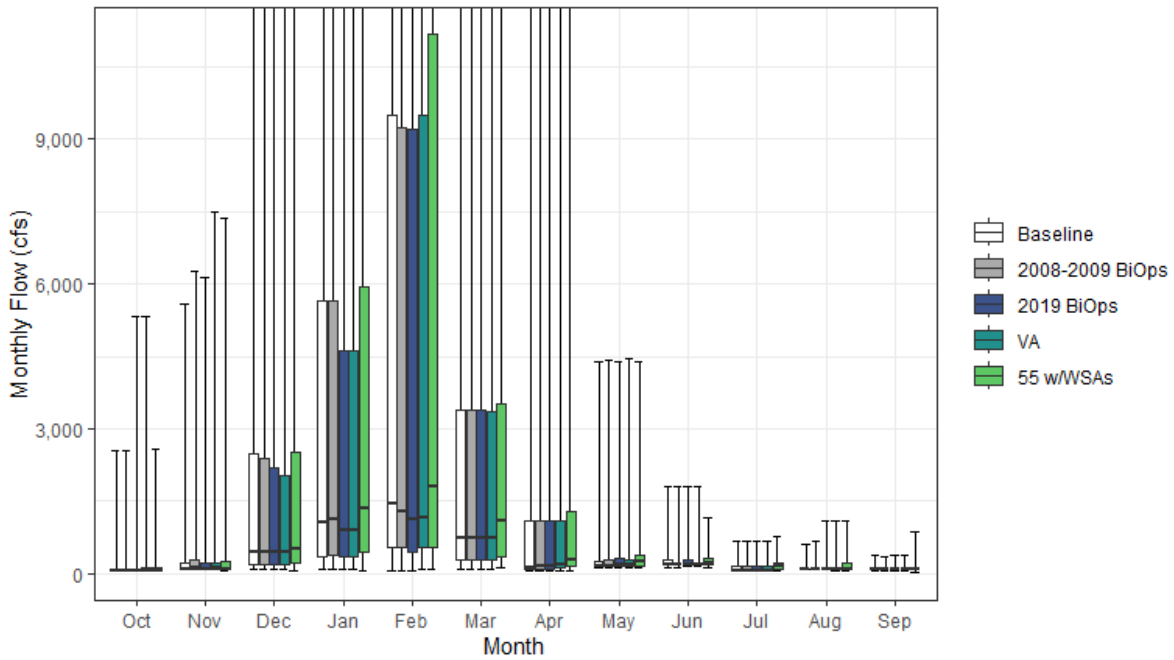

Figure H1a2-39. Yolo Bypass Streamflow below Putah Creek Inflow Monthly Boxplot (cfs)

Table H1a2-77. Cumulative Distribution of Monthly Flow (cfs) — Yolo Bypass below Putah Creek Inflow

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	47	75	76	82	66	89	65	109	132	58	71	64	85
10%	51	78	95	152	132	126	83	147	171	66	76	72	138
25%	54	81	193	338	526	281	93	152	179	68	77	83	216
50%	61	92	447	1,062	1,451	736	127	161	188	69	80	91	532
75%	97	220	2,491	5,655	9,499	3,389	1,084	264	273	162	98	97	2,880
90%	137	450	10,879	29,017	48,867	24,497	4,071	848	314	192	111	107	7,797
100%	2,537	5,581	57,995	109,107	132,376	109,902	48,449	4,380	1,806	656	606	363	12,286
Mean	114	287	3,827	8,831	13,382	7,381	2,318	366	244	118	105	96	2,199
2008-2009 BiOps													
0%	47	74	77	82	66	90	66	109	125	58	71	64	99
10%	51	79	98	150	133	129	82	145	172	61	76	75	146
25%	54	81	173	367	526	281	94	152	179	68	77	86	202
50%	61	106	447	1,119	1,297	736	145	161	186	69	79	91	527
75%	97	297	2,397	5,654	9,238	3,391	1,084	293	198	144	94	97	2,724
90%	139	365	9,882	29,025	48,817	24,339	4,060	851	324	191	109	107	7,767
100%	2,537	6,250	57,995	109,106	132,377	109,879	48,442	4,409	1,805	656	665	349	12,280
Mean	114	296	3,763	8,795	13,210	7,365	2,320	375	239	102	106	97	2,182
2019 BiOps													
0%	47	74	76	82	66	89	65	111	140	58	71	64	85
10%	51	78	95	151	132	128	83	146	171	67	76	73	135
25%	54	81	179	338	449	281	96	154	180	68	78	81	195
50%	62	92	427	910	1,135	736	153	172	189	69	79	91	531
75%	97	229	2,177	4,615	9,214	3,389	1,084	308	281	158	96	97	2,852
90%	139	342	12,783	30,194	48,531	24,503	4,059	865	319	204	112	107	7,854
100%	5,328	6,146	57,993	109,107	132,378	109,902	48,380	4,379	1,805	667	1,091	363	12,380
Mean	143	290	3,836	8,725	13,280	7,369	2,331	401	256	128	122	95	2,194
VA													
0%	47	90	91	87	71	89	66	124	154	57	68	67	88
10%	51	97	106	184	138	154	87	147	173	65	75	73	150
25%	54	99	181	339	531	291	109	154	178	66	77	86	208
50%	63	108	434	905	1,156	747	192	192	185	69	86	92	530
75%	105	215	2,041	4,619	9,516	3,349	1,087	274	197	152	113	97	2,886
90%	157	396	11,467	30,682	48,010	24,335	4,062	867	287	197	562	105	7,858
100%	5,323	7,496	58,039	109,171	132,082	109,901	48,486	4,442	1,803	667	1,106	362	12,380
Mean	150	315	3,689	8,719	13,218	7,372	2,345	398	240	128	165	96	2,186
55 w/WSAs													
0%	47	63	69	68	81	113	65	109	127	56	56	34	111
10%	51	70	91	189	168	162	109	147	174	66	66	68	171
25%	54	78	211	431	547	335	160	159	181	79	75	78	279
50%	70	91	508	1,344	1,791	1,080	283	258	217	159	90	88	644
75%	108	240	2,513	5,950	11,180	3,508	1,273	367	299	212	225	100	2,873
90%	161	387	10,292	27,839	44,151	21,510	3,958	1,157	349	242	556	204	7,657
100%	2,566	7,369	56,480	104,761	125,995	109,888	46,291	4,382	1,163	757	1,076	876	12,435
Mean	123	296	3,754	9,095	12,964	7,222	2,415	452	276	169	196	116	2,202

Table H1a2-78. Water Year Average of Monthly Flows (cfs) — Yolo Bypass below Putah Creek Inflow

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	72	103	699	829	593	333	104	170	170	88	107	85
D	66	175	919	511	1,362	663	208	173	235	120	95	101
BN	110	115	1,305	1,432	4,336	999	308	186	223	135	114	109
AN	105	228	2,602	6,970	15,121	7,058	661	372	212	119	123	98
W	177	602	9,713	24,630	34,050	20,238	6,982	725	316	120	98	90
All	114	287	3,827	8,831	13,382	7,381	2,318	366	244	118	105	96
2008-2009 BiOps												
C	72	131	714	825	592	336	111	157	171	66	82	79
D	67	205	916	525	1,359	663	206	194	237	116	148	112
BN	110	140	1,318	1,427	4,194	998	309	193	220	111	107	103
AN	105	271	2,573	6,928	14,331	6,944	665	379	212	88	127	97
W	178	558	9,500	24,525	33,890	20,229	6,983	739	300	112	80	93
All	114	296	3,763	8,795	13,210	7,365	2,320	375	239	102	106	97
2019 BiOps												
C	76	119	703	553	591	332	103	171	180	66	82	80
D	66	154	861	525	1,137	663	229	231	258	127	123	106
BN	110	148	1,457	1,303	4,257	886	310	188	206	110	108	102
AN	106	230	2,543	6,958	15,073	7,018	661	379	205	108	129	100
W	270	595	9,713	24,504	33,949	20,284	7,008	791	346	182	149	89
All	143	290	3,836	8,725	13,280	7,369	2,331	401	256	128	122	95
VA												
C	77	122	699	584	593	344	120	175	181	83	82	79
D	69	191	795	517	1,219	675	249	186	217	86	199	106
BN	115	120	1,358	1,304	4,178	896	332	220	196	120	163	107
AN	115	247	2,494	6,893	15,091	7,086	687	385	197	93	172	100
W	285	658	9,361	24,500	33,728	20,246	7,006	790	333	202	185	90
All	150	315	3,689	8,719	13,218	7,372	2,345	398	240	128	165	96
55 w/WSAs												
C	83	112	699	921	659	356	117	190	222	162	272	183
D	81	157	931	653	1,730	1,285	255	230	260	145	190	110
BN	113	116	1,527	1,759	5,098	1,848	513	242	252	148	79	96
AN	116	212	2,343	8,468	15,128	6,453	854	460	225	133	178	94
W	185	643	9,429	24,542	31,881	18,949	7,055	884	351	219	240	107
All	123	296	3,754	9,095	12,964	7,222	2,415	452	276	169	196	116

H1a2.2.40 Yuba River, North Fork above New Bullards Bar Reservoir (SWRCB New Bullards Bar Inflow)

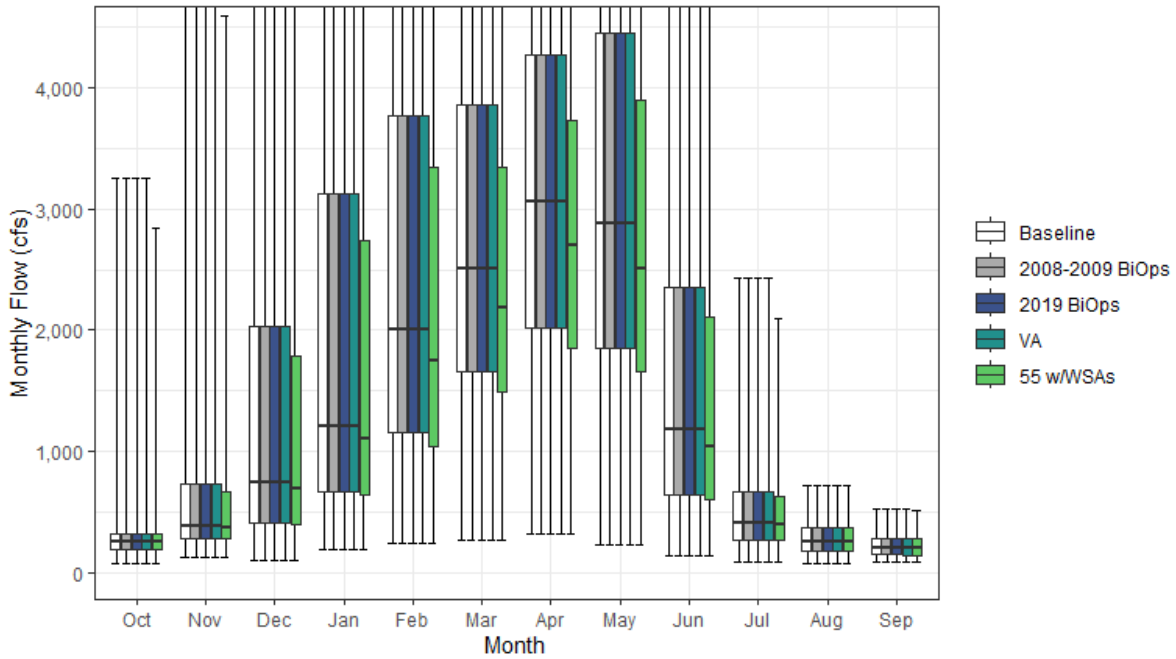

Figure H1a2-40. Yuba River, North Fork Streamflow above New Bullards Bar Reservoir Monthly Boxplot (cfs)

Table H1a2-79. Cumulative Distribution of Monthly Flow (cfs) — Yuba River, North Fork above New Bullards Bar Reservoir (SWRCB New Bullards Bar Inflow)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	73	128	102	194	241	271	317	233	142	83	67	85	141
10%	159	213	280	360	678	1,047	1,353	706	257	157	130	119	422
25%	192	281	406	670	1,152	1,652	2,018	1,847	641	263	180	144	662
50%	260	379	740	1,212	2,004	2,503	3,065	2,876	1,187	404	250	204	1,082
75%	316	725	2,027	3,132	3,772	3,866	4,279	4,453	2,355	665	371	275	1,681
90%	447	1,367	4,692	5,517	5,365	5,527	5,330	5,892	3,596	1,030	465	325	1,937
100%	3,262	5,150	9,325	11,384	13,205	7,964	7,314	7,518	6,164	2,430	712	529	2,970
Mean	306	701	1,659	2,186	2,685	2,894	3,245	3,182	1,669	539	277	218	1,177
2008-2009 BiOps													
0%	73	128	102	194	241	271	317	233	142	83	67	85	141
10%	159	213	280	360	678	1,047	1,353	706	257	157	130	119	422
25%	192	281	406	670	1,152	1,652	2,018	1,847	642	263	180	144	662
50%	260	379	741	1,212	2,004	2,503	3,065	2,876	1,187	404	250	204	1,082
75%	315	725	2,027	3,132	3,772	3,866	4,279	4,453	2,355	665	371	275	1,681
90%	447	1,367	4,692	5,517	5,366	5,527	5,329	5,892	3,596	1,030	465	325	1,937
100%	3,262	5,150	9,325	11,384	13,205	7,964	7,314	7,518	6,164	2,430	712	529	2,970
Mean	306	701	1,659	2,186	2,685	2,895	3,245	3,182	1,669	539	277	218	1,177
2019 BiOps													
0%	73	128	102	194	241	271	317	233	142	83	67	85	141
10%	159	213	280	360	678	1,047	1,353	706	257	157	130	119	422
25%	192	281	406	670	1,152	1,652	2,018	1,847	641	263	180	144	662
50%	260	379	741	1,212	2,004	2,503	3,065	2,876	1,187	404	250	204	1,082
75%	316	725	2,027	3,132	3,772	3,866	4,279	4,453	2,355	665	371	275	1,681
90%	447	1,367	4,692	5,517	5,366	5,527	5,330	5,892	3,596	1,030	465	325	1,937
100%	3,262	5,150	9,325	11,384	13,205	7,964	7,314	7,518	6,164	2,430	712	529	2,970
Mean	306	701	1,659	2,186	2,685	2,894	3,245	3,182	1,669	539	277	218	1,177
VA													
0%	73	128	102	194	241	271	317	233	142	83	67	85	141
10%	159	213	280	360	678	1,047	1,353	706	257	157	130	119	422
25%	192	281	406	670	1,152	1,652	2,017	1,847	641	262	180	144	662
50%	260	379	741	1,212	2,004	2,503	3,065	2,876	1,187	404	250	204	1,082
75%	316	725	2,027	3,132	3,772	3,866	4,279	4,453	2,355	663	371	275	1,683
90%	447	1,367	4,692	5,517	5,365	5,527	5,330	5,892	3,595	1,030	465	325	1,952
100%	3,262	5,150	9,325	11,384	13,205	7,964	7,315	7,518	6,164	2,430	712	530	2,970
Mean	306	701	1,664	2,193	2,685	2,895	3,244	3,182	1,669	538	277	218	1,177
55 w/WSAs													
0%	73	128	102	194	241	271	317	233	142	83	67	85	141
10%	159	213	280	355	611	942	1,231	670	257	157	130	119	394
25%	192	277	401	639	1,043	1,493	1,845	1,661	603	262	180	144	608
50%	260	372	693	1,100	1,747	2,190	2,699	2,507	1,046	392	250	204	968
75%	313	664	1,783	2,741	3,352	3,347	3,735	3,896	2,104	628	368	275	1,528
90%	429	1,173	4,314	5,092	4,958	5,095	4,782	5,298	3,089	946	454	325	1,823
100%	2,843	4,598	10,043	11,384	13,205	8,210	7,648	6,910	5,426	2,095	712	509	2,777
Mean	297	645	1,565	2,043	2,469	2,639	2,899	2,807	1,479	506	275	217	1,073

Table H1a2-80. Water Year Average of Monthly Flows (cfs) — Yuba River, North Fork above New Bullards Bar Reservoir (SWRCB New Bullards Bar Inflow)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	240	288	516	509	886	1,229	1,288	1,038	472	172	128	114
D	237	517	920	779	1,623	2,172	2,496	2,065	793	283	187	164
BN	257	492	874	1,441	2,152	2,659	3,656	3,110	1,402	426	258	202
AN	295	889	1,311	3,079	3,282	4,050	3,469	3,764	1,567	530	312	249
W	428	1,113	3,445	4,228	4,521	3,999	4,489	4,956	3,161	998	421	310
All	306	701	1,659	2,186	2,685	2,894	3,245	3,182	1,669	539	277	218
2008-2009 BiOps												
C	240	288	516	509	886	1,229	1,288	1,038	472	172	128	114
D	237	517	920	779	1,623	2,172	2,496	2,065	793	283	187	164
BN	257	492	874	1,441	2,151	2,659	3,656	3,110	1,402	426	258	202
AN	295	889	1,311	3,079	3,282	4,050	3,469	3,764	1,567	530	312	249
W	428	1,112	3,445	4,228	4,521	4,000	4,489	4,956	3,161	998	421	310
All	306	701	1,659	2,186	2,685	2,895	3,245	3,182	1,669	539	277	218
2019 BiOps												
C	240	288	516	509	886	1,229	1,288	1,038	472	172	128	114
D	237	517	920	779	1,623	2,172	2,496	2,065	793	283	187	164
BN	257	492	874	1,441	2,152	2,659	3,656	3,110	1,402	426	258	202
AN	295	889	1,311	3,079	3,282	4,050	3,469	3,764	1,567	530	312	249
W	428	1,113	3,445	4,228	4,521	3,999	4,489	4,956	3,161	998	421	310
All	306	701	1,659	2,186	2,685	2,894	3,245	3,182	1,669	539	277	218
VA												
C	240	288	516	509	886	1,229	1,288	1,038	472	172	128	114
D	237	517	920	779	1,623	2,172	2,496	2,065	793	283	187	164
BN	257	492	874	1,441	2,152	2,659	3,656	3,110	1,402	426	258	202
AN	295	889	1,311	3,114	3,282	4,050	3,458	3,764	1,567	524	312	249
W	428	1,113	3,464	4,236	4,521	4,002	4,489	4,956	3,161	998	421	310
All	306	701	1,664	2,193	2,685	2,895	3,244	3,182	1,669	538	277	218
55 w/WSAs												
C	236	283	489	485	819	1,125	1,179	957	445	172	128	114
D	236	486	854	719	1,475	1,981	2,238	1,846	737	281	187	164
BN	255	464	805	1,300	1,944	2,394	3,271	2,752	1,272	417	258	202
AN	292	814	1,303	2,838	3,024	3,807	3,041	3,279	1,386	505	311	248
W	404	1,003	3,247	3,997	4,189	3,615	4,010	4,344	2,741	905	414	307
All	297	645	1,565	2,043	2,469	2,639	2,899	2,807	1,479	506	275	217

H1a2.2.41 Yuba River, Middle Fork above Confluence with North Fork Yuba (SWRCB M Yuba Inflow)

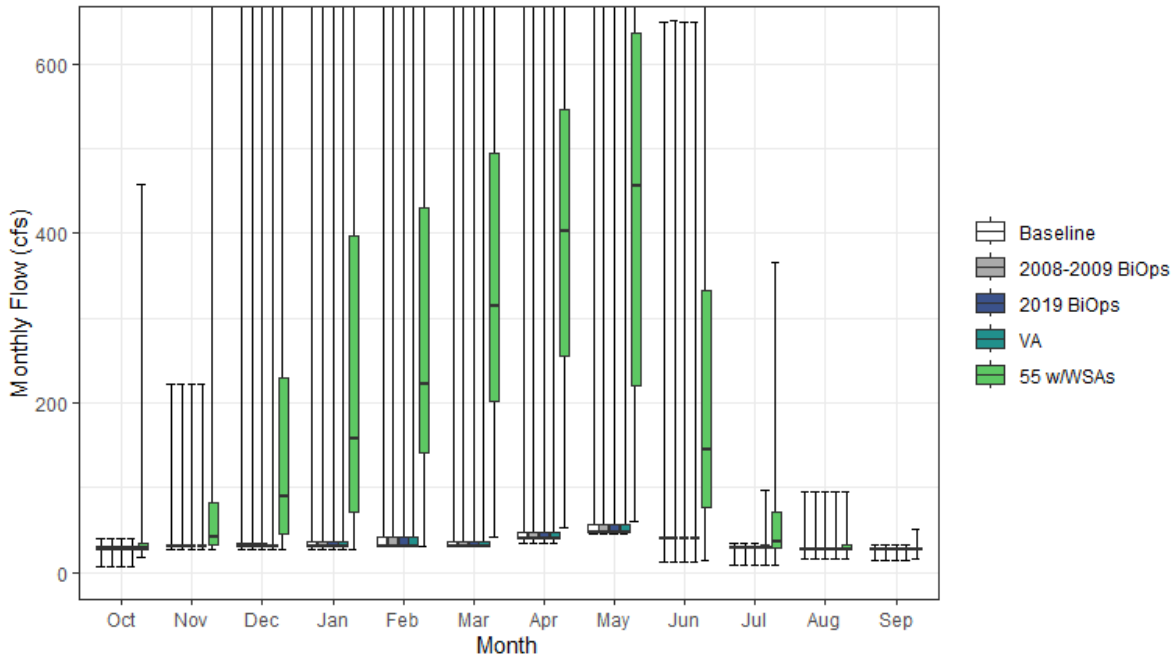

Figure H1a2-41. Yuba River, Middle Fork Streamflow above Confluence with North Fork Yuba Monthly Boxplot (cfs)

Table H1a2-81. Cumulative Distribution of Monthly Flow (cfs) — Yuba River, Middle Fork above Confluence with North Fork Yuba (SWRCB M Yuba Inflow)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	7	27	28	28	31	31	35	46	12	8	16	13	23
10%	27	29	31	31	31	31	40	47	38	27	25	23	23
25%	28	31	31	31	31	31	40	47	39	28	27	26	24
50%	29	31	31	31	31	31	40	48	39	30	28	27	26
75%	31	31	34	36	42	36	47	56	39	31	28	28	58
90%	31	36	103	331	363	244	157	174	44	31	30	29	161
100%	41	222	2,933	3,087	3,806	2,173	2,132	718	650	35	96	33	385
Mean	29	35	144	206	183	153	97	84	48	29	29	27	64
2008-2009 BiOps													
0%	7	27	28	28	31	31	35	46	12	8	16	13	23
10%	27	29	31	31	31	31	40	47	38	27	25	23	23
25%	28	31	31	31	31	31	40	47	39	28	27	26	24
50%	29	31	31	31	31	31	40	48	39	30	28	27	26
75%	31	31	34	36	42	36	47	56	39	31	28	28	58
90%	31	36	103	331	363	244	157	174	44	31	30	29	161
100%	41	222	2,933	3,087	3,806	2,173	2,132	718	650	35	96	33	385
Mean	29	35	144	206	183	153	97	84	48	29	29	27	64
2019 BiOps													
0%	7	27	28	28	31	31	35	46	12	8	16	13	23
10%	27	29	31	31	31	31	40	47	38	27	25	23	23
25%	28	31	31	31	31	31	40	47	39	28	27	26	24
50%	29	31	31	31	31	31	40	48	39	30	28	27	26
75%	31	31	34	36	42	36	47	56	39	31	28	28	58
90%	31	36	103	331	363	244	157	174	44	31	30	29	161
100%	41	222	2,933	3,087	3,806	2,173	2,132	718	650	35	96	33	385
Mean	29	35	144	206	183	153	97	84	48	29	29	27	64
VA													
0%	7	27	28	28	31	31	35	46	12	8	16	13	23
10%	27	29	31	31	31	31	40	47	38	27	25	23	23
25%	28	31	31	31	31	31	40	47	39	29	27	26	24
50%	29	31	31	31	31	31	40	48	39	30	27	27	26
75%	31	31	33	36	42	36	47	56	39	31	28	28	58
90%	31	36	53	331	363	244	178	174	44	31	30	29	152
100%	41	222	2,933	3,087	3,806	2,173	2,132	718	650	97	96	33	385
Mean	29	35	138	200	183	153	99	84	48	30	29	27	63
55 w/WSAs													
0%	18	27	28	28	31	42	53	60	15	9	16	16	27
10%	27	29	31	39	87	133	165	99	43	28	25	23	56
25%	28	32	46	72	142	202	255	220	76	29	27	26	86
50%	29	42	90	158	221	314	403	455	146	37	28	27	125
75%	34	83	230	397	430	495	546	636	333	72	32	28	240
90%	42	188	584	713	754	686	741	838	537	114	39	32	331
100%	457	788	2,216	3,087	3,806	2,173	2,132	1,236	1,149	366	96	51	585
Mean	38	91	237	350	399	408	447	469	240	63	31	28	168

Table H1a2-82. Water Year Average of Monthly Flows (cfs) — Yuba River, Middle Fork above Confluence with North Fork Yuba (SWRCB M Yuba Inflow)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	29	31	31	32	37	37	48	57	41	28	24	23
D	30	32	32	32	47	65	42	49	40	29	27	27
BN	28	31	35	32	49	63	77	47	39	29	27	27
AN	29	48	174	165	147	302	40	66	39	29	27	28
W	28	37	342	554	461	275	201	153	69	30	34	28
All	29	35	144	206	183	153	97	84	48	29	29	27
2008-2009 BiOps												
C	29	31	31	32	37	37	48	57	41	28	24	23
D	30	32	32	32	47	65	42	49	40	29	27	27
BN	28	31	35	32	49	63	77	48	39	29	27	27
AN	29	48	174	165	147	302	40	66	39	29	27	28
W	28	37	342	554	461	275	201	153	69	30	34	28
All	29	35	144	206	183	153	97	84	48	29	29	27
2019 BiOps												
C	29	31	31	32	37	37	48	57	41	28	24	23
D	30	32	32	32	47	65	42	49	40	29	27	27
BN	28	31	35	32	49	63	77	47	39	29	27	27
AN	29	48	174	165	147	302	40	66	39	29	27	28
W	28	37	342	554	461	275	201	153	69	30	34	28
All	29	35	144	206	183	153	97	84	48	29	29	27
VA												
C	29	31	31	32	37	37	48	57	41	28	24	23
D	30	32	32	32	47	65	42	49	40	30	27	27
BN	28	31	35	32	49	63	77	48	39	29	27	27
AN	29	48	174	130	147	302	51	66	39	35	27	28
W	28	37	323	546	461	275	201	153	69	30	34	28
All	29	35	138	200	183	153	99	84	48	30	29	27
55 w/WSAs												
C	33	36	59	56	104	141	157	138	69	28	24	23
D	31	63	98	92	194	256	300	268	96	31	27	27
BN	30	59	104	173	256	328	462	405	169	38	27	27
AN	33	123	183	406	405	545	468	562	228	54	28	29
W	52	147	540	785	793	659	691	797	487	125	42	31
All	38	91	237	350	399	408	447	469	240	63	31	28

H1a2.2.42 Yuba River, South Fork above Confluence with Yuba River (SWRCB S Yuba Inflow)

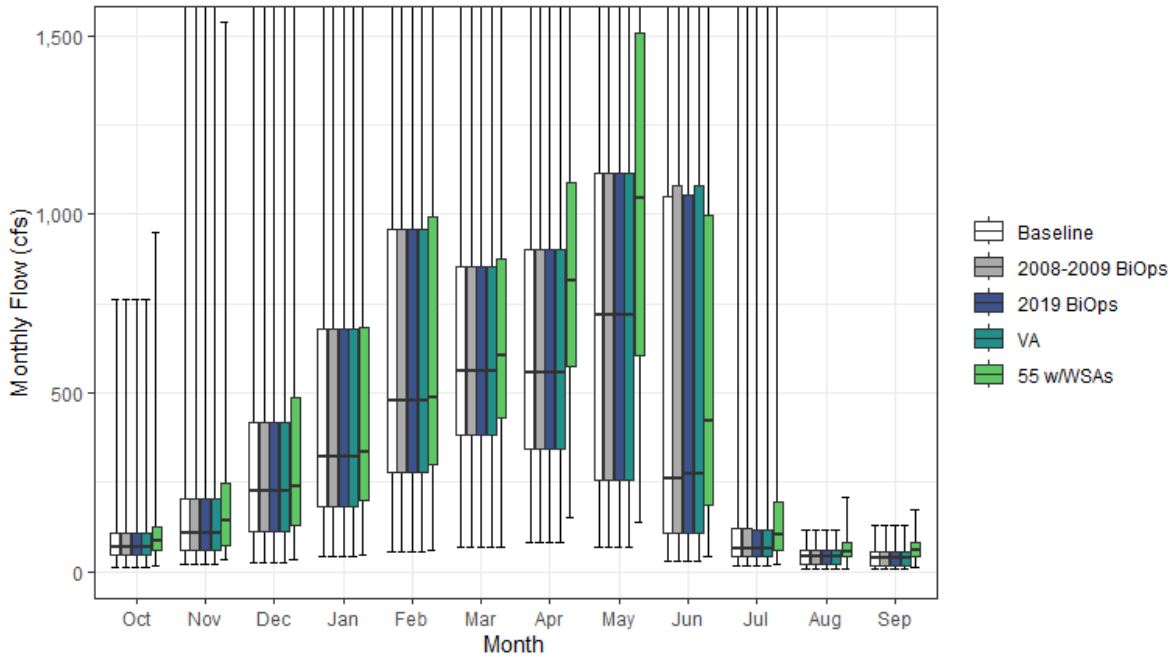

Figure H1a2-42. Yuba River, South Fork Streamflow above Confluence with Yuba River Monthly Boxplot (cfs)

Table H1a2-83. Cumulative Distribution of Monthly Flow (cfs) — Yuba River, South Fork above Confluence with Yuba River (SWRCB S Yuba Inflow)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	10	20	26	42	53	68	83	70	30	18	9	9	35
10%	23	45	62	98	144	232	208	118	59	30	16	13	91
25%	44	61	111	183	277	382	342	258	109	42	22	18	142
50%	67	109	225	323	478	563	555	717	262	63	40	38	244
75%	108	204	416	677	958	853	902	1,115	1,051	119	58	56	450
90%	143	342	1,128	1,383	1,445	1,581	1,161	1,973	1,929	190	79	74	597
100%	762	1,595	2,691	3,971	5,772	2,450	3,153	3,682	3,835	1,644	117	128	1,241
Mean	82	183	414	573	700	713	681	871	732	149	43	41	312
2008-2009 BiOps													
0%	10	20	26	42	53	68	83	70	30	18	9	9	35
10%	23	45	62	98	144	232	208	118	59	30	16	13	91
25%	44	61	111	183	277	382	342	258	109	42	22	18	142
50%	67	109	225	323	478	563	555	717	262	63	40	38	244
75%	108	204	416	677	958	853	902	1,115	1,078	119	58	56	450
90%	143	342	1,128	1,383	1,445	1,581	1,165	1,963	1,968	190	79	74	595
100%	762	1,599	2,680	4,002	5,751	2,451	3,174	3,784	3,835	1,644	117	128	1,245
Mean	82	183	413	574	699	713	682	871	732	151	43	41	312
2019 BiOps													
0%	10	20	26	42	53	68	83	70	30	18	9	9	35
10%	23	45	62	98	144	232	208	118	59	30	16	13	91
25%	44	61	111	183	277	382	342	258	109	42	22	18	142
50%	67	109	225	323	478	563	555	717	272	63	40	38	244
75%	108	204	416	677	958	853	901	1,115	1,053	116	58	56	448
90%	143	342	1,128	1,383	1,445	1,581	1,142	1,972	1,934	190	79	74	597
100%	762	1,640	2,663	3,969	5,748	2,450	3,128	3,668	3,835	1,644	117	128	1,244
Mean	82	184	413	574	701	713	680	870	733	150	43	41	312
VA													
0%	10	20	26	42	53	68	83	70	30	18	9	9	35
10%	23	45	62	98	144	232	208	118	59	30	16	13	91
25%	44	61	111	183	277	382	342	258	109	42	22	18	142
50%	67	109	225	323	478	563	555	717	275	63	40	38	244
75%	108	204	416	677	958	853	902	1,115	1,078	116	58	56	453
90%	143	342	1,128	1,383	1,445	1,581	1,153	1,969	1,932	207	79	74	596
100%	763	1,625	2,688	4,037	5,797	2,410	3,144	3,673	3,833	1,645	117	128	1,243
Mean	82	184	415	575	700	712	681	870	731	151	43	41	312
55 w/WSAs													
0%	16	34	34	46	61	68	150	139	41	22	9	14	52
10%	40	55	74	100	175	267	420	305	90	46	27	33	120
25%	59	73	130	198	297	430	576	605	188	59	41	42	198
50%	84	142	237	336	489	606	816	1,047	420	102	57	62	301
75%	124	246	487	685	995	877	1,089	1,507	996	194	82	81	514
90%	162	404	1,129	1,380	1,457	1,581	1,424	2,187	1,519	337	107	99	624
100%	951	1,540	2,656	3,390	5,711	2,432	3,195	3,710	3,264	1,637	206	173	1,264
Mean	108	221	448	580	716	757	900	1,160	705	193	65	64	356

Table H1a2-84. Water Year Average of Monthly Flows (cfs) — Yuba River, South Fork above Confluence with Yuba River (SWRCB S Yuba Inflow)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	70	63	116	139	228	265	225	177	89	45	35	32
D	74	170	240	196	370	491	407	394	196	64	41	35
BN	80	129	230	351	528	585	707	634	466	74	45	36
AN	70	245	442	783	852	972	712	1,127	652	81	35	46
W	101	267	806	1,139	1,243	1,093	1,096	1,639	1,669	342	50	51
All	82	183	414	573	700	713	681	871	732	149	43	41
2008-2009 BiOps												
C	70	63	116	139	228	265	225	177	89	45	35	32
D	74	170	240	196	370	491	407	394	196	64	41	35
BN	80	129	230	351	528	585	707	634	463	74	45	36
AN	70	246	442	786	852	972	712	1,124	657	81	35	46
W	101	267	803	1,141	1,239	1,093	1,098	1,639	1,669	347	50	51
All	82	183	413	574	699	713	682	871	732	151	43	41
2019 BiOps												
C	70	63	116	139	228	265	225	177	89	45	35	32
D	74	170	240	196	370	491	407	394	196	64	41	35
BN	80	129	230	351	528	585	705	634	462	74	45	36
AN	70	249	442	788	852	972	712	1,122	653	81	35	46
W	101	267	804	1,139	1,245	1,093	1,094	1,639	1,673	343	50	51
All	82	184	413	574	701	713	680	870	733	150	43	41
VA												
C	70	63	116	139	228	265	225	177	89	45	35	32
D	74	170	240	196	370	491	407	394	196	64	41	35
BN	80	129	230	351	528	585	706	634	466	74	45	36
AN	70	248	443	782	858	972	712	1,128	658	81	35	46
W	101	267	809	1,143	1,240	1,089	1,098	1,635	1,662	346	50	51
All	82	184	415	575	700	712	681	870	731	151	43	41
55 w/WSAs												
C	88	80	125	144	238	308	385	358	152	61	41	40
D	88	189	258	204	393	531	641	689	270	76	47	51
BN	94	162	235	374	548	650	969	976	502	109	64	61
AN	99	277	469	806	877	1,000	960	1,395	693	145	61	68
W	146	334	884	1,129	1,249	1,132	1,295	1,956	1,454	421	94	87
All	108	221	448	580	716	757	900	1,160	705	193	65	64

H1a2.2.43 Yuba River below Englebright Reservoir (SWRCB Englebright)

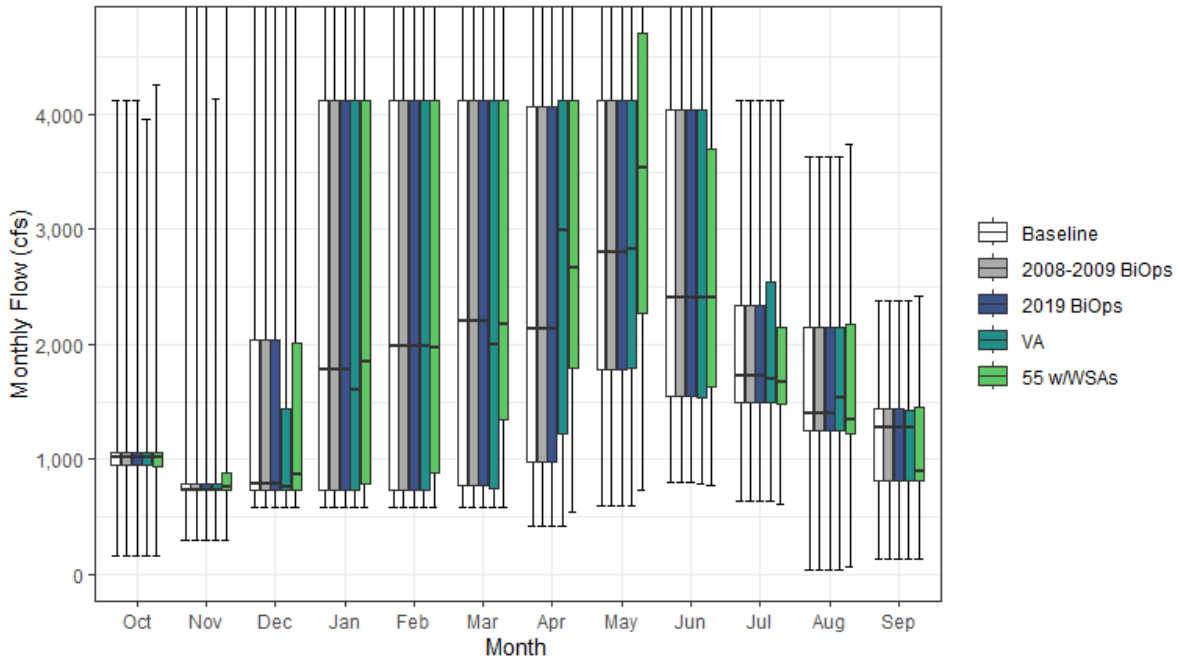

Figure H1a2-43. Yuba River Streamflow below Englebright Reservoir Monthly Boxplot (cfs)

Table H1a2-85. Cumulative Distribution of Monthly Flow (cfs) — Yuba River below Englebright Reservoir (SWRCB Englebright)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	156	295	580	580	580	580	412	593	804	640	41	133	424
10%	903	730	731	731	731	731	865	1,660	1,313	1,404	1,167	742	744
25%	954	731	731	731	731	769	976	1,787	1,554	1,501	1,244	818	904
50%	1,019	731	780	1,778	1,988	2,204	2,137	2,807	2,411	1,724	1,405	1,270	1,395
75%	1,062	792	2,038	4,121	4,121	4,129	4,068	4,120	4,045	2,337	2,151	1,435	2,296
90%	1,100	908	4,121	5,566	5,654	6,618	4,999	6,504	5,366	3,269	2,254	1,552	2,966
100%	4,120	5,034	15,018	20,108	22,897	13,509	10,513	9,628	9,922	4,120	3,630	2,378	4,502
Mean	1,026	934	1,998	2,976	3,027	3,072	2,624	3,389	2,979	2,067	1,705	1,161	1,626
2008-2009 BiOps													
0%	156	295	580	580	580	580	412	593	804	640	41	133	424
10%	903	730	730	731	731	731	864	1,660	1,313	1,404	1,167	742	744
25%	954	731	731	731	731	769	976	1,787	1,554	1,501	1,244	818	904
50%	1,019	731	780	1,780	1,988	2,204	2,137	2,807	2,411	1,724	1,404	1,270	1,395
75%	1,062	792	2,038	4,121	4,121	4,129	4,068	4,120	4,045	2,337	2,151	1,435	2,294
90%	1,100	908	4,121	5,567	5,654	6,618	4,999	6,501	5,407	3,274	2,254	1,552	2,965
100%	4,120	5,038	15,007	20,140	22,876	13,590	10,548	9,670	9,922	4,120	3,630	2,378	4,506
Mean	1,026	934	1,997	2,977	3,027	3,072	2,624	3,389	2,979	2,068	1,704	1,162	1,626
2019 BiOps													
0%	156	295	580	580	580	580	412	593	804	640	41	133	424
10%	903	730	731	731	731	731	864	1,660	1,313	1,404	1,167	742	744
25%	954	731	731	731	731	769	976	1,787	1,554	1,501	1,244	818	904
50%	1,019	731	780	1,779	1,988	2,204	2,137	2,807	2,411	1,724	1,398	1,270	1,395
75%	1,062	792	2,038	4,121	4,121	4,129	4,068	4,120	4,044	2,337	2,151	1,435	2,294
90%	1,100	908	4,121	5,566	5,654	6,618	4,999	6,501	5,366	3,272	2,254	1,552	2,966
100%	4,120	5,079	14,991	20,106	22,873	13,509	10,510	9,629	9,922	4,120	3,630	2,378	4,505
Mean	1,026	934	1,997	2,976	3,028	3,072	2,623	3,388	2,980	2,068	1,704	1,161	1,626
VA													
0%	156	295	580	580	580	580	412	593	785	640	41	133	424
10%	903	730	730	731	731	731	824	1,562	1,294	1,385	1,132	736	717
25%	945	731	731	731	731	744	1,226	1,790	1,536	1,489	1,254	818	930
50%	1,018	731	763	1,602	1,983	1,999	2,991	2,835	2,402	1,699	1,529	1,271	1,419
75%	1,062	789	1,437	4,121	4,122	4,129	4,121	4,120	4,043	2,550	2,145	1,433	2,292
90%	1,100	886	4,121	5,359	5,654	6,618	4,999	6,077	5,363	3,312	2,272	1,558	2,921
100%	3,955	4,141	14,123	20,174	22,922	13,590	10,479	9,684	9,920	4,120	3,630	2,379	4,435
Mean	1,022	912	1,874	2,852	2,988	3,046	2,989	3,428	2,945	2,049	1,708	1,164	1,626
55 w/WSAs													
0%	156	295	580	581	580	581	538	725	771	609	65	133	420
10%	903	730	730	731	731	855	1,241	1,560	1,206	1,341	1,115	755	785
25%	939	731	731	780	876	1,343	1,800	2,275	1,628	1,477	1,219	817	999
50%	1,019	757	870	1,843	1,975	2,176	2,672	3,533	2,408	1,675	1,338	896	1,392
75%	1,065	881	2,017	4,121	4,121	4,122	4,121	4,709	3,700	2,146	2,173	1,457	2,351
90%	1,107	1,520	4,121	5,359	5,629	6,458	4,999	6,701	4,859	3,357	2,291	1,586	2,975
100%	4,265	6,575	13,250	19,527	22,836	13,509	10,789	10,103	8,653	4,121	3,739	2,420	4,542
Mean	1,028	1,071	1,963	2,923	3,042	3,223	3,054	3,864	2,843	1,952	1,631	1,137	1,672

Table H1a2-86. Water Year Average of Monthly Flows (cfs) — Yuba River below Englebright Reservoir (SWRCB Englebright)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	996	764	766	802	753	754	789	1,407	1,237	1,272	996	723
D	1,007	824	953	1,212	1,146	1,475	1,382	2,101	1,823	1,601	1,355	956
BN	1,010	784	1,074	1,934	2,111	2,030	2,566	3,008	2,608	1,877	1,689	1,150
AN	942	1,065	1,963	3,276	3,458	4,514	2,996	3,738	2,990	2,058	1,794	1,317
W	1,101	1,147	4,021	5,968	6,027	5,563	4,401	5,492	4,988	2,957	2,313	1,489
All	1,026	934	1,998	2,976	3,027	3,072	2,624	3,389	2,979	2,067	1,705	1,161
2008-2009 BiOps												
C	996	764	766	802	753	754	789	1,407	1,237	1,272	996	724
D	1,007	824	953	1,213	1,146	1,475	1,382	2,101	1,823	1,601	1,356	956
BN	1,010	784	1,074	1,934	2,111	2,030	2,566	3,008	2,605	1,877	1,689	1,150
AN	942	1,066	1,963	3,279	3,458	4,514	2,996	3,736	2,994	2,059	1,794	1,317
W	1,101	1,148	4,018	5,969	6,025	5,563	4,403	5,493	4,987	2,960	2,311	1,493
All	1,026	934	1,997	2,977	3,027	3,072	2,624	3,389	2,979	2,068	1,704	1,162
2019 BiOps												
C	996	764	766	802	753	754	789	1,407	1,237	1,272	996	724
D	1,007	824	953	1,212	1,146	1,475	1,382	2,101	1,823	1,601	1,355	956
BN	1,010	784	1,074	1,934	2,111	2,030	2,566	3,008	2,604	1,877	1,689	1,150
AN	942	1,069	1,963	3,281	3,458	4,514	2,996	3,735	2,990	2,059	1,793	1,317
W	1,101	1,148	4,018	5,967	6,029	5,563	4,399	5,491	4,992	2,958	2,312	1,490
All	1,026	934	1,997	2,976	3,028	3,072	2,623	3,388	2,980	2,068	1,704	1,161
VA												
C	996	764	765	771	742	742	754	1,369	1,191	1,238	966	712
D	998	824	936	1,083	1,064	1,434	1,948	2,109	1,752	1,538	1,428	973
BN	1,010	784	1,007	1,742	2,056	2,006	3,379	3,169	2,541	1,827	1,646	1,148
AN	942	991	1,768	3,229	3,456	4,438	3,722	3,849	3,021	2,144	1,800	1,317
W	1,092	1,104	3,744	5,811	6,001	5,559	4,403	5,490	4,981	2,959	2,311	1,493
All	1,022	912	1,874	2,852	2,988	3,046	2,989	3,428	2,945	2,049	1,708	1,164
55 w/WSAs												
C	967	766	802	824	838	983	1,176	1,476	1,221	1,171	957	723
D	999	885	1,027	1,150	1,295	1,760	2,052	2,494	1,762	1,514	1,259	853
BN	1,004	827	1,103	1,940	2,068	2,310	2,987	3,486	2,507	1,719	1,587	1,154
AN	923	1,265	1,890	3,411	3,440	4,360	3,363	4,424	2,894	1,911	1,680	1,309
W	1,139	1,446	3,844	5,770	5,956	5,614	4,708	6,156	4,694	2,853	2,272	1,486
All	1,028	1,071	1,963	2,923	3,042	3,223	3,054	3,864	2,843	1,952	1,631	1,137

H1a2.2.44 Yuba River above Confluence with Feather River (SWRCB Yuba River)

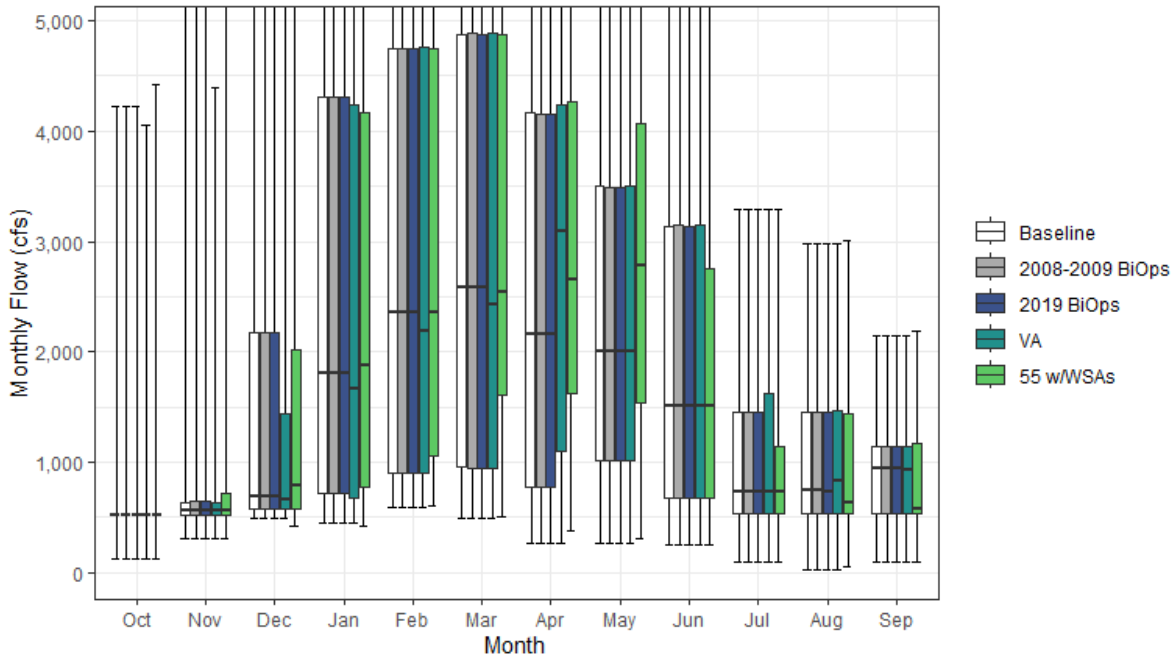

Figure H1a2-44. Yuba River Streamflow above Confluence with Feather River Monthly Boxplot (cfs)

Table H1a2-87. Cumulative Distribution of Monthly Flow (cfs) — Yuba River above Confluence with Feather River (SWRCB Yuba River)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	124	312	484	452	587	495	269	270	250	99	27	99	247
10%	517	523	524	618	781	799	715	909	519	525	524	524	465
25%	520	524	569	718	901	953	772	1,018	673	528	528	528	638
50%	523	557	688	1,801	2,358	2,581	2,163	2,006	1,513	727	740	946	1,192
75%	524	636	2,166	4,309	4,753	4,878	4,166	3,501	3,140	1,454	1,459	1,147	2,176
90%	524	808	4,540	6,366	6,824	7,738	5,518	5,884	4,469	2,295	1,628	1,280	2,882
100%	4,222	5,193	15,465	22,405	25,564	15,576	11,592	9,150	9,089	3,294	2,976	2,144	4,556
Mean	547	779	2,001	3,180	3,535	3,527	2,677	2,662	2,108	1,127	1,035	874	1,447
2008-2009 BiOps													
0%	124	312	484	452	590	495	269	270	250	99	27	99	247
10%	517	523	524	617	781	802	715	909	519	525	524	525	465
25%	523	523	569	710	901	948	772	1,015	673	528	528	528	638
50%	523	557	686	1,802	2,357	2,580	2,163	2,007	1,513	727	739	946	1,192
75%	524	640	2,166	4,309	4,753	4,887	4,149	3,483	3,145	1,454	1,459	1,147	2,174
90%	524	806	4,540	6,368	6,824	7,726	5,516	5,852	4,509	2,300	1,628	1,280	2,879
100%	4,222	5,196	15,454	22,436	25,543	15,675	11,627	9,191	9,089	3,294	2,976	2,144	4,560
Mean	547	779	2,000	3,180	3,534	3,528	2,676	2,660	2,107	1,129	1,034	876	1,446
2019 BiOps													
0%	124	312	484	452	587	495	269	270	250	99	27	99	247
10%	517	523	524	618	780	799	715	910	519	524	524	525	465
25%	520	524	569	710	901	949	772	1,018	673	528	528	528	638
50%	523	557	688	1,801	2,357	2,581	2,159	2,007	1,513	727	725	946	1,193
75%	524	640	2,166	4,309	4,753	4,878	4,149	3,491	3,140	1,454	1,459	1,147	2,173
90%	524	802	4,540	6,366	6,824	7,721	5,516	5,867	4,468	2,296	1,628	1,280	2,879
100%	4,222	5,237	15,438	22,402	25,540	15,576	11,589	9,151	9,089	3,294	2,982	2,144	4,559
Mean	547	779	2,000	3,179	3,536	3,527	2,674	2,659	2,108	1,128	1,034	874	1,446
VA													
0%	124	312	484	450	587	493	269	270	250	99	27	99	247
10%	498	523	524	612	781	781	713	770	425	428	428	441	447
25%	520	523	569	673	896	939	1,095	1,018	673	528	528	527	659
50%	523	556	664	1,660	2,193	2,427	3,087	2,007	1,512	727	825	924	1,193
75%	524	634	1,433	4,241	4,761	4,887	4,240	3,502	3,143	1,617	1,460	1,147	2,155
90%	524	745	4,468	6,311	6,824	7,722	5,516	5,586	4,465	2,375	1,645	1,299	2,860
100%	4,059	4,394	14,582	22,469	25,588	15,675	11,540	9,205	9,087	3,294	2,976	2,145	4,489
Mean	543	756	1,878	3,057	3,497	3,500	3,035	2,704	2,076	1,111	1,039	877	1,448
55 w/WSAs													
0%	124	312	424	426	601	504	373	307	250	99	51	99	250
10%	425	523	524	623	771	945	1,128	890	425	428	428	428	529
25%	520	524	570	771	1,054	1,601	1,619	1,539	674	528	527	527	749
50%	523	557	793	1,875	2,353	2,545	2,653	2,784	1,513	727	627	572	1,189
75%	524	718	2,012	4,166	4,753	4,870	4,263	4,069	2,750	1,140	1,432	1,175	2,234
90%	524	1,444	4,541	6,166	6,834	7,412	5,528	5,981	3,968	2,360	1,648	1,328	2,897
100%	4,418	6,720	13,721	21,829	25,504	15,576	11,815	9,347	7,835	3,294	3,008	2,186	4,591
Mean	557	910	1,966	3,127	3,547	3,675	3,112	3,158	1,986	1,027	964	843	1,496

Table H1a2-88. Water Year Average of Monthly Flows (cfs) — Yuba River above Confluence with Feather River (SWRCB Yuba River)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	506	535	628	724	876	841	620	705	459	402	398	453
D	506	644	886	1,145	1,336	1,718	1,267	1,336	918	650	666	660
BN	510	608	973	1,953	2,507	2,390	2,580	2,268	1,721	904	998	853
AN	489	951	1,911	3,585	4,083	5,145	3,101	3,017	2,116	1,095	1,139	1,031
W	646	1,047	4,236	6,596	6,996	6,359	4,700	4,785	4,102	2,018	1,626	1,207
All	547	779	2,001	3,180	3,535	3,527	2,677	2,662	2,108	1,127	1,035	874
2008-2009 BiOps												
C	506	535	628	724	876	841	620	705	459	402	398	453
D	506	643	887	1,143	1,337	1,723	1,267	1,337	918	650	666	660
BN	510	609	972	1,952	2,508	2,386	2,575	2,265	1,718	904	998	853
AN	490	950	1,911	3,588	4,084	5,148	3,087	3,008	2,119	1,096	1,139	1,031
W	646	1,047	4,234	6,597	6,993	6,358	4,706	4,784	4,101	2,022	1,624	1,212
All	547	779	2,000	3,180	3,534	3,528	2,676	2,660	2,107	1,129	1,034	876
2019 BiOps												
C	506	534	628	726	875	841	621	705	459	403	398	453
D	506	644	886	1,143	1,336	1,720	1,267	1,339	918	650	666	660
BN	510	608	973	1,950	2,509	2,389	2,575	2,267	1,717	904	998	853
AN	489	953	1,913	3,590	4,084	5,143	3,085	3,005	2,115	1,096	1,137	1,031
W	646	1,047	4,233	6,595	6,998	6,358	4,698	4,779	4,105	2,020	1,626	1,207
All	547	779	2,000	3,179	3,536	3,527	2,674	2,659	2,108	1,128	1,034	874
VA												
C	506	534	628	694	866	825	591	680	424	381	376	444
D	502	644	870	1,016	1,256	1,675	1,823	1,346	848	587	738	678
BN	510	607	905	1,760	2,453	2,363	3,383	2,429	1,655	854	956	851
AN	489	876	1,719	3,539	4,081	5,075	3,805	3,128	2,147	1,180	1,144	1,031
W	637	1,004	3,965	6,442	6,970	6,355	4,699	4,783	4,095	2,020	1,624	1,211
All	543	756	1,878	3,057	3,497	3,500	3,035	2,704	2,076	1,111	1,039	877
55 w/WSAs												
C	505	524	660	746	959	1,072	1,027	886	504	376	373	422
D	501	699	960	1,085	1,482	1,999	1,940	1,749	870	572	571	549
BN	512	646	1,002	1,956	2,462	2,663	3,001	2,740	1,622	747	897	856
AN	484	1,145	1,838	3,719	4,065	4,991	3,469	3,701	2,020	949	1,026	1,023
W	683	1,345	4,063	6,398	6,922	6,408	5,010	5,450	3,810	1,915	1,585	1,204
All	557	910	1,966	3,127	3,547	3,675	3,112	3,158	1,986	1,027	964	843

H1a2.2.45 Total Delta Inflow

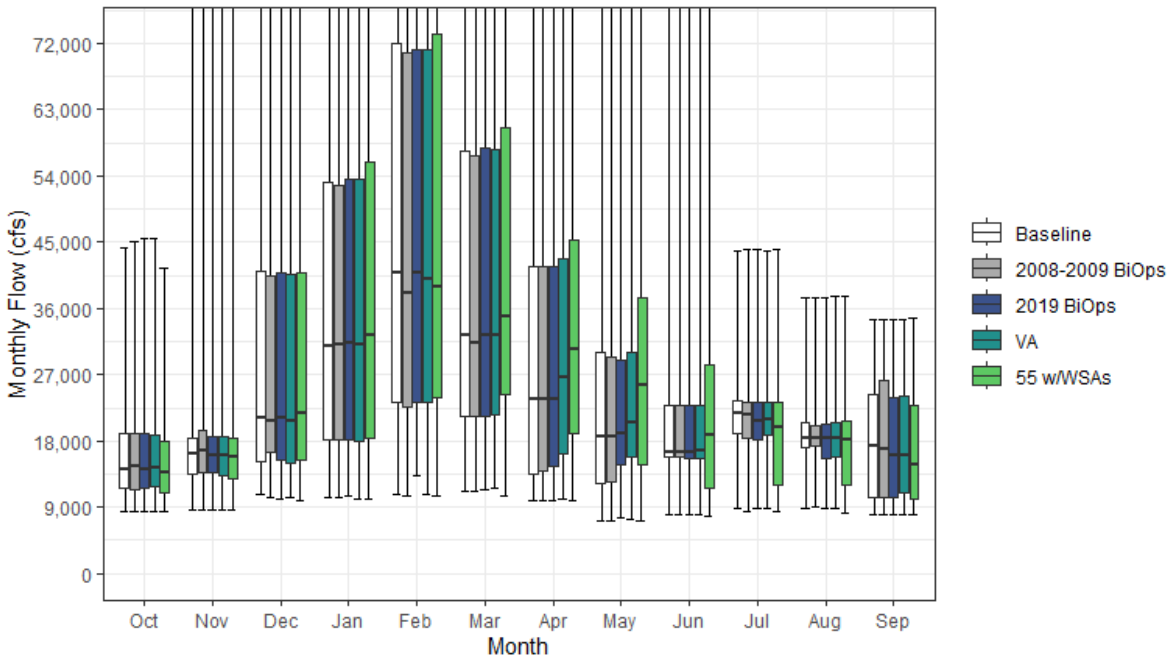

Figure H1a2-45. Total Delta Inflow Monthly Boxplot (cfs)

Table H1a2-89. Cumulative Distribution of Monthly Flow (cfs) — Total Delta Inflow

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	8,449	8,698	10,656	10,257	10,723	11,231	9,919	7,201	7,988	8,754	8,811	7,991	7,497
10%	9,351	11,013	14,240	14,586	16,218	15,538	11,881	10,752	12,317	10,047	11,254	8,817	10,268
25%	11,588	13,485	15,111	18,071	23,231	21,250	13,435	12,247	15,914	19,041	17,100	10,382	12,742
50%	14,145	16,154	21,059	30,915	40,827	32,373	23,761	18,681	16,527	21,833	18,399	17,299	16,953
75%	18,939	18,292	40,954	53,219	71,924	57,327	41,669	30,093	22,865	23,421	20,409	24,277	28,742
90%	21,477	26,830	74,924	103,296	132,470	98,037	72,132	55,184	41,408	25,810	25,117	26,014	38,848
100%	44,167	78,537	158,487	260,670	266,590	244,758	154,302	84,626	81,888	43,865	37,468	34,419	63,400
Mean	15,761	18,571	34,150	47,197	58,758	47,554	33,370	25,403	22,217	20,693	18,361	17,734	21,617
2008-2009 BiOps													
0%	8,464	8,686	10,411	10,390	10,563	11,121	9,918	7,149	7,984	8,517	8,994	7,994	7,551
10%	9,318	10,542	14,221	14,449	16,402	15,502	11,993	10,763	12,710	10,212	11,178	8,638	10,245
25%	11,415	13,728	16,447	18,194	22,609	21,268	13,835	12,410	15,897	18,441	17,250	10,329	12,648
50%	14,527	16,619	20,623	31,048	38,010	31,369	23,761	18,682	16,527	21,452	18,341	16,826	16,975
75%	18,935	19,453	40,374	52,625	70,717	56,676	41,675	29,482	22,806	23,308	20,041	26,261	28,845
90%	21,480	26,433	74,989	103,638	130,414	97,840	72,105	55,175	41,441	25,019	25,093	28,920	39,059
100%	45,035	78,561	158,489	260,669	266,591	244,694	154,295	84,665	81,888	43,927	37,467	34,393	63,398
Mean	15,803	18,920	34,005	46,901	58,328	47,447	33,497	25,384	22,265	20,414	18,425	18,542	21,626
2019 BiOps													
0%	8,452	8,581	10,044	10,465	13,300	11,320	9,920	7,498	7,982	8,755	8,812	7,993	7,597
10%	9,341	10,948	13,691	14,588	16,188	15,566	12,380	11,540	12,052	9,797	11,194	8,817	10,248
25%	11,549	13,782	15,452	18,252	23,225	21,262	14,620	14,669	15,617	18,220	15,558	10,334	12,754
50%	14,219	16,121	21,062	31,301	40,770	32,268	23,775	19,081	16,504	20,784	18,285	16,037	16,777
75%	18,973	18,483	40,904	53,492	71,190	57,876	41,669	28,901	22,870	23,295	20,190	23,977	28,610
90%	21,436	26,612	76,958	104,513	133,112	97,961	72,105	55,175	41,408	26,224	25,138	25,549	38,692
100%	45,545	78,538	158,487	260,670	266,591	244,758	154,211	84,626	81,888	43,927	37,486	34,419	63,404
Mean	15,704	18,600	34,217	47,252	58,772	47,559	33,720	26,192	22,142	20,229	18,124	17,317	21,620
VA													
0%	8,454	8,665	10,302	10,131	10,717	11,513	10,046	7,373	7,979	8,748	8,787	7,990	7,668
10%	9,396	10,584	13,527	14,189	15,716	15,360	12,217	11,151	11,617	9,985	11,171	8,784	10,242
25%	11,747	13,391	15,090	17,926	23,225	21,536	16,241	15,840	15,591	18,791	15,735	11,062	12,957
50%	14,253	16,141	20,613	31,001	40,012	32,467	26,567	20,464	16,677	20,854	18,399	16,038	17,173
75%	18,883	18,580	40,654	53,497	71,179	57,566	42,737	29,985	22,890	23,266	20,469	24,115	28,640
90%	21,531	26,672	74,745	103,302	133,077	97,788	72,122	55,175	41,487	24,506	25,043	25,849	38,685
100%	45,548	78,630	158,499	260,736	266,297	244,758	154,355	84,705	81,888	43,842	37,662	34,421	63,406
Mean	15,760	18,501	33,781	47,113	58,615	47,679	34,808	26,852	22,110	20,310	18,281	17,350	21,701
55 w/WSAs													
0%	8,513	8,579	9,872	10,150	10,617	10,616	9,898	7,243	7,771	8,489	8,201	7,947	7,142
10%	9,131	10,364	12,567	14,472	17,239	17,036	12,358	10,969	11,019	8,813	10,881	9,081	10,172
25%	10,943	12,827	15,407	18,279	23,977	24,230	18,958	14,729	11,572	11,977	12,024	10,167	12,753
50%	13,622	15,934	21,715	32,274	38,907	34,955	30,431	25,638	18,786	19,757	18,250	14,866	17,212
75%	17,896	18,301	40,908	55,899	73,262	60,489	45,205	37,455	28,377	23,190	20,724	22,871	29,199
90%	21,085	24,929	72,844	104,443	128,366	92,045	73,689	55,704	41,323	25,701	23,895	24,124	38,926
100%	41,440	79,176	156,828	254,917	259,985	244,744	152,134	84,607	80,630	44,019	37,707	34,744	63,459
Mean	15,050	17,889	33,754	47,620	58,688	48,737	37,288	29,315	22,772	18,288	17,213	16,230	21,802

Table H1a2-90. Water Year Average of Monthly Flows (cfs) — Total Delta Inflow

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	12,614	13,091	17,577	18,359	20,139	16,942	11,403	9,781	11,374	10,478	10,700	8,838
D	14,700	15,788	22,377	19,979	27,756	25,191	15,537	13,373	15,926	18,342	16,316	11,525
BN	15,808	16,405	22,874	30,305	44,024	33,298	25,973	18,456	17,448	21,776	18,717	16,274
AN	14,780	19,833	31,057	56,184	73,304	58,297	34,165	28,317	20,657	24,630	19,250	25,226
W	18,579	24,401	60,001	89,640	105,604	85,012	62,529	45,790	36,258	25,606	23,367	24,960
All	15,761	18,571	34,150	47,197	58,758	47,554	33,370	25,403	22,217	20,693	18,361	17,734
2008-2009 BiOps												
C	12,636	13,071	17,612	18,230	20,035	16,908	11,471	9,854	11,495	10,582	10,567	8,615
D	14,762	16,060	22,734	19,968	27,369	25,036	15,894	13,432	16,029	17,758	17,025	11,458
BN	15,494	16,739	23,168	29,980	43,553	33,036	26,035	18,273	17,468	21,201	18,366	16,261
AN	14,629	20,957	31,266	55,451	71,452	58,295	34,300	28,266	20,668	24,139	19,152	24,155
W	18,920	24,704	58,972	89,240	105,562	84,956	62,557	45,781	36,259	25,616	23,390	28,230
All	15,803	18,920	34,005	46,901	58,328	47,447	33,497	25,384	22,265	20,414	18,425	18,542
2019 BiOps												
C	12,562	13,032	17,204	18,130	20,270	16,933	11,811	10,711	11,174	10,306	10,607	8,534
D	14,661	15,745	22,255	20,024	27,725	25,187	16,513	15,292	15,888	17,700	15,864	11,362
BN	15,891	16,575	23,294	30,577	44,024	33,221	26,171	19,498	17,304	21,270	18,265	15,104
AN	14,810	19,808	30,922	56,405	73,275	58,237	34,399	28,402	20,453	24,225	19,220	24,635
W	18,385	24,461	60,300	89,649	105,612	85,108	62,533	45,797	36,319	25,118	23,262	24,842
All	15,704	18,600	34,217	47,252	58,772	47,559	33,720	26,192	22,142	20,229	18,124	17,317
VA												
C	12,719	12,922	16,937	18,046	20,108	16,847	11,715	10,495	10,962	10,484	10,649	8,594
D	14,659	15,811	22,256	19,835	27,602	25,359	17,984	16,330	16,154	18,198	16,489	11,589
BN	16,015	16,472	22,537	30,222	43,696	33,491	28,384	21,063	17,286	20,964	18,199	14,838
AN	14,734	19,467	30,611	56,298	73,337	58,645	37,003	29,912	20,022	24,187	19,352	24,847
W	18,437	24,348	59,606	89,644	105,453	85,091	62,651	45,733	36,315	25,133	23,289	24,836
All	15,760	18,501	33,781	47,113	58,615	47,679	34,808	26,852	22,110	20,310	18,281	17,350
55 w/WSAs												
C	12,179	12,091	16,567	17,970	21,031	18,180	12,078	10,289	10,039	8,822	10,070	8,671
D	13,526	15,335	22,787	20,487	29,177	28,379	21,011	16,652	12,966	12,557	13,414	11,137
BN	15,362	15,681	23,085	30,912	44,950	36,283	32,396	24,429	18,495	18,646	16,283	13,097
AN	13,806	17,931	30,928	58,026	73,570	58,561	38,696	34,438	24,203	21,679	19,101	21,926
W	18,000	24,237	58,851	89,750	103,160	83,922	65,205	49,795	38,891	25,957	23,641	23,703
All	15,050	17,889	33,754	47,620	58,688	48,737	37,288	29,315	22,772	18,288	17,213	16,230

H1a2.2.46 Delta Outflow (SWRCB Delta)

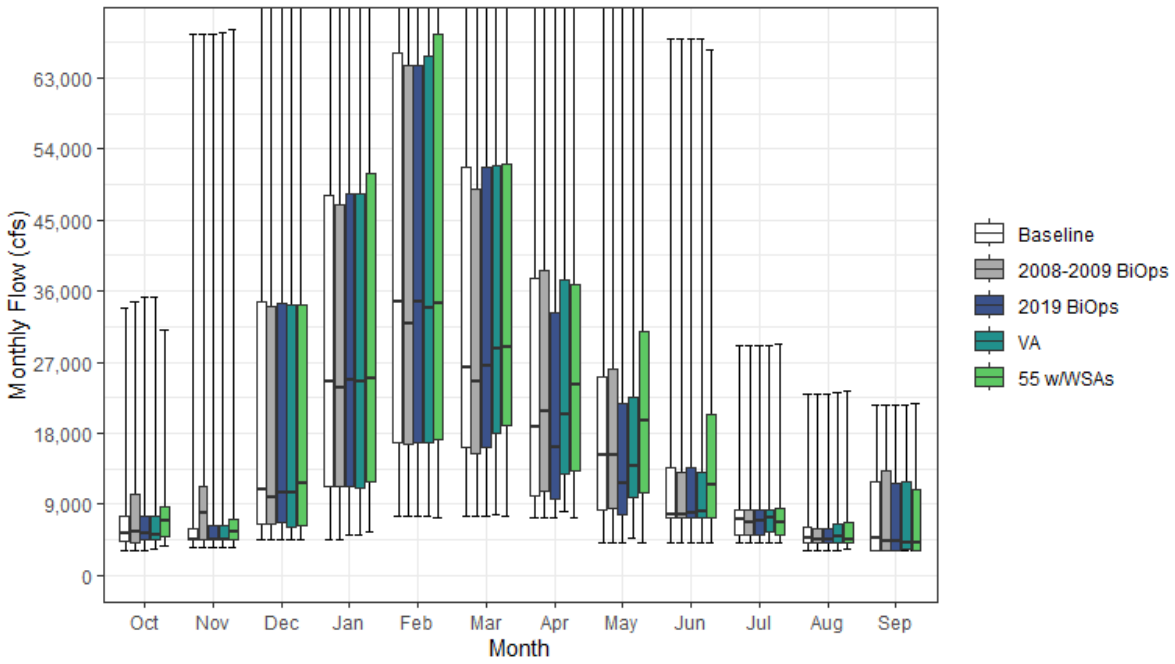

Figure H1a2-46. Delta Outflow, including Postprocessed VA Flows Monthly Boxplot (cfs)

Table H1a2-91. Cumulative Distribution of Monthly Flow (cfs) — Delta Outflow (SWRCB Delta)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	3,094	3,508	4,507	4,518	7,406	7,518	7,208	4,163	4,160	4,186	3,164	3,068	4,081
10%	4,021	3,558	4,567	7,647	9,527	10,094	8,388	7,275	7,255	4,215	3,678	3,096	5,600
25%	4,267	4,517	6,568	11,283	16,852	16,163	10,117	8,282	7,294	5,191	4,181	3,123	7,103
50%	5,295	4,559	10,774	24,464	34,686	26,334	18,759	15,145	7,686	7,130	4,740	4,697	10,854
75%	7,398	5,838	34,578	48,138	66,161	51,786	37,709	25,102	13,595	8,232	6,132	11,880	21,790
90%	9,042	14,873	67,829	96,697	126,929	90,430	61,203	45,246	28,685	10,951	10,992	12,917	31,162
100%	33,783	68,575	149,425	252,997	259,252	239,630	146,210	71,971	67,870	29,042	23,016	21,506	55,256
Mean	6,523	8,214	25,355	40,501	52,240	41,497	29,001	20,433	13,372	7,727	6,004	7,292	15,472
2008-2009 BiOps													
0%	3,094	3,508	4,519	4,518	7,430	7,518	7,208	4,163	4,160	4,186	3,178	3,068	4,094
10%	4,021	3,558	4,674	7,294	9,582	9,843	8,834	7,275	7,255	4,215	3,678	3,095	5,622
25%	4,197	4,520	6,490	11,178	16,517	15,378	10,617	8,388	7,296	5,191	4,165	3,111	7,104
50%	5,517	7,806	9,934	23,654	31,785	24,562	20,711	15,219	7,686	6,727	4,487	4,241	10,531
75%	10,160	11,173	33,958	46,865	64,506	48,996	38,675	26,204	13,037	8,230	5,981	13,139	22,108
90%	12,101	15,397	66,642	97,102	124,864	89,618	67,406	51,141	28,585	10,644	10,834	16,349	32,174
100%	34,651	68,599	149,425	252,997	259,252	237,432	146,193	78,589	67,870	29,104	23,014	21,480	55,049
Mean	7,281	10,071	25,059	40,232	51,809	40,542	30,222	21,272	13,243	7,577	5,923	8,181	15,666
2019 BiOps													
0%	3,094	3,508	4,507	5,008	7,407	7,518	7,208	4,163	4,160	4,186	3,177	3,068	4,222
10%	4,028	3,558	4,567	7,567	10,899	10,090	8,115	7,287	7,255	4,215	3,675	3,097	5,553
25%	4,402	4,517	6,618	11,260	16,852	16,176	9,689	7,709	7,276	5,191	4,162	3,111	6,916
50%	5,194	4,550	10,392	24,630	34,629	26,416	16,298	11,610	7,811	6,967	4,487	4,316	10,447
75%	7,394	6,189	34,528	48,411	64,668	51,609	33,251	21,705	13,670	8,234	5,975	11,634	21,279
90%	9,011	14,703	68,634	97,977	126,024	90,355	60,859	45,246	28,685	11,797	10,992	12,877	30,936
100%	35,161	68,576	149,425	252,997	259,252	239,629	146,112	71,971	67,870	29,104	23,034	21,506	55,306
Mean	6,576	8,241	25,421	40,580	52,305	41,495	26,838	18,680	13,419	7,764	5,884	7,215	15,246
VA													
0%	3,405	3,508	4,507	5,008	7,408	7,724	8,007	4,692	4,160	4,186	3,164	3,068	4,283
10%	4,025	3,558	4,567	7,187	9,689	10,703	9,615	7,803	7,257	4,215	4,032	3,109	5,617
25%	4,435	4,516	6,136	11,135	16,829	18,063	12,911	9,896	7,313	5,548	4,191	3,296	7,362
50%	5,122	4,547	10,383	24,554	33,872	28,608	20,455	13,865	8,123	7,323	4,815	4,126	11,106
75%	7,540	6,291	34,278	48,416	65,729	51,923	37,513	22,555	13,060	8,238	6,479	11,752	21,898
90%	9,106	14,623	67,650	97,263	125,864	90,203	62,389	46,246	28,706	10,482	10,898	13,209	31,157
100%	35,164	68,668	149,459	253,072	259,255	239,629	147,744	73,055	67,870	29,019	23,209	21,508	55,458
Mean	6,583	8,180	25,052	40,502	52,202	42,618	30,093	20,306	13,473	7,812	6,101	7,246	15,593
55 w/WSAs													
0%	3,649	3,500	4,500	5,589	7,226	7,506	7,202	4,159	4,147	4,175	3,341	3,057	4,118
10%	4,410	3,763	5,106	7,751	11,044	10,980	9,079	7,484	7,245	4,200	3,652	3,089	5,852
25%	4,897	4,509	6,252	11,849	17,203	18,947	13,271	10,519	7,309	5,188	4,074	3,101	7,647
50%	6,919	5,465	11,727	24,896	34,397	28,932	24,055	19,511	11,463	6,718	4,590	4,171	11,193
75%	8,574	7,084	34,226	50,834	68,537	52,126	36,818	30,857	20,367	8,488	6,705	10,842	22,456
90%	9,626	14,148	65,613	97,628	119,757	83,895	62,840	46,414	29,277	10,650	9,787	11,558	31,700
100%	31,146	69,213	147,766	247,245	252,708	237,806	144,049	71,953	66,611	29,196	23,254	21,831	55,154
Mean	7,306	8,575	25,231	41,152	52,189	42,604	31,276	23,324	15,374	7,693	5,917	6,813	16,036

Table H1a2-92. Water Year Average of Monthly Flows (cfs) — Delta Outflow (SWRCB Delta)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	5,237	4,389	9,657	12,197	14,358	12,045	8,411	6,219	6,277	4,340	4,018	3,378
D	5,640	5,733	13,276	12,705	21,842	20,244	12,345	9,494	7,707	5,199	4,588	3,254
BN	6,555	6,121	13,520	23,618	37,646	27,623	23,144	14,753	8,525	7,282	4,838	4,363
AN	5,691	9,633	21,493	50,398	66,860	52,085	30,323	24,675	11,037	9,900	5,099	12,502
W	8,168	12,832	51,624	82,713	98,133	77,344	55,377	37,935	25,313	10,801	9,201	12,111
All	6,523	8,214	25,355	40,501	52,240	41,497	29,001	20,433	13,372	7,727	6,004	7,292
2008-2009 BiOps												
C	5,167	5,365	9,826	12,046	14,216	12,034	8,482	6,249	6,272	4,335	3,930	3,357
D	6,551	7,664	13,177	12,692	21,485	19,177	12,737	9,530	7,714	5,199	4,647	3,299
BN	7,133	8,048	13,714	23,399	37,271	26,183	23,203	14,553	8,462	6,895	4,496	4,147
AN	6,683	11,750	21,272	49,687	65,017	50,903	31,271	24,469	10,913	9,301	4,924	11,373
W	9,275	14,957	50,596	82,338	98,020	76,364	58,665	40,871	24,976	10,790	9,224	15,613
All	7,281	10,071	25,059	40,232	51,809	40,542	30,222	21,272	13,243	7,577	5,923	8,181
2019 BiOps												
C	5,317	4,389	9,414	12,052	14,672	12,022	8,428	6,396	6,246	4,342	3,984	3,329
D	5,743	5,723	13,040	12,749	21,818	20,265	10,944	8,710	7,734	5,198	4,327	3,238
BN	6,554	6,128	14,029	23,951	37,637	27,545	19,160	12,285	8,634	7,358	4,595	4,047
AN	5,721	9,663	21,277	50,619	66,964	51,950	26,277	20,351	11,079	10,320	5,060	12,519
W	8,213	12,912	51,912	82,722	98,159	77,435	53,401	35,924	25,379	10,705	9,184	12,088
All	6,576	8,241	25,421	40,580	52,305	41,495	26,838	18,680	13,419	7,764	5,884	7,215
VA												
C	5,361	4,400	9,193	12,177	14,645	12,135	9,227	6,878	6,234	4,338	4,015	3,359
D	5,721	5,717	13,185	12,578	21,755	22,379	14,994	11,079	8,119	5,557	4,936	3,463
BN	6,604	6,172	13,319	23,706	37,392	30,389	22,825	14,430	8,675	7,314	4,864	3,874
AN	5,683	9,420	20,968	50,512	67,026	52,587	34,612	23,044	10,784	10,130	5,189	12,628
W	8,215	12,780	51,277	82,719	98,010	77,475	55,090	36,861	25,375	10,707	9,215	12,078
All	6,583	8,180	25,052	40,502	52,202	42,618	30,093	20,306	13,473	7,812	6,101	7,246
55 w/WSAs												
C	5,739	4,431	9,136	12,585	15,208	12,898	8,758	7,075	6,216	4,341	4,227	3,218
D	6,530	6,274	13,800	13,520	23,215	23,340	15,545	12,420	8,066	5,192	3,799	3,469
BN	7,076	6,239	14,221	24,381	38,627	30,623	26,904	18,782	11,138	6,712	4,372	3,764
AN	6,750	9,088	21,580	52,268	67,430	52,404	32,394	28,187	14,967	8,514	5,553	11,494
W	9,079	13,747	50,631	82,828	95,652	76,241	57,144	40,917	28,464	11,608	9,496	11,241
All	7,306	8,575	25,231	41,152	52,189	42,604	31,276	23,324	15,374	7,693	5,917	6,813

H1a2.3 Delta Interior Flows

H1a2.3.1 Delta Cross Channel

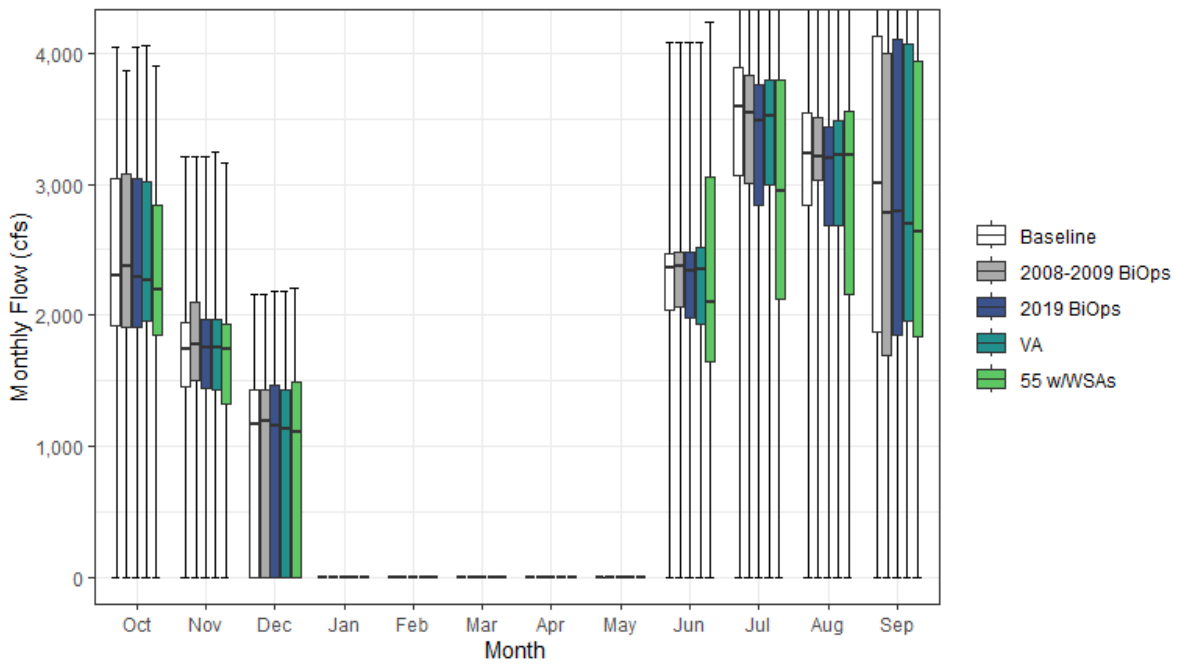

Figure H1a2-47. Delta Cross Channel Monthly Boxplot (cfs)

Table H1a2-93. Cumulative Distribution of Monthly Flow (cfs) — Delta Cross Channel

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	0	0	0	0	0	0	0	0	0	0	0	0	0
10%	1,553	1,046	0	0	0	0	0	0	0	1,827	2,047	1,611	734
25%	1,925	1,456	0	0	0	0	0	0	2,035	3,063	2,837	1,867	936
50%	2,299	1,738	1,172	0	0	0	0	0	2,365	3,590	3,229	3,008	1,051
75%	3,038	1,947	1,428	0	0	0	0	0	2,471	3,890	3,544	4,130	1,134
90%	3,369	2,266	1,784	0	0	0	0	0	3,136	4,301	3,811	4,494	1,207
100%	4,044	3,211	2,164	0	0	0	0	0	4,081	4,895	4,700	4,711	1,358
Mean	2,457	1,634	959	0	0	0	0	0	2,137	3,357	3,095	3,034	1,012
2008-2009 BiOps													
0%	0	0	0	0	0	0	0	0	0	0	0	0	0
10%	1,553	1,102	0	0	0	0	0	0	0	1,880	2,027	0	718
25%	1,907	1,497	0	0	0	0	0	0	2,059	3,011	3,032	1,697	883
50%	2,374	1,779	1,192	0	0	0	0	0	2,373	3,550	3,207	2,780	1,019
75%	3,076	2,104	1,427	0	0	0	0	0	2,479	3,836	3,514	4,005	1,116
90%	3,419	2,589	1,710	0	0	0	0	0	3,141	4,135	3,829	4,481	1,197
100%	3,871	3,210	2,164	0	0	0	0	0	4,087	4,787	4,700	4,846	1,342
Mean	2,464	1,749	971	0	0	0	0	0	2,145	3,308	3,106	2,590	991
2019 BiOps													
0%	0	0	0	0	0	0	0	0	0	0	0	0	0
10%	1,553	1,064	0	0	0	0	0	0	0	1,811	2,037	1,611	737
25%	1,912	1,439	0	0	0	0	0	0	1,980	2,845	2,685	1,854	938
50%	2,288	1,749	1,152	0	0	0	0	0	2,337	3,489	3,198	2,789	1,041
75%	3,040	1,970	1,462	0	0	0	0	0	2,487	3,763	3,441	4,107	1,115
90%	3,380	2,339	1,803	0	0	0	0	0	3,145	4,083	3,811	4,432	1,173
100%	4,053	3,211	2,188	0	0	0	0	0	4,079	4,761	4,553	4,658	1,325
Mean	2,444	1,672	958	0	0	0	0	0	2,124	3,221	3,049	2,957	997
VA													
0%	0	0	0	0	0	0	0	0	0	0	0	0	0
10%	1,569	1,074	0	0	0	0	0	0	0	1,842	2,019	1,612	736
25%	1,961	1,428	0	0	0	0	0	0	1,934	2,997	2,680	1,961	949
50%	2,271	1,756	1,135	0	0	0	0	0	2,355	3,519	3,221	2,701	1,041
75%	3,018	1,973	1,436	0	0	0	0	0	2,517	3,791	3,484	4,070	1,119
90%	3,400	2,344	1,841	0	0	0	0	0	3,140	4,043	3,829	4,463	1,191
100%	4,060	3,241	2,185	0	0	0	0	0	4,088	4,850	4,556	4,682	1,327
Mean	2,454	1,663	966	0	0	0	0	0	2,124	3,287	3,071	2,964	1,003
55 w/WSAs													
0%	0	0	0	0	0	0	0	0	0	0	0	0	0
10%	1,544	1,064	0	0	0	0	0	0	0	1,681	1,939	1,570	685
25%	1,845	1,326	0	0	0	0	0	0	1,649	2,119	2,158	1,839	801
50%	2,191	1,743	1,111	0	0	0	0	0	2,094	2,950	3,218	2,643	964
75%	2,845	1,931	1,491	0	0	0	0	0	3,052	3,799	3,560	3,941	1,111
90%	3,337	2,224	1,780	0	0	0	0	0	3,665	4,068	3,712	4,205	1,200
100%	3,900	3,165	2,201	0	0	0	0	0	4,239	4,694	4,574	4,552	1,366
Mean	2,335	1,641	952	0	0	0	0	0	2,162	2,946	2,906	2,794	954

Table H1a2-94. Water Year Average of Monthly Flows (cfs) — Delta Cross Channel

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	2,110	1,530	1,153	0	0	0	0	0	1,768	1,970	2,018	1,675
D	2,439	1,638	1,323	0	0	0	0	0	2,375	3,304	2,961	2,090
BN	2,575	1,858	1,085	0	0	0	0	0	2,440	3,823	3,322	2,872
AN	2,459	1,737	1,106	0	0	0	0	0	2,664	4,134	3,311	4,440
W	2,581	1,504	451	0	0	0	0	0	1,755	3,531	3,537	3,991
All	2,457	1,634	959	0	0	0	0	0	2,137	3,357	3,095	3,034
2008-2009 BiOps												
C	2,114	1,524	1,149	0	0	0	0	0	1,787	1,993	1,998	1,635
D	2,451	1,837	1,342	0	0	0	0	0	2,391	3,197	3,082	2,076
BN	2,517	1,896	1,116	0	0	0	0	0	2,444	3,721	3,258	2,871
AN	2,431	1,867	1,129	0	0	0	0	0	2,665	4,049	3,292	4,243
W	2,639	1,663	449	0	0	0	0	0	1,759	3,533	3,544	2,638
All	2,464	1,749	971	0	0	0	0	0	2,145	3,308	3,106	2,590
2019 BiOps												
C	2,100	1,521	1,122	0	0	0	0	0	1,734	1,942	2,006	1,620
D	2,432	1,635	1,321	0	0	0	0	0	2,365	3,184	2,872	2,059
BN	2,590	1,875	1,104	0	0	0	0	0	2,420	3,734	3,239	2,657
AN	2,464	1,740	1,101	0	0	0	0	0	2,632	3,649	3,303	4,331
W	2,537	1,623	455	0	0	0	0	0	1,764	3,432	3,514	3,969
All	2,444	1,672	958	0	0	0	0	0	2,124	3,221	3,049	2,957
VA												
C	2,129	1,507	1,100	0	0	0	0	0	1,700	1,972	2,013	1,631
D	2,431	1,639	1,324	0	0	0	0	0	2,415	3,285	2,974	2,102
BN	2,612	1,866	1,054	0	0	0	0	0	2,423	3,677	3,218	2,610
AN	2,451	1,711	1,281	0	0	0	0	0	2,572	4,063	3,325	4,373
W	2,544	1,616	450	0	0	0	0	0	1,769	3,434	3,514	3,968
All	2,454	1,663	966	0	0	0	0	0	2,124	3,287	3,071	2,964
55 w/WSAs												
C	2,032	1,408	1,054	0	0	0	0	0	1,551	1,659	1,880	1,633
D	2,224	1,757	1,247	0	0	0	0	0	1,874	2,241	2,422	2,034
BN	2,497	1,772	1,073	0	0	0	0	0	2,573	3,282	2,928	2,357
AN	2,284	1,580	1,319	0	0	0	0	0	3,202	3,649	3,340	3,900
W	2,496	1,623	458	0	0	0	0	0	2,022	3,654	3,621	3,804
All	2,335	1,641	952	0	0	0	0	0	2,162	2,946	2,906	2,794

H1a2.3.2 Georgiana Slough

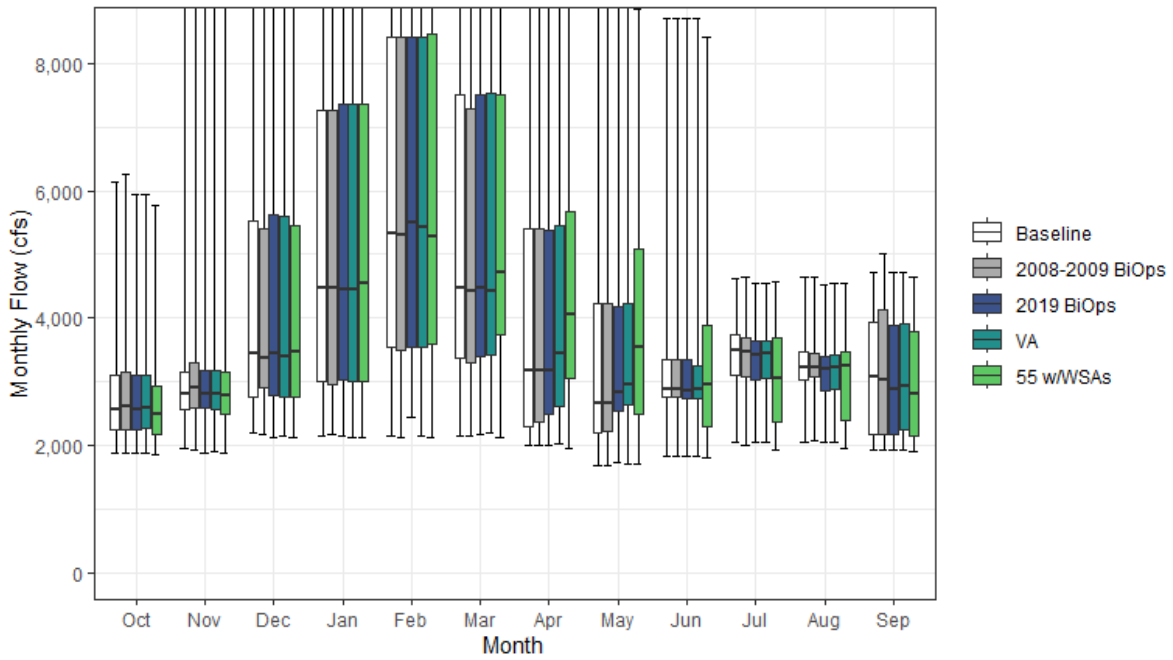

Figure H1a2-48. Georgiana Slough Monthly Boxplot (cfs)

Table H1a2-95. Cumulative Distribution of Monthly Flow (cfs) — Georgiana Slough

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	1,878	1,940	2,198	2,157	2,151	2,151	1,997	1,692	1,836	2,040	2,048	1,925	1,557
10%	1,951	2,218	2,625	2,608	2,818	2,703	2,147	2,108	2,398	2,166	2,328	1,982	1,853
25%	2,241	2,567	2,763	3,005	3,549	3,366	2,293	2,207	2,765	3,110	3,032	2,174	2,146
50%	2,566	2,797	3,435	4,468	5,334	4,471	3,183	2,655	2,872	3,491	3,221	3,077	2,552
75%	3,098	3,159	5,529	7,258	8,406	7,500	5,391	4,222	3,357	3,739	3,468	3,923	3,534
90%	3,459	4,283	8,678	9,617	10,479	9,106	8,186	6,734	4,651	4,061	3,673	4,196	4,159
100%	6,144	9,090	11,306	11,830	12,021	11,608	11,013	8,894	8,697	4,615	4,651	4,710	5,323
Mean	2,715	3,128	4,562	5,336	6,021	5,357	4,123	3,520	3,286	3,351	3,150	3,104	2,870
2008-2009 BiOps													
0%	1,868	1,938	2,164	2,164	2,128	2,136	1,997	1,685	1,836	2,006	2,074	1,926	1,565
10%	1,954	2,151	2,627	2,658	2,858	2,702	2,165	2,129	2,397	2,207	2,308	1,991	1,865
25%	2,233	2,599	2,894	2,964	3,488	3,287	2,355	2,211	2,766	3,077	3,069	2,173	2,169
50%	2,617	2,902	3,374	4,481	5,303	4,424	3,183	2,658	2,878	3,481	3,217	3,033	2,534
75%	3,151	3,297	5,414	7,258	8,406	7,294	5,396	4,223	3,343	3,686	3,450	4,118	3,566
90%	3,385	4,099	8,695	9,607	10,373	9,100	8,185	6,755	4,642	3,951	3,680	4,579	4,172
100%	6,267	9,090	11,284	11,830	12,021	11,610	11,013	8,895	8,697	4,635	4,651	5,017	5,324
Mean	2,721	3,176	4,550	5,299	5,984	5,344	4,140	3,516	3,293	3,314	3,159	3,218	2,874
2019 BiOps													
0%	1,876	1,887	2,114	2,158	2,431	2,164	1,998	1,724	1,824	2,040	2,048	1,926	1,570
10%	1,951	2,206	2,568	2,612	2,814	2,708	2,232	2,263	2,399	2,142	2,321	1,990	1,850
25%	2,249	2,581	2,778	3,016	3,543	3,394	2,481	2,526	2,728	3,034	2,845	2,172	2,176
50%	2,564	2,819	3,450	4,440	5,509	4,469	3,185	2,832	2,861	3,425	3,196	2,879	2,565
75%	3,103	3,179	5,624	7,365	8,405	7,506	5,389	4,183	3,351	3,641	3,390	3,894	3,511
90%	3,425	4,264	8,651	9,617	10,485	9,103	8,185	6,645	4,637	3,970	3,673	4,146	4,148
100%	5,944	9,090	11,284	11,830	12,021	11,610	11,010	8,894	8,697	4,551	4,511	4,710	5,310
Mean	2,703	3,131	4,570	5,359	6,037	5,359	4,170	3,627	3,274	3,284	3,114	3,045	2,871
VA													
0%	1,879	1,896	2,147	2,117	2,146	2,196	2,015	1,716	1,824	2,039	2,050	1,925	1,580
10%	1,952	2,156	2,561	2,604	2,766	2,685	2,272	2,199	2,337	2,165	2,306	1,987	1,847
25%	2,269	2,557	2,753	3,010	3,549	3,423	2,615	2,627	2,728	3,061	2,885	2,254	2,199
50%	2,594	2,797	3,396	4,458	5,424	4,424	3,456	2,955	2,881	3,450	3,212	2,928	2,573
75%	3,090	3,176	5,594	7,366	8,403	7,524	5,454	4,221	3,251	3,646	3,426	3,908	3,511
90%	3,457	4,274	8,666	9,617	10,485	9,113	8,185	6,654	4,642	3,876	3,684	4,162	4,159
100%	5,945	9,094	11,279	11,830	12,022	11,610	11,015	8,897	8,697	4,540	4,535	4,709	5,310
Mean	2,710	3,114	4,529	5,341	6,024	5,374	4,312	3,725	3,274	3,297	3,131	3,051	2,884
55 w/WSAs													
0%	1,852	1,875	2,117	2,120	2,132	2,127	1,941	1,695	1,804	1,925	1,949	1,904	1,507
10%	1,934	2,099	2,427	2,623	2,947	2,898	2,271	2,136	2,187	2,032	2,285	2,033	1,874
25%	2,162	2,483	2,765	3,013	3,579	3,735	3,056	2,486	2,293	2,371	2,402	2,155	2,123
50%	2,487	2,789	3,479	4,553	5,286	4,716	4,062	3,545	2,946	3,048	3,250	2,800	2,635
75%	2,927	3,142	5,460	7,358	8,460	7,507	5,680	5,091	3,889	3,678	3,473	3,776	3,628
90%	3,335	3,914	8,521	9,487	10,268	9,046	8,191	6,695	4,868	3,864	3,613	3,976	4,156
100%	5,778	9,103	11,267	11,818	11,993	11,592	11,004	8,863	8,424	4,560	4,545	4,644	5,307
Mean	2,618	3,035	4,522	5,359	6,072	5,532	4,611	3,977	3,341	3,035	3,005	2,919	2,892

Table H1a2-96. Water Year Average of Monthly Flows (cfs) — Georgiana Slough

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	2,356	2,498	3,004	3,004	3,208	2,848	2,149	1,997	2,302	2,249	2,286	2,023
D	2,608	2,817	3,543	3,243	4,085	3,834	2,520	2,332	2,839	3,271	3,008	2,341
BN	2,712	2,875	3,529	4,398	5,517	4,606	3,585	2,792	2,897	3,669	3,285	2,940
AN	2,623	3,277	4,315	6,721	7,642	6,804	4,435	3,896	3,094	3,908	3,276	4,142
W	3,023	3,792	6,892	8,154	8,610	7,709	6,566	5,515	4,461	3,574	3,580	3,930
All	2,715	3,128	4,562	5,336	6,021	5,357	4,123	3,520	3,286	3,351	3,150	3,104
2008-2009 BiOps												
C	2,359	2,491	3,007	2,985	3,194	2,843	2,158	2,009	2,319	2,266	2,270	1,992
D	2,617	2,851	3,594	3,240	4,032	3,812	2,570	2,337	2,853	3,189	3,101	2,330
BN	2,668	2,918	3,568	4,353	5,470	4,570	3,593	2,765	2,900	3,591	3,236	2,939
AN	2,602	3,429	4,347	6,622	7,493	6,818	4,453	3,888	3,096	3,843	3,262	3,991
W	3,072	3,840	6,777	8,112	8,627	7,702	6,570	5,512	4,463	3,577	3,586	4,392
All	2,721	3,176	4,550	5,299	5,984	5,344	4,140	3,516	3,293	3,314	3,159	3,218
2019 BiOps												
C	2,348	2,487	2,950	3,010	3,227	2,846	2,207	2,128	2,273	2,227	2,276	1,980
D	2,603	2,813	3,535	3,248	4,113	3,833	2,655	2,595	2,831	3,179	2,940	2,317
BN	2,724	2,894	3,567	4,455	5,528	4,611	3,613	2,939	2,879	3,601	3,221	2,775
AN	2,627	3,273	4,303	6,754	7,647	6,800	4,468	3,907	3,066	3,852	3,271	4,058
W	2,983	3,801	6,935	8,173	8,626	7,716	6,563	5,507	4,465	3,496	3,558	3,913
All	2,703	3,131	4,570	5,359	6,037	5,359	4,170	3,627	3,274	3,284	3,114	3,045
VA												
C	2,370	2,471	2,913	2,995	3,204	2,832	2,190	2,097	2,242	2,250	2,282	1,989
D	2,602	2,818	3,544	3,222	4,084	3,854	2,856	2,748	2,874	3,256	3,018	2,350
BN	2,741	2,884	3,473	4,405	5,494	4,645	3,915	3,157	2,882	3,557	3,205	2,739
AN	2,617	3,222	4,266	6,749	7,653	6,846	4,814	4,124	3,013	3,853	3,287	4,091
W	2,989	3,776	6,886	8,174	8,635	7,716	6,562	5,511	4,469	3,497	3,558	3,912
All	2,710	3,114	4,529	5,341	6,024	5,374	4,312	3,725	3,274	3,297	3,131	3,051
55 w/WSAs												
C	2,296	2,357	2,864	2,936	3,322	3,021	2,237	2,062	2,110	2,010	2,179	1,990
D	2,444	2,758	3,603	3,292	4,226	4,178	3,236	2,711	2,396	2,456	2,595	2,297
BN	2,652	2,776	3,530	4,436	5,531	4,881	4,390	3,515	3,015	3,255	2,983	2,545
AN	2,489	3,013	4,335	6,770	7,678	6,907	4,970	4,610	3,570	3,536	3,299	3,728
W	2,947	3,772	6,783	8,186	8,593	7,726	6,882	5,967	4,807	3,667	3,641	3,785
All	2,618	3,035	4,522	5,359	6,072	5,532	4,611	3,977	3,341	3,035	3,005	2,919

H1a2.3.3 San Joaquin River at Jersey Point (QWEST)

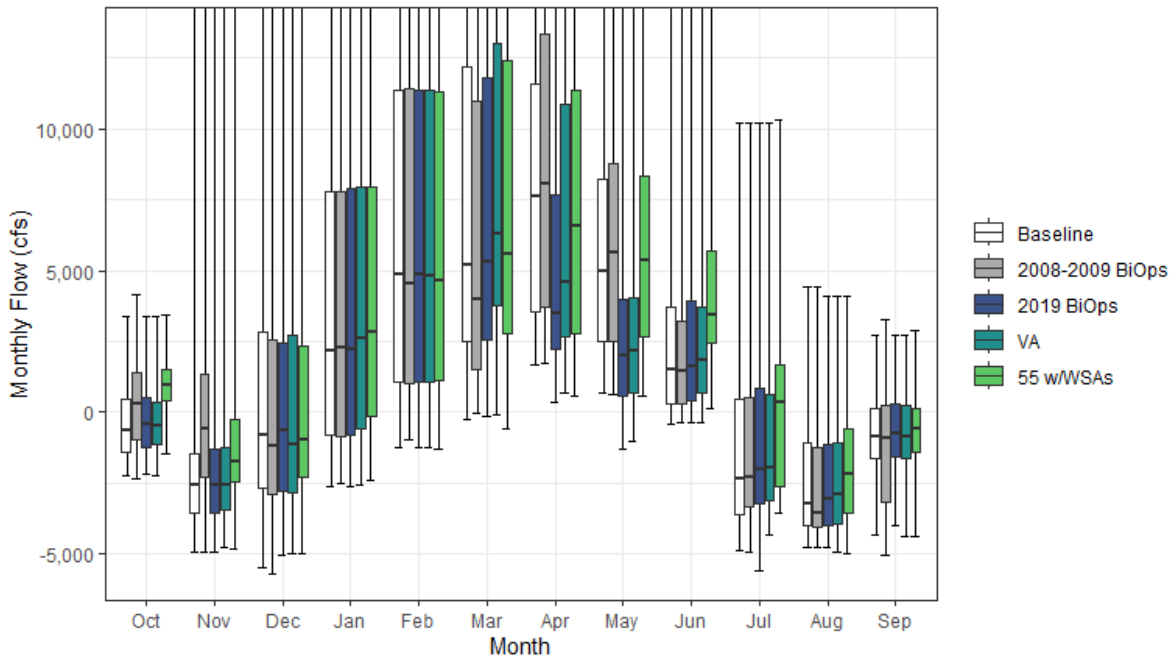

Figure H1a2-49. San Joaquin River at Jersey Point (QWEST) Monthly Boxplot (cfs)

Table H1a2-97. Cumulative Distribution of Monthly Flow (cfs) — San Joaquin River at Jersey Point (QWEST)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	-2,216	-4,918	-5,494	-2,604	-1,215	-268	1,656	672	-386	-4,880	-4,751	-4,332	-767
10%	-1,696	-4,095	-3,695	-1,613	-439	892	2,597	1,515	-5	-4,163	-4,258	-3,710	-294
25%	-1,410	-3,544	-2,653	-792	1,083	2,515	3,555	2,519	321	-3,604	-3,988	-1,647	166
50%	-658	-2,564	-786	2,200	4,857	5,192	7,596	5,005	1,538	-2,356	-3,220	-875	1,113
75%	485	-1,478	2,818	7,783	11,340	12,201	11,565	8,236	3,727	494	-1,046	117	3,382
90%	1,235	42	8,815	16,005	21,027	18,881	16,394	12,600	9,747	1,773	1,106	461	5,603
100%	3,404	16,374	28,117	75,267	57,186	63,141	37,264	26,669	25,245	10,183	4,424	2,742	15,469
Mean	-380	-2,048	1,462	5,635	8,244	8,217	8,940	6,336	3,223	-1,373	-2,285	-1,065	2,083
2008-2009 BiOps													
0%	-2,355	-4,918	-5,676	-2,485	-985	-3	1,757	655	-380	-4,918	-4,762	-5,035	-591
10%	-1,568	-3,434	-4,787	-1,564	-490	351	2,620	1,513	-24	-4,144	-4,370	-4,020	-64
25%	-942	-2,305	-2,894	-866	1,038	1,509	3,695	2,499	315	-3,347	-4,047	-3,186	238
50%	280	-595	-1,161	2,280	4,547	3,970	8,053	5,638	1,465	-2,277	-3,570	-901	1,162
75%	1,385	1,350	2,550	7,792	11,407	10,967	13,334	8,788	3,221	549	-1,223	275	3,382
90%	2,580	2,595	8,820	16,034	21,026	18,354	22,375	18,126	9,207	1,722	1,023	833	6,307
100%	4,170	16,397	28,116	75,268	57,185	60,967	37,255	27,628	25,246	10,183	4,424	3,284	15,262
Mean	349	-376	1,313	5,627	8,205	7,358	10,051	7,190	3,062	-1,332	-2,409	-1,316	2,252
2019 BiOps													
0%	-2,195	-4,917	-5,034	-2,603	-1,215	-119	338	-1,280	-347	-5,607	-4,731	-4,014	-978
10%	-1,766	-4,085	-3,672	-1,630	-368	845	1,292	-166	29	-3,843	-4,253	-3,209	-540
25%	-1,211	-3,545	-2,789	-792	1,095	2,535	2,225	594	395	-3,199	-4,010	-1,547	-51
50%	-423	-2,552	-620	2,201	4,857	5,286	3,507	2,013	1,636	-1,997	-3,056	-732	689
75%	506	-1,285	2,451	7,906	11,343	11,795	7,688	4,014	3,915	825	-1,118	277	2,963
90%	1,235	109	8,907	16,023	21,025	18,879	15,558	11,466	9,782	1,887	1,106	690	5,503
100%	3,404	16,374	28,118	75,268	57,185	63,138	37,255	26,681	25,245	10,183	4,094	2,745	15,502
Mean	-295	-2,009	1,468	5,683	8,311	8,213	6,473	3,897	3,317	-1,076	-2,248	-862	1,839
VA													
0%	-2,246	-4,771	-4,999	-2,575	-1,215	-108	711	-1,031	-332	-4,317	-4,897	-4,357	-694
10%	-1,749	-4,162	-3,668	-1,607	-337	1,696	2,283	8	117	-3,777	-4,244	-2,825	-282
25%	-1,128	-3,438	-2,834	-605	1,096	3,752	2,686	687	668	-3,121	-3,918	-1,612	219
50%	-486	-2,553	-1,126	2,588	4,813	6,316	4,606	2,174	1,866	-1,961	-2,868	-827	921
75%	375	-1,241	2,748	7,945	11,336	12,993	10,838	4,046	3,727	657	-1,077	273	3,101
90%	1,256	69	8,853	16,064	21,025	18,908	16,013	11,460	9,475	1,766	1,083	751	5,544
100%	3,404	16,418	28,120	75,269	57,482	63,138	37,715	26,680	25,245	10,183	4,091	2,746	15,528
Mean	-332	-1,999	1,502	5,720	8,350	9,210	7,722	4,011	3,388	-1,039	-2,158	-858	1,998
55 w/WSAs													
0%	-1,473	-4,803	-5,002	-2,399	-1,285	-574	593	596	141	-3,551	-4,990	-4,381	-120
10%	-604	-2,887	-2,932	-1,519	-394	949	2,257	1,846	1,765	-3,118	-4,191	-2,324	396
25%	395	-2,438	-2,289	-145	1,140	2,772	2,789	2,678	2,458	-2,603	-3,526	-1,410	646
50%	950	-1,716	-958	2,858	4,623	5,558	6,590	5,363	3,427	378	-2,176	-602	1,318
75%	1,503	-238	2,351	7,925	11,292	12,411	11,331	8,323	5,670	1,681	-576	163	3,693
90%	1,910	261	8,957	15,818	20,762	18,770	15,910	12,339	10,233	2,270	1,539	933	5,858
100%	3,426	16,008	28,076	75,230	57,207	61,330	37,318	26,934	25,075	10,287	4,083	2,862	15,311
Mean	866	-1,127	1,651	5,890	8,305	8,424	8,156	6,368	4,876	42	-1,774	-692	2,452

Table H1a2-98. Water Year Average of Monthly Flows (cfs) — San Joaquin River at Jersey Point (QWEST)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	260	-1,783	-1,096	64	734	1,332	2,705	1,538	1,741	544	-102	237
D	-544	-2,482	-1,037	-489	2,005	3,139	4,215	2,830	520	-3,476	-2,951	-1,408
BN	-191	-2,157	-1,141	2,079	5,889	5,369	8,404	5,284	1,099	-3,279	-4,041	-3,179
AN	-674	-1,449	459	8,364	10,935	10,301	10,050	8,309	2,639	-1,797	-3,781	-761
W	-603	-2,041	6,708	14,257	17,241	16,584	15,625	11,341	7,572	523	-1,251	-292
All	-380	-2,048	1,462	5,635	8,244	8,217	8,940	6,336	3,223	-1,373	-2,285	-1,065
2008-2009 BiOps												
C	176	-799	-964	31	678	1,350	2,714	1,507	1,650	475	-94	363
D	329	-588	-1,421	-494	1,978	2,208	4,299	2,815	456	-3,083	-3,385	-1,326
BN	599	-481	-1,167	2,141	5,946	4,152	8,410	5,240	1,023	-3,273	-4,142	-3,385
AN	420	-173	87	8,291	10,787	9,143	10,882	8,145	2,508	-2,052	-3,890	-1,168
W	269	-11	6,592	14,242	17,183	15,653	18,889	14,284	7,240	507	-1,237	-952
All	349	-376	1,313	5,627	8,205	7,358	10,051	7,190	3,062	-1,332	-2,409	-1,316
2019 BiOps												
C	377	-1,742	-1,049	160	934	1,317	2,370	914	1,846	670	-64	392
D	-414	-2,457	-1,163	-489	2,041	3,166	1,968	381	566	-3,049	-2,914	-1,318
BN	-248	-2,282	-998	2,198	5,893	5,373	4,248	1,915	1,310	-2,854	-3,977	-2,706
AN	-665	-1,401	365	8,400	11,062	10,226	5,804	3,908	2,823	-1,511	-3,802	-345
W	-449	-1,894	6,742	14,277	17,275	16,583	13,641	9,316	7,590	738	-1,207	-236
All	-295	-2,009	1,468	5,683	8,311	8,213	6,473	3,897	3,317	-1,076	-2,248	-862
VA												
C	311	-1,654	-1,064	346	1,046	1,480	2,595	1,056	1,982	543	-62	382
D	-437	-2,522	-1,006	-492	2,069	5,107	3,119	583	776	-3,015	-2,760	-1,254
BN	-289	-2,160	-1,091	2,250	5,935	7,954	5,197	2,139	1,346	-2,702	-3,683	-2,713
AN	-670	-1,382	510	8,383	11,070	10,473	10,697	4,159	2,797	-1,282	-3,793	-391
W	-491	-1,945	6,748	14,272	17,292	16,631	14,240	9,228	7,582	716	-1,216	-240
All	-332	-1,999	1,502	5,720	8,350	9,210	7,722	4,011	3,388	-1,039	-2,158	-858
55 w/WSAs												
C	1,041	-1,020	-859	775	833	1,117	2,512	1,978	2,573	1,603	450	125
D	1,125	-1,448	-954	-112	2,162	3,530	3,019	3,380	3,024	350	-1,896	-1,021
BN	616	-1,525	-679	2,293	6,034	5,856	7,074	4,877	3,107	-1,889	-3,042	-1,895
AN	1,006	-537	901	8,446	11,285	10,598	8,684	7,409	4,209	-1,420	-3,487	205
W	684	-933	6,676	14,275	17,042	16,665	15,406	11,428	8,851	793	-1,383	-483
All	866	-1,127	1,651	5,890	8,305	8,424	8,156	6,368	4,876	42	-1,774	-692

H1a2.3.4 Old and Middle Rivers Net Flow

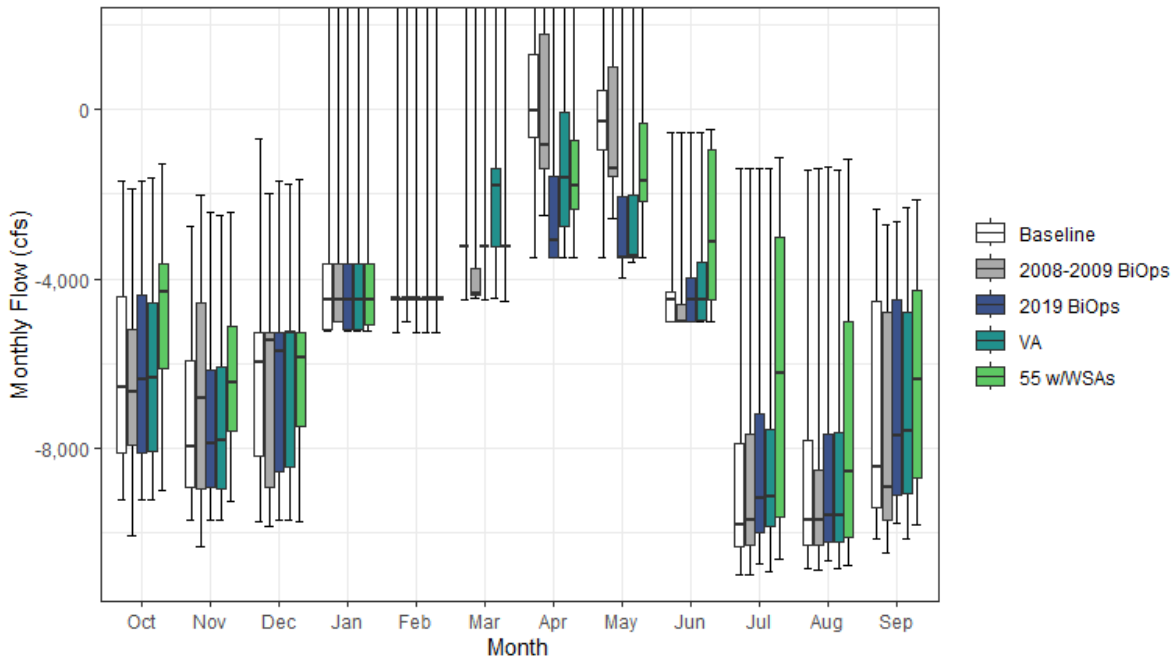

Figure H1a2-50. Old and Middle Rivers Net Flow Monthly Boxplot (cfs)

Table H1a2-99. Cumulative Distribution of Monthly Flow (cfs) — Old and Middle Rivers Net Flow

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	-9,246	-9,736	-9,765	-5,242	-5,268	-4,505	-3,500	-3,500	-5,000	-11,004	-10,863	-10,151	-4,649
10%	-8,550	-9,260	-9,368	-5,242	-5,000	-3,500	-2,637	-3,482	-5,000	-10,656	-10,496	-9,742	-4,314
25%	-8,138	-8,951	-8,203	-5,205	-4,483	-3,258	-651	-935	-5,000	-10,356	-10,319	-9,409	-4,224
50%	-6,588	-7,970	-5,980	-4,516	-4,464	-3,258	-32	-291	-4,500	-9,822	-9,722	-8,459	-3,861
75%	-4,417	-5,932	-5,267	-3,645	-4,447	-3,224	1,314	460	-4,297	-7,904	-7,814	-4,523	-3,381
90%	-3,526	-3,966	-4,104	-3,545	-3,671	-2,294	1,756	1,194	-1,666	-2,426	-4,827	-2,861	-2,261
100%	-1,688	-2,769	-696	19,185	6,005	16,817	7,518	3,502	-542	-1,399	-1,418	-2,359	-202
Mean	-6,220	-7,260	-6,449	-4,157	-4,073	-2,859	37	-397	-4,163	-8,374	-8,579	-7,252	-3,614
2008-2009 BiOps													
0%	-10,082	-10,365	-9,860	-5,000	-5,000	-4,452	-2,509	-2,590	-5,000	-11,004	-10,919	-10,503	-4,683
10%	-9,012	-9,913	-9,696	-5,000	-5,000	-4,371	-1,728	-1,810	-5,000	-10,653	-10,503	-10,075	-4,450
25%	-7,960	-8,985	-8,951	-5,000	-4,501	-4,371	-1,390	-1,563	-5,000	-10,320	-10,308	-9,723	-4,199
50%	-6,702	-6,836	-5,451	-4,516	-4,464	-4,355	-841	-1,391	-5,000	-9,714	-9,731	-8,943	-3,858
75%	-5,191	-4,584	-5,265	-3,645	-4,448	-3,744	1,792	1,019	-4,600	-7,700	-8,546	-4,802	-3,263
90%	-3,792	-3,598	-3,929	-3,620	-3,637	-2,291	2,954	1,930	-1,997	-2,698	-4,598	-3,121	-2,533
100%	-1,852	-2,012	-1,989	19,185	6,004	14,811	7,183	5,135	-542	-1,402	-1,403	-2,737	-712
Mean	-6,474	-6,676	-6,582	-4,132	-4,074	-3,633	407	-385	-4,325	-8,255	-8,711	-7,536	-3,654
2019 BiOps													
0%	-9,246	-9,736	-9,727	-5,242	-5,268	-4,505	-3,500	-3,980	-5,000	-10,764	-10,694	-9,777	-4,905
10%	-8,550	-9,260	-9,353	-5,242	-5,000	-3,500	-3,500	-3,500	-5,000	-10,244	-10,400	-9,425	-4,650
25%	-8,138	-8,951	-8,563	-5,205	-4,483	-3,258	-3,500	-3,500	-5,000	-10,029	-10,254	-9,131	-4,514
50%	-6,378	-7,912	-5,721	-4,516	-4,464	-3,258	-3,082	-3,485	-4,500	-9,193	-9,599	-7,737	-4,169
75%	-4,399	-6,167	-5,269	-3,645	-4,444	-3,232	-1,565	-2,046	-3,996	-7,200	-7,669	-4,497	-3,506
90%	-3,036	-3,786	-4,054	-3,254	-3,412	-2,292	1	-1,175	-1,622	-2,320	-4,901	-2,860	-2,391
100%	-1,677	-2,417	-1,701	19,185	6,004	16,814	7,529	3,515	-542	-1,401	-1,353	-2,645	-159
Mean	-6,120	-7,261	-6,450	-4,134	-4,025	-2,865	-2,254	-2,715	-4,053	-7,912	-8,468	-6,942	-3,823
VA													
0%	-9,246	-9,736	-9,727	-5,242	-5,268	-4,461	-3,500	-3,600	-5,000	-10,939	-10,861	-10,151	-4,880
10%	-8,550	-9,224	-9,368	-5,242	-5,000	-3,258	-3,087	-3,500	-5,000	-10,263	-10,437	-9,645	-4,492
25%	-8,089	-8,974	-8,445	-5,197	-4,483	-3,258	-2,774	-3,500	-4,989	-9,851	-10,252	-9,082	-4,342
50%	-6,349	-7,847	-5,290	-4,516	-4,464	-1,793	-1,625	-3,478	-4,500	-9,179	-9,593	-7,604	-3,983
75%	-4,576	-6,091	-5,251	-3,645	-4,440	-1,385	-55	-2,024	-3,600	-7,581	-7,661	-4,799	-3,403
90%	-3,364	-3,563	-4,138	-2,971	-2,754	-788	563	-1,090	-1,495	-2,432	-3,966	-2,860	-2,240
100%	-1,598	-2,494	-1,756	19,186	6,283	16,814	7,956	3,515	-542	-1,382	-1,416	-2,306	-134
Mean	-6,165	-7,226	-6,389	-4,080	-3,976	-1,984	-1,310	-2,669	-3,971	-7,941	-8,417	-6,944	-3,695
55 w/WSAs													
0%	-9,006	-9,293	-9,774	-5,242	-5,268	-4,541	-3,500	-3,500	-5,000	-10,653	-10,811	-9,847	-4,484
10%	-8,136	-8,580	-9,028	-5,233	-5,000	-3,500	-2,840	-2,640	-5,000	-10,075	-10,413	-9,331	-4,229
25%	-6,134	-7,611	-7,489	-5,084	-4,483	-3,258	-2,335	-2,153	-4,499	-9,634	-10,117	-8,717	-3,917
50%	-4,307	-6,468	-5,877	-4,515	-4,464	-3,258	-1,793	-1,682	-3,124	-6,231	-8,585	-6,396	-3,278
75%	-3,661	-5,132	-5,263	-3,637	-4,440	-3,234	-708	-308	-955	-3,006	-5,022	-4,281	-2,826
90%	-2,470	-3,173	-4,270	-2,329	-3,872	-2,325	15	-21	-763	-1,447	-4,335	-3,234	-2,058
100%	-1,261	-2,437	-1,649	19,185	6,071	15,114	7,617	3,491	-471	-1,128	-1,164	-2,140	-346
Mean	-4,863	-6,288	-6,194	-3,949	-4,060	-2,933	-1,459	-1,326	-2,836	-6,168	-7,599	-6,337	-3,265

Table H1a2-100. Water Year Average of Monthly Flows (cfs) — Old and Middle Rivers Net Flow

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	-4,731	-5,669	-5,707	-3,926	-4,371	-3,064	-355	-736	-2,088	-2,945	-3,878	-3,100
D	-6,071	-7,016	-6,879	-4,914	-4,643	-3,214	-270	-540	-4,573	-9,145	-8,334	-5,517
BN	-6,143	-7,111	-6,934	-4,603	-4,520	-3,280	784	231	-4,858	-10,205	-10,236	-8,825
AN	-6,289	-7,319	-7,105	-4,173	-4,161	-3,187	622	843	-4,871	-9,982	-10,295	-9,386
W	-7,143	-8,357	-5,959	-3,437	-3,176	-2,091	-237	-1,004	-4,244	-8,900	-9,529	-8,888
All	-6,220	-7,260	-6,449	-4,157	-4,073	-2,859	37	-397	-4,163	-8,374	-8,579	-7,252
2008-2009 BiOps												
C	-5,592	-5,399	-5,582	-3,946	-4,406	-3,044	-1,336	-1,537	-2,205	-3,046	-3,838	-3,134
D	-6,165	-6,222	-7,291	-4,916	-4,615	-4,046	-1,460	-1,699	-4,659	-8,607	-8,934	-5,699
BN	-6,254	-6,437	-7,021	-4,506	-4,432	-4,353	140	-833	-4,935	-10,034	-10,224	-9,347
AN	-6,085	-7,185	-7,492	-4,153	-4,153	-4,261	962	50	-4,996	-10,082	-10,360	-9,813
W	-7,468	-7,638	-5,955	-3,413	-3,242	-2,936	2,653	1,303	-4,557	-8,918	-9,529	-9,172
All	-6,474	-6,676	-6,582	-4,132	-4,074	-3,633	407	-385	-4,325	-8,255	-8,711	-7,536
2019 BiOps												
C	-4,608	-5,615	-5,588	-3,848	-4,204	-3,076	-714	-1,424	-1,933	-2,783	-3,822	-2,870
D	-5,942	-6,986	-6,984	-4,915	-4,635	-3,190	-2,440	-3,007	-4,515	-8,556	-8,156	-5,384
BN	-6,219	-7,259	-6,853	-4,548	-4,527	-3,280	-3,027	-2,970	-4,629	-9,668	-10,042	-8,048
AN	-6,289	-7,268	-7,179	-4,173	-4,035	-3,254	-3,276	-3,177	-4,647	-9,224	-10,296	-8,831
W	-6,926	-8,339	-5,970	-3,437	-3,159	-2,096	-2,041	-2,841	-4,242	-8,539	-9,448	-8,801
All	-6,120	-7,261	-6,450	-4,134	-4,025	-2,865	-2,254	-2,715	-4,053	-7,912	-8,468	-6,942
VA												
C	-4,715	-5,506	-5,547	-3,658	-4,082	-2,917	-498	-1,267	-1,747	-2,949	-3,834	-2,897
D	-5,960	-7,052	-6,853	-4,898	-4,581	-1,456	-1,601	-2,962	-4,402	-8,683	-8,179	-5,391
BN	-6,290	-7,123	-6,811	-4,447	-4,453	-980	-2,485	-2,959	-4,569	-9,426	-9,733	-7,963
AN	-6,258	-7,181	-7,178	-4,173	-4,035	-3,086	744	-3,116	-4,522	-9,362	-10,311	-8,925
W	-6,973	-8,355	-5,916	-3,436	-3,149	-2,069	-1,605	-2,841	-4,241	-8,551	-9,445	-8,805
All	-6,165	-7,226	-6,389	-4,080	-3,976	-1,984	-1,310	-2,669	-3,971	-7,941	-8,417	-6,944
55 w/WSAs												
C	-3,887	-4,722	-5,266	-3,223	-4,411	-3,417	-664	-456	-939	-1,442	-3,120	-3,125
D	-4,207	-6,079	-6,772	-4,632	-4,689	-3,299	-2,347	-883	-1,530	-3,761	-6,380	-5,006
BN	-5,263	-6,324	-6,478	-4,460	-4,477	-3,278	-1,637	-1,525	-3,410	-7,803	-8,412	-6,492
AN	-4,431	-6,059	-6,906	-4,152	-3,900	-3,136	-1,602	-1,485	-4,517	-8,526	-9,780	-7,301
W	-5,783	-7,346	-5,798	-3,429	-3,212	-2,105	-1,061	-1,925	-3,770	-8,476	-9,496	-8,541
All	-4,863	-6,288	-6,194	-3,949	-4,060	-2,933	-1,459	-1,326	-2,836	-6,168	-7,599	-6,337

H1a2.3.5 Jones Pumping Plant (CVP)

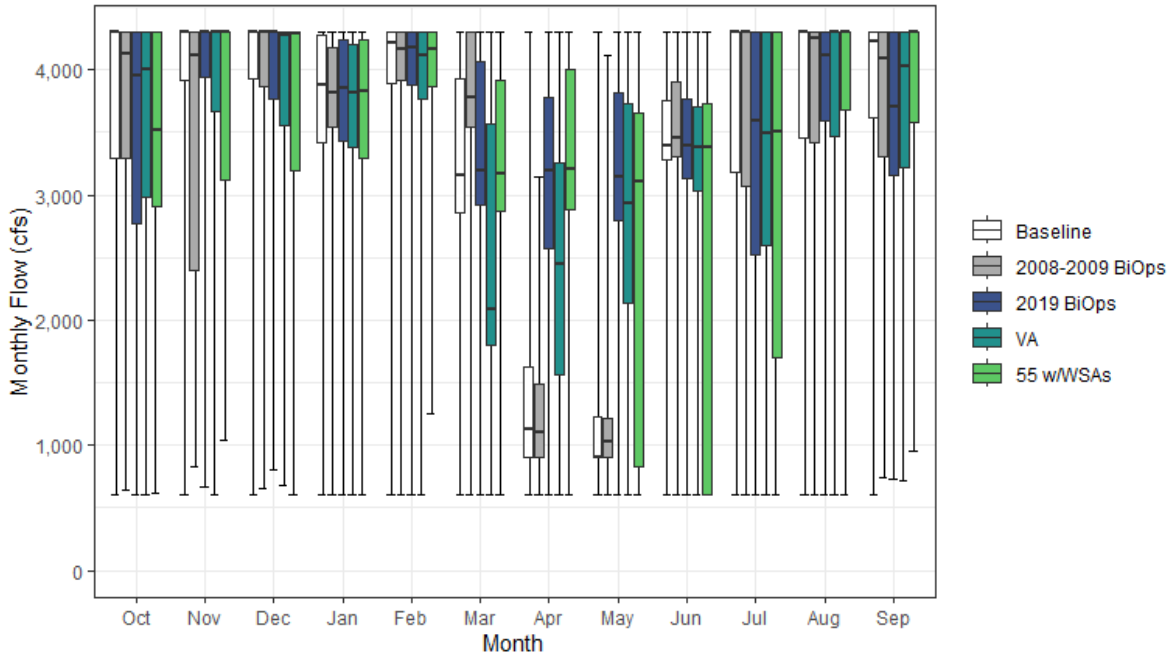

Figure H1a2-51. Jones Pumping Plant (CVP) Monthly Boxplot (cfs)

Table H1a2-101. Cumulative Distribution of Monthly Flow (cfs) — Jones Pumping Plant (CVP)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	600	600	600	600	600	600	600	608	604	604	600	606	1,047
10%	2,529	2,068	2,878	2,790	3,641	2,338	602	898	2,022	1,888	2,887	2,787	1,811
25%	3,296	3,918	3,929	3,424	3,895	2,858	898	899	3,279	3,187	3,450	3,611	2,272
50%	4,297	4,298	4,297	3,880	4,214	3,151	1,132	908	3,395	4,300	4,300	4,227	2,469
75%	4,300	4,300	4,298	4,273	4,297	3,931	1,628	1,230	3,758	4,300	4,300	4,300	2,638
90%	4,300	4,300	4,300	4,298	4,298	4,297	3,336	4,110	4,299	4,300	4,300	4,300	2,913
100%	4,300	4,300	4,300	4,300	4,300	4,299	4,300	4,300	4,300	4,300	4,300	4,300	3,089
Mean	3,662	3,824	3,920	3,660	4,001	3,173	1,568	1,537	3,314	3,566	3,764	3,768	2,398
2008-2009 BiOps													
0%	647	825	651	600	600	600	600	608	605	602	600	742	1,039
10%	2,045	1,803	2,592	3,026	3,636	2,391	603	899	2,398	2,062	2,876	2,560	1,832
25%	3,292	2,399	3,868	3,545	3,918	3,541	899	899	3,302	3,073	3,415	3,307	2,268
50%	4,123	4,118	4,298	3,819	4,162	3,780	1,100	1,030	3,452	4,299	4,249	4,086	2,463
75%	4,299	4,298	4,300	4,182	4,297	4,297	1,483	1,217	3,899	4,300	4,300	4,300	2,598
90%	4,300	4,300	4,300	4,298	4,298	4,298	2,093	1,616	4,299	4,300	4,300	4,300	2,678
100%	4,300	4,300	4,300	4,300	4,300	4,300	3,141	4,111	4,300	4,300	4,300	4,300	3,032
Mean	3,616	3,440	3,909	3,653	4,000	3,568	1,261	1,205	3,380	3,544	3,759	3,689	2,354
2019 BiOps													
0%	609	664	809	601	600	600	600	608	604	602	600	729	811
10%	2,190	2,070	2,502	2,771	3,194	1,975	606	2,067	1,761	1,585	2,125	2,701	1,835
25%	2,770	3,944	3,767	3,424	3,882	2,919	2,573	2,794	3,131	2,521	3,588	3,158	2,404
50%	3,951	4,298	4,295	3,852	4,180	3,194	3,193	3,139	3,393	3,587	4,118	3,708	2,651
75%	4,300	4,300	4,298	4,241	4,297	4,064	3,782	3,820	3,767	4,300	4,300	4,300	2,843
90%	4,300	4,300	4,300	4,298	4,298	4,297	4,296	4,120	4,299	4,300	4,300	4,300	2,955
100%	4,300	4,300	4,300	4,300	4,300	4,299	4,300	4,300	4,300	4,300	4,300	4,300	3,070
Mean	3,431	3,776	3,788	3,648	3,937	3,239	2,985	3,137	3,260	3,295	3,646	3,583	2,517
VA													
0%	600	605	677	600	600	600	600	600	606	602	603	718	934
10%	2,185	2,082	2,553	2,535	3,061	1,797	704	1,481	1,266	1,848	2,620	2,633	1,757
25%	2,987	3,665	3,559	3,385	3,764	1,797	1,560	2,139	3,029	2,602	3,473	3,213	2,262
50%	4,008	4,298	4,280	3,817	4,111	2,092	2,448	2,935	3,378	3,491	4,300	4,029	2,519
75%	4,300	4,300	4,298	4,196	4,297	3,565	3,259	3,730	3,700	4,300	4,300	4,300	2,761
90%	4,300	4,300	4,300	4,298	4,298	4,297	4,054	4,203	4,299	4,300	4,300	4,300	2,934
100%	4,300	4,300	4,300	4,300	4,300	4,299	4,299	4,300	4,300	4,300	4,300	4,300	3,047
Mean	3,505	3,764	3,761	3,597	3,838	2,597	2,401	2,919	3,141	3,290	3,719	3,661	2,425
55 w/WSAs													
0%	618	1,042	600	600	1,255	600	600	600	600	600	603	955	906
10%	2,217	1,659	1,383	2,016	3,291	1,528	1,067	609	604	608	2,344	2,702	1,707
25%	2,909	3,120	3,197	3,298	3,864	2,864	2,884	834	610	1,702	3,682	3,584	2,132
50%	3,517	4,297	4,283	3,824	4,162	3,174	3,205	3,108	3,385	3,504	4,299	4,298	2,600
75%	4,298	4,298	4,298	4,241	4,297	3,921	4,001	3,648	3,726	4,299	4,300	4,300	2,811
90%	4,300	4,300	4,299	4,298	4,298	4,298	4,299	4,113	4,298	4,300	4,300	4,300	2,969
100%	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300	3,101
Mean	3,439	3,634	3,583	3,510	3,914	3,136	3,099	2,582	2,593	2,937	3,745	3,811	2,411

Table H1a2-102. Water Year Average of Monthly Flows (cfs) — Jones Pumping Plant (CVP)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	3,139	3,035	3,549	2,944	3,579	2,459	925	1,007	1,615	1,461	2,351	2,359
D	3,702	3,852	4,021	3,622	3,993	2,873	1,247	1,097	3,329	3,626	3,766	3,983
BN	3,710	3,880	3,775	3,722	4,042	3,313	972	980	3,414	3,798	3,813	3,841
AN	3,544	3,749	4,017	3,840	4,144	3,495	1,321	924	3,715	4,066	4,229	3,993
W	3,927	4,218	4,098	3,957	4,147	3,557	2,623	2,739	3,986	4,298	4,300	4,225
All	3,662	3,824	3,920	3,660	4,001	3,173	1,568	1,537	3,314	3,566	3,764	3,768
2008-2009 BiOps												
C	3,325	3,134	3,374	2,940	3,588	2,445	925	1,020	1,737	1,633	2,401	2,609
D	3,593	3,152	4,067	3,664	3,930	3,442	1,197	1,159	3,348	3,583	3,677	3,897
BN	3,636	3,521	3,792	3,666	4,023	3,805	1,024	959	3,464	3,612	3,800	3,625
AN	3,482	3,578	4,012	3,826	4,144	3,948	1,038	1,017	3,769	4,098	4,300	4,051
W	3,828	3,707	4,111	3,948	4,198	3,958	1,727	1,569	4,070	4,270	4,300	4,008
All	3,616	3,440	3,909	3,653	4,000	3,568	1,261	1,205	3,380	3,544	3,759	3,689
2019 BiOps												
C	3,001	3,014	3,219	2,943	3,396	2,456	1,272	1,610	1,447	1,341	2,032	2,728
D	3,424	3,717	4,000	3,610	3,988	2,846	2,819	2,873	3,232	3,087	3,645	3,714
BN	3,610	3,946	3,498	3,722	4,042	3,355	3,313	3,223	3,379	3,252	3,603	3,221
AN	3,344	3,648	3,889	3,840	4,144	3,768	3,585	3,546	3,724	3,889	4,231	3,523
W	3,588	4,170	4,079	3,929	4,039	3,661	3,573	3,925	3,987	4,279	4,300	4,197
All	3,431	3,776	3,788	3,648	3,937	3,239	2,985	3,137	3,260	3,295	3,646	3,583
VA												
C	3,121	3,049	3,139	2,795	3,227	2,298	1,034	1,275	1,224	1,523	2,383	2,617
D	3,318	3,837	4,031	3,646	3,737	1,758	1,965	2,574	3,054	3,232	3,703	4,052
BN	3,693	3,761	3,533	3,600	3,964	1,962	2,896	2,942	3,272	3,095	3,612	3,280
AN	3,501	3,573	3,882	3,841	4,143	3,233	1,518	3,219	3,581	3,589	4,247	3,542
W	3,730	4,169	3,992	3,890	4,037	3,518	3,490	3,916	3,968	4,279	4,300	4,220
All	3,505	3,764	3,761	3,597	3,838	2,597	2,401	2,919	3,141	3,290	3,719	3,661
55 w/WSAs												
C	3,198	2,625	2,783	2,394	3,636	2,301	1,052	711	608	716	2,174	3,172
D	3,218	3,727	3,637	3,510	3,962	2,821	3,163	1,500	1,334	2,498	3,761	4,090
BN	3,622	3,857	3,450	3,575	3,815	3,372	3,543	2,837	2,870	2,856	4,013	3,439
AN	2,984	3,382	3,671	3,846	4,144	3,546	3,568	3,391	3,686	3,553	4,049	3,759
W	3,797	4,065	4,021	3,929	3,997	3,497	3,673	3,889	3,961	4,250	4,278	4,203
All	3,439	3,634	3,583	3,510	3,914	3,136	3,099	2,582	2,593	2,937	3,745	3,811

H1a2.3.6 Banks Pumping Plant (SWP)

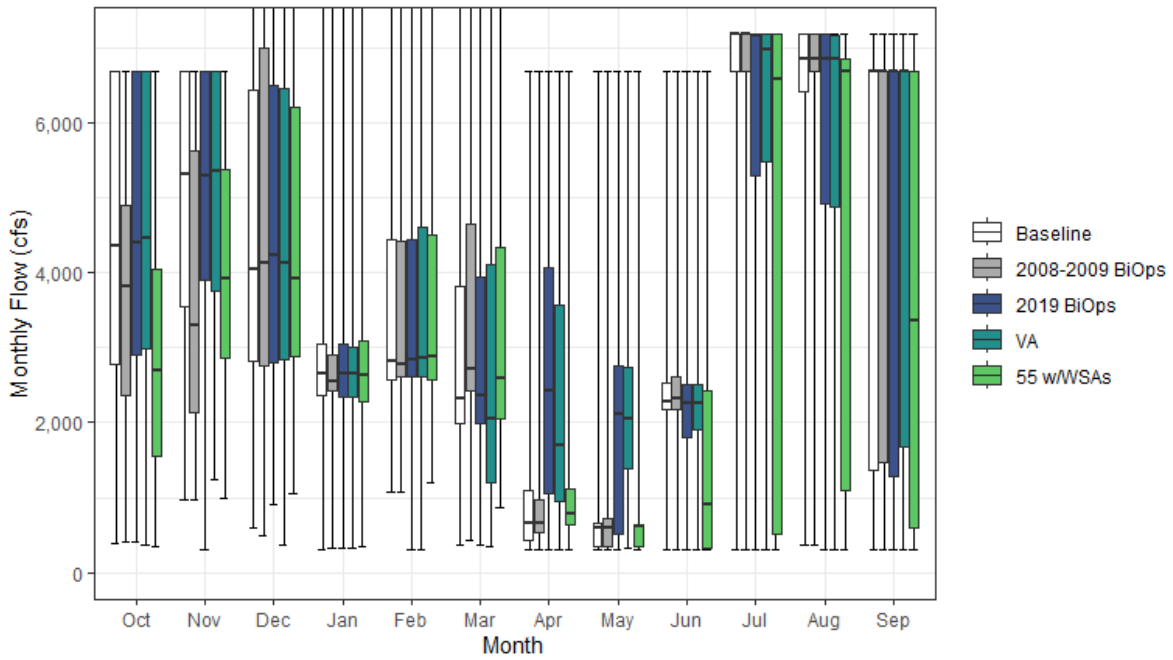

Figure H1a2-52. Banks Pumping Plant (SWP) Monthly Boxplot (cfs)

Table H1a2-103. Cumulative Distribution of Monthly Flow (cfs) — Banks Pumping Plant (SWP)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	381	971	604	311	1,065	359	301	301	315	302	377	310	827
10%	1,484	2,294	2,219	2,009	2,394	1,873	316	306	332	319	755	480	1,288
25%	2,785	3,546	2,810	2,371	2,575	1,984	427	351	2,167	6,680	6,406	1,372	2,184
50%	4,364	5,304	4,050	2,658	2,817	2,326	662	601	2,274	7,180	6,855	6,680	2,810
75%	6,680	6,680	6,430	3,053	4,441	3,813	1,099	662	2,524	7,180	7,180	6,680	3,290
90%	6,680	6,680	7,062	3,942	6,631	6,890	5,755	4,145	5,179	7,180	7,180	6,725	3,924
100%	6,680	6,680	7,678	8,500	8,500	7,561	6,680	6,680	6,680	7,180	7,180	7,180	5,018
Mean	4,380	4,918	4,401	2,955	3,692	3,199	1,668	1,285	2,481	5,810	5,625	4,681	2,725
2008-2009 BiOps													
0%	403	975	485	321	1,074	422	301	301	313	306	361	303	790
10%	1,618	1,495	2,169	2,154	2,465	1,776	329	304	333	320	920	524	1,244
25%	2,355	2,136	2,764	2,414	2,601	2,431	529	348	2,179	6,680	6,680	1,461	2,033
50%	3,810	3,292	4,122	2,552	2,786	2,716	658	601	2,311	7,180	6,855	6,680	2,689
75%	4,906	5,618	7,002	2,903	4,418	4,647	978	723	2,613	7,180	7,180	6,680	3,114
90%	6,680	6,680	7,073	3,942	6,631	7,391	1,433	1,050	5,720	7,180	7,180	6,725	3,546
100%	6,680	6,680	7,678	8,500	8,500	7,561	6,680	6,680	6,680	7,180	7,180	7,180	5,095
Mean	3,712	3,796	4,559	2,934	3,694	3,652	881	758	2,592	5,704	5,774	4,680	2,584
2019 BiOps													
0%	407	310	909	321	306	361	303	315	312	302	307	307	713
10%	1,762	2,278	2,345	1,975	2,418	1,873	332	336	328	322	842	457	1,297
25%	2,904	3,899	2,802	2,332	2,602	1,984	1,049	506	1,803	5,284	4,920	1,285	2,296
50%	4,407	5,291	4,230	2,658	2,839	2,369	2,425	2,104	2,265	7,165	6,855	6,680	2,928
75%	6,680	6,680	6,490	3,056	4,441	3,941	4,062	2,754	2,506	7,180	7,180	6,680	3,530
90%	6,680	6,680	7,062	4,043	6,670	6,636	6,285	4,639	5,180	7,180	7,180	6,680	4,054
100%	6,680	6,680	7,678	8,500	8,500	7,561	6,680	6,680	6,680	7,180	7,180	7,180	4,973
Mean	4,500	4,967	4,534	2,941	3,704	3,140	2,766	2,229	2,416	5,582	5,625	4,526	2,836
VA													
0%	372	1,247	364	322	307	356	300	318	310	303	311	311	682
10%	1,743	2,198	2,261	1,978	2,453	1,202	337	634	400	331	785	459	1,302
25%	2,986	3,759	2,844	2,332	2,612	1,203	944	1,390	1,914	5,481	4,870	1,686	2,190
50%	4,454	5,358	4,127	2,654	2,871	2,044	1,702	2,046	2,257	6,976	6,855	6,680	2,871
75%	6,680	6,680	6,457	3,010	4,600	4,104	3,563	2,739	2,504	7,180	7,158	6,680	3,423
90%	6,680	6,680	7,062	4,141	6,670	6,798	5,572	4,640	5,180	7,180	7,180	6,685	4,026
100%	6,680	6,680	7,678	8,500	8,500	7,561	6,680	6,680	6,680	7,180	7,180	7,180	4,947
Mean	4,476	4,942	4,494	2,932	3,749	2,815	2,314	2,397	2,447	5,618	5,496	4,451	2,788
55 w/WSAs													
0%	345	990	1,045	338	1,201	872	302	307	300	304	300	307	782
10%	668	1,889	2,542	1,402	2,326	1,937	612	324	326	311	664	340	1,117
25%	1,552	2,857	2,872	2,280	2,564	2,047	641	339	333	509	1,087	590	1,430
50%	2,692	3,923	3,916	2,625	2,872	2,583	775	623	906	6,586	6,680	3,353	2,377
75%	4,041	5,368	6,196	3,082	4,492	4,335	1,109	632	2,419	7,180	6,855	6,680	3,080
90%	6,680	6,680	7,040	3,975	6,671	6,635	5,083	3,964	5,037	7,180	7,180	6,680	3,649
100%	6,680	6,680	7,678	8,500	8,500	7,561	6,680	6,680	6,680	7,180	7,180	7,180	5,069
Mean	3,148	4,076	4,468	2,887	3,768	3,317	1,720	1,229	1,768	4,101	4,591	3,631	2,337

Table H1a2-104. Water Year Average of Monthly Flows (cfs) — Banks Pumping Plant (SWP)

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	3,019	3,604	3,269	2,138	2,548	2,073	456	385	558	1,169	1,353	1,144
D	4,108	4,464	4,359	2,645	2,585	2,021	532	537	1,817	5,934	4,977	2,277
BN	4,274	4,685	4,693	2,516	3,388	2,489	706	557	2,338	7,062	7,119	6,139
AN	4,423	5,003	4,922	2,775	3,894	3,310	1,413	577	2,753	6,999	6,940	6,722
W	5,354	6,065	4,642	3,967	5,227	5,068	3,860	3,057	3,975	6,927	6,908	6,590
All	4,380	4,918	4,401	2,955	3,692	3,199	1,668	1,285	2,481	5,810	5,625	4,681
2008-2009 BiOps												
C	2,925	2,510	3,307	2,163	2,579	2,065	455	415	563	1,107	1,259	697
D	3,370	3,506	4,764	2,604	2,617	2,365	548	495	1,892	5,394	5,715	2,255
BN	3,459	3,451	4,773	2,465	3,311	3,174	656	596	2,373	7,062	7,119	6,558
AN	3,342	4,183	5,351	2,766	3,885	4,036	882	639	2,835	7,075	6,940	6,722
W	4,691	4,759	4,623	3,950	5,245	5,592	1,496	1,282	4,230	6,975	6,908	6,578
All	3,712	3,796	4,559	2,934	3,694	3,652	881	758	2,592	5,704	5,774	4,680
2019 BiOps												
C	3,022	3,565	3,467	2,052	2,549	2,090	502	538	558	1,114	1,611	522
D	4,244	4,567	4,494	2,658	2,582	2,021	1,342	1,468	1,852	5,835	4,906	2,400
BN	4,458	4,781	4,882	2,455	3,396	2,447	2,549	1,829	2,126	7,027	7,119	5,907
AN	4,622	5,049	5,131	2,775	3,760	3,111	3,428	2,367	2,501	6,355	6,940	6,582
W	5,453	6,094	4,671	3,996	5,316	4,970	4,891	3,888	3,972	6,555	6,821	6,524
All	4,500	4,967	4,534	2,941	3,704	3,140	2,766	2,229	2,416	5,582	5,625	4,526
VA												
C	3,020	3,411	3,503	1,992	2,584	2,073	503	700	579	1,112	1,272	663
D	4,370	4,519	4,321	2,603	2,773	1,206	1,275	1,718	1,908	5,828	4,873	2,070
BN	4,451	4,816	4,801	2,467	3,393	1,314	2,371	2,097	2,168	6,922	6,776	5,755
AN	4,432	5,028	5,137	2,774	3,761	3,462	1,083	2,629	2,510	6,805	6,940	6,667
W	5,364	6,112	4,699	4,034	5,307	5,083	4,499	3,897	3,990	6,568	6,818	6,504
All	4,476	4,942	4,494	2,932	3,749	2,815	2,314	2,397	2,447	5,618	5,496	4,451
55 w/WSAs												
C	2,068	2,977	3,554	1,924	2,545	2,619	663	367	326	311	728	359
D	2,583	3,623	4,625	2,445	2,667	2,166	772	488	519	1,308	2,862	1,612
BN	3,421	3,866	4,541	2,531	3,578	2,427	716	547	1,315	5,465	4,944	3,961
AN	2,991	4,013	5,081	2,771	3,604	3,203	1,507	627	2,399	6,003	6,563	4,687
W	4,029	5,154	4,550	3,996	5,415	5,142	3,701	2,905	3,488	6,547	6,908	6,226
All	3,148	4,076	4,468	2,887	3,768	3,317	1,720	1,229	1,768	4,101	4,591	3,631

H1a2.4 Interbasin Diversions

Interbasin diversions divert water from one basin into a neighboring basin. Some interbasin diversions presented below move water from one fork to another within the same major tributary watershed, while others move water from one major tributary watershed to another. Results for all major interbasin diversions are presented in this section.

H1a2.4.1 Bowman-Spaulding Conduit

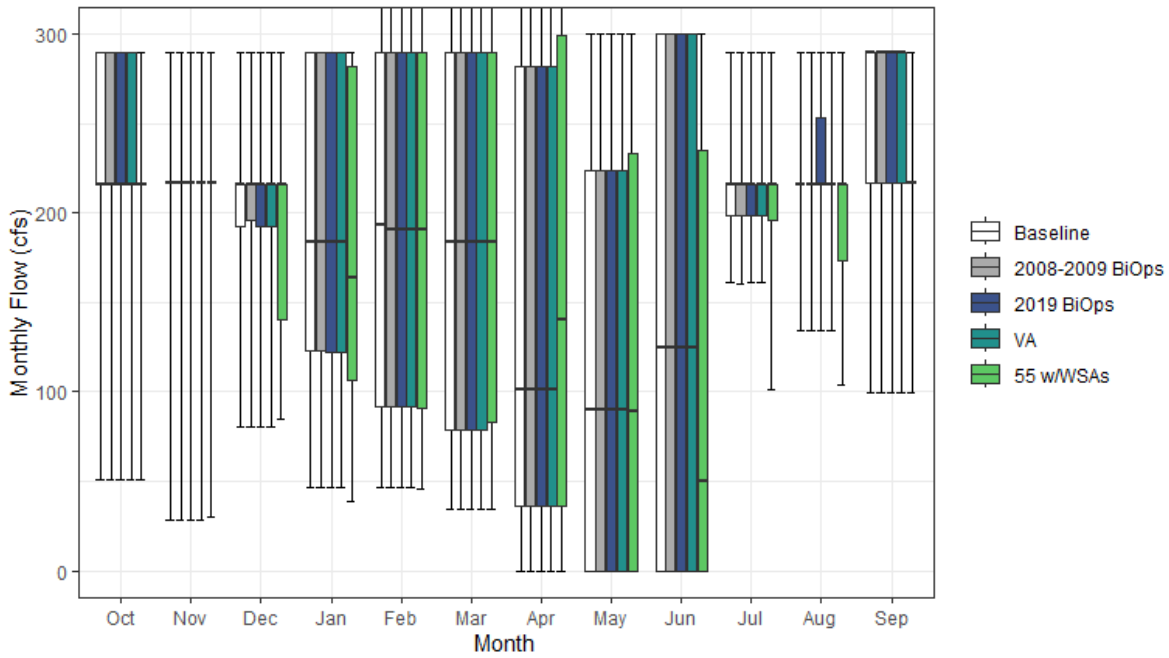

Figure H1a2-53. Bowman-Spaulding Conduit Monthly Boxplot (cfs)

Table H1a2-105. Cumulative Distribution of Monthly Flow (cfs) — Bowman-Spaulding Conduit

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	51	28	81	47	47	34	0	0	0	161	134	100	73
10%	163	217	127	72	71	47	0	0	0	176	169	126	90
25%	216	217	192	123	91	79	36	0	0	198	216	217	102
50%	216	217	216	184	193	184	102	90	124	216	216	290	134
75%	290	217	216	290	290	290	282	224	300	216	216	290	179
90%	290	217	290	290	313	303	302	300	300	216	290	290	197
100%	290	290	290	290	325	325	325	300	300	290	290	290	207
Mean	232	220	214	191	190	178	143	122	145	208	224	238	139
2008-2009 BiOps													
0%	51	28	81	47	47	34	0	0	0	161	134	100	73
10%	163	217	127	72	71	47	0	0	0	176	169	126	90
25%	216	217	196	123	91	79	36	0	0	198	216	217	102
50%	216	217	216	184	191	184	102	90	124	216	216	290	134
75%	290	217	216	290	290	290	282	224	300	216	216	290	179
90%	290	217	290	290	315	303	313	300	300	216	290	290	197
100%	290	290	290	290	325	325	325	300	300	290	290	290	212
Mean	232	220	213	191	190	178	143	122	145	208	224	239	139
2019 BiOps													
0%	51	28	81	47	47	34	0	0	0	161	134	100	73
10%	163	217	127	72	71	47	0	0	0	176	169	126	90
25%	216	217	192	122	91	79	36	0	0	198	216	217	102
50%	216	217	216	184	191	184	102	90	124	216	216	290	134
75%	290	217	216	290	290	290	282	224	300	216	253	290	179
90%	290	217	290	290	313	294	302	300	300	216	290	290	197
100%	290	290	290	290	325	325	325	300	300	290	290	290	207
Mean	234	220	214	190	190	178	143	122	145	208	225	237	139
VA													
0%	51	28	81	47	47	34	0	0	0	161	134	100	73
10%	163	217	127	72	71	47	0	0	0	176	169	126	90
25%	216	217	192	122	91	79	36	0	0	198	216	217	102
50%	216	217	216	184	191	184	102	90	124	216	216	290	134
75%	290	217	216	290	290	290	282	224	300	216	216	290	179
90%	290	217	290	290	313	303	302	300	300	216	290	290	197
100%	290	290	290	290	325	325	325	300	300	290	290	290	212
Mean	234	220	214	191	190	178	143	121	145	210	224	237	139
55 w/WSAs													
0%	51	30	85	39	45	34	0	0	0	101	104	100	67
10%	122	191	108	67	72	47	0	0	0	161	134	100	80
25%	216	217	140	107	91	83	36	0	0	196	173	217	96
50%	216	217	216	163	191	184	140	89	50	216	216	217	128
75%	216	217	216	282	290	290	299	233	235	216	216	217	164
90%	290	217	290	290	310	290	300	300	300	216	290	290	187
100%	290	290	290	290	325	325	325	300	300	290	290	290	208
Mean	212	212	192	177	189	179	153	116	116	201	207	211	131

Table H1a2-106. Water Year Average of Monthly Flows (cfs) — Bowman-Spaulding Conduit

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	216	222	183	117	99	94	10	0	3	201	181	161
D	222	218	200	149	124	103	55	33	50	206	197	204
BN	234	216	202	173	151	146	103	99	147	202	220	256
AN	223	203	215	208	231	203	192	195	208	202	235	272
W	251	229	248	265	296	290	284	237	262	218	265	280
All	232	220	214	191	190	178	143	122	145	208	224	238
2008-2009 BiOps												
C	211	222	184	117	99	94	10	0	3	201	181	161
D	222	218	200	149	124	103	55	33	50	206	197	204
BN	234	216	202	173	151	146	103	99	147	202	224	256
AN	229	203	215	208	228	203	192	195	208	196	235	278
W	251	229	245	265	296	290	285	238	262	221	263	280
All	232	220	213	191	190	178	143	122	145	208	224	239
2019 BiOps												
C	216	222	183	117	99	94	10	0	3	201	181	161
D	222	218	200	149	124	103	55	33	50	206	197	204
BN	238	216	202	173	151	146	102	99	147	206	220	256
AN	229	203	215	207	228	203	191	194	208	202	235	272
W	251	229	248	265	296	289	284	237	262	216	268	277
All	234	220	214	190	190	178	143	122	145	208	225	237
VA												
C	216	222	183	117	99	94	10	0	3	201	181	161
D	222	218	200	149	124	103	55	33	50	206	197	204
BN	238	216	202	173	151	146	103	99	147	202	220	256
AN	229	203	215	207	228	203	191	194	208	196	235	272
W	251	229	248	265	295	290	284	237	262	228	265	277
All	234	220	214	191	190	178	143	121	145	210	224	237
55 w/WSAs												
C	176	205	159	110	96	95	9	0	0	198	153	139
D	199	206	184	133	127	106	63	24	36	200	189	188
BN	237	217	174	153	155	153	123	86	104	201	208	230
AN	203	199	197	188	227	193	215	171	164	194	222	235
W	230	224	224	256	291	287	291	242	224	208	243	243
All	212	212	192	177	189	179	153	116	116	201	207	211

H1a2.4.2 Drum Canal

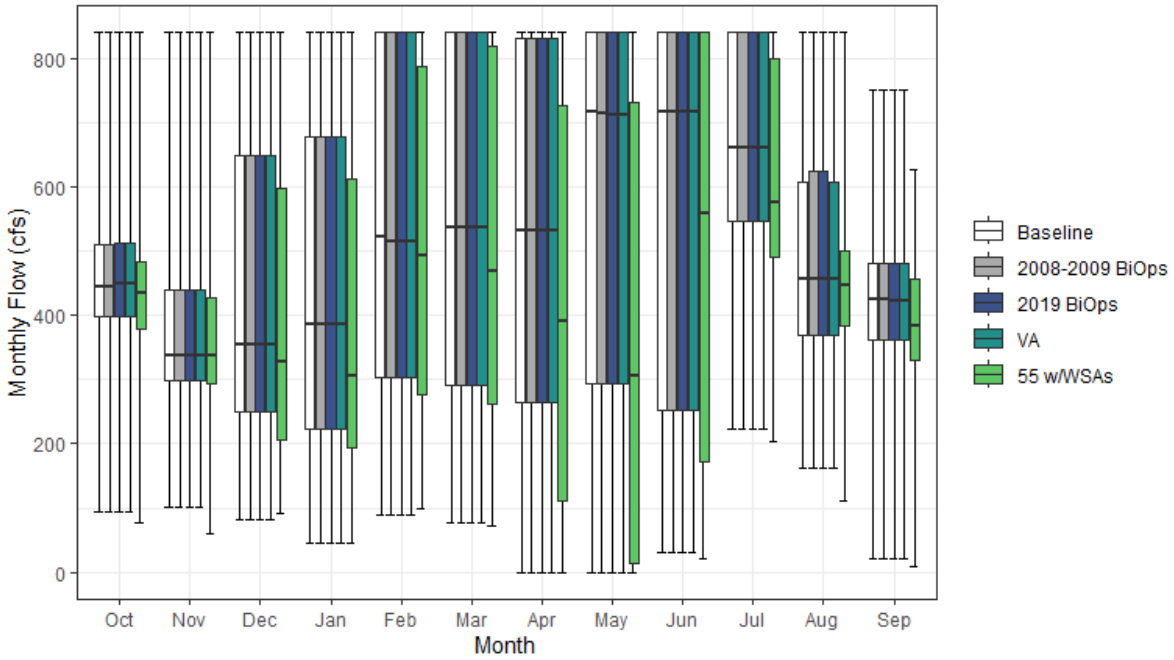

Figure H1a2-54. Drum Canal Monthly Boxplot (cfs)

Table H1a2-107. Cumulative Distribution of Monthly Flow (cfs) — Drum Canal

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	94	101	82	44	89	77	0	0	31	223	162	22	87
10%	349	272	170	131	176	187	128	16	86	349	265	114	180
25%	398	298	249	222	303	290	264	294	251	545	369	362	257
50%	444	338	354	385	521	537	533	716	717	660	457	424	355
75%	510	440	648	678	840	840	831	840	840	840	608	481	475
90%	567	674	840	840	840	840	840	840	840	840	826	550	521
100%	840	840	840	840	840	840	840	840	840	840	840	750	576
Mean	450	403	441	444	522	522	503	557	577	653	497	395	360
2008-2009 BiOps													
0%	94	100	81	44	89	77	0	0	31	223	162	22	88
10%	348	272	170	131	176	187	127	16	85	349	265	114	180
25%	398	298	250	222	303	290	264	294	251	545	369	362	257
50%	443	338	354	385	515	537	532	715	717	660	457	424	356
75%	510	440	648	678	840	840	831	840	840	840	623	481	474
90%	567	674	840	840	840	840	840	840	840	840	825	550	521
100%	840	840	840	840	840	840	840	840	840	840	840	750	576
Mean	450	403	440	444	522	522	503	557	577	653	496	395	360
2019 BiOps													
0%	94	101	82	44	89	77	0	0	31	223	162	22	87
10%	349	272	170	131	176	187	128	16	85	349	266	113	180
25%	398	298	249	222	303	290	264	294	251	545	369	362	257
50%	449	338	354	385	515	537	533	711	717	660	457	423	356
75%	511	440	648	678	840	840	831	840	840	840	623	481	475
90%	567	674	840	840	840	840	840	840	840	840	826	550	521
100%	840	840	840	840	840	840	840	840	840	840	840	750	576
Mean	451	403	441	443	522	522	503	557	577	653	498	394	360
VA													
0%	94	101	81	44	89	77	0	0	31	223	162	22	87
10%	348	271	170	131	176	187	128	16	86	349	265	114	180
25%	398	298	249	222	303	290	264	294	251	545	369	362	257
50%	449	338	354	385	515	537	533	711	717	660	457	423	356
75%	511	440	648	678	840	840	831	840	840	840	608	481	475
90%	567	674	840	840	840	840	840	840	840	840	837	550	521
100%	840	840	840	840	840	840	840	840	840	840	840	750	576
Mean	451	403	441	443	522	522	503	557	577	653	498	394	360
55 w/WSAs													
0%	77	59	91	44	98	72	0	0	22	203	111	9	86
10%	340	258	142	106	165	146	0	7	32	272	213	236	154
25%	378	292	206	194	276	261	112	14	173	491	384	331	215
50%	435	337	326	305	493	467	391	307	559	575	446	383	326
75%	482	426	597	613	787	820	726	730	840	798	500	456	435
90%	532	603	840	840	840	840	840	840	840	840	610	511	497
100%	840	840	840	840	840	840	840	840	840	840	840	627	556
Mean	432	384	404	417	509	489	413	374	507	585	445	371	322

Table H1a2-108. Water Year Average of Monthly Flows (cfs) — Drum Canal

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	430	337	292	187	296	279	120	107	234	404	285	168
D	416	372	345	264	381	336	356	357	400	558	373	350
BN	426	348	321	377	405	472	495	611	608	689	480	415
AN	435	400	478	567	626	655	636	797	686	710	534	465
W	506	497	651	704	778	767	768	814	827	811	697	508
All	450	403	441	444	522	522	503	557	577	653	497	395
2008-2009 BiOps												
C	426	337	293	187	296	279	120	107	234	404	285	168
D	416	372	345	265	381	336	356	357	400	558	373	350
BN	426	348	321	377	405	472	495	611	609	689	484	415
AN	441	400	478	567	623	655	636	797	687	710	531	471
W	506	497	649	704	778	767	768	814	827	811	693	507
All	450	403	440	444	522	522	503	557	577	653	496	395
2019 BiOps												
C	430	337	292	187	296	279	120	107	234	404	285	168
D	416	372	345	265	381	336	356	357	400	558	373	350
BN	430	348	321	377	405	472	495	611	608	689	484	415
AN	441	400	478	566	623	655	636	795	686	710	539	465
W	506	497	651	704	778	767	768	814	827	811	697	505
All	451	403	441	443	522	522	503	557	577	653	498	394
VA												
C	430	337	292	187	296	279	120	107	234	404	285	168
D	416	372	345	265	381	336	356	357	400	558	373	350
BN	430	348	321	377	405	472	495	611	608	689	480	415
AN	441	400	478	566	623	655	636	795	686	710	535	465
W	506	497	651	704	778	767	768	814	827	811	700	506
All	451	403	441	443	522	522	503	557	577	653	498	394
55 w/WSAs												
C	404	318	262	176	282	241	38	27	173	349	257	181
D	395	357	317	239	365	301	209	146	321	497	390	354
BN	436	336	291	339	397	417	360	320	552	616	436	395
AN	420	380	427	528	600	632	570	527	615	648	473	428
W	478	470	604	680	771	749	732	701	750	731	579	445
All	432	384	404	417	509	489	413	374	507	585	445	371

H1a2.4.3 Hell Hole Tunnel

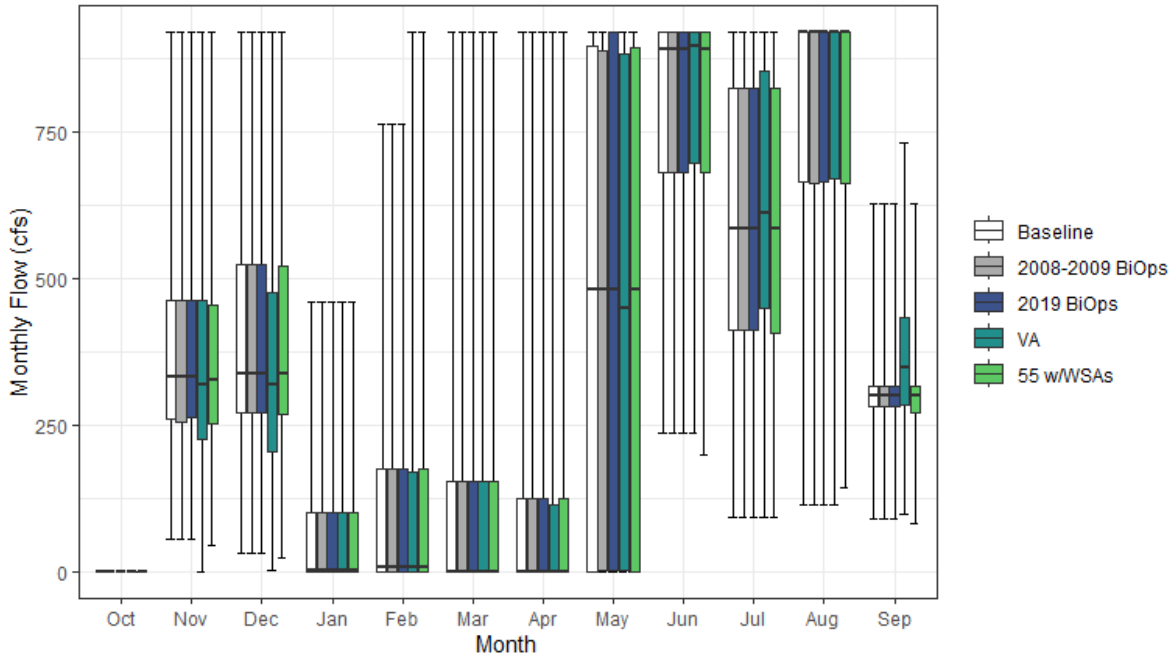

Figure H1a2-55. Hell Hole Tunnel Monthly Boxplot (cfs)

Table H1a2-109. Cumulative Distribution of Monthly Flow (cfs) — Hell Hole Tunnel

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	0	55	32	0	0	0	0	0	237	93	114	90	48
10%	0	199	217	0	0	0	0	0	401	290	281	216	117
25%	0	260	270	0	0	0	0	0	680	411	664	280	167
50%	0	332	337	1	6	0	0	481	890	584	920	300	245
75%	0	463	524	99	174	153	124	896	920	825	920	315	319
90%	0	676	883	245	297	388	486	920	920	884	920	396	375
100%	0	920	920	460	764	920	920	920	920	920	920	627	503
Mean	0	387	433	68	103	105	121	465	773	600	764	300	249
2008-2009 BiOps													
0%	0	55	32	0	0	0	0	0	237	93	114	90	48
10%	0	199	217	0	0	0	0	0	401	290	281	216	116
25%	0	254	270	0	0	0	0	0	680	411	663	280	167
50%	0	331	337	1	6	0	0	480	890	584	920	300	245
75%	0	463	524	99	174	153	124	888	920	825	920	315	318
90%	0	676	905	245	297	388	486	920	920	884	920	396	375
100%	0	920	920	460	764	920	920	920	920	920	920	627	503
Mean	0	386	432	68	103	105	121	463	773	600	764	300	249
2019 BiOps													
0%	0	55	32	0	0	0	0	0	237	93	114	90	48
10%	0	198	218	0	0	0	0	0	401	290	281	216	118
25%	0	262	270	0	0	0	0	1	680	411	663	280	167
50%	0	332	337	1	6	0	0	480	890	584	920	300	245
75%	0	462	524	99	174	153	124	920	920	825	920	316	319
90%	0	676	838	245	297	388	486	920	920	884	920	396	374
100%	0	920	920	460	764	920	920	920	920	920	920	627	503
Mean	0	386	431	68	103	105	121	465	773	600	764	300	249
VA													
0%	0	0	2	0	0	0	0	0	237	93	114	97	51
10%	0	149	155	0	0	0	0	0	401	319	318	250	112
25%	0	226	204	0	0	0	0	1	696	449	671	284	169
50%	0	319	319	1	6	0	0	450	896	610	920	349	257
75%	0	464	475	99	169	153	113	884	920	854	920	434	325
90%	0	639	920	245	297	388	486	920	920	890	920	468	375
100%	0	920	920	460	920	920	920	920	920	920	920	732	506
Mean	0	368	384	67	103	104	121	463	780	629	764	353	251
55 w/WSAs													
0%	0	44	24	0	0	0	0	0	198	93	142	81	47
10%	0	189	216	0	0	0	0	0	399	290	281	176	116
25%	0	253	268	0	0	0	0	0	680	406	663	270	167
50%	0	327	337	1	6	0	0	480	890	584	920	300	245
75%	0	454	520	99	174	153	124	894	920	825	920	315	318
90%	0	666	882	245	297	388	486	920	920	884	920	396	377
100%	0	920	920	460	920	920	920	920	920	920	920	627	507
Mean	0	379	428	68	104	105	121	469	772	599	764	295	249

Table H1a2-110. Water Year Average of Monthly Flows (cfs) — Hell Hole Tunnel

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	0	290	314	2	0	0	0	0	471	290	331	270
D	0	382	328	27	24	7	15	183	702	466	689	306
BN	0	365	367	48	67	34	52	442	823	618	872	312
AN	0	372	424	72	167	91	112	709	882	672	920	265
W	0	460	618	144	212	282	311	837	910	824	920	317
All	0	387	433	68	103	105	121	465	773	600	764	300
2008-2009 BiOps												
C	0	289	313	2	1	0	0	0	471	290	331	269
D	0	382	330	27	24	7	15	183	702	466	689	306
BN	0	363	367	48	67	34	52	442	822	618	872	312
AN	0	371	424	72	167	91	112	712	882	672	920	265
W	0	460	615	144	212	282	311	829	911	824	920	317
All	0	386	432	68	103	105	121	463	773	600	764	300
2019 BiOps												
C	0	289	315	2	1	0	0	0	471	290	331	270
D	0	382	331	27	24	7	15	185	702	466	689	306
BN	0	365	367	48	67	34	52	440	821	618	872	312
AN	0	371	416	72	167	91	112	720	881	672	920	265
W	0	460	612	144	212	282	311	833	914	824	920	317
All	0	386	431	68	103	105	121	465	773	600	764	300
VA												
C	0	264	269	2	1	0	0	0	471	290	335	268
D	0	381	275	27	24	7	15	183	713	501	692	369
BN	0	348	302	47	66	34	52	440	838	692	868	456
AN	0	358	377	72	163	91	112	704	887	729	916	410
W	0	431	578	142	215	281	310	832	914	824	920	300
All	0	368	384	67	103	104	121	463	780	629	764	353
55 w/WSAs												
C	0	280	307	2	0	0	0	22	467	285	336	262
D	0	375	322	27	24	7	15	181	701	466	689	300
BN	0	361	365	48	67	34	52	446	821	617	867	311
AN	0	362	419	72	167	91	112	706	882	672	920	259
W	0	453	613	144	217	282	311	838	911	824	920	314
All	0	379	428	68	104	105	121	469	772	599	764	295

H1a2.4.4 Jenkinson Lake Camino Conduit

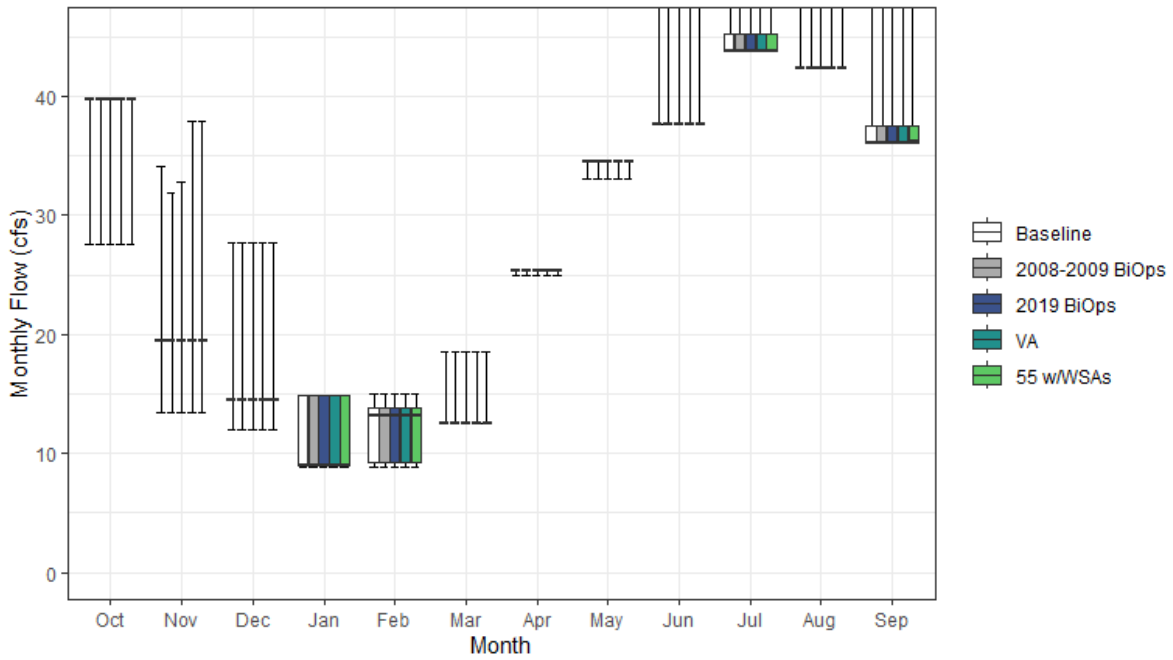

Figure H1a2-56. Jenkinson Lake Camino Conduit Monthly Boxplot (cfs)

Table H1a2-111. Cumulative Distribution of Monthly Flow (cfs) — Jenkinson Lake Camino Conduit

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	28	13	12	9	9	13	25	33	38	44	42	36	18
10%	38	18	14	9	9	13	25	35	38	44	42	36	20
25%	40	19	14	9	9	13	25	35	38	44	42	36	20
50%	40	19	14	9	13	13	25	35	38	44	42	36	20
75%	40	19	14	15	14	13	25	35	38	45	42	38	21
90%	40	19	28	15	14	13	25	35	38	61	42	45	22
100%	40	34	28	15	15	19	25	35	51	67	67	57	24
Mean	39	19	16	11	12	13	25	35	38	48	44	39	20
2008-2009 BiOps													
0%	28	13	12	9	9	13	25	33	38	44	42	36	18
10%	38	18	14	9	9	13	25	35	38	44	42	36	20
25%	40	19	14	9	9	13	25	35	38	44	42	36	20
50%	40	19	14	9	13	13	25	35	38	44	42	36	20
75%	40	19	14	15	14	13	25	35	38	45	42	38	21
90%	40	19	28	15	14	13	25	35	38	61	42	45	22
100%	40	32	28	15	15	19	25	35	51	67	67	57	24
Mean	39	19	16	11	12	13	25	35	38	48	44	39	20
2019 BiOps													
0%	28	13	12	9	9	13	25	33	38	44	42	36	18
10%	38	18	14	9	9	13	25	35	38	44	42	36	20
25%	40	19	14	9	9	13	25	35	38	44	42	36	20
50%	40	19	14	9	13	13	25	35	38	44	42	36	20
75%	40	19	14	15	14	13	25	35	38	45	42	38	21
90%	40	19	28	15	14	13	25	35	38	61	42	45	22
100%	40	33	28	15	15	19	25	35	51	67	67	57	24
Mean	39	19	16	11	12	13	25	35	38	48	44	39	20
VA													
0%	28	13	12	9	9	13	25	33	38	44	42	36	18
10%	38	18	14	9	9	13	25	35	38	44	42	36	20
25%	40	19	14	9	9	13	25	35	38	44	42	36	20
50%	40	19	14	9	13	13	25	35	38	44	42	36	20
75%	40	19	14	15	14	13	25	35	38	45	42	38	21
90%	40	19	28	15	14	13	25	35	38	61	42	45	22
100%	40	38	28	15	15	19	25	35	51	67	67	57	24
Mean	39	19	16	11	12	13	25	35	38	48	44	39	20
55 w/WSAs													
0%	28	13	12	9	9	13	25	33	38	44	42	36	18
10%	38	18	14	9	9	13	25	35	38	44	42	36	20
25%	40	19	14	9	9	13	25	35	38	44	42	36	20
50%	40	19	14	9	13	13	25	35	38	44	42	36	20
75%	40	19	14	15	14	13	25	35	38	45	42	38	21
90%	40	19	28	15	14	13	25	35	38	61	42	45	22
100%	40	38	28	15	15	19	25	35	51	67	67	57	24
Mean	39	19	16	11	12	13	25	35	38	48	44	39	20

Table H1a2-112. Water Year Average of Monthly Flows (cfs) — Jenkinson Lake Camino Conduit

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	39	19	15	12	10	13	25	34	38	50	45	38
D	38	19	15	9	10	13	25	35	38	48	44	39
BN	39	19	16	10	11	13	25	35	38	47	44	40
AN	39	20	15	12	12	13	25	35	38	54	44	43
W	40	20	18	13	14	13	25	35	38	44	42	37
All	39	19	16	11	12	13	25	35	38	48	44	39
2008-2009 BiOps												
C	39	19	15	12	10	13	25	34	38	50	45	38
D	38	19	15	9	10	13	25	35	38	48	44	39
BN	39	19	16	10	11	13	25	35	38	47	44	40
AN	39	20	15	12	12	13	25	35	38	54	44	43
W	40	20	18	13	14	13	25	35	38	44	42	37
All	39	19	16	11	12	13	25	35	38	48	44	39
2019 BiOps												
C	39	19	15	12	10	13	25	34	38	50	45	38
D	38	19	15	9	10	13	25	35	38	48	44	39
BN	39	19	16	10	11	13	25	35	38	47	44	40
AN	39	20	15	12	12	13	25	35	38	54	44	43
W	40	20	18	13	14	13	25	35	38	44	42	37
All	39	19	16	11	12	13	25	35	38	48	44	39
VA												
C	39	19	15	12	10	13	25	34	38	50	45	38
D	38	19	15	9	10	13	25	35	38	48	44	39
BN	39	19	16	10	11	13	25	35	38	47	44	40
AN	39	20	15	12	12	13	25	35	38	54	44	43
W	40	20	18	13	14	13	25	35	38	44	42	37
All	39	19	16	11	12	13	25	35	38	48	44	39
55 w/WSAs												
C	39	19	15	11	10	13	25	34	38	50	45	38
D	38	19	14	9	10	13	25	35	38	48	44	39
BN	39	19	16	10	11	13	25	35	38	47	44	40
AN	39	20	15	12	12	13	25	35	38	54	44	43
W	40	20	18	13	14	13	25	35	38	44	42	37
All	39	19	16	11	12	13	25	35	38	48	44	39

H1a2.4.5 Milton-Bowman Tunnel

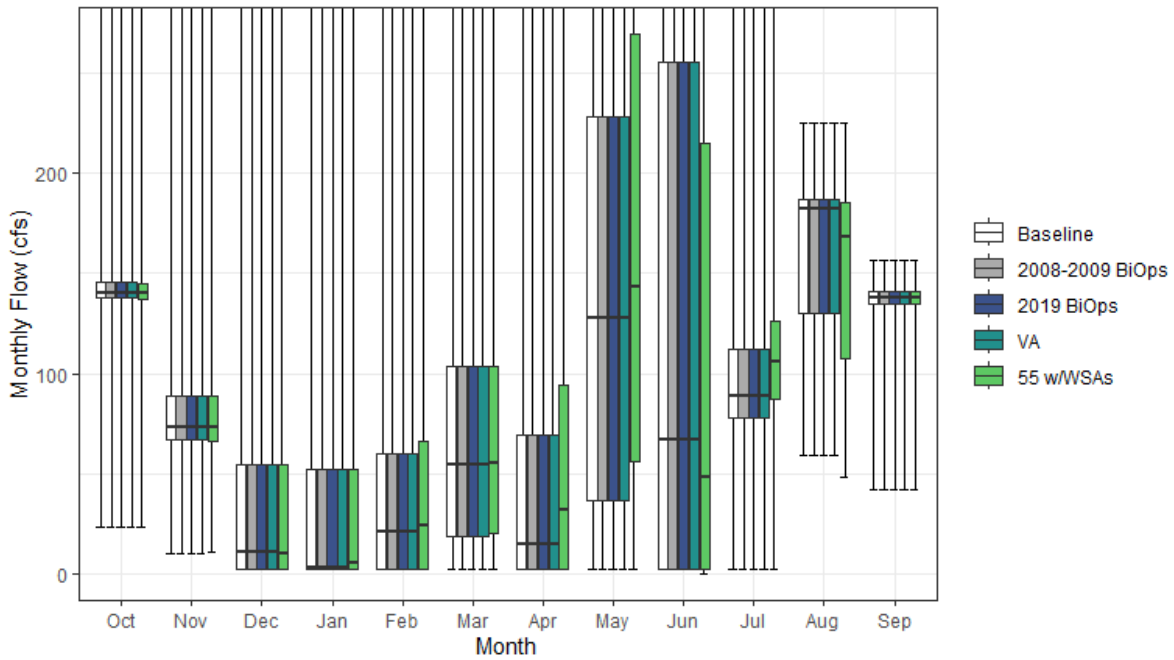

Figure H1a2-57. Milton-Bowman Tunnel Monthly Boxplot (cfs)

Table H1a2-113. Cumulative Distribution of Monthly Flow (cfs) — Milton-Bowman Tunnel

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	23	10	2	2	2	2	2	2	2	2	59	42	25
10%	101	63	2	2	2	2	2	2	2	71	88	89	30
25%	137	67	2	2	2	18	2	36	2	78	130	135	43
50%	140	73	10	3	21	55	14	128	67	89	182	138	67
75%	146	89	54	52	60	104	69	228	256	112	187	141	97
90%	155	127	144	125	105	137	113	374	425	154	192	147	117
100%	369	425	425	425	425	425	419	425	425	326	225	156	209
Mean	139	91	47	45	50	69	46	152	144	104	161	129	71
2008-2009 BiOps													
0%	23	10	2	2	2	2	2	2	2	2	59	42	25
10%	101	63	2	2	2	2	2	2	2	71	88	89	30
25%	137	67	2	2	2	18	2	36	2	78	130	135	43
50%	140	73	10	3	21	55	14	128	67	89	182	138	67
75%	146	89	54	52	60	104	69	228	256	112	187	141	97
90%	155	127	144	125	105	137	113	374	425	154	192	147	117
100%	369	425	425	425	425	425	419	425	425	326	225	156	209
Mean	139	91	47	45	50	69	46	152	144	104	161	129	71
2019 BiOps													
0%	23	10	2	2	2	2	2	2	2	2	59	42	25
10%	101	63	2	2	2	2	2	2	2	71	88	89	30
25%	137	67	2	2	2	18	2	36	2	78	130	135	43
50%	140	73	10	3	21	55	14	128	67	89	182	138	67
75%	146	89	54	52	60	104	69	228	256	112	187	141	97
90%	155	127	144	125	105	137	113	374	425	154	192	147	117
100%	369	425	425	425	425	425	419	425	425	326	225	156	209
Mean	139	91	47	45	50	69	46	152	144	104	161	129	71
VA													
0%	23	10	2	2	2	2	2	2	2	2	59	42	25
10%	101	63	2	2	2	2	2	2	2	71	88	89	30
25%	137	67	2	2	2	18	2	36	2	78	130	135	43
50%	140	73	10	3	21	54	14	128	67	89	182	138	67
75%	146	89	54	52	60	104	69	228	256	112	187	141	97
90%	155	127	144	125	105	137	113	374	425	154	192	147	117
100%	369	425	425	425	425	425	420	425	425	326	225	156	209
Mean	139	91	47	45	50	69	46	152	144	104	161	129	71
55 w/WSAs													
0%	23	11	2	2	2	2	2	2	0	2	48	42	23
10%	88	62	2	2	2	2	2	13	2	78	78	77	31
25%	137	66	2	2	2	20	2	56	2	88	108	135	43
50%	140	73	10	5	24	55	31	144	48	106	168	138	67
75%	145	88	54	52	66	104	94	270	215	126	186	141	94
90%	155	127	144	125	105	140	165	379	308	152	191	147	116
100%	369	425	425	425	425	425	419	425	425	312	225	156	202
Mean	137	91	47	45	52	71	60	165	115	114	147	126	71

Table H1a2-114. Water Year Average of Monthly Flows (cfs) — Milton-Bowman Tunnel

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	134	70	8	3	14	25	7	13	8	81	105	98
D	130	79	19	10	12	37	29	71	38	85	142	124
BN	133	75	13	11	23	61	43	150	110	90	175	136
AN	127	106	57	57	48	87	55	230	166	93	184	141
W	157	116	106	109	114	115	79	255	306	144	187	141
All	139	91	47	45	50	69	46	152	144	104	161	129
2008-2009 BiOps												
C	134	70	8	3	14	25	7	13	8	81	105	98
D	130	79	19	10	12	37	29	71	38	85	142	124
BN	133	75	13	11	23	61	43	150	110	90	175	136
AN	127	106	57	57	48	87	55	230	166	93	184	141
W	157	116	106	109	114	115	79	255	306	144	187	141
All	139	91	47	45	50	69	46	152	144	104	161	129
2019 BiOps												
C	134	70	8	3	14	25	7	13	8	81	105	98
D	130	79	19	10	12	37	29	71	38	85	142	124
BN	133	75	13	11	23	61	43	150	110	90	175	136
AN	127	106	57	57	48	87	55	230	166	93	184	141
W	157	116	106	109	114	115	79	255	306	144	187	141
All	139	91	47	45	50	69	46	152	144	104	161	129
VA												
C	134	70	8	3	14	25	7	13	8	81	105	98
D	130	79	18	10	12	37	29	71	38	85	142	124
BN	133	75	13	11	23	61	43	150	110	90	175	136
AN	127	106	57	57	48	87	55	230	166	93	184	141
W	157	116	106	109	114	115	79	255	306	144	187	141
All	139	91	47	45	50	69	46	152	144	104	161	129
55 w/WSAs												
C	126	69	10	5	14	23	7	32	7	87	86	89
D	127	78	18	9	14	38	37	83	32	99	126	119
BN	133	75	13	10	24	65	56	156	98	105	155	135
AN	127	105	57	58	48	88	77	222	134	109	168	141
W	155	116	106	109	117	119	101	281	236	146	182	140
All	137	91	47	45	52	71	60	165	115	114	147	126

H1a2.4.6 Toadtown Canal

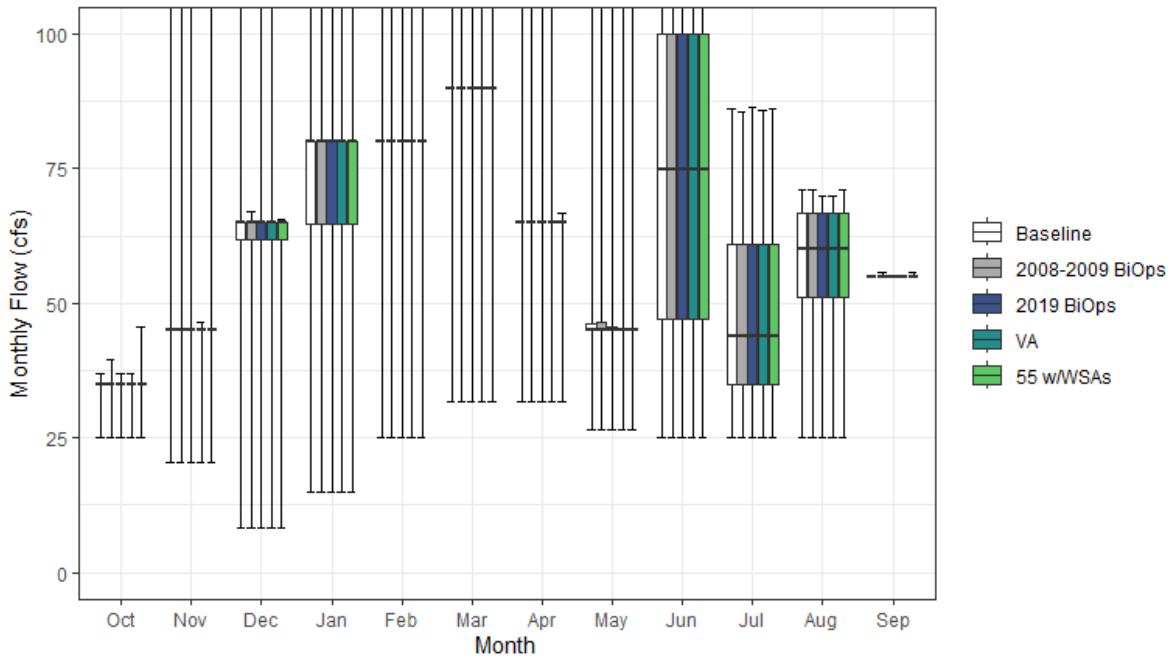

Figure H1a2-58. Toadtown Canal Monthly Boxplot (cfs)

Table H1a2-115. Cumulative Distribution of Monthly Flow (cfs) — Toadtown Canal

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	25	21	8	15	25	32	32	27	25	25	25	55	26
10%	35	33	33	31	77	90	65	45	35	28	45	55	36
25%	35	45	62	65	80	90	65	45	47	35	51	55	41
50%	35	45	65	80	80	90	65	45	75	44	60	55	44
75%	35	45	65	80	80	90	65	46	100	61	67	55	48
90%	35	45	65	80	81	91	67	94	102	84	70	55	51
100%	37	109	113	117	120	127	119	118	115	86	71	55	54
Mean	35	43	58	72	80	90	65	53	73	50	58	55	44
2008-2009 BiOps													
0%	25	21	8	15	25	32	32	27	25	25	25	55	26
10%	35	33	33	31	77	90	65	45	35	28	45	55	36
25%	35	45	62	65	80	90	65	45	47	35	51	55	41
50%	35	45	65	80	80	90	65	45	75	44	60	55	45
75%	35	45	65	80	80	90	65	46	100	61	67	55	48
90%	35	45	65	80	81	91	66	95	101	84	70	55	50
100%	40	109	67	117	120	127	119	119	113	86	71	56	54
Mean	35	45	58	72	78	90	65	54	73	49	58	55	44
2019 BiOps													
0%	25	21	8	15	25	32	32	27	25	25	25	55	26
10%	35	33	33	31	77	90	65	45	35	28	45	55	36
25%	35	45	62	65	80	90	65	45	47	35	51	55	41
50%	35	45	65	80	80	90	65	45	75	44	60	55	44
75%	35	45	65	80	80	90	65	46	100	61	67	55	48
90%	35	45	65	80	81	91	67	46	102	84	70	55	51
100%	37	109	113	117	120	127	119	105	115	86	70	55	55
Mean	35	43	58	72	79	90	66	47	73	50	58	55	44
VA													
0%	25	21	8	15	25	32	32	27	25	25	25	55	26
10%	35	33	33	31	77	90	65	45	35	28	45	55	36
25%	35	45	62	65	80	90	65	45	47	35	51	55	41
50%	35	45	65	80	80	90	65	45	75	44	60	55	44
75%	35	45	65	80	80	90	65	45	100	61	67	55	48
90%	35	45	65	80	81	90	65	46	101	84	70	55	49
100%	37	46	113	117	120	127	115	109	114	86	70	55	55
Mean	35	43	58	72	79	89	65	48	72	50	58	55	44
55 w/WSAs													
0%	25	21	8	15	25	32	32	27	25	25	25	55	26
10%	35	33	33	31	77	90	65	45	35	28	45	55	36
25%	35	45	62	65	80	90	65	45	47	35	51	55	41
50%	35	45	65	80	80	90	65	45	75	44	60	55	44
75%	35	45	65	80	80	90	65	45	100	61	67	55	47
90%	35	45	65	80	81	91	65	45	100	84	70	55	49
100%	45	109	66	117	120	127	67	119	118	86	71	56	54
Mean	35	46	58	70	78	90	64	45	72	50	58	55	43

Table H1a2-116. Water Year Average of Monthly Flows (cfs) — Toadtown Canal

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	34	39	44	51	69	80	60	44	42	31	43	55
D	34	43	58	62	76	89	65	60	55	37	54	55
BN	35	42	54	73	78	90	65	65	72	43	58	55
AN	34	43	63	76	83	90	65	46	82	50	61	55
W	35	47	66	87	88	94	69	49	99	72	67	55
All	35	43	58	72	80	90	65	53	73	50	58	55
2008-2009 BiOps												
C	34	39	44	51	69	80	60	46	42	31	43	55
D	35	46	58	62	76	90	65	58	55	37	54	55
BN	35	43	54	73	78	90	65	67	72	43	58	55
AN	34	50	63	76	83	90	66	46	82	50	61	55
W	35	47	65	87	83	94	67	49	99	72	67	55
All	35	45	58	72	78	90	65	54	73	49	58	55
2019 BiOps												
C	34	39	44	51	69	80	60	41	42	31	43	55
D	34	43	58	62	76	90	65	45	55	37	54	55
BN	35	42	54	73	78	90	65	50	72	43	58	55
AN	34	43	63	76	83	90	65	46	82	50	61	55
W	35	47	66	87	87	94	71	49	99	72	67	55
All	35	43	58	72	79	90	66	47	73	50	58	55
VA												
C	34	39	44	51	69	80	60	41	42	31	43	55
D	34	43	58	62	76	89	65	49	55	37	54	55
BN	35	42	54	73	77	90	65	52	71	43	58	55
AN	34	43	63	76	83	90	65	45	81	50	61	55
W	35	45	66	87	85	93	67	49	99	72	67	55
All	35	43	58	72	79	89	65	48	72	50	58	55
55 w/WSAs												
C	35	39	44	51	69	80	60	42	42	31	43	55
D	35	52	58	62	76	90	65	45	55	37	54	55
BN	35	43	54	73	77	90	65	45	70	43	58	55
AN	34	50	63	75	80	90	65	45	81	50	61	55
W	35	47	65	83	83	94	65	48	97	72	67	55
All	35	46	58	70	78	90	64	45	72	50	58	55

H1a2.4.7 Slate Creek Tunnel

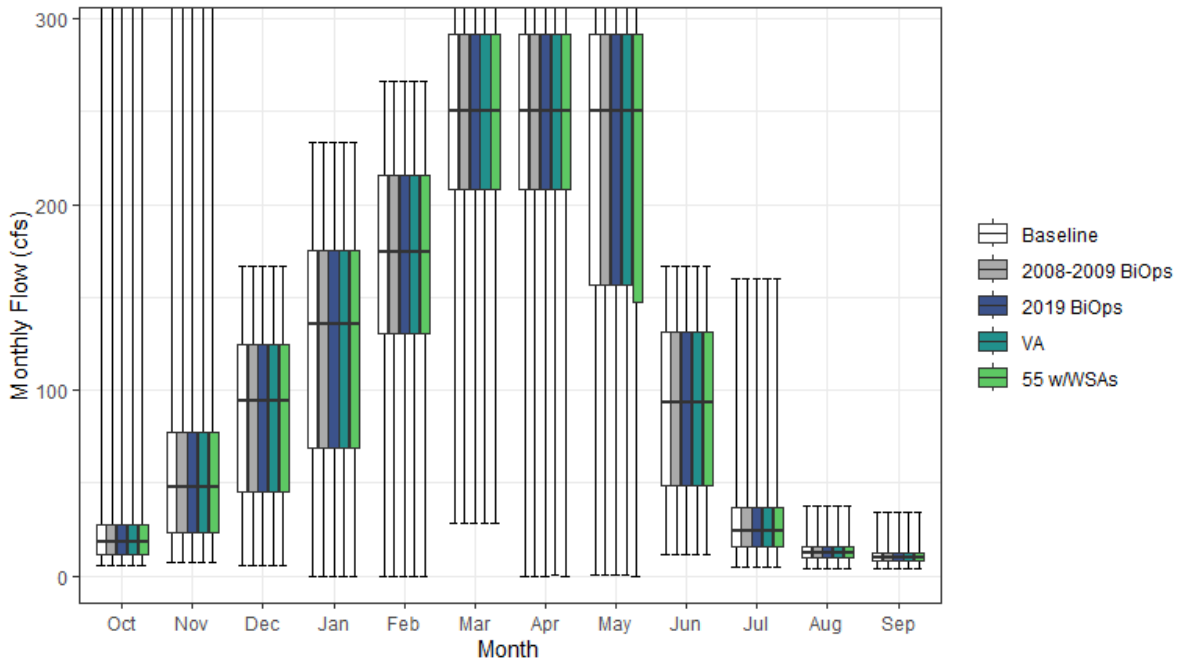

Figure H1a2-59. Slate Creek Tunnel Monthly Boxplot (cfs)

Table H1a2-117. Cumulative Distribution of Monthly Flow (cfs) — Slate Creek Tunnel

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	5	8	6	0	0	29	0	1	12	5	4	4	13
10%	8	15	28	43	71	139	149	81	27	13	8	7	50
25%	11	24	46	69	131	208	208	156	48	16	10	8	65
50%	18	48	94	136	175	250	250	250	93	24	12	10	78
75%	28	77	125	175	216	292	292	292	131	37	15	13	96
90%	44	184	146	204	233	292	292	292	146	57	20	14	108
100%	437	470	167	233	267	333	333	333	167	160	38	34	134
Mean	27	78	88	125	168	236	237	215	91	32	13	11	79
2008-2009 BiOps													
0%	5	8	6	0	0	29	0	1	12	5	4	4	13
10%	8	15	28	43	71	139	149	81	27	13	8	7	50
25%	11	23	46	69	131	208	208	156	48	16	10	8	65
50%	18	48	94	136	175	250	250	250	93	24	12	10	77
75%	28	77	125	175	216	292	292	292	131	37	15	13	96
90%	44	184	146	204	233	292	292	292	146	57	20	14	108
100%	437	470	167	233	267	333	333	333	167	160	38	34	134
Mean	27	78	88	125	168	235	237	215	91	32	13	11	79
2019 BiOps													
0%	5	8	6	0	0	29	0	1	12	5	4	4	13
10%	8	15	28	43	71	139	149	81	27	13	8	7	50
25%	11	24	46	69	131	208	208	156	48	16	10	8	65
50%	18	48	94	136	175	250	250	250	93	24	12	10	78
75%	28	77	125	175	216	292	292	292	131	37	15	13	96
90%	44	184	146	204	233	292	292	292	146	57	20	14	108
100%	437	470	167	233	267	333	333	333	167	160	38	34	134
Mean	27	78	88	125	168	236	237	215	91	32	13	11	79
VA													
0%	5	8	6	0	0	29	0	1	12	5	4	4	13
10%	8	15	28	43	71	139	149	81	27	13	8	7	50
25%	11	24	46	69	131	208	208	156	48	16	10	8	65
50%	19	48	94	136	175	250	250	250	93	24	12	10	77
75%	28	77	125	175	216	292	292	292	131	37	15	13	96
90%	44	184	146	204	233	292	292	292	146	57	20	14	108
100%	437	470	167	233	267	333	333	333	167	160	38	34	134
Mean	27	78	88	125	168	235	237	215	91	32	13	11	79
55 w/WSAs													
0%	5	8	6	0	0	29	0	0	12	5	4	4	13
10%	8	15	28	43	71	139	148	67	27	13	8	7	50
25%	11	24	46	69	131	208	208	148	48	16	10	8	65
50%	19	48	94	136	175	250	250	250	93	24	12	10	77
75%	28	77	125	175	216	292	292	292	131	37	15	13	95
90%	44	184	146	204	233	292	292	292	146	57	19	14	108
100%	429	470	167	233	267	333	333	333	167	160	38	34	127
Mean	26	78	88	125	168	236	233	210	91	32	13	11	79

Table H1a2-118. Water Year Average of Monthly Flows (cfs) — Slate Creek Tunnel

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	22	29	45	61	101	157	164	115	44	14	8	7
D	19	69	81	88	152	213	232	187	63	18	10	9
BN	19	49	68	130	167	235	259	226	93	26	12	9
AN	26	92	90	154	200	284	288	273	100	29	14	12
W	40	123	129	173	203	276	245	258	130	56	18	14
All	27	78	88	125	168	236	237	215	91	32	13	11
2008-2009 BiOps												
C	22	29	45	61	101	157	164	115	44	14	8	7
D	19	69	81	88	152	212	232	187	63	18	10	9
BN	19	49	68	130	167	235	259	226	93	26	12	9
AN	26	92	90	154	200	284	288	273	100	29	14	12
W	40	123	129	173	203	275	245	258	130	56	18	14
All	27	78	88	125	168	235	237	215	91	32	13	11
2019 BiOps												
C	22	29	45	61	101	157	164	115	44	14	8	7
D	19	69	81	88	152	212	232	187	63	18	10	9
BN	19	49	68	130	167	235	259	226	93	26	12	9
AN	26	92	90	154	200	284	288	273	100	29	14	12
W	40	123	129	173	203	276	245	258	130	56	18	14
All	27	78	88	125	168	236	237	215	91	32	13	11
VA												
C	22	29	45	61	101	157	164	115	44	14	8	7
D	19	69	81	88	152	212	232	187	63	18	10	9
BN	19	49	68	130	167	235	259	226	93	26	12	9
AN	26	92	90	154	200	284	288	273	100	29	14	12
W	40	123	128	173	203	273	245	258	130	56	18	14
All	27	78	88	125	168	235	237	215	91	32	13	11
55 w/WSAs												
C	22	29	45	61	101	157	164	115	44	14	8	7
D	19	69	81	88	152	212	232	187	63	18	10	9
BN	19	49	68	130	167	235	259	226	93	26	12	9
AN	26	92	90	154	200	284	288	273	100	29	14	12
W	39	123	128	173	203	276	234	241	130	56	18	14
All	26	78	88	125	168	236	233	210	91	32	13	11

H1a2.4.8 South Canal

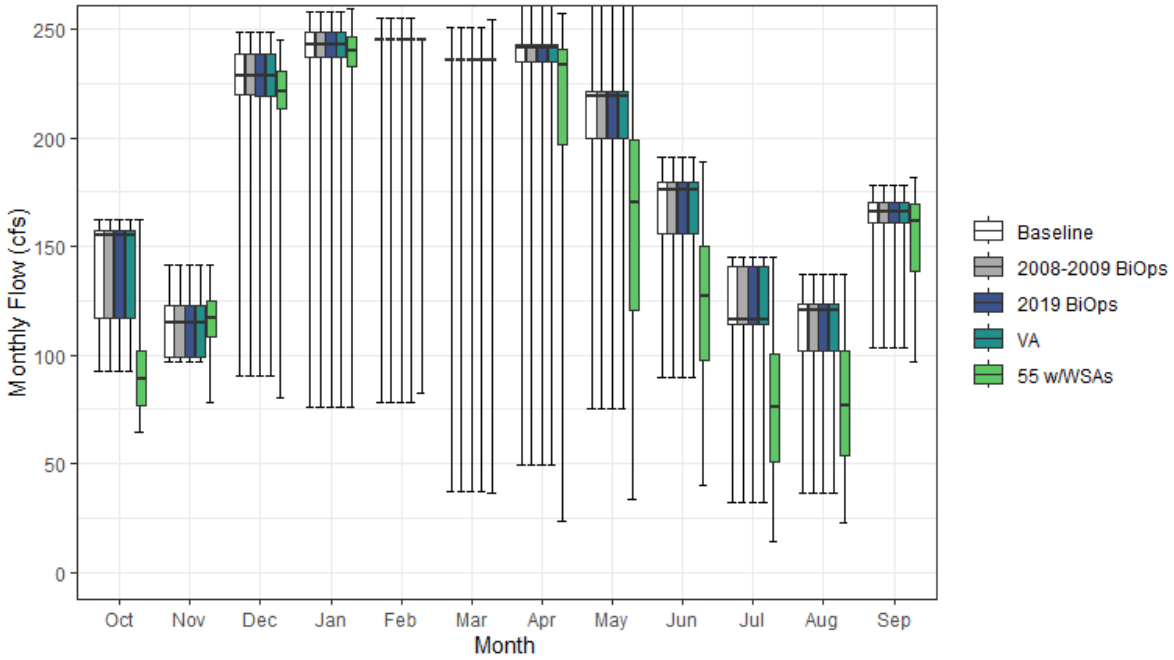

Figure H1a2-60. South Canal Monthly Boxplot (cfs)

Table H1a2-119. Cumulative Distribution of Monthly Flow (cfs) — South Canal

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	93	97	90	76	78	37	49	75	90	32	37	104	54
10%	113	97	213	223	245	236	175	172	152	101	99	143	124
25%	117	99	219	237	245	236	235	200	156	114	102	161	131
50%	155	115	228	243	245	236	241	219	176	116	121	166	135
75%	157	123	239	249	245	236	243	222	179	141	124	170	137
90%	160	132	247	251	245	236	247	223	182	142	125	173	138
100%	162	141	249	258	255	251	269	277	191	145	137	178	140
Mean	142	113	225	234	240	230	226	210	168	122	114	162	132
2008-2009 BiOps													
0%	93	97	90	76	78	37	49	75	90	32	37	104	54
10%	113	97	213	224	245	236	175	172	152	101	99	143	124
25%	117	99	219	237	245	236	235	200	156	114	102	161	131
50%	155	115	228	243	245	236	241	219	176	116	121	166	135
75%	157	123	239	249	245	236	243	222	179	141	124	170	137
90%	160	132	247	251	245	236	247	223	182	142	125	173	138
100%	162	141	249	258	255	251	269	277	191	145	137	178	140
Mean	142	113	225	234	240	230	226	210	168	122	114	162	132
2019 BiOps													
0%	93	97	90	76	78	37	49	75	90	32	37	104	54
10%	113	97	213	224	245	236	175	172	152	101	99	143	124
25%	117	99	219	237	245	236	235	200	156	114	102	161	131
50%	155	115	228	243	245	236	241	219	176	116	121	166	135
75%	157	123	239	249	245	236	243	222	179	141	124	170	137
90%	160	132	247	251	245	236	247	223	182	142	125	173	138
100%	162	141	249	258	255	251	269	277	191	145	137	178	140
Mean	142	113	225	234	240	230	226	210	168	122	114	162	132
VA													
0%	93	97	90	76	78	37	49	75	90	32	37	104	54
10%	113	97	213	224	245	236	175	172	152	101	99	143	124
25%	117	99	219	237	245	236	235	200	156	114	102	161	131
50%	155	115	228	243	245	236	241	219	176	116	121	166	135
75%	157	123	239	249	245	236	243	222	179	141	124	170	137
90%	160	132	247	251	245	236	247	223	182	142	125	173	138
100%	162	141	249	258	255	251	269	277	191	145	137	178	140
Mean	142	113	225	234	240	230	226	210	168	122	114	162	132
55 w/WSAs													
0%	65	78	80	76	82	36	24	34	40	14	23	97	43
10%	70	99	206	205	245	229	74	83	84	35	42	126	95
25%	77	109	213	233	245	236	197	121	97	51	54	139	107
50%	89	117	221	240	245	236	233	170	127	76	76	161	118
75%	102	125	230	246	245	236	241	199	150	100	102	170	128
90%	156	131	238	251	245	236	245	221	176	117	123	174	132
100%	162	142	245	259	245	254	257	276	189	145	137	181	138
Mean	98	116	218	231	238	227	200	158	124	77	78	153	115

Table H1a2-120. Water Year Average of Monthly Flows (cfs) — South Canal

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	143	117	217	209	218	204	164	168	154	102	101	156
D	140	111	225	234	244	233	231	202	169	123	113	163
BN	139	115	232	239	243	236	239	219	172	125	117	165
AN	135	113	224	241	245	236	241	217	168	132	111	158
W	146	113	224	241	245	236	242	228	171	124	120	164
All	142	113	225	234	240	230	226	210	168	122	114	162
2008-2009 BiOps												
C	143	117	217	209	218	204	164	168	154	102	101	156
D	140	111	225	234	244	233	231	202	169	123	113	163
BN	139	115	232	239	243	236	239	219	172	125	117	165
AN	135	113	224	241	245	236	241	217	168	132	111	158
W	146	113	224	241	245	236	242	228	171	124	120	164
All	142	113	225	234	240	230	226	210	168	122	114	162
2019 BiOps												
C	143	117	217	209	218	204	164	168	154	102	101	156
D	140	111	225	234	244	233	231	202	169	123	113	163
BN	139	115	232	239	243	236	239	219	172	125	117	165
AN	135	113	224	241	245	236	241	217	168	132	111	158
W	146	113	224	241	245	236	242	228	171	124	120	164
All	142	113	225	234	240	230	226	210	168	122	114	162
VA												
C	143	117	217	209	218	204	164	168	154	102	101	156
D	140	111	225	234	244	233	231	202	169	123	113	163
BN	139	115	232	239	243	236	239	219	172	125	117	165
AN	135	113	224	241	245	236	241	217	168	132	111	158
W	146	113	224	241	245	236	242	228	171	124	120	164
All	142	113	225	234	240	230	226	210	168	122	114	162
55 w/WSAs												
C	93	118	207	205	217	193	108	95	97	51	55	135
D	95	116	219	225	241	229	183	133	118	68	73	152
BN	110	114	223	240	237	236	218	165	124	78	80	159
AN	83	114	219	238	245	236	239	184	137	97	85	165
W	100	118	220	239	245	236	235	194	136	88	88	155
All	98	116	218	231	238	227	200	158	124	77	78	153

H1a2.4.9 South Yuba Canal

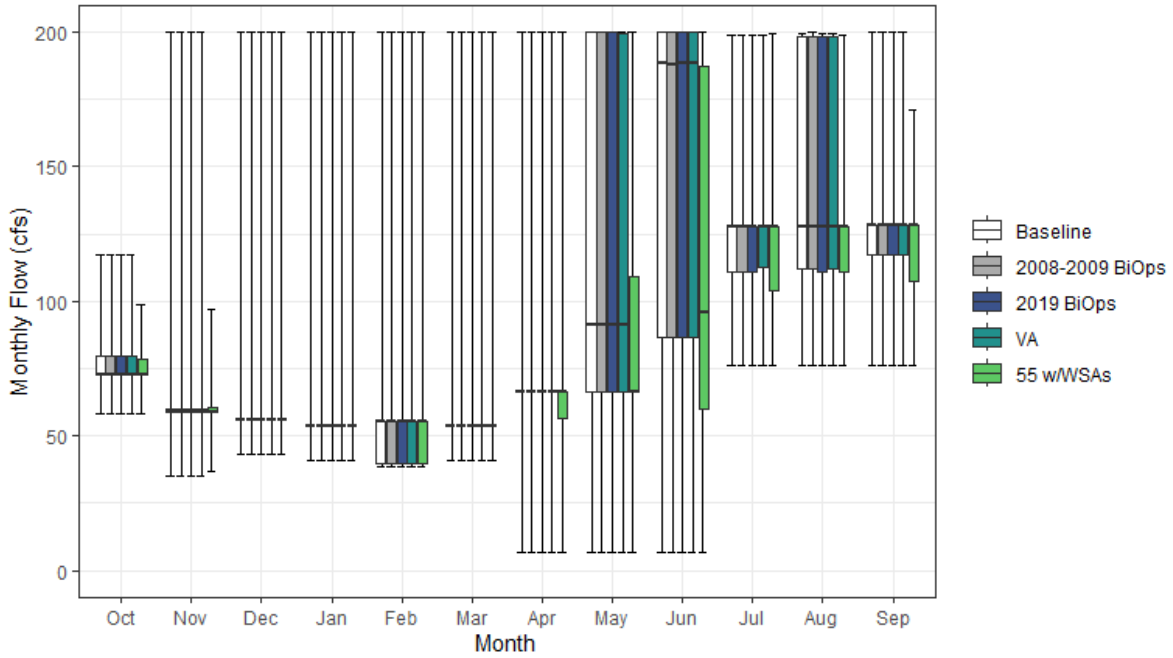

Figure H1a2-61. South Yuba Canal Monthly Boxplot (cfs)

Table H1a2-121. Cumulative Distribution of Monthly Flow (cfs) — South Yuba Canal

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	58	35	43	41	39	41	7	7	7	76	76	76	46
10%	73	59	43	41	40	41	7	23	51	90	76	76	55
25%	73	59	56	54	40	54	66	67	87	111	112	117	58
50%	73	59	56	54	55	54	66	91	188	128	128	128	64
75%	79	60	56	54	55	54	66	200	200	128	198	128	72
90%	88	74	86	66	60	55	138	200	200	198	199	128	85
100%	117	200	200	200	200	200	200	200	200	199	200	200	105
Mean	76	62	67	59	59	61	70	116	144	130	141	124	67
2008-2009 BiOps													
0%	58	35	43	41	39	41	7	7	7	76	76	76	46
10%	73	59	43	41	40	41	7	23	51	90	76	76	55
25%	73	59	56	54	40	54	66	67	87	111	112	118	58
50%	73	59	56	54	55	54	66	91	188	128	128	128	64
75%	79	60	56	54	55	54	66	200	200	128	198	128	72
90%	88	74	86	66	60	55	137	200	200	198	199	128	85
100%	117	200	200	200	200	200	200	200	200	199	200	200	105
Mean	76	62	67	59	59	61	70	115	144	129	141	124	67
2019 BiOps													
0%	58	35	43	41	39	41	7	7	7	76	76	76	46
10%	73	59	43	41	40	41	7	23	51	90	76	76	55
25%	73	59	56	54	40	54	66	66	87	111	111	117	58
50%	73	59	56	54	55	54	66	91	188	128	128	128	64
75%	79	60	56	54	55	54	66	200	200	128	198	128	72
90%	88	74	86	66	60	55	137	200	200	198	199	128	85
100%	117	200	200	200	200	200	200	200	200	199	199	200	105
Mean	76	62	67	59	59	61	70	115	144	130	140	124	67
VA													
0%	58	35	43	41	39	41	7	7	7	76	76	76	46
10%	73	59	43	41	40	41	7	23	51	90	76	76	55
25%	73	59	56	54	40	54	66	66	87	113	112	117	58
50%	73	59	56	54	55	54	66	91	188	128	128	128	63
75%	79	60	56	54	55	54	66	200	200	128	198	128	72
90%	88	74	86	66	60	55	137	200	200	198	199	128	85
100%	117	200	200	200	200	200	200	200	200	199	200	200	105
Mean	76	62	67	59	59	61	70	115	144	130	140	124	67
55 w/WSAs													
0%	58	37	43	41	39	41	7	7	7	76	76	76	42
10%	73	59	43	41	40	41	7	16	7	76	76	76	48
25%	73	59	56	54	40	54	57	66	60	104	111	107	52
50%	73	59	56	54	55	54	66	67	96	128	128	128	58
75%	79	60	56	54	55	54	66	109	187	128	128	128	64
90%	87	74	82	66	57	55	67	166	200	130	185	128	74
100%	99	97	200	200	200	200	200	200	200	200	199	171	99
Mean	76	62	64	57	59	60	64	83	107	120	126	118	60

Table H1a2-122. Water Year Average of Monthly Flows (cfs) — South Yuba Canal

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	75	61	61	61	48	52	49	137	133	167	179	153
D	75	64	58	54	46	49	40	91	122	140	162	128
BN	81	63	62	49	50	52	67	82	136	122	142	127
AN	74	68	69	51	51	53	77	113	149	110	130	110
W	76	59	79	71	84	83	104	145	168	115	109	108
All	76	62	67	59	59	61	70	116	144	130	141	124
2008-2009 BiOps												
C	75	61	61	61	48	52	49	137	133	167	179	153
D	75	64	58	54	46	49	40	91	122	140	162	128
BN	81	63	62	49	50	52	67	82	136	122	141	127
AN	74	68	69	51	51	53	77	112	149	108	130	110
W	76	59	79	71	84	83	104	145	168	115	109	108
All	76	62	67	59	59	61	70	115	144	129	141	124
2019 BiOps												
C	75	61	61	61	48	52	49	137	133	167	179	153
D	75	64	58	54	46	49	40	91	122	140	162	128
BN	81	63	62	49	50	52	67	82	136	123	140	127
AN	74	68	69	51	51	53	77	111	150	110	126	110
W	76	59	79	71	84	83	104	144	168	115	109	108
All	76	62	67	59	59	61	70	115	144	130	140	124
VA												
C	75	61	61	61	48	52	49	137	133	167	179	153
D	75	64	58	54	46	49	40	91	122	140	162	128
BN	81	63	62	49	50	52	67	82	136	122	141	127
AN	74	68	69	51	51	53	77	106	150	108	126	110
W	76	59	79	71	84	83	104	145	168	116	109	108
All	76	62	67	59	59	61	70	115	144	130	140	124
55 w/WSAs												
C	75	61	60	61	48	49	35	95	94	142	137	120
D	75	64	58	54	46	49	39	70	76	123	131	124
BN	79	64	62	49	50	52	65	59	103	127	131	127
AN	74	60	69	51	51	53	66	69	100	106	128	110
W	76	60	70	66	84	82	98	107	143	107	114	111
All	76	62	64	57	59	60	64	83	107	120	126	118

H1a2.4.10 Chalk Bluff Canal

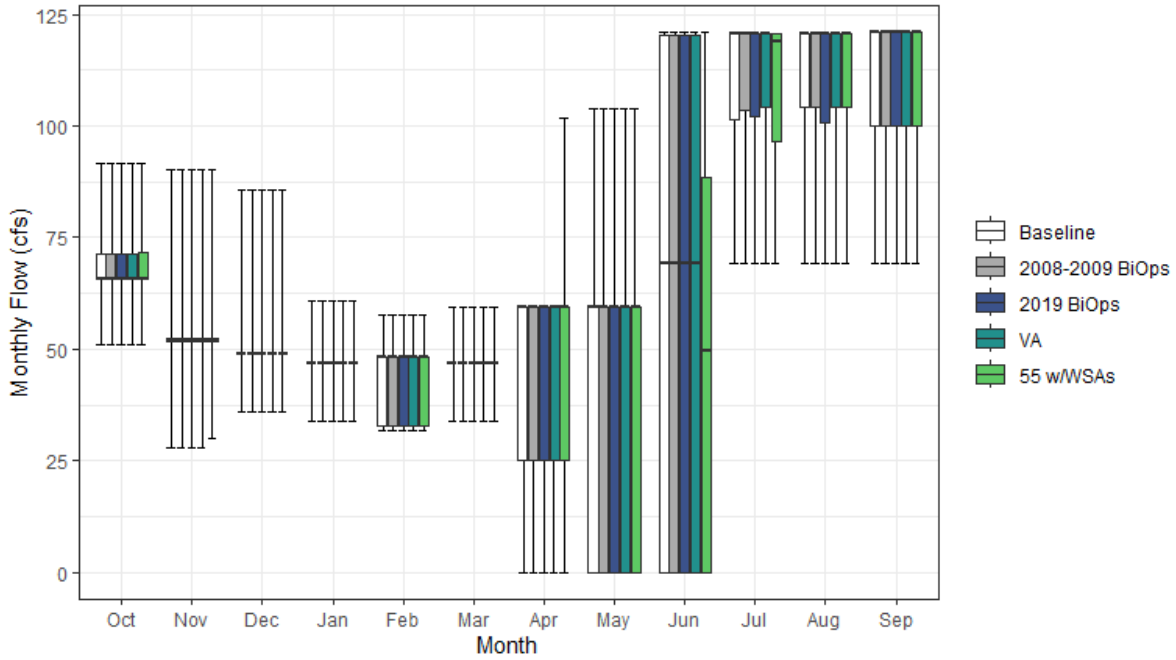

Figure H1a2-62. Chalk Bluff Canal Monthly Boxplot (cfs)

Table H1a2-123. Cumulative Distribution of Monthly Flow (cfs) — Chalk Bluff Canal

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	51	28	36	34	32	34	0	0	0	69	69	69	34
10%	66	52	36	34	33	34	0	0	0	83	69	69	38
25%	66	52	49	47	33	47	25	0	0	101	104	100	42
50%	66	52	49	47	48	47	59	59	69	121	121	121	48
75%	71	52	49	47	48	47	59	59	120	121	121	121	53
90%	80	66	66	59	48	47	59	73	121	121	121	121	56
100%	92	90	85	61	58	59	59	104	121	121	121	121	60
Mean	69	54	51	46	43	44	44	42	64	109	107	109	47
2008-2009 BiOps													
0%	51	28	36	34	32	34	0	0	0	69	69	69	34
10%	66	52	36	34	33	34	0	0	0	83	69	69	38
25%	66	52	49	47	33	47	25	0	0	103	104	100	42
50%	66	52	49	47	48	47	59	59	69	121	121	121	48
75%	71	53	49	47	48	47	59	59	120	121	121	121	53
90%	80	66	66	59	48	47	59	73	121	121	121	121	56
100%	92	90	85	61	58	59	59	104	121	121	121	121	60
Mean	69	54	51	46	43	44	44	42	64	109	107	109	47
2019 BiOps													
0%	51	28	36	34	32	34	0	0	0	69	69	69	34
10%	66	52	36	34	33	34	0	0	0	83	69	69	38
25%	66	52	49	47	33	47	25	0	0	102	101	100	42
50%	66	52	49	47	48	47	59	59	69	121	121	121	48
75%	71	53	49	47	48	47	59	59	120	121	121	121	53
90%	80	66	66	59	48	47	59	73	121	121	121	121	56
100%	92	90	85	61	58	59	59	104	121	121	121	121	60
Mean	69	54	51	46	43	44	44	42	64	109	107	109	47
VA													
0%	51	28	36	34	32	34	0	0	0	69	69	69	34
10%	66	52	36	34	33	34	0	0	0	83	69	69	38
25%	66	52	49	47	33	47	25	0	0	104	104	100	42
50%	66	52	49	47	48	47	59	59	69	121	121	121	48
75%	71	53	49	47	48	47	59	59	120	121	121	121	53
90%	80	66	66	59	48	47	59	73	121	121	121	121	56
100%	92	90	85	61	58	59	59	104	121	121	121	121	60
Mean	69	54	51	46	43	44	44	42	64	109	107	109	47
55 w/WSAs													
0%	51	30	36	34	32	34	0	0	0	69	69	69	34
10%	66	52	36	34	33	34	0	0	0	69	69	69	37
25%	66	52	49	47	33	47	25	0	0	97	104	100	41
50%	66	52	49	47	48	47	59	59	50	119	121	121	45
75%	72	52	49	47	48	47	59	59	89	121	121	121	52
90%	80	67	66	59	48	47	59	59	121	121	121	121	54
100%	92	90	85	61	58	59	102	104	121	121	121	121	60
Mean	69	55	51	46	43	44	44	37	49	106	109	110	46

Table H1a2-124. Water Year Average of Monthly Flows (cfs) — Chalk Bluff Canal

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	68	54	53	53	40	41	10	0	3	108	109	106
D	68	57	51	47	39	42	31	18	35	113	117	117
BN	72	56	55	42	43	45	54	57	82	111	115	120
AN	67	53	50	44	44	46	59	65	89	103	102	103
W	69	52	48	46	47	47	59	63	95	107	95	101
All	69	54	51	46	43	44	44	42	64	109	107	109
2008-2009 BiOps												
C	68	54	53	53	40	41	10	0	3	108	109	106
D	68	57	51	47	39	42	31	18	35	113	117	117
BN	72	56	55	42	43	45	54	57	82	111	115	120
AN	67	53	50	44	44	46	59	65	89	101	102	103
W	69	52	48	46	47	47	59	63	95	108	95	101
All	69	54	51	46	43	44	44	42	64	109	107	109
2019 BiOps												
C	68	54	53	53	40	41	10	0	3	108	109	106
D	68	57	51	47	39	42	31	18	35	113	117	117
BN	72	56	55	42	43	45	54	57	82	112	114	120
AN	67	53	50	44	44	46	59	65	89	103	102	103
W	69	52	48	46	47	47	59	63	95	107	95	101
All	69	54	51	46	43	44	44	42	64	109	107	109
VA												
C	68	54	53	53	40	41	10	0	3	108	109	106
D	68	57	51	47	39	42	31	18	35	113	117	117
BN	72	56	55	42	43	45	54	57	82	111	115	120
AN	67	53	50	44	44	46	59	65	89	101	102	103
W	69	52	48	46	47	47	59	63	95	109	95	101
All	69	54	51	46	43	44	44	42	64	109	107	109
55 w/WSAs												
C	68	54	53	53	40	41	9	0	0	108	109	106
D	68	57	51	47	39	42	31	14	24	113	117	117
BN	72	57	55	42	43	45	54	42	65	112	117	120
AN	67	53	50	44	44	46	59	58	59	99	104	103
W	69	52	48	46	47	47	61	61	77	100	100	104
All	69	55	51	46	43	44	44	37	49	106	109	110

H1a2.4.11 Clear Creek Tunnel

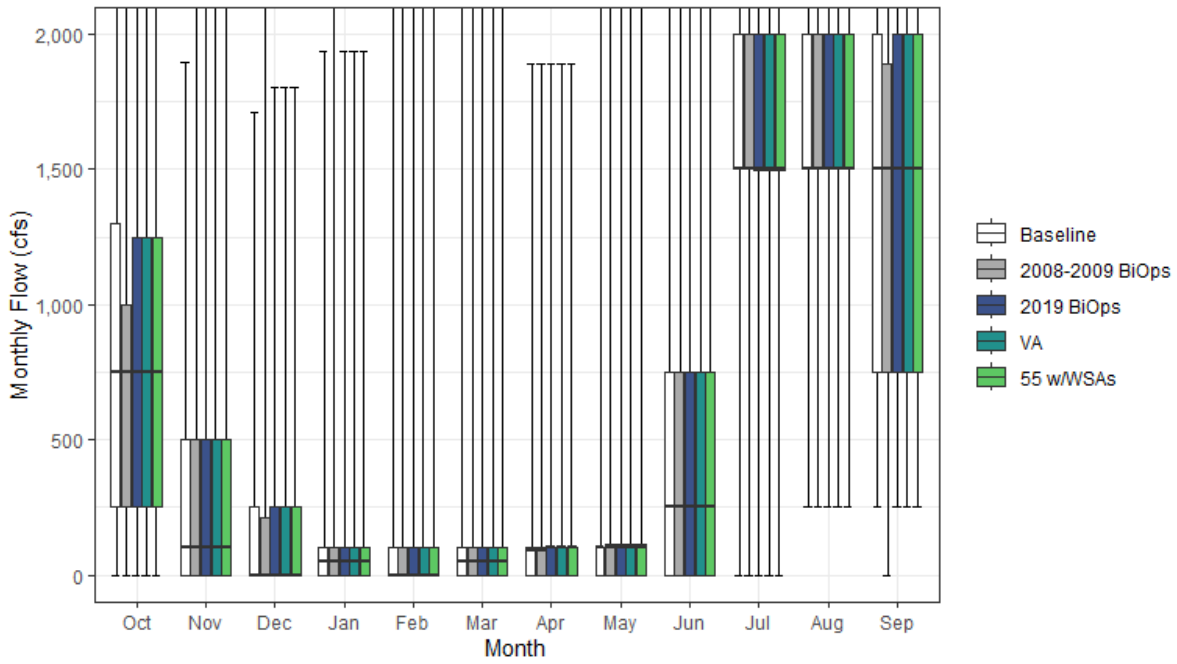

Figure H1a2-63. Clear Creek Tunnel Monthly Boxplot (cfs)

Table H1a2-125. Cumulative Distribution of Monthly Flow (cfs) — Clear Creek Tunnel

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	0	0	0	0	0	0	0	0	0	0	250	250	128
10%	0	0	0	0	0	0	0	0	0	0	1,000	500	226
25%	250	0	0	0	0	0	0	0	0	1,500	1,500	750	312
50%	750	100	0	50	0	50	88	100	250	1,500	1,500	1,500	440
75%	1,298	500	250	100	100	100	100	100	750	2,000	2,000	2,000	568
90%	1,848	500	308	266	709	824	258	250	1,300	2,873	2,750	2,101	696
100%	3,200	1,898	1,714	1,935	3,200	3,199	1,889	3,200	3,200	3,200	3,200	3,200	1,050
Mean	852	227	157	144	273	262	161	211	471	1,575	1,721	1,396	452
2008-2009 BiOps													
0%	0	0	0	0	0	0	0	0	0	0	250	0	128
10%	0	0	0	0	0	0	0	0	0	0	1,000	500	233
25%	250	0	0	0	0	0	0	0	0	1,500	1,500	750	310
50%	750	100	0	50	0	50	88	100	250	1,500	1,500	1,500	439
75%	1,000	500	211	100	100	100	100	111	750	2,000	2,000	1,892	581
90%	1,826	500	397	250	727	817	250	250	1,261	3,200	3,167	2,082	696
100%	2,131	3,200	3,200	2,662	3,200	3,199	1,889	3,200	3,200	3,200	3,200	3,200	1,000
Mean	805	273	229	141	256	250	163	217	430	1,611	1,749	1,372	455
2019 BiOps													
0%	0	0	0	0	0	0	0	0	0	0	250	250	128
10%	0	0	0	0	0	0	0	0	0	0	987	500	220
25%	250	0	0	0	0	0	0	0	0	1,498	1,500	750	312
50%	750	100	0	50	0	50	100	100	250	1,500	1,500	1,500	440
75%	1,250	500	250	100	100	100	100	111	750	2,000	2,000	2,000	564
90%	1,826	500	308	250	706	905	258	250	1,183	3,200	2,584	2,132	696
100%	3,200	3,200	1,802	1,935	3,200	3,199	1,889	3,200	3,200	3,200	3,200	3,200	1,048
Mean	832	276	157	141	278	260	165	210	452	1,597	1,671	1,409	452
VA													
0%	0	0	0	0	0	0	0	0	0	0	250	250	128
10%	0	0	0	0	0	0	0	0	0	0	987	500	220
25%	250	0	0	0	0	0	0	0	0	1,498	1,500	750	312
50%	750	100	0	50	0	50	100	100	250	1,500	1,500	1,500	440
75%	1,250	500	250	100	100	100	100	111	750	2,000	2,000	2,000	564
90%	1,826	500	308	250	706	905	258	250	1,183	3,200	2,584	2,132	696
100%	3,200	3,200	1,802	1,935	3,200	3,199	1,889	3,200	3,200	3,200	3,200	3,200	1,048
Mean	832	276	157	141	278	260	165	210	452	1,597	1,671	1,409	452
55 w/WSAs													
0%	0	0	0	0	0	0	0	0	0	0	250	250	128
10%	0	0	0	0	0	0	0	0	0	0	987	500	220
25%	250	0	0	0	0	0	0	0	0	1,498	1,500	750	312
50%	750	100	0	50	0	50	100	100	250	1,500	1,500	1,500	440
75%	1,250	500	250	100	100	100	100	111	750	2,000	2,000	2,000	564
90%	1,826	500	308	250	706	905	258	250	1,183	3,200	2,584	2,132	696
100%	3,200	3,200	1,802	1,935	3,200	3,199	1,889	3,200	3,200	3,200	3,200	3,200	1,048
Mean	832	276	157	141	278	260	165	210	452	1,597	1,671	1,409	452

Table H1a2-126. Water Year Average of Monthly Flows (cfs) — Clear Creek Tunnel

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	608	141	121	139	545	304	134	421	798	2,246	1,657	762
D	780	236	155	144	684	269	86	127	670	1,725	2,021	1,510
BN	952	156	81	293	102	398	216	66	487	1,237	1,681	1,342
AN	882	250	269	178	25	50	211	52	148	1,336	1,625	1,424
W	960	302	182	39	33	234	174	315	270	1,417	1,599	1,673
All	852	227	157	144	273	262	161	211	471	1,575	1,721	1,396
2008-2009 BiOps												
C	423	358	121	128	419	249	127	441	653	2,400	1,715	812
D	710	299	269	155	739	294	85	134	659	1,785	2,123	1,378
BN	977	156	87	367	66	357	241	71	447	1,237	1,684	1,342
AN	840	302	652	37	25	44	207	52	86	1,336	1,583	1,382
W	955	270	180	35	28	234	173	317	270	1,411	1,599	1,680
All	805	273	229	141	256	250	163	217	430	1,611	1,749	1,372
2019 BiOps												
C	608	157	115	134	544	257	124	408	770	2,415	1,420	885
D	769	296	155	133	697	264	95	134	670	1,702	1,983	1,503
BN	880	312	81	293	102	398	216	66	487	1,237	1,681	1,316
AN	851	292	276	178	25	50	250	52	86	1,336	1,625	1,424
W	960	293	182	39	41	254	171	315	245	1,417	1,587	1,674
All	832	276	157	141	278	260	165	210	452	1,597	1,671	1,409
VA												
C	608	157	115	134	544	257	124	408	770	2,415	1,420	885
D	769	296	155	133	697	264	95	134	670	1,702	1,983	1,503
BN	880	312	81	293	102	398	216	66	487	1,237	1,681	1,316
AN	851	292	276	178	25	50	250	52	86	1,336	1,625	1,424
W	960	293	182	39	41	254	171	315	245	1,417	1,587	1,674
All	832	276	157	141	278	260	165	210	452	1,597	1,671	1,409
55 w/WSAs												
C	608	157	115	134	544	257	124	408	770	2,415	1,420	885
D	769	296	155	133	697	264	95	134	670	1,702	1,983	1,503
BN	880	312	81	293	102	398	216	66	487	1,237	1,681	1,316
AN	851	292	276	178	25	50	250	52	86	1,336	1,625	1,424
W	960	293	182	39	41	254	171	315	245	1,417	1,587	1,674
All	832	276	157	141	278	260	165	210	452	1,597	1,671	1,409

H1a2.4.12 Spring Creek Conduit

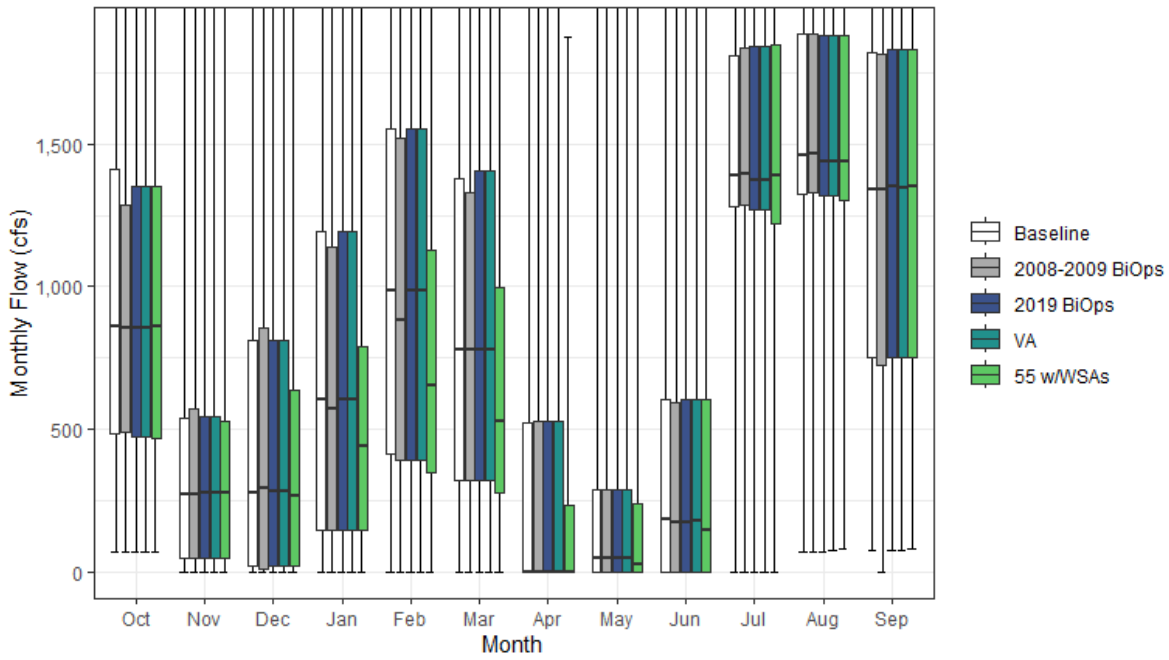

Figure H1a2-64. Spring Creek Conduit Monthly Boxplot (cfs)

Table H1a2-127. Cumulative Distribution of Monthly Flow (cfs) — Spring Creek Conduit

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	69	0	0	0	0	0	0	0	0	0	71	75	155
10%	233	0	0	21	155	139	0	0	0	81	866	503	326
25%	483	48	19	148	411	318	0	0	0	1,281	1,324	753	453
50%	858	270	276	602	984	779	0	45	186	1,387	1,460	1,342	605
75%	1,411	536	811	1,194	1,553	1,381	521	288	602	1,807	1,885	1,820	713
90%	1,974	890	1,395	1,629	2,393	1,872	1,162	604	1,278	2,756	2,569	2,019	849
100%	3,433	1,985	2,071	3,616	4,200	4,200	2,410	3,502	3,509	3,399	3,189	3,200	1,645
Mean	1,003	379	501	745	1,120	968	331	260	437	1,466	1,612	1,281	610
2008-2009 BiOps													
0%	67	0	0	0	0	0	0	0	0	0	72	0	176
10%	232	0	0	25	87	131	0	0	0	81	868	418	325
25%	489	48	9	148	393	318	0	0	0	1,285	1,327	722	453
50%	855	273	291	574	881	779	0	47	171	1,392	1,467	1,338	616
75%	1,284	573	852	1,138	1,520	1,330	526	288	594	1,835	1,885	1,814	715
90%	1,968	874	1,507	1,664	2,396	1,851	1,162	604	1,256	2,984	3,006	1,959	871
100%	2,341	3,286	3,223	3,616	4,200	4,200	2,410	3,502	3,509	3,399	3,121	3,200	1,645
Mean	956	424	575	742	1,104	955	333	260	400	1,502	1,639	1,258	613
2019 BiOps													
0%	69	0	0	0	0	0	0	0	0	0	71	75	176
10%	233	0	0	21	155	139	0	0	0	81	831	503	350
25%	471	48	19	148	393	318	0	0	0	1,271	1,320	753	453
50%	857	277	279	602	984	779	0	48	176	1,374	1,440	1,349	606
75%	1,349	543	811	1,194	1,553	1,407	526	288	602	1,844	1,880	1,831	712
90%	1,968	959	1,395	1,629	2,383	1,836	1,162	604	1,039	2,984	2,496	2,036	845
100%	3,433	3,287	2,071	3,616	4,200	4,200	2,410	3,502	3,509	3,399	3,189	3,200	1,645
Mean	983	427	502	742	1,125	964	336	258	417	1,488	1,561	1,294	610
VA													
0%	67	0	0	0	0	0	0	0	0	0	72	75	176
10%	233	0	0	21	155	139	0	0	0	81	832	503	350
25%	472	48	19	148	393	318	0	0	0	1,271	1,320	753	453
50%	857	277	279	602	984	779	0	48	176	1,374	1,440	1,347	606
75%	1,349	543	811	1,194	1,553	1,407	526	288	602	1,844	1,880	1,831	712
90%	1,968	959	1,395	1,629	2,383	1,836	1,162	604	1,038	2,984	2,497	2,036	845
100%	3,433	3,286	2,071	3,616	4,200	4,200	2,410	3,502	3,509	3,399	3,189	3,200	1,645
Mean	983	427	502	742	1,124	964	336	258	417	1,488	1,562	1,295	610
55 w/WSAs													
0%	71	0	0	0	0	0	0	0	0	0	78	82	181
10%	238	0	0	21	157	140	0	0	0	38	815	503	332
25%	470	48	23	148	347	279	0	0	0	1,222	1,302	753	418
50%	858	277	268	441	654	528	0	24	148	1,388	1,440	1,352	527
75%	1,349	530	635	791	1,128	996	234	236	606	1,847	1,880	1,833	658
90%	1,964	892	991	1,134	1,821	1,399	495	446	1,056	2,993	2,479	2,045	735
100%	3,436	3,287	1,987	2,798	3,324	3,736	1,877	3,405	3,357	3,266	3,190	3,233	1,301
Mean	984	400	393	540	850	707	175	219	403	1,490	1,559	1,297	545

Table H1a2-128. Water Year Average of Monthly Flows (cfs) — Spring Creek Conduit

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	744	136	196	219	831	438	12	275	649	2,105	1,526	638
D	911	351	286	280	1,126	775	49	53	551	1,574	1,869	1,378
BN	1,089	250	212	725	709	848	277	61	415	1,117	1,534	1,192
AN	1,058	421	593	1,147	1,374	1,075	382	252	219	1,249	1,539	1,342
W	1,132	593	969	1,220	1,428	1,424	721	533	342	1,353	1,547	1,584
All	1,003	379	501	745	1,120	968	331	260	437	1,466	1,612	1,281
2008-2009 BiOps												
C	560	347	196	208	705	378	7	272	510	2,259	1,585	695
D	841	414	403	291	1,180	800	49	50	545	1,635	1,971	1,247
BN	1,113	250	217	799	679	807	296	65	386	1,117	1,538	1,192
AN	1,016	473	984	1,006	1,374	1,069	378	252	156	1,249	1,498	1,301
W	1,128	562	967	1,216	1,423	1,424	721	535	342	1,347	1,547	1,591
All	956	424	575	742	1,104	955	333	260	400	1,502	1,639	1,258
2019 BiOps												
C	744	151	196	219	830	387	12	256	618	2,274	1,291	758
D	900	412	286	268	1,138	770	52	57	551	1,551	1,831	1,371
BN	1,017	406	212	721	706	848	277	61	415	1,116	1,533	1,166
AN	1,026	463	601	1,147	1,374	1,075	422	252	156	1,249	1,539	1,342
W	1,132	585	969	1,220	1,436	1,444	721	533	317	1,353	1,535	1,585
All	983	427	502	742	1,125	964	336	258	417	1,488	1,561	1,294
VA												
C	744	151	196	219	830	387	12	256	618	2,274	1,292	760
D	900	412	286	268	1,138	770	52	57	551	1,551	1,831	1,371
BN	1,016	406	212	721	706	848	277	61	416	1,117	1,534	1,166
AN	1,027	463	601	1,147	1,374	1,075	422	252	156	1,249	1,539	1,342
W	1,132	585	969	1,220	1,436	1,444	721	533	317	1,353	1,535	1,585
All	983	427	502	742	1,124	964	336	258	417	1,488	1,562	1,295
55 w/WSAs												
C	746	151	175	211	782	367	8	256	634	2,319	1,331	780
D	902	394	261	235	1,030	627	22	50	548	1,564	1,836	1,373
BN	1,017	387	174	608	523	720	201	53	405	1,106	1,534	1,166
AN	1,027	439	525	872	941	713	257	179	128	1,249	1,531	1,342
W	1,131	528	691	763	926	937	325	446	281	1,335	1,503	1,583
All	984	400	393	540	850	707	175	219	403	1,490	1,559	1,297

H1a2.4.13 Robbs Peak Tunnel

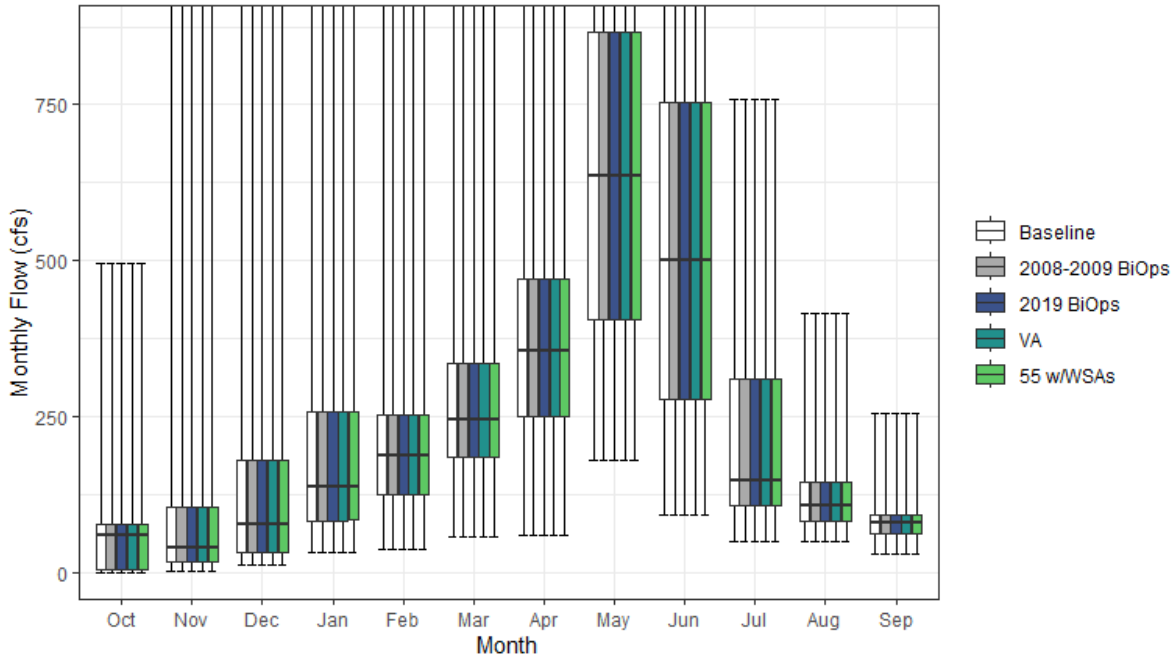

Figure H1a2-65. Robbs Peak Tunnel Monthly Boxplot (cfs)

Table H1a2-129. Cumulative Distribution of Monthly Flow (cfs) — Robbs Peak Tunnel

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	0	2	12	31	36	58	59	180	92	50	48	29	50
10%	0	11	21	60	82	124	182	273	180	81	72	54	83
25%	5	17	33	83	124	185	250	406	278	107	81	63	116
50%	61	40	76	138	187	244	355	637	500	148	107	79	170
75%	77	105	181	257	253	335	470	866	753	311	146	92	237
90%	117	224	541	375	353	467	640	1,020	988	407	168	108	279
100%	496	968	1,020	1,020	1,020	956	1,020	1,020	1,020	758	416	256	422
Mean	65	95	170	192	219	276	382	645	533	220	119	83	181
2008-2009 BiOps													
0%	0	2	12	31	36	58	59	180	92	50	48	29	50
10%	0	11	21	60	82	124	182	273	180	81	72	54	83
25%	5	17	33	83	124	185	250	406	278	107	81	63	116
50%	60	40	76	138	187	244	355	637	500	148	107	79	170
75%	77	105	181	257	253	335	469	866	753	311	146	92	237
90%	117	224	541	375	353	467	640	1,020	988	407	168	108	279
100%	496	968	1,020	1,020	1,020	956	1,020	1,020	1,020	758	416	256	422
Mean	65	95	170	192	219	276	382	645	533	220	119	83	181
2019 BiOps													
0%	0	2	12	31	36	58	59	180	92	50	48	29	50
10%	0	11	21	60	82	124	182	273	180	81	72	54	83
25%	5	17	33	83	124	185	250	406	278	107	81	63	116
50%	61	40	76	138	187	244	355	637	500	148	107	79	170
75%	77	105	181	257	253	335	469	866	753	311	146	92	237
90%	117	224	541	375	353	467	640	1,020	988	407	168	108	279
100%	496	968	1,020	1,020	1,020	956	1,020	1,020	1,020	758	416	256	422
Mean	65	95	170	192	219	276	382	645	533	220	119	83	181
VA													
0%	0	2	12	31	36	58	59	180	92	50	48	29	50
10%	0	11	21	60	82	124	182	273	180	81	72	54	83
25%	5	17	33	83	124	185	250	406	278	107	81	63	116
50%	60	40	76	138	187	244	355	637	500	148	107	79	170
75%	77	105	181	257	253	335	469	866	753	311	146	92	237
90%	117	224	541	375	353	467	640	1,020	988	407	168	108	279
100%	496	968	1,020	1,020	1,020	956	1,020	1,020	1,020	758	416	256	422
Mean	65	95	170	192	219	276	382	645	533	220	119	83	181
55 w/WSAs													
0%	0	2	12	31	36	58	59	179	91	50	48	29	51
10%	0	11	21	60	82	124	182	273	180	81	72	54	83
25%	5	17	33	83	124	185	250	406	278	107	81	63	116
50%	60	40	76	138	186	244	355	637	500	148	107	79	170
75%	77	105	181	257	253	335	469	866	752	311	146	92	237
90%	117	224	541	375	353	467	640	1,020	988	407	168	108	279
100%	496	968	1,020	1,020	1,020	956	1,020	1,020	1,020	758	416	256	422
Mean	65	95	170	192	219	276	382	645	532	220	119	82	181

Table H1a2-130. Water Year Average of Monthly Flows (cfs) — Robbs Peak Tunnel

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	47	32	46	64	100	142	175	289	240	90	78	72
D	47	72	96	97	150	225	320	494	368	130	90	87
BN	59	65	78	132	176	259	427	653	512	180	108	77
AN	63	144	182	280	252	342	402	781	559	212	118	70
W	93	146	344	331	348	369	502	886	811	382	169	94
All	65	95	170	192	219	276	382	645	533	220	119	83
2008-2009 BiOps												
C	47	32	46	64	100	142	175	289	240	90	78	72
D	47	72	96	97	150	225	320	494	368	130	90	87
BN	59	65	78	132	176	259	427	653	512	180	108	77
AN	63	144	182	280	252	342	402	781	559	212	118	70
W	93	146	344	331	348	369	502	886	811	382	169	94
All	65	95	170	192	219	276	382	645	533	220	119	83
2019 BiOps												
C	47	32	46	64	100	142	175	289	240	90	78	72
D	47	72	96	97	150	225	320	494	368	130	90	87
BN	59	65	78	132	176	259	427	653	512	180	108	77
AN	63	144	182	280	252	342	402	781	559	212	118	70
W	93	146	344	331	348	369	502	886	811	382	169	94
All	65	95	170	192	219	276	382	645	533	220	119	83
VA												
C	47	32	46	64	100	142	175	289	240	90	78	72
D	47	72	96	97	150	225	320	494	368	130	90	87
BN	59	65	78	132	176	259	427	653	512	180	108	77
AN	63	144	182	280	252	342	402	781	559	212	118	70
W	93	146	344	331	348	369	502	886	811	382	169	94
All	65	95	170	192	219	276	382	645	533	220	119	83
55 w/WSAs												
C	47	32	46	64	100	142	175	289	240	90	77	72
D	47	72	96	97	150	225	320	494	368	130	90	87
BN	59	65	78	132	176	259	427	653	512	180	108	77
AN	63	144	182	280	252	342	402	781	559	212	118	70
W	93	146	344	331	348	369	502	886	811	382	169	94
All	65	95	170	192	219	276	382	645	532	220	119	82

H1a2.4.14 Lake Valley Canal

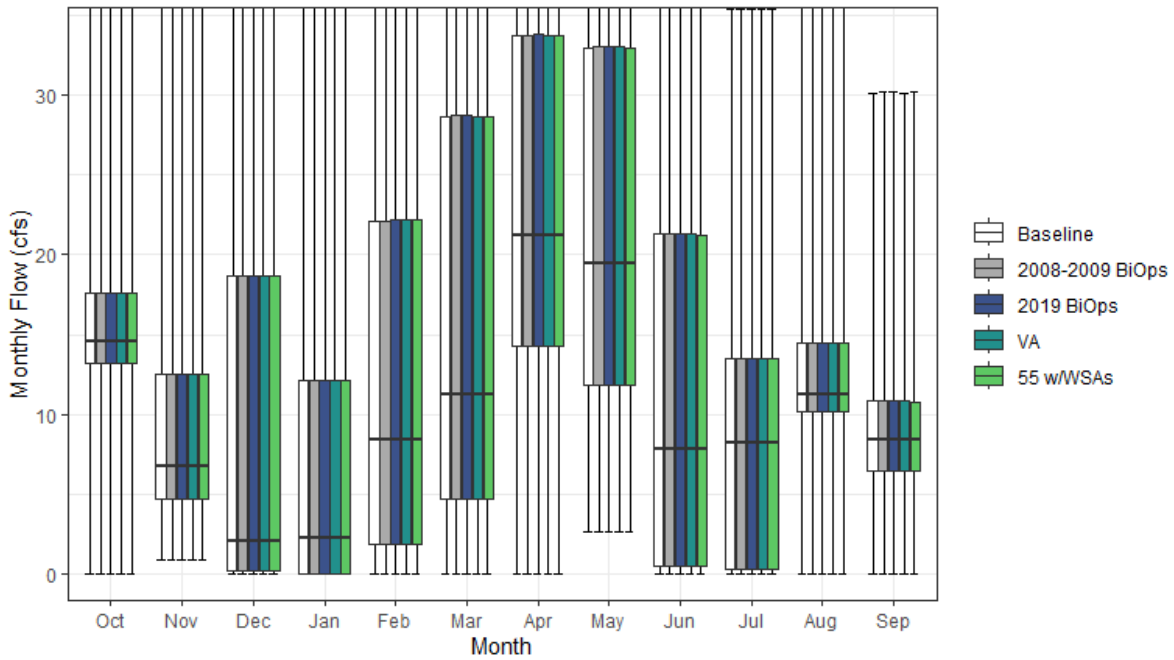

Figure H1a2-66. Lake Valley Canal Monthly Boxplot (cfs)

Table H1a2-131. Cumulative Distribution of Monthly Flow (cfs) — Lake Valley Canal

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual (TAF)
Baseline													
0%	0	1	0	0	0	0	0	3	0	0	0	0	2
10%	13	4	0	0	0	1	6	7	0	0	2	6	6
25%	13	5	0	0	2	5	14	12	0	0	10	6	7
50%	15	7	2	2	8	11	21	20	8	8	11	8	9
75%	18	12	19	12	22	29	34	33	21	13	14	11	12
90%	21	21	35	35	36	42	42	42	40	21	17	14	15
100%	42	42	42	42	42	42	42	42	42	35	42	30	22
Mean	16	11	10	9	13	17	23	23	13	9	11	9	10
2008-2009 BiOps													
0%	0	1	0	0	0	0	0	3	0	0	0	0	2
10%	13	4	0	0	0	1	6	7	0	0	2	6	6
25%	13	5	0	0	2	5	14	12	0	0	10	6	7
50%	15	7	2	2	8	11	21	20	8	8	11	8	9
75%	18	12	19	12	22	29	34	33	21	13	14	11	12
90%	21	21	35	35	36	42	42	42	40	21	17	14	15
100%	42	42	42	42	42	42	42	42	42	35	42	30	22
Mean	16	11	10	9	13	17	23	23	13	9	11	9	10
2019 BiOps													
0%	0	1	0	0	0	0	0	3	0	0	0	0	2
10%	13	4	0	0	0	1	6	7	0	0	2	6	6
25%	13	5	0	0	2	5	14	12	0	0	10	6	7
50%	15	7	2	2	8	11	21	20	8	8	11	8	9
75%	18	12	19	12	22	29	34	33	21	13	14	11	12
90%	21	21	35	35	36	42	42	42	40	21	17	14	15
100%	42	42	42	42	42	42	42	42	42	35	42	30	22
Mean	16	11	10	9	13	17	23	23	13	9	11	9	10
VA													
0%	0	1	0	0	0	0	0	3	0	0	0	0	2
10%	13	4	0	0	0	1	6	7	0	0	2	6	6
25%	13	5	0	0	2	5	14	12	0	0	10	6	7
50%	15	7	2	2	8	11	21	20	8	8	11	8	9
75%	18	12	19	12	22	29	34	33	21	13	14	11	12
90%	21	21	35	35	36	42	42	42	40	21	17	14	15
100%	42	42	42	42	42	42	42	42	42	35	42	30	22
Mean	16	11	10	9	13	17	23	23	13	9	11	9	10
55 w/WSAs													
0%	0	1	0	0	0	0	0	3	0	0	0	0	2
10%	13	4	0	0	0	1	6	7	0	0	2	6	6
25%	13	5	0	0	2	5	14	12	0	0	10	6	7
50%	15	7	2	2	8	11	21	20	8	8	11	8	9
75%	18	12	19	12	22	29	34	33	21	13	14	11	12
90%	21	21	35	35	36	42	42	42	40	21	17	14	15
100%	42	42	42	42	42	42	42	42	42	35	42	30	22
Mean	16	11	10	9	13	17	23	23	13	9	11	9	10

Table H1a2-132. Water Year Average of Monthly Flows (cfs) — Lake Valley Canal

Water Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Baseline												
C	15	7	4	2	5	14	19	16	6	4	7	8
D	17	10	6	2	8	15	26	22	6	7	11	8
BN	15	8	2	5	12	17	26	27	15	10	12	9
AN	15	12	14	21	16	23	29	25	11	10	15	10
W	18	14	20	17	19	16	18	22	22	12	11	10
All	16	11	10	9	13	17	23	23	13	9	11	9
2008-2009 BiOps												
C	15	7	4	2	5	14	19	16	6	4	7	8
D	17	10	6	2	8	15	26	22	6	7	11	8
BN	15	8	2	5	12	17	26	27	15	10	12	9
AN	15	12	14	21	16	23	29	25	11	10	15	10
W	18	14	20	17	19	16	18	22	22	12	11	10
All	16	11	10	9	13	17	23	23	13	9	11	9
2019 BiOps												
C	15	7	3	2	5	14	19	16	6	4	7	8
D	17	10	6	2	8	15	26	22	6	7	11	8
BN	15	8	2	5	12	17	26	27	15	10	12	9
AN	15	12	14	21	16	23	29	25	11	10	15	10
W	18	14	20	17	19	16	18	22	22	12	11	10
All	16	11	10	9	13	17	23	23	13	9	11	9
VA												
C	15	7	4	2	5	14	19	16	6	4	7	8
D	17	10	6	2	8	15	26	22	6	7	11	8
BN	15	8	2	5	12	17	26	27	15	10	12	9
AN	15	12	14	21	16	23	29	25	11	10	15	10
W	18	14	20	17	19	16	18	22	22	12	11	10
All	16	11	10	9	13	17	23	23	13	9	11	9
55 w/WSAs												
C	15	7	4	2	5	14	20	16	6	4	7	8
D	17	10	6	2	8	15	26	22	6	7	11	8
BN	15	8	2	5	12	17	26	27	15	10	12	9
AN	15	12	14	21	16	23	29	25	11	10	15	10
W	18	14	20	17	19	16	18	22	22	12	11	10
All	16	11	10	9	13	17	23	23	13	9	11	9

H1a2.5 Reservoir Storage

SacWAM dynamically simulates storage regulation in most major reservoirs in the Sacramento Valley and Delta Eastside Tributaries. Storage in smaller reservoirs, including regulating reservoirs that act as forebays and afterbays, are typically not simulated, although they may be represented in the model schematic. Storage in these smaller reservoirs is usually kept constant. For some mid-size reservoirs, storage is constrained to follow historical average monthly values. Reservoirs represented in the model but having storage that does not change in any of the scenarios are considered non-reoperated reservoirs. Results for non-reoperated reservoirs with constant end-of-April and end-of-September storage are listed in Table H1a2-133. Results for these reservoirs are not presented further. Farmington Reservoir and Schaads Reservoir do not store water in SacWAM as currently configured.

Reservoirs that exhibit interannual variability in end-of-April or end-of-September storage but show less than or equal to one percent change from baseline storage during April or September are listed in Table H1a2-134. Reservoirs that exhibit greater than one percent change from baseline storage during April or September are listed in Table H1a2-135.

Results for other reservoirs listed in Tables H1a2-134 and H1a2-135 are presented as end-of-April storage and elevation and end-of-September storage and elevation. SacWAM contains storage-elevation relationships for most of the reoperated reservoirs, allowing average annual fluctuation in reservoir elevation to be calculated as the average of the annual maximum minus minimum water surface elevations (Table H1a2-136).

Table H1a2-133. Non-reoperated Reservoirs with Constant End-of-April and End-of-September Storage (TAF)

Reservoir	Watershed	End-of-April	End-of-September
Belden Reservoir	Feather	2.4	2.4
Buck Island	American	1.1	1.1
Camino Reservoir	American	0.8	0.8
Chili Bar Reservoir	American	3	3
Clifton Court Forebay	Old River	31.3	31.3
Cresta Reservoir	Feather	4.1	4.1
EBMUD Terminal Reservoirs	Offstream Storage	140	118
Englebright Reservoir	Yuba	66.1	65.3
Farmington Reservoir	Littlejohns	0	0
Gerle Creek Reservoir	American	1.3	1.3
Grizzly Reservoir	Feather	1.1	1.1
Junction Reservoir	American	3.2	3.2
Keswick Reservoir	Sacramento	22	22
Lake Combie	Bear	5.2	3.3
Lake Natoma	American	8	8
Lake Tableaud	Mokelumne	1.3	1.3
Lewiston Lake	Trinity	14.7	14.7
Lower Bucks Lake	Feather	5.8	5.8
PGE Old Reservoirs	Mokelumne	7.8	7.2
Poe Reservoir	Feather	1.2	1.2

Reservoir	Watershed	End-of-April	End-of-September
Rock Creek Reservoir	Feather	4.4	4.4
Rubicon	American	1.4	1.4
Schaads Reservoir	Mokelumne	0	0
Slab Creek Reservoir	American	16.6	16.6
Thermalito Afterbay	Feather	38	38
Upper Bear	Mokelumne	7	1.6

Table H1a2-134. Reservoirs with Interannual Variability in End-of-April or End-of-September Storage but with no Change in Storage Greater than One Percent Relative to Baseline in April or September.

Reservoir	Watershed
Antelope Reservoir	Feather
Bucks Lake	Feather
Butt Valley	Feather
Caples Lake	American
Frenchman Lake	Feather
Ice House	American
Jenkinson Lake	Cosumnes
Lake Almanor	Feather
Lake Aloha	American
Lake Amador	Mokelumne
Lake Davis	Feather
Lake Valley	American
Little Grass Valley Reservoir	Feather
Loon Lake	American
Merle Collins Reservoir	Yuba
Mountain Meadows Reservoir	Feather
Philbrook Round Valley	Feather
Silver Lake	American
Sly Creek Reservoir	Feather
Stumpy Meadows	American
Union Valley Reservoir	American

Table H1a2-135. Reservoirs with a Change in Storage Relative to Baseline Greater than One Percent in April or September

Reservoir	Watershed
Black Butte Reservoir	Stony
Bowman Lake	Yuba
Camanche Reservoir	Mokelumne
Camp Far West	Bear
Clear Lake	Cache
CVP San Luis Reservoir	South of Delta Offstream
East Park Reservoir	Stony
Folsom Lake	American
French Lake	Yuba
French Meadows	American
Hell Hole	American
Indian Valley Reservoir	Cache
Jackson Meadows Reservoir	Yuba
Lake Berryessa	Putah
Lake Fordyce	Yuba
Lake Spaulding	Yuba

Reservoir	Watershed
Los Vaqueros Reservoir	Kellogg
Lower Bear	Mokelumne
New Bullards Bar Reservoir	Yuba
New Hogan Reservoir	Calaveras
Oroville Reservoir	Feather
Pardee Reservoir	Mokelumne
Rollins Reservoir	Bear
Salt Springs	Mokelumne
Scotts Flat Reservoir	Yuba
Shasta Lake	Sacramento
Stony Gorge Reservoir	Stony
SWP San Luis Reservoir	South of Delta Offstream
Total San Luis Reservoir	South of Delta Offstream
Trinity Reservoir	Trinity
Whiskeytown Reservoir	Clear

Table H1a2-136. Average Annual Change in Elevation for Reservoirs with Elevational Changes Calculated by SacWAM (ft)

			Flow Scenario Minus Baseline			
Reservoir	Watershed	Baseline	2008-2009 BiOps	2019 BiOps	55 w/WSAs	VA
Black Butte Reservoir	Stony	32.1	0	0	-4.8	0
Bowman Lake	Yuba	54.6	-0.1	0	-0.1	0
Camanche Reservoir	Mokelumne	23	0	0	-6.1	0
Camp Far West	Bear	39.9	0	0	-0.6	0
Clear Lake	Cache	5.8	0	0	-0.3	0
East Park Reservoir	Stony	10.7	0	0	7.4	0
Folsom Lake	American	48.2	4.1	-1.2	-8.4	-2.1
French Meadows	American	65.7	0	0	-0.1	0
Hell Hole	American	102.7	0	0	-0.2	1
Indian Valley Reservoir	Cache	50	0	0	3.7	0
Jackson Meadows Reservoir	Yuba	38.2	0	0	-0.6	0
Lake Berryessa	Putah	20.4	0	0	-1.2	0.3
Lake Fordyce	Yuba	67.8	0	0	-3	0
Lake Spaulding	Yuba	107.6	0	0	-0.8	0
Los Vaqueros Reservoir	Kellogg	14.1	0	0	1.2	0
Lower Bear	Mokelumne	87.5	0	0	0	0
New Bullards Bar Reservoir	Yuba	91.7	0	0	-4.1	0.8
New Hogan Reservoir	Calaveras	36.5	0	0	-11.1	0
Oroville Reservoir	Feather	152	-0.1	-2.8	-30.4	-3.9
Pardee Reservoir	Mokelumne	18.9	0	0	1.6	0
Rollins Reservoir	Bear	11.7	0	0	0.1	0
Salt Springs	Mokelumne	184.8	0	0	-1.8	0
Scotts Flat Reservoir	Yuba	28.5	0	0	0.1	0
Shasta Lake	Sacramento	71.1	1.1	1.5	-5.3	1.4
Stony Gorge Reservoir	Stony	11.8	0	0	9.9	0
San Luis Reservoir Total	SOD Offstream	125.1	2.5	-9.7	-0.8	-13.2
Trinity Reservoir	Trinity	66.5	0.2	-0.8	-0.8	-0.8
Whiskeytown Reservoir	Clear	10.2	0	0	0	0

H1a2.5.1 Antelope Reservoir (Feather River Watershed)

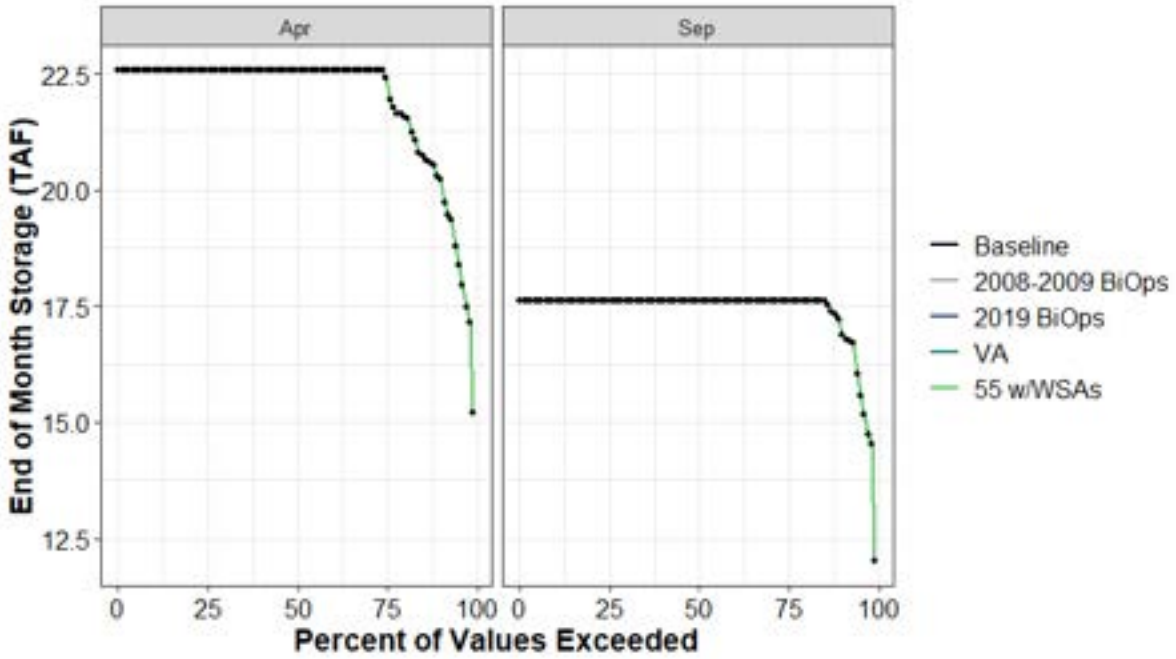

Figure H1a2-67. Antelope Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

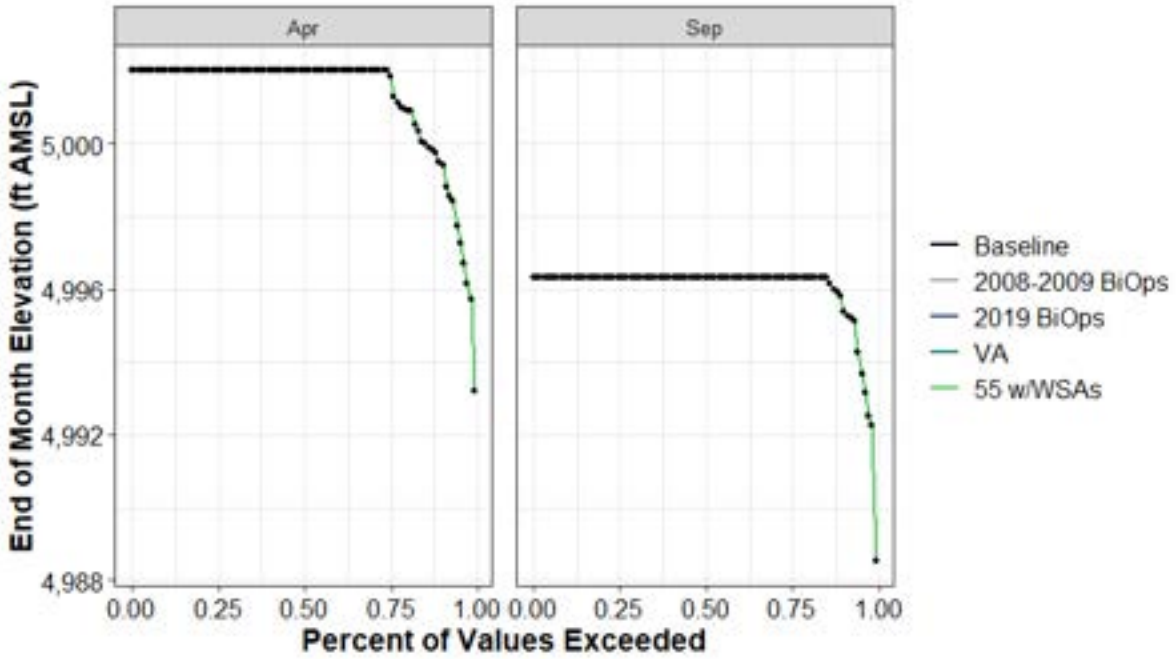

Figure H1a2-68. Antelope Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-137. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Antelope Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	12	0	0	0	0
10%	17	0	0	0	0
25%	18	0	0	0	0
50%	18	0	0	0	0
75%	18	0	0	0	0
90%	18	0	0	0	0
100%	18	0	0	0	0
Mean	17	0	0	0	0

Table H1a2-138. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Antelope Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,989	0	0	0	0
10%	4,996	0	0	0	0
25%	4,996	0	0	0	0
50%	4,996	0	0	0	0
75%	4,996	0	0	0	0
90%	4,996	0	0	0	0
100%	4,996	0	0	0	0
Mean	4,996	0	0	0	0

Table H1a2-139. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Antelope Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	15	0	0	0	0
10%	20	0	0	0	0
25%	22	0	0	0	0
50%	23	0	0	0	0
75%	23	0	0	0	0
90%	23	0	0	0	0
100%	23	0	0	0	0
Mean	22	0	0	0	0

Table H1a2-140. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Antelope Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,993	0	0	0	0
10%	4,999	0	0	0	0
25%	5,002	0	0	0	0
50%	5,002	0	0	0	0
75%	5,002	0	0	0	0
90%	5,002	0	0	0	0
100%	5,002	0	0	0	0
Mean	5,001	0	0	0	0

H1a2.5.2 Black Butte Reservoir (Stony Creek Watershed)

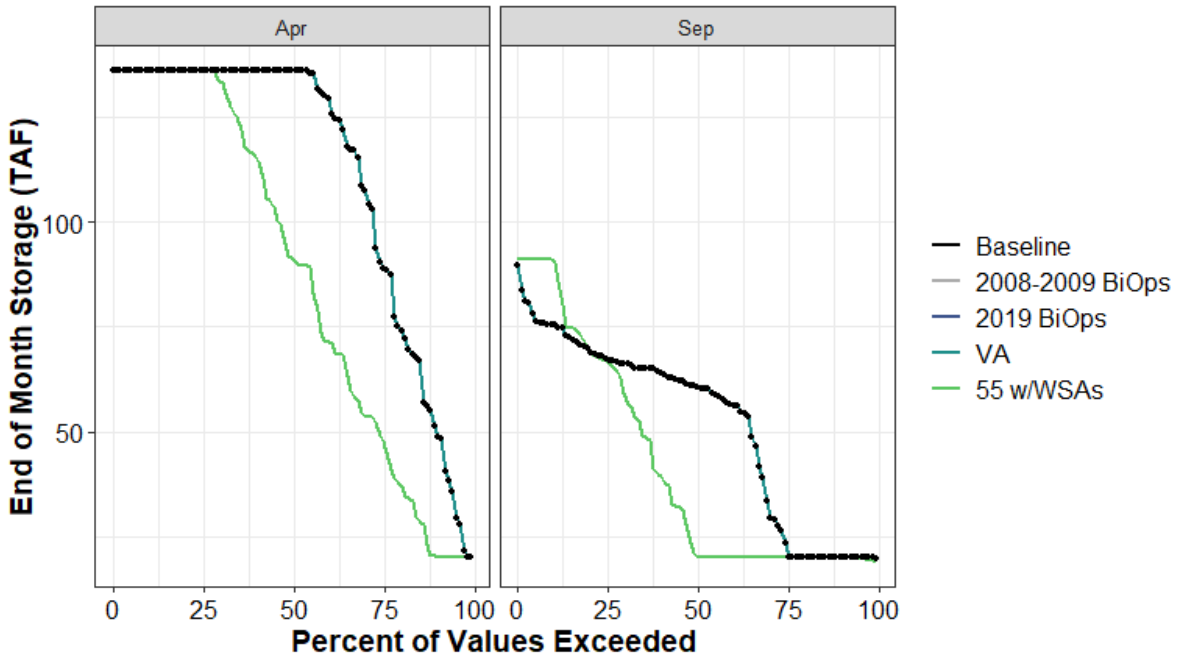

Figure H1a2-69. Black Butte Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

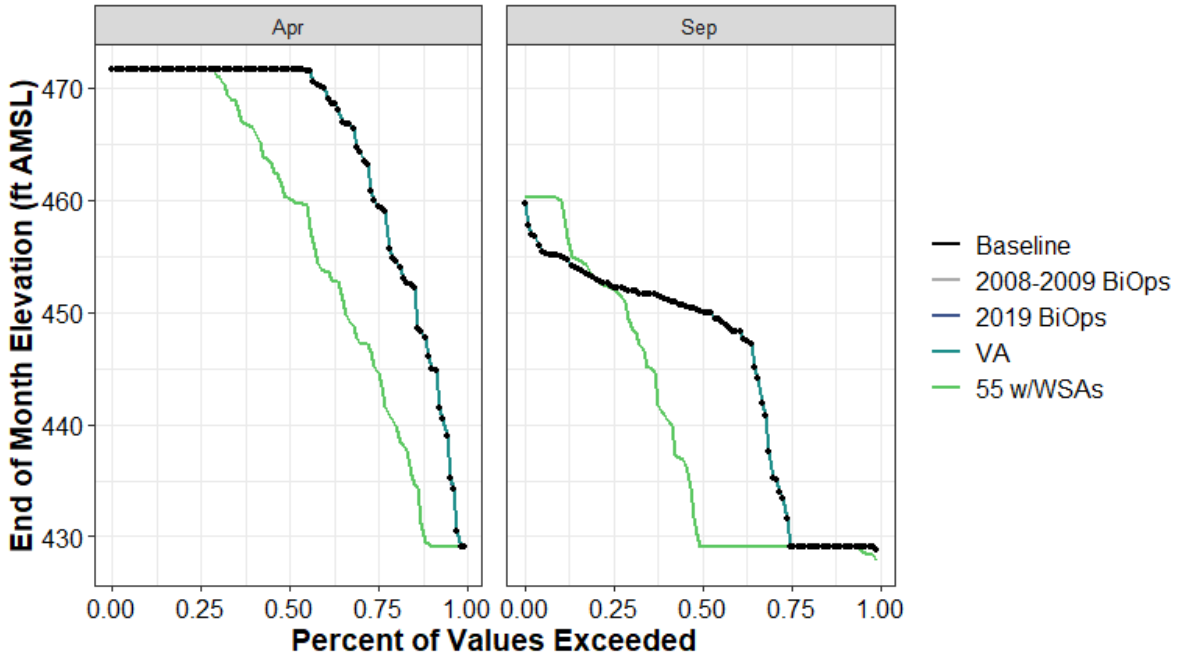

Figure H1a2-70. Black Butte Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-141. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Black Butte Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	20	0	0	0	-1
10%	20	0	0	0	0
25%	22	0	0	0	-2
50%	61	0	0	0	-41
75%	67	0	0	0	-1
90%	75	0	0	0	15
100%	90	0	0	0	1
Mean	52	0	0	0	-10

Table H1a2-142. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Black Butte Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	429	0	0	0	-1
10%	429	0	0	0	0
25%	430	0	0	0	-1
50%	450	0	0	0	-21
75%	452	0	0	0	0
90%	455	0	0	0	5
100%	460	0	0	0	0
Mean	445	0	0	0	-5

Table H1a2-143. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Black Butte Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	20	0	0	0	0
10%	51	0	0	0	-30
25%	90	0	0	0	-41
50%	136	0	0	0	-45
75%	136	0	0	0	0
90%	136	0	0	0	0
100%	136	0	0	0	0
Mean	112	0	0	0	-24

Table H1a2-144. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Black Butte Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	429	0	0	0	0
10%	446	0	0	0	-17
25%	460	0	0	0	-15
50%	472	0	0	0	-11
75%	472	0	0	0	0
90%	472	0	0	0	0
100%	472	0	0	0	0
Mean	464	0	0	0	-8

H1a2.5.3 Bowman Lake (Yuba River Watershed)

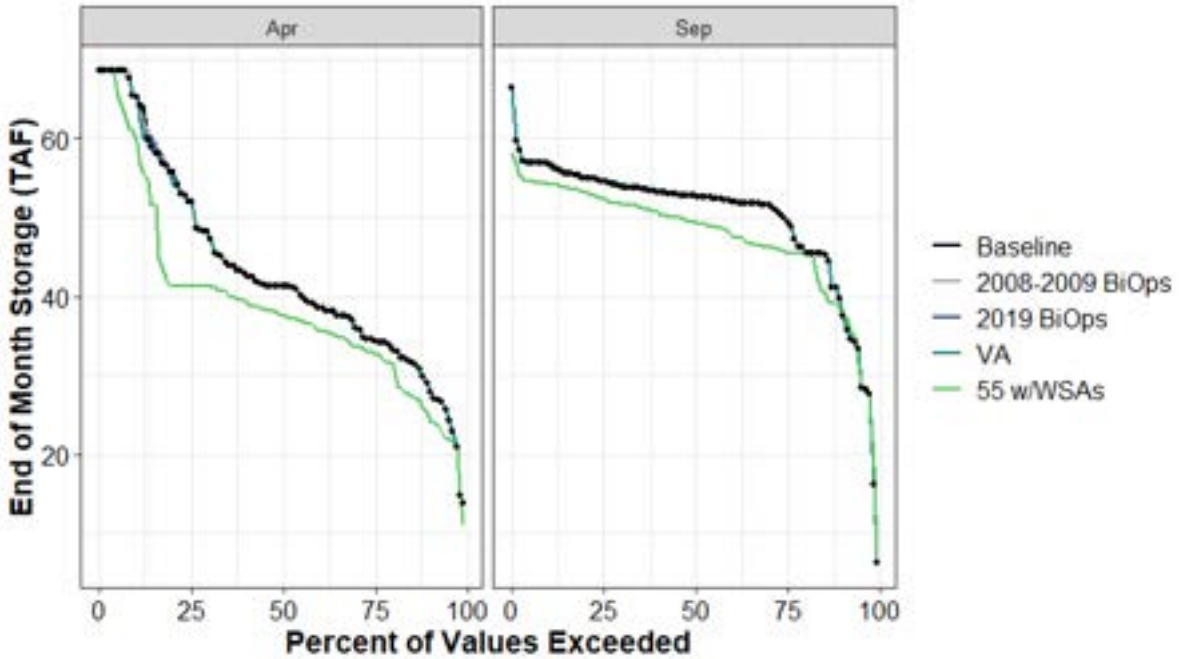

Figure H1a2-71. Bowman Lake End of April and End of September Storage (TAF) Percent Exceedance Plot

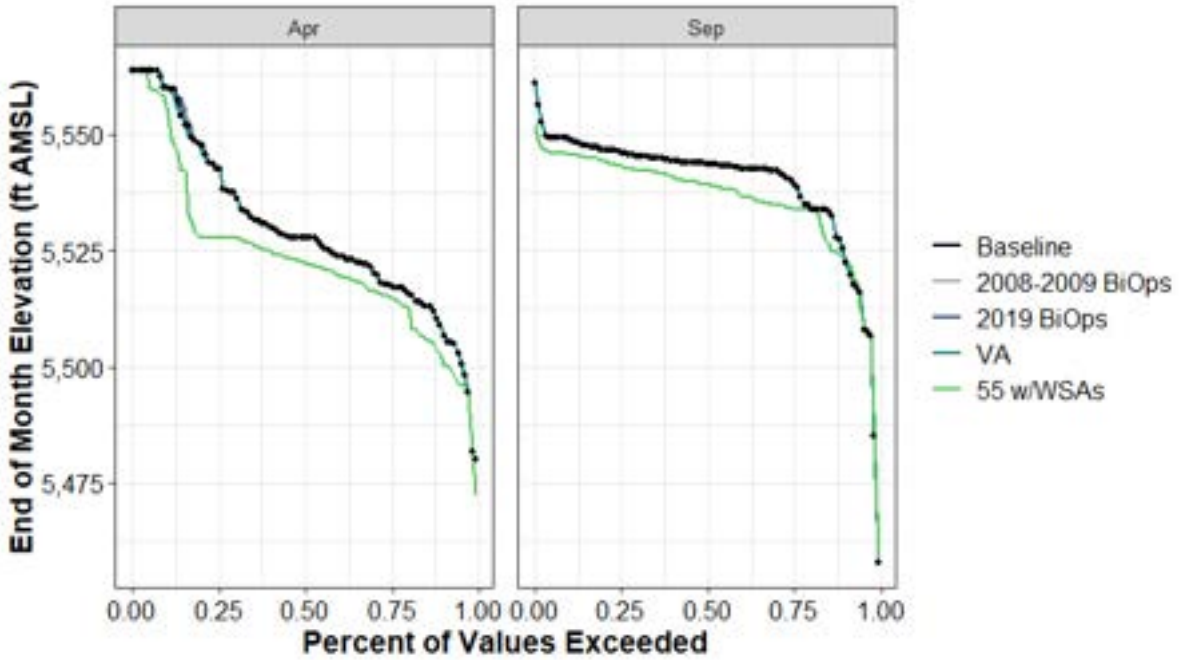

Figure H1a2-72. Bowman Lake End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-145. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Bowman Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	6	0	0	0	0
10%	39	0	0	0	-1
25%	50	0	0	0	-4
50%	53	0	0	0	-3
75%	54	0	0	0	-2
90%	57	0	0	0	-3
100%	66	0	0	0	-8
Mean	50	0	0	0	-3

Table H1a2-146. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Bowman Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,458	0	0	0	0
10%	5,525	0	0	0	-2
25%	5,540	0	0	0	-6
50%	5,544	0	0	0	-4
75%	5,546	0	0	0	-3
90%	5,549	0	0	0	-3
100%	5,561	0	0	0	-9
Mean	5,539	0	0	0	-4

Table H1a2-147. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Bowman Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	14	0	0	0	-3
10%	29	0	0	0	-4
25%	34	0	0	0	-2
50%	41	0	0	0	-4
75%	52	0	0	0	-11
90%	65	0	0	0	-5
100%	69	0	0	0	0
Mean	43	0	0	0	-4

Table H1a2-148. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Bowman Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,480	0	0	0	-8
10%	5,509	0	0	0	-7
25%	5,517	0	0	0	-2
50%	5,528	0	0	0	-5
75%	5,543	0	0	0	-15
90%	5,560	0	0	0	-4
100%	5,564	0	0	0	0
Mean	5,530	0	0	0	-6

H1a2.5.4 Bucks Lake (Feather River Watershed)

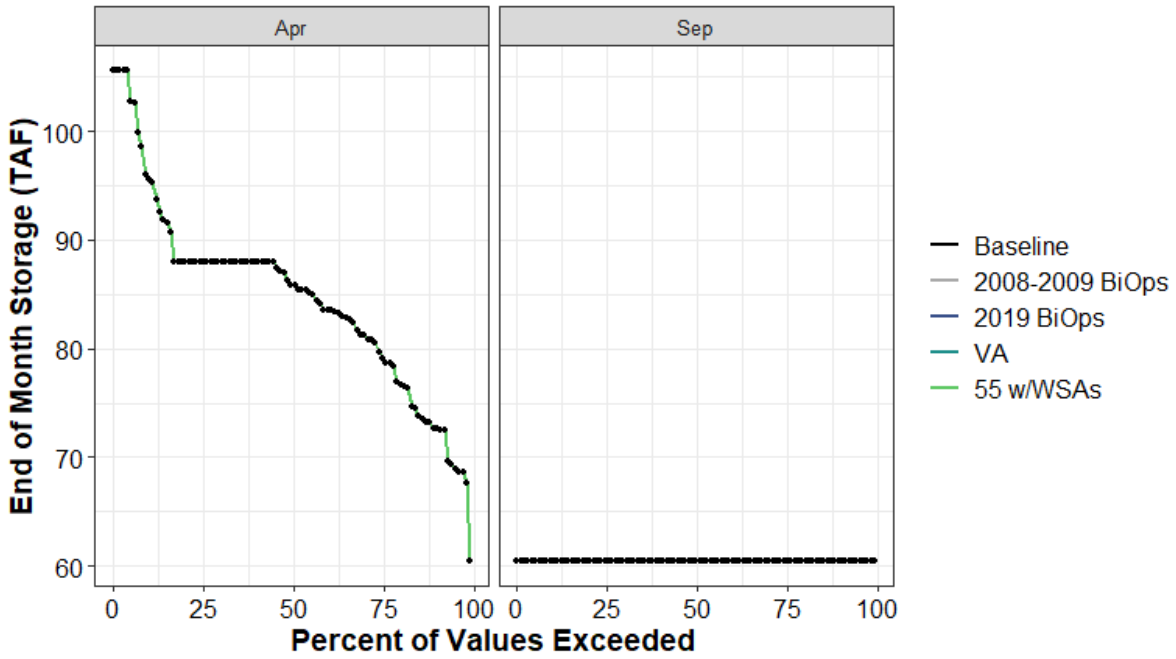

Figure H1a2-73. Bucks Lake End of April and End of September Storage (TAF) Percent Exceedance Plot

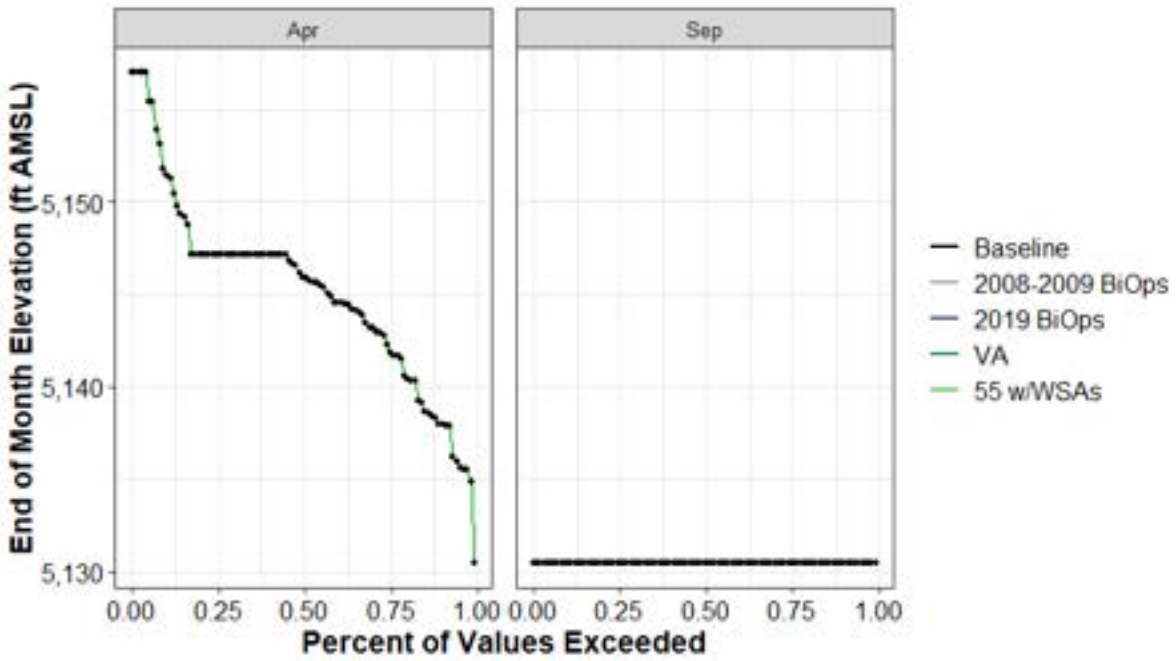

Figure H1a2-74. Bucks Lake End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-149. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Bucks Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	60	0	0	0	0
10%	60	0	0	0	0
25%	60	0	0	0	0
50%	60	0	0	0	0
75%	60	0	0	0	0
90%	60	0	0	0	0
100%	60	0	0	0	0
Mean	60	0	0	0	0

Table H1a2-150. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Bucks Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,130	0	0	0	0
10%	5,130	0	0	0	0
25%	5,130	0	0	0	0
50%	5,130	0	0	0	0
75%	5,130	0	0	0	0
90%	5,130	0	0	0	0
100%	5,130	0	0	0	0
Mean	5,130	0	0	0	0

Table H1a2-151. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Bucks Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	60	0	0	0	0
10%	73	0	0	0	0
25%	79	0	0	0	0
50%	86	0	0	0	0
75%	88	0	0	0	0
90%	96	0	0	0	0
100%	106	0	0	0	0
Mean	85	0	0	0	0

Table H1a2-152. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Bucks Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,130	0	0	0	0
10%	5,138	0	0	0	0
25%	5,142	0	0	0	0
50%	5,146	0	0	0	0
75%	5,147	0	0	0	0
90%	5,152	0	0	0	0
100%	5,157	0	0	0	0
Mean	5,145	0	0	0	0

H1a2.5.5 Butt Valley (Feather River Watershed)

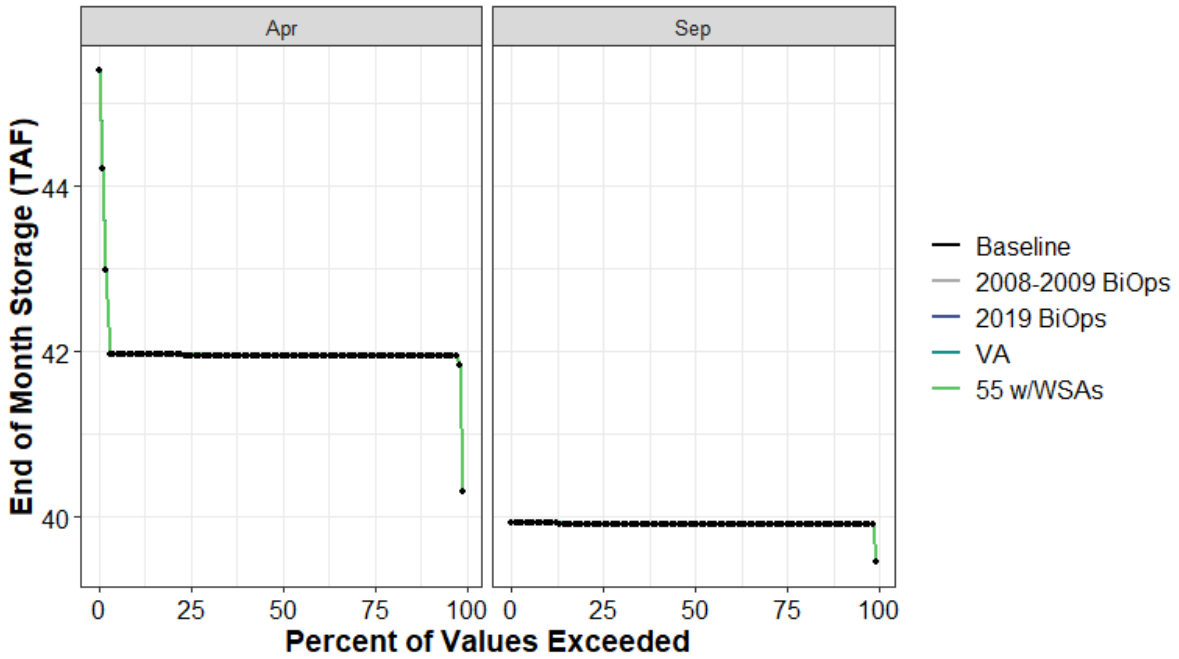

Figure H1a2-75. Butt Valley End of April and End of September Storage (TAF) Percent Exceedance Plot

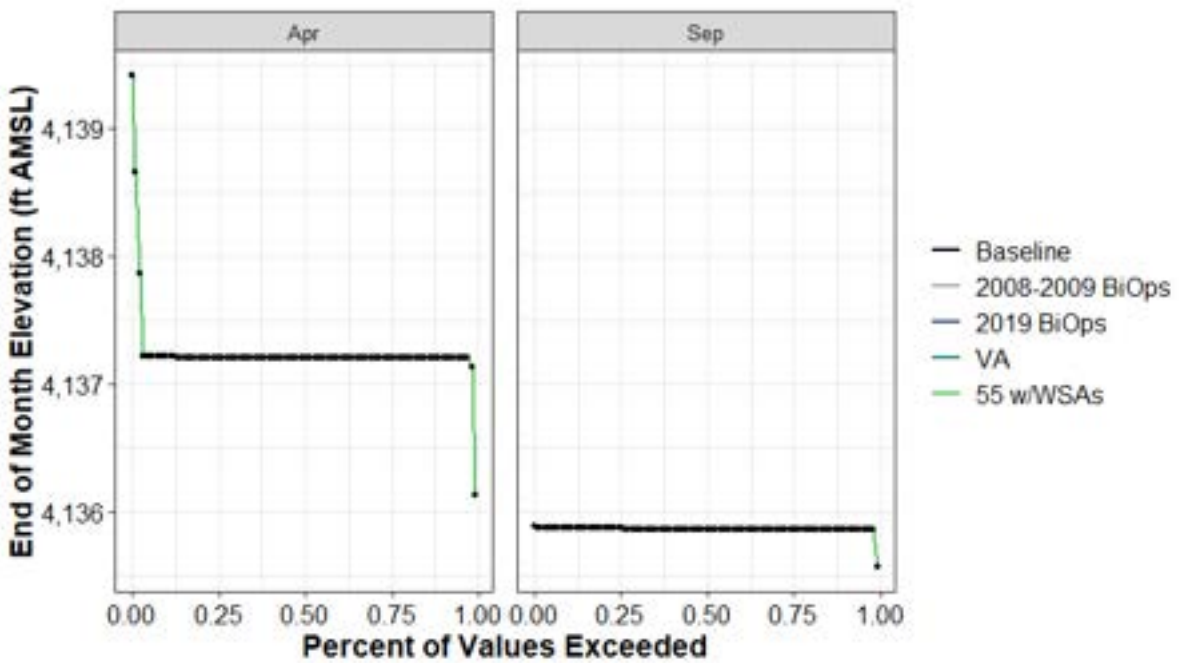

Figure H1a2-76. Butt Valley Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-153. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Butt Valley

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	39	0	0	0	0
10%	40	0	0	0	0
25%	40	0	0	0	0
50%	40	0	0	0	0
75%	40	0	0	0	0
90%	40	0	0	0	0
100%	40	0	0	0	0
Mean	40	0	0	0	0

Table H1a2-154. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Butt Valley

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,136	0	0	0	0
10%	4,136	0	0	0	0
25%	4,136	0	0	0	0
50%	4,136	0	0	0	0
75%	4,136	0	0	0	0
90%	4,136	0	0	0	0
100%	4,136	0	0	0	0
Mean	4,136	0	0	0	0

Table H1a2-155. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Butt Valley

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	40	0	0	0	0
10%	42	0	0	0	0
25%	42	0	0	0	0
50%	42	0	0	0	0
75%	42	0	0	0	0
90%	42	0	0	0	0
100%	45	0	0	0	0
Mean	42	0	0	0	0

Table H1a2-156. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Butt Valley

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,136	0	0	0	0
10%	4,137	0	0	0	0
25%	4,137	0	0	0	0
50%	4,137	0	0	0	0
75%	4,137	0	0	0	0
90%	4,137	0	0	0	0
100%	4,139	0	0	0	0
Mean	4,137	0	0	0	0

H1a2.5.6 Camanche Reservoir (Mokelumne River Watershed)

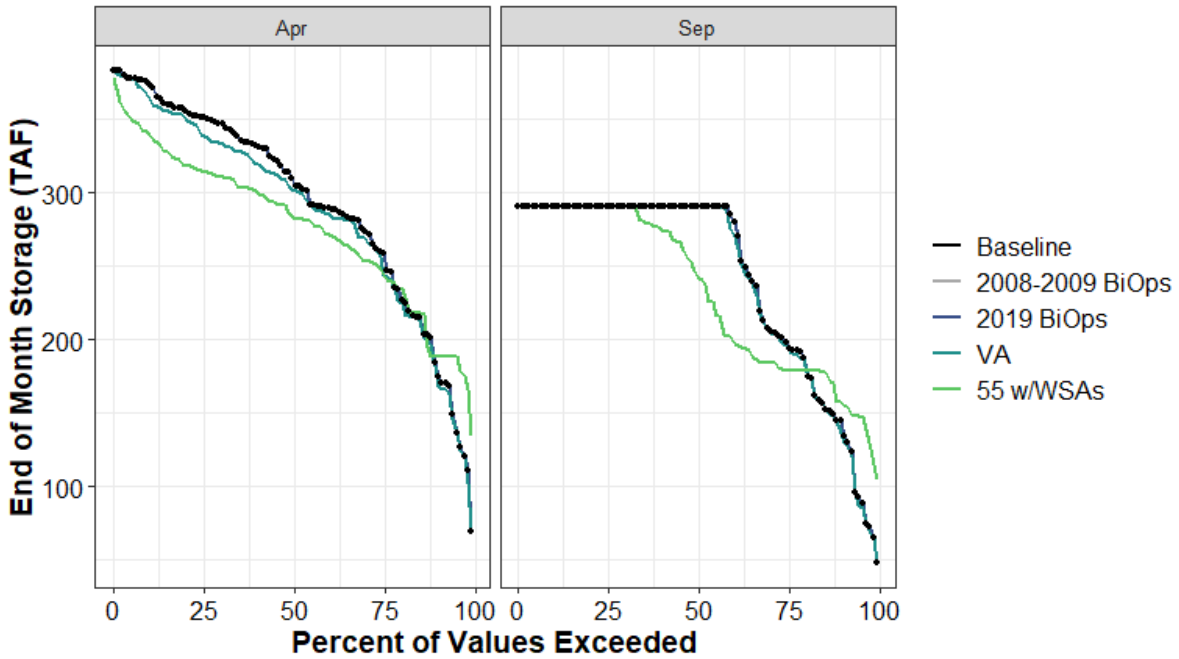

Figure H1a2-77. Camanche Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

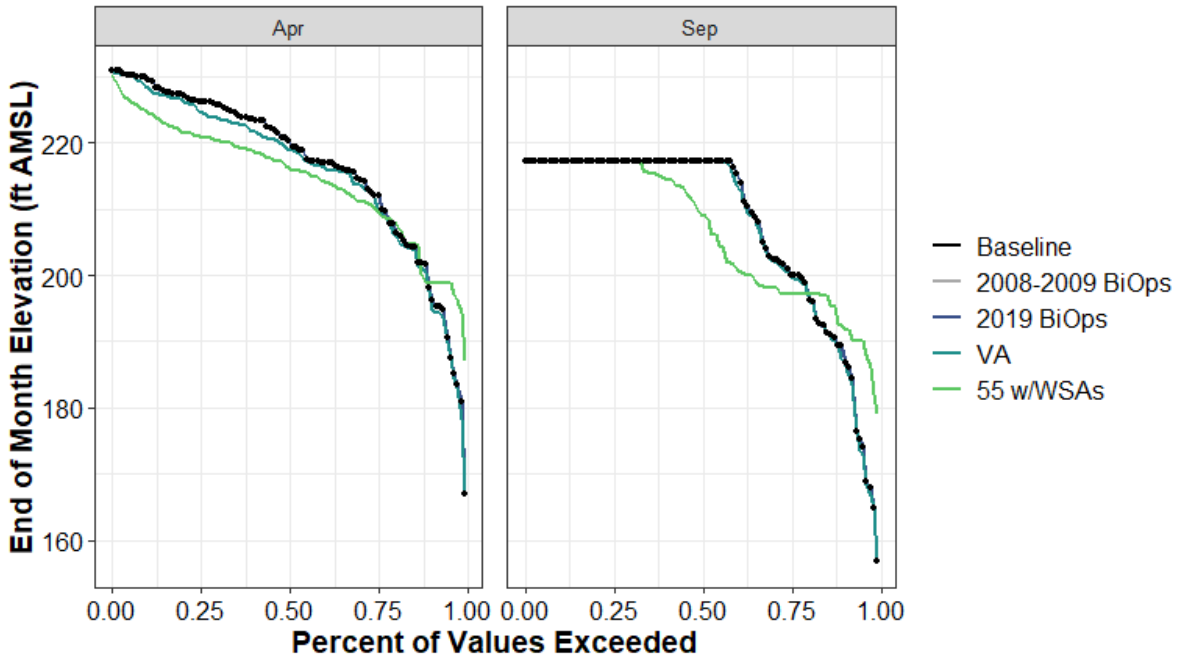

Figure H1a2-78. Camanche Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-157. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Camanche Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	48	0	0	-1	56
10%	142	0	0	-7	14
25%	196	0	0	-2	-17
50%	290	0	0	0	-48
75%	290	0	0	0	0
90%	291	0	0	0	0
100%	291	0	0	0	0
Mean	243	0	0	-1	-11

Table H1a2-158. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Camanche Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	157	0	0	0	22
10%	189	0	0	-2	3
25%	201	0	0	0	-3
50%	217	0	0	0	-8
75%	217	0	0	0	0
90%	217	0	0	0	0
100%	217	0	0	0	0
Mean	208	0	0	0	-1

Table H1a2-159. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Camanche Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	69	0	0	0	65
10%	182	0	0	-3	6
25%	259	0	0	-9	-13
50%	310	0	0	-8	-25
75%	351	0	0	-12	-36
90%	374	0	0	-9	-34
100%	383	0	0	0	-5
Mean	294	0	0	-6	-16

Table H1a2-160. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Camanche Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	167	0	0	0	20
10%	198	0	0	-1	1
25%	212	0	0	-1	-2
50%	220	0	0	-1	-4
75%	226	0	0	-2	-5
90%	230	0	0	-1	-5
100%	231	0	0	0	-1
Mean	217	0	0	-1	-2

H1a2.5.7 Camp Far West (Bear River Watershed)

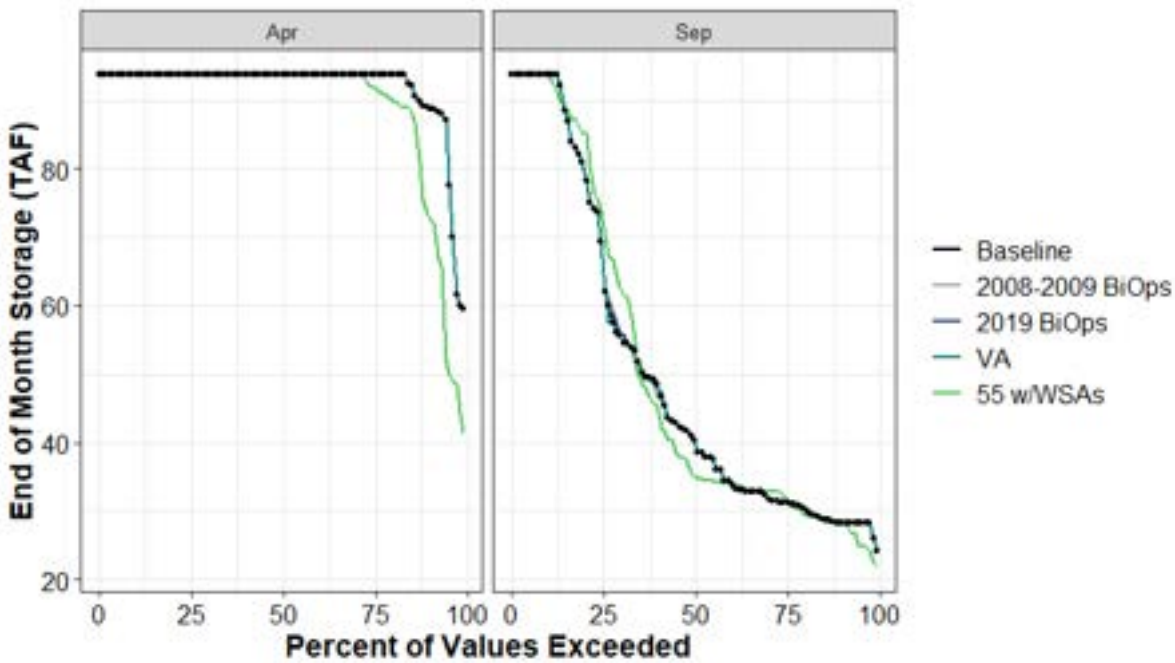

Figure H1a2-79. Camp Far West End of April and End of September Storage (TAF) Percent Exceedance Plot

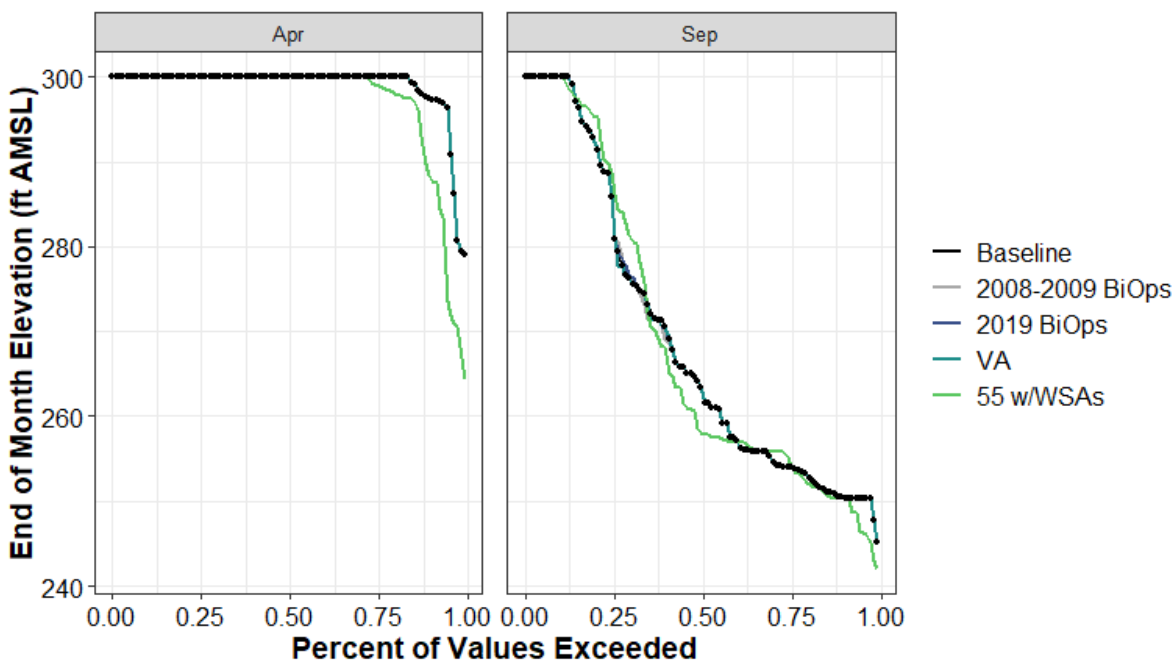

Figure H1a2-80. Camp Far West Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-161. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Camp Far West

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	24	0	0	0	-2
10%	28	0	0	0	0
25%	31	0	0	0	1
50%	40	0	0	0	-5
75%	66	0	0	0	6
90%	94	0	0	0	0
100%	94	0	0	0	0
Mean	50	0	0	0	0

Table H1a2-162. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Camp Far West

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	245	0	0	0	-3
10%	250	0	0	0	0
25%	254	0	0	0	1
50%	263	0	0	0	-5
75%	283	0	0	0	4
90%	300	0	0	0	0
100%	300	0	0	0	0
Mean	269	0	0	0	0

Table H1a2-163. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Camp Far West

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	60	0	0	0	-18
10%	89	0	0	0	-16
25%	94	0	0	0	-2
50%	94	0	0	0	0
75%	94	0	0	0	0
90%	94	0	0	0	0
100%	94	0	0	0	0
Mean	92	0	0	0	-3

Table H1a2-164. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Camp Far West

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	279	0	0	0	-15
10%	297	0	0	0	-9
25%	300	0	0	0	-1
50%	300	0	0	0	0
75%	300	0	0	0	0
90%	300	0	0	0	0
100%	300	0	0	0	0
Mean	299	0	0	0	-2

H1a2.5.8 Caples Lake (American River Watershed)

Figure H1a2-81. Caples Lake End of April and End of September Storage (TAF) Percent Exceedance Plot

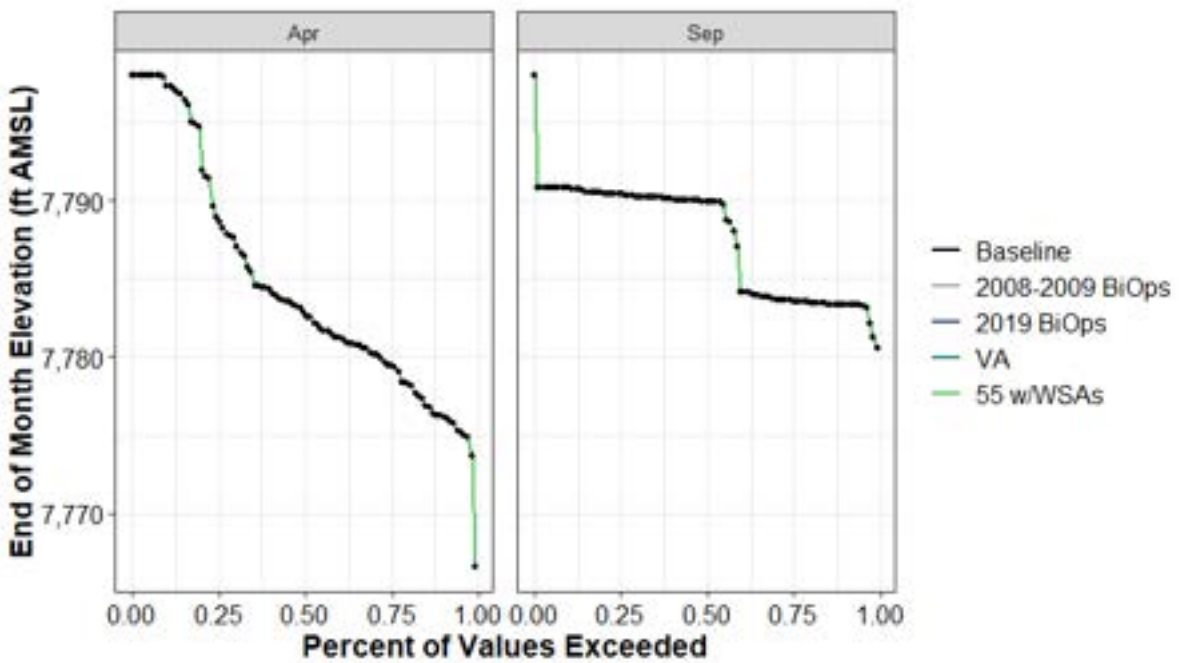

Figure H1a2-82. Caples Lake End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-165. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Caples Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	13	0	0	0	0
10%	14	0	0	0	0
25%	14	0	0	0	0
50%	18	0	0	0	0
75%	18	0	0	0	0
90%	18	0	0	0	0
100%	22	0	0	0	0
Mean	16	0	0	0	0

Table H1a2-166. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Caples Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	7,781	0	0	0	0
10%	7,783	0	0	0	0
25%	7,784	0	0	0	0
50%	7,790	0	0	0	0
75%	7,790	0	0	0	0
90%	7,791	0	0	0	0
100%	7,798	0	0	0	0
Mean	7,788	0	0	0	0

Table H1a2-167. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Caples Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	6	0	0	0	0
10%	10	0	0	0	0
25%	12	0	0	0	0
50%	14	0	0	0	0
75%	17	0	0	0	0
90%	22	0	0	0	0
100%	22	0	0	0	0
Mean	15	0	0	0	0

Table H1a2-168. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Caples Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	7,767	0	0	0	0
10%	7,776	0	0	0	0
25%	7,779	0	0	0	0
50%	7,783	0	0	0	0
75%	7,789	0	0	0	0
90%	7,797	0	0	0	0
100%	7,798	0	0	0	0
Mean	7,785	0	0	0	0

H1a2.5.9 Clear Lake (Cache Creek Watershed)

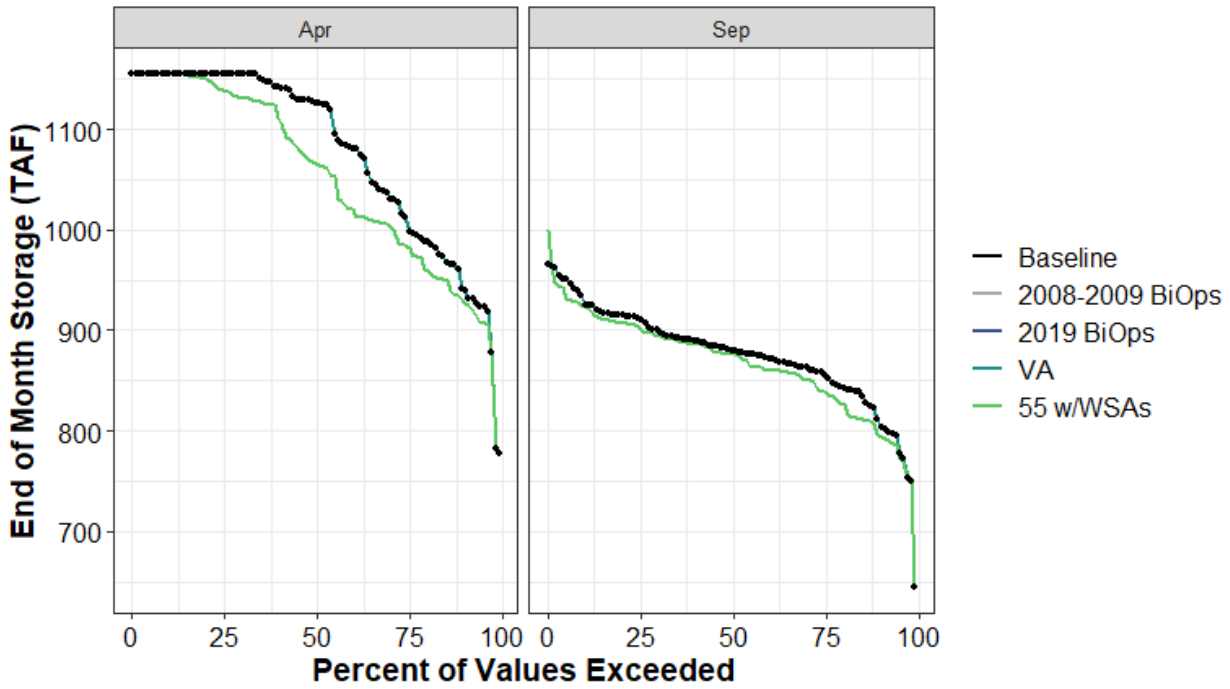

Figure H1a2-83. Clear Lake End of April and End of September Storage (TAF) Percent Exceedance Plot

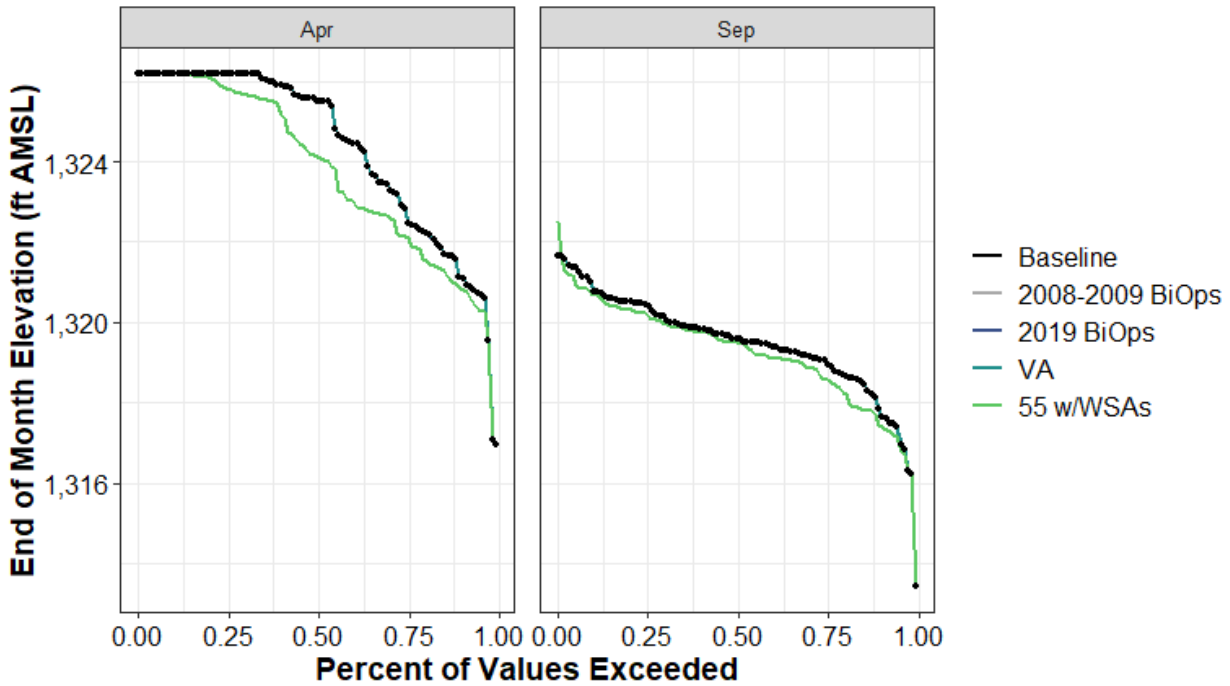

Figure H1a2-84. Clear Lake End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-169. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Clear Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	645	0	0	0	-1
10%	810	0	0	0	-14
25%	856	0	0	0	-17
50%	880	0	0	0	-4
75%	911	0	0	0	-9
90%	928	0	0	0	-5
100%	965	0	0	0	34
Mean	876	0	0	0	-9

Table H1a2-170. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Clear Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,313	0	0	0	0
10%	1,318	0	0	0	0
25%	1,319	0	0	0	0
50%	1,320	0	0	0	0
75%	1,320	0	0	0	0
90%	1,321	0	0	0	0
100%	1,322	0	0	0	1
Mean	1,319	0	0	0	0

Table H1a2-171. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Clear Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	777	0	0	0	0
10%	941	0	0	0	-11
25%	1,005	0	0	0	-22
50%	1,126	0	0	0	-60
75%	1,155	0	0	0	-17
90%	1,155	0	0	0	0
100%	1,155	0	0	0	0
Mean	1,078	0	0	0	-25

Table H1a2-172. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Clear Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,317	0	0	0	0
10%	1,321	0	0	0	0
25%	1,323	0	0	0	-1
50%	1,326	0	0	0	-1
75%	1,326	0	0	0	0
90%	1,326	0	0	0	0
100%	1,326	0	0	0	0
Mean	1,324	0	0	0	-1

H1a2.5.10 CVP San Luis Reservoir (South of Delta Offstream)

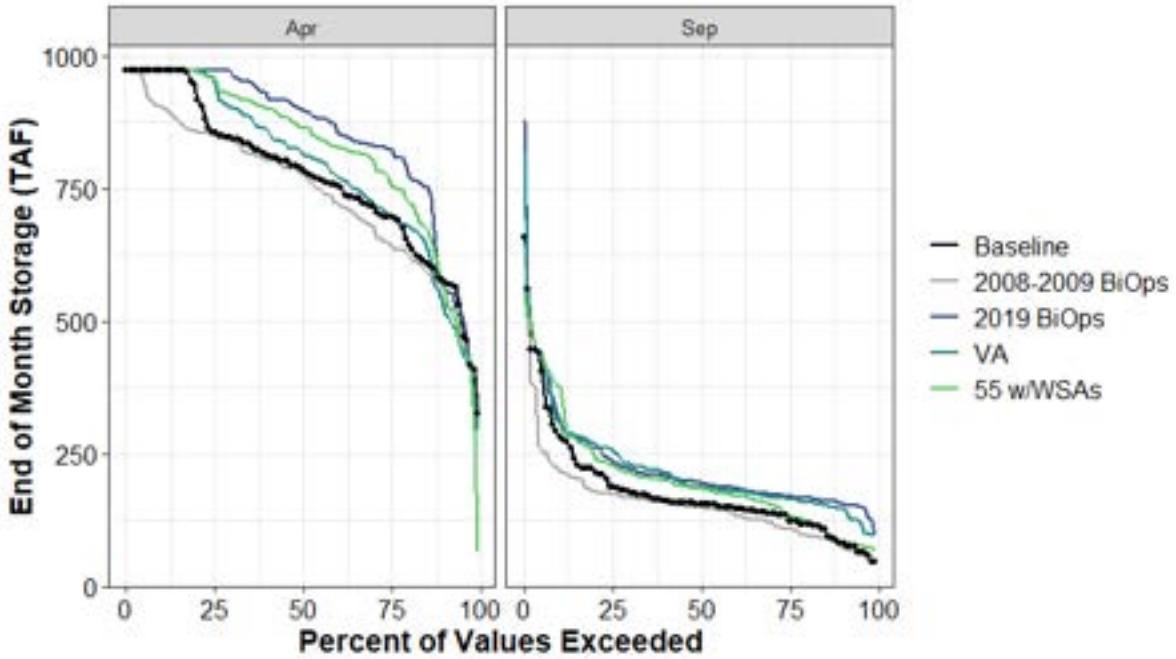

Figure H1a2-85. CVP San Luis Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

Table H1a2-173. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for CVP San Luis Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	45	0	51	51	21
10%	81	-5	76	66	3
25%	128	-20	40	37	4
50%	155	-6	40	32	29
75%	188	-15	49	70	41
90%	283	-64	30	29	93
100%	658	-17	219	165	-98
Mean	178	-22	47	44	25

Table H1a2-174. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for CVP San Luis Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	325	74	-33	-33	-262
10%	578	-37	-9	-44	-14
25%	695	-51	129	5	68
50%	789	-11	109	29	76
75%	855	-2	117	95	100
90%	972	-67	0	0	0
100%	972	0	0	0	0
Mean	773	-29	77	18	48

H1a2.5.11 East Park Reservoir (Stony Creek Watershed)

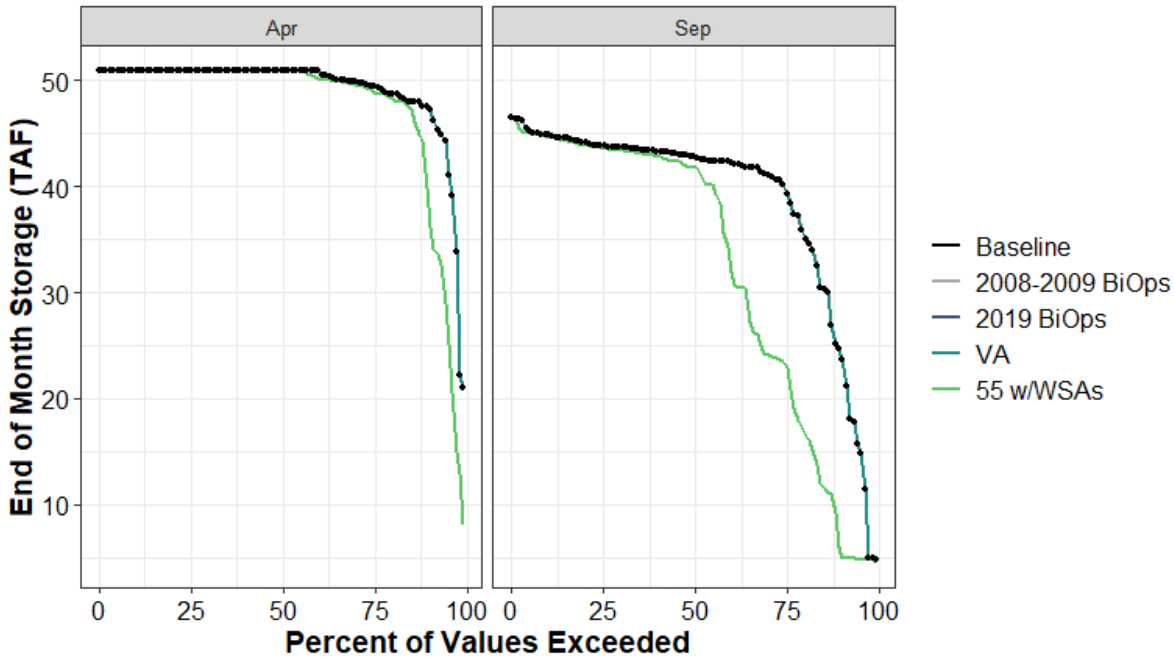

Figure H1a2-86. East Park Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

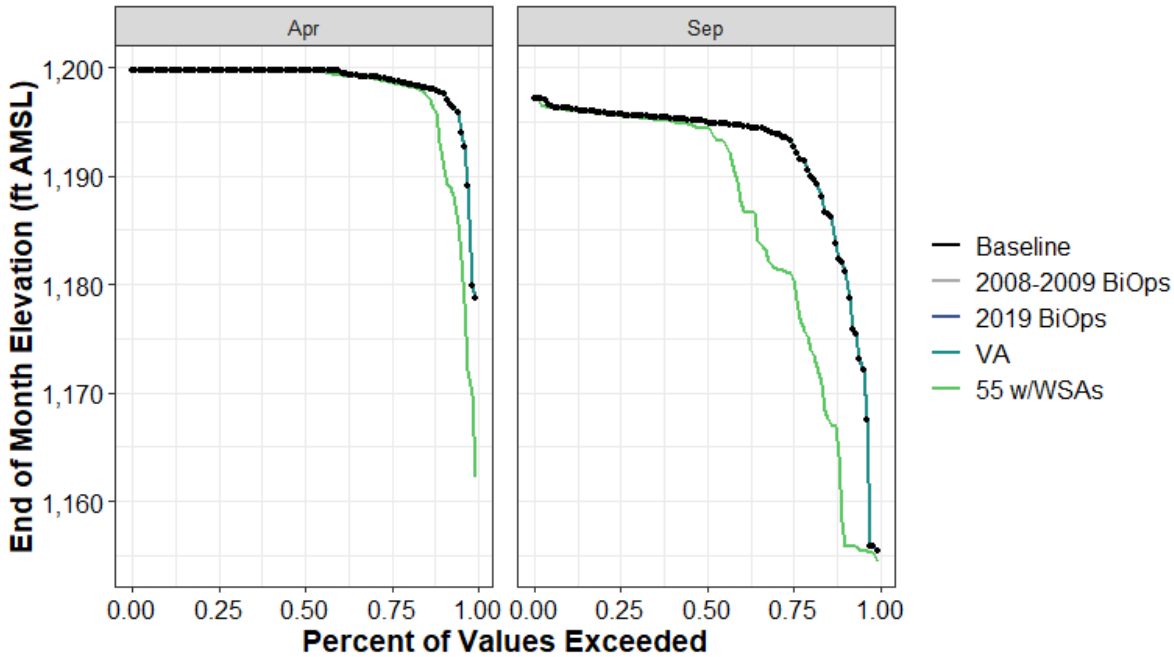

Figure H1a2-87. East Park Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-175. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for East Park Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5	0	0	0	0
10%	25	0	0	0	-19
25%	40	0	0	0	-16
50%	43	0	0	0	-1
75%	44	0	0	0	0
90%	45	0	0	0	0
100%	46	0	0	0	0
Mean	39	0	0	0	-6

Table H1a2-176. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for East Park Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,155	0	0	0	-1
10%	1,182	0	0	0	-24
25%	1,193	0	0	0	-12
50%	1,195	0	0	0	-1
75%	1,196	0	0	0	0
90%	1,196	0	0	0	0
100%	1,197	0	0	0	0
Mean	1,192	0	0	0	-6

Table H1a2-177. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for East Park Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	21	0	0	0	-13
10%	47	0	0	0	-8
25%	49	0	0	0	0
50%	51	0	0	0	0
75%	51	0	0	0	0
90%	51	0	0	0	0
100%	51	0	0	0	0
Mean	49	0	0	0	-2

Table H1a2-178. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for East Park Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,179	0	0	0	-17
10%	1,198	0	0	0	-5
25%	1,199	0	0	0	0
50%	1,200	0	0	0	0
75%	1,200	0	0	0	0
90%	1,200	0	0	0	0
100%	1,200	0	0	0	0
Mean	1,199	0	0	0	-1

H1a2.5.12 Folsom Lake (American River Watershed)

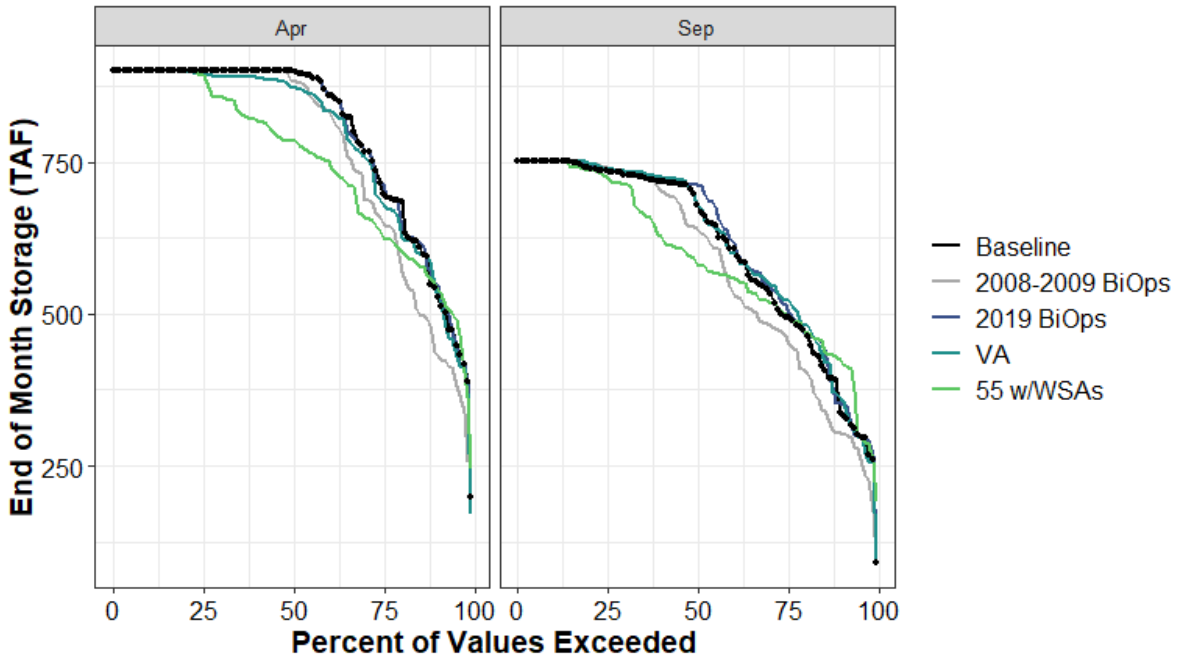

Figure H1a2-88. Folsom Lake End of April and End of September Storage (TAF) Percent Exceedance Plot

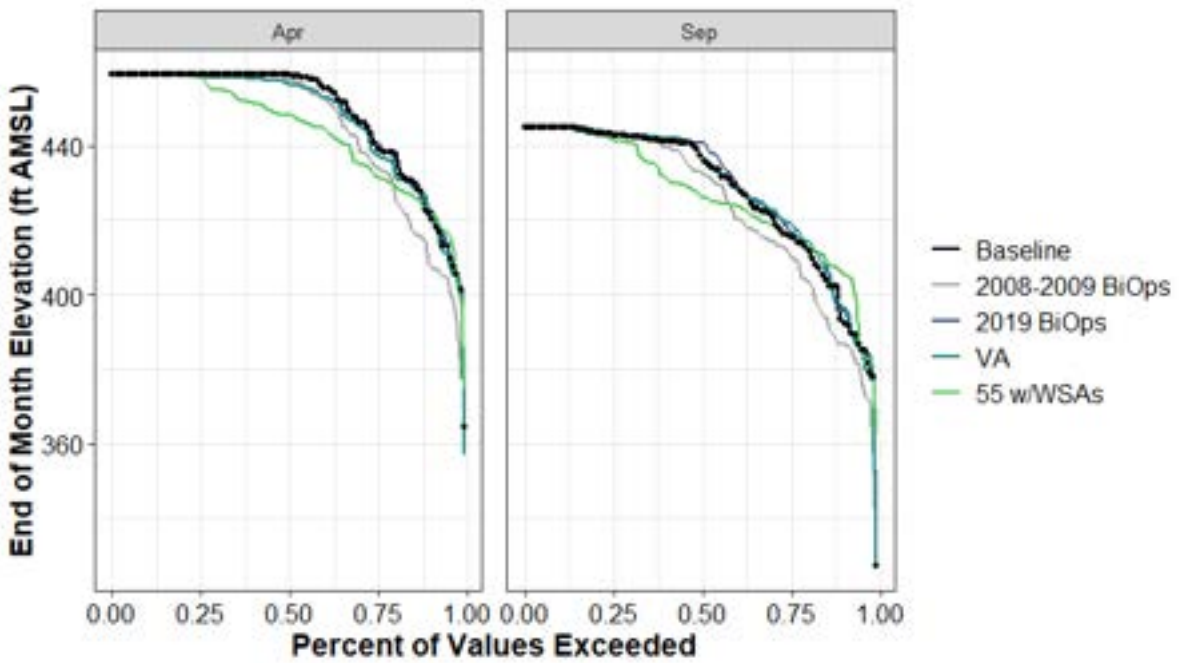

Figure H1a2-89. Folsom Lake End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-179. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Folsom Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	90	0	0	0	102
10%	336	-33	17	24	86
25%	494	-38	14	28	4
50%	679	-38	34	2	-97
75%	735	5	3	4	-12
90%	752	0	0	0	0
100%	752	0	0	0	0
Mean	606	-28	8	6	-19

Table H1a2-180. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Folsom Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	327	0	0	0	35
10%	393	-6	3	4	13
25%	416	-5	2	4	0
50%	437	-4	4	0	-11
75%	443	0	0	0	-1
90%	445	0	0	0	0
100%	445	0	0	0	0
Mean	427	-4	1	1	-2

Table H1a2-181. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Folsom Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	199	58	0	-28	45
10%	540	-103	9	2	8
25%	706	-52	8	-22	-75
50%	900	-16	0	-26	-114
75%	900	0	0	-4	-8
90%	900	0	0	0	0
100%	900	0	0	0	0
Mean	797	-30	0	-12	-50

Table H1a2-182. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Folsom Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	364	13	0	-8	10
10%	421	-13	1	0	1
25%	440	-5	1	-2	-8
50%	459	-2	0	-2	-11
75%	459	0	0	0	-1
90%	459	0	0	0	0
100%	459	0	0	0	0
Mean	448	-3	0	-1	-5

H1a2.5.13 French Lake (Yuba River Watershed)

Figure H1a2-90. French Lake End of April and End of September Storage (TAF) Percent Exceedance Plot

Table H1a2-183. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for French Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	0	0	0	0	0
10%	0	0	0	0	0
25%	0	0	0	0	0
50%	0	0	0	0	0
75%	0	0	0	0	0
90%	0	0	0	0	0
100%	0	0	0	0	0
Mean	0	0	0	0	0

Table H1a2-184. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for French Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	0	0	0	0	0
10%	0	0	0	0	0
25%	0	0	0	0	0
50%	0	0	0	0	0
75%	0	0	0	0	0
90%	0	0	0	0	0
100%	5	1	0	0	-1
Mean	0	0	0	0	0

H1a2.5.14 French Meadows (American River Watershed)

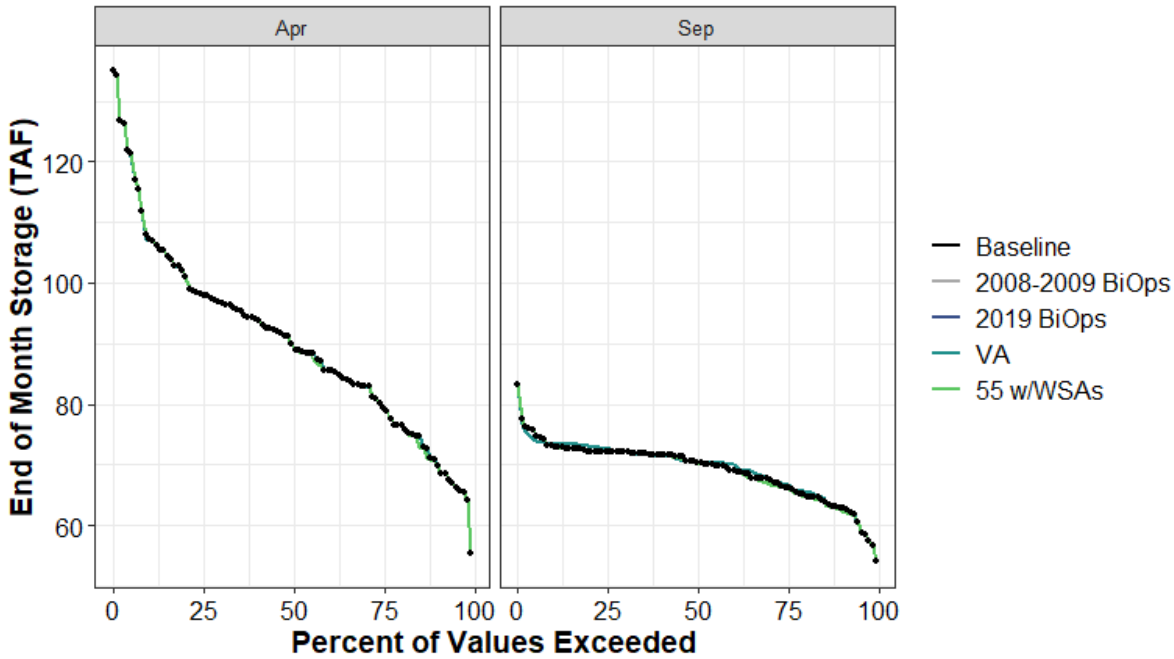

Figure H1a2-91. French Meadows End of April and End of September Storage (TAF) Percent Exceedance Plot

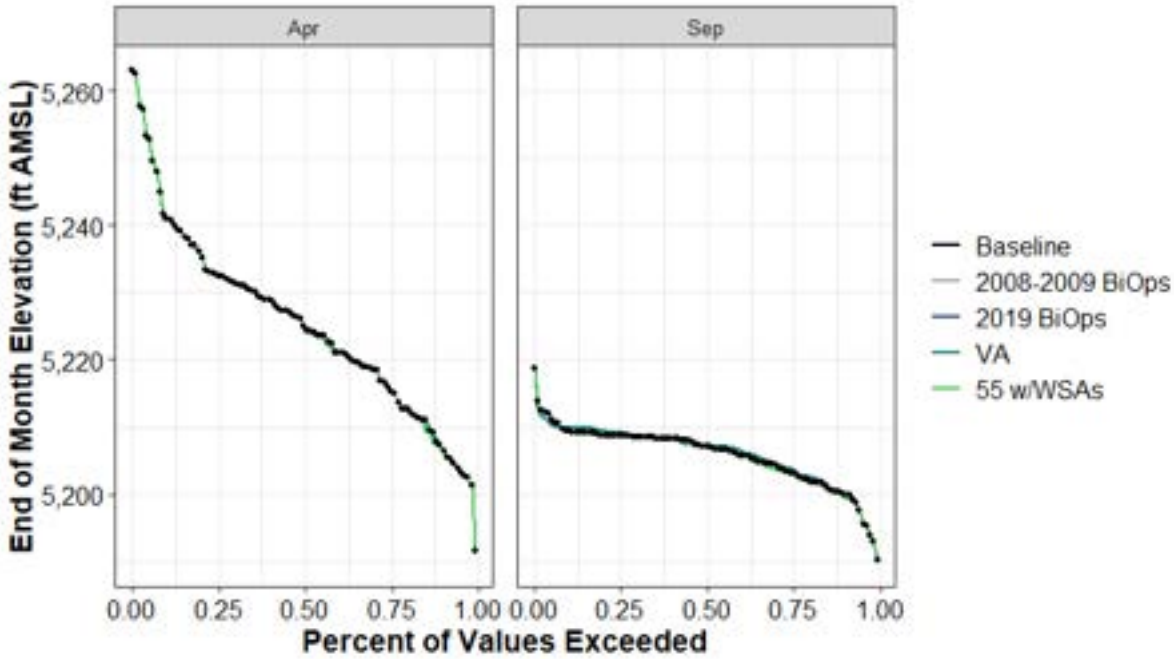

Figure H1a2-92. French Meadows Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-185. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for French Meadows

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	54	0	0	0	0
10%	63	0	0	0	0
25%	66	0	0	1	0
50%	70	0	0	0	0
75%	72	0	0	1	0
90%	73	0	0	1	0
100%	83	0	0	0	0
Mean	69	0	0	0	0

Table H1a2-186. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for French Meadows

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,190	0	0	0	0
10%	5,200	0	0	0	0
25%	5,203	0	0	1	0
50%	5,207	0	0	0	0
75%	5,209	0	0	1	0
90%	5,209	0	0	1	0
100%	5,219	0	0	0	0
Mean	5,206	0	0	0	0

Table H1a2-187. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for French Meadows

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	55	0	0	0	0
10%	71	0	0	0	0
25%	80	0	0	0	0
50%	90	0	0	0	0
75%	98	0	0	0	0
90%	107	0	0	0	0
100%	135	0	0	0	0
Mean	90	0	0	0	0

Table H1a2-188. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for French Meadows

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,192	0	0	0	0
10%	5,207	0	0	0	0
25%	5,216	0	0	0	0
50%	5,225	0	0	0	0
75%	5,233	0	0	0	0
90%	5,241	0	0	0	0
100%	5,263	0	0	0	0
Mean	5,225	0	0	0	0

H1a2.5.15 Frenchman Lake (Feather River Watershed)

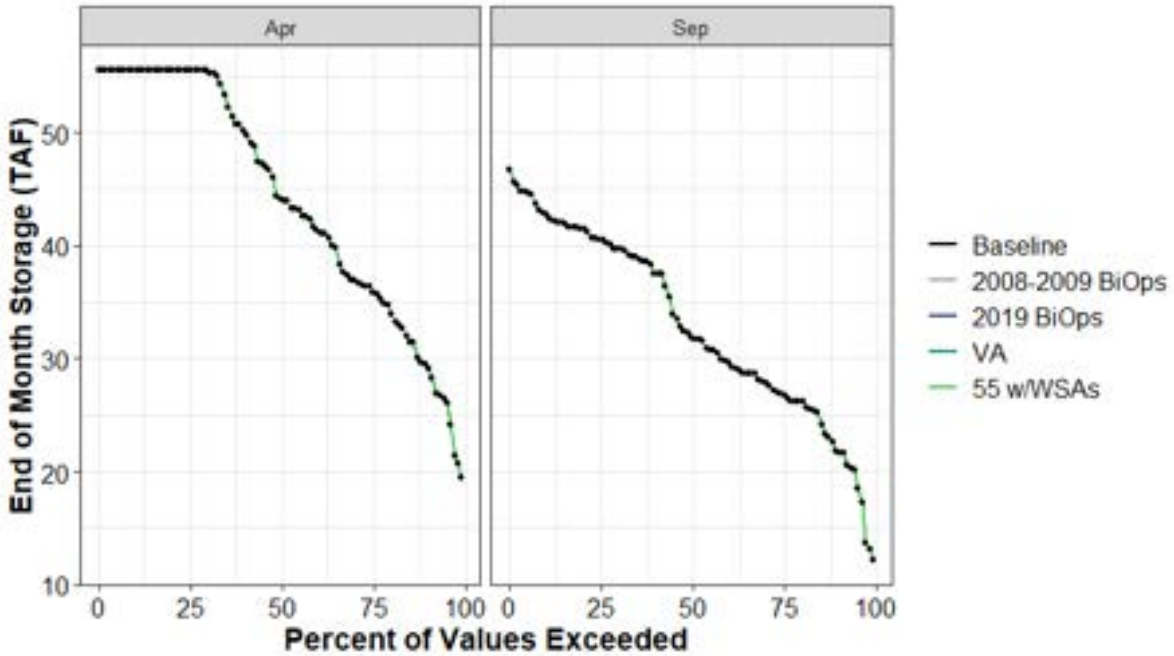

Figure H1a2-93. Frenchman Lake End of April and End of September Storage (TAF) Percent Exceedance Plot

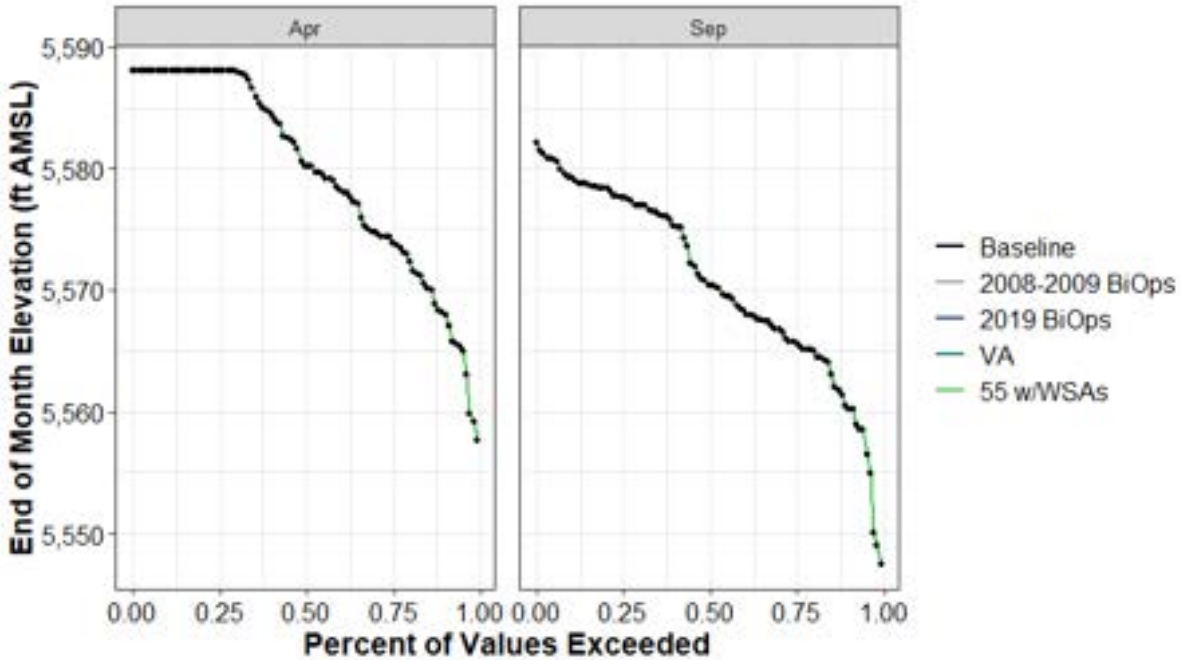

Figure H1a2-94. Frenchman Lake End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-189. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Frenchman Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	12	0	0	0	0
10%	22	0	0	0	0
25%	27	0	0	0	0
50%	32	0	0	0	0
75%	41	0	0	0	0
90%	43	0	0	0	0
100%	47	0	0	0	0
Mean	33	0	0	0	0

Table H1a2-190. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Frenchman Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,547	0	0	0	0
10%	5,560	0	0	0	0
25%	5,566	0	0	0	0
50%	5,570	0	0	0	0
75%	5,578	0	0	0	0
90%	5,579	0	0	0	0
100%	5,582	0	0	0	0
Mean	5,571	0	0	0	0

Table H1a2-191. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Frenchman Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	19	0	0	0	0
10%	29	0	0	0	0
25%	36	0	0	0	0
50%	44	0	0	0	0
75%	55	0	0	0	0
90%	55	0	0	0	0
100%	55	0	0	0	0
Mean	44	0	0	0	0

Table H1a2-192. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Frenchman Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,558	0	0	0	0
10%	5,568	0	0	0	0
25%	5,574	0	0	0	0
50%	5,580	0	0	0	0
75%	5,588	0	0	0	0
90%	5,588	0	0	0	0
100%	5,588	0	0	0	0
Mean	5,580	0	0	0	0

H1a2.5.16 Hell Hole (American River Watershed)

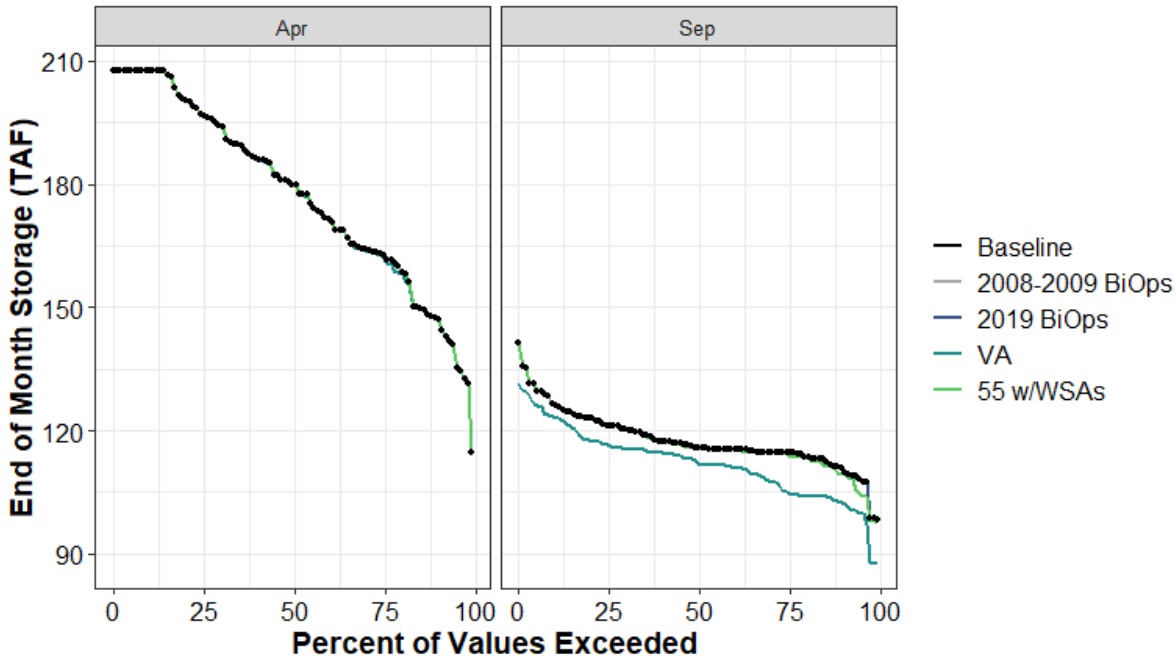

Figure H1a2-95. Hell Hole End of April and End of September Storage (TAF) Percent Exceedance Plot

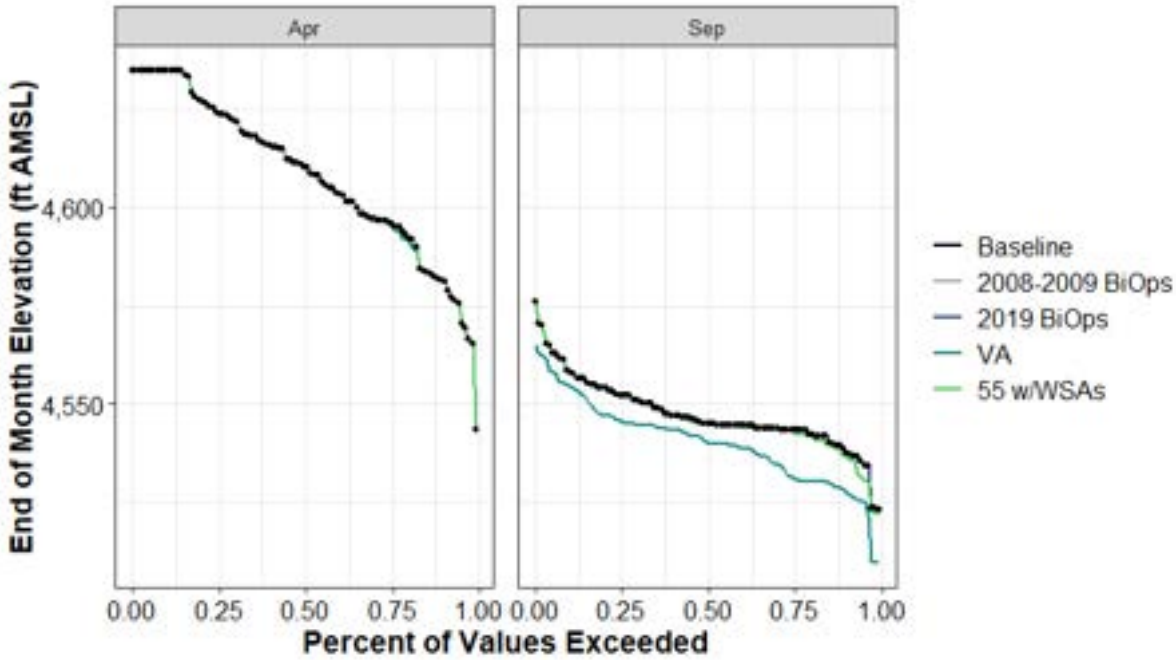

Figure H1a2-96. Hell Hole Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-193. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Hell Hole

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	98	0	0	-11	-1
10%	111	0	0	-8	-1
25%	115	0	0	-10	-1
50%	116	0	0	-4	0
75%	121	0	0	-5	0
90%	126	0	0	-3	0
100%	141	0	0	-10	0
Mean	118	0	0	-6	0

Table H1a2-194. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Hell Hole

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,523	0	0	-13	-1
10%	4,538	0	0	-10	-1
25%	4,543	0	0	-12	-1
50%	4,545	0	0	-5	0
75%	4,552	0	0	-7	0
90%	4,558	0	0	-4	0
100%	4,576	0	0	-11	0
Mean	4,547	0	0	-7	0

Table H1a2-195. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Hell Hole

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	115	0	0	0	0
10%	147	0	0	0	0
25%	163	0	0	-1	0
50%	180	0	0	0	0
75%	197	0	0	0	0
90%	208	0	0	0	0
100%	208	0	0	0	0
Mean	178	0	0	0	0

Table H1a2-196. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Hell Hole

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,543	0	0	0	0
10%	4,581	0	0	0	0
25%	4,596	0	0	-1	0
50%	4,610	0	0	0	0
75%	4,624	0	0	0	0
90%	4,635	0	0	0	0
100%	4,635	0	0	0	0
Mean	4,608	0	0	0	0

H1a2.5.17 Ice House (American River Watershed)

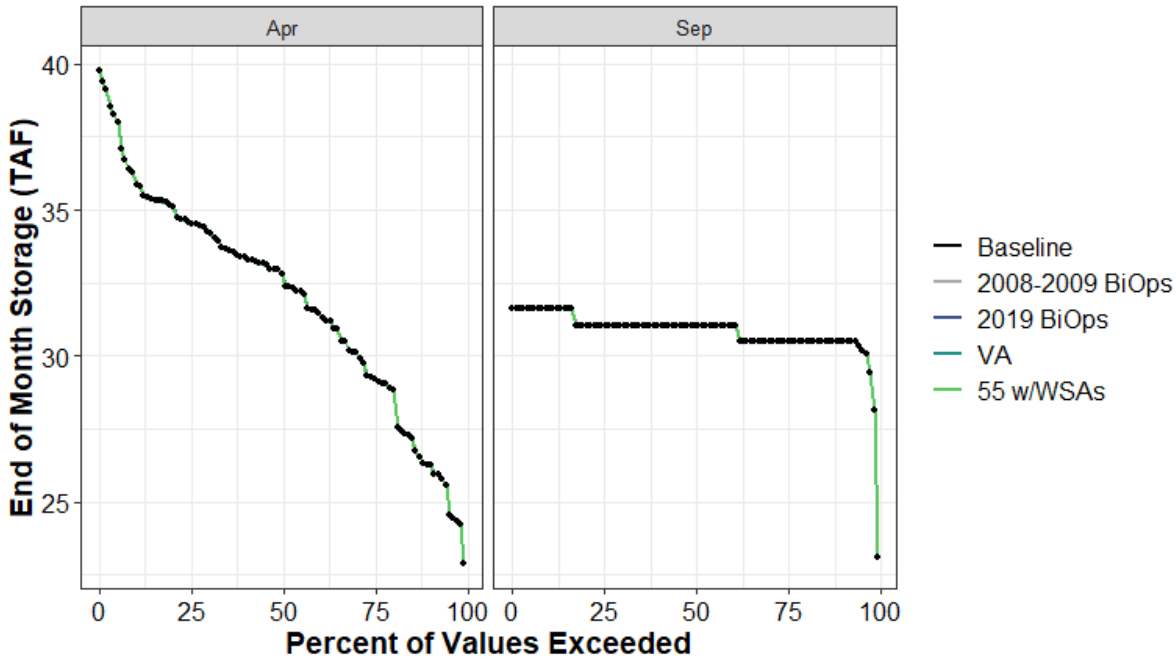

Figure H1a2-97. Ice House End of April and End of September Storage (TAF) Percent Exceedance Plot

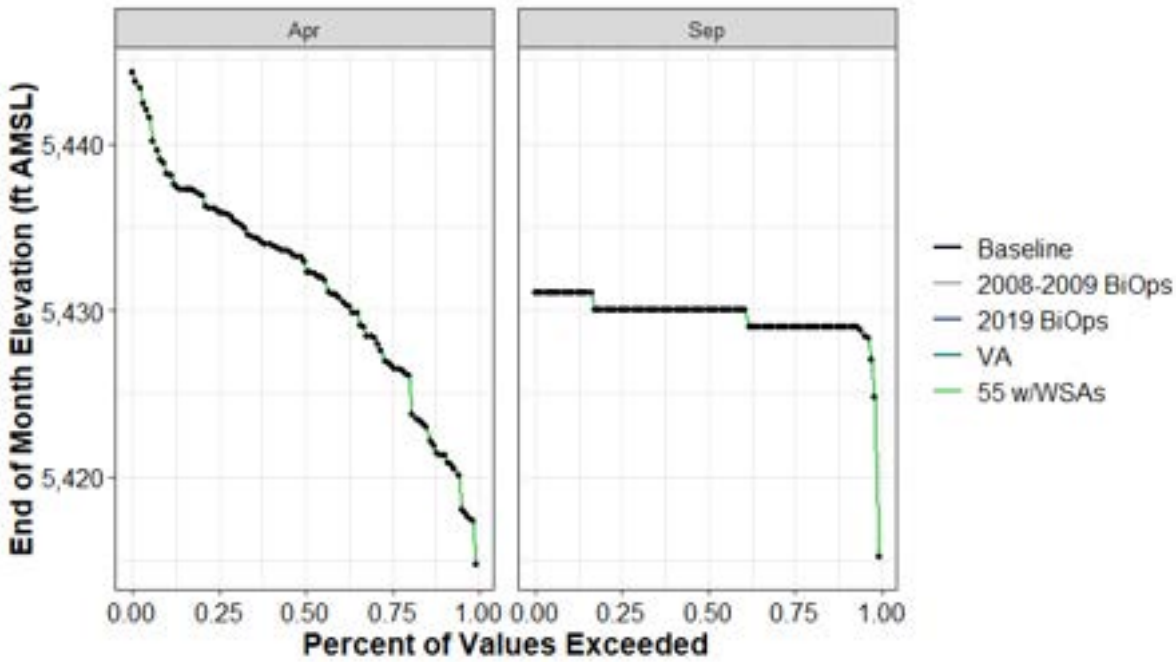

Figure H1a2-98. Ice House Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-197. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Ice House

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	23	0	0	0	0
10%	30	0	0	0	0
25%	30	0	0	0	0
50%	31	0	0	0	0
75%	31	0	0	0	0
90%	32	0	0	0	0
100%	32	0	0	0	0
Mean	31	0	0	0	0

Table H1a2-198. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Ice House

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,415	0	0	0	0
10%	5,429	0	0	0	0
25%	5,429	0	0	0	0
50%	5,430	0	0	0	0
75%	5,430	0	0	0	0
90%	5,431	0	0	0	0
100%	5,431	0	0	0	0
Mean	5,430	0	0	0	0

Table H1a2-199. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Ice House

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	23	0	0	0	0
10%	26	0	0	0	0
25%	29	0	0	0	0
50%	33	0	0	0	0
75%	35	0	0	0	0
90%	36	0	0	0	0
100%	40	0	0	0	0
Mean	32	0	0	0	0

Table H1a2-200. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Ice House

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,415	0	0	0	0
10%	5,421	0	0	0	0
25%	5,427	0	0	0	0
50%	5,433	0	0	0	0
75%	5,436	0	0	0	0
90%	5,438	0	0	0	0
100%	5,444	0	0	0	0
Mean	5,431	0	0	0	0

H1a2.5.18 Indian Valley Reservoir (Cache Creek Watershed)

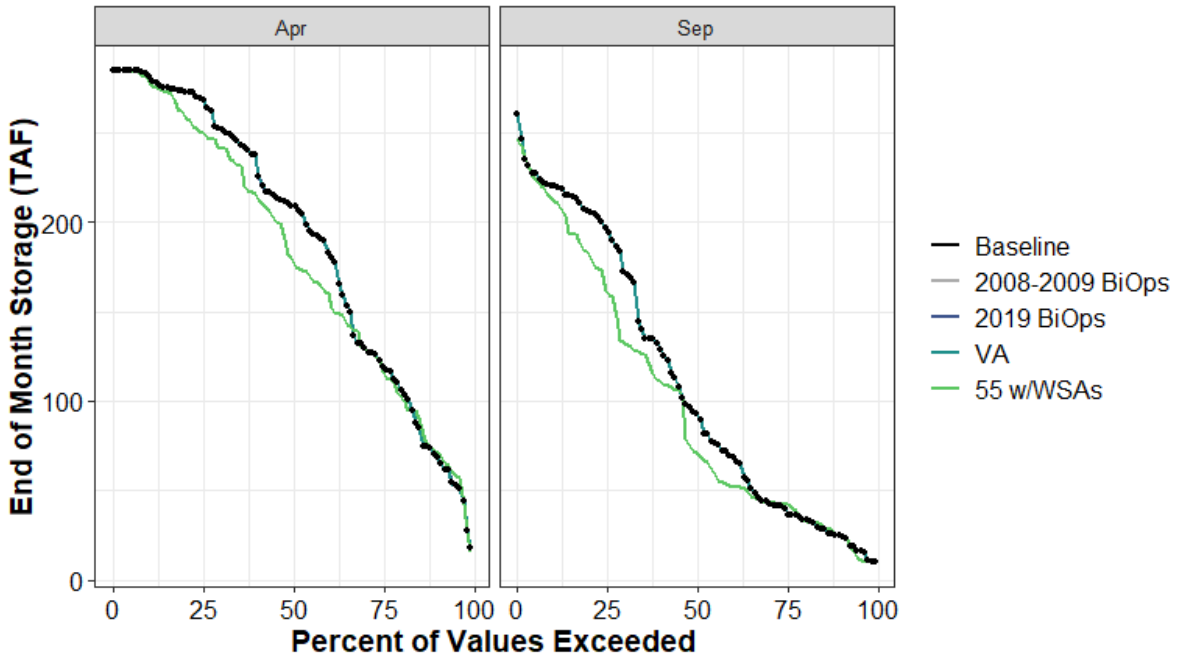

Figure H1a2-99. Indian Valley Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

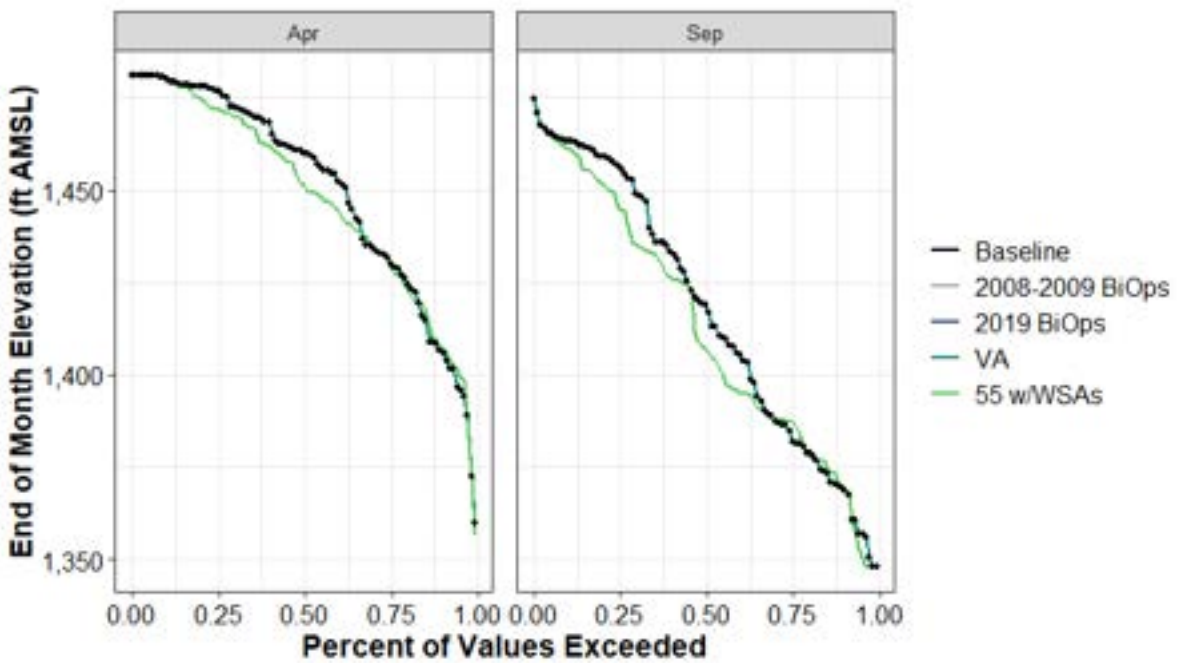

Figure H1a2-100. Indian Valley Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-201. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Indian Valley Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	10	0	0	0	0
10%	25	0	0	0	0
25%	38	0	0	0	4
50%	93	0	0	0	-22
75%	195	0	0	0	-35
90%	220	0	0	0	-8
100%	260	0	0	0	-14
Mean	111	0	0	0	-11

Table H1a2-202. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Indian Valley Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,348	0	0	0	0
10%	1,370	0	0	0	0
25%	1,383	0	0	0	4
50%	1,419	0	0	0	-12
75%	1,456	0	0	0	-11
90%	1,463	0	0	0	-2
100%	1,475	0	0	0	-4
Mean	1,417	0	0	0	-5

Table H1a2-203. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Indian Valley Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	18	0	0	0	-2
10%	70	0	0	0	2
25%	121	0	0	0	-2
50%	209	0	0	0	-29
75%	269	0	0	0	-19
90%	282	0	0	0	-3
100%	284	0	0	0	0
Mean	190	0	0	0	-9

Table H1a2-204. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Indian Valley Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,360	0	0	0	-3
10%	1,406	0	0	0	1
25%	1,431	0	0	0	-1
50%	1,460	0	0	0	-9
75%	1,477	0	0	0	-5
90%	1,480	0	0	0	-1
100%	1,481	0	0	0	0
Mean	1,451	0	0	0	-3

H1a2.5.19 Jackson Meadows Reservoir (Yuba River Watershed)

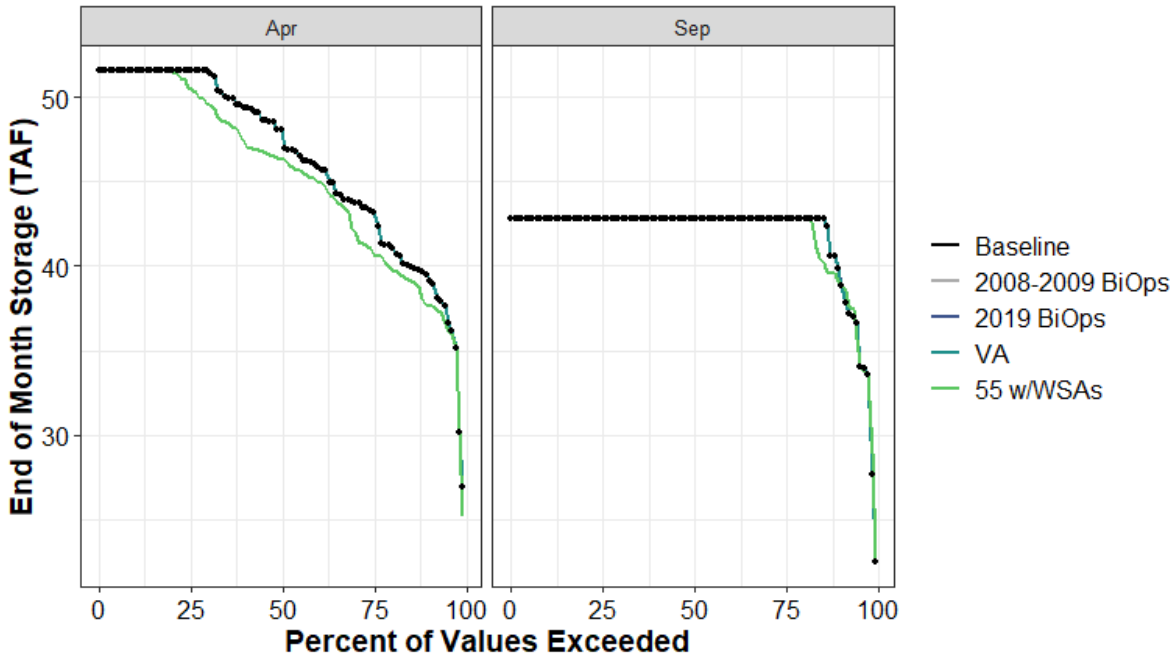

Figure H1a2-101. Jackson Meadows Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

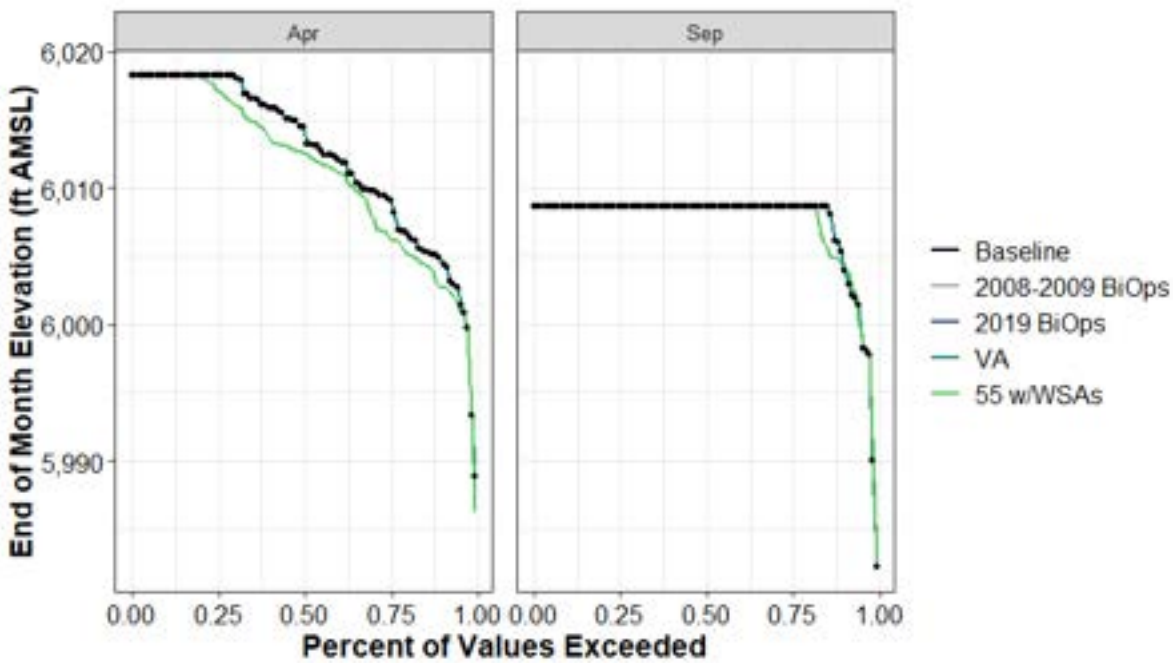

Figure H1a2-102. Jackson Meadows Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-205. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Jackson Meadows Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	22	0	0	0	0
10%	40	0	0	0	-1
25%	43	0	0	0	0
50%	43	0	0	0	0
75%	43	0	0	0	0
90%	43	0	0	0	0
100%	43	0	0	0	0
Mean	42	0	0	0	0

Table H1a2-206. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Jackson Meadows Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,982	0	0	0	0
10%	6,005	0	0	0	-1
25%	6,009	0	0	0	0
50%	6,009	0	0	0	0
75%	6,009	0	0	0	0
90%	6,009	0	0	0	0
100%	6,009	0	0	0	0
Mean	6,008	0	0	0	0

Table H1a2-207. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Jackson Meadows Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	27	0	0	0	-2
10%	39	0	0	0	-2
25%	43	0	0	0	-2
50%	48	0	0	0	-2
75%	52	0	0	0	-1
90%	52	0	0	0	0
100%	52	0	0	0	0
Mean	46	0	0	0	-1

Table H1a2-208. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Jackson Meadows Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,989	0	0	0	-3
10%	6,005	0	0	0	-2
25%	6,009	0	0	0	-3
50%	6,014	0	0	0	-2
75%	6,018	0	0	0	-1
90%	6,018	0	0	0	0
100%	6,018	0	0	0	0
Mean	6,012	0	0	0	-1

H1a2.5.20 Jenkinson Lake (Cosumnes River Watershed)

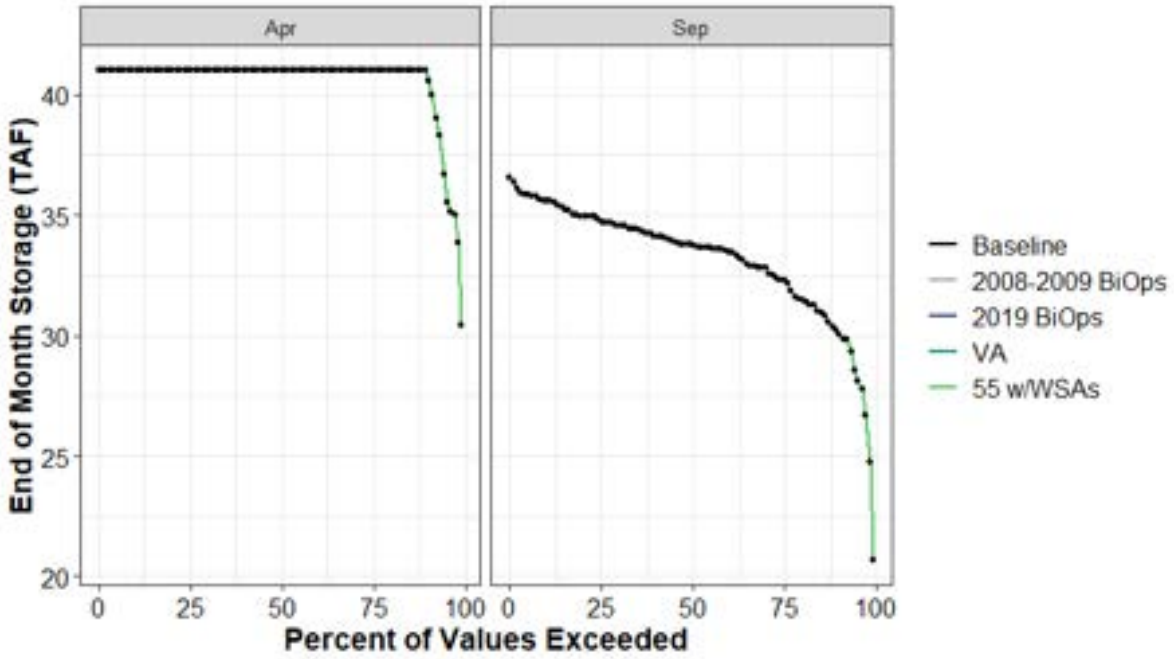

Figure H1a2-103. Jenkinson Lake End of April and End of September Storage (TAF) Percent Exceedance Plot

Table H1a2-209. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Jenkinson Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	21	0	0	0	0
10%	30	0	0	0	0
25%	32	0	0	0	0
50%	34	0	0	0	0
75%	35	0	0	0	0
90%	36	0	0	0	0
100%	37	0	0	0	0
Mean	33	0	0	0	0

Table H1a2-210. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Jenkinson Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	30	0	0	0	0
10%	41	0	0	0	0
25%	41	0	0	0	0
50%	41	0	0	0	0
75%	41	0	0	0	0
90%	41	0	0	0	0
100%	41	0	0	0	0
Mean	41	0	0	0	0

H1a2.5.21 Lake Almanor (Feather River Watershed)

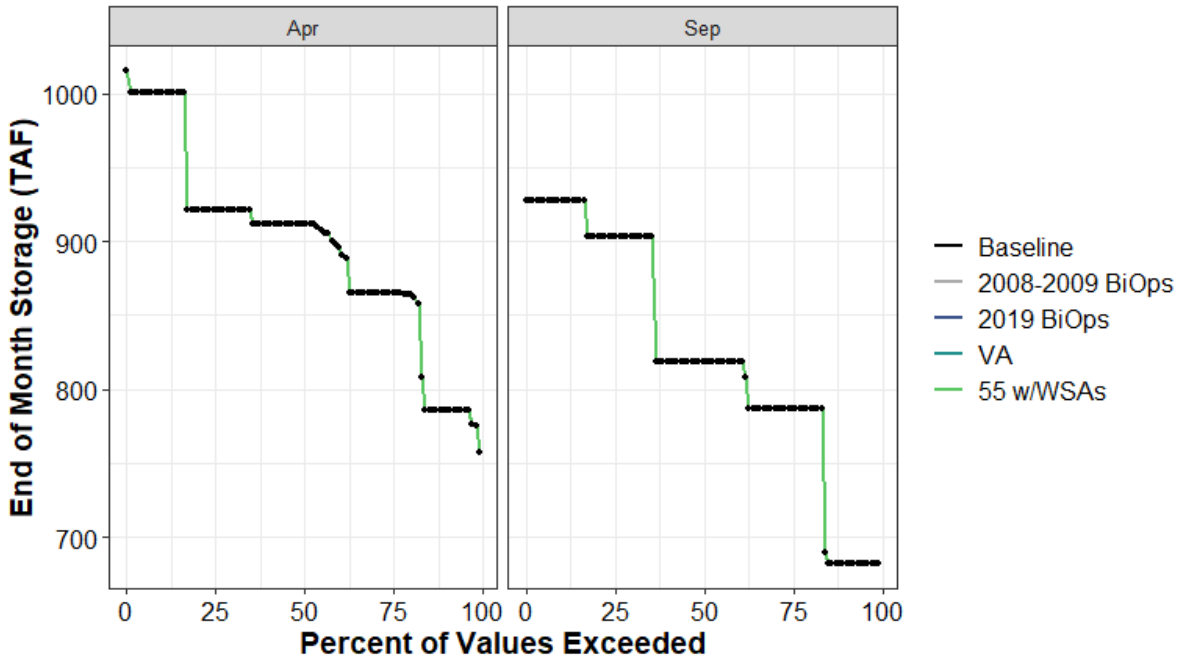

Figure H1a2-104. Lake Almanor End of April and End of September Storage (TAF) Percent Exceedance Plot

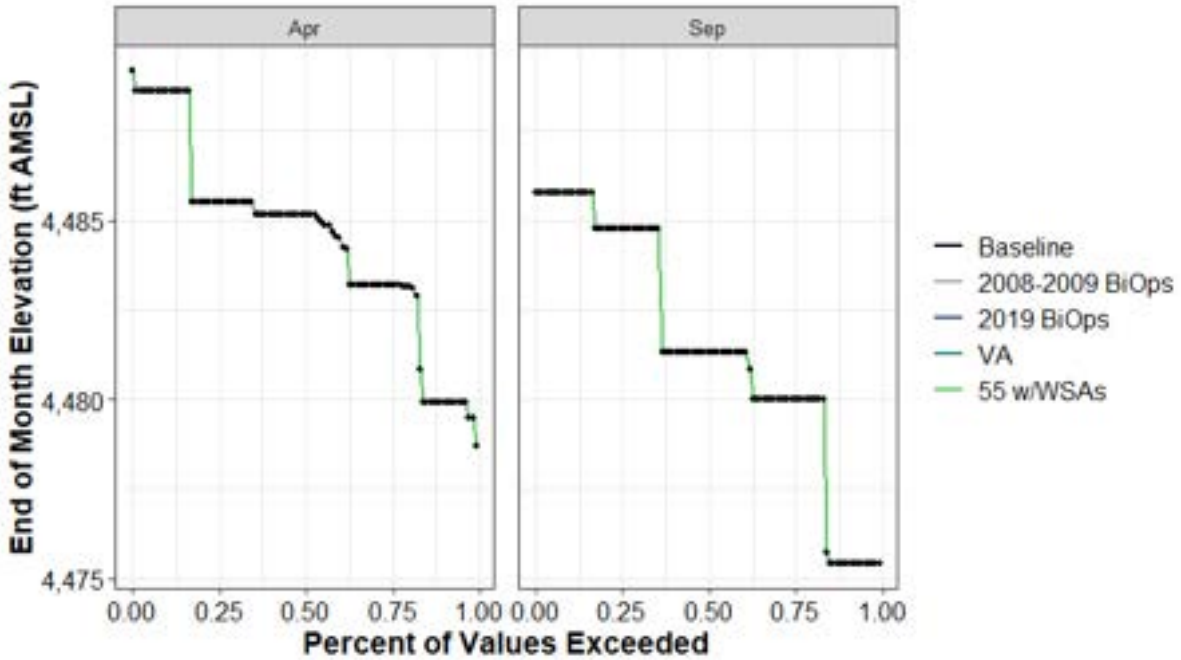

Figure H1a2-105. Lake Almanor Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-211. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Lake Almanor

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	682	0	0	0	0
10%	682	0	0	0	0
25%	787	0	0	0	0
50%	819	0	0	0	0
75%	903	0	0	0	0
90%	928	0	0	0	0
100%	928	0	0	0	0
Mean	825	0	0	0	0

Table H1a2-212. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Lake Almanor

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,475	0	0	0	0
10%	4,475	0	0	0	0
25%	4,480	0	0	0	0
50%	4,481	0	0	0	0
75%	4,485	0	0	0	0
90%	4,486	0	0	0	0
100%	4,486	0	0	0	0
Mean	4,482	0	0	0	0

Table H1a2-213. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Lake Almanor

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	757	0	0	0	0
10%	786	0	0	0	0
25%	865	0	0	0	0
50%	912	0	0	0	0
75%	921	0	0	0	0
90%	1,001	0	0	0	0
100%	1,015	0	0	0	0
Mean	896	0	0	0	0

Table H1a2-214. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Lake Almanor

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,479	0	0	0	0
10%	4,480	0	0	0	0
25%	4,483	0	0	0	0
50%	4,485	0	0	0	0
75%	4,485	0	0	0	0
90%	4,489	0	0	0	0
100%	4,489	0	0	0	0
Mean	4,484	0	0	0	0

H1a2.5.22 Lake Aloha (American River Watershed)

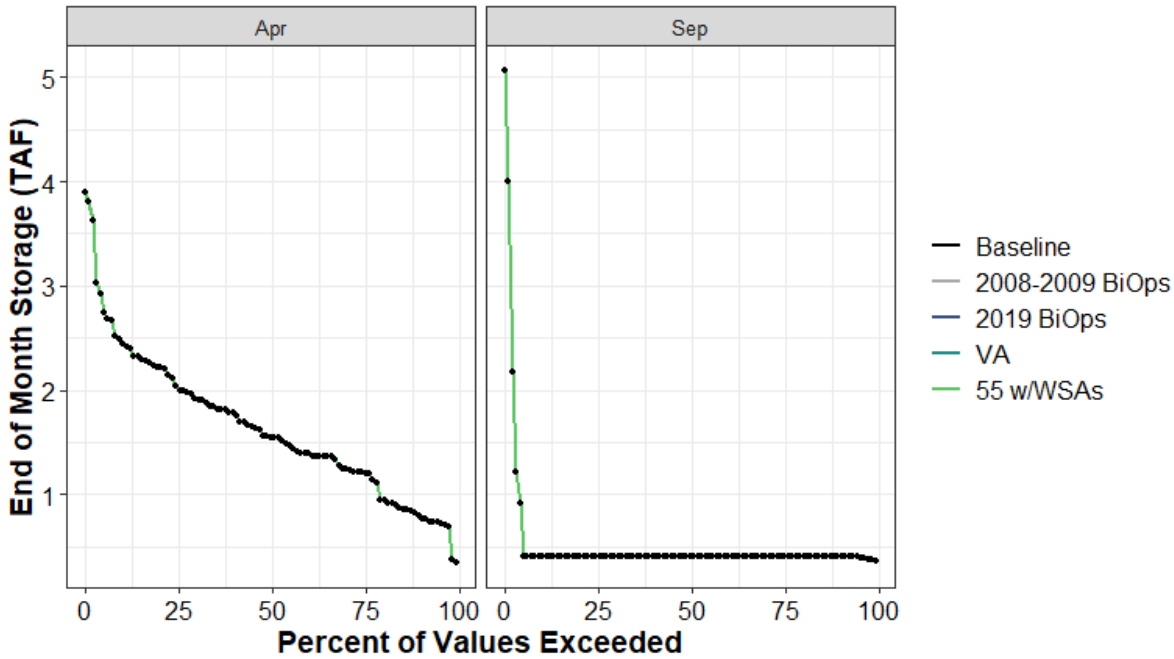

Figure H1a2-106. Lake Aloha End of April and End of September Storage (TAF) Percent Exceedance Plot

Table H1a2-215. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Lake Aloha

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	0	0	0	0	0
10%	0	0	0	0	0
25%	0	0	0	0	0
50%	0	0	0	0	0
75%	0	0	0	0	0
90%	0	0	0	0	0
100%	5	0	0	0	0
Mean	1	0	0	0	0

Table H1a2-216. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Lake Aloha

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	0	0	0	0	0
10%	1	0	0	0	0
25%	1	0	0	0	0
50%	2	0	0	0	0
75%	2	0	0	0	0
90%	2	0	0	0	0
100%	4	0	0	0	0
Mean	2	0	0	0	0

H1a2.5.23 Lake Amador (Mokelumne River Watershed)

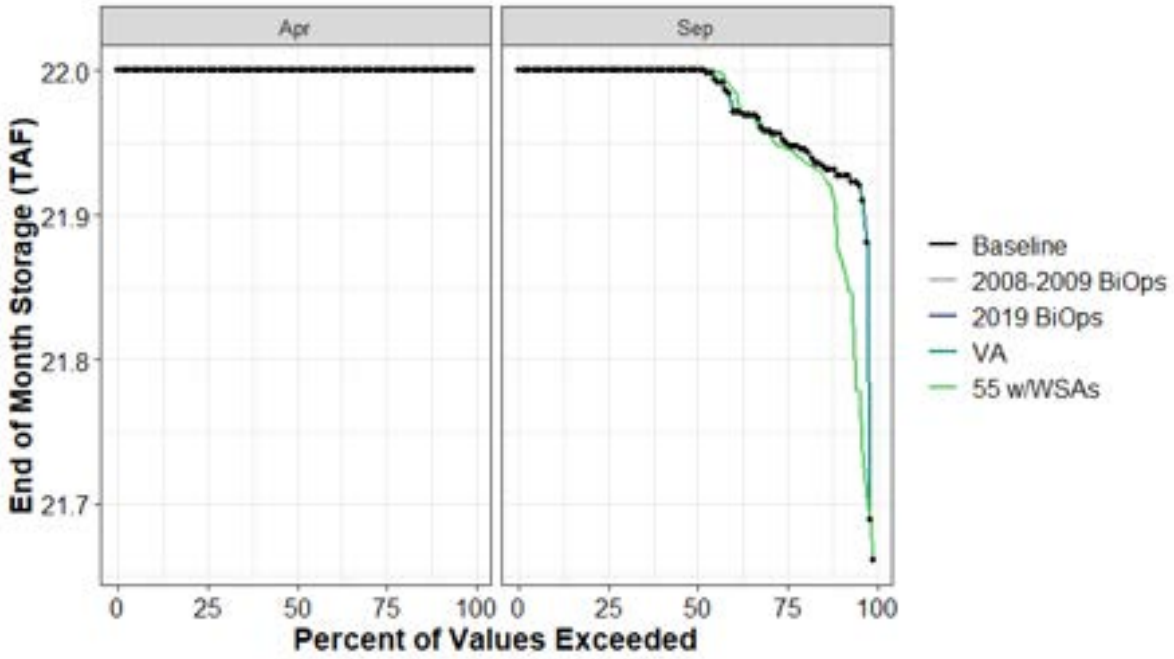

Figure H1a2-107. Lake Amador End of April and End of September Storage (TAF) Percent Exceedance Plot

Table H1a2-217. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Lake Amador

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	22	0	0	0	0
10%	22	0	0	0	0
25%	22	0	0	0	0
50%	22	0	0	0	0
75%	22	0	0	0	0
90%	22	0	0	0	0
100%	22	0	0	0	0
Mean	22	0	0	0	0

Table H1a2-218. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Lake Amador

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	22	0	0	0	0
10%	22	0	0	0	0
25%	22	0	0	0	0
50%	22	0	0	0	0
75%	22	0	0	0	0
90%	22	0	0	0	0
100%	22	0	0	0	0
Mean	22	0	0	0	0

H1a2.5.24 Lake Berryessa (Putah Creek Watershed)

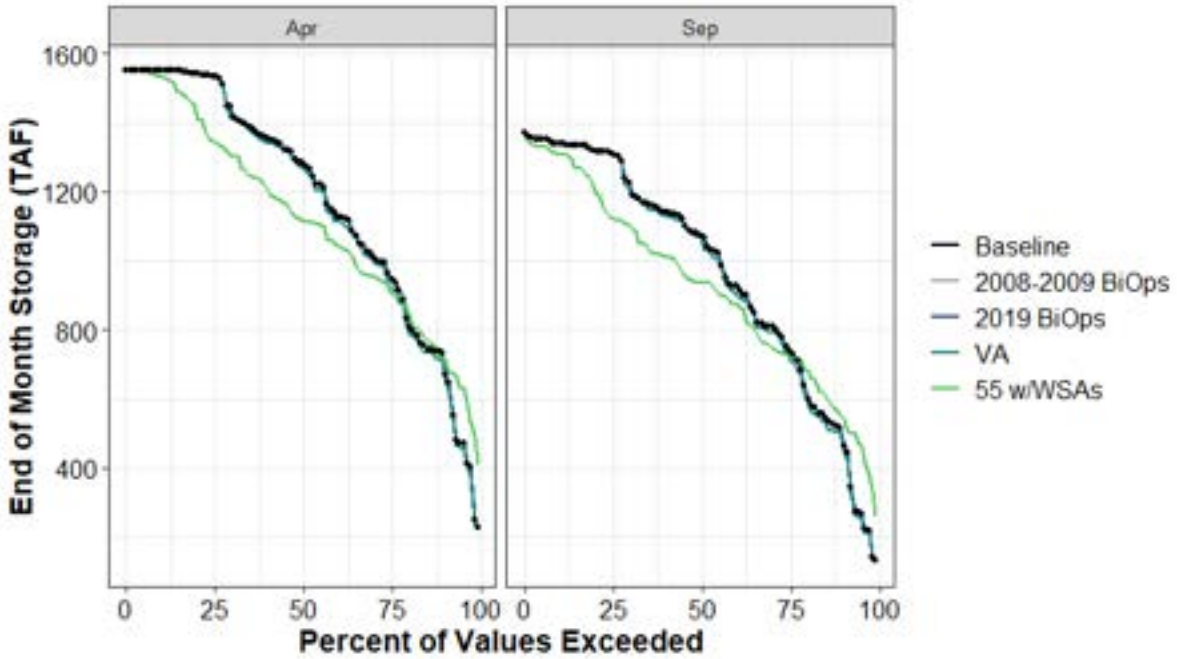

Figure H1a2-108. Lake Berryessa End of April and End of September Storage (TAF) Percent Exceedance Plot

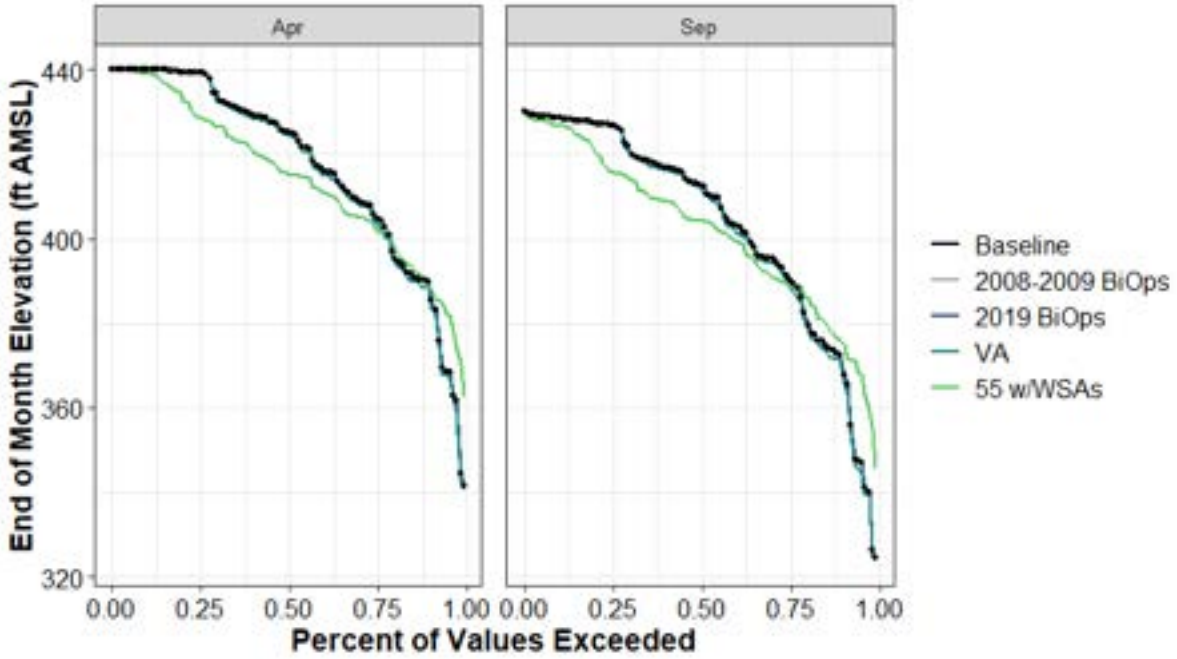

Figure H1a2-109. Lake Berryessa Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-219. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Lake Berryessa

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	130	0	0	-3	129
10%	505	0	0	-14	50
25%	744	1	1	-24	-20
50%	1,073	1	0	-7	-135
75%	1,312	0	0	0	-189
90%	1,342	0	0	0	-31
100%	1,370	0	0	0	-14
Mean	969	0	0	-10	-43

Table H1a2-220. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Lake Berryessa

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	324	0	0	-1	21
10%	372	0	0	-1	4
25%	391	0	0	-2	-1
50%	413	0	0	0	-8
75%	427	0	0	0	-11
90%	428	0	0	0	-2
100%	430	0	0	0	-1
Mean	403	0	0	-1	-2

Table H1a2-221. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Lake Berryessa

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	227	0	0	-6	183
10%	720	0	0	-21	-3
25%	955	0	1	-23	-44
50%	1,286	-1	0	-12	-166
75%	1,536	0	0	-1	-192
90%	1,551	0	0	0	-19
100%	1,551	0	0	0	0
Mean	1,178	0	0	-11	-59

Table H1a2-222. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Lake Berryessa

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	341	0	0	-1	21
10%	389	0	0	-2	0
25%	405	0	0	-2	-3
50%	425	0	0	-1	-10
75%	439	0	0	0	-11
90%	440	0	0	0	-1
100%	440	0	0	0	0
Mean	417	0	0	-1	-3

H1a2.5.25 Lake Davis (Feather River Watershed)

Figure H1a2-110. Lake Davis End of April and End of September Storage (TAF) Percent Exceedance Plot

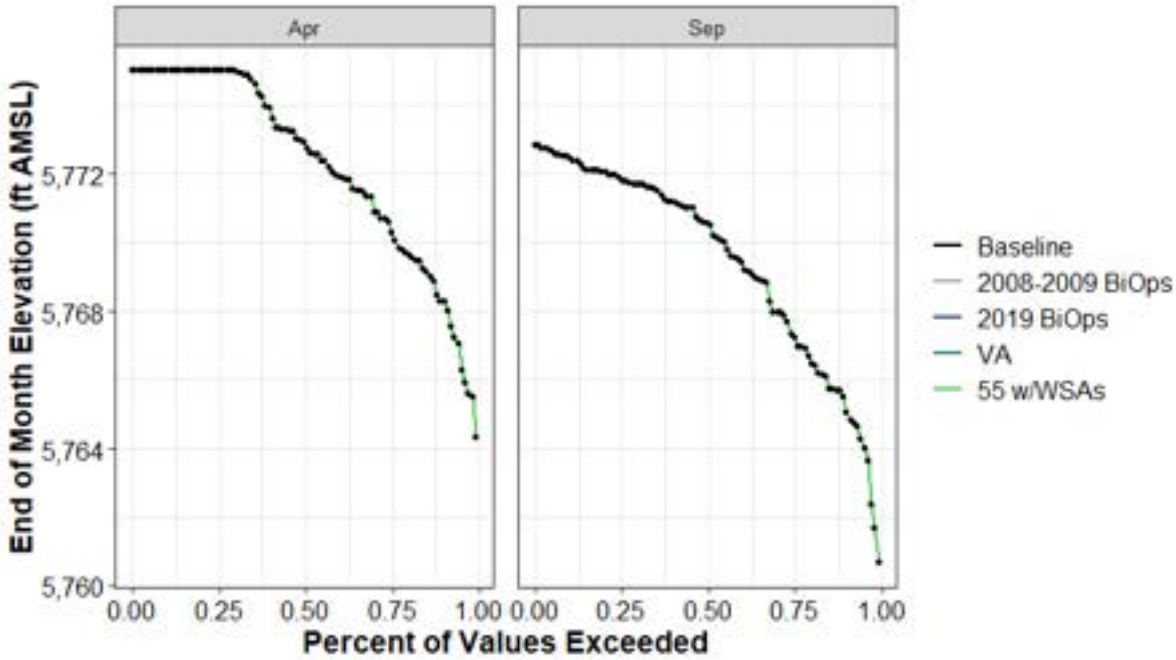

Figure H1a2-111. Lake Davis Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-223. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Lake Davis

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	37	0	0	0	0
10%	51	0	0	0	0
25%	56	0	0	0	0
50%	67	0	0	0	0
75%	72	0	0	0	0
90%	75	0	0	0	0
100%	76	0	0	0	0
Mean	64	0	0	0	0

Table H1a2-224. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Lake Davis

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,761	0	0	0	0
10%	5,765	0	0	0	0
25%	5,767	0	0	0	0
50%	5,771	0	0	0	0
75%	5,772	0	0	0	0
90%	5,772	0	0	0	0
100%	5,773	0	0	0	0
Mean	5,769	0	0	0	0

Table H1a2-225. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Lake Davis

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	47	0	0	0	0
10%	60	0	0	0	0
25%	67	0	0	0	0
50%	76	0	0	0	0
75%	84	0	0	0	0
90%	84	0	0	0	0
100%	84	0	0	0	0
Mean	74	0	0	0	0

Table H1a2-226. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Lake Davis

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,764	0	0	0	0
10%	5,768	0	0	0	0
25%	5,770	0	0	0	0
50%	5,773	0	0	0	0
75%	5,775	0	0	0	0
90%	5,775	0	0	0	0
100%	5,775	0	0	0	0
Mean	5,772	0	0	0	0

H1a2.5.26 Lake Fordyce (Yuba River Watershed)

Figure H1a2-112. Lake Fordyce End of April and End of September Storage (TAF) Percent Exceedance Plot

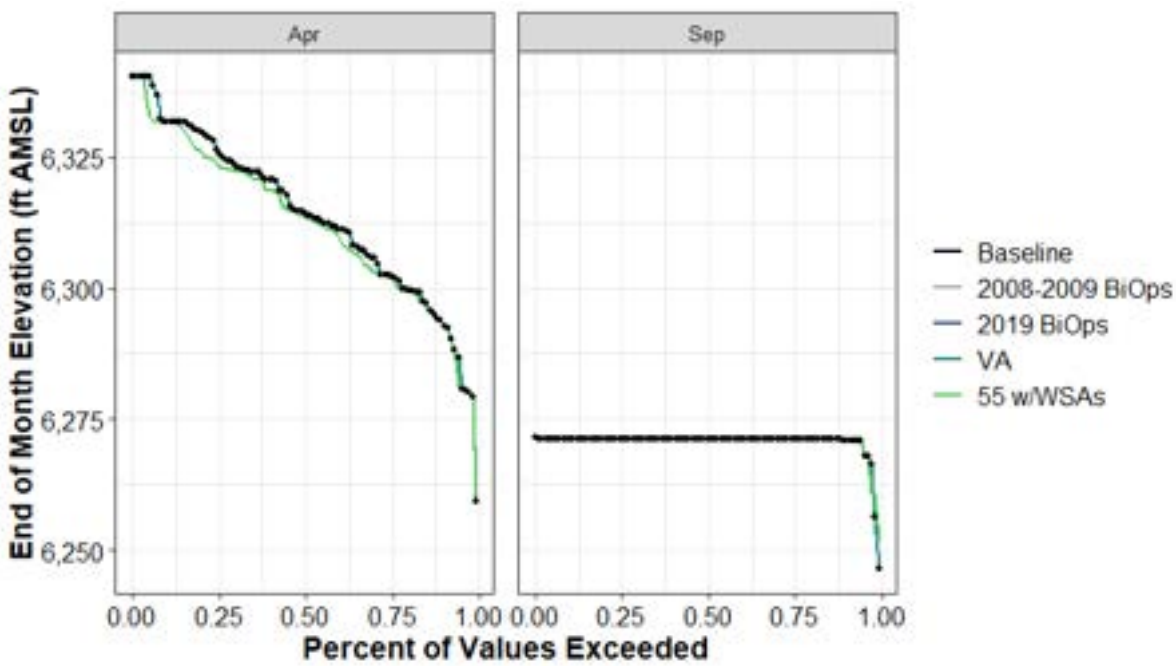

Figure H1a2-113. Lake Fordyce Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-227. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Lake Fordyce

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	3	0	0	0	1
10%	10	0	0	0	0
25%	10	0	0	0	0
50%	10	0	0	0	0
75%	10	0	0	0	0
90%	10	0	0	0	0
100%	10	0	0	0	0
Mean	10	0	0	0	0

Table H1a2-228. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Lake Fordyce

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	6,246	0	0	0	5
10%	6,271	0	0	0	0
25%	6,271	0	0	0	0
50%	6,271	0	0	0	0
75%	6,271	0	0	0	0
90%	6,271	0	0	0	0
100%	6,271	0	0	0	0
Mean	6,271	0	0	0	0

Table H1a2-229. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Lake Fordyce

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	6	0	0	0	0
10%	20	0	0	0	0
25%	24	0	0	0	0
50%	32	0	0	0	0
75%	39	0	0	0	-2
90%	43	0	0	0	0
100%	49	0	0	0	0
Mean	32	0	0	0	-1

Table H1a2-230. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Lake Fordyce

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	6,259	0	0	0	1
10%	6,294	0	0	0	0
25%	6,302	0	0	0	0
50%	6,315	0	0	0	-1
75%	6,326	0	0	0	-3
90%	6,332	0	0	0	0
100%	6,340	0	0	0	0
Mean	6,314	0	0	0	-1

H1a2.5.27 Lake Spaulding (Yuba River Watershed)

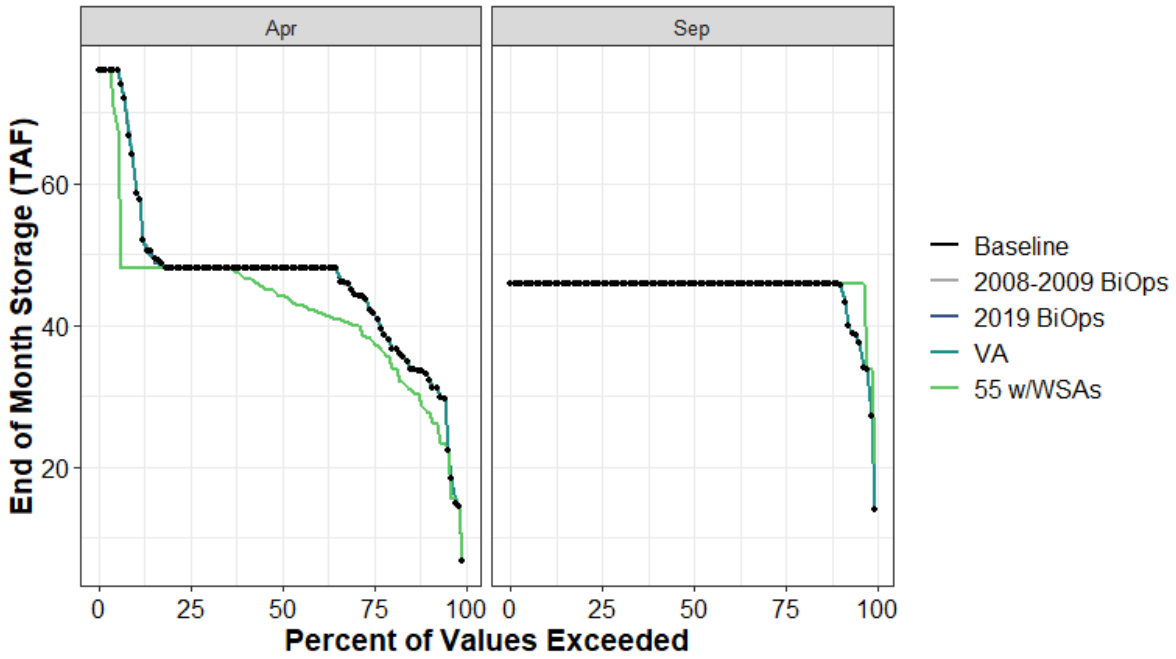

Figure H1a2-114. Lake Spaulding End of April and End of September Storage (TAF) Percent Exceedance Plot

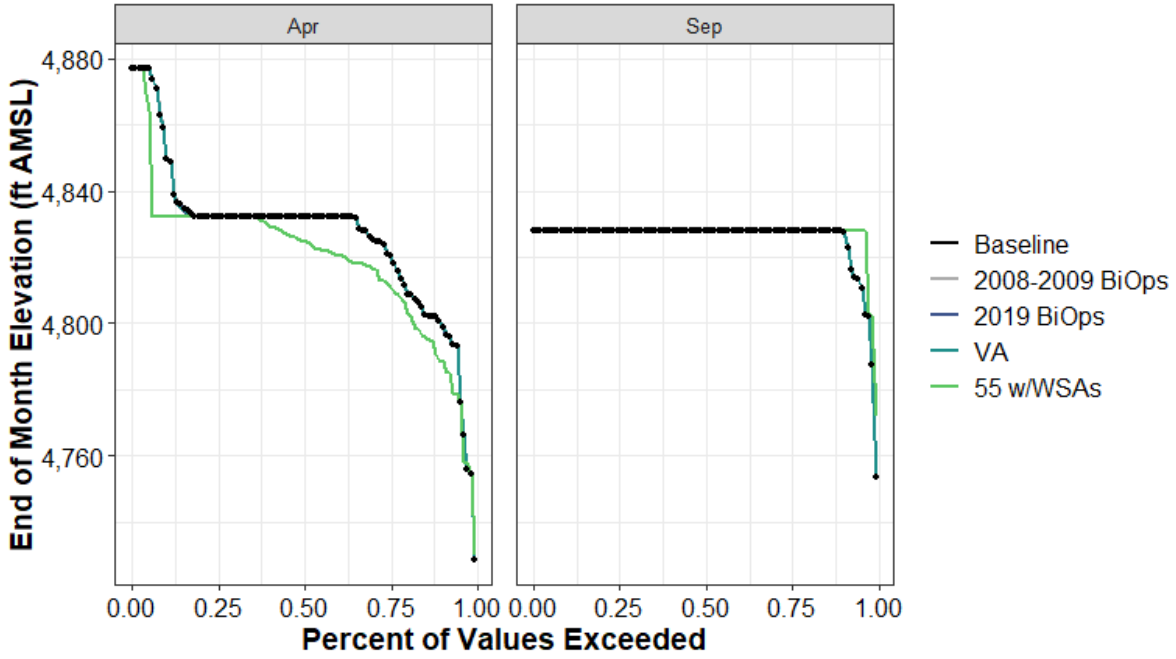

Figure H1a2-115. Lake Spaulding Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-231. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Lake Spaulding

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	14	0	0	0	6
10%	46	0	0	0	0
25%	46	0	0	0	0
50%	46	0	0	0	0
75%	46	0	0	0	0
90%	46	0	0	0	0
100%	46	0	0	0	0
Mean	45	0	0	0	1

Table H1a2-232. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Lake Spaulding

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,753	0	0	0	19
10%	4,828	0	0	0	0
25%	4,828	0	0	0	0
50%	4,828	0	0	0	0
75%	4,828	0	0	0	0
90%	4,828	0	0	0	0
100%	4,828	0	0	0	0
Mean	4,826	0	0	0	1

Table H1a2-233. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Lake Spaulding

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	7	0	0	0	0
10%	33	0	0	0	-5
25%	42	0	0	0	-4
50%	48	0	0	0	-4
75%	48	0	0	0	0
90%	60	0	0	0	-12
100%	76	0	0	0	0
Mean	46	0	0	0	-4

Table H1a2-234. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Lake Spaulding

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,728	0	0	0	2
10%	4,800	0	0	0	-11
25%	4,821	0	0	0	-9
50%	4,832	0	0	0	-7
75%	4,832	0	0	0	0
90%	4,852	0	0	0	-20
100%	4,877	0	0	0	0
Mean	4,827	0	0	0	-7

H1a2.5.28 Lake Valley (American River Watershed)

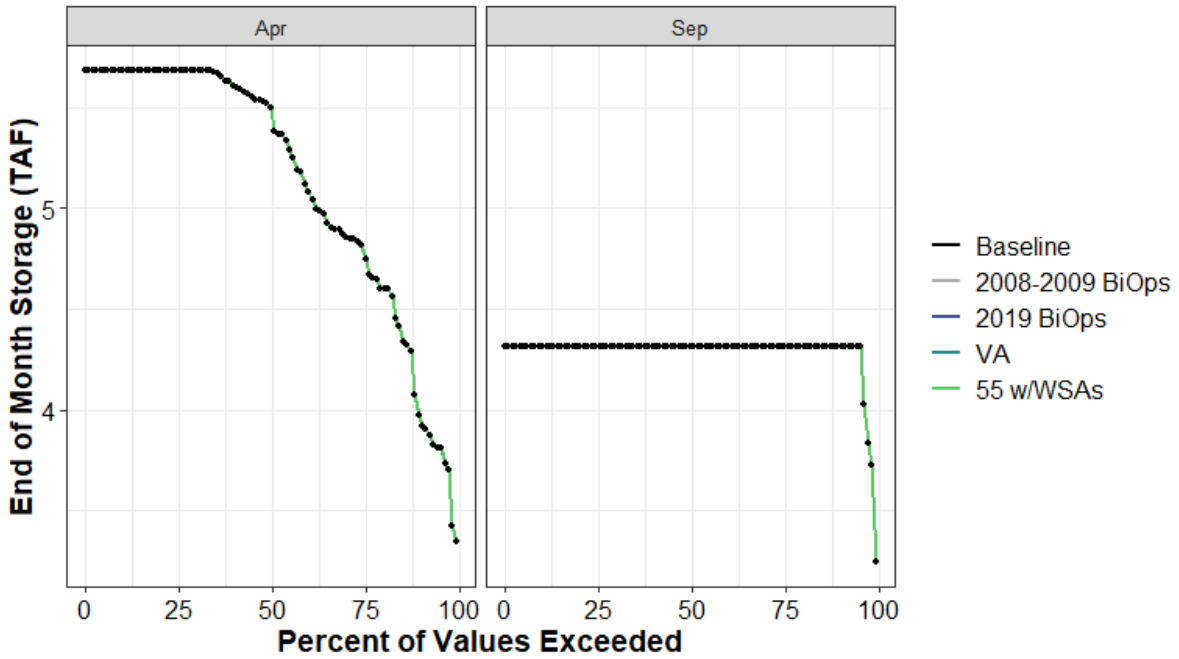

Figure H1a2-116. Lake Valley End of April and End of September Storage (TAF) Percent Exceedance Plot

Table H1a2-235. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Lake Valley

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	3	0	0	0	0
10%	4	0	0	0	0
25%	4	0	0	0	0
50%	4	0	0	0	0
75%	4	0	0	0	0
90%	4	0	0	0	0
100%	4	0	0	0	0
Mean	4	0	0	0	0

Table H1a2-236. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Lake Valley

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	3	0	0	0	0
10%	4	0	0	0	0
25%	5	0	0	0	0
50%	5	0	0	0	0
75%	6	0	0	0	0
90%	6	0	0	0	0
100%	6	0	0	0	0
Mean	5	0	0	0	0

H1a2.5.29 Little Grass Valley Reservoir (Feather River Watershed)

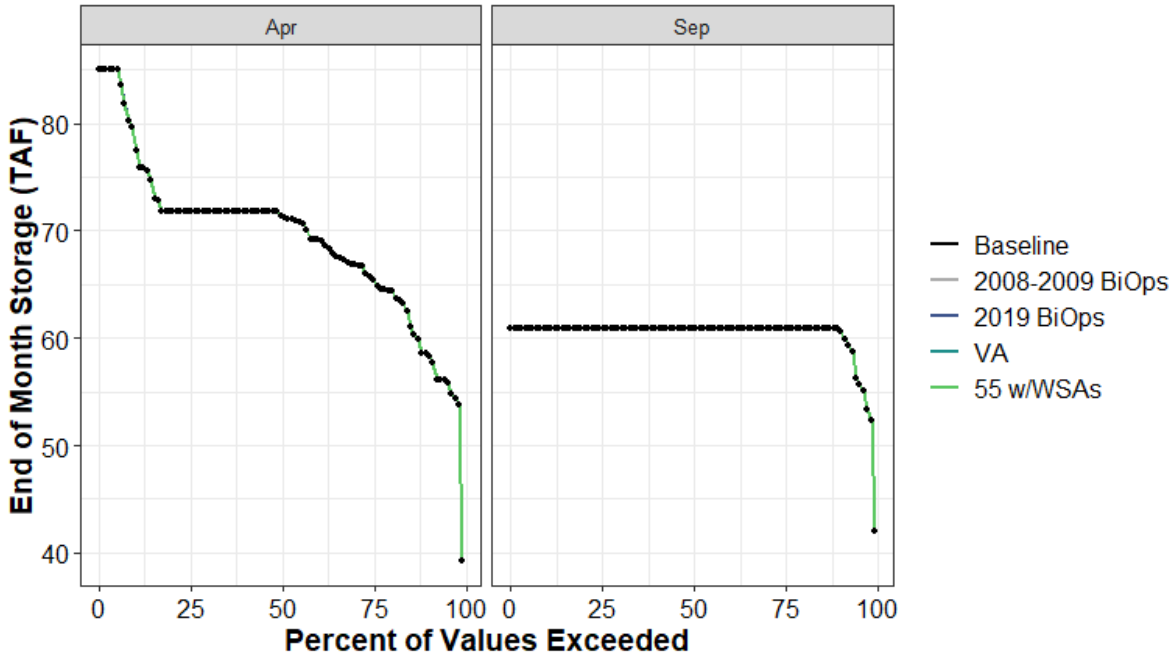

Figure H1a2-117. Little Grass Valley Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

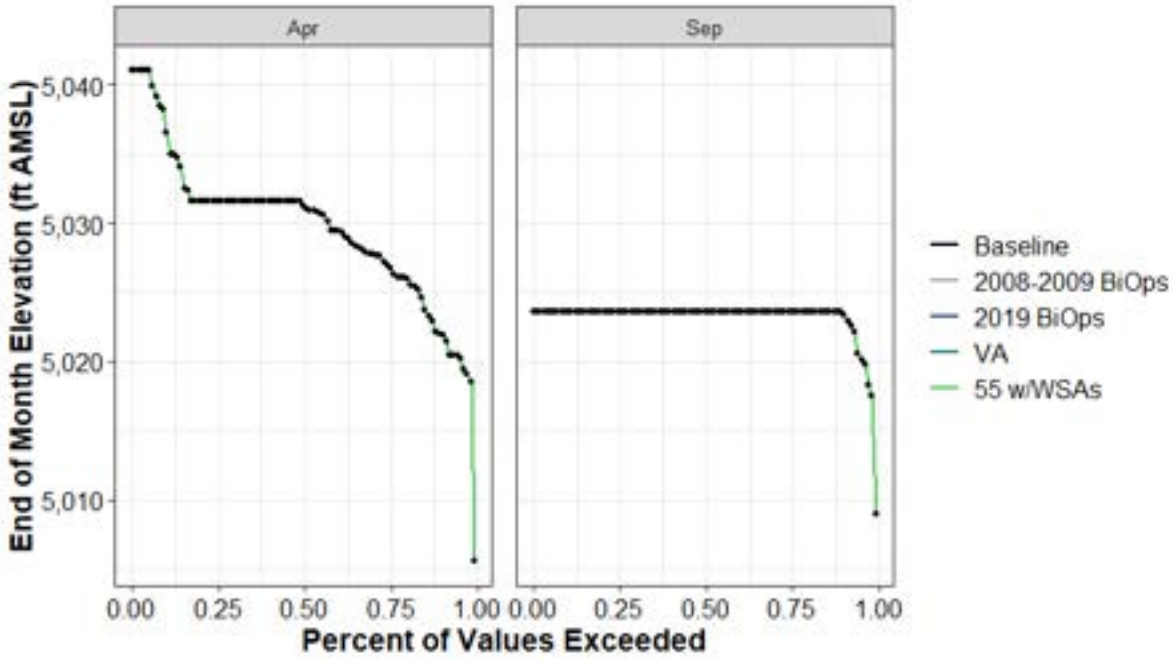

Figure H1a2-118. Little Grass Valley Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-237. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Little Grass Valley Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	42	0	0	0	0
10%	61	0	0	0	0
25%	61	0	0	0	0
50%	61	0	0	0	0
75%	61	0	0	0	0
90%	61	0	0	0	0
100%	61	0	0	0	0
Mean	60	0	0	0	0

Table H1a2-238. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Little Grass Valley Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,009	0	0	0	0
10%	5,024	0	0	0	0
25%	5,024	0	0	0	0
50%	5,024	0	0	0	0
75%	5,024	0	0	0	0
90%	5,024	0	0	0	0
100%	5,024	0	0	0	0
Mean	5,023	0	0	0	0

Table H1a2-239. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Little Grass Valley Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	39	0	0	0	0
10%	59	0	0	0	0
25%	66	0	0	0	0
50%	71	0	0	0	0
75%	72	0	0	0	0
90%	78	0	0	0	0
100%	85	0	0	0	0
Mean	69	0	0	0	0

Table H1a2-240. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Little Grass Valley Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,006	0	0	0	0
10%	5,022	0	0	0	0
25%	5,027	0	0	0	0
50%	5,031	0	0	0	0
75%	5,032	0	0	0	0
90%	5,037	0	0	0	0
100%	5,041	0	0	0	0
Mean	5,030	0	0	0	0

H1a2.5.30 Loon Lake (American River Watershed)

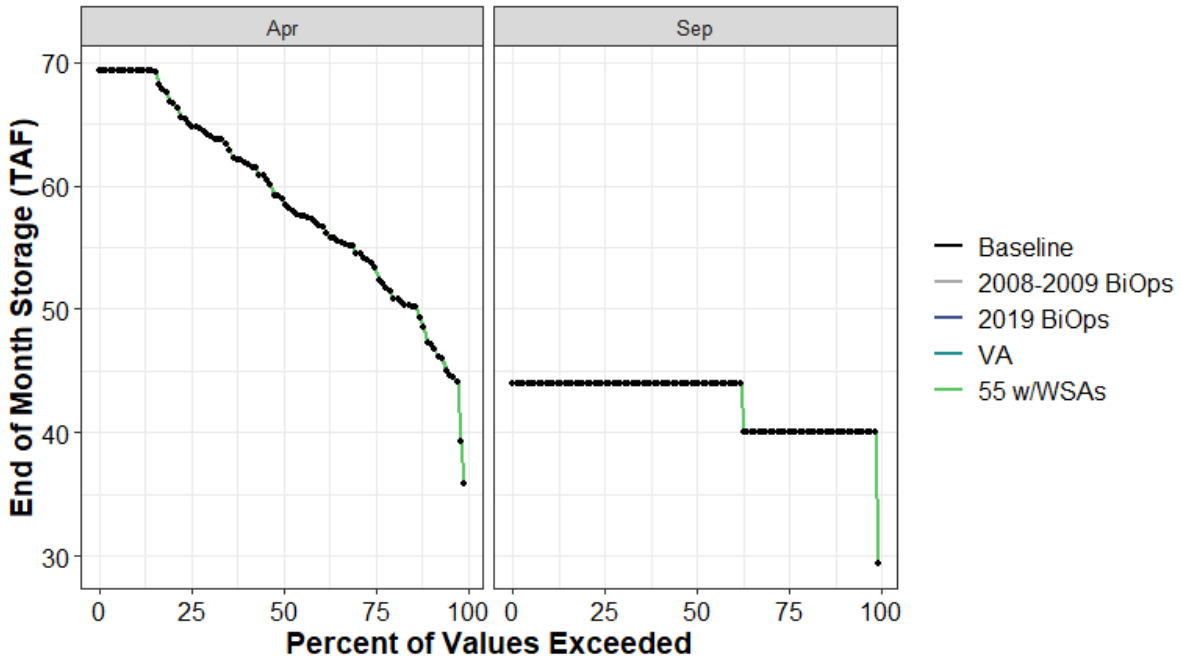

Figure H1a2-119. Loon Lake End of April and End of September Storage (TAF) Percent Exceedance Plot

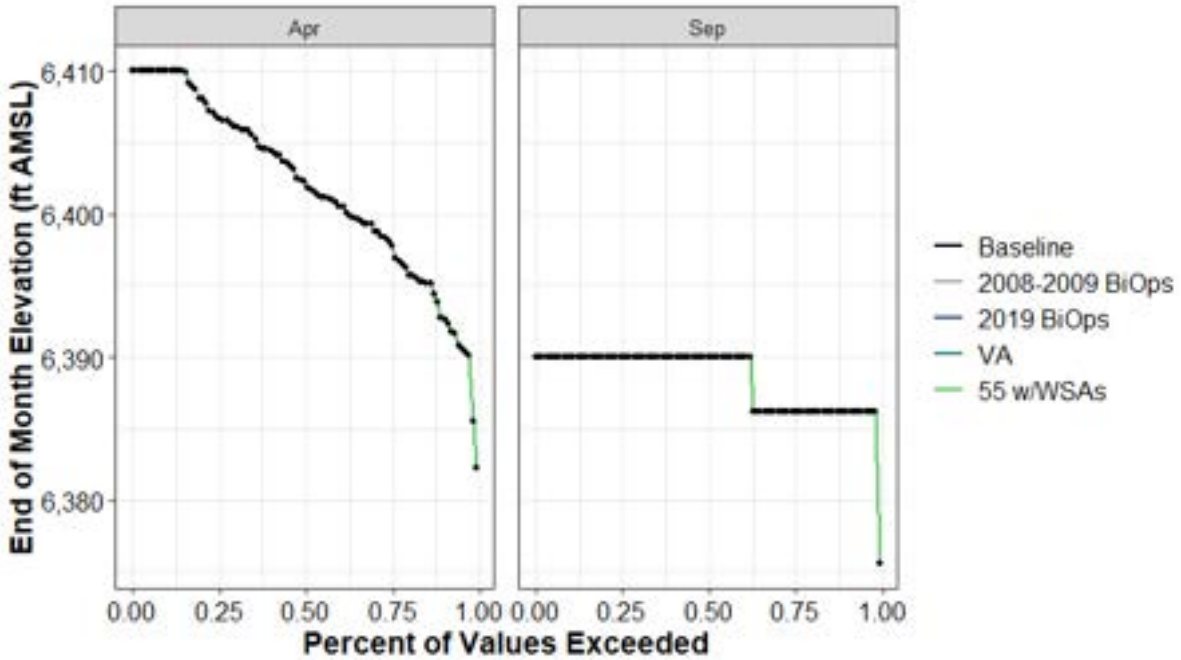

Figure H1a2-120. Loon Lake End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-241. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Loon Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	29	0	0	0	0
10%	40	0	0	0	0
25%	40	0	0	0	0
50%	44	0	0	0	0
75%	44	0	0	0	0
90%	44	0	0	0	0
100%	44	0	0	0	0
Mean	42	0	0	0	0

Table H1a2-242. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Loon Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	6,376	0	0	0	0
10%	6,386	0	0	0	0
25%	6,386	0	0	0	0
50%	6,390	0	0	0	0
75%	6,390	0	0	0	0
90%	6,390	0	0	0	0
100%	6,390	0	0	0	0
Mean	6,388	0	0	0	0

Table H1a2-243. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Loon Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	36	0	0	0	0
10%	47	0	0	0	0
25%	54	0	0	0	0
50%	59	0	0	0	0
75%	65	0	0	0	0
90%	69	0	0	0	0
100%	69	0	0	0	0
Mean	59	0	0	0	0

Table H1a2-244. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Loon Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	6,382	0	0	0	0
10%	6,393	0	0	0	0
25%	6,398	0	0	0	0
50%	6,402	0	0	0	0
75%	6,407	0	0	0	0
90%	6,410	0	0	0	0
100%	6,410	0	0	0	0
Mean	6,402	0	0	0	0

H1a2.5.31 Los Vaqueros Reservoir (Kellogg Creek Watershed)

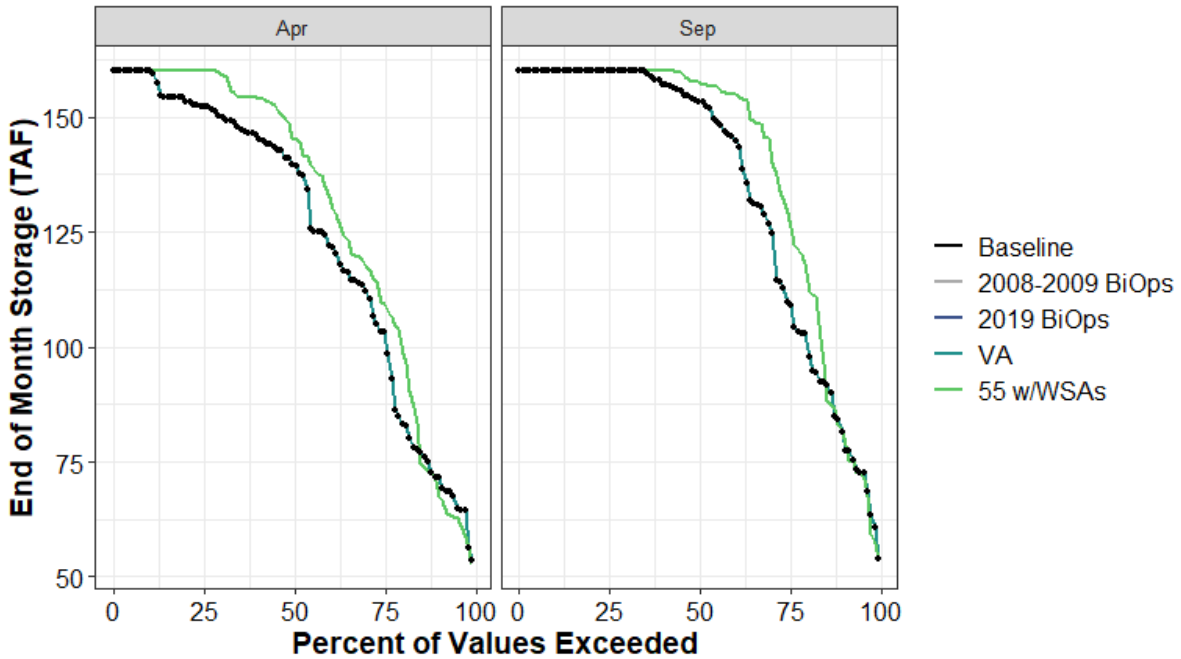

Figure H1a2-121. Los Vaqueros Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

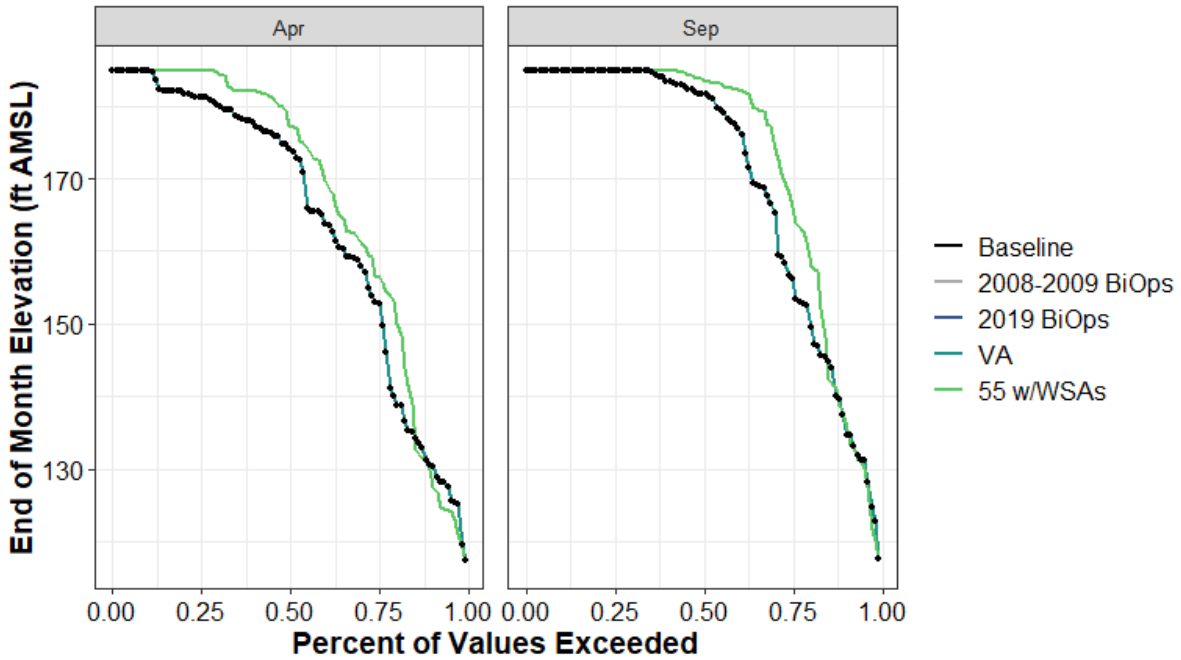

Figure H1a2-122. Los Vaqueros Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-245. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Los Vaqueros Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	54	0	0	0	0
10%	81	0	0	0	1
25%	109	0	0	0	18
50%	153	0	0	0	4
75%	160	0	0	0	0
90%	160	0	0	0	0
100%	160	0	0	0	0
Mean	135	0	0	0	5

Table H1a2-246. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Los Vaqueros Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	118	0	0	0	0
10%	137	0	0	0	0
25%	156	0	0	0	11
50%	182	0	0	0	2
75%	185	0	0	0	0
90%	185	0	0	0	0
100%	185	0	0	0	0
Mean	170	0	0	0	3

Table H1a2-247. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Los Vaqueros Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	53	0	0	0	-1
10%	72	0	0	0	-2
25%	103	0	0	0	6
50%	140	0	0	0	6
75%	152	0	0	0	8
90%	160	0	0	0	0
100%	160	0	0	0	0
Mean	125	0	0	0	6

Table H1a2-248. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Los Vaqueros Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	117	0	0	0	0
10%	131	0	0	0	-1
25%	153	0	0	0	4
50%	174	0	0	0	3
75%	181	0	0	0	4
90%	185	0	0	0	0
100%	185	0	0	0	0
Mean	164	0	0	0	3

H1a2.5.32 Lower Bear (Mokelumne River Watershed)

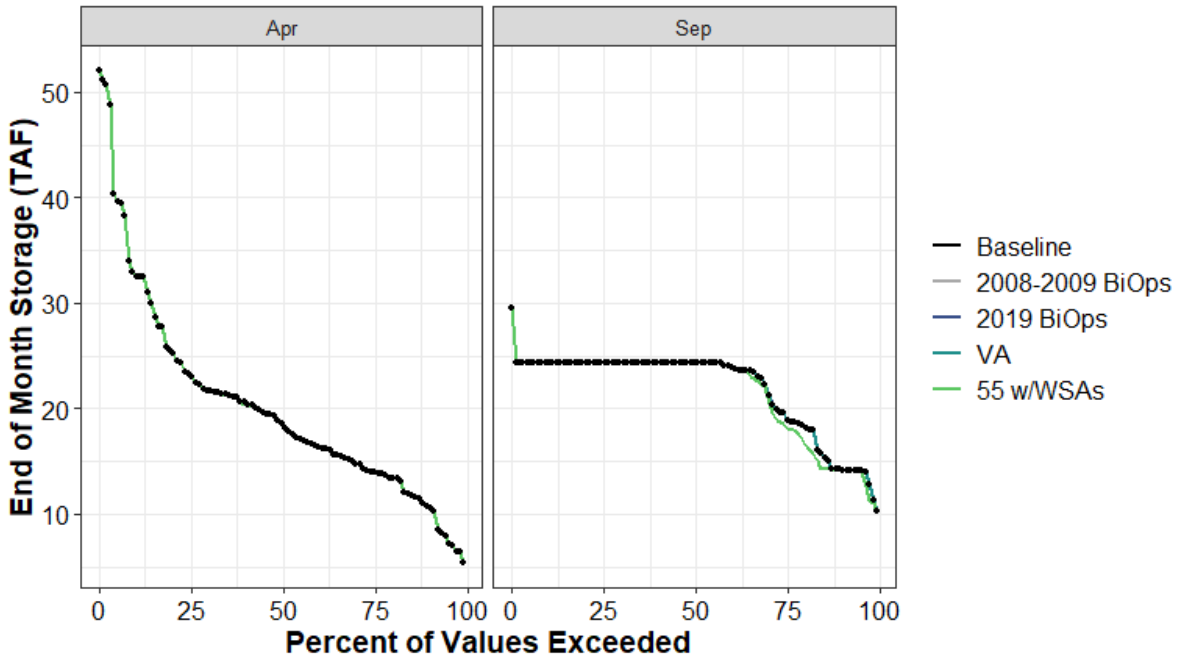

Figure H1a2-123. Lower Bear End of April and End of September Storage (TAF) Percent Exceedance Plot

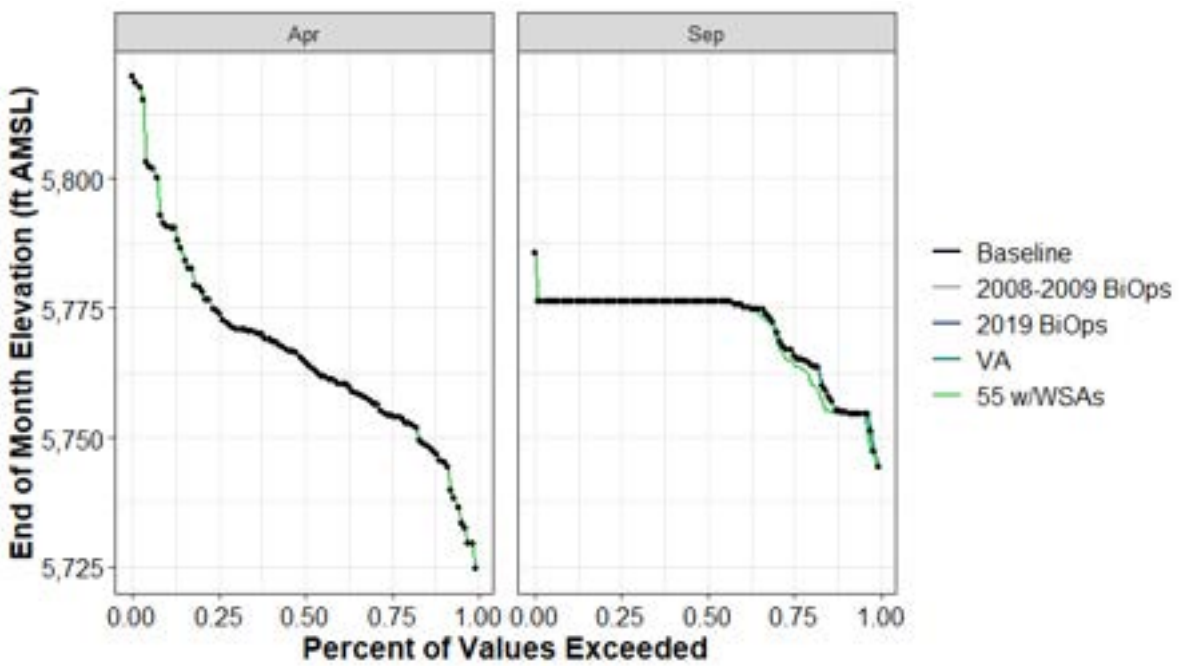

Figure H1a2-124. Lower Bear Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-249. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Lower Bear

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	10	0	0	0	0
10%	14	0	0	0	0
25%	19	0	0	0	-1
50%	24	0	0	0	0
75%	24	0	0	0	0
90%	24	0	0	0	0
100%	30	0	0	0	0
Mean	22	0	0	0	0

Table H1a2-250. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Lower Bear

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,744	0	0	0	0
10%	5,755	0	0	0	0
25%	5,766	0	0	0	-2
50%	5,776	0	0	0	0
75%	5,776	0	0	0	0
90%	5,776	0	0	0	0
100%	5,786	0	0	0	0
Mean	5,771	0	0	0	-1

Table H1a2-251. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Lower Bear

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5	0	0	0	0
10%	11	0	0	0	0
25%	14	0	0	0	0
50%	19	0	0	0	0
75%	23	0	0	0	0
90%	33	0	0	0	0
100%	52	0	0	0	0
Mean	20	0	0	0	0

Table H1a2-252. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Lower Bear

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,725	0	0	0	0
10%	5,745	0	0	0	0
25%	5,754	0	0	0	0
50%	5,765	0	0	0	0
75%	5,774	0	0	0	0
90%	5,791	0	0	0	0
100%	5,820	0	0	0	0
Mean	5,766	0	0	0	0

H1a2.5.33 Merle Collins Reservoir (Yuba River Watershed)

Figure H1a2-125. Merle Collins Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

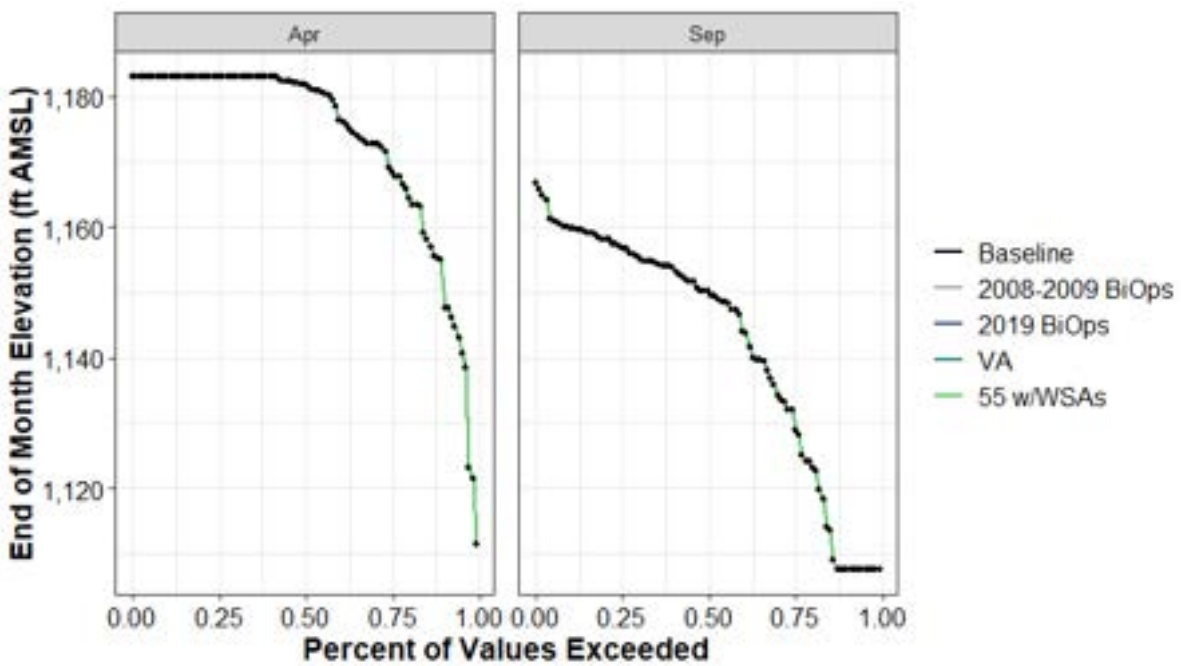

Figure H1a2-126. Merle Collins Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-253. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Merle Collins Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	8	0	0	0	0
10%	8	0	0	0	0
25%	17	0	0	0	0
50%	29	0	0	0	0
75%	34	0	0	0	0
90%	36	0	0	0	0
100%	42	0	0	0	0
Mean	25	0	0	0	0

Table H1a2-254. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Merle Collins Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,108	0	0	0	0
10%	1,108	0	0	0	0
25%	1,130	0	0	0	0
50%	1,150	0	0	0	0
75%	1,157	0	0	0	0
90%	1,160	0	0	0	0
100%	1,167	0	0	0	0
Mean	1,142	0	0	0	0

Table H1a2-255. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Merle Collins Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	9	0	0	0	0
10%	31	0	0	0	0
25%	43	0	0	0	0
50%	56	0	0	0	0
75%	57	0	0	0	0
90%	57	0	0	0	0
100%	57	0	0	0	0
Mean	49	0	0	0	0

Table H1a2-256. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Merle Collins Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,111	0	0	0	0
10%	1,154	0	0	0	0
25%	1,169	0	0	0	0
50%	1,182	0	0	0	0
75%	1,183	0	0	0	0
90%	1,183	0	0	0	0
100%	1,183	0	0	0	0
Mean	1,173	0	0	0	0

H1a2.5.34 Mountain Meadows Reservoir (Feather River Watershed)

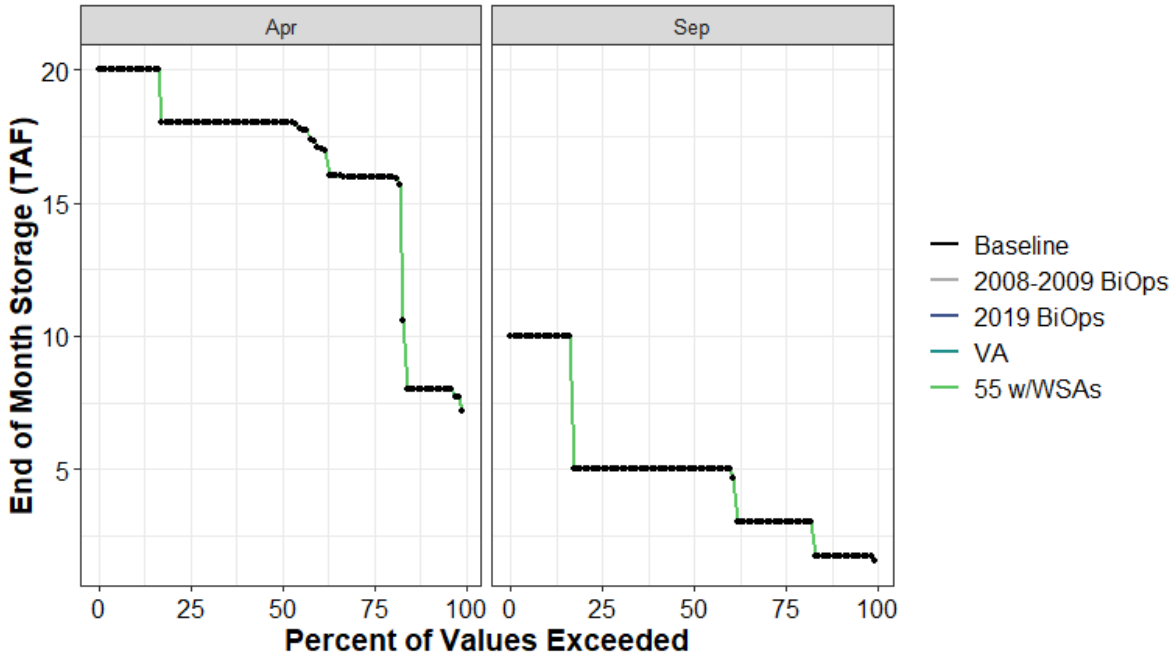

Figure H1a2-127. Mountain Meadows Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

Table H1a2-257. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Mountain Meadows Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	2	0	0	0	0
10%	2	0	0	0	0
25%	3	0	0	0	0
50%	5	0	0	0	0
75%	5	0	0	0	0
90%	10	0	0	0	0
100%	10	0	0	0	0
Mean	5	0	0	0	0

Table H1a2-258. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Mountain Meadows Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	7	0	0	0	0
10%	8	0	0	0	0
25%	16	0	0	0	0
50%	18	0	0	0	0
75%	18	0	0	0	0
90%	20	0	0	0	0
100%	20	0	0	0	0
Mean	16	0	0	0	0

H1a2.5.35 New Bullards Bar Reservoir (Yuba River Watershed)

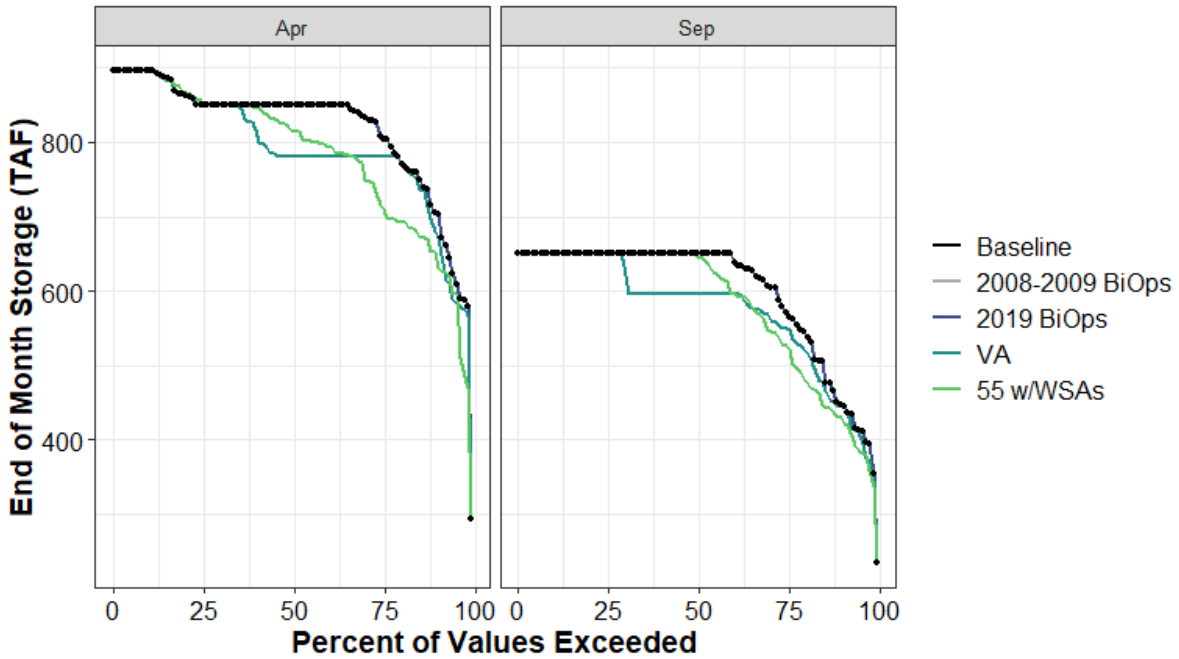

Figure H1a2-128. New Bullards Bar Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

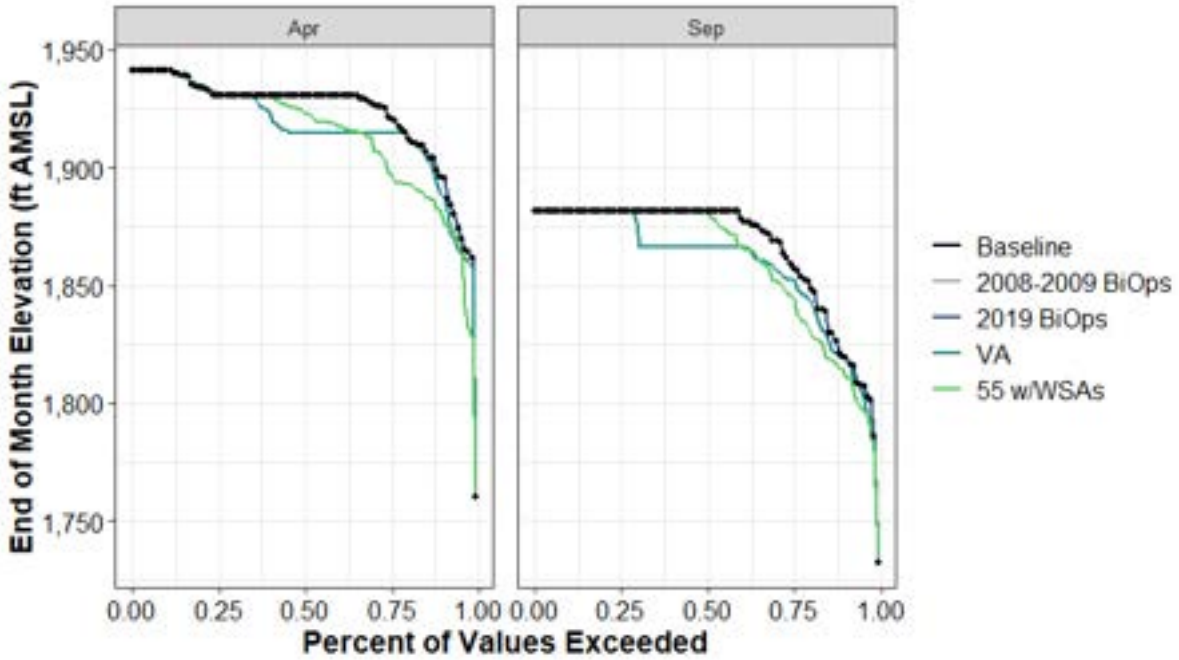

Figure H1a2-129. New Bullards Bar Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-259. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for New Bullards Bar Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	234	0	0	0	0
10%	446	0	0	-2	-17
25%	567	0	0	-19	-44
50%	650	0	0	-55	-3
75%	650	0	0	0	0
90%	650	0	0	0	0
100%	650	0	0	0	0
Mean	597	0	0	-26	-19

Table H1a2-260. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for New Bullards Bar Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,732	0	0	0	0
10%	1,820	0	0	-1	-6
25%	1,858	0	0	-6	-13
50%	1,881	0	0	-15	-1
75%	1,881	0	0	0	0
90%	1,881	0	0	0	0
100%	1,881	0	0	0	0
Mean	1,865	0	0	-8	-6

Table H1a2-261. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for New Bullards Bar Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	293	0	0	0	2
10%	706	0	0	-27	-57
25%	807	0	0	-27	-95
50%	850	0	0	-70	-35
75%	850	0	0	0	4
90%	896	0	0	0	0
100%	896	0	0	0	0
Mean	818	0	0	-27	-34

Table H1a2-262. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for New Bullards Bar Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,760	0	0	0	1
10%	1,896	0	0	-7	-15
25%	1,921	0	0	-6	-23
50%	1,931	0	0	-16	-8
75%	1,931	0	0	0	1
90%	1,941	0	0	0	0
100%	1,941	0	0	0	0
Mean	1,922	0	0	-6	-8

H1a2.5.36 New Hogan Reservoir (Calaveras River Watershed)

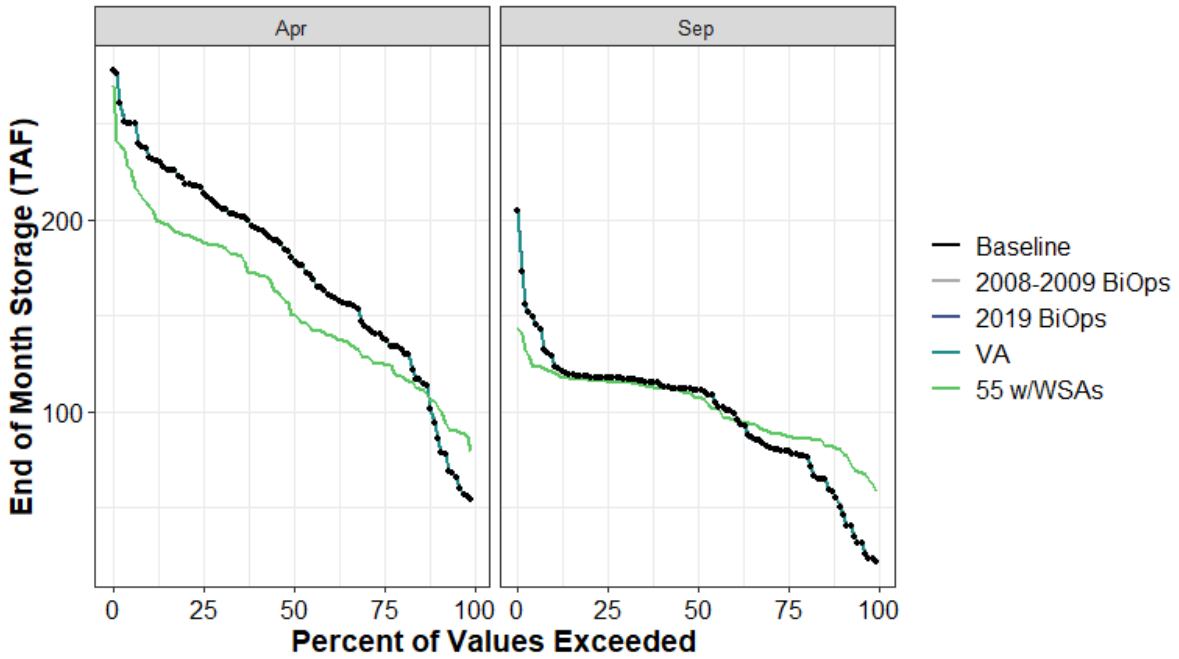

Figure H1a2-130. New Hogan Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

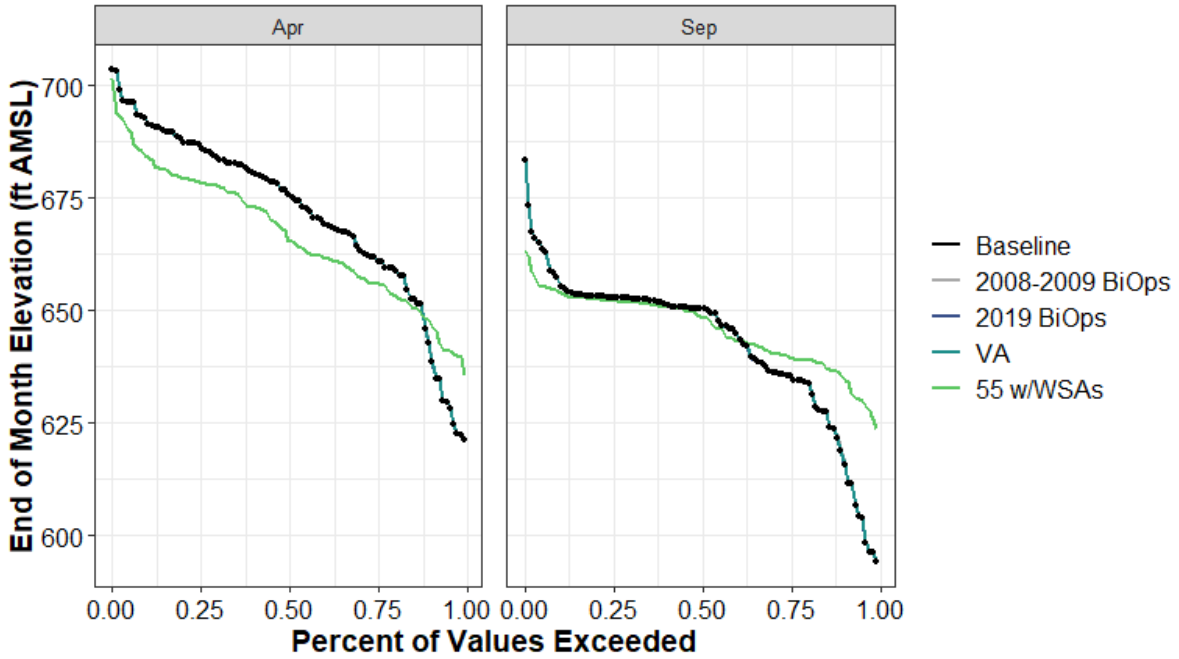

Figure H1a2-131. New Hogan Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-263. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for New Hogan Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	22	0	0	0	37
10%	50	1	0	0	30
25%	80	0	0	0	8
50%	111	0	0	0	-4
75%	118	0	0	0	-2
90%	124	0	0	0	-4
100%	205	0	0	0	-61
Mean	99	0	0	0	3

Table H1a2-264. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for New Hogan Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	594	0	0	0	30
10%	618	1	0	0	17
25%	636	0	0	0	4
50%	650	0	0	0	-2
75%	653	0	0	0	-1
90%	656	0	0	0	-2
100%	683	0	0	0	-20
Mean	643	0	0	0	3

Table H1a2-265. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for New Hogan Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	55	0	0	0	25
10%	93	1	0	0	12
25%	139	0	0	0	-14
50%	180	0	0	0	-30
75%	215	0	0	0	-26
90%	234	0	0	0	-26
100%	278	0	0	0	-8
Mean	174	0	0	0	-17

Table H1a2-266. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for New Hogan Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	621	0	0	0	14
10%	642	0	0	0	6
25%	661	0	0	0	-5
50%	676	0	0	0	-10
75%	686	0	0	0	-8
90%	692	0	0	0	-8
100%	703	0	0	0	-2
Mean	672	0	0	0	-5

H1a2.5.37 Oroville Reservoir (Feather River Watershed)

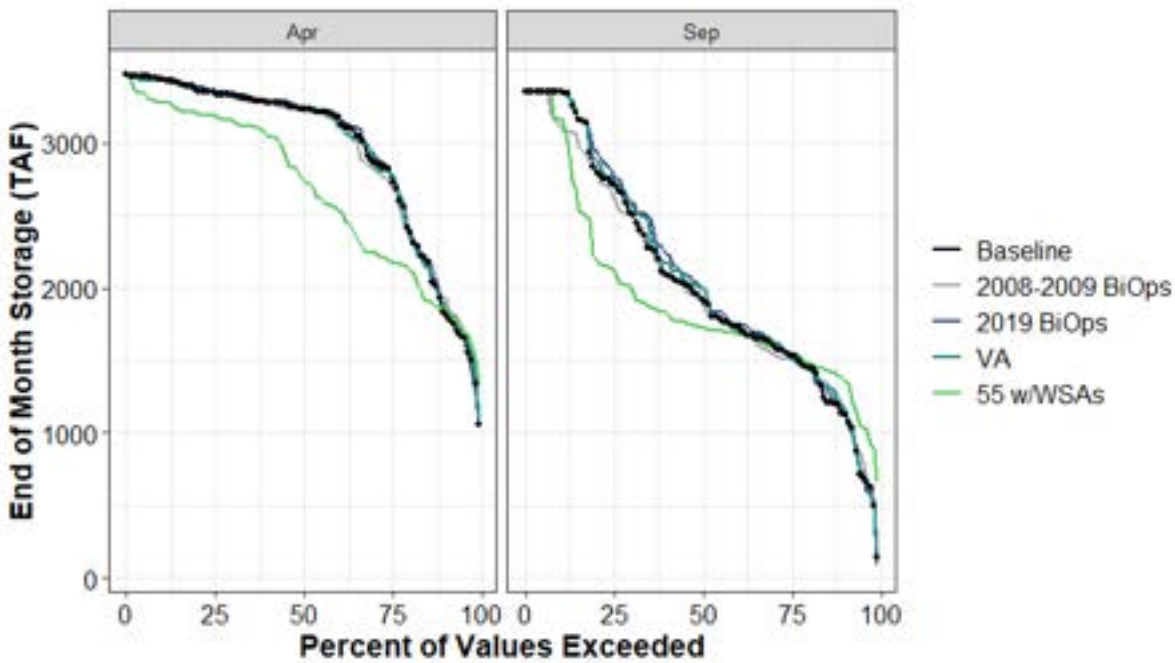

Figure H1a2-132. Oroville Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

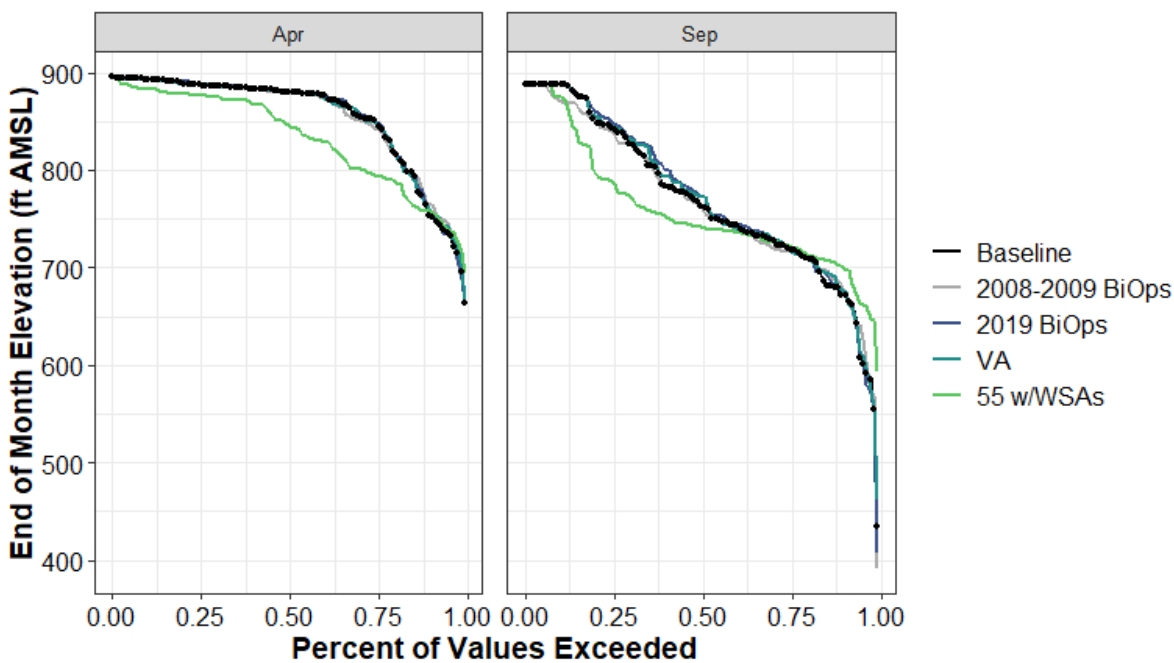

Figure H1a2-133. Oroville Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-267. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Oroville Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	146	-71	-51	54	510
10%	1,129	82	46	49	251
25%	1,539	-29	8	-9	16
50%	1,919	-9	78	82	-192
75%	2,713	-76	66	25	-592
90%	3,350	-241	0	0	-187
100%	3,351	0	0	0	0
Mean	2,057	-32	42	26	-141

Table H1a2-268. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Oroville Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	434	-43	-27	28	159
10%	672	9	5	6	29
25%	720	-3	1	-1	2
50%	764	-1	9	9	-22
75%	843	-6	5	2	-56
90%	888	-16	0	0	-13
100%	888	0	0	0	0
Mean	768	-2	4	3	-10

Table H1a2-269. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Oroville Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,056	65	-20	-4	261
10%	1,827	105	58	59	36
25%	2,779	-72	12	9	-595
50%	3,238	-18	5	-2	-487
75%	3,343	6	13	8	-159
90%	3,435	0	4	-9	-154
100%	3,470	0	0	0	0
Mean	2,946	-9	12	-3	-285

Table H1a2-270. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Oroville Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	664	8	-2	0	30
10%	753	12	7	7	4
25%	848	-5	1	1	-53
50%	880	-1	0	0	-35
75%	887	0	1	1	-11
90%	893	0	0	-1	-10
100%	896	0	0	0	0
Mean	854	0	1	0	-22

H1a2.5.38 Pardee Reservoir (Mokelumne River Watershed)

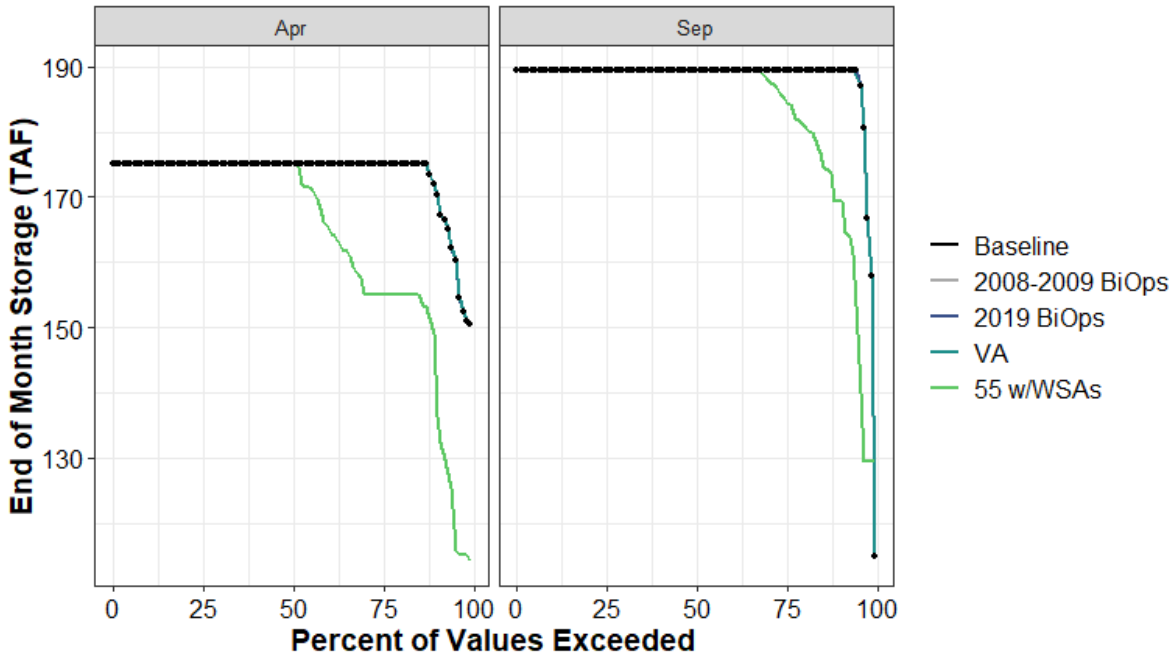

Figure H1a2-134. Pardee Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

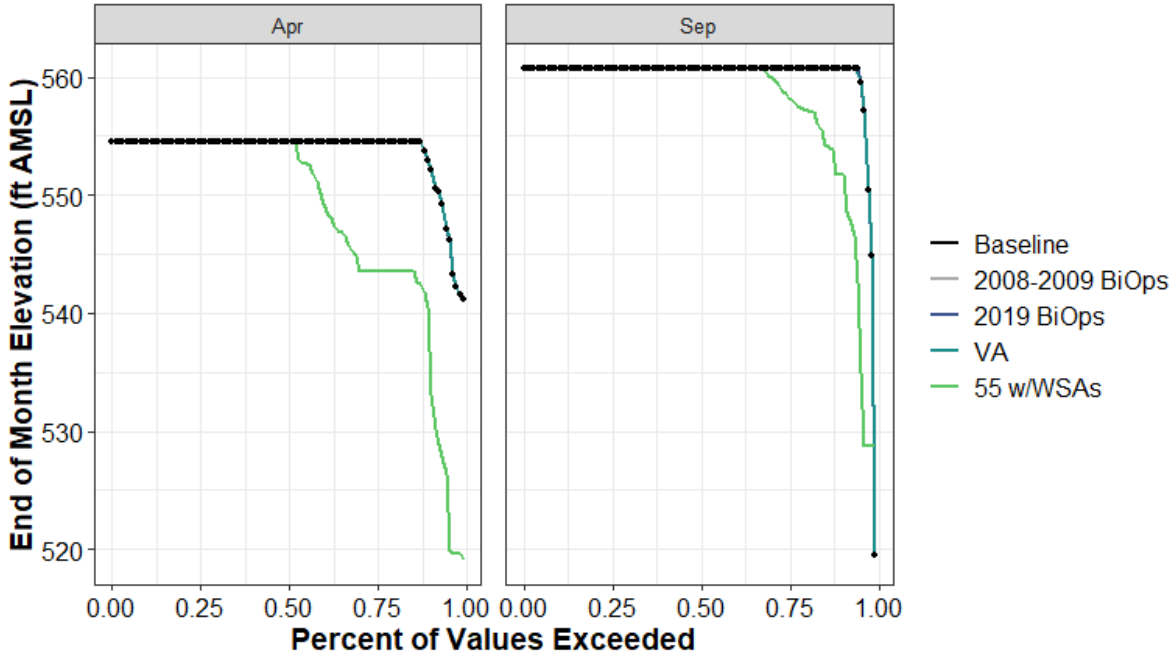

Figure H1a2-135. Pardee Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-271. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Pardee Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	115	0	0	0	14
10%	189	0	0	0	-20
25%	189	0	0	0	-5
50%	189	0	0	0	0
75%	189	0	0	0	0
90%	189	0	0	0	0
100%	189	0	0	0	0
Mean	188	0	0	0	-5

Table H1a2-272. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Pardee Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	519	0	0	0	9
10%	561	0	0	0	-9
25%	561	0	0	0	-2
50%	561	0	0	0	0
75%	561	0	0	0	0
90%	561	0	0	0	0
100%	561	0	0	0	0
Mean	560	0	0	0	-2

Table H1a2-273. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Pardee Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	150	0	0	0	-36
10%	172	0	0	0	-25
25%	175	0	0	0	-20
50%	175	0	0	0	0
75%	175	0	0	0	0
90%	175	0	0	0	0
100%	175	0	0	0	0
Mean	174	0	0	0	-10

Table H1a2-274. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Pardee Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	541	0	0	0	-22
10%	553	0	0	0	-14
25%	555	0	0	0	-11
50%	555	0	0	0	0
75%	555	0	0	0	0
90%	555	0	0	0	0
100%	555	0	0	0	0
Mean	554	0	0	0	-5

H1a2.5.39 Philbrook Round Valley (Feather River Watershed)

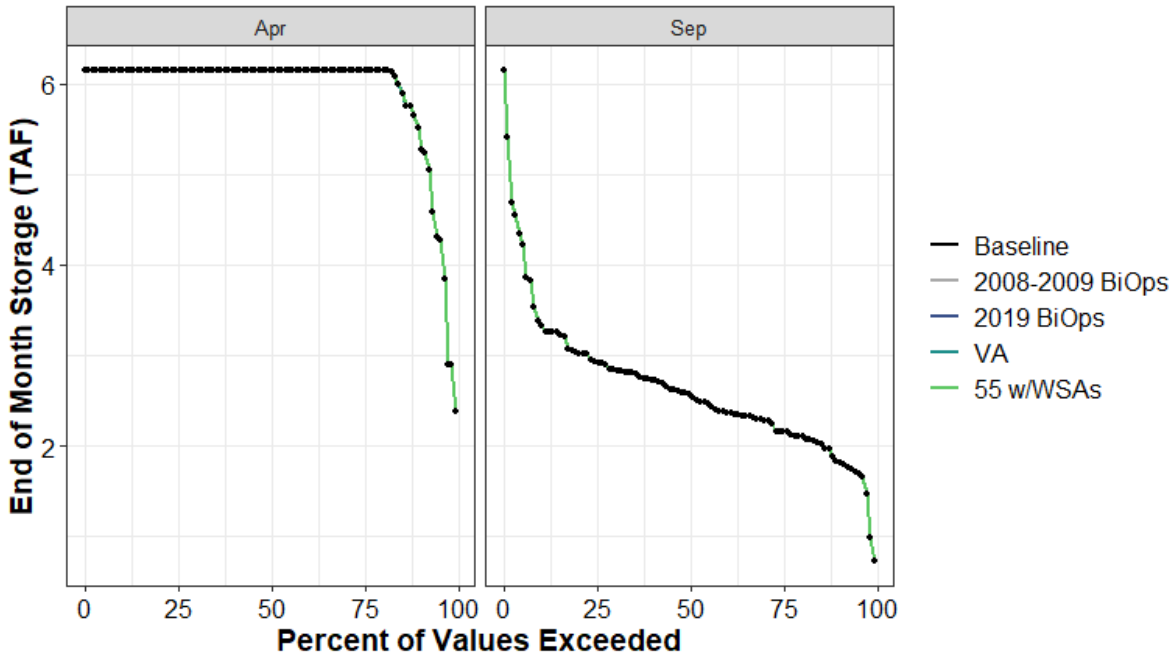

Figure H1a2-136. Philbrook Round Valley End of April and End of September Storage (TAF) Percent Exceedance Plot

Table H1a2-275. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Philbrook Round Valley

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1	0	0	0	0
10%	2	0	0	0	0
25%	2	0	0	0	0
50%	3	0	0	0	0
75%	3	0	0	0	0
90%	3	0	0	0	0
100%	6	0	0	0	0
Mean	3	0	0	0	0

Table H1a2-276. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for PhilbrookRoundValley

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	2	0	0	0	0
10%	5	0	0	0	0
25%	6	0	0	0	0
50%	6	0	0	0	0
75%	6	0	0	0	0
90%	6	0	0	0	0
100%	6	0	0	0	0
Mean	6	0	0	0	0

H1a2.5.40 Rollins Reservoir (Bear River Watershed)

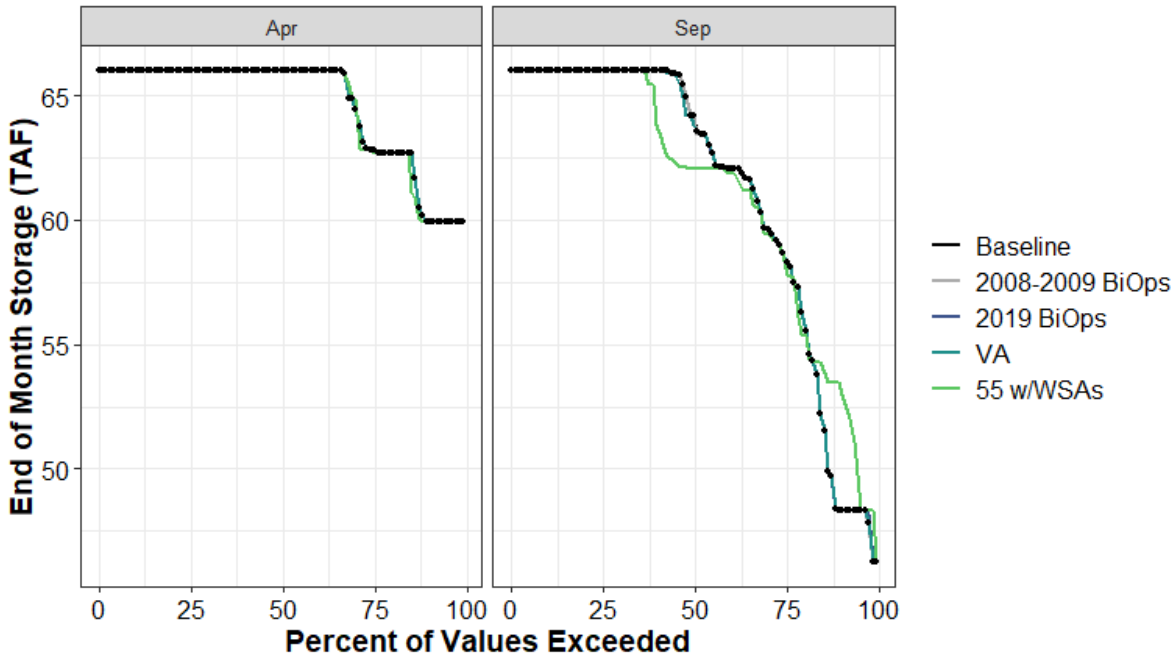

Figure H1a2-137. Rollins Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

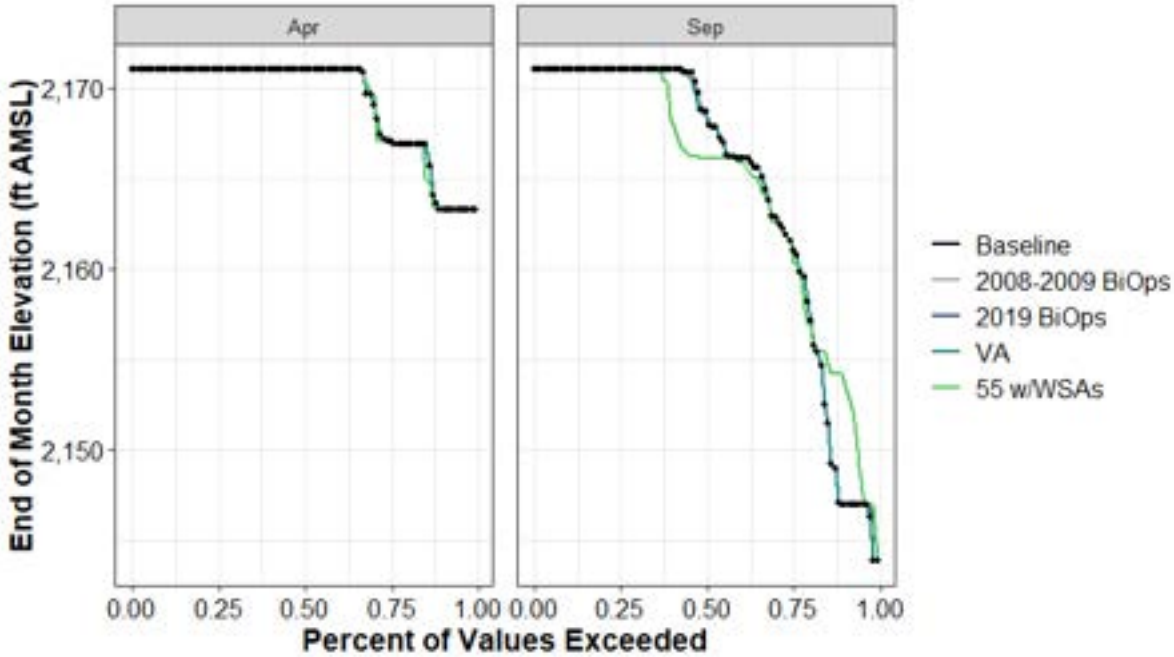

Figure H1a2-138. Rollins Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-277. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Rollins Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	46	0	0	0	0
10%	48	0	0	0	5
25%	58	0	0	0	0
50%	64	0	0	0	-2
75%	66	0	0	0	0
90%	66	0	0	0	0
100%	66	0	0	0	0
Mean	61	0	0	0	0

Table H1a2-278. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Rollins Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	2,144	0	0	0	0
10%	2,147	0	0	0	7
25%	2,161	0	0	0	0
50%	2,169	0	0	0	-3
75%	2,171	0	0	0	0
90%	2,171	0	0	0	0
100%	2,171	0	0	0	0
Mean	2,165	0	0	0	0

Table H1a2-279. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Rollins Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	60	0	0	0	0
10%	60	0	0	0	0
25%	63	0	0	0	0
50%	66	0	0	0	0
75%	66	0	0	0	0
90%	66	0	0	0	0
100%	66	0	0	0	0
Mean	65	0	0	0	0

Table H1a2-280. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Rollins Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	2,163	0	0	0	0
10%	2,163	0	0	0	0
25%	2,167	0	0	0	0
50%	2,171	0	0	0	0
75%	2,171	0	0	0	0
90%	2,171	0	0	0	0
100%	2,171	0	0	0	0
Mean	2,169	0	0	0	0

H1a2.5.41 Salt Springs (Mokelumne River Watershed)

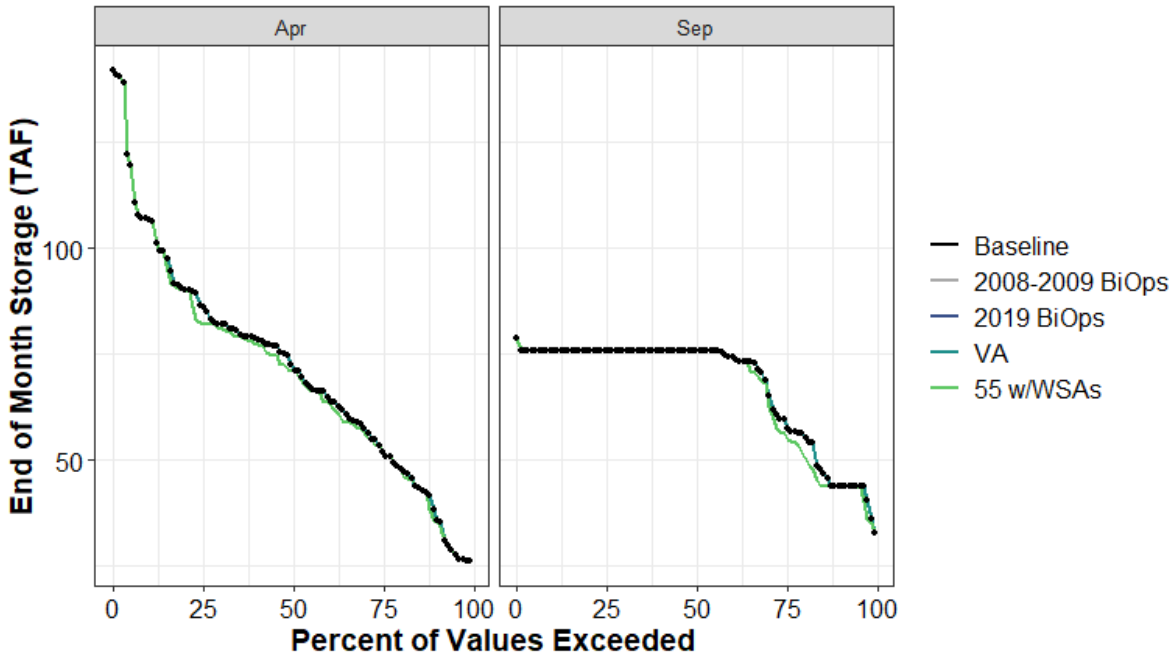

Figure H1a2-139. Salt Springs End of April and End of September Storage (TAF) Percent Exceedance Plot

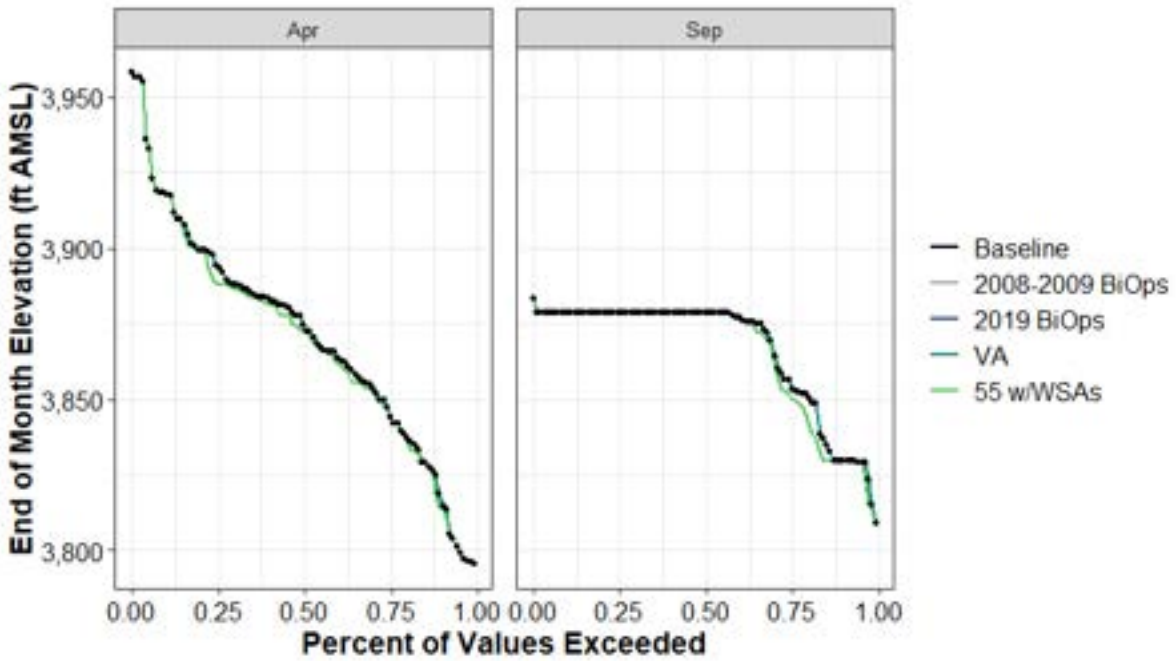

Figure H1a2-140. Salt Springs Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-281. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Salt Springs

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	33	0	0	0	0
10%	44	0	0	0	0
25%	59	0	0	0	-3
50%	76	0	0	0	0
75%	76	0	0	0	0
90%	76	0	0	0	0
100%	79	0	0	0	0
Mean	67	0	0	0	-1

Table H1a2-282. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Salt Springs

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	3,809	0	0	0	0
10%	3,830	0	0	0	0
25%	3,855	0	0	0	-4
50%	3,879	0	0	0	0
75%	3,879	0	0	0	0
90%	3,879	0	0	0	0
100%	3,883	0	0	0	0
Mean	3,867	0	0	0	-1

Table H1a2-283. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Salt Springs

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	26	0	0	0	0
10%	38	0	0	0	-2
25%	53	0	0	0	0
50%	72	0	0	0	-1
75%	86	0	0	0	-4
90%	107	0	0	0	0
100%	142	0	0	0	0
Mean	72	0	0	0	-1

Table H1a2-284. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Salt Springs

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	3,796	0	0	0	0
10%	3,818	0	0	0	-4
25%	3,846	0	0	0	0
50%	3,874	0	0	0	-2
75%	3,894	0	0	0	-6
90%	3,918	0	0	0	0
100%	3,958	0	0	0	0
Mean	3,871	0	0	0	-1

H1a2.5.42 Scotts Flat Reservoir (Yuba RiverWatershed)

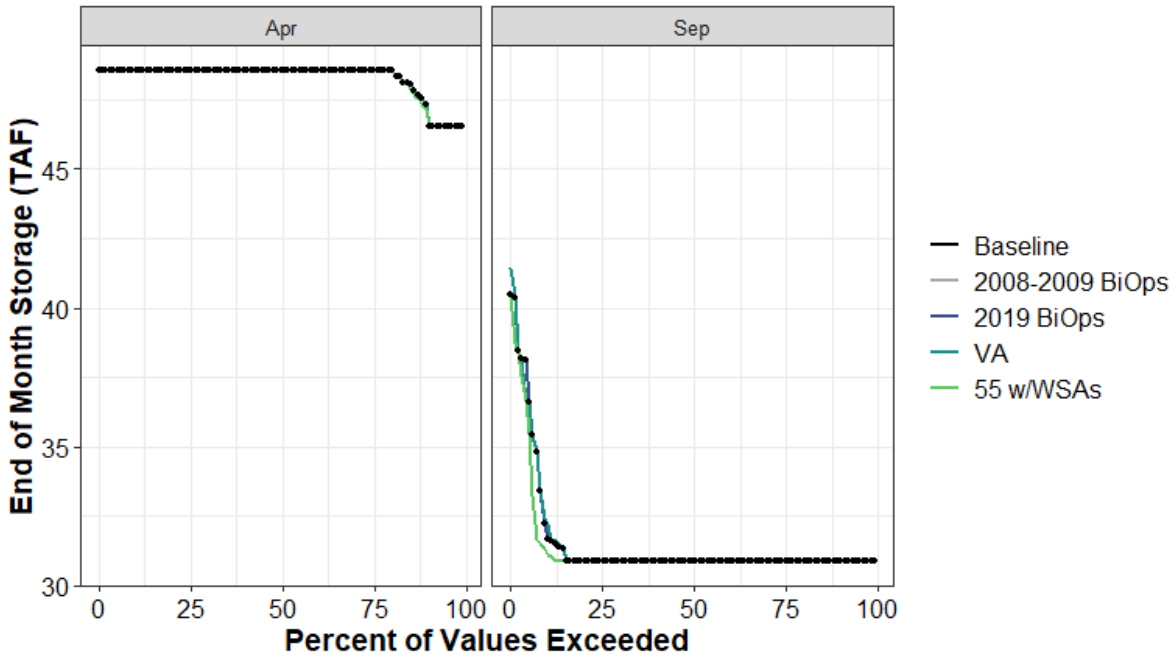

Figure H1a2-141. Scotts Flat Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

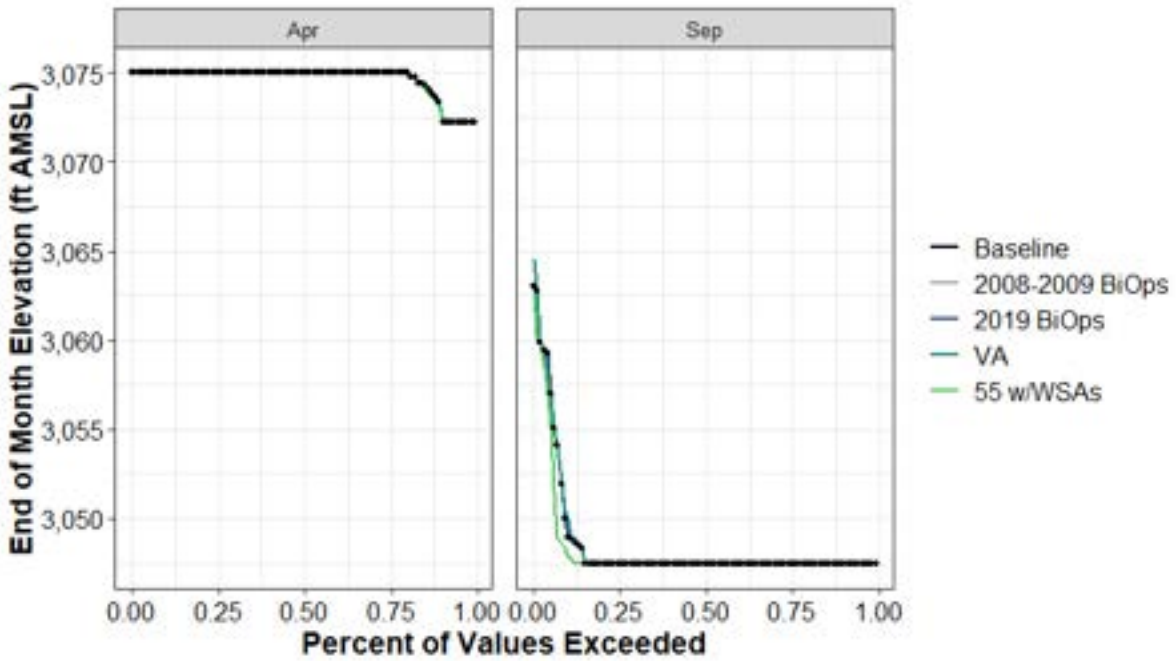

Figure H1a2-142. Scotts Flat Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-285. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Scotts Flat Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	31	0	0	0	0
10%	31	0	0	0	0
25%	31	0	0	0	0
50%	31	0	0	0	0
75%	31	0	0	0	0
90%	32	0	0	0	-1
100%	40	1	0	1	0
Mean	32	0	0	0	0

Table H1a2-286. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Scotts Flat Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	3,047	0	0	0	0
10%	3,047	0	0	0	0
25%	3,047	0	0	0	0
50%	3,047	0	0	0	0
75%	3,047	0	0	0	0
90%	3,049	0	0	1	-1
100%	3,063	2	0	2	0
Mean	3,048	0	0	0	0

Table H1a2-287. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Scotts Flat Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	47	0	0	0	0
10%	47	0	0	0	0
25%	49	0	0	0	0
50%	49	0	0	0	0
75%	49	0	0	0	0
90%	49	0	0	0	0
100%	49	0	0	0	0
Mean	48	0	0	0	0

Table H1a2-288. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Scotts Flat Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	3,072	0	0	0	0
10%	3,073	0	0	0	0
25%	3,075	0	0	0	0
50%	3,075	0	0	0	0
75%	3,075	0	0	0	0
90%	3,075	0	0	0	0
100%	3,075	0	0	0	0
Mean	3,075	0	0	0	0

H1a2.5.43 Shasta Lake (Sacramento River Watershed)

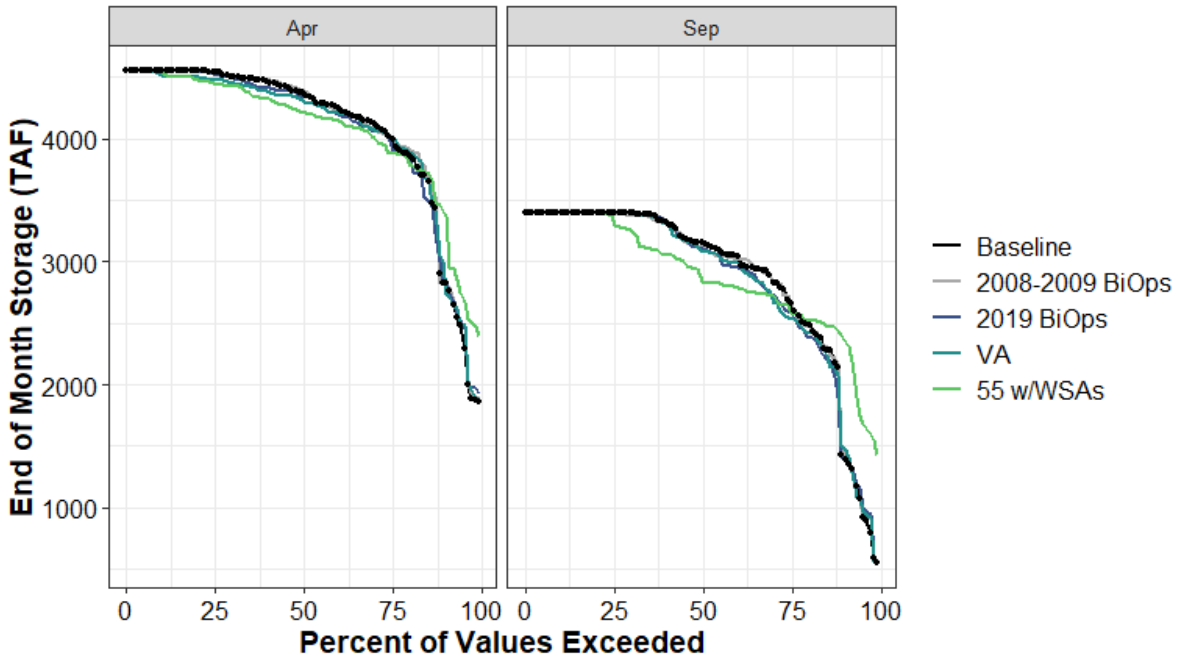

Figure H1a2-143. Shasta Lake End of April and End of September Storage (TAF) Percent Exceedance Plot

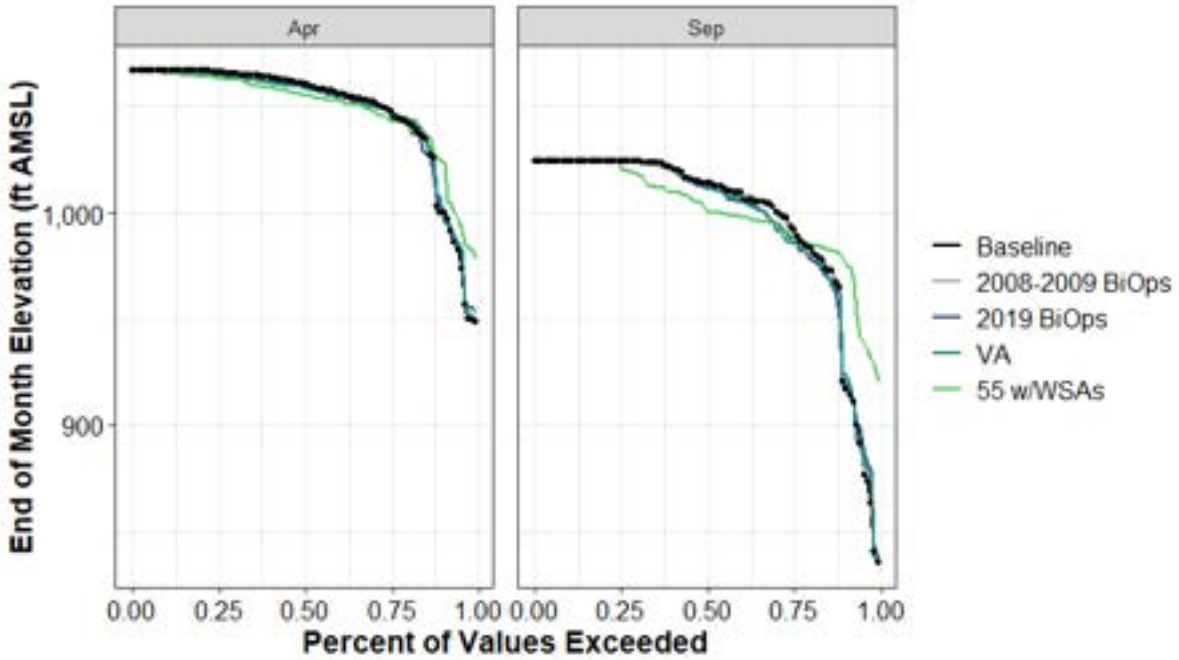

Figure H1a2-144. Shasta Lake End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-289. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Shasta Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	550	0	10	0	876
10%	1,420	39	-8	78	973
25%	2,679	13	-87	-134	-61
50%	3,158	-38	-56	-71	-318
75%	3,400	-6	0	0	-64
90%	3,400	0	0	0	0
100%	3,400	0	0	0	0
Mean	2,871	-4	-31	-32	3

Table H1a2-290. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Shasta Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	835	0	1	0	85
10%	920	3	-1	5	59
25%	993	1	-4	-7	-3
50%	1,014	-2	-2	-3	-14
75%	1,024	0	0	0	-3
90%	1,024	0	0	0	0
100%	1,024	0	0	0	0
Mean	997	0	-1	-1	3

Table H1a2-291. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Shasta Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,862	23	68	23	533
10%	2,827	-5	20	124	577
25%	4,015	-7	-47	-10	-131
50%	4,372	23	-51	-58	-158
75%	4,543	-3	-23	-63	-94
90%	4,552	0	0	-35	-12
100%	4,552	0	0	0	0
Mean	4,084	10	-21	-23	-13

Table H1a2-292. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Shasta Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	949	1	4	1	30
10%	1,000	0	1	5	25
25%	1,048	0	-2	0	-5
50%	1,061	1	-2	-2	-5
75%	1,067	0	-1	-2	-3
90%	1,067	0	0	-1	0
100%	1,067	0	0	0	0
Mean	1,049	0	-1	-1	0

H1a2.5.44 Silver Lake (American River Watershed)

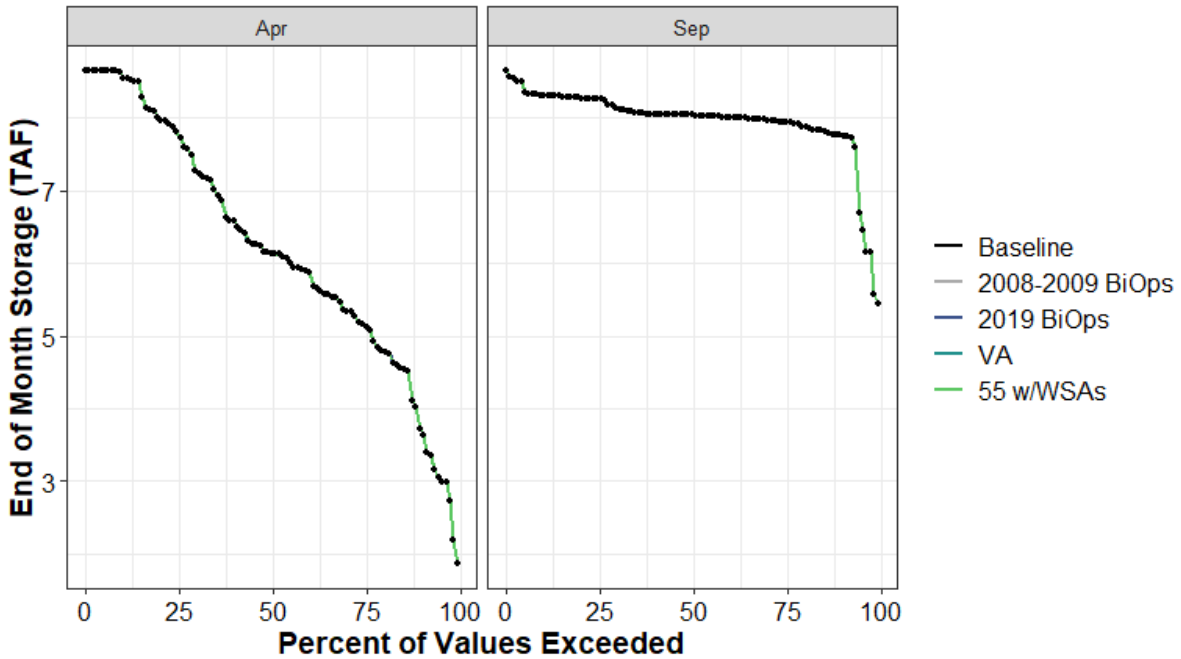

Figure H1a2-145. Silver Lake End of April and End of September Storage (TAF) Percent Exceedance Plot

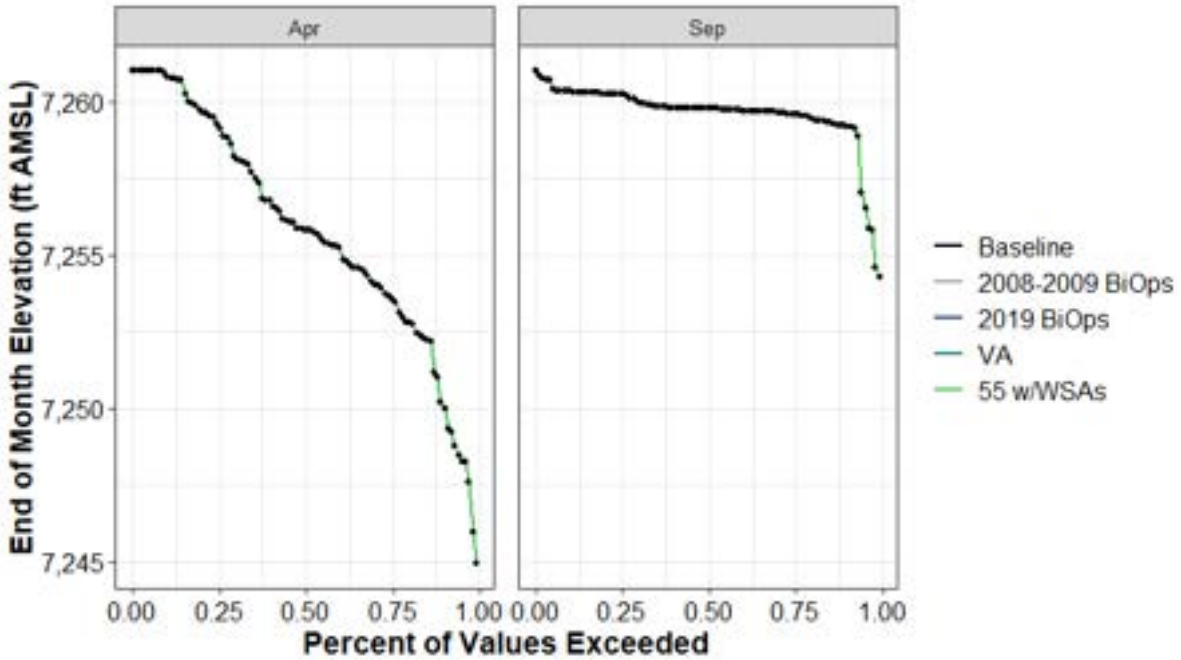

Figure H1a2-146. Silver Lake End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-293. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Silver Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5	0	0	0	0
10%	8	0	0	0	0
25%	8	0	0	0	0
50%	8	0	0	0	0
75%	8	0	0	0	0
90%	8	0	0	0	0
100%	9	0	0	0	0
Mean	8	0	0	0	0

Table H1a2-294. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Silver Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	7,254	0	0	0	0
10%	7,259	0	0	0	0
25%	7,260	0	0	0	0
50%	7,260	0	0	0	0
75%	7,260	0	0	0	0
90%	7,260	0	0	0	0
100%	7,261	0	0	0	0
Mean	7,260	0	0	0	0

Table H1a2-295. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Silver Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	2	0	0	0	0
10%	4	0	0	0	0
25%	5	0	0	0	0
50%	6	0	0	0	0
75%	8	0	0	0	0
90%	9	0	0	0	0
100%	9	0	0	0	0
Mean	6	0	0	0	0

Table H1a2-296. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Silver Lake

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	7,245	0	0	0	0
10%	7,250	0	0	0	0
25%	7,254	0	0	0	0
50%	7,256	0	0	0	0
75%	7,259	0	0	0	0
90%	7,261	0	0	0	0
100%	7,261	0	0	0	0
Mean	7,256	0	0	0	0

H1a2.5.45 Sly Creek Reservoir (Feather River Watershed)

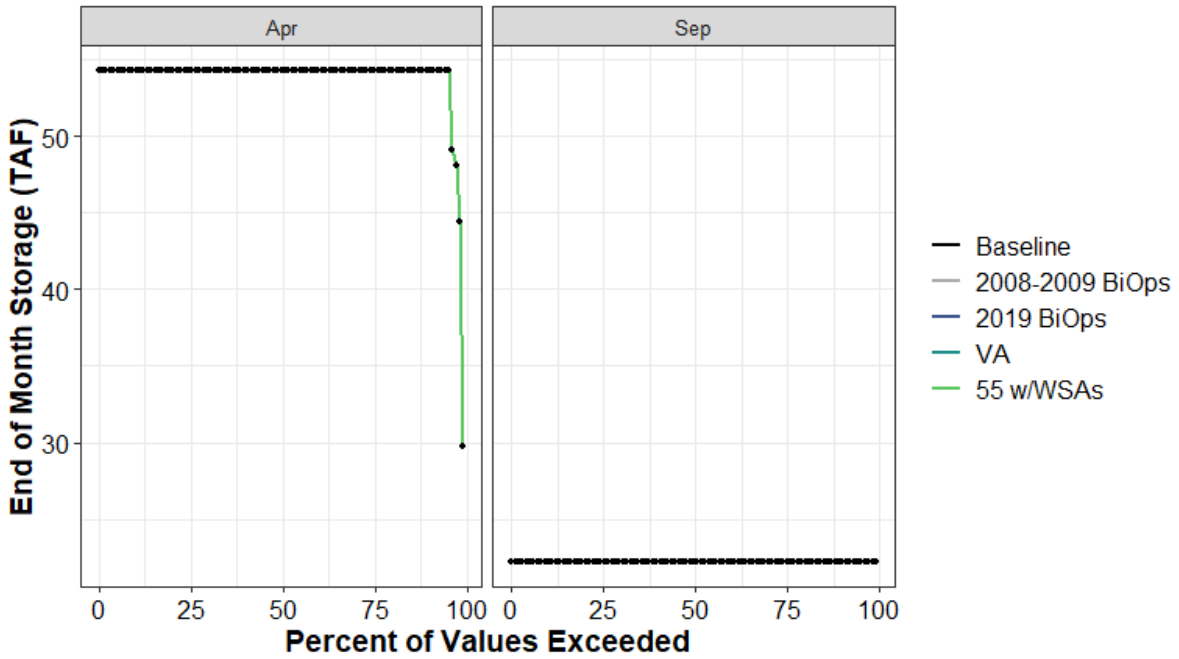

Figure H1a2-147. Sly Creek Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

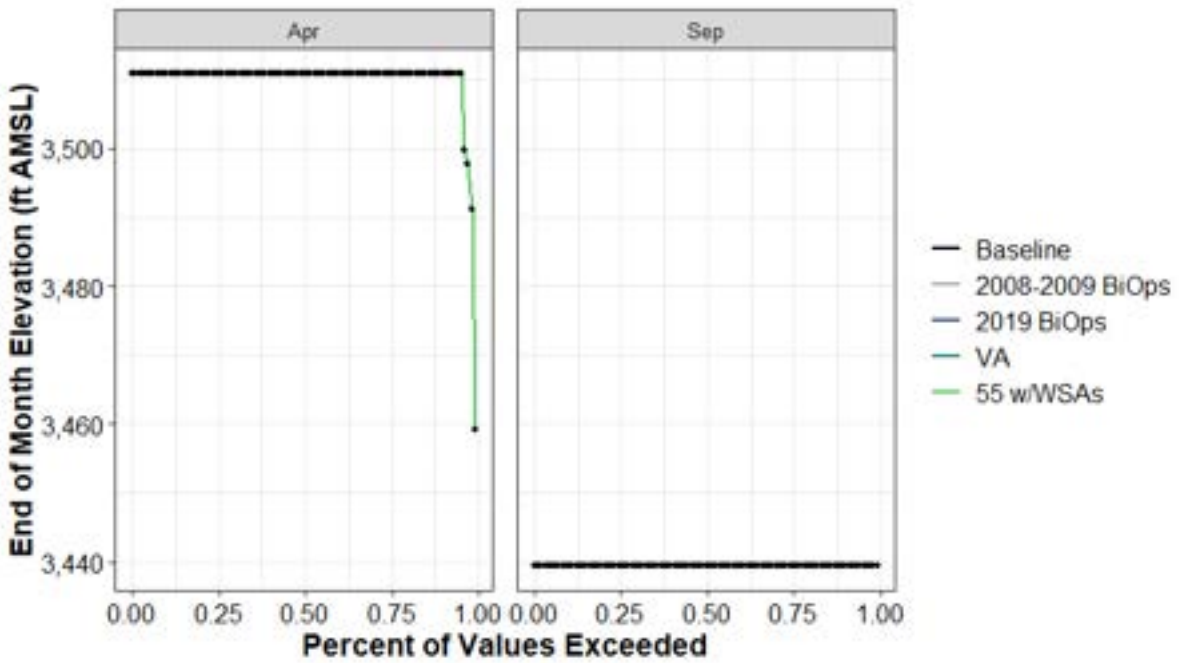

Figure H1a2-148. Sly Creek Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-297. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Sly Creek Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	22	0	0	0	0
10%	22	0	0	0	0
25%	22	0	0	0	0
50%	22	0	0	0	0
75%	22	0	0	0	0
90%	22	0	0	0	0
100%	22	0	0	0	0
Mean	22	0	0	0	0

Table H1a2-298. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Sly Creek Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	3,439	0	0	0	0
10%	3,439	0	0	0	0
25%	3,439	0	0	0	0
50%	3,439	0	0	0	0
75%	3,439	0	0	0	0
90%	3,439	0	0	0	0
100%	3,439	0	0	0	0
Mean	3,439	0	0	0	0

Table H1a2-299. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Sly Creek Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	30	0	0	0	0
10%	54	0	0	0	0
25%	54	0	0	0	0
50%	54	0	0	0	0
75%	54	0	0	0	0
90%	54	0	0	0	0
100%	54	0	0	0	0
Mean	54	0	0	0	0

Table H1a2-300. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Sly Creek Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	3,459	0	0	0	0
10%	3,511	0	0	0	0
25%	3,511	0	0	0	0
50%	3,511	0	0	0	0
75%	3,511	0	0	0	0
90%	3,511	0	0	0	0
100%	3,511	0	0	0	0
Mean	3,510	0	0	0	0

H1a2.5.46 Stony Gorge Reservoir (Stony Creek Watershed)

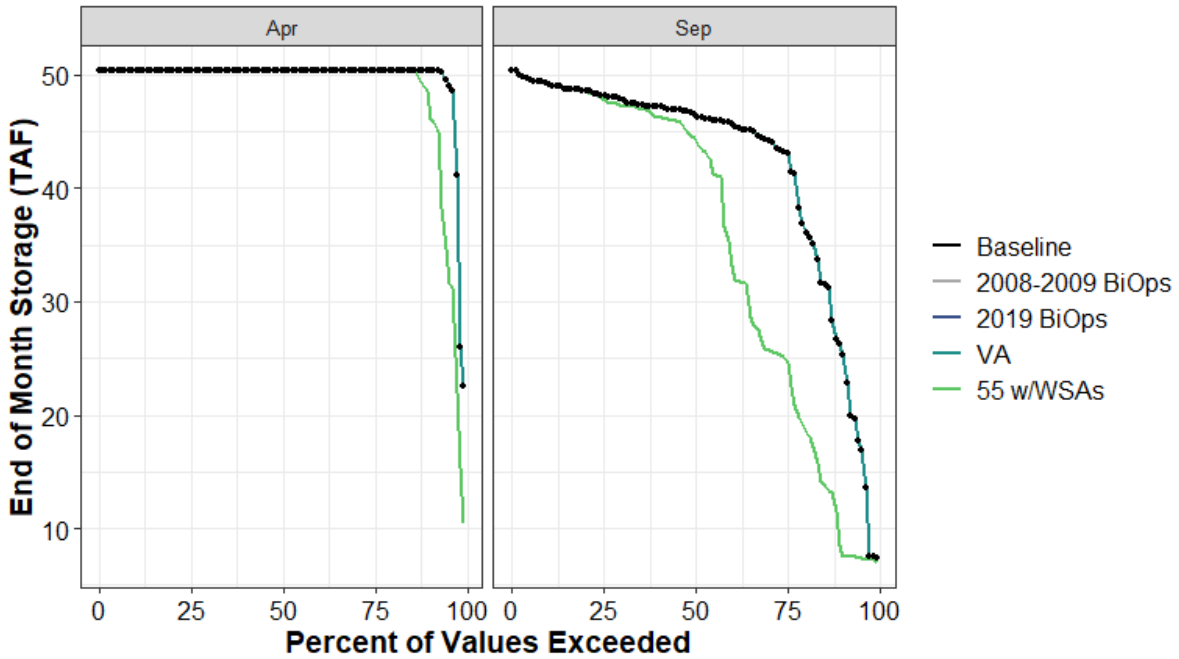

Figure H1a2-149. Stony Gorge Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

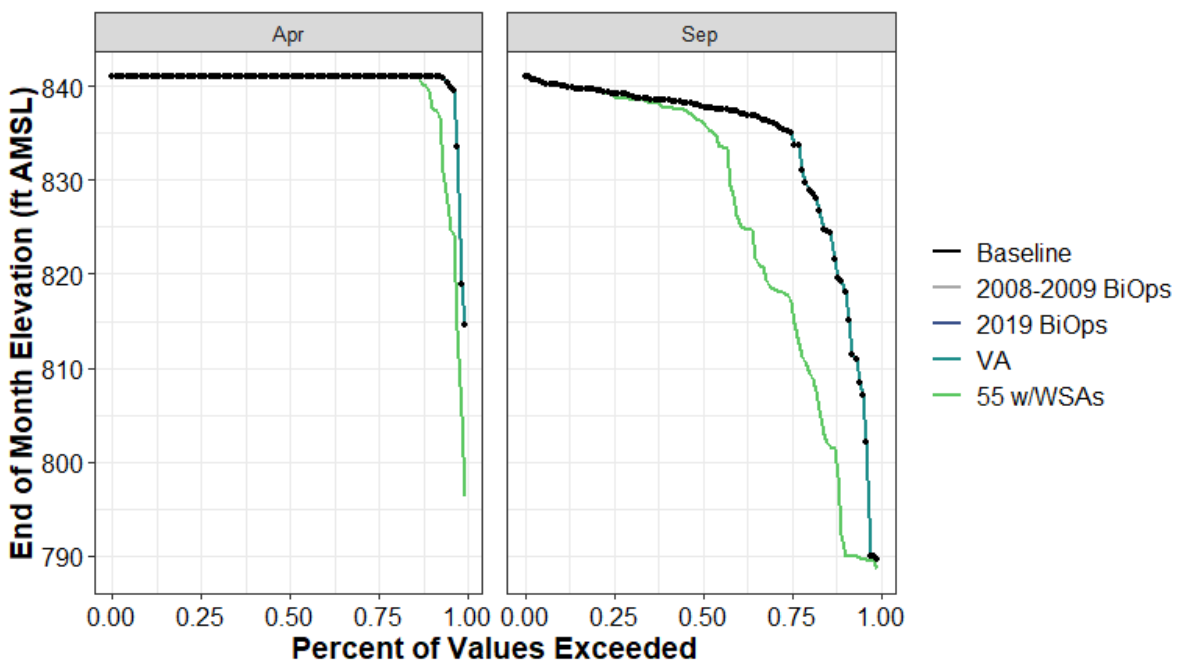

Figure H1a2-150. Stony Gorge Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-301. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Stony Gorge Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	7	0	0	0	0
10%	26	0	0	0	-18
25%	43	0	0	0	-18
50%	47	0	0	0	-2
75%	48	0	0	0	0
90%	49	0	0	0	0
100%	50	0	0	0	0
Mean	42	0	0	0	-7

Table H1a2-302. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Stony Gorge Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	790	0	0	0	-1
10%	819	0	0	0	-27
25%	835	0	0	0	-18
50%	838	0	0	0	-2
75%	839	0	0	0	0
90%	840	0	0	0	0
100%	841	0	0	0	0
Mean	833	0	0	0	-7

Table H1a2-303. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Stony Gorge Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	23	0	0	0	-12
10%	50	0	0	0	-2
25%	50	0	0	0	0
50%	50	0	0	0	0
75%	50	0	0	0	0
90%	50	0	0	0	0
100%	50	0	0	0	0
Mean	50	0	0	0	-1

Table H1a2-304. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Stony Gorge Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	815	0	0	0	-18
10%	841	0	0	0	-2
25%	841	0	0	0	0
50%	841	0	0	0	0
75%	841	0	0	0	0
90%	841	0	0	0	0
100%	841	0	0	0	0
Mean	840	0	0	0	-1

H1a2.5.47 Stumpy Meadows (American River Watershed)

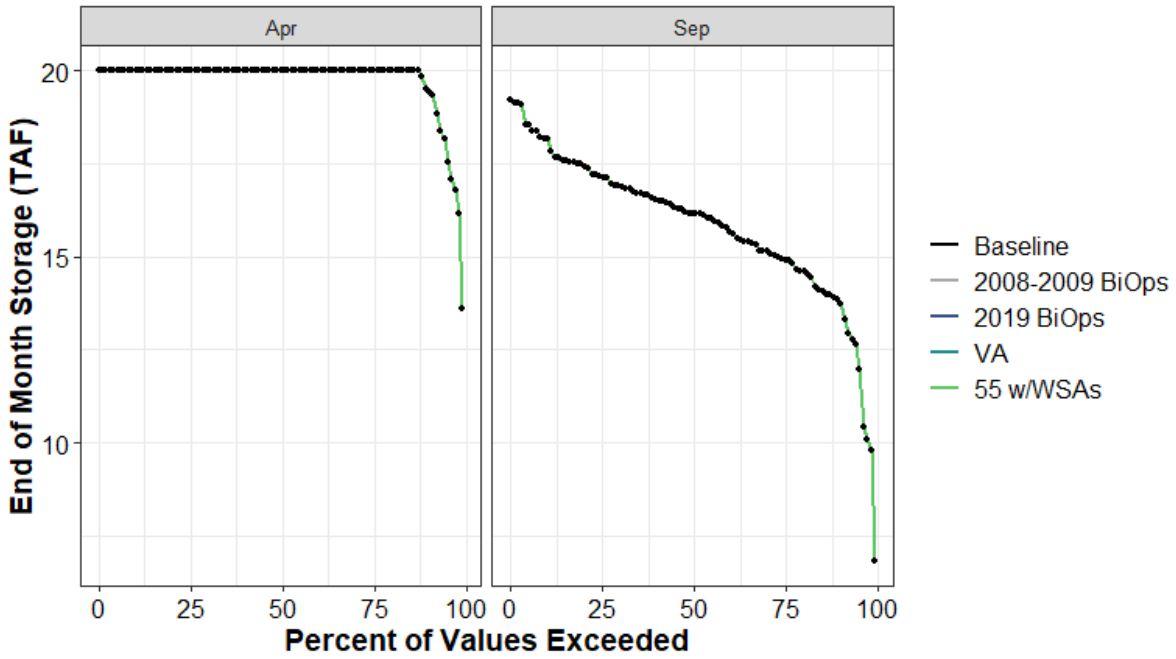

Figure H1a2-151. Stumpy Meadows End of April and End of September Storage (TAF) Percent Exceedance Plot

Table H1a2-305. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Stumpy Meadows

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	7	0	0	0	0
10%	14	0	0	0	0
25%	15	0	0	0	0
50%	16	0	0	0	0
75%	17	0	0	0	0
90%	18	0	0	0	0
100%	19	0	0	0	0
Mean	16	0	0	0	0

Table H1a2-306. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Stumpy Meadows

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	14	0	0	0	0
10%	19	0	0	0	0
25%	20	0	0	0	0
50%	20	0	0	0	0
75%	20	0	0	0	0
90%	20	0	0	0	0
100%	20	0	0	0	0
Mean	20	0	0	0	0

H1a2.5.48 SWP San Luis Reservoir (South of Delta Offstream)

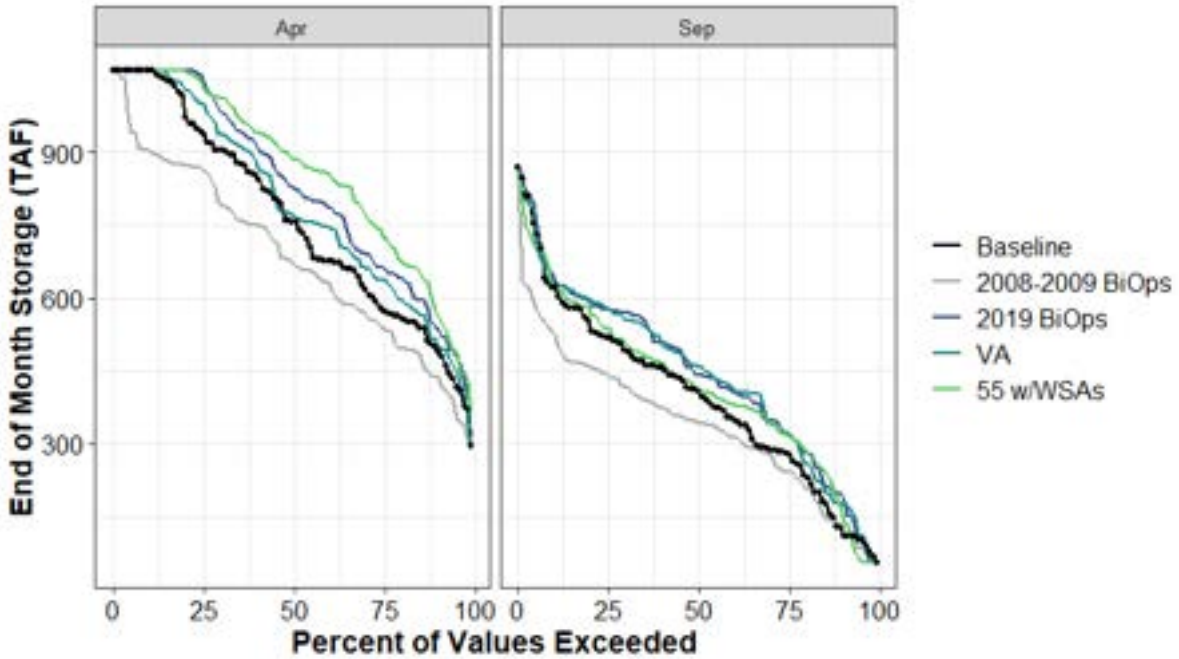

Figure H1a2-152. SWP San Luis Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

Table H1a2-307. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for SWP San Luis Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	55	0	0	0	0
10%	123	6	72	54	37
25%	279	-37	40	43	38
50%	410	-65	31	51	1
75%	518	-78	58	59	18
90%	622	-98	14	4	1
100%	869	-20	4	-14	-7
Mean	397	-58	47	44	20

Table H1a2-308. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for SWP San Luis Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	297	-5	93	-10	64
10%	496	-58	42	16	74
25%	575	-36	89	62	157
50%	757	-82	73	14	129
75%	940	-76	111	59	97
90%	1,067	-164	0	0	0
100%	1,067	0	0	0	0
Mean	763	-81	64	30	98

H1a2.5.49 Total San Luis Reservoir (South of Delta Offstream)

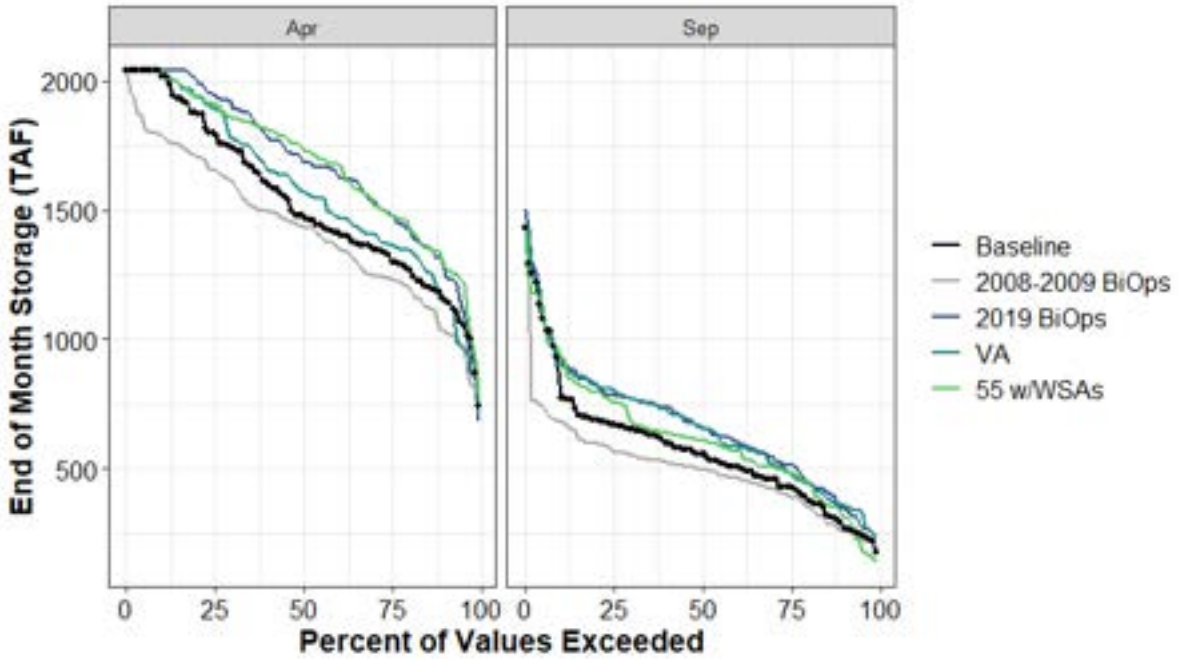

Figure H1a2-153. Total San Luis Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

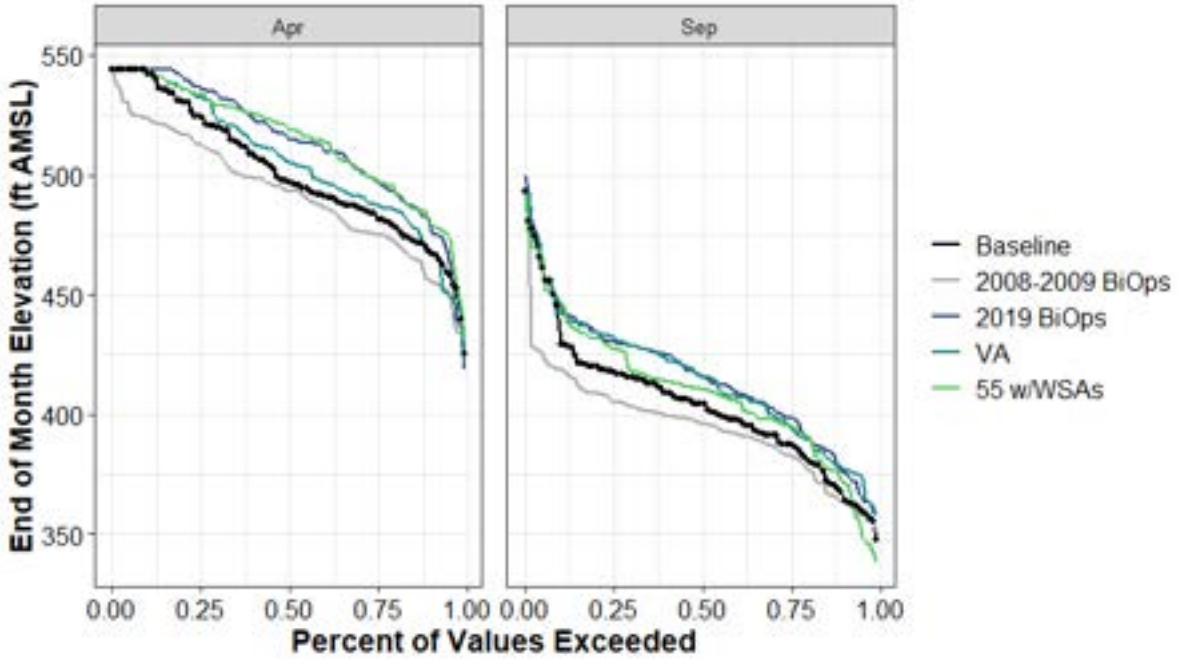

Figure H1a2-154. Total San Luis Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-309. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Total San Luis Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	176	17	56	56	-39
10%	285	-23	64	74	36
25%	428	-33	85	57	57
50%	557	-61	105	100	53
75%	671	-103	115	134	88
90%	804	-123	120	95	135
100%	1,430	-21	76	17	-7
Mean	575	-80	94	88	45

Table H1a2-310. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Total San Luis Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	348	3	10	10	-10
10%	367	-4	10	11	6
25%	388	-5	11	8	7
50%	404	-8	12	12	6
75%	418	-12	13	15	10
90%	432	-14	13	10	14
100%	493	-2	7	2	-1
Mean	404	-9	11	11	5

Table H1a2-311. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Total San Luis Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	740	45	-58	-40	44
10%	1,156	-118	134	-1	131
25%	1,313	-79	171	54	170
50%	1,477	-43	211	93	261
75%	1,793	-138	150	100	118
90%	2,022	-231	17	10	17
100%	2,039	0	0	0	0
Mean	1,536	-110	141	48	145

Table H1a2-312. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Total San Luis Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	426	5	-6	-4	5
10%	468	-11	13	0	12
25%	483	-7	15	5	15
50%	497	-4	18	8	22
75%	524	-12	12	8	10
90%	543	-19	1	1	1
100%	544	0	0	0	0
Mean	502	-10	12	4	13

H1a2.5.50 Trinity Reservoir (Trinity River Watershed)

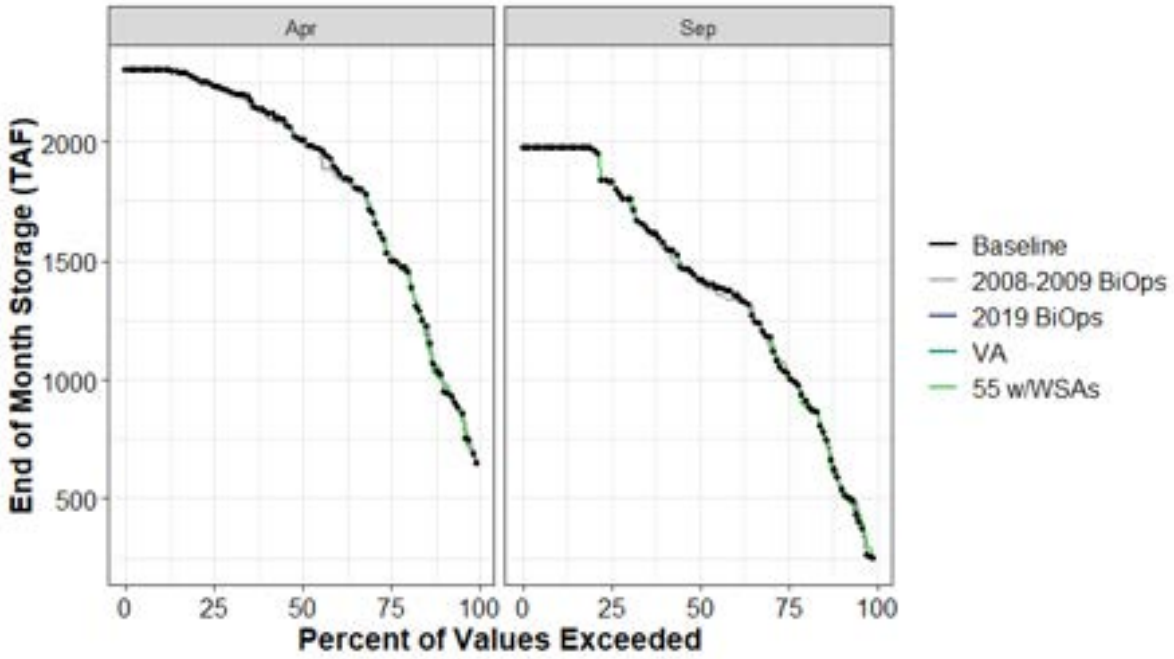

Figure H1a2-155. Trinity Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

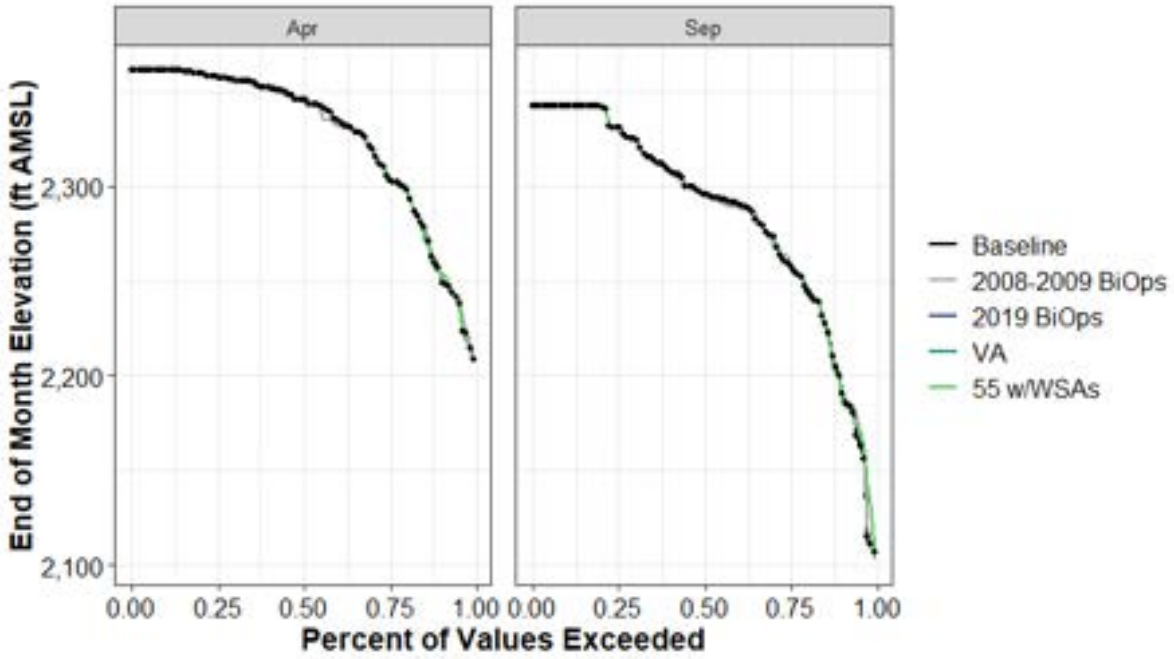

Figure H1a2-156. Trinity Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-313. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Trinity Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	246	-6	2	2	2
10%	578	-6	-17	-17	-17
25%	1,030	8	0	0	0
50%	1,420	-12	3	3	3
75%	1,831	0	0	0	0
90%	1,972	0	0	0	0
100%	1,972	0	0	0	0
Mean	1,379	-4	-1	-1	-1

Table H1a2-314. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Trinity Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	2,107	-4	1	1	1
10%	2,198	-1	-3	-3	-3
25%	2,258	1	0	0	0
50%	2,296	-1	0	0	0
75%	2,331	0	0	0	0
90%	2,343	0	0	0	0
100%	2,343	0	0	0	0
Mean	2,285	0	0	0	0

Table H1a2-315. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Trinity Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	650	7	29	29	29
10%	1,004	7	-6	-6	-6
25%	1,516	19	0	0	0
50%	2,009	-11	0	0	0
75%	2,235	0	0	0	0
90%	2,300	-1	0	0	0
100%	2,300	0	0	0	0
Mean	1,843	-4	-3	-3	-3

Table H1a2-316. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Trinity Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	2,209	1	4	4	4
10%	2,255	1	-1	-1	-1
25%	2,304	2	0	0	0
50%	2,345	-1	0	0	0
75%	2,358	0	0	0	0
90%	2,361	0	0	0	0
100%	2,361	0	0	0	0
Mean	2,327	0	0	0	0

H1a2.5.51 Union Valley Reservoir (American River Watershed)

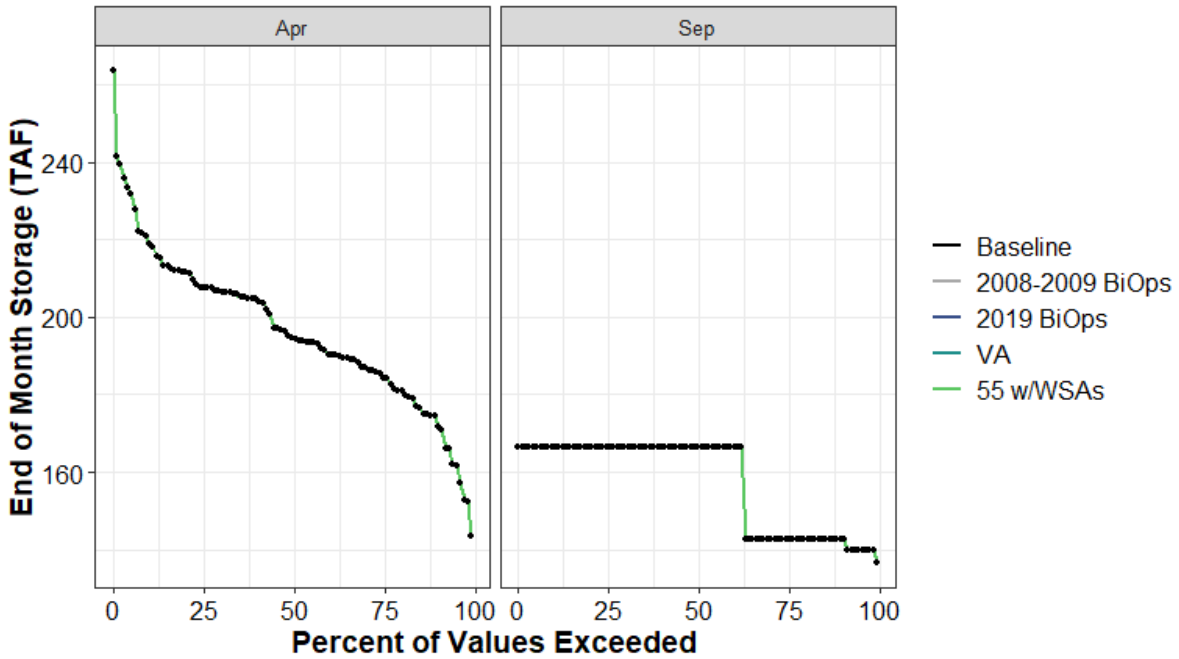

Figure H1a2-157. Union Valley Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

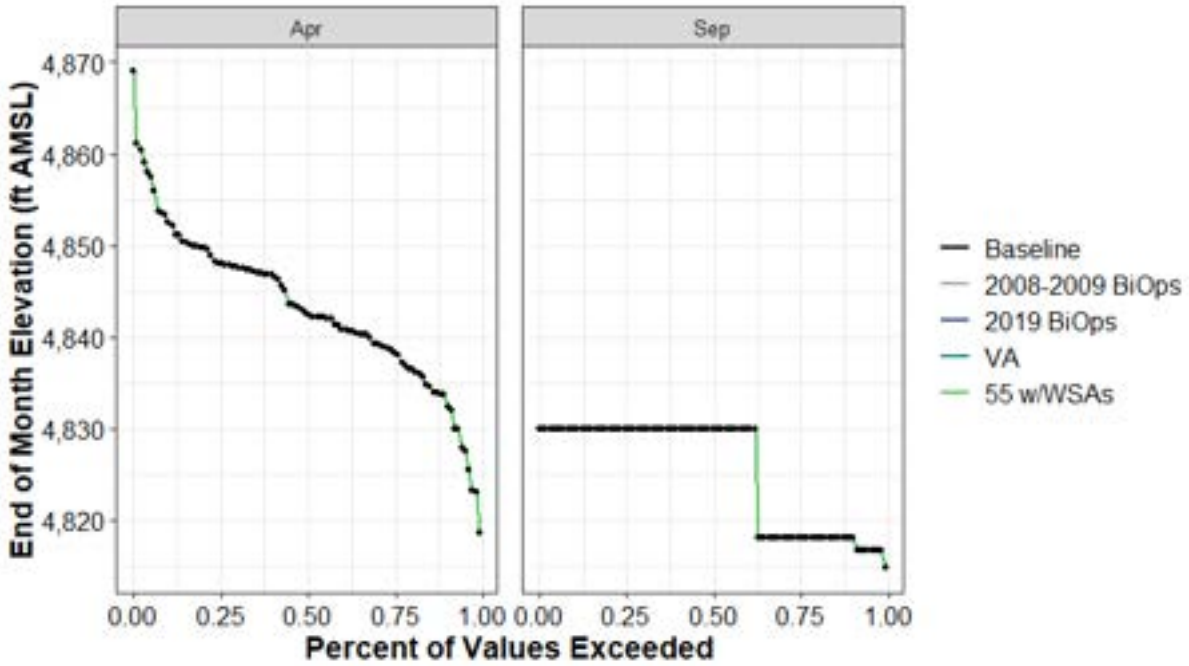

Figure H1a2-158. Union Valley Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-317. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Union Valley Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	137	0	0	0	0
10%	143	0	0	0	0
25%	143	0	0	0	0
50%	166	0	0	0	0
75%	166	0	0	0	0
90%	166	0	0	0	0
100%	166	0	0	0	0
Mean	157	0	0	0	0

Table H1a2-318. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Union Valley Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,815	0	0	0	0
10%	4,818	0	0	0	0
25%	4,818	0	0	0	0
50%	4,830	0	0	0	0
75%	4,830	0	0	0	0
90%	4,830	0	0	0	0
100%	4,830	0	0	0	0
Mean	4,825	0	0	0	0

Table H1a2-319. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Union Valley Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	144	0	0	0	0
10%	174	0	0	0	0
25%	185	0	0	0	0
50%	195	0	0	0	0
75%	208	0	0	0	0
90%	219	0	0	0	0
100%	264	0	0	0	0
Mean	197	0	0	0	0

Table H1a2-320. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Union Valley Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,819	0	0	0	0
10%	4,833	0	0	0	0
25%	4,838	0	0	0	0
50%	4,843	0	0	0	0
75%	4,848	0	0	0	0
90%	4,853	0	0	0	0
100%	4,869	0	0	0	0
Mean	4,843	0	0	0	0

H1a2.5.52 Whiskeytown Reservoir (Clear Creek Watershed)

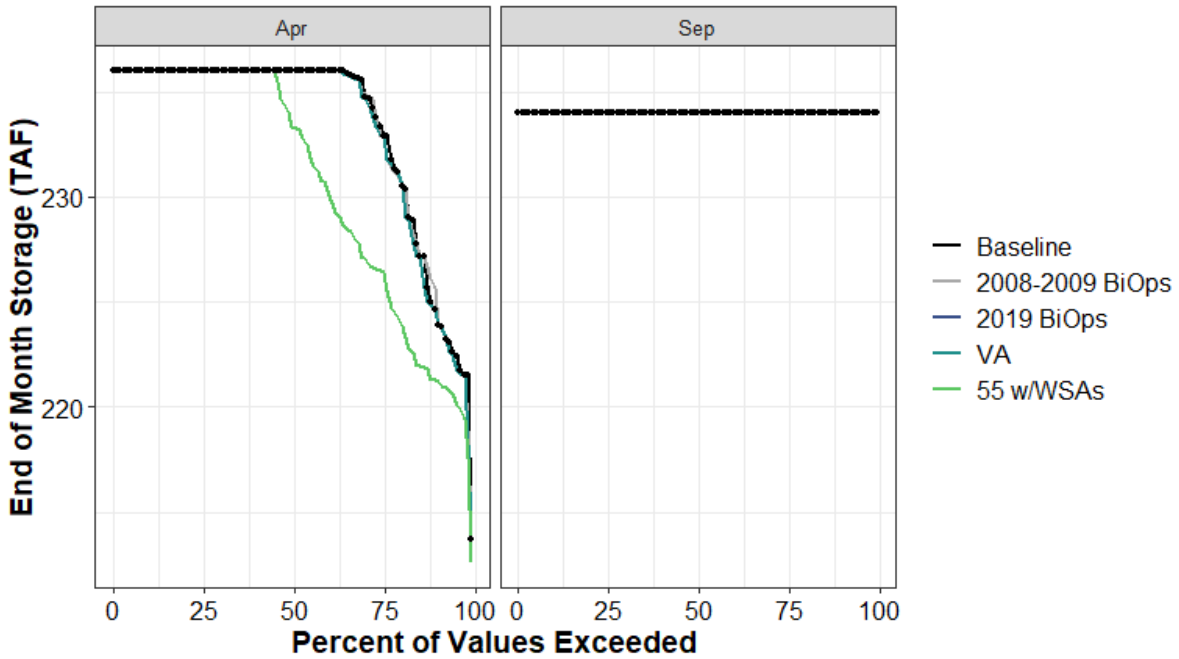

Figure H1a2-159. Whiskeytown Reservoir End of April and End of September Storage (TAF) Percent Exceedance Plot

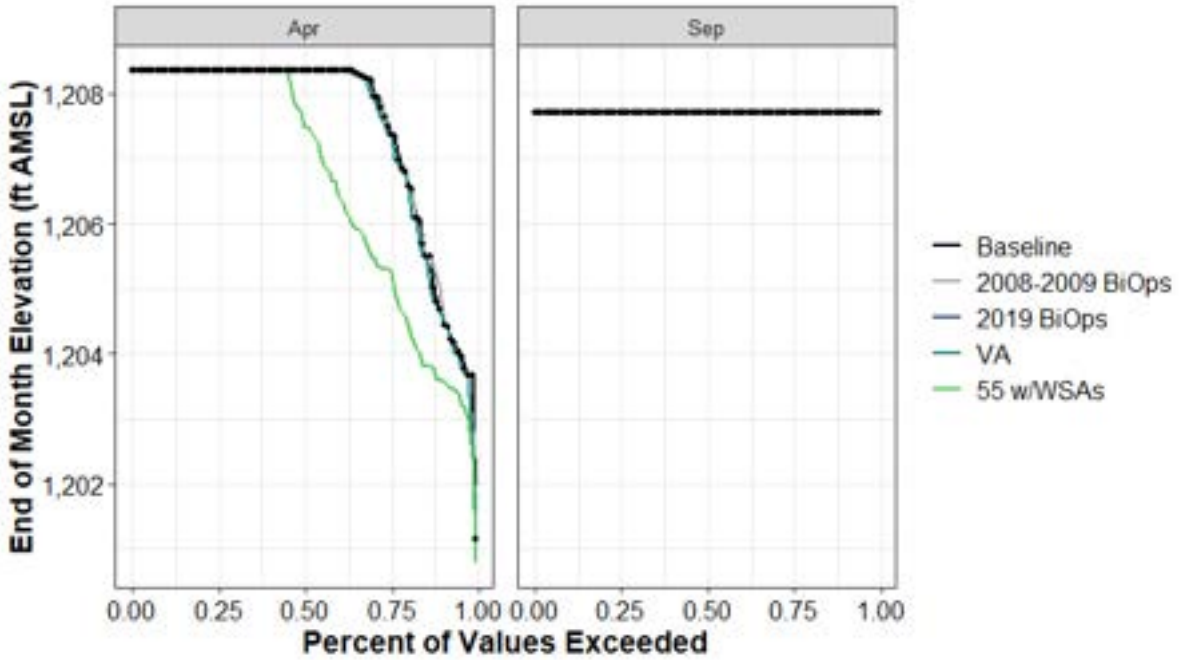

Figure H1a2-160. Whiskeytown Reservoir End-of-April and End-of-September Elevation (ft AMSL) Percent Exceedance Plot

Table H1a2-321. Distribution of Baseline End-of-September Carryover Storage (TAF) and Absolute Difference by Scenario for Whiskeytown Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	234	0	0	0	0
10%	234	0	0	0	0
25%	234	0	0	0	0
50%	234	0	0	0	0
75%	234	0	0	0	0
90%	234	0	0	0	0
100%	234	0	0	0	0
Mean	234	0	0	0	0

Table H1a2-322. Distribution of Baseline End-of-September Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Whiskeytown Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,208	0	0	0	0
10%	1,208	0	0	0	0
25%	1,208	0	0	0	0
50%	1,208	0	0	0	0
75%	1,208	0	0	0	0
90%	1,208	0	0	0	0
100%	1,208	0	0	0	0
Mean	1,208	0	0	0	0

Table H1a2-323. Distribution of Baseline End-of-April Storage (TAF) and Absolute Difference by Scenario for Whiskeytown Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	214	0	0	0	-1
10%	224	1	0	0	-3
25%	233	0	0	0	-7
50%	236	0	0	0	-3
75%	236	0	0	0	0
90%	236	0	0	0	0
100%	236	0	0	0	0
Mean	233	0	0	0	-3

Table H1a2-324. Distribution of Baseline End-of-April Storage Elevation (ft AMSL) and Absolute Difference by Scenario for Whiskeytown Reservoir

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,201	0	0	0	0
10%	1,205	0	0	0	-1
25%	1,207	0	0	0	-2
50%	1,208	0	0	0	-1
75%	1,208	0	0	0	0
90%	1,208	0	0	0	0
100%	1,208	0	0	0	0
Mean	1,208	0	0	0	-1

H1a2.6 Water Supply

In this section, SacWAM results for water supply are presented by water budget area (WBA), other logical groupings of demand sites within the model domain but outside of the valley floor (upper watershed and foothill, San Francisco Bay Area), CVP contract type, and SWP contract type. The values presented by WBA include total water supplied, including surface and groundwater to the demand locations by water year. Results presented for CVP and SWP deliveries only include surface supplies and are also summarized by water year. All water supply results are presented as simple aggregations of transmission link flows to the set of demand sites identified for each summary. WBAs in the Sacramento Valley include water delivered to SWP and CVP contractors in those WBAs.

Water supplies for many demand site groups remain essentially unchanged among the model scenarios presented here. The WBAs and other demand site groups identified in Table H1a2-325 show constant supplies for all water years in all scenarios summarized and are not presented further in this appendix.

Table H1a2-325. Water Budget Areas and Demand Site Groups with Constant Supply in all Water Years of all Scenarios.

WBA or Demand Site Group	Demand Type	Annual Supply (TAF)
Water Budget Areas 4 and 6	Urban	21
Water Budget Area 5	Urban	9
Water Budget Area 7	Urban	7
Water Budget Area 8	Urban	8
Water Budget Area 9	Urban	0.3
Water Budget Area 10	Urban	32
Water Budget Area 11	Urban	12
Water Budget Area 15S	Urban	13
Water Budget Area 17	Urban	0.8
Water Budget Areas 18 and 19	Urban	0.7
Water Budget Area 22	Urban	2
Water Budget Area 23	Urban	1
Water Budget Area 61N	Urban	26

H1a2.6.1 Water Budget Area 2 (Agricultural)

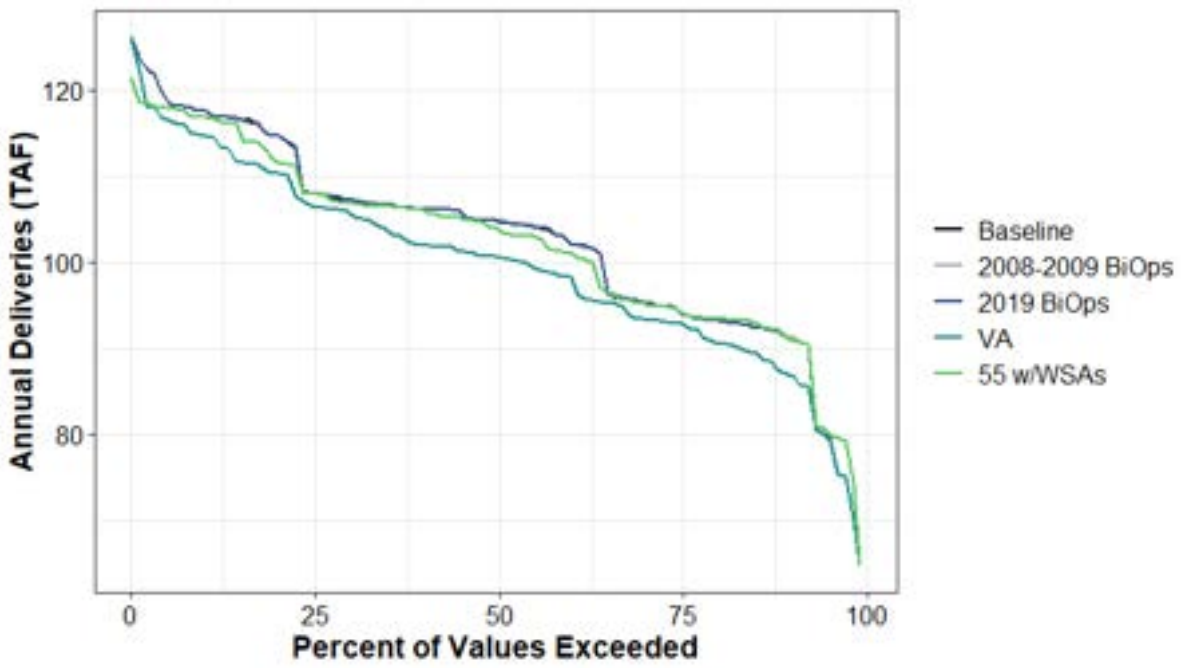

Figure H1a2-161. Total Water Supplied to Water Budget Area 2 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-326. Total Water Supplied to Water Budget Area 2 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	126	126	126	126	121
10%	118	118	118	115	117
20%	115	115	115	110	112
30%	107	107	107	106	107
40%	106	106	106	102	106
50%	105	105	105	101	104
60%	102	102	102	98	101
70%	95	95	95	93	95
80%	93	93	93	91	93
90%	91	91	91	87	91
100%	65	65	65	65	65
Mean	103	103	103	100	102

Table H1a2-327. Total Water Supplied to Water Budget Area 2 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	111	111	111	111	107
D	105	105	105	99	104
BN	105	105	105	99	105
AN	100	100	100	94	100
W	97	97	97	97	97
All	103	103	103	100	102

H1a2.6.2 Water Budget Area 2 (Urban)

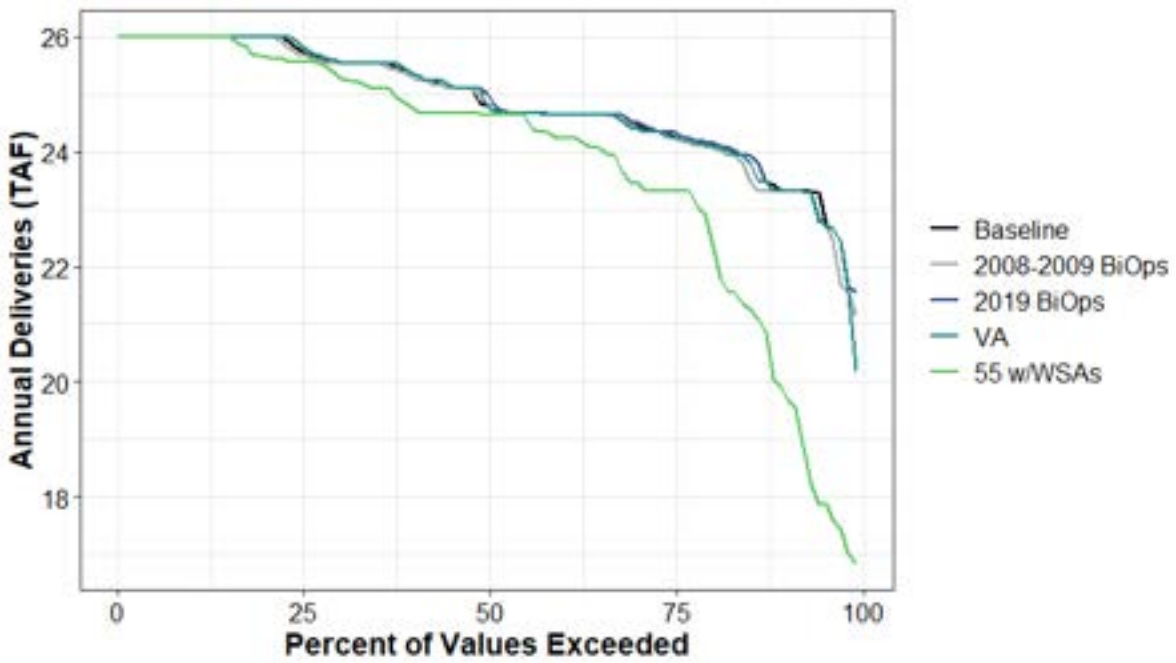

Figure H1a2-162. Total Water Supplied to Water Budget Area 2 (Urban) Annual Percent Exceedance Plot.

Table H1a2-328. Total Water Supplied to Water Budget Area 2 (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	26	26	26	26	26
10%	26	26	26	26	26
20%	26	26	26	26	25.7
30%	25.5	25.5	25.6	25.6	25.3
40%	25.3	25.3	25.4	25.4	24.8
50%	24.8	24.8	25	24.8	24.7
60%	24.7	24.7	24.7	24.7	24.2
70%	24.5	24.4	24.5	24.4	23.5
80%	24.1	24.1	24.2	24.1	22.7
90%	23.3	23.3	23.3	23.3	19.9
100%	21.6	21.2	21.6	20.2	16.8
Mean	24.9	24.8	24.9	24.8	23.8

Table H1a2-329. Total Water Supplied to Water Budget Area 2 (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	24.3	24.2	24.3	24.1	19.6
D	24.8	24.7	24.8	24.8	24
BN	24.4	24.3	24.4	24.4	24.1
AN	25.5	25.5	25.5	25.5	25.2
W	25.3	25.3	25.3	25.3	25.2
All	24.9	24.8	24.9	24.8	23.8

H1a2.6.3 Water Budget Area 3 (Agricultural)

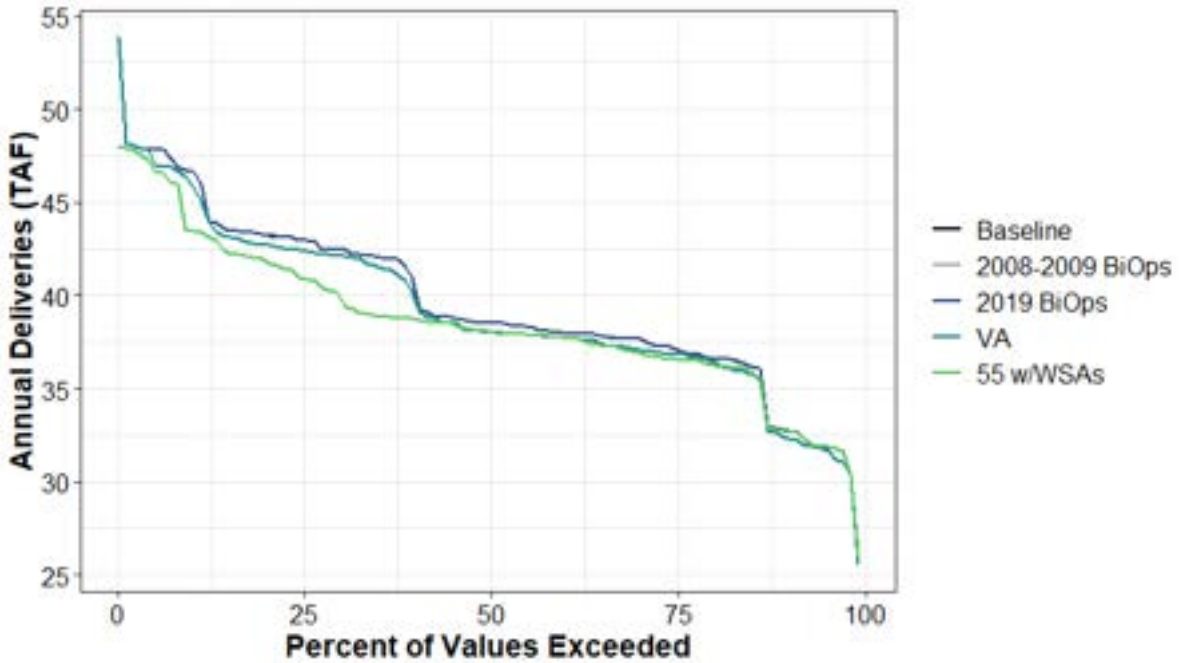

Figure H1a2-163. Total Water Supplied to Water Budget Area 3 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-330. Total Water Supplied to Water Budget Area 3 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	54	54	54	54	48
10%	47	47	47	46	44
20%	43	43	43	43	42
30%	42	42	42	42	40
40%	41	41	41	40	39
50%	39	39	39	38	38
60%	38	38	38	38	38
70%	38	38	38	37	37
80%	37	37	37	37	36
90%	33	33	33	32	33
100%	26	26	26	26	26
Mean	40	40	40	39	39

Table H1a2-331. Total Water Supplied to Water Budget Area 3 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	44	44	44	44	39
D	41	41	41	40	40
BN	39	39	39	38	39
AN	37	37	37	37	37
W	38	38	38	38	38
All	40	40	40	39	39

H1a2.6.4 Water Budget Area 3 (Urban)

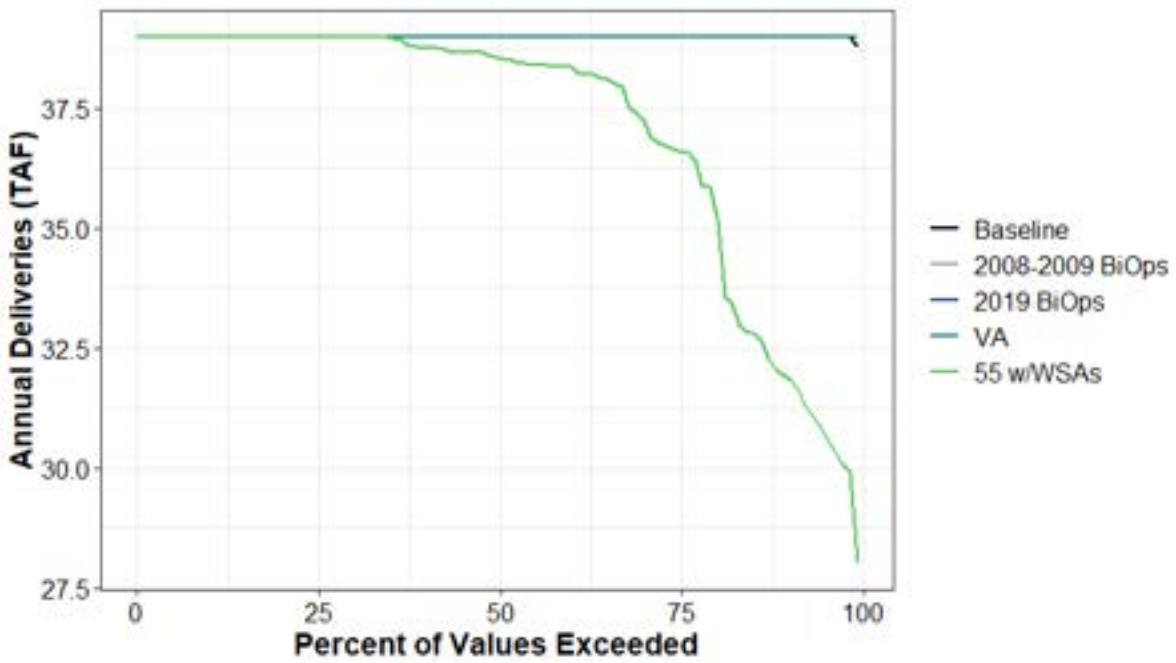

Figure H1a2-164. Total Water Supplied to Water Budget Area 3 (Urban) Annual Percent Exceedance Plot.

Table H1a2-332. Total Water Supplied to Water Budget Area 3 (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	39	39	39	39	39
10%	39	39	39	39	39
20%	39	39	39	39	39
30%	39	39	39	39	39
40%	39	39	39	39	39
50%	39	39	39	39	39
60%	39	39	39	39	38
70%	39	39	39	39	37
80%	39	39	39	39	36
90%	39	39	39	39	32
100%	39	39	39	39	28
Mean	39	39	39	39	37

Table H1a2-333. Total Water Supplied to Water Budget Area 3 (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	39	39	39	39	32
D	39	39	39	39	36
BN	39	39	39	39	38
AN	39	39	39	39	39
W	39	39	39	39	39
All	39	39	39	39	37

H1a2.6.5 Water Budget Areas 4 and 6 (Agricultural)

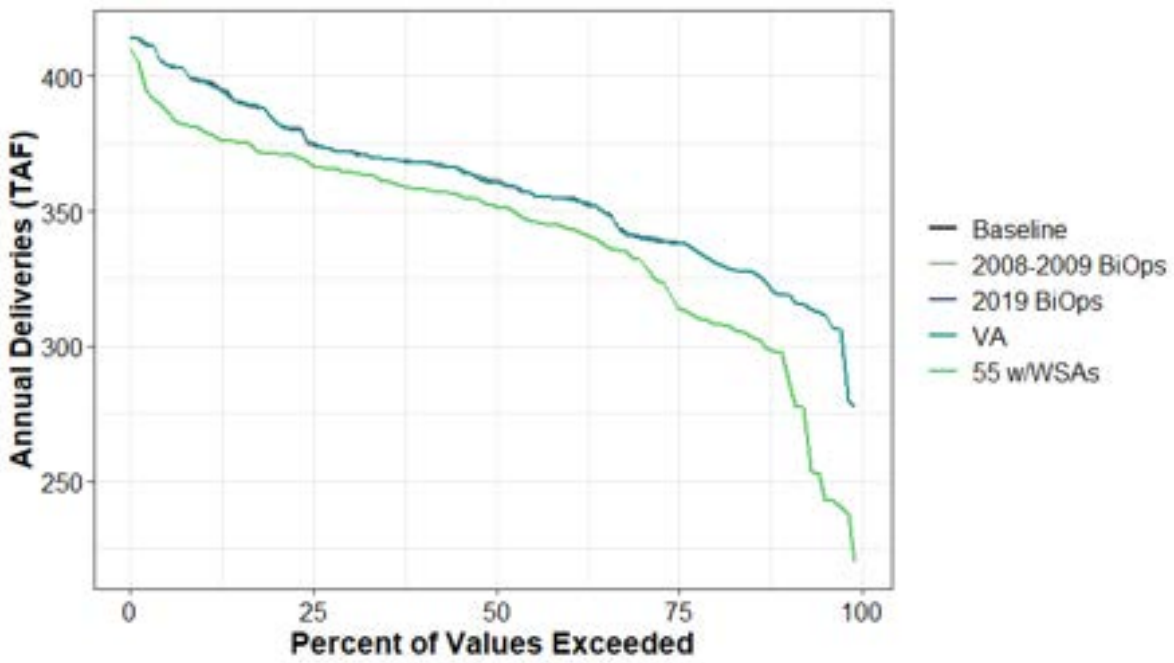

Figure H1a2-165. Total Water Supplied to Water Budget Areas 4 and 6 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-334. Total Water Supplied to Water Budget Areas 4 and 6 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	415	415	415	415	410
10%	398	399	398	398	380
20%	383	383	383	383	371
30%	372	372	372	372	364
40%	368	368	368	368	358
50%	361	362	361	360	352
60%	355	354	355	355	344
70%	341	341	340	341	332
80%	332	332	332	332	309
90%	319	319	319	319	295
100%	277	277	277	277	220
Mean	359	359	359	359	341

Table H1a2-335. Total Water Supplied to Water Budget Areas 4 and 6 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	385	385	385	385	362
D	369	369	369	369	362
BN	364	364	364	364	360
AN	343	343	343	343	333
W	340	340	340	340	306
All	359	359	359	359	341

H1a2.6.6 Water Budget Area 5 (Agricultural)

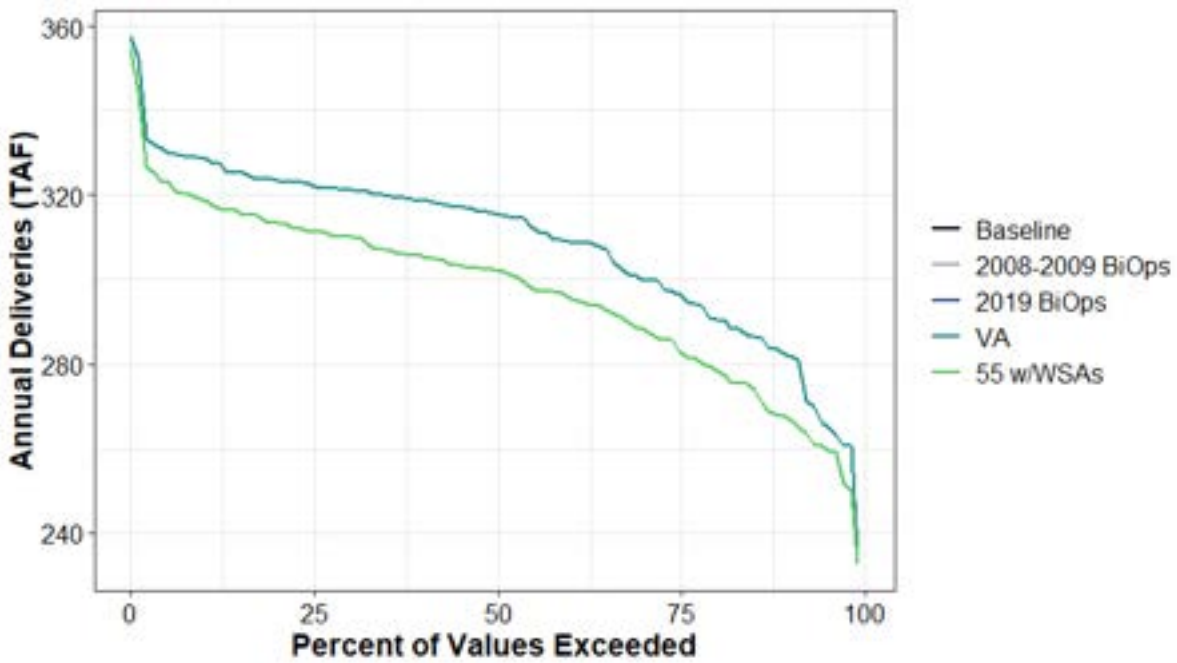

Figure H1a2-166. Total Water Supplied to Water Budget Area 5 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-336. Total Water Supplied to Water Budget Area 5 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	358	358	358	358	355
10%	329	329	329	329	319
20%	324	324	324	324	314
30%	321	321	321	321	310
40%	319	319	319	319	306
50%	316	316	316	316	302
60%	309	309	309	309	296
70%	300	300	300	300	288
80%	291	291	291	291	279
90%	282	282	282	282	267
100%	235	235	235	235	232
Mean	309	309	309	309	297

Table H1a2-337. Total Water Supplied to Water Budget Area 5 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	322	322	322	322	316
D	315	315	315	315	305
BN	309	309	309	309	297
AN	300	300	300	300	289
W	300	300	300	300	284
All	309	309	309	309	297

H1a2.6.7 Water Budget Area 7 (Agricultural)

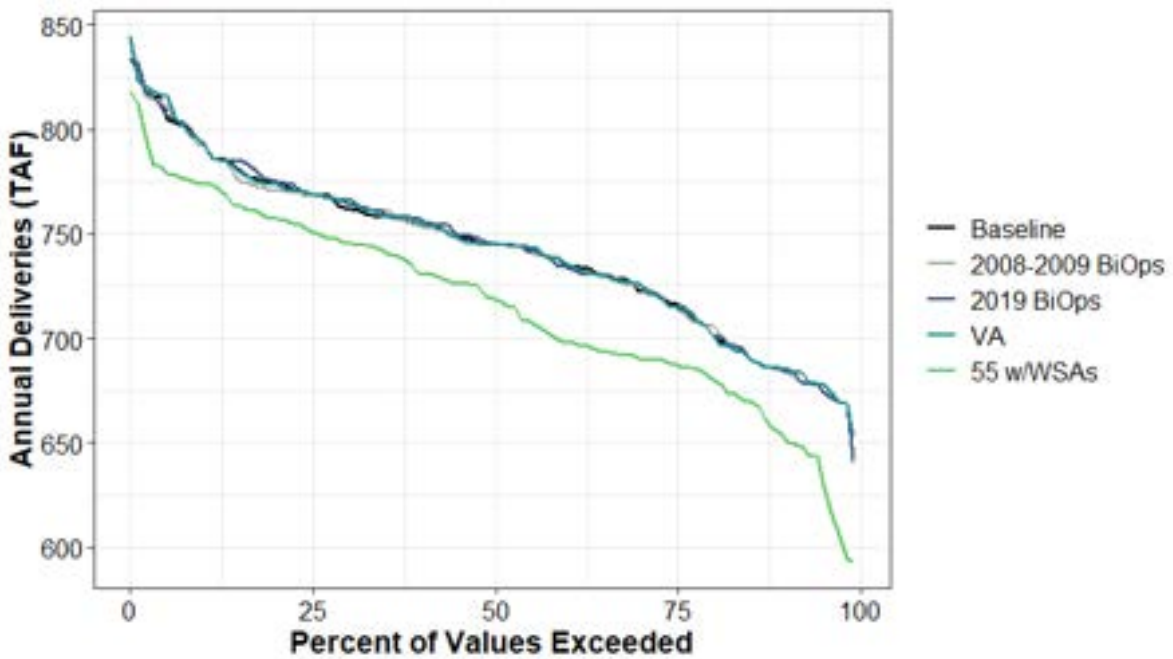

Figure H1a2-167. Total Water Supplied to Water Budget Area 7 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-338. Total Water Supplied to Water Budget Area 7 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	834	844	834	844	818
10%	794	792	794	793	774
20%	775	771	775	774	757
30%	762	766	765	766	745
40%	755	754	757	755	731
50%	745	746	745	745	719
60%	736	735	734	736	698
70%	724	725	726	726	691
80%	704	706	704	704	682
90%	686	685	685	686	654
100%	642	640	641	653	593
Mean	743	742	743	743	716

Table H1a2-339. Total Water Supplied to Water Budget Area 7 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	754	754	754	754	674
D	758	756	760	758	706
BN	758	760	759	760	745
AN	734	734	735	734	732
W	719	718	718	718	720
All	743	742	743	743	716

H1a2.6.8 Water Budget Area 8 (Agricultural)

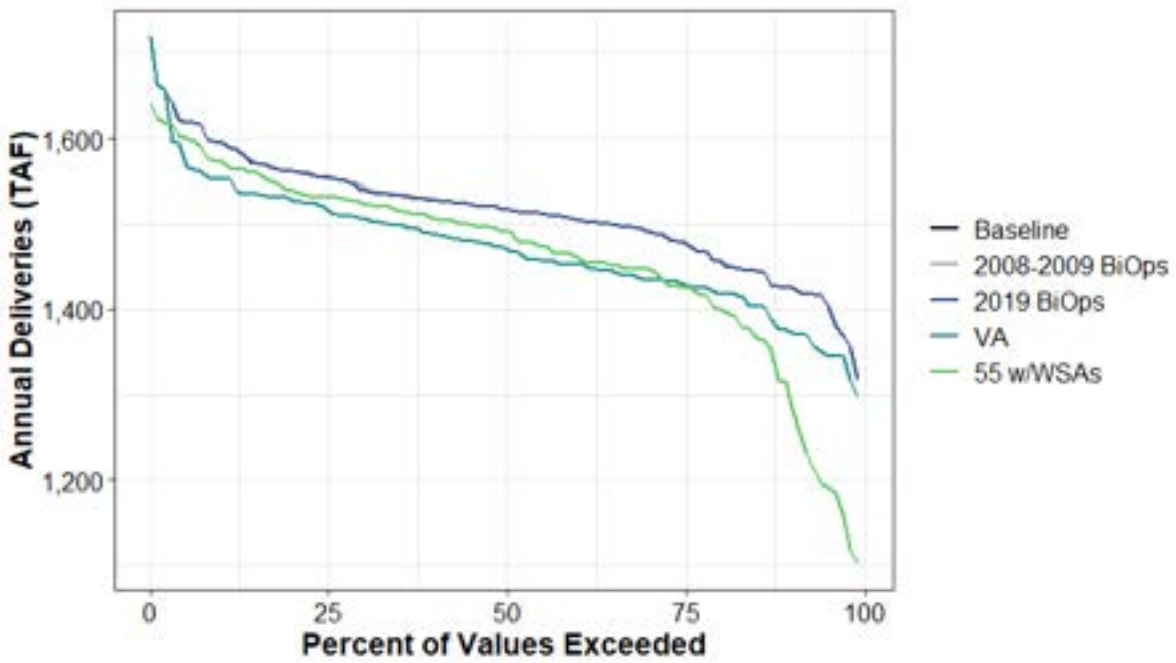

Figure H1a2-168. Total Water Supplied to Water Budget Area 8 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-340. Total Water Supplied to Water Budget Area 8 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,718	1,718	1,718	1,719	1,641
10%	1,596	1,596	1,596	1,554	1,573
20%	1,562	1,562	1,562	1,528	1,538
30%	1,545	1,545	1,540	1,507	1,524
40%	1,528	1,528	1,527	1,489	1,507
50%	1,517	1,517	1,517	1,473	1,491
60%	1,506	1,506	1,506	1,452	1,462
70%	1,492	1,492	1,492	1,435	1,446
80%	1,458	1,458	1,458	1,420	1,402
90%	1,426	1,426	1,426	1,376	1,308
100%	1,318	1,318	1,318	1,297	1,102
Mean	1,514	1,514	1,514	1,472	1,462

Table H1a2-341. Total Water Supplied to Water Budget Area 8 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	1,572	1,572	1,571	1,570	1,271
D	1,540	1,540	1,540	1,460	1,516
BN	1,526	1,526	1,526	1,447	1,530
AN	1,483	1,484	1,483	1,406	1,488
W	1,470	1,470	1,470	1,470	1,469
All	1,514	1,514	1,514	1,472	1,462

H1a2.6.9 Water Budget Area 8 (Refuge)

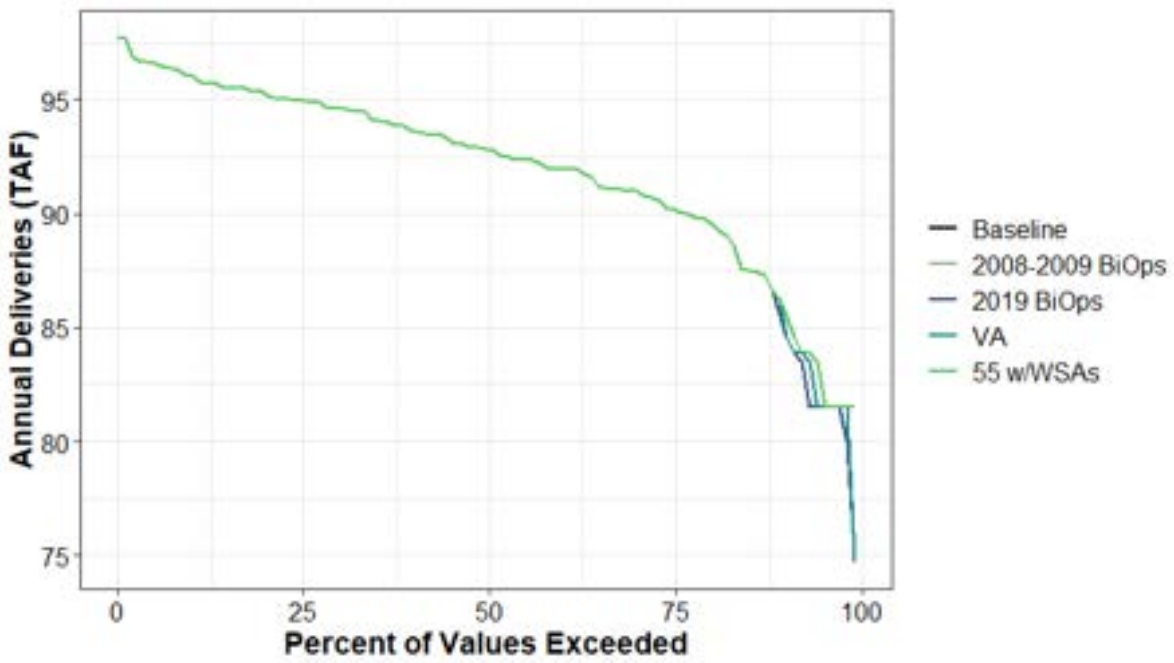

Figure H1a2-169. Total Water Supplied to Water Budget Area 8 (Refuge) Annual Percent Exceedance Plot.

Table H1a2-342. Total Water Supplied to Water Budget Area 8 (Refuge) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	98	98	98	98	98
10%	96	96	96	96	96
20%	95	95	95	95	95
30%	95	95	95	95	95
40%	94	94	94	94	94
50%	93	93	93	93	93
60%	92	92	92	92	92
70%	91	91	91	91	91
80%	90	90	90	90	90
90%	86	86	85	86	86
100%	82	82	75	75	82
Mean	92	92	92	92	92

Table H1a2-343. Total Water Supplied to Water Budget Area 8 (Refuge) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	90	90	90	90	90
D	93	93	93	93	93
BN	93	93	93	93	93
AN	91	91	91	91	91
W	92	92	92	92	92
All	92	92	92	92	92

H1a2.6.10 Water Budget Area 9 (Agricultural)

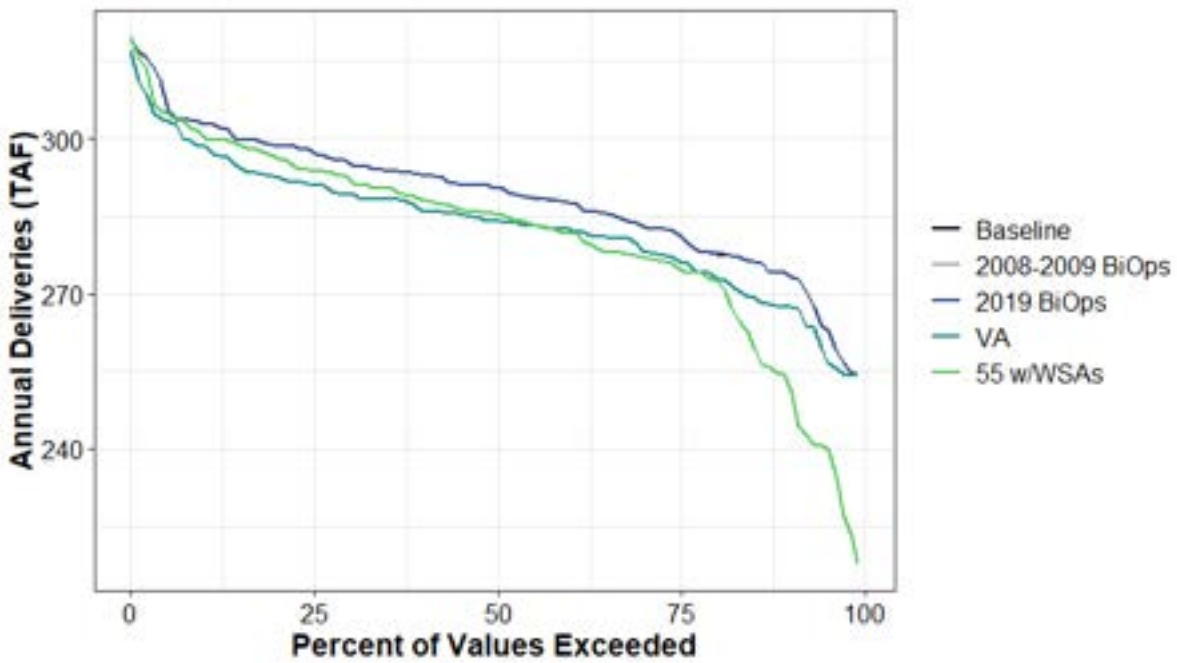

Figure H1a2-170. Total Water Supplied to Water Budget Area 9 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-344. Total Water Supplied to Water Budget Area 9 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	320	320	320	317	320
10%	303	303	303	299	300
20%	299	299	299	293	296
30%	295	295	295	289	292
40%	293	293	293	286	288
50%	291	291	291	284	286
60%	288	288	288	283	282
70%	283	283	283	279	277
80%	278	278	278	273	273
90%	274	274	274	267	254
100%	254	254	254	254	218
Mean	289	289	289	283	281

Table H1a2-345. Total Water Supplied to Water Budget Area 9 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	297	297	297	297	253
D	294	294	294	284	290
BN	294	294	294	283	295
AN	284	284	284	274	286
W	279	279	279	279	280
All	289	289	289	283	281

H1a2.6.11 Water Budget Area 9 (Refuge)

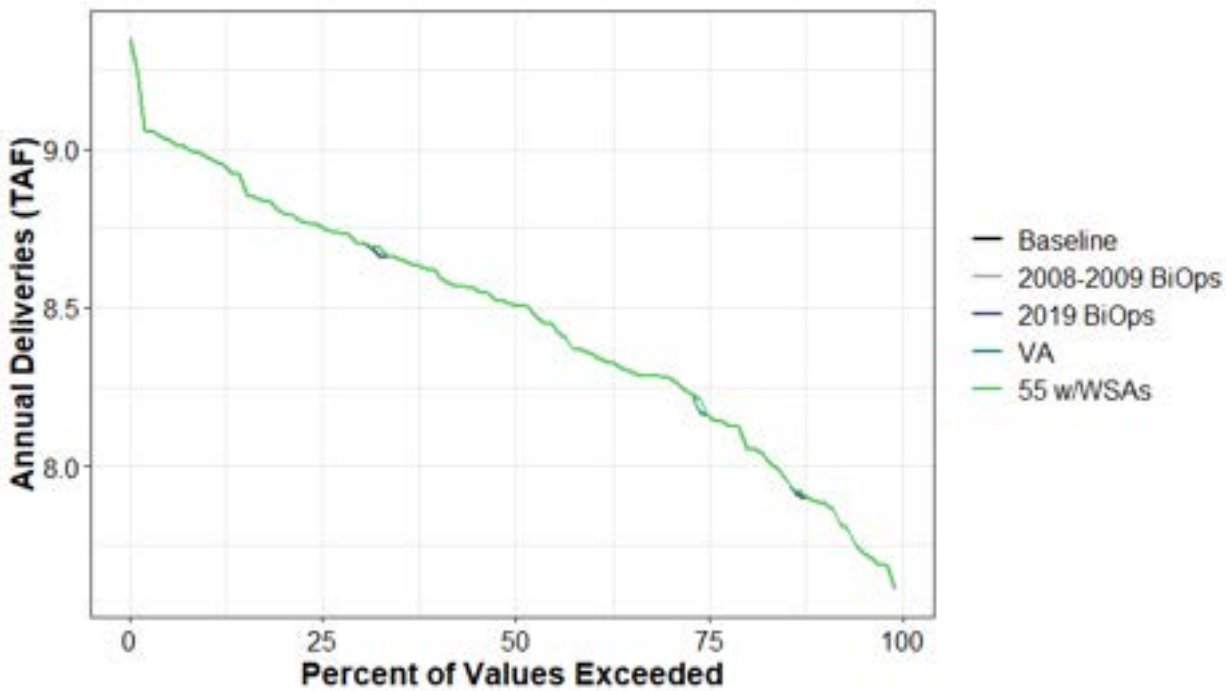

Figure H1a2-171. Total Water Supplied to Water Budget Area 9 (Refuge) Annual Percent Exceedance Plot.

Table H1a2-346. Total Water Supplied to Water Budget Area 9 (Refuge) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	9.3	9.3	9.3	9.3	9.3
10%	9	9	9	9	9
20%	8.8	8.8	8.8	8.8	8.8
30%	8.7	8.7	8.7	8.7	8.7
40%	8.6	8.6	8.6	8.6	8.6
50%	8.5	8.5	8.5	8.5	8.5
60%	8.4	8.4	8.4	8.4	8.4
70%	8.3	8.3	8.3	8.3	8.3
80%	8.1	8.1	8.1	8.1	8.1
90%	7.9	7.9	7.9	7.9	7.9
100%	7.6	7.6	7.6	7.6	7.6
Mean	8.5	8.5	8.5	8.5	8.5

Table H1a2-347. Total Water Supplied to Water Budget Area 9 (Refuge) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	8.8	8.8	8.8	8.8	8.8
D	8.6	8.6	8.6	8.6	8.6
BN	8.6	8.6	8.6	8.6	8.6
AN	8.3	8.3	8.3	8.3	8.3
W	8.2	8.2	8.2	8.2	8.2
All	8.5	8.5	8.5	8.5	8.5

H1a2.6.12 Water Budget Area 10 (Agricultural)

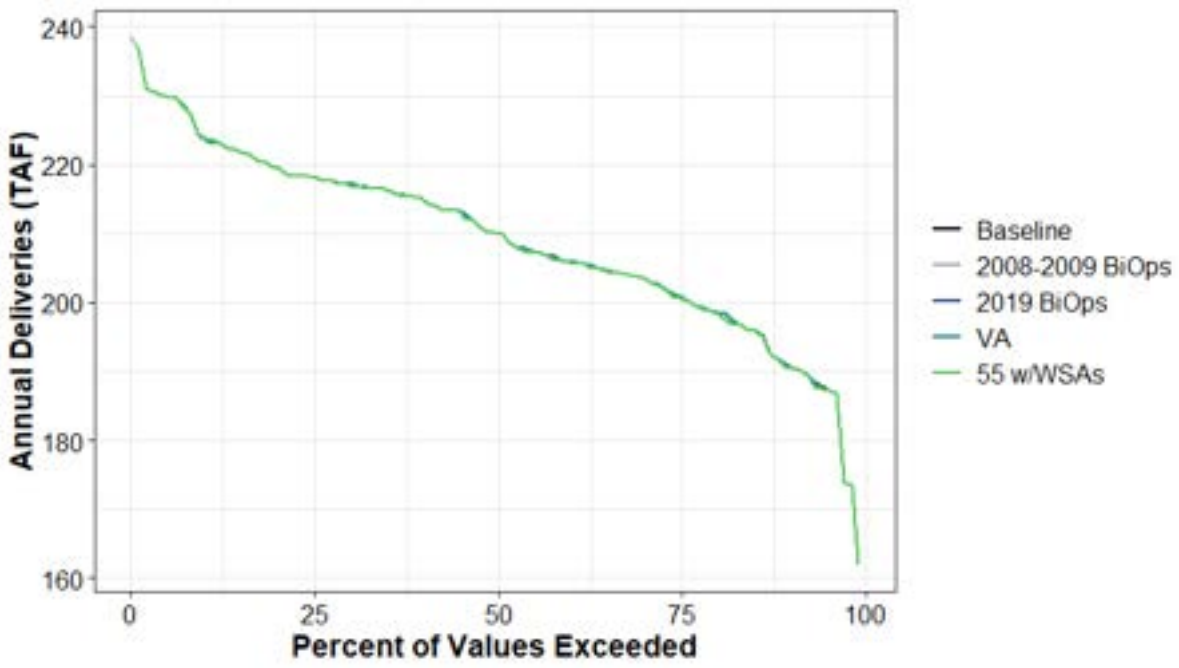

Figure H1a2-172. Total Water Supplied to Water Budget Area 10 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-348. Total Water Supplied to Water Budget Area 10 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	239	239	239	239	239
10%	224	224	224	224	224
20%	220	220	220	220	220
30%	217	217	217	217	217
40%	215	215	215	215	215
50%	210	210	210	210	210
60%	206	206	206	206	206
70%	204	204	204	204	204
80%	199	199	199	199	199
90%	191	191	191	191	191
100%	162	162	162	162	162
Mean	209	209	209	209	209

Table H1a2-349. Total Water Supplied to Water Budget Area 10 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	220	220	220	220	220
D	214	214	214	214	214
BN	210	210	210	210	210
AN	203	203	203	203	202
W	202	202	202	202	202
All	209	209	209	209	209

H1a2.6.13 Water Budget Area 11 (Agricultural)

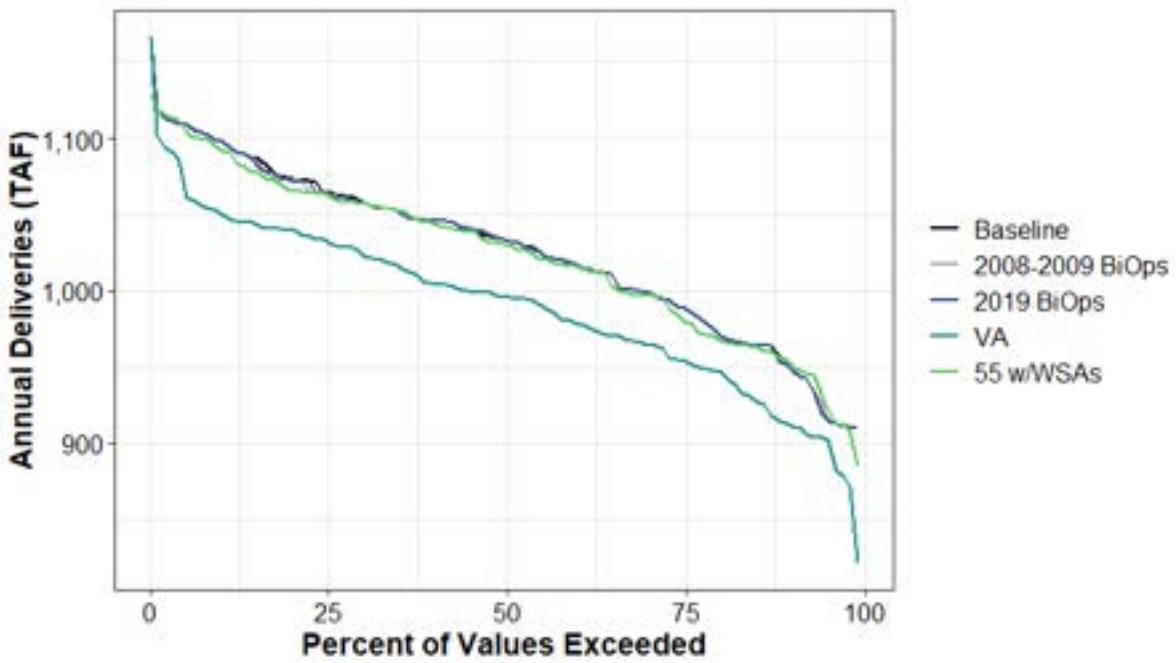

Figure H1a2-173. Total Water Supplied to Water Budget Area 11 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-350. Total Water Supplied to Water Budget Area 11 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,167	1,167	1,167	1,167	1,129
10%	1,098	1,098	1,098	1,051	1,093
20%	1,074	1,072	1,073	1,040	1,066
30%	1,059	1,057	1,057	1,024	1,058
40%	1,046	1,046	1,046	1,005	1,044
50%	1,034	1,033	1,034	996	1,030
60%	1,018	1,018	1,018	979	1,016
70%	999	999	999	965	997
80%	974	974	974	947	969
90%	953	953	951	913	954
100%	910	910	910	821	885
Mean	1,027	1,027	1,026	991	1,024

Table H1a2-351. Total Water Supplied to Water Budget Area 11 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	1,048	1,046	1,046	1,048	1,032
D	1,054	1,054	1,054	983	1,056
BN	1,042	1,043	1,042	977	1,045
AN	1,008	1,009	1,008	945	1,011
W	993	993	993	993	988
All	1,027	1,027	1,026	991	1,024

H1a2.6.14 Water Budget Area 11 (Refuge)

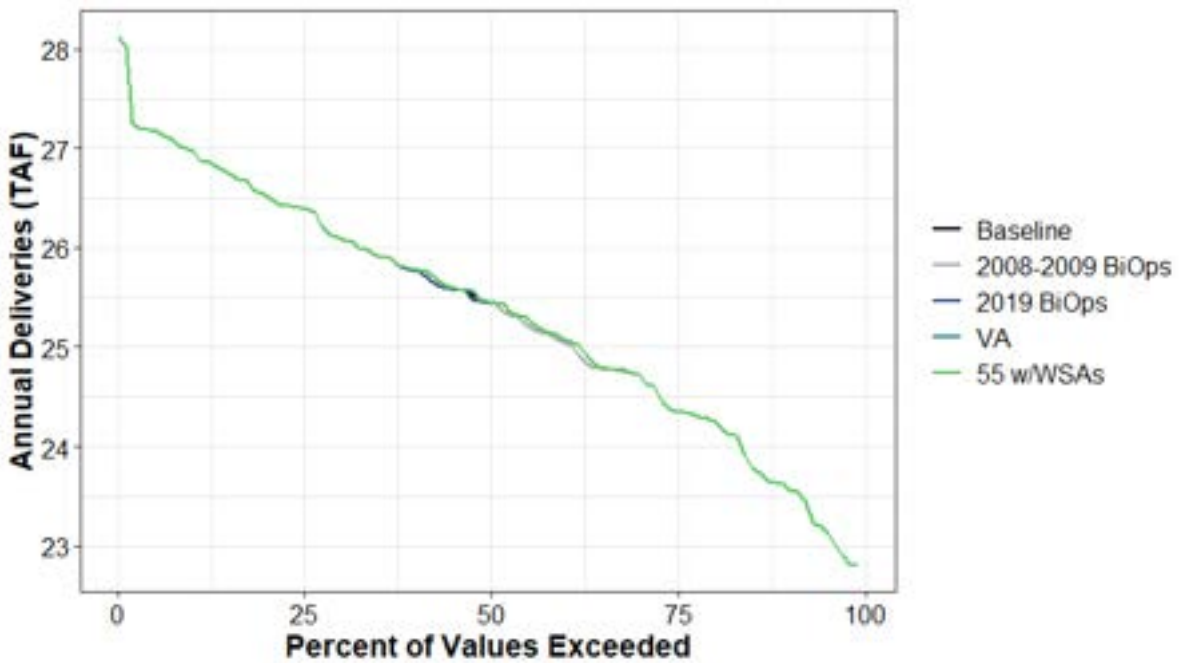

Figure H1a2-174. Total Water Supplied to Water Budget Area 11 (Refuge) Annual Percent Exceedance Plot.

Table H1a2-352. Total Water Supplied to Water Budget Area 11 (Refuge) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	28.1	28.1	28.1	28.1	28.1
10%	27	27	27	27	27
20%	26.5	26.5	26.5	26.5	26.5
30%	26.1	26.1	26.1	26.1	26.1
40%	25.8	25.8	25.8	25.8	25.8
50%	25.5	25.4	25.4	25.5	25.5
60%	25.1	25.1	25.1	25.1	25.1
70%	24.7	24.7	24.7	24.7	24.7
80%	24.3	24.3	24.3	24.3	24.3
90%	23.6	23.6	23.6	23.6	23.6
100%	22.8	22.8	22.8	22.8	22.8
Mean	25.4	25.4	25.4	25.4	25.4

Table H1a2-353. Total Water Supplied to Water Budget Area 11 (Refuge) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	26.6	26.6	26.6	26.6	26.6
D	25.8	25.8	25.8	25.8	25.8
BN	25.6	25.6	25.6	25.6	25.6
AN	24.9	24.9	24.9	24.9	24.9
W	24.4	24.4	24.4	24.4	24.4
All	25.4	25.4	25.4	25.4	25.4

H1a2.6.15 Water Budget Areas 12 and 13 (Agricultural)

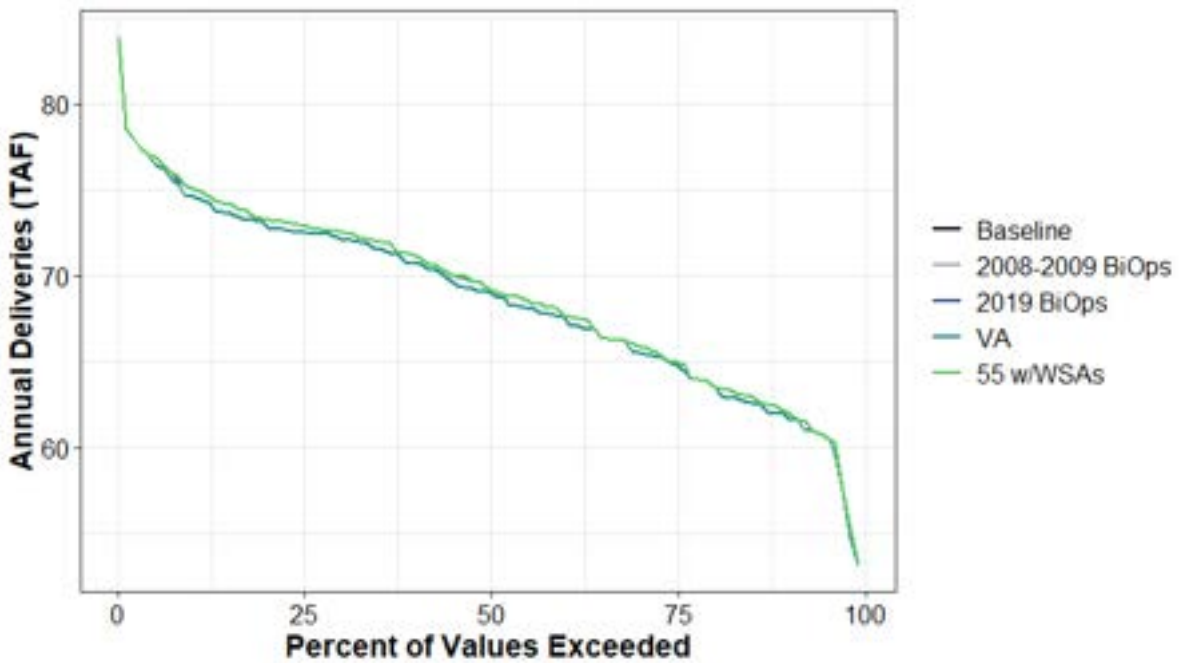

Figure H1a2-175. Total Water Supplied to Water Budget Areas 12 and 13 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-354. Total Water Supplied to Water Budget Areas 12 and 13 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	84	84	84	84	84
10%	75	75	75	75	75
20%	73	73	73	73	73
30%	73	73	73	72	73
40%	71	71	71	71	71
50%	69	69	69	69	69
60%	68	68	68	68	68
70%	66	66	66	66	66
80%	64	64	64	64	64
90%	62	62	62	62	62
100%	53	53	53	53	53
Mean	69	69	69	69	69

Table H1a2-355. Total Water Supplied to Water Budget Areas 12 and 13 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	75	75	75	75	75
D	70	70	70	70	70
BN	70	70	70	69	70
AN	67	67	67	66	67
W	65	65	65	65	65
All	69	69	69	69	69

H1a2.6.16 Water Budget Areas 12 and 13 (Urban)

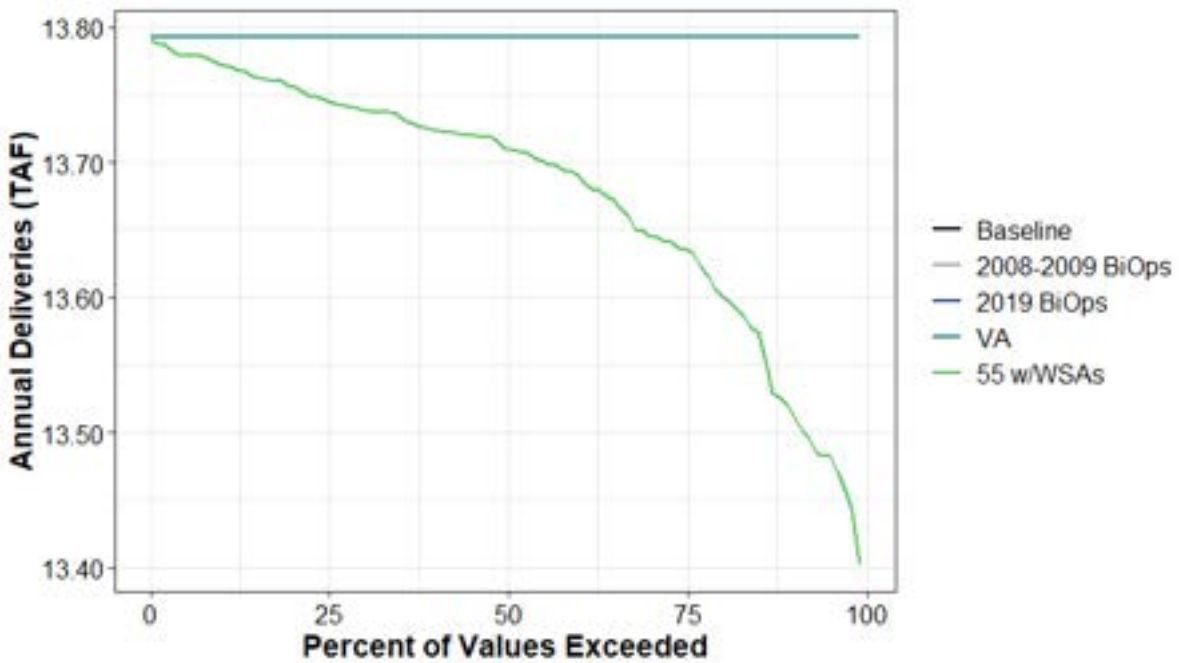

Figure H1a2-176. Total Water Supplied to Water Budget Areas 12 and 13 (Urban) Annual Percent Exceedance Plot.

Table H1a2-356. Total Water Supplied to Water Budget Areas 12 and 13 (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	13.8	13.8	13.8	13.8	13.8
10%	13.8	13.8	13.8	13.8	13.8
20%	13.8	13.8	13.8	13.8	13.8
30%	13.8	13.8	13.8	13.8	13.7
40%	13.8	13.8	13.8	13.8	13.7
50%	13.8	13.8	13.8	13.8	13.7
60%	13.8	13.8	13.8	13.8	13.7
70%	13.8	13.8	13.8	13.8	13.6
80%	13.8	13.8	13.8	13.8	13.6
90%	13.8	13.8	13.8	13.8	13.5
100%	13.8	13.8	13.8	13.8	13.4
Mean	13.8	13.8	13.8	13.8	13.7

Table H1a2-357. Total Water Supplied to Water Budget Areas 12 and 13 (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	13.8	13.8	13.8	13.8	13.7
D	13.8	13.8	13.8	13.8	13.6
BN	13.8	13.8	13.8	13.8	13.7
AN	13.8	13.8	13.8	13.8	13.7
W	13.8	13.8	13.8	13.8	13.7
All	13.8	13.8	13.8	13.8	13.7

H1a2.6.17 Water Budget Areas 14 and 15N (Agricultural)

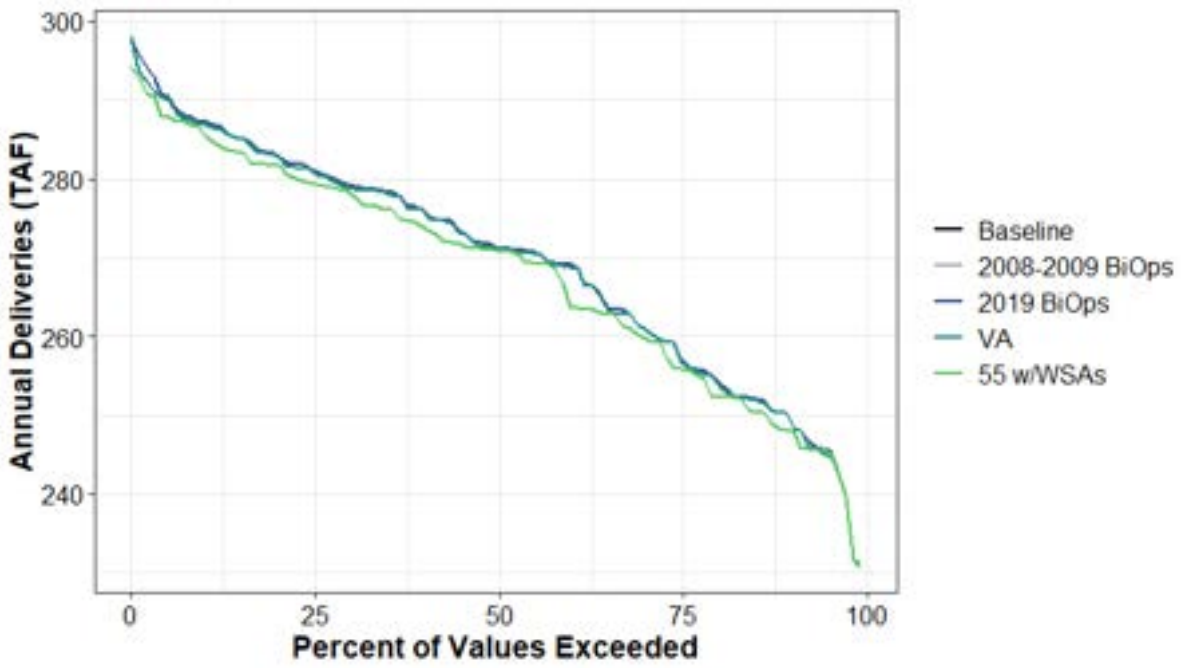

Figure H1a2-177. Total Water Supplied to Water Budget Areas 14 and 15N (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-358. Total Water Supplied to Water Budget Areas 14 and 15N (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	298	298	298	298	294
10%	287	287	287	287	286
20%	283	283	283	283	282
30%	279	279	279	279	278
40%	276	276	276	276	274
50%	271	271	271	271	271
60%	269	269	269	269	264
70%	261	261	261	261	260
80%	255	255	255	254	252
90%	250	250	250	250	248
100%	231	231	231	231	231
Mean	270	270	270	269	268

Table H1a2-359. Total Water Supplied to Water Budget Areas 14 and 15N (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	280	280	280	280	272
D	277	277	277	277	276
BN	274	274	274	273	274
AN	265	265	265	264	264
W	258	258	258	258	258
All	270	270	270	269	268

H1a2.6.18 Water Budget Areas 14 and 15N (Urban)

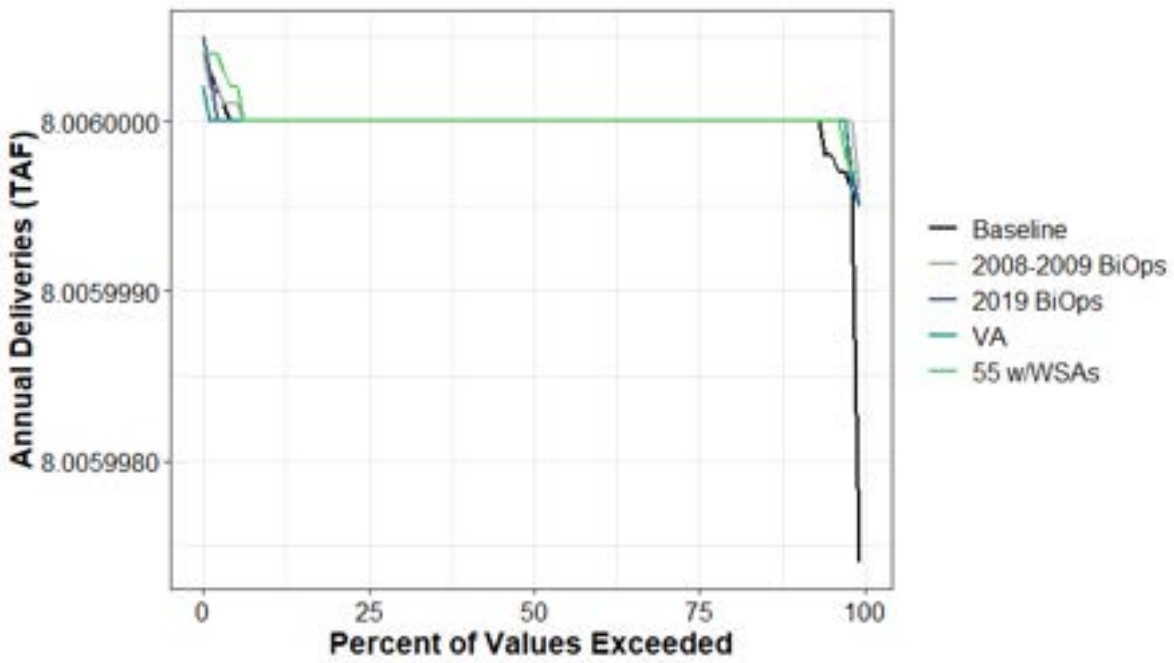

Figure H1a2-178. Total Water Supplied to Water Budget Areas 14 and 15N (Urban) Annual Percent Exceedance Plot.

Table H1a2-360. Total Water Supplied to Water Budget Areas 14 and 15N (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	8	8	8	8	8
10%	8	8	8	8	8
20%	8	8	8	8	8
30%	8	8	8	8	8
40%	8	8	8	8	8
50%	8	8	8	8	8
60%	8	8	8	8	8
70%	8	8	8	8	8
80%	8	8	8	8	8
90%	8	8	8	8	8
100%	8	8	8	8	8
Mean	8	8	8	8	8

Table H1a2-361. Total Water Supplied to Water Budget Areas 14 and 15N (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	8	8	8	8	8
D	8	8	8	8	8
BN	8	8	8	8	8
AN	8	8	8	8	8
W	8	8	8	8	8
All	8	8	8	8	8

H1a2.6.19 Water Budget Area 15S (Agricultural)

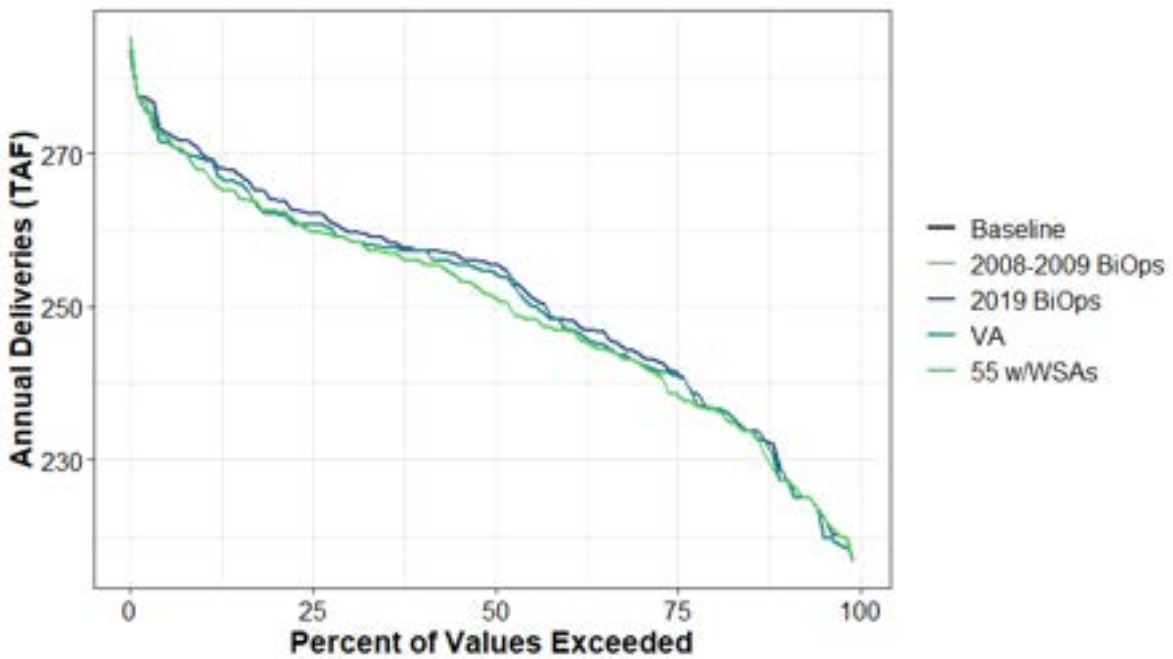

Figure H1a2-179. Total Water Supplied to Water Budget Area 15S (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-362. Total Water Supplied to Water Budget Area 15S (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	285	285	285	283	285
10%	270	270	270	269	268
20%	264	264	264	262	263
30%	260	260	260	259	259
40%	257	257	257	257	256
50%	256	256	256	255	252
60%	248	248	248	247	247
70%	244	244	244	243	243
80%	237	237	237	237	237
90%	228	228	228	227	227
100%	217	217	217	217	217
Mean	252	252	251	251	250

Table H1a2-363. Total Water Supplied to Water Budget Area 15S (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	263	263	263	263	253
D	259	259	259	257	258
BN	254	254	254	252	254
AN	247	247	247	245	247
W	240	240	240	240	240
All	252	252	251	251	250

H1a2.6.20 Water Budget Area 16 (Agricultural)

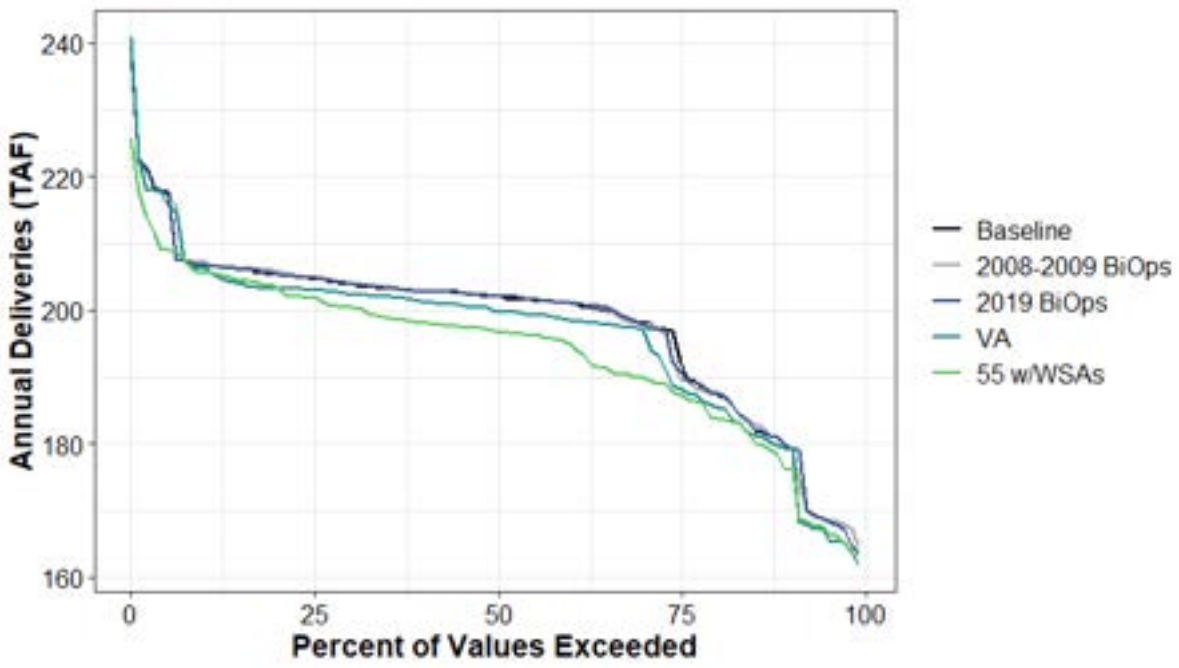

Figure H1a2-180. Total Water Supplied to Water Budget Area 16 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-364. Total Water Supplied to Water Budget Area 16 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	239	239	239	241	226
10%	207	207	207	206	206
20%	205	206	205	203	203
30%	204	204	204	203	200
40%	203	203	203	201	198
50%	202	202	202	200	197
60%	201	201	201	199	195
70%	198	198	198	197	190
80%	187	187	188	186	184
90%	180	180	180	179	176
100%	164	165	164	162	163
Mean	198	198	198	196	194

Table H1a2-365. Total Water Supplied to Water Budget Area 16 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	209	209	209	209	202
D	202	202	202	199	196
BN	198	198	198	195	195
AN	194	194	195	191	192
W	191	191	191	191	188
All	198	198	198	196	194

H1a2.6.21 Water Budget Area 16 (Urban)

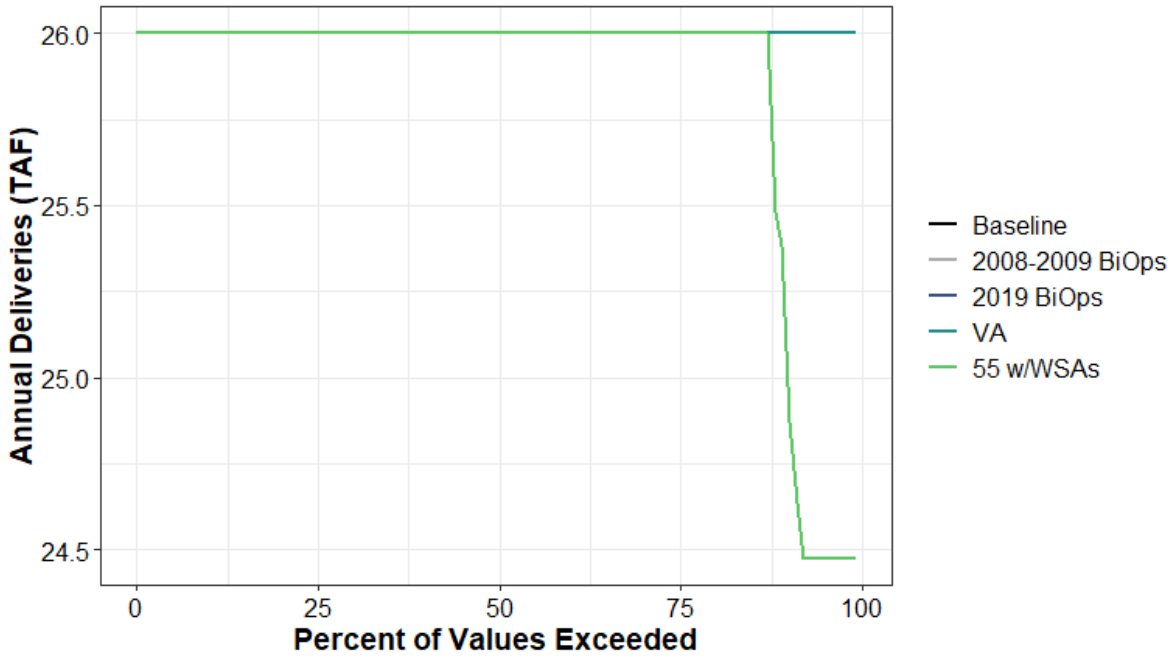

Figure H1a2-181. Total Water Supplied to Water Budget Area 16 (Urban) Annual Percent Exceedance Plot.

Table H1a2-366. Total Water Supplied to Water Budget Area 16 (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	26	26	26	26	26
10%	26	26	26	26	26
20%	26	26	26	26	26
30%	26	26	26	26	26
40%	26	26	26	26	26
50%	26	26	26	26	26
60%	26	26	26	26	26
70%	26	26	26	26	26
80%	26	26	26	26	26
90%	26	26	26	26	25.3
100%	26	26	26	26	24.5
Mean	26	26	26	26	25.8

Table H1a2-367. Total Water Supplied to Water Budget Area 16 (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	26	26	26	26	25.6
D	26	26	26	26	25.6
BN	26	26	26	26	26
AN	26	26	26	26	26
W	26	26	26	26	25.9
All	26	26	26	26	25.8

H1a2.6.22 Water Budget Area 17 (Agricultural)

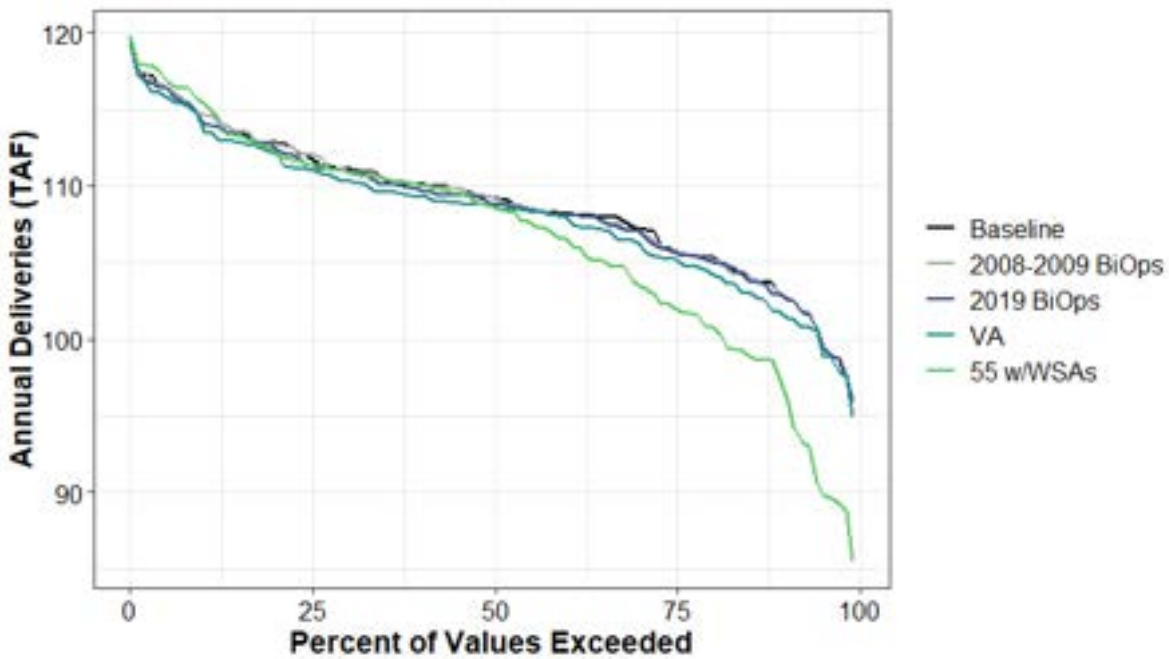

Figure H1a2-182. Total Water Supplied to Water Budget Area 17 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-368. Total Water Supplied to Water Budget Area 17 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	119	119	119	120	120
10%	115	115	114	114	115
20%	113	113	113	112	112
30%	111	111	111	110	111
40%	110	110	110	109	110
50%	109	109	109	109	109
60%	108	108	108	108	107
70%	107	107	107	106	104
80%	105	105	105	104	101
90%	103	103	103	102	97
100%	96	96	96	95	85
Mean	109	109	109	108	107

Table H1a2-369. Total Water Supplied to Water Budget Area 17 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	112	112	112	112	112
D	110	110	109	109	110
BN	110	110	109	108	109
AN	107	107	107	105	105
W	107	107	107	107	101
All	109	109	109	108	107

H1a2.6.23 Water Budget Area 17 (Refuge)

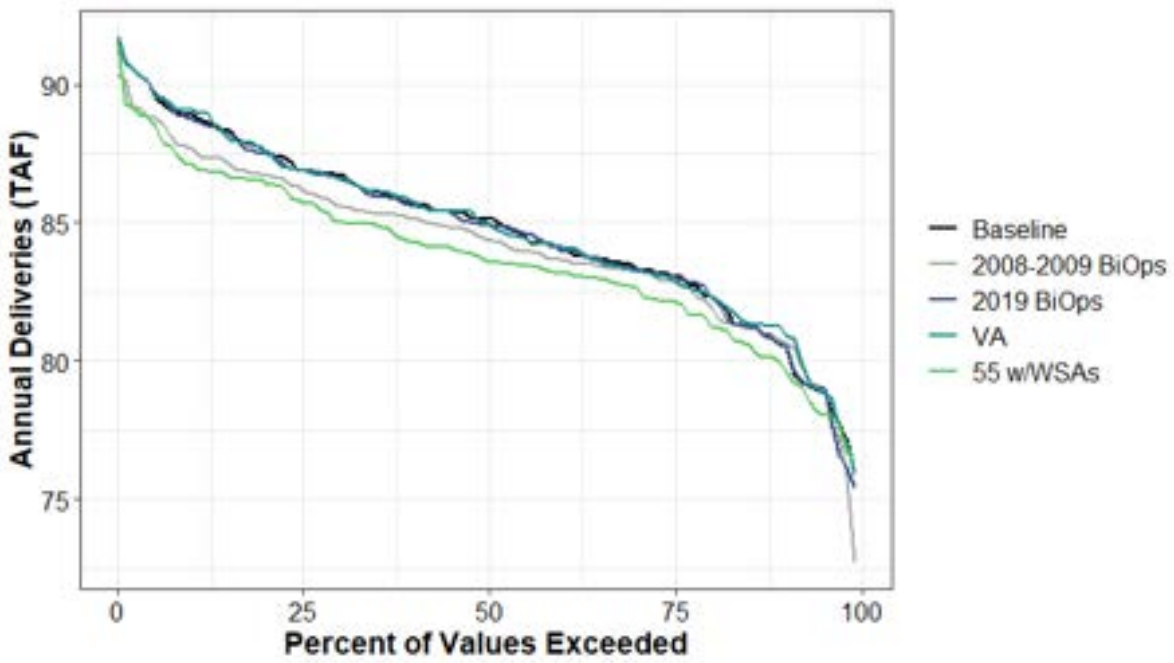

Figure H1a2-183. Total Water Supplied to Water Budget Area 17 (Refuge) Annual Percent Exceedance Plot.

Table H1a2-370. Total Water Supplied to Water Budget Area 17 (Refuge) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	92	90	92	92	91
10%	89	88	89	89	87
20%	88	87	87	88	86
30%	87	86	87	87	85
40%	86	85	86	86	84
50%	85	84	85	85	84
60%	84	84	84	84	83
70%	83	83	83	83	83
80%	82	82	83	82	81
90%	81	81	81	81	80
100%	76	73	75	76	76
Mean	85	84	85	85	84

Table H1a2-371. Total Water Supplied to Water Budget Area 17 (Refuge) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	84	84	84	84	84
D	85	85	85	85	84
BN	85	84	85	85	84
AN	84	83	84	84	83
W	85	85	85	85	84
All	85	84	85	85	84

H1a2.6.24 Water Budget Areas 18 and 19 (Agricultural)

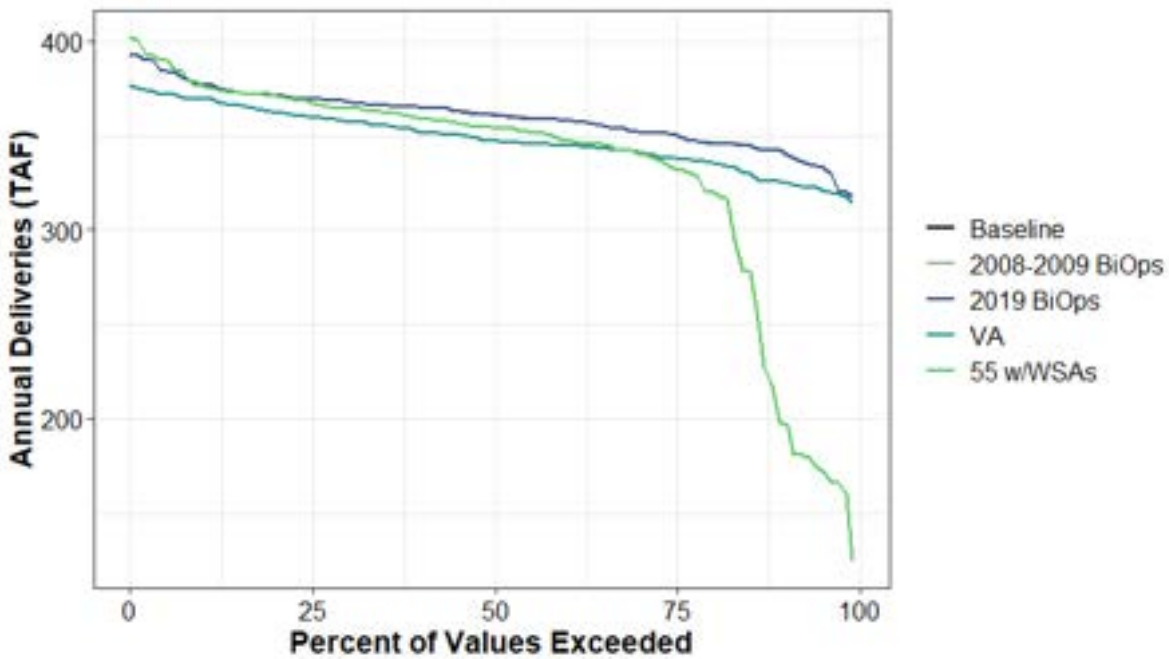

Figure H1a2-184. Total Water Supplied to Water Budget Areas 18 and 19 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-372. Total Water Supplied to Water Budget Areas 18 and 19 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	393	393	393	377	403
10%	377	377	377	369	377
20%	371	371	371	362	371
30%	368	368	368	358	365
40%	365	365	365	352	359
50%	361	361	361	347	354
60%	358	358	358	345	347
70%	352	352	352	342	341
80%	346	346	346	336	320
90%	341	341	341	325	198
100%	318	318	318	315	124
Mean	360	360	360	348	332

Table H1a2-373. Total Water Supplied to Water Budget Areas 18 and 19 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	364	364	364	364	206
D	367	367	367	345	353
BN	366	366	366	345	368
AN	356	356	355	334	357
W	350	350	350	350	350
All	360	360	360	348	332

H1a2.6.25 Water Budget Areas 20 and 25 (Agricultural)

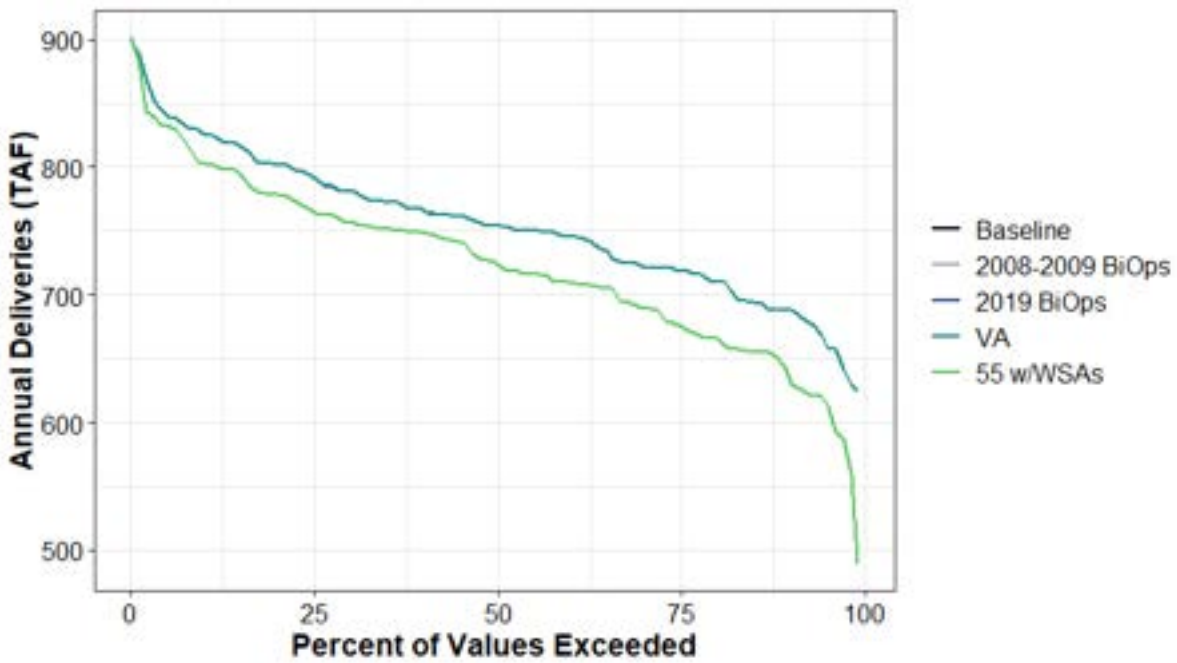

Figure H1a2-185. Total Water Supplied to Water Budget Areas 20 and 25 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-374. Total Water Supplied to Water Budget Areas 20 and 25 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	900	900	900	900	902
10%	826	826	826	826	803
20%	802	802	802	802	778
30%	781	781	781	781	757
40%	766	766	766	766	749
50%	754	754	754	754	726
60%	746	746	746	746	710
70%	723	723	723	723	690
80%	711	711	711	711	666
90%	688	688	688	688	641
100%	625	625	625	625	489
Mean	755	755	755	755	724

Table H1a2-375. Total Water Supplied to Water Budget Areas 20 and 25 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	794	794	794	794	760
D	777	777	777	777	740
BN	768	768	768	768	710
AN	738	738	738	738	715
W	718	718	718	718	704
All	755	755	755	755	724

H1a2.6.26 Water Budget Areas 20 and 25 (Urban)

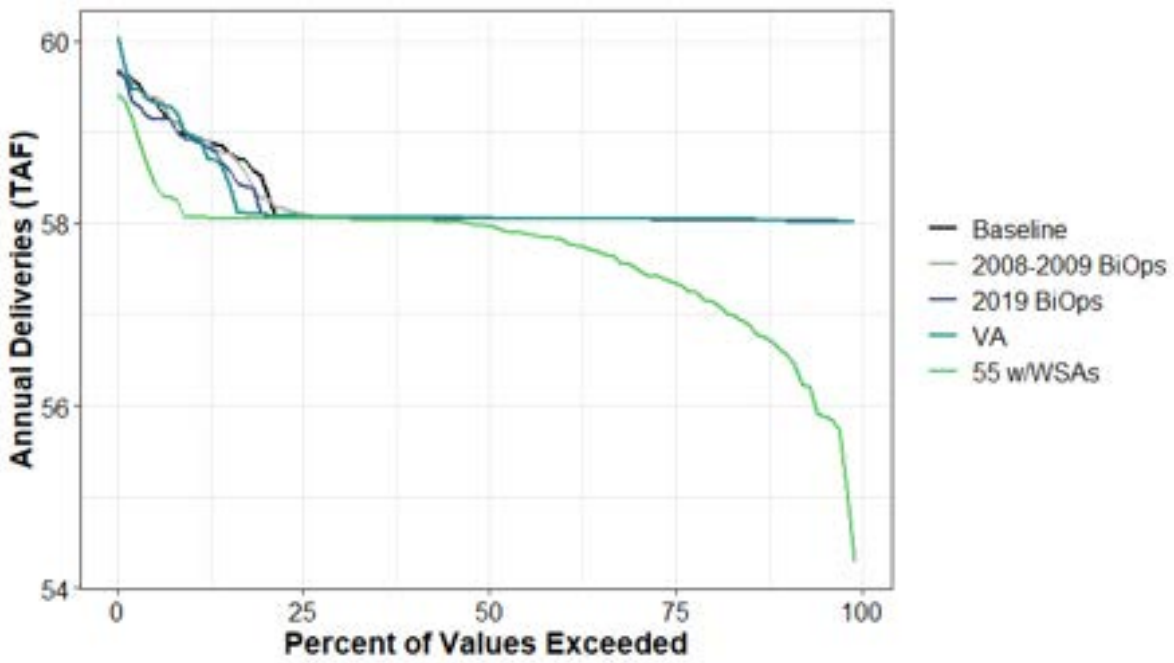

Figure H1a2-186. Total Water Supplied to Water Budget Areas 20 and 25 (Urban) Annual Percent Exceedance Plot.

Table H1a2-376. Total Water Supplied to Water Budget Areas 20 and 25 (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	60	60	60	60	59
10%	59	59	59	59	58
20%	58	58	58	58	58
30%	58	58	58	58	58
40%	58	58	58	58	58
50%	58	58	58	58	58
60%	58	58	58	58	58
70%	58	58	58	58	58
80%	58	58	58	58	57
90%	58	58	58	58	57
100%	58	58	58	58	54
Mean	58	58	58	58	58

Table H1a2-377. Total Water Supplied to Water Budget Areas 20 and 25 (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	59	59	59	59	58
D	58	58	58	58	57
BN	58	58	58	58	57
AN	58	58	58	58	58
W	58	58	58	58	58
All	58	58	58	58	58

H1a2.6.27 Water Budget Area 21 (Agricultural)

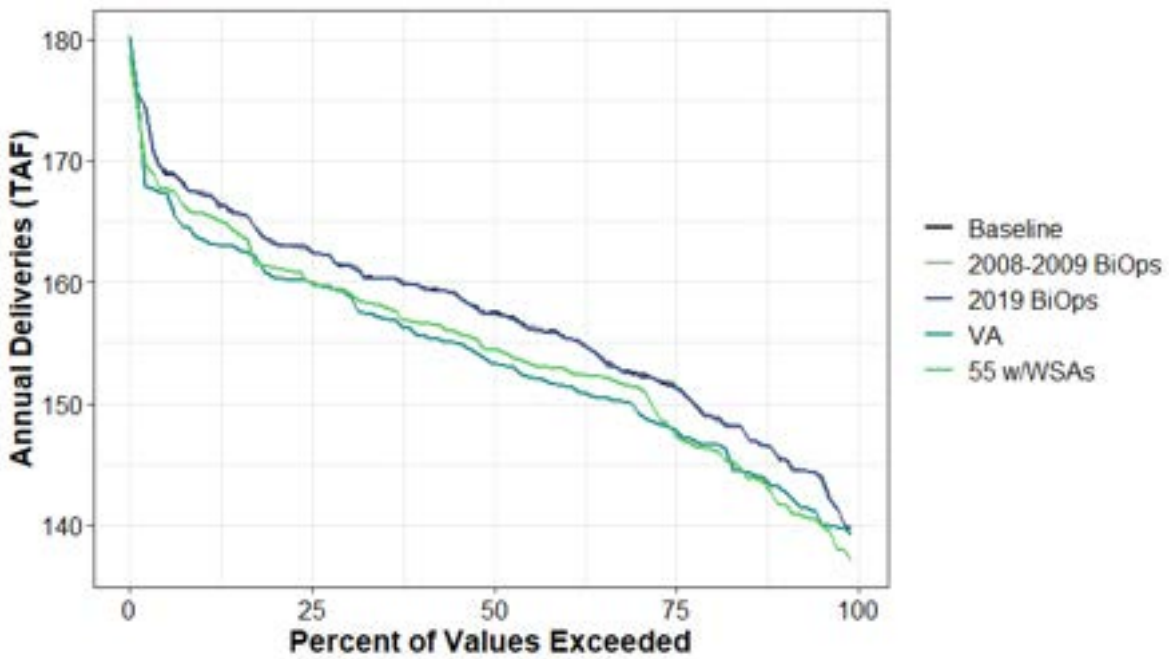

Figure H1a2-187. Total Water Supplied to Water Budget Area 21 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-378. Total Water Supplied to Water Budget Area 21 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	180	180	180	180	179
10%	167	168	167	164	166
20%	163	163	163	160	161
30%	161	161	161	159	159
40%	160	160	160	156	157
50%	157	157	157	153	154
60%	156	156	156	151	153
70%	153	152	152	150	151
80%	149	149	149	147	146
90%	145	146	146	143	142
100%	140	140	140	139	137
Mean	157	157	157	154	154

Table H1a2-379. Total Water Supplied to Water Budget Area 21 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	164	164	164	164	162
D	160	160	160	154	157
BN	158	158	158	152	156
AN	155	155	155	149	154
W	151	151	151	151	148
All	157	157	157	154	154

H1a2.6.28 Water Budget Area 21 (Urban)

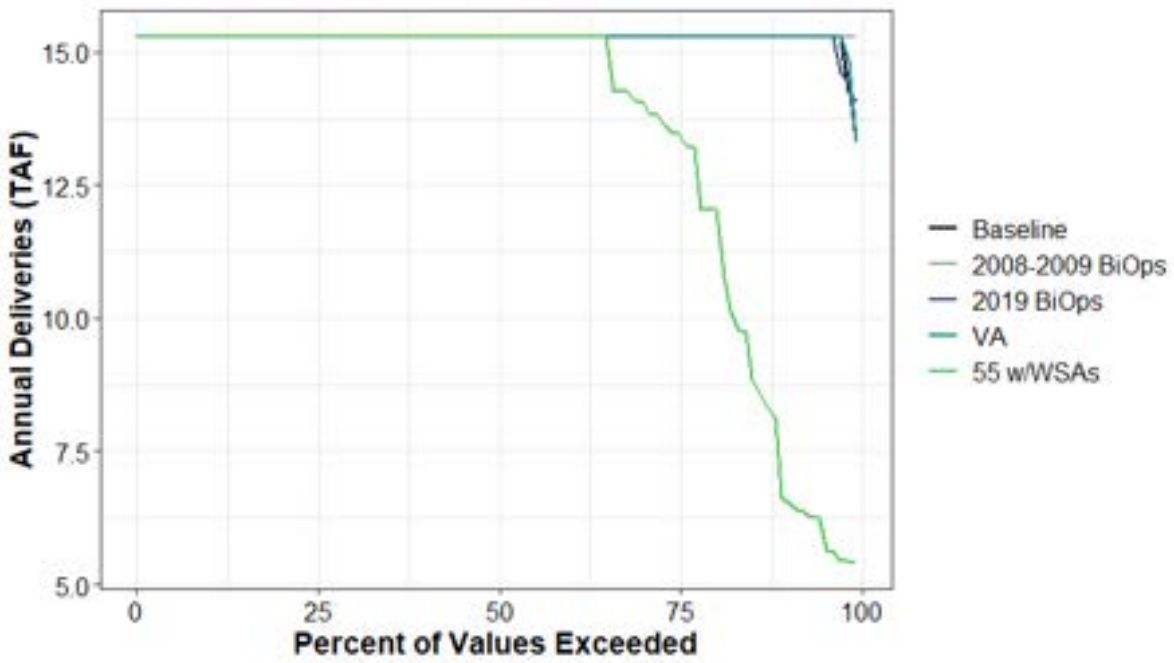

Figure H1a2-188. Total Water Supplied to Water Budget Area 21 (Urban) Annual Percent Exceedance Plot.

Table H1a2-380. Total Water Supplied to Water Budget Area 21 (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	15.3	15.3	15.3	15.3	15.3
10%	15.3	15.3	15.3	15.3	15.3
20%	15.3	15.3	15.3	15.3	15.3
30%	15.3	15.3	15.3	15.3	15.3
40%	15.3	15.3	15.3	15.3	15.3
50%	15.3	15.3	15.3	15.3	15.3
60%	15.3	15.3	15.3	15.3	15.3
70%	15.3	15.3	15.3	15.3	14.1
80%	15.3	15.3	15.3	15.3	12
90%	15.3	15.3	15.3	15.3	6.6
100%	14.1	15.3	13.3	13.3	5.4
Mean	15.3	15.3	15.3	15.3	13.5

Table H1a2-381. Total Water Supplied to Water Budget Area 21 (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	15.3	15.3	15.2	15.2	7.3
D	15.3	15.3	15.3	15.3	13.4
BN	15.2	15.3	15.2	15.3	15
AN	15.2	15.3	15.2	15.3	15
W	15.3	15.3	15.3	15.3	15.3
All	15.3	15.3	15.3	15.3	13.5

H1a2.6.29 Water Budget Area 22 (Agricultural)

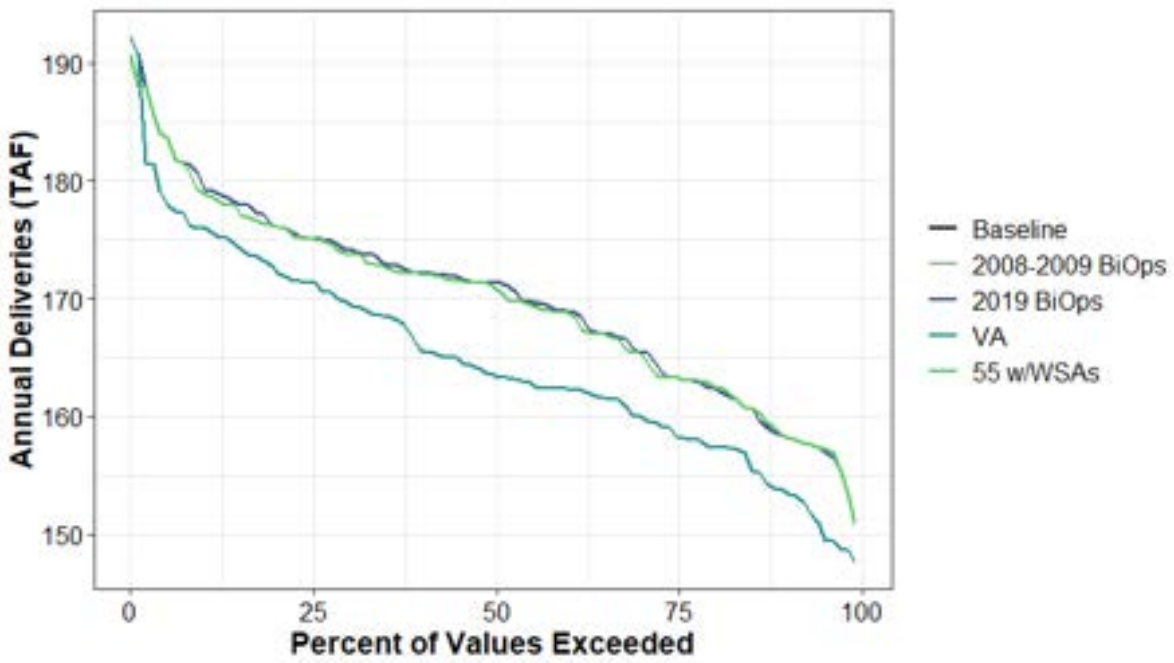

Figure H1a2-189. Total Water Supplied to Water Budget Area 22 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-382. Total Water Supplied to Water Budget Area 22 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	192	192	192	192	191
10%	180	180	180	176	179
20%	176	176	176	172	176
30%	174	174	174	170	174
40%	172	172	172	166	172
50%	171	171	171	164	171
60%	169	169	169	162	169
70%	166	166	166	160	165
80%	162	162	162	157	163
90%	158	158	158	154	158
100%	151	151	151	148	151
Mean	170	170	170	165	170

Table H1a2-383. Total Water Supplied to Water Budget Area 22 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	178	178	178	178	176
D	173	173	173	163	173
BN	171	171	171	162	172
AN	167	167	167	157	167
W	164	164	164	164	164
All	170	170	170	165	170

H1a2.6.30 Water Budget Area 23 (Agricultural)

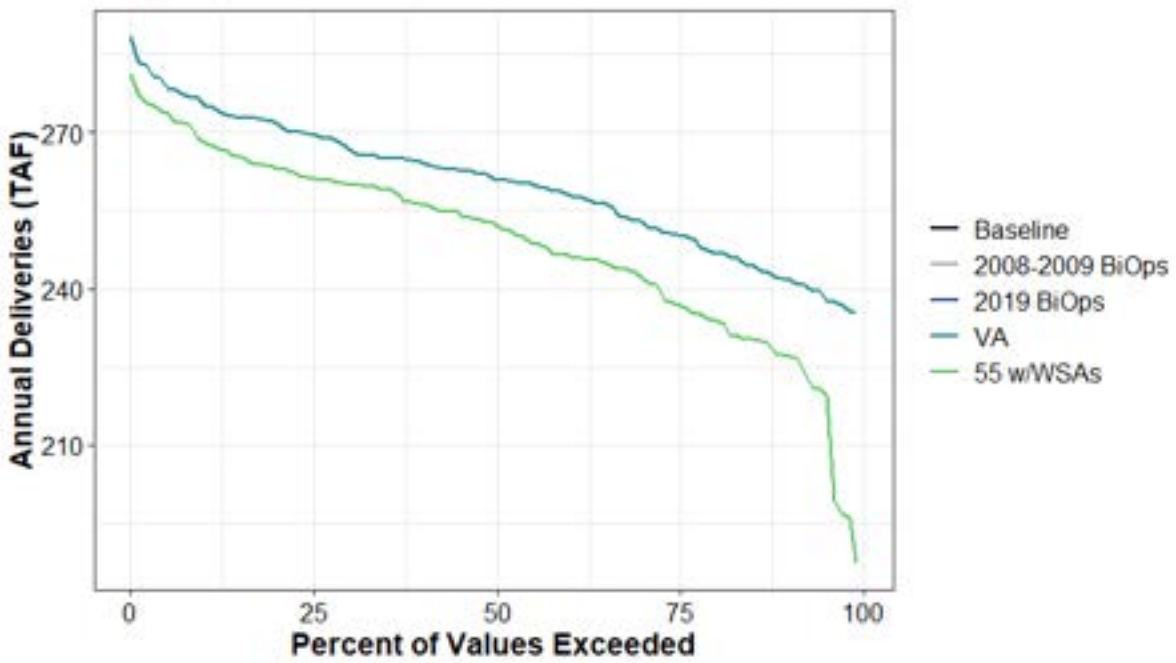

Figure H1a2-190. Total Water Supplied to Water Budget Area 23 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-384. Total Water Supplied to Water Budget Area 23 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	288	288	288	288	281
10%	275	275	275	275	268
20%	272	272	272	272	263
30%	267	267	267	267	260
40%	264	264	264	264	256
50%	261	261	261	261	253
60%	258	258	258	258	246
70%	253	253	253	253	243
80%	247	247	247	247	234
90%	242	242	242	242	227
100%	235	235	235	235	187
Mean	260	260	260	260	249

Table H1a2-385. Total Water Supplied to Water Budget Area 23 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	270	270	270	270	259
D	265	265	265	265	255
BN	263	263	263	263	250
AN	256	256	256	256	241
W	251	251	251	251	241
All	260	260	260	260	249

H1a2.6.31 Water Budget Area 24 (Agricultural)

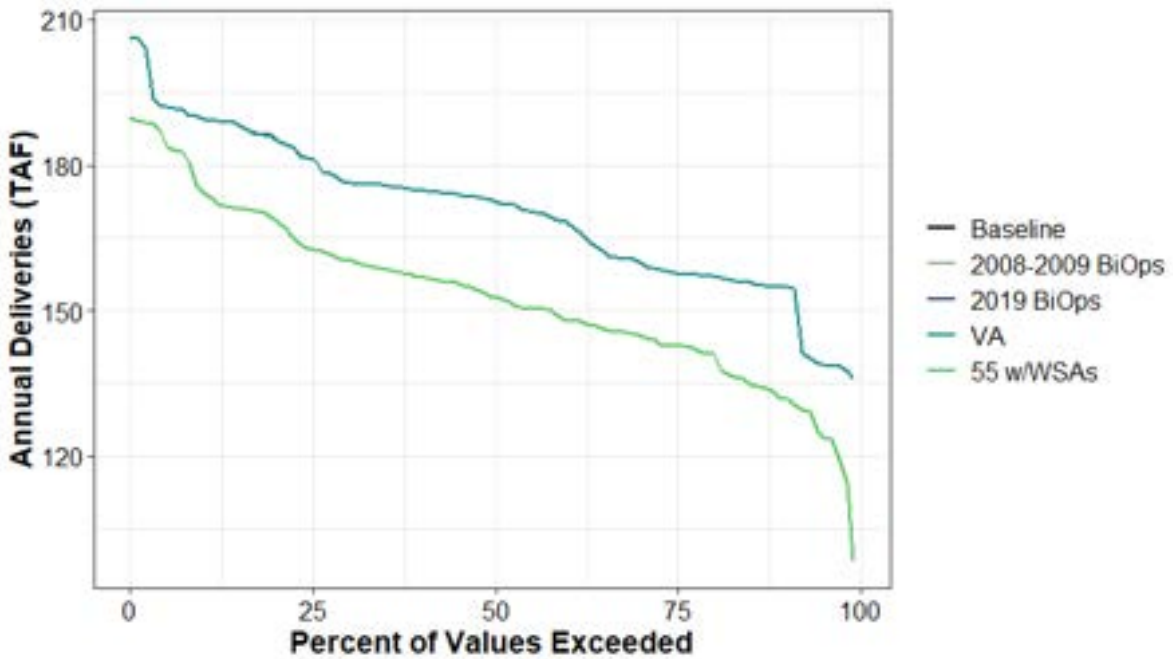

Figure H1a2-191. Total Water Supplied to Water Budget Area 24 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-386. Total Water Supplied to Water Budget Area 24 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	207	207	207	207	190
10%	190	190	190	190	174
20%	185	185	185	185	169
30%	176	176	176	176	160
40%	175	175	175	175	157
50%	173	173	173	173	153
60%	168	168	168	168	148
70%	160	160	160	160	145
80%	157	157	157	157	141
90%	155	155	155	155	132
100%	136	136	136	136	98
Mean	170	170	170	170	153

Table H1a2-387. Total Water Supplied to Water Budget Area 24 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	181	181	181	181	158
D	177	177	177	177	156
BN	173	173	173	173	153
AN	165	165	165	165	154
W	161	161	161	161	148
All	170	170	170	170	153

H1a2.6.32 Water Budget Area 24 (Urban)

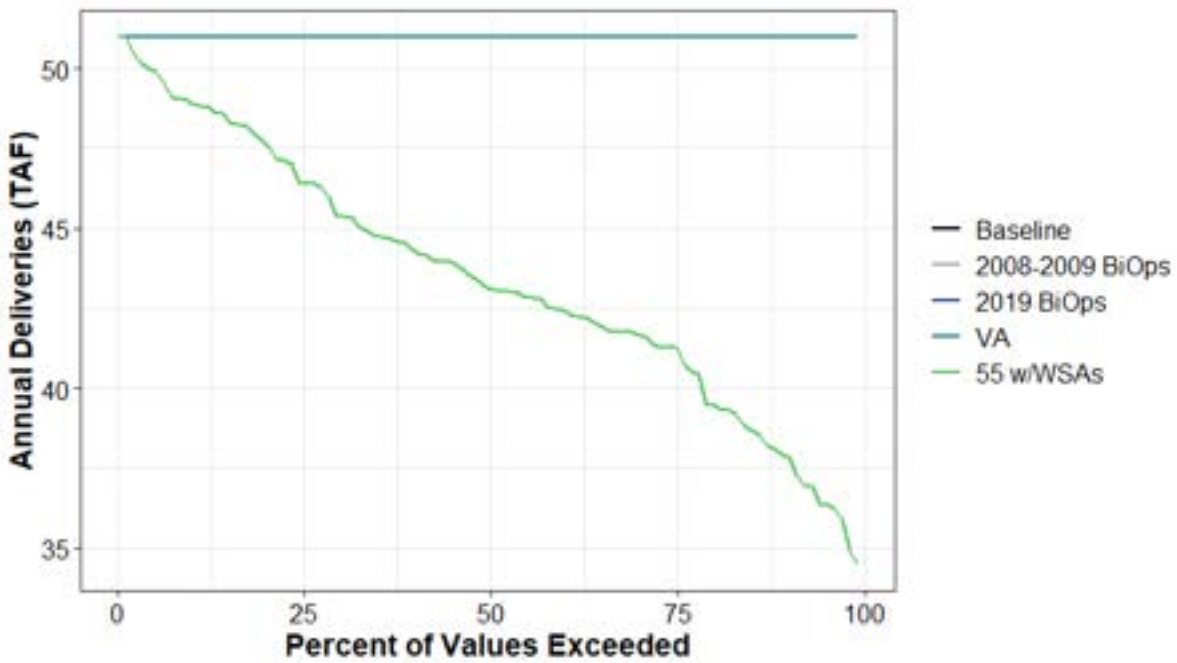

Figure H1a2-192. Total Water Supplied to Water Budget Area 24 (Urban) Annual Percent Exceedance Plot.

Table H1a2-388. Total Water Supplied to Water Budget Area 24 (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	51	51	51	51	51
10%	51	51	51	51	49
20%	51	51	51	51	48
30%	51	51	51	51	45
40%	51	51	51	51	44
50%	51	51	51	51	43
60%	51	51	51	51	42
70%	51	51	51	51	42
80%	51	51	51	51	39
90%	51	51	51	51	38
100%	51	51	51	51	34
Mean	51	51	51	51	43

Table H1a2-389. Total Water Supplied to Water Budget Area 24 (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	51	51	51	51	40
D	51	51	51	51	42
BN	51	51	51	51	45
AN	51	51	51	51	45
W	51	51	51	51	45
All	51	51	51	51	43

H1a2.6.33 Water Budget Area 26 (Agricultural)

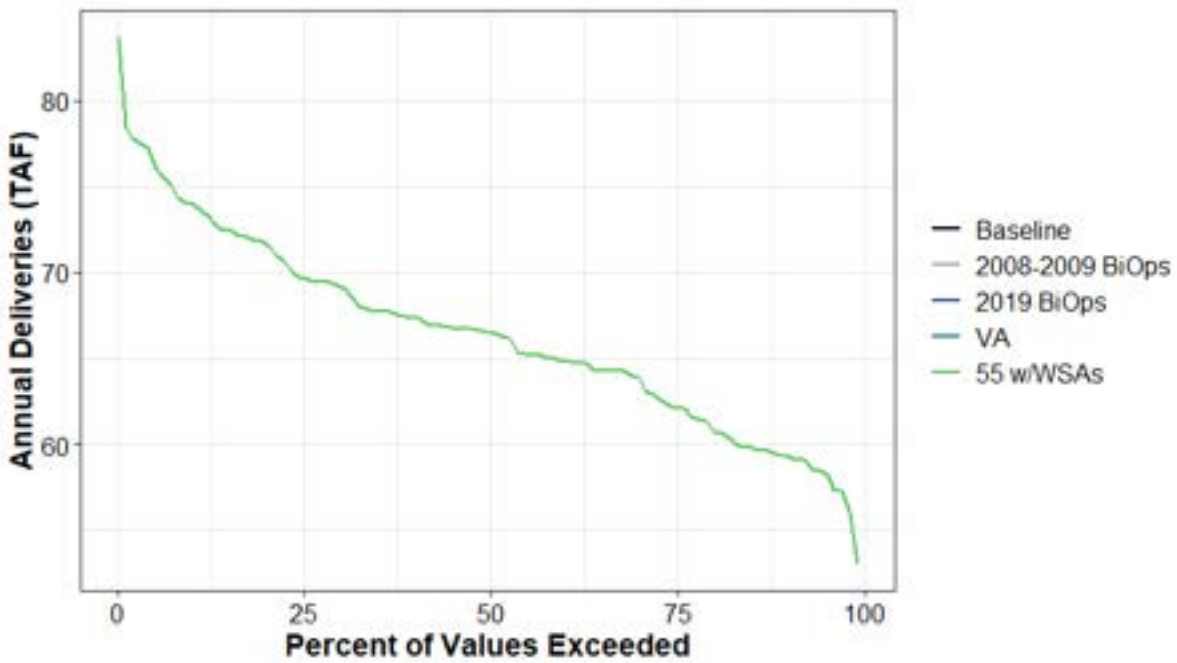

Figure H1a2-193. Total Water Supplied to Water Budget Area 26 (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-390. Total Water Supplied to Water Budget Area 26 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	84	84	84	84	84
10%	74	74	74	74	74
20%	72	72	72	72	72
30%	69	69	69	69	69
40%	67	67	67	67	67
50%	67	67	67	67	67
60%	65	65	65	65	65
70%	64	64	64	64	64
80%	61	61	61	61	61
90%	59	59	59	59	59
100%	53	53	53	53	53
Mean	66	66	66	66	66

Table H1a2-391. Total Water Supplied to Water Budget Area 26 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	73	73	73	73	73
D	68	68	68	68	68
BN	67	67	67	67	67
AN	65	65	65	65	65
W	63	63	63	63	63
All	66	66	66	66	66

H1a2.6.34 Water Budget Area 26 (Urban)

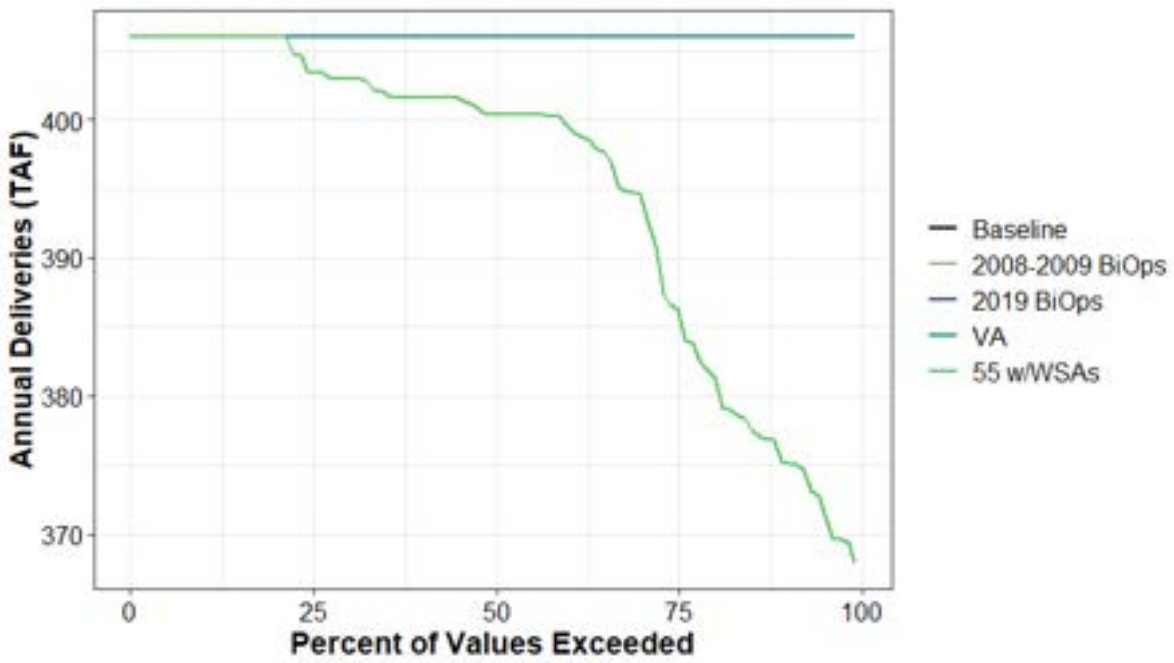

Figure H1a2-194. Total Water Supplied to Water Budget Area 26 (Urban) Annual Percent Exceedance Plot.

Table H1a2-392. Total Water Supplied to Water Budget Area 26 (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	406	406	406	406	406
10%	406	406	406	406	406
20%	406	406	406	406	406
30%	406	406	406	406	403
40%	406	406	406	406	402
50%	406	406	406	406	400
60%	406	406	406	406	400
70%	406	406	406	406	395
80%	406	406	406	406	382
90%	406	406	406	406	375
100%	406	406	406	406	368
Mean	406	406	406	406	395

Table H1a2-393. Total Water Supplied to Water Budget Area 26 (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	406	406	406	406	375
D	406	406	406	406	390
BN	406	406	406	406	401
AN	406	406	406	406	402
W	406	406	406	406	404
All	406	406	406	406	395

H1a2.6.35 Water Budget Area 50 (Agricultural)

The values in the figure and tables that follow summarize agricultural diversions to Delta islands as represented by the Delta Channel Depletions model.

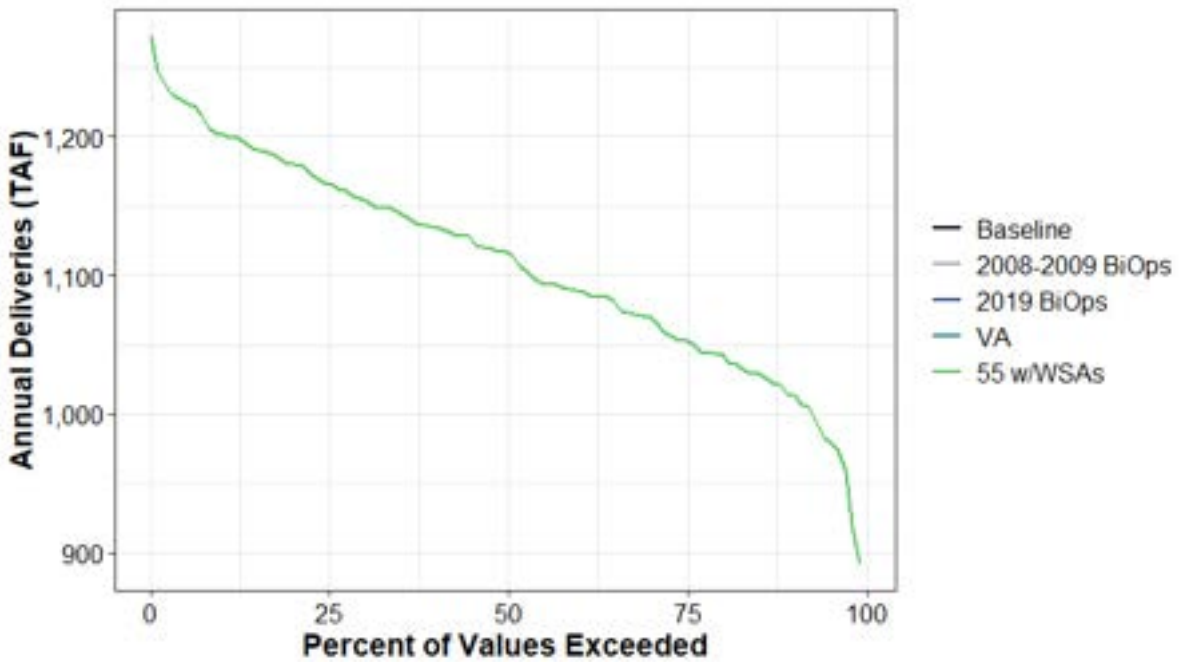

Figure H1a2-195. Surface Water Supplied to Water Budget Area 50 (Agricultural) Annual Percent Exceedance Plot. Includes agricultural diversions to Delta islands as represented by the Delta Channel Depletions model.

Table H1a2-394. Surface Water Supplied to Water Budget Area 50 (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,273	1,273	1,273	1,273	1,273
10%	1,202	1,202	1,202	1,202	1,202
20%	1,180	1,180	1,180	1,180	1,180
30%	1,154	1,154	1,154	1,154	1,154
40%	1,135	1,135	1,135	1,135	1,135
50%	1,117	1,117	1,117	1,117	1,117
60%	1,089	1,089	1,089	1,089	1,089
70%	1,070	1,070	1,070	1,070	1,070
80%	1,043	1,043	1,043	1,043	1,043
90%	1,013	1,013	1,013	1,013	1,013
100%	892	892	892	892	892
Mean	1,109	1,109	1,109	1,109	1,109

Table H1a2-395. Surface Water Supplied to Water Budget Area 50 (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	1,177	1,177	1,177	1,177	1,177
D	1,148	1,148	1,148	1,148	1,148
BN	1,129	1,129	1,129	1,129	1,129
AN	1,077	1,077	1,077	1,077	1,077
W	1,045	1,045	1,045	1,045	1,045
All	1,109	1,109	1,109	1,109	1,109

H1a2.6.36 Delta (Urban)

The values in the figure and tables that follow summarize diversions to the City of Antioch (demand site U_ANTOC_NU).

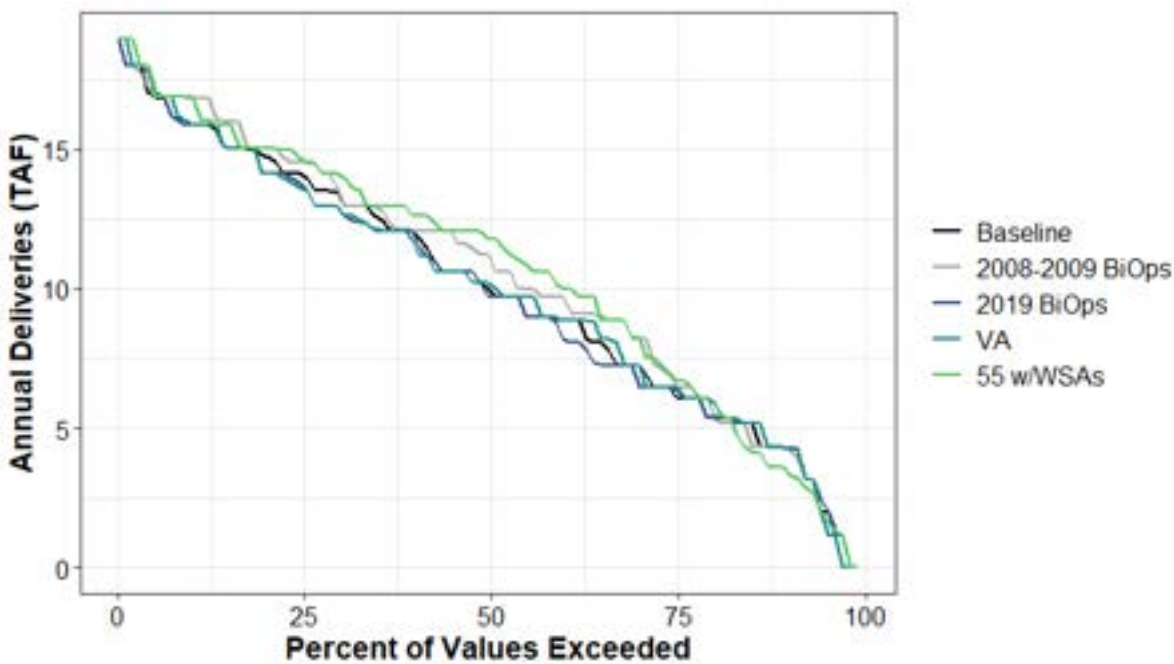

Figure H1a2-196. Surface Water Supplied to Delta (Urban) Annual Percent Exceedance Plot.

Table H1a2-396. Surface Water Supplied to Delta (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	19	19	19	19	19
10%	15.9	16.9	15.9	15.9	16.8
20%	14.8	15.1	14.2	14.2	15.1
30%	13.3	13.4	12.8	12.8	14.1
40%	12	12.1	11.9	11.7	12.6
50%	10	11.2	9.7	10.2	11.8
60%	8.9	9.7	8.3	8.9	10.1
70%	7.2	8.2	6.8	7.2	8.2
80%	5.4	5.3	5.4	6	5.8
90%	4.3	4.2	4.3	4.3	3.5
100%	0	0	0	0	0
Mean	10.1	10.5	9.9	10	10.7

Table H1a2-397. Surface Water Supplied to Delta (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	3.2	3	3.3	3	2.8
D	7	7.7	6.7	7.1	7.8
BN	9.7	10.3	9.8	10.1	11.1
AN	12.2	13.1	12.3	12	12.9
W	15.3	15.6	15	15.2	15.8
All	10.1	10.5	9.9	10	10.7

H1a2.6.37 Water Budget Area 60N (Agricultural)

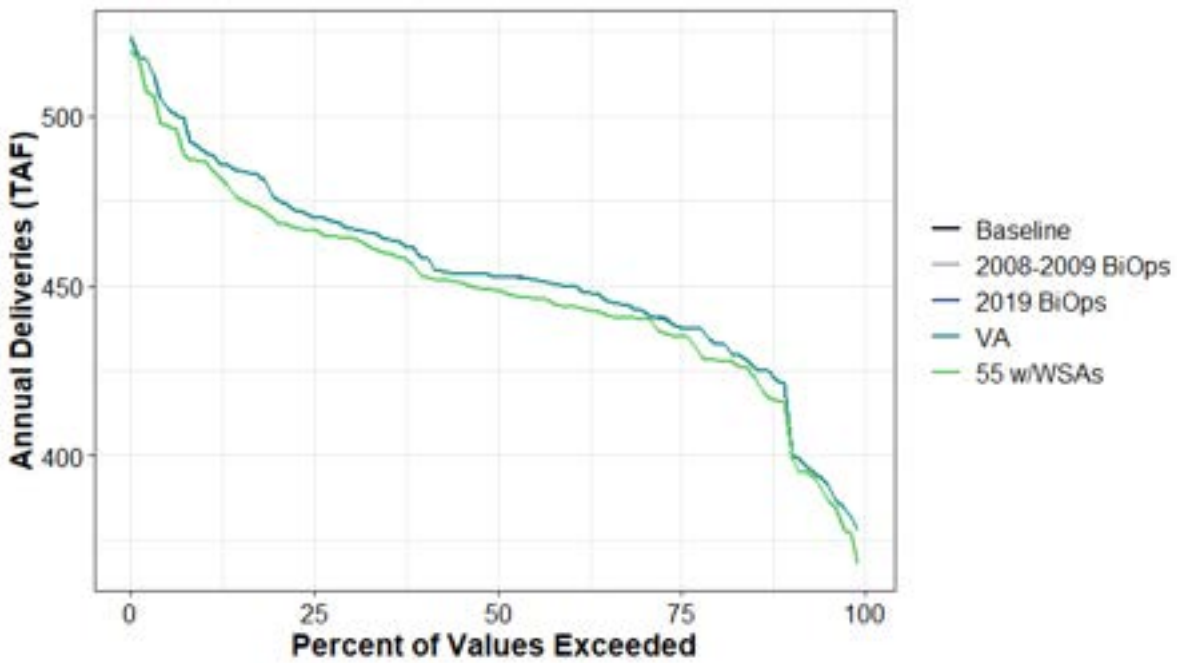

Figure H1a2-197. Total Water Supplied to Water Budget Area 60N (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-398. Total Water Supplied to Water Budget Area 60N (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	523	523	523	523	519
10%	490	490	490	490	486
20%	476	476	476	476	469
30%	467	467	467	467	464
40%	459	459	459	458	453
50%	453	453	453	453	449
60%	450	450	450	450	444
70%	443	443	443	443	440
80%	434	434	434	434	428
90%	417	417	417	417	412
100%	378	378	378	378	368
Mean	453	453	453	453	449

Table H1a2-399. Total Water Supplied to Water Budget Area 60N (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	476	476	476	476	470
D	465	465	465	465	460
BN	450	450	450	450	445
AN	442	442	442	442	437
W	439	439	439	439	436
All	453	453	453	453	449

H1a2.6.38 Water Budget Area 60N (Urban)

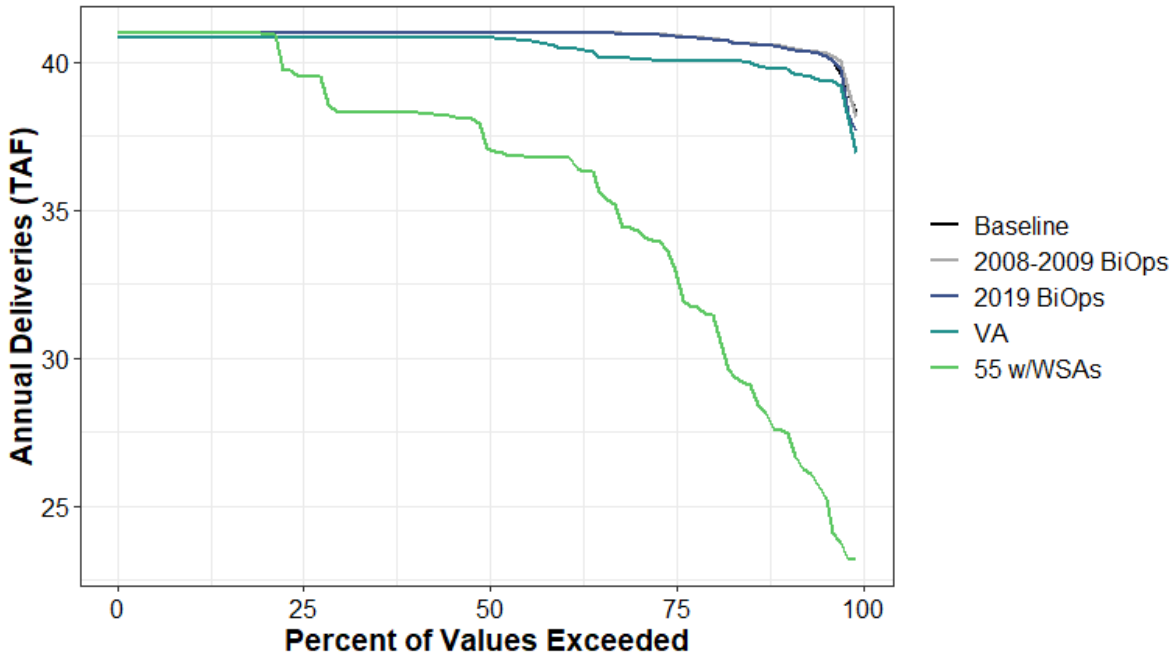

Figure H1a2-198. Total Water Supplied to Water Budget Area 60N (Urban) Annual Percent Exceedance Plot.

Table H1a2-400. Total Water Supplied to Water Budget Area 60N (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	41	41	41	41	41
10%	41	41	41	41	41
20%	41	41	41	41	41
30%	41	41	41	41	38
40%	41	41	41	41	38
50%	41	41	41	41	37
60%	41	41	41	40	37
70%	41	41	41	40	34
80%	41	41	41	40	31
90%	41	41	41	40	28
100%	38	38	38	37	23
Mean	41	41	41	40	36

Table H1a2-401. Total Water Supplied to Water Budget Area 60N (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	41	41	40	40	28
D	41	41	41	40	33
BN	41	41	41	41	38
AN	41	41	41	41	38
W	41	41	41	41	39
All	41	41	41	40	36

H1a2.6.39 Water Budget Area 60S (Agricultural)

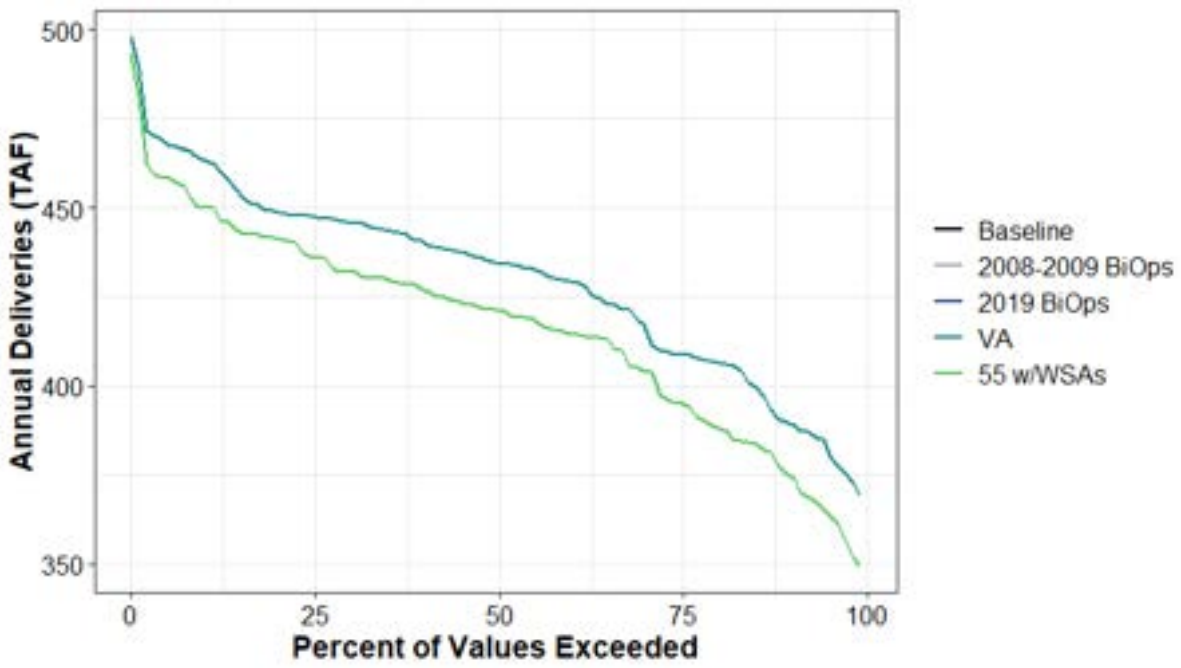

Figure H1a2-199. Total Water Supplied to Water Budget Area 60S (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-402. Total Water Supplied to Water Budget Area 60S (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	498	498	498	498	493
10%	463	463	463	463	450
20%	449	449	449	449	441
30%	446	446	446	446	432
40%	440	440	440	440	427
50%	435	435	435	435	421
60%	430	430	430	430	415
70%	418	418	418	418	404
80%	407	407	407	407	389
90%	390	390	390	390	375
100%	369	369	369	369	350
Mean	430	430	430	430	417

Table H1a2-403. Total Water Supplied to Water Budget Area 60S (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	445	445	445	445	439
D	442	442	442	442	433
BN	437	437	437	437	417
AN	425	425	425	425	408
W	411	411	411	411	396
All	430	430	430	430	417

H1a2.6.40 Water Budget Area 60S (Urban)

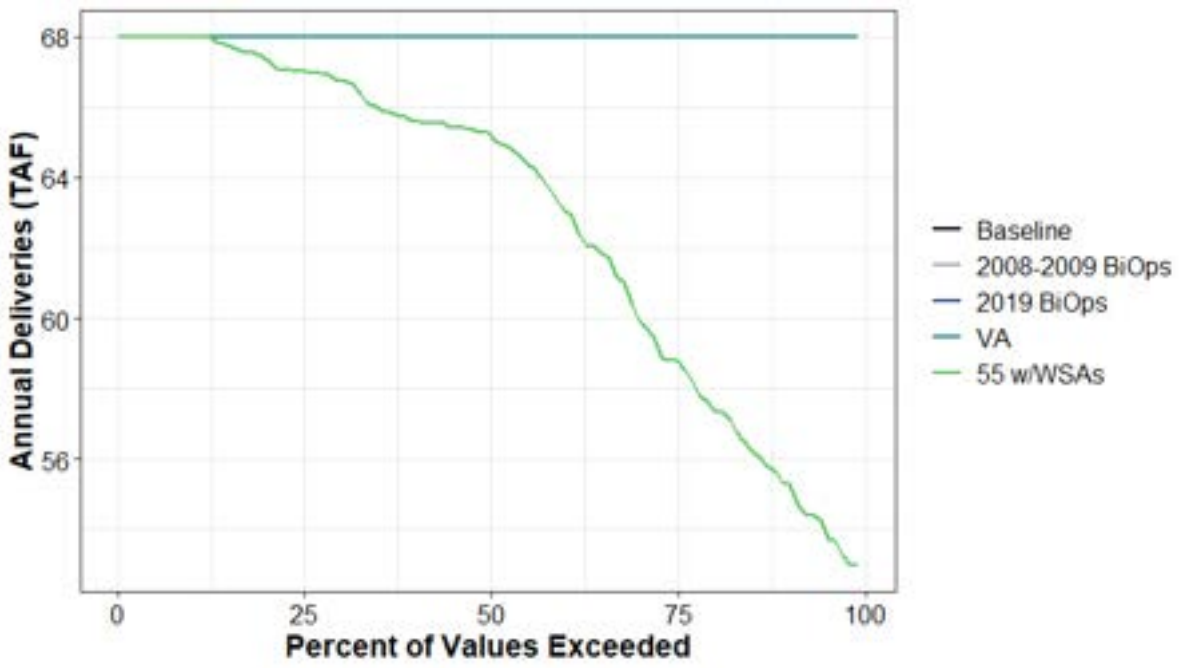

Figure H1a2-200. Total Water Supplied to Water Budget Area 60S (Urban) Annual Percent Exceedance Plot.

Table H1a2-404. Total Water Supplied to Water Budget Area 60S (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	68	68	68	68	68
10%	68	68	68	68	68
20%	68	68	68	68	67
30%	68	68	68	68	67
40%	68	68	68	68	66
50%	68	68	68	68	65
60%	68	68	68	68	63
70%	68	68	68	68	60
80%	68	68	68	68	58
90%	68	68	68	68	55
100%	68	68	68	68	53
Mean	68	68	68	68	63

Table H1a2-405. Total Water Supplied to Water Budget Area 60S (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	68	68	68	68	56
D	68	68	68	68	59
BN	68	68	68	68	65
AN	68	68	68	68	67
W	68	68	68	68	67
All	68	68	68	68	63

H1a2.6.41 Water Budget Area 61N (Agricultural)

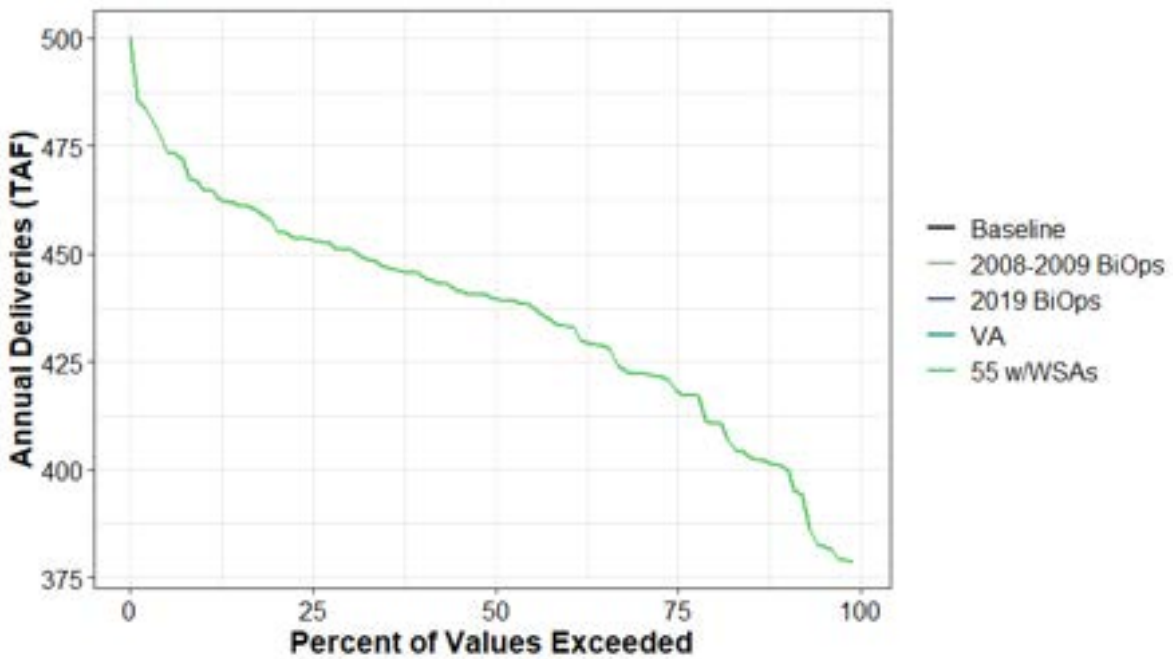

Figure H1a2-201. Total Water Supplied to Water Budget Area 61N (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-406. Total Water Supplied to Water Budget Area 61N (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	500	500	500	500	500
10%	465	465	465	465	465
20%	456	456	456	456	456
30%	451	451	451	451	451
40%	445	445	445	445	445
50%	440	440	440	440	440
60%	433	433	433	433	433
70%	422	422	422	422	422
80%	411	411	411	411	411
90%	401	401	401	401	401
100%	379	379	379	379	379
Mean	436	436	436	436	436

Table H1a2-407. Total Water Supplied to Water Budget Area 61N (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	453	453	453	453	453
D	452	452	452	452	452
BN	437	437	437	437	437
AN	424	424	424	424	424
W	419	419	419	419	419
All	436	436	436	436	436

H1a2.6.42 Upper Watershed and Foothill (Agricultural)

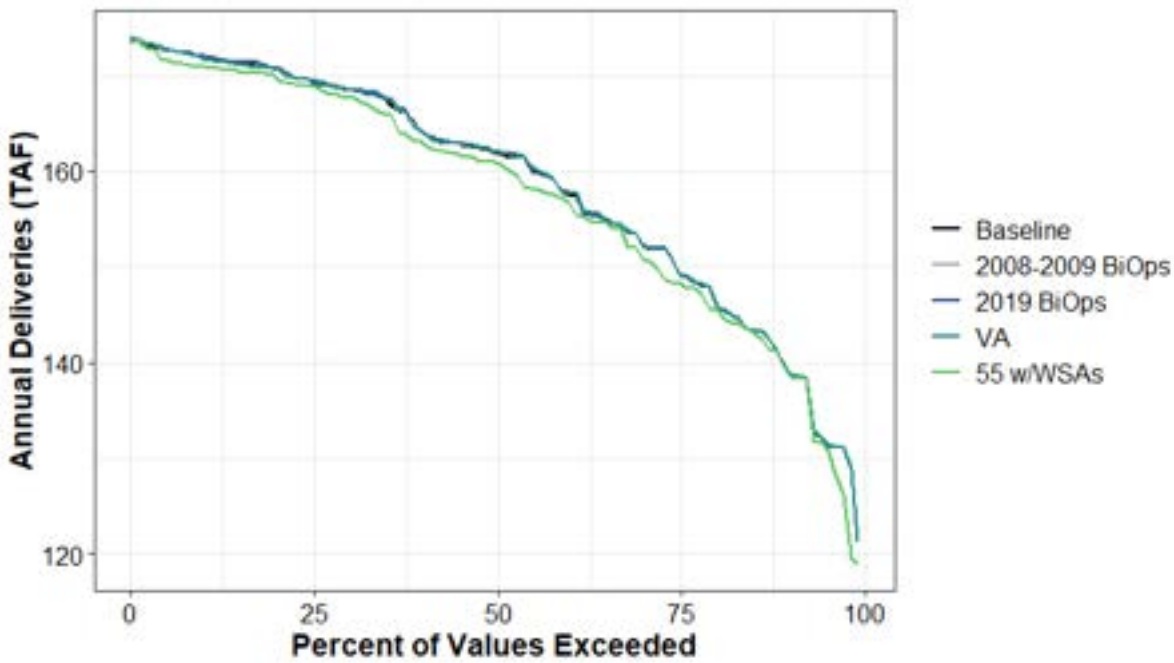

Figure H1a2-202. Surface Water Supplied to Upper Watershed and Foothill (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-408. Surface Water Supplied to Upper Watershed and Foothill (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	174	174	174	174	174
10%	172	172	172	172	171
20%	171	171	171	171	170
30%	169	169	169	169	168
40%	164	164	164	164	163
50%	162	162	162	162	161
60%	158	158	158	158	157
70%	153	153	153	153	151
80%	147	147	147	147	146
90%	139	139	139	139	139
100%	121	121	121	121	119
Mean	158	159	159	159	157

Table H1a2-409. Surface Water Supplied to Upper Watershed and Foothill (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	139	139	139	139	138
D	150	150	150	151	150
BN	160	160	160	160	159
AN	165	165	165	165	163
W	171	171	171	171	170
All	158	159	159	159	157

H1a2.6.43 Upper Watershed and Foothill (Urban)

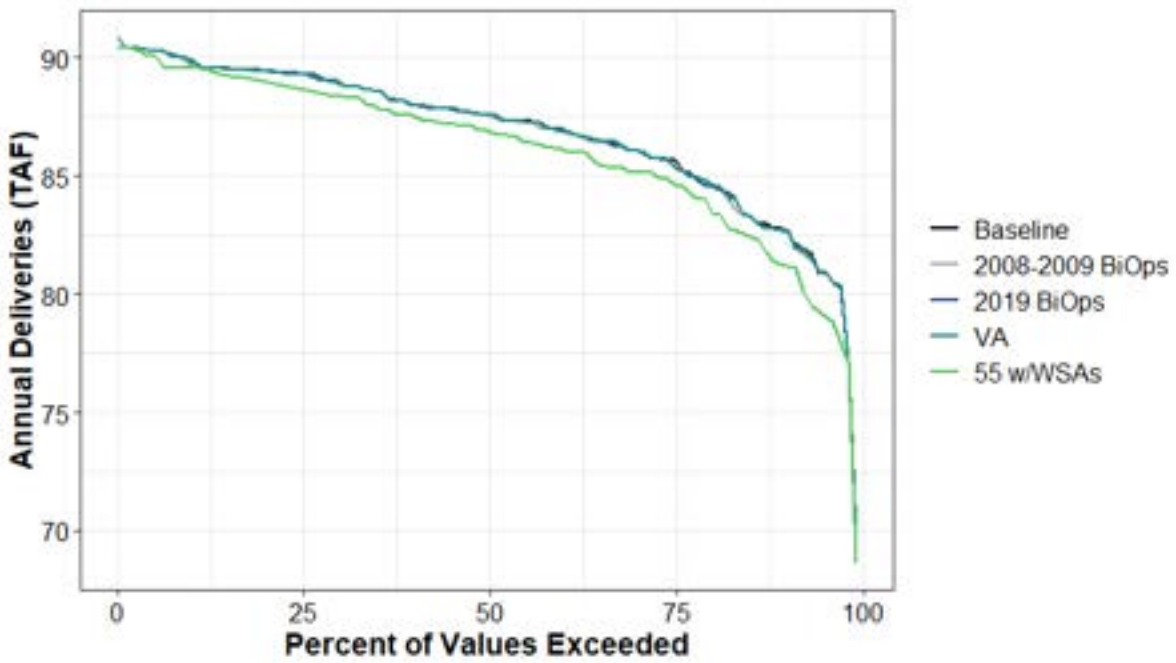

Figure H1a2-203. Surface Water Supplied to Upper Watershed and Foothill (Urban) Annual Percent Exceedance Plot.

Table H1a2-410. Surface Water Supplied to Upper Watershed and Foothill (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	91	91	91	91	90
10%	90	90	90	90	90
20%	89	89	89	89	89
30%	89	89	89	89	88
40%	88	88	88	88	88
50%	88	88	88	88	87
60%	87	87	87	87	86
70%	86	86	86	86	85
80%	85	85	85	85	84
90%	83	83	83	83	81
100%	70	70	70	69	69
Mean	87	87	87	87	86

Table H1a2-411. Surface Water Supplied to Upper Watershed and Foothill (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	81	81	81	81	80
D	86	86	86	86	85
BN	88	88	88	88	87
AN	88	88	88	88	88
W	89	89	89	89	89
All	87	87	87	87	86

H1a2.6.44 San Francisco Bay Area (Agricultural)

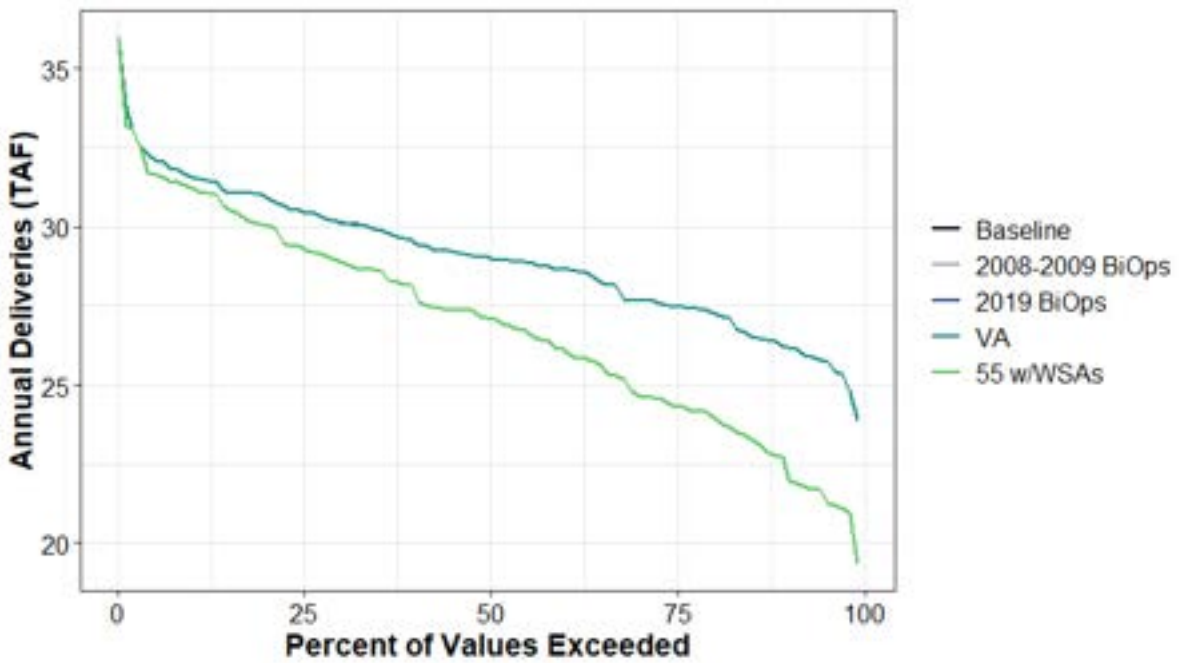

Figure H1a2-204. Total Water Supplied to San Francisco Bay Area (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-412. Total Water Supplied to San Francisco Bay Area (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	36	36	36	36	36
10%	32	32	32	32	31
20%	31	31	31	31	30
30%	30	30	30	30	29
40%	30	30	30	30	28
50%	29	29	29	29	27
60%	29	29	29	29	26
70%	28	28	28	28	25
80%	27	27	27	27	24
90%	26	26	26	26	23
100%	24	24	24	24	19
Mean	29	29	29	29	27

Table H1a2-413. Total Water Supplied to San Francisco Bay Area (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	31	31	31	31	28
D	30	30	30	30	29
BN	29	29	29	29	26
AN	28	28	28	28	26
W	27	27	27	27	26
All	29	29	29	29	27

H1a2.6.45 San Francisco Bay Area (Urban)

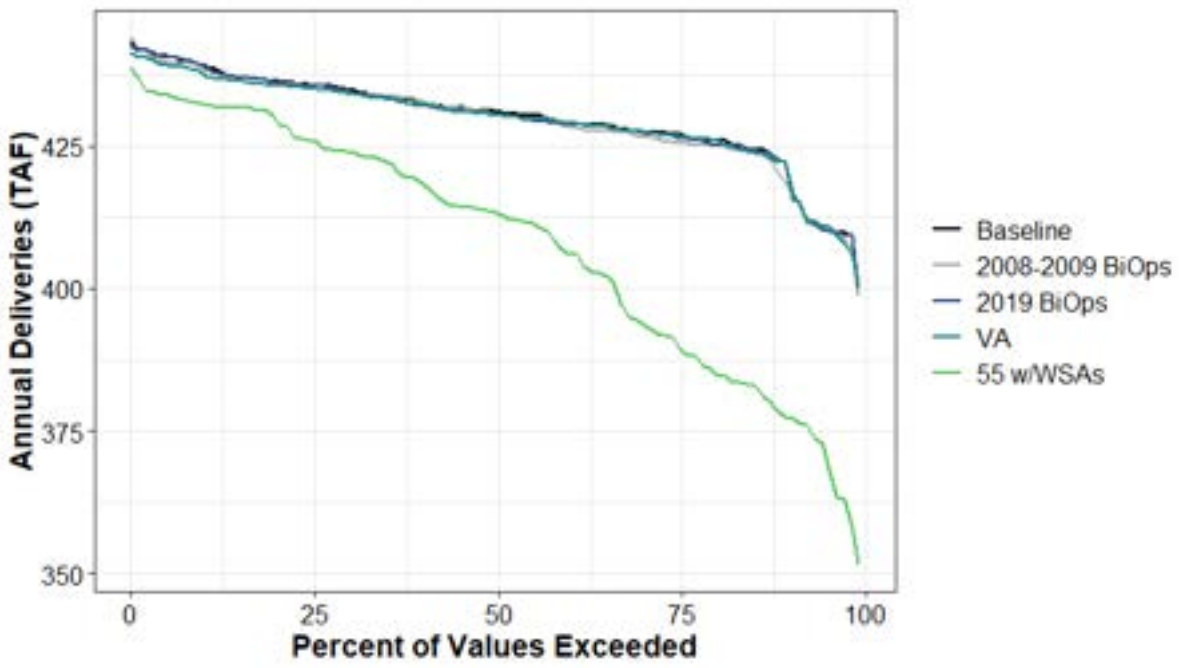

Figure H1a2-205. Surface Water Supplied to San Francisco Bay Area (Urban) Annual Percent Exceedance Plot.

Table H1a2-414. Surface Water Supplied to San Francisco Bay Area (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	443	444	442	442	438
10%	439	438	439	437	432
20%	436	436	436	436	429
30%	435	434	435	434	424
40%	433	433	432	432	418
50%	431	431	431	431	413
60%	429	428	429	429	406
70%	428	427	427	428	394
80%	426	425	425	426	386
90%	421	418	421	421	377
100%	400	399	400	401	351
Mean	430	429	430	429	408

Table H1a2-415. Surface Water Supplied to San Francisco Bay Area (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	420	420	420	420	390
D	432	431	431	431	392
BN	432	431	431	431	406
AN	432	432	432	431	420
W	432	431	432	432	426
All	430	429	430	429	408

H1a2.6.46 Total CVP Deliveries

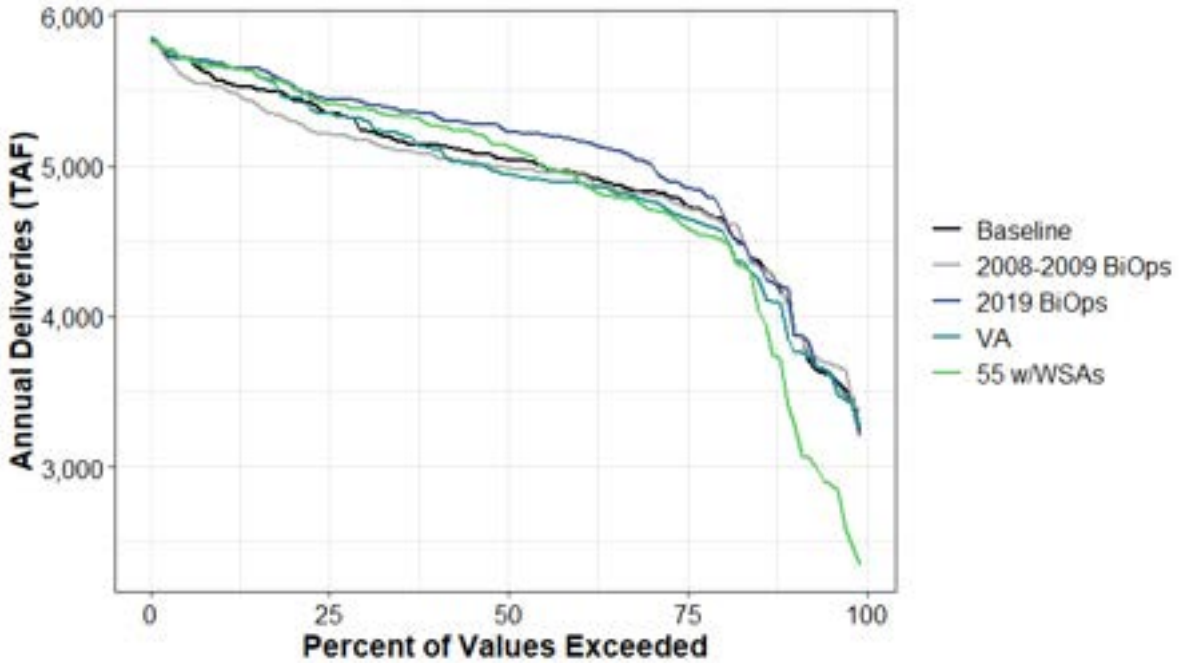

Figure H1a2-206. Surface Water Supplied to Total CVP Deliveries Annual Percent Exceedance Plot.

Table H1a2-416. Surface Water Supplied to Total CVP Deliveries Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,839	5,832	5,860	5,861	5,822
10%	5,569	5,526	5,684	5,669	5,661
20%	5,448	5,300	5,541	5,454	5,519
30%	5,237	5,170	5,423	5,308	5,382
40%	5,140	5,069	5,339	5,118	5,267
50%	5,044	4,996	5,239	4,946	5,143
60%	4,956	4,939	5,173	4,888	4,923
70%	4,830	4,815	5,027	4,768	4,718
80%	4,657	4,642	4,745	4,582	4,520
90%	4,056	4,032	4,127	3,835	3,382
100%	3,247	3,377	3,204	3,264	2,346
Mean	4,950	4,903	5,068	4,916	4,868

Table H1a2-417. Surface Water Supplied to Total CVP Deliveries Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	4,035	4,060	4,041	4,012	3,280
D	4,821	4,792	4,955	4,700	4,717
BN	4,958	4,891	5,123	4,869	5,065
AN	5,062	5,062	5,290	4,983	5,251
W	5,482	5,378	5,576	5,558	5,549
All	4,950	4,903	5,068	4,916	4,868

H1a2.6.47 Total CVP North of Delta

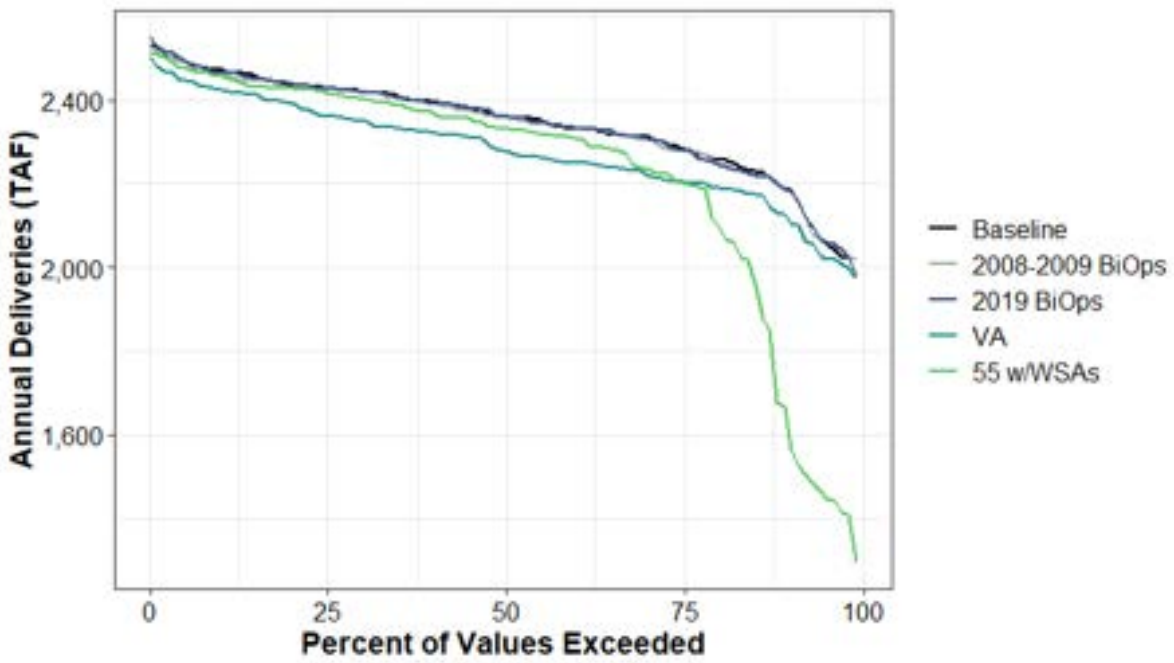

Figure H1a2-207. Surface Water Supplied to Total CVP North of Delta Annual Percent Exceedance Plot.

Table H1a2-418. Surface Water Supplied to Total CVP North of Delta Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	2,534	2,529	2,552	2,502	2,514
10%	2,473	2,461	2,465	2,424	2,457
20%	2,438	2,431	2,442	2,392	2,429
30%	2,423	2,421	2,419	2,350	2,405
40%	2,398	2,392	2,393	2,323	2,370
50%	2,363	2,357	2,363	2,279	2,334
60%	2,333	2,334	2,335	2,250	2,311
70%	2,313	2,305	2,311	2,226	2,236
80%	2,260	2,252	2,252	2,191	2,111
90%	2,187	2,187	2,188	2,123	1,646
100%	2,019	2,022	1,981	1,976	1,295
Mean	2,344	2,339	2,343	2,279	2,226

Table H1a2-419. Surface Water Supplied to Total CVP North of Delta Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	2,176	2,177	2,174	2,172	1,619
D	2,343	2,335	2,343	2,221	2,231
BN	2,390	2,380	2,389	2,268	2,378
AN	2,391	2,390	2,391	2,278	2,393
W	2,385	2,383	2,385	2,385	2,381
All	2,344	2,339	2,343	2,279	2,226

H1a2.6.48 CVP North of Delta Water Service (Agricultural)

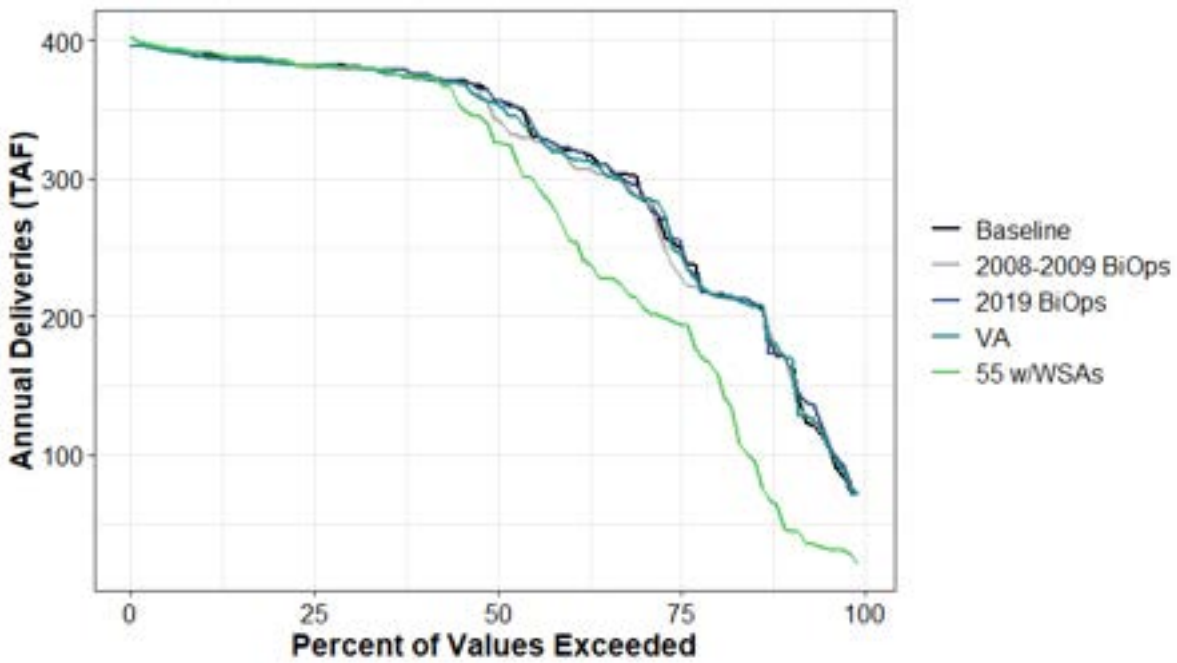

Figure H1a2-208. Surface Water Supplied to CVP North of Delta Water Service (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-420. Surface Water Supplied to CVP North of Delta Water Service (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	397	397	397	397	403
10%	390	388	388	388	391
20%	384	384	384	384	387
30%	382	379	381	380	380
40%	374	373	375	372	374
50%	356	344	357	355	327
60%	320	314	322	317	258
70%	292	287	291	286	210
80%	216	217	216	217	163
90%	171	169	169	170	46
100%	71	73	70	71	20
Mean	312	308	312	310	275

Table H1a2-421. Surface Water Supplied to CVP North of Delta Water Service (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	167	168	167	169	55
D	275	268	275	274	202
BN	327	318	328	319	311
AN	373	372	375	373	373
W	382	381	382	382	384
All	312	308	312	310	275

H1a2.6.49 CVP North of Delta Water Service (M&I)

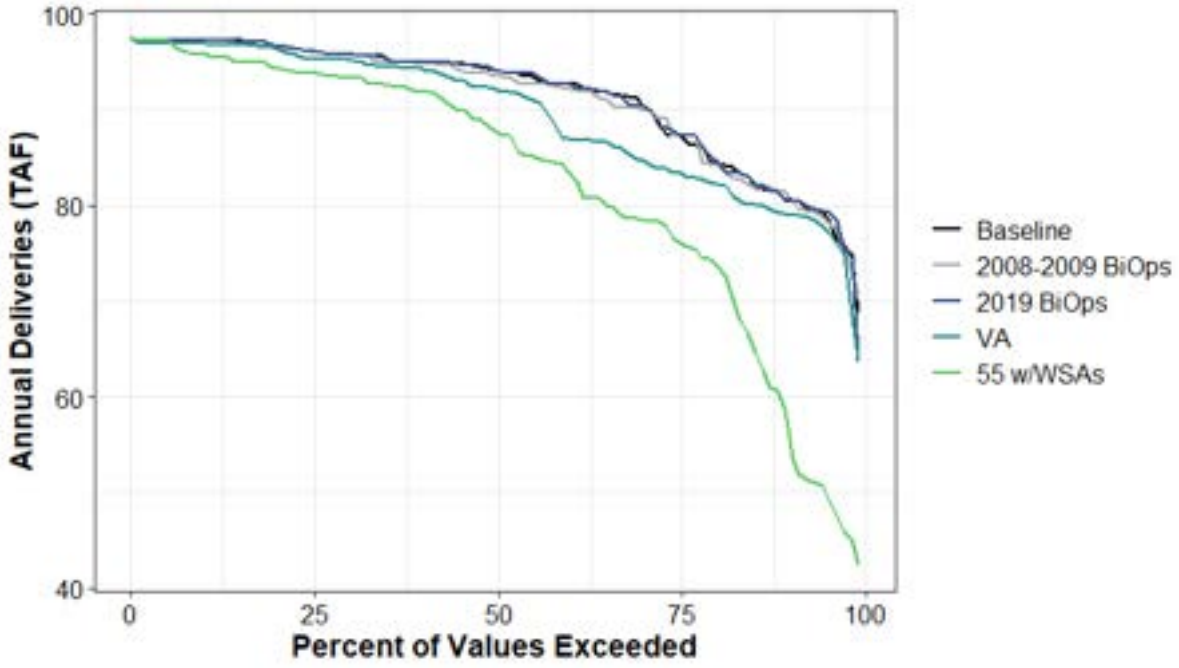

Figure H1a2-209. Surface Water Supplied to CVP North of Delta Water Service (M&I) Annual Percent Exceedance Plot.

Table H1a2-422. Surface Water Supplied to CVP North of Delta Water Service (M&I) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	97	97	97	98	97
10%	97	97	97	97	96
20%	97	96	97	96	94
30%	96	96	96	95	93
40%	95	95	95	94	92
50%	94	93	94	92	88
60%	93	92	93	87	84
70%	91	90	90	85	78
80%	84	84	85	82	74
90%	81	81	81	79	58
100%	69	70	64	64	42
Mean	91	91	91	89	82

Table H1a2-423. Surface Water Supplied to CVP North of Delta Water Service (M&I) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	83	83	83	80	55
D	91	90	91	83	79
BN	91	91	91	91	87
AN	93	94	94	94	90
W	95	95	95	95	93
All	91	91	91	89	82

H1a2.6.50 CVP Settlement (Agricultural)

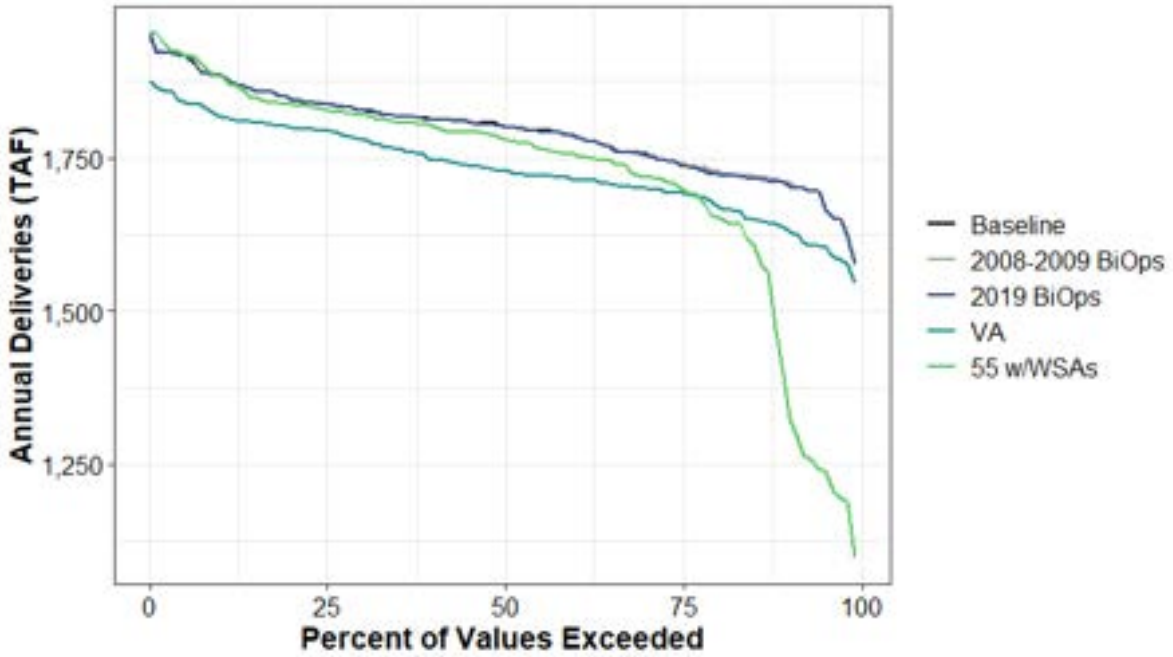

Figure H1a2-210. Surface Water Supplied to CVP Settlement (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-424. Surface Water Supplied to CVP Settlement (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,950	1,951	1,951	1,877	1,955
10%	1,883	1,883	1,885	1,819	1,883
20%	1,847	1,848	1,846	1,800	1,837
30%	1,828	1,829	1,828	1,780	1,820
40%	1,814	1,813	1,813	1,747	1,803
50%	1,802	1,802	1,803	1,729	1,781
60%	1,785	1,785	1,786	1,715	1,756
70%	1,756	1,755	1,756	1,701	1,719
80%	1,726	1,730	1,723	1,677	1,656
90%	1,711	1,711	1,709	1,637	1,383
100%	1,576	1,576	1,577	1,547	1,098
Mean	1,794	1,794	1,793	1,733	1,722

Table H1a2-425. Surface Water Supplied to CVP Settlement (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	1,784	1,784	1,782	1,782	1,368
D	1,830	1,830	1,829	1,716	1,804
BN	1,824	1,825	1,823	1,710	1,832
AN	1,778	1,778	1,777	1,665	1,785
W	1,759	1,759	1,759	1,759	1,756
All	1,794	1,794	1,793	1,733	1,722

H1a2.6.51 CVP Settlement (M&I)

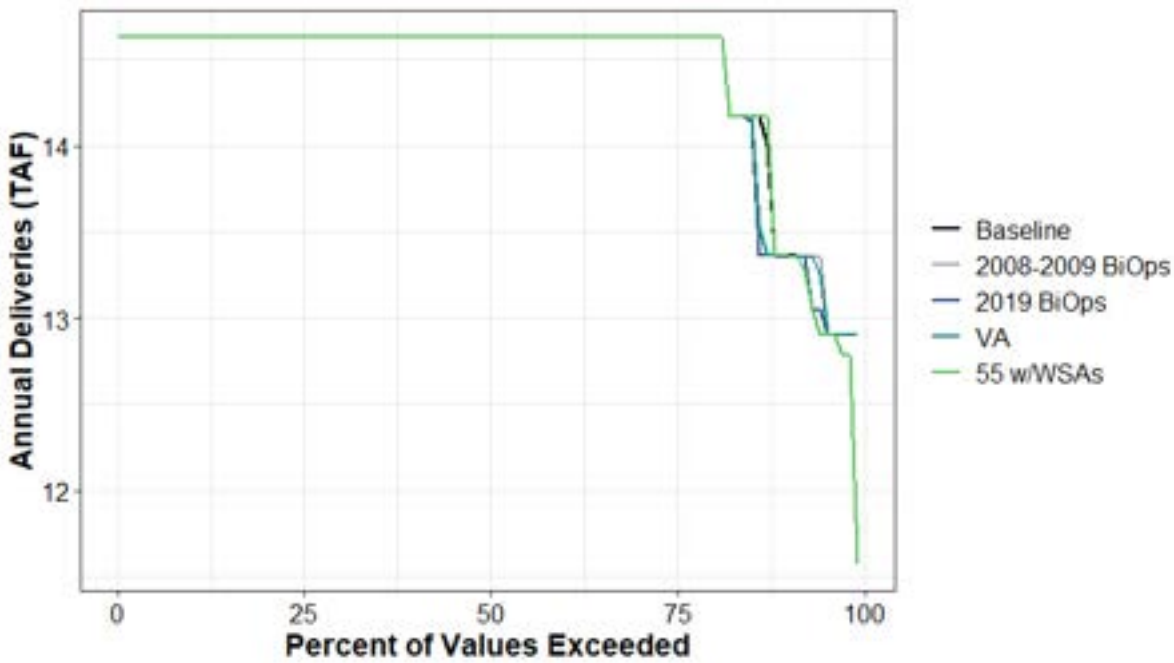

Figure H1a2-211. Surface Water Supplied to CVP Settlement (M&I) Annual Percent Exceedance Plot.

Table H1a2-426. Surface Water Supplied to CVP Settlement (M&I) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	14.6	14.6	14.6	14.6	14.6
10%	14.6	14.6	14.6	14.6	14.6
20%	14.6	14.6	14.6	14.6	14.6
30%	14.6	14.6	14.6	14.6	14.6
40%	14.6	14.6	14.6	14.6	14.6
50%	14.6	14.6	14.6	14.6	14.6
60%	14.6	14.6	14.6	14.6	14.6
70%	14.6	14.6	14.6	14.6	14.6
80%	14.6	14.6	14.6	14.6	14.6
90%	13.4	13.4	13.4	13.4	13.4
100%	12.9	12.9	12.9	12.9	11.6
Mean	14.4	14.4	14.4	14.4	14.4

Table H1a2-427. Surface Water Supplied to CVP Settlement (M&I) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	13.6	13.6	13.6	13.6	13.5
D	14.5	14.5	14.5	14.5	14.5
BN	14.6	14.6	14.5	14.6	14.6
AN	14.5	14.6	14.5	14.5	14.6
W	14.6	14.6	14.6	14.6	14.6
All	14.4	14.4	14.4	14.4	14.4

H1a2.6.52 CVP North of Delta (Refuge)

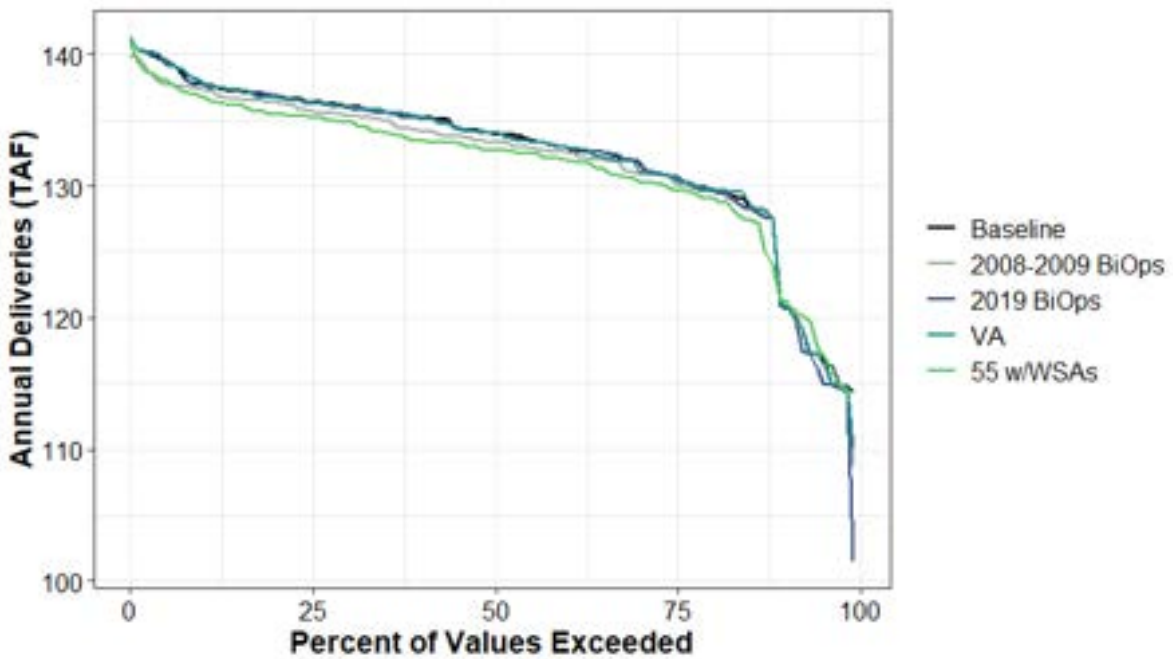

Figure H1a2-212. Surface Water Supplied to CVP North of Delta (Refuge) Annual Percent Exceedance Plot.

Table H1a2-428. Surface Water Supplied to CVP North of Delta (Refuge) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	141	140	141	141	141
10%	138	137	138	138	137
20%	137	136	137	137	135
30%	136	135	136	136	135
40%	135	134	135	135	133
50%	134	133	134	134	133
60%	133	133	133	133	132
70%	132	131	132	131	130
80%	130	130	130	130	129
90%	121	121	121	121	121
100%	114	109	101	110	114
Mean	133	132	132	132	131

Table H1a2-429. Surface Water Supplied to CVP North of Delta (Refuge) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	128	128	128	128	128
D	133	133	133	133	132
BN	133	132	133	133	133
AN	132	131	132	132	130
W	134	134	134	134	133
All	133	132	132	132	131

H1a2.6.53 Total CVP South of Delta

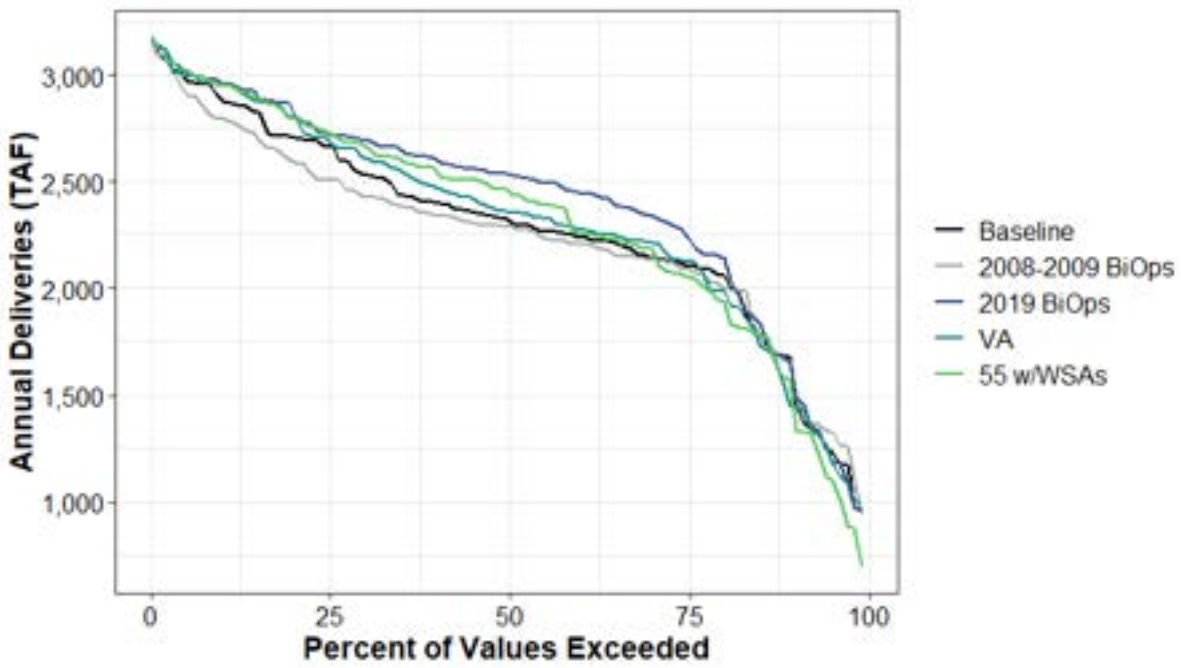

Figure H1a2-213. Surface Water Supplied to Total CVP South of Delta Annual Percent Exceedance Plot.

Table H1a2-430. Surface Water Supplied to Total CVP South of Delta Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	3,179	3,159	3,179	3,172	3,178
10%	2,885	2,794	2,961	2,951	2,953
20%	2,712	2,595	2,830	2,803	2,795
30%	2,537	2,435	2,700	2,614	2,666
40%	2,403	2,347	2,609	2,477	2,557
50%	2,328	2,292	2,536	2,362	2,464
60%	2,240	2,210	2,449	2,281	2,261
70%	2,150	2,139	2,343	2,218	2,189
80%	2,067	2,019	2,149	1,987	1,947
90%	1,638	1,629	1,616	1,453	1,522
100%	963	936	964	960	697
Mean	2,294	2,251	2,413	2,324	2,327

Table H1a2-431. Surface Water Supplied to Total CVP South of Delta Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	1,568	1,592	1,576	1,548	1,375
D	2,170	2,148	2,303	2,170	2,168
BN	2,250	2,193	2,416	2,282	2,362
AN	2,346	2,348	2,573	2,380	2,532
W	2,778	2,677	2,873	2,855	2,849
All	2,294	2,251	2,413	2,324	2,327

H1a2.6.54 CVP South of Delta Water Service (Agricultural)

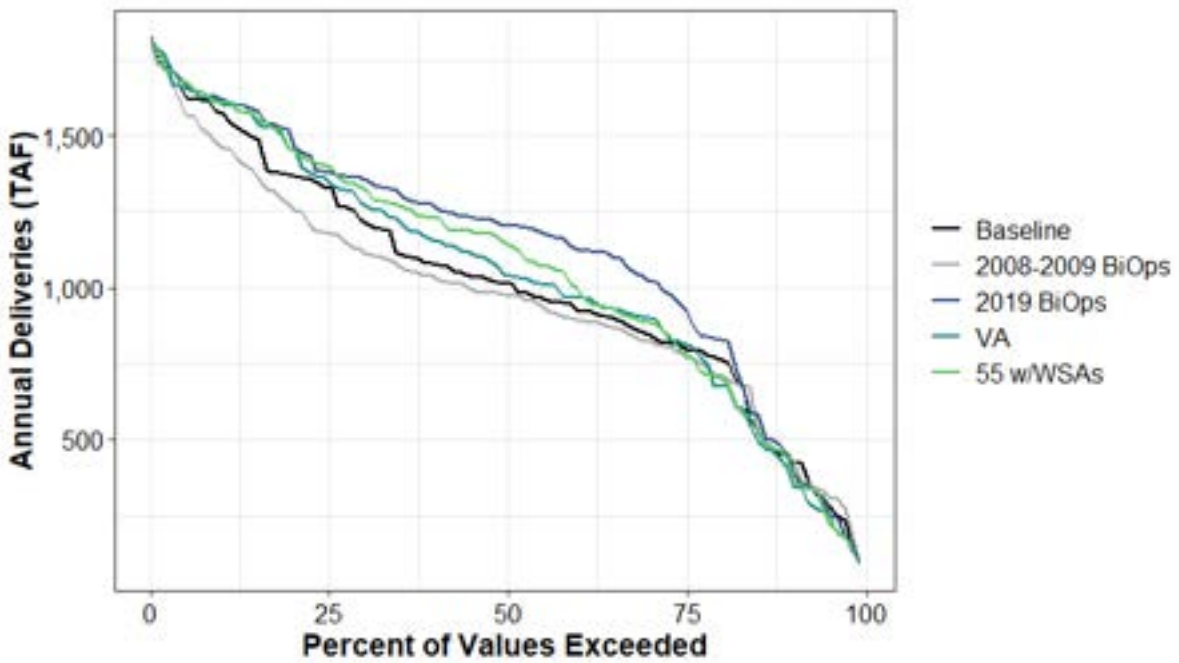

Figure H1a2-214. Surface Water Supplied to CVP South of Delta Water Service (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-432. Surface Water Supplied to CVP South of Delta Water Service (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,827	1,808	1,827	1,821	1,827
10%	1,576	1,464	1,622	1,607	1,611
20%	1,372	1,262	1,485	1,457	1,453
30%	1,217	1,120	1,360	1,275	1,327
40%	1,077	1,034	1,273	1,156	1,230
50%	1,015	979	1,204	1,039	1,148
60%	930	897	1,127	968	999
70%	847	823	1,028	903	887
80%	768	713	833	676	704
90%	444	453	436	396	421
100%	91	90	92	91	88
Mean	1,017	971	1,129	1,045	1,069

Table H1a2-433. Surface Water Supplied to CVP South of Delta Water Service (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	497	500	506	476	393
D	873	846	996	871	897
BN	937	882	1,094	967	1,046
AN	1,036	1,037	1,252	1,066	1,215
W	1,443	1,345	1,531	1,516	1,513
All	1,017	971	1,129	1,045	1,069

H1a2.6.55 CVP South of Delta Water Service (M&I)

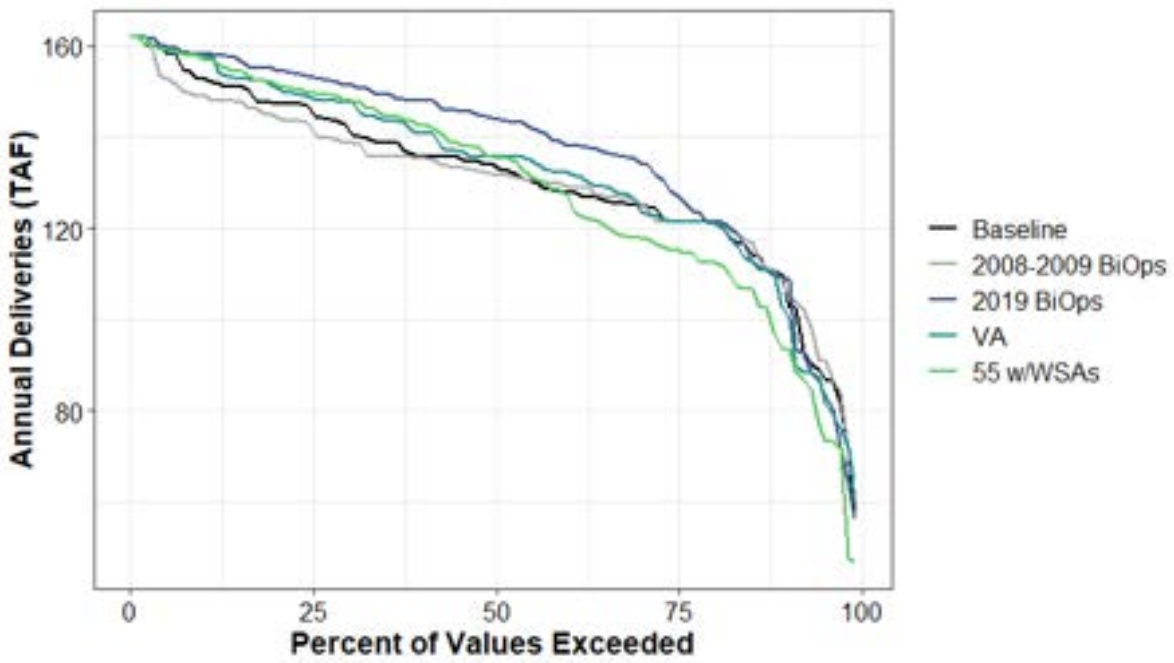

Figure H1a2-215. Surface Water Supplied to CVP South of Delta Water Service (M&I) Annual Percent Exceedance Plot.

Table H1a2-434. Surface Water Supplied to CVP South of Delta Water Service (M&I) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	162	162	162	162	162
10%	153	149	158	158	157
20%	147	145	155	151	152
30%	142	139	151	148	148
40%	136	135	148	141	143
50%	134	132	144	136	136
60%	128	129	138	132	127
70%	125	126	135	125	118
80%	122	121	122	121	113
90%	108	108	109	103	94
100%	57	65	56	60	47
Mean	131	130	137	133	130

Table H1a2-435. Surface Water Supplied to CVP South of Delta Water Service (M&I) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	101	103	101	101	88
D	127	128	133	126	119
BN	130	129	139	133	134
AN	132	132	144	135	140
W	149	146	155	153	152
All	131	130	137	133	130

H1a2.6.56 CVP SOD Exchange

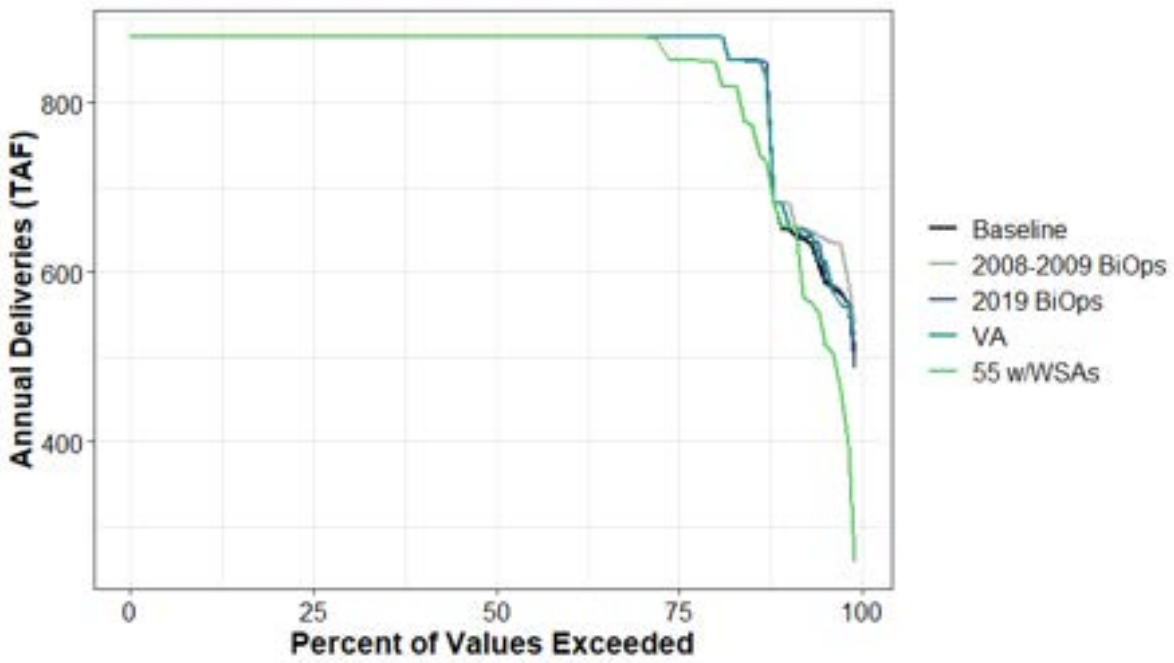

Figure H1a2-216. Surface Water Supplied to CVP SOD Exchange Annual Percent Exceedance Plot.

Table H1a2-436. Surface Water Supplied to CVP SOD Exchange Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	878	878	878	878	878
10%	878	878	878	878	878
20%	878	878	878	878	878
30%	878	878	878	878	878
40%	878	878	878	878	878
50%	878	878	878	878	878
60%	878	878	878	878	878
70%	878	878	878	878	878
80%	878	878	878	878	848
90%	651	682	653	677	654
100%	504	538	486	523	257
Mean	844	848	845	845	828

Table H1a2-437. Surface Water Supplied to CVP SOD Exchange Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	694	714	694	697	626
D	865	867	867	866	845
BN	875	874	875	875	875
AN	874	874	874	874	874
W	877	877	877	877	875
All	844	848	845	845	828

H1a2.6.57 CVP SOD Refuge

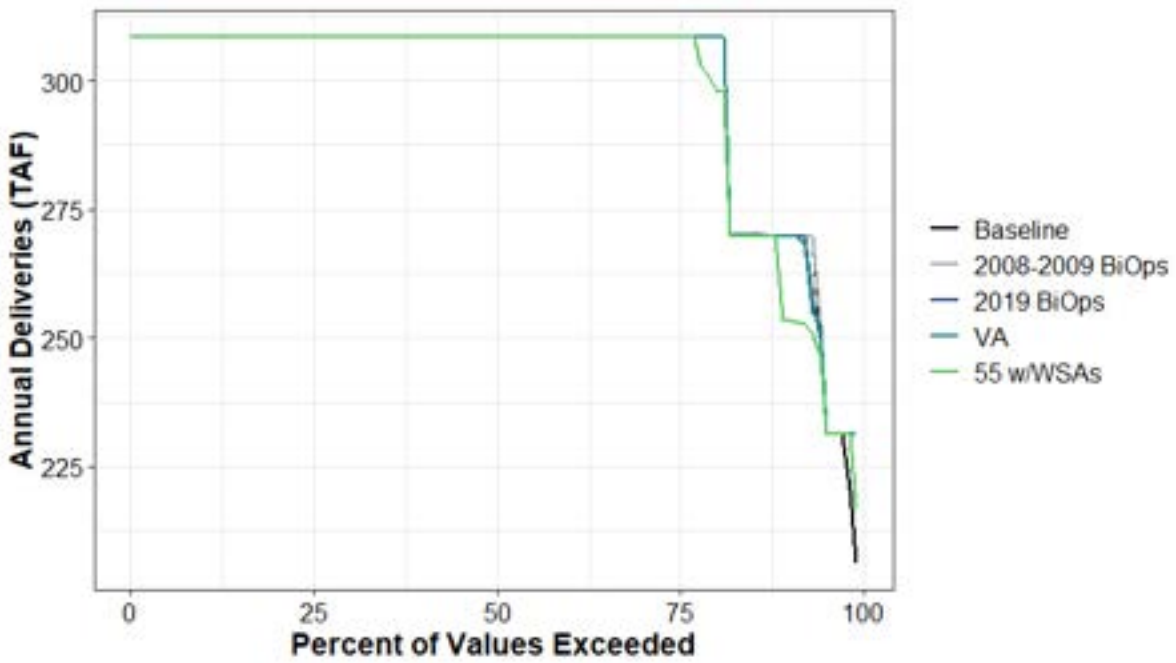

Figure H1a2-217. Surface Water Supplied to CVP SOD Refuge Annual Percent Exceedance Plot.

Table H1a2-438. Surface Water Supplied to CVP SOD Refuge Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	309	309	309	309	309
10%	309	309	309	309	309
20%	309	309	309	309	309
30%	309	309	309	309	309
40%	309	309	309	309	309
50%	309	309	309	309	309
60%	309	309	309	309	309
70%	309	309	309	309	309
80%	309	309	309	309	300
90%	270	270	270	270	253
100%	206	231	231	231	217
Mean	299	299	299	299	298

Table H1a2-439. Surface Water Supplied to CVP SOD Refuge Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	271	271	270	270	264
D	302	303	303	303	303
BN	304	304	304	304	304
AN	302	302	302	302	302
W	307	307	307	307	307
All	299	299	299	299	298

H1a2.6.58 Total SWP Deliveries

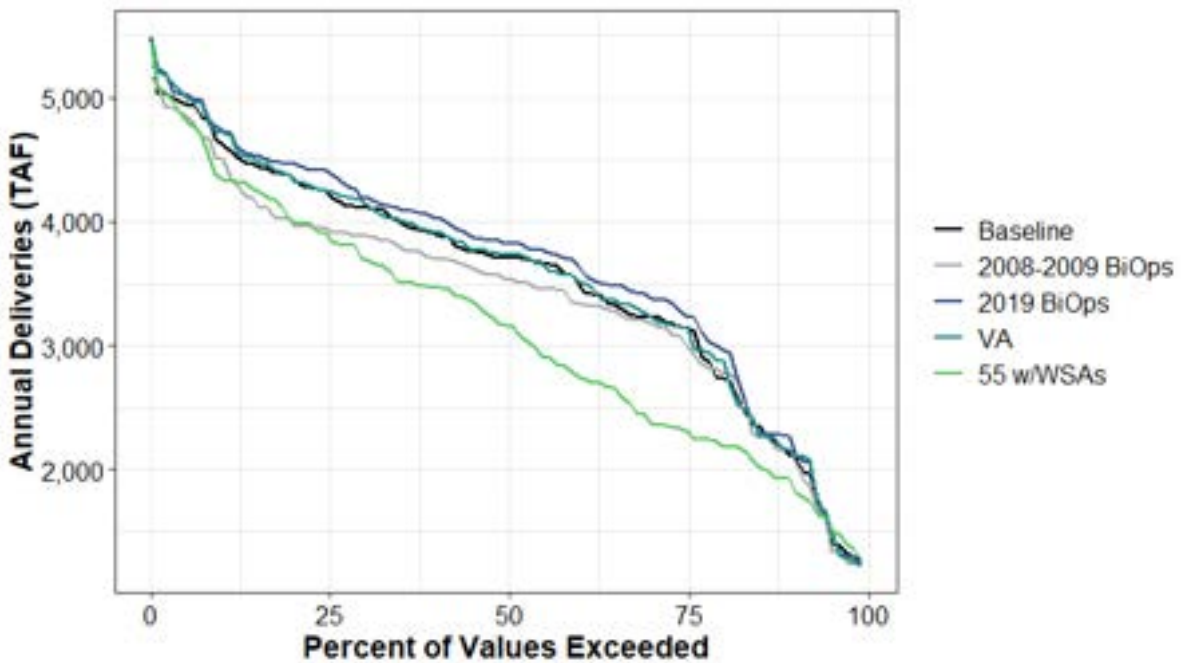

Figure H1a2-218. Surface Water Supplied to Total SWP Deliveries Annual Percent Exceedance Plot.

Table H1a2-440. Surface Water Supplied to Total SWP Deliveries Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	5,465	5,162	5,479	5,491	5,419
10%	4,630	4,505	4,743	4,725	4,345
20%	4,351	3,988	4,462	4,343	4,005
30%	4,112	3,881	4,195	4,157	3,697
40%	3,903	3,710	4,035	3,922	3,472
50%	3,710	3,530	3,828	3,738	3,167
60%	3,512	3,339	3,660	3,526	2,756
70%	3,231	3,184	3,396	3,240	2,400
80%	2,745	2,801	2,987	2,881	2,212
90%	2,110	2,137	2,241	2,144	1,908
100%	1,288	1,232	1,245	1,223	1,272
Mean	3,551	3,409	3,659	3,576	3,136

Table H1a2-441. Surface Water Supplied to Total SWP Deliveries Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	2,043	1,961	2,078	2,063	1,888
D	3,234	3,112	3,353	3,225	2,427
BN	3,631	3,529	3,779	3,632	3,094
AN	3,782	3,714	3,953	3,799	3,436
W	4,446	4,200	4,534	4,517	4,227
All	3,551	3,409	3,659	3,576	3,136

H1a2.6.59 Total SWP Table A

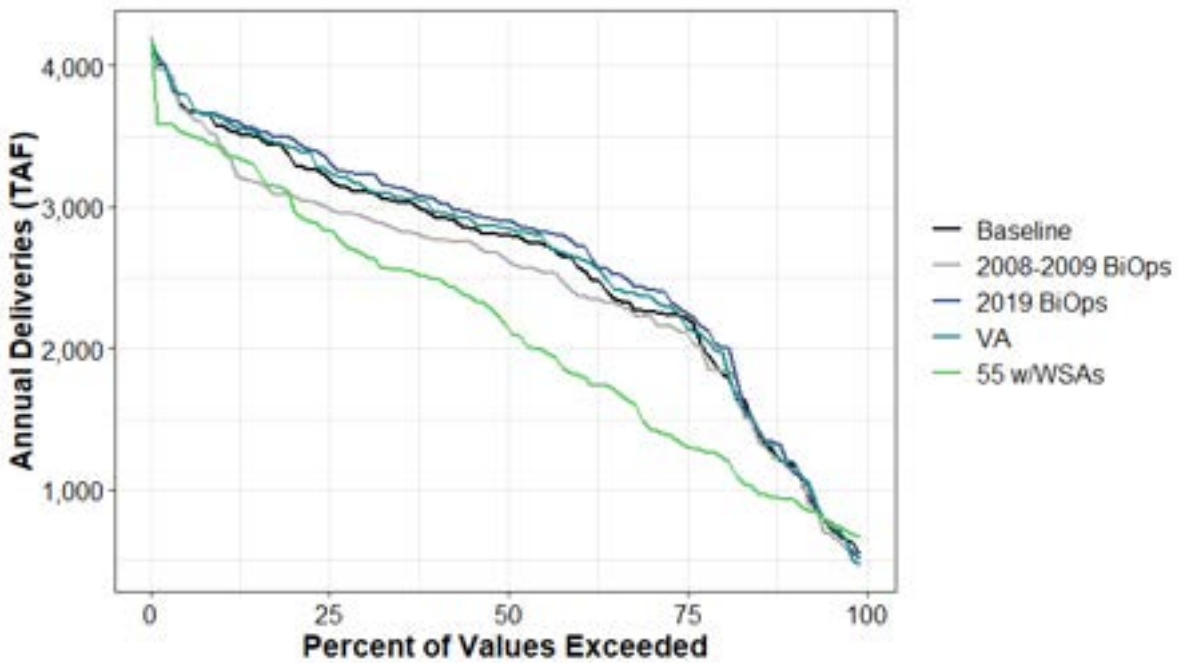

Figure H1a2-219. Surface Water Supplied to Total SWP Table A Annual Percent Exceedance Plot.

Table H1a2-442. Surface Water Supplied to Total SWP Table A Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,190	4,149	4,176	4,172	4,205
10%	3,577	3,408	3,638	3,635	3,419
20%	3,326	3,075	3,483	3,422	3,023
30%	3,110	2,934	3,233	3,147	2,663
40%	2,941	2,774	3,057	2,974	2,488
50%	2,796	2,634	2,903	2,858	2,168
60%	2,595	2,384	2,732	2,645	1,816
70%	2,263	2,228	2,424	2,368	1,451
80%	1,866	1,845	2,028	1,983	1,246
90%	1,183	1,155	1,168	1,201	935
100%	549	510	513	469	664
Mean	2,595	2,467	2,682	2,634	2,142

Table H1a2-443. Surface Water Supplied to Total SWP Table A Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	1,190	1,101	1,209	1,198	1,015
D	2,273	2,155	2,361	2,300	1,451
BN	2,700	2,593	2,835	2,750	2,148
AN	2,830	2,760	2,988	2,891	2,425
W	3,421	3,229	3,484	3,467	3,133
All	2,595	2,467	2,682	2,634	2,142

H1a2.6.60 SWP Table A North of Delta

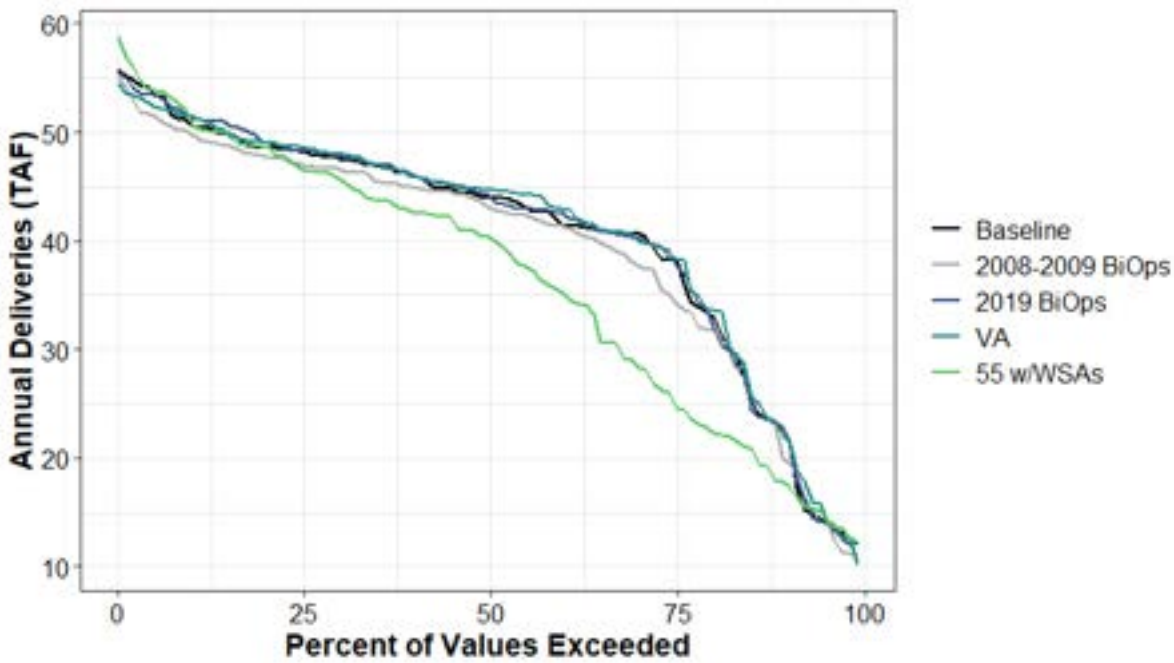

Figure H1a2-220. Surface Water Supplied to SWP Table A North of Delta Annual Percent Exceedance Plot.

Table H1a2-444. Surface Water Supplied to SWP Table A North of Delta Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	56	55	55	55	59
10%	51	50	51	51	51
20%	49	48	49	49	49
30%	48	47	48	48	46
40%	46	45	46	46	43
50%	44	43	44	45	40
60%	42	41	43	43	35
70%	41	38	40	40	29
80%	33	32	33	34	23
90%	22	20	23	22	18
100%	12	11	11	10	12
Mean	41	40	41	41	37

Table H1a2-445. Surface Water Supplied to SWP Table A North of Delta Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	21	20	21	21	17
D	37	36	37	38	27
BN	43	42	44	44	39
AN	46	45	46	45	44
W	50	49	50	50	49
All	41	40	41	41	37

H1a2.6.61 SWP Table A South of Delta

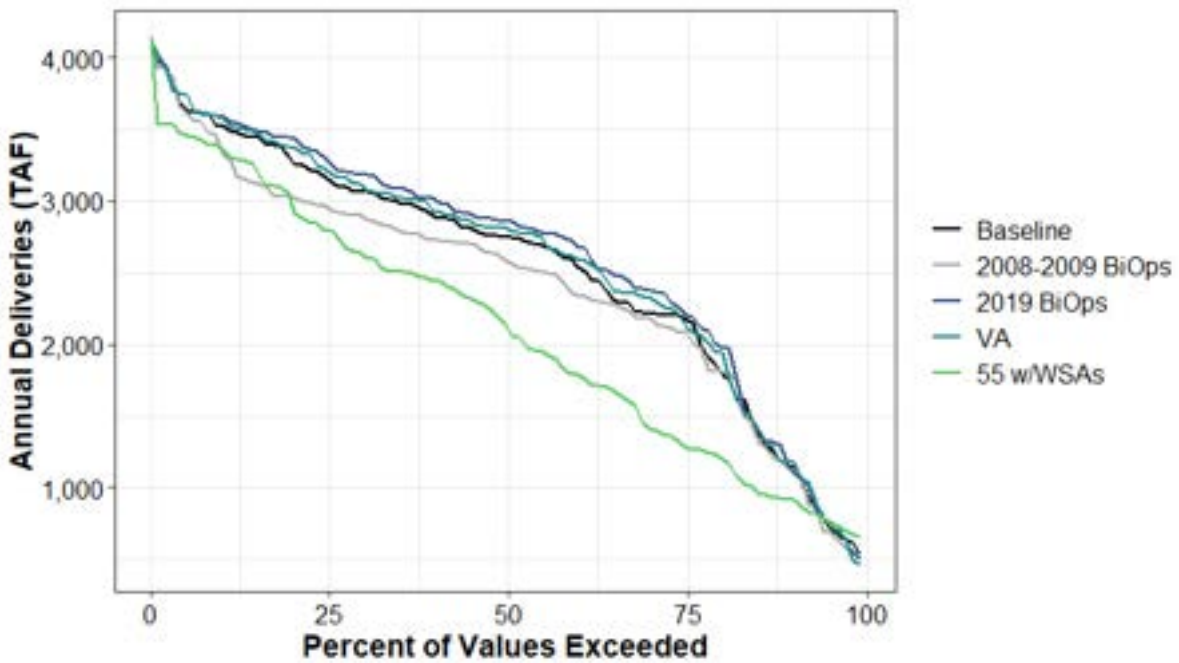

Figure H1a2-221. Surface Water Supplied to SWP Table A South of Delta Annual Percent Exceedance Plot.

Table H1a2-446. Surface Water Supplied to SWP Table A South of Delta Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4,135	4,094	4,123	4,119	4,148
10%	3,528	3,358	3,588	3,584	3,369
20%	3,277	3,026	3,436	3,371	2,971
30%	3,064	2,888	3,187	3,100	2,621
40%	2,895	2,729	3,013	2,929	2,444
50%	2,750	2,587	2,861	2,811	2,133
60%	2,555	2,341	2,689	2,601	1,786
70%	2,221	2,184	2,380	2,326	1,421
80%	1,833	1,813	1,995	1,949	1,224
90%	1,160	1,130	1,144	1,180	914
100%	535	494	499	458	651
Mean	2,555	2,428	2,641	2,593	2,105

Table H1a2-447. Surface Water Supplied to SWP Table A South of Delta Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	1,169	1,081	1,189	1,177	998
D	2,236	2,119	2,324	2,261	1,424
BN	2,657	2,550	2,792	2,707	2,108
AN	2,784	2,715	2,941	2,847	2,381
W	3,371	3,180	3,434	3,417	3,083
All	2,555	2,428	2,641	2,593	2,105

H1a2.6.62 Total SWP Article 21

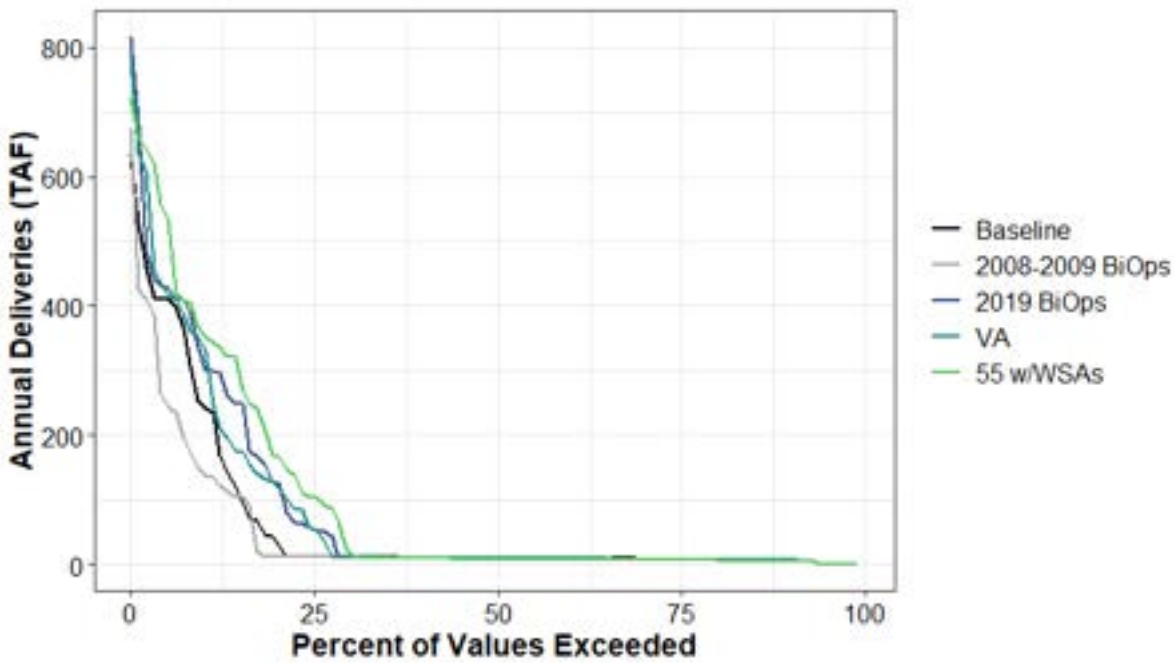

Figure H1a2-222. Surface Water Supplied to Total SWP Article 21 Annual Percent Exceedance Plot.

Table H1a2-448. Surface Water Supplied to Total SWP Article 21 Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	633	674	817	786	723
10%	244	140	308	335	355
20%	35	12	126	123	168
30%	11	11	12	12	19
40%	11	10	11	11	9
50%	10	10	10	10	8
60%	9	9	9	9	8
70%	9	8	8	8	7
80%	8	7	7	7	6
90%	6	6	6	6	5
100%	0	0	0	0	0
Mean	62	47	83	79	98

Table H1a2-449. Surface Water Supplied to Total SWP Article 21 Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	21	30	39	32	53
D	29	26	59	56	37
BN	18	21	29	24	28
AN	62	63	76	72	112
W	136	82	161	160	204
All	62	47	83	79	98

H1a2.6.63 SWP Article 21 Central Coast and Tulare

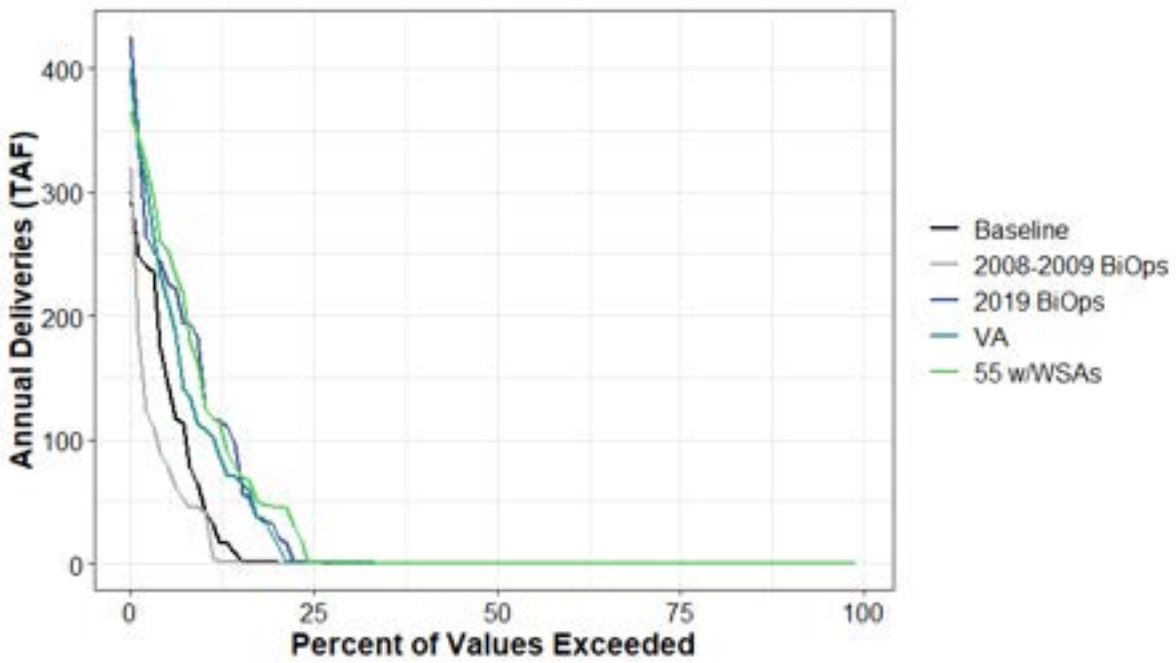

Figure H1a2-223. Surface Water Supplied to SWP Article 21 Central Coast and Tulare Annual Percent Exceedance Plot.

Table H1a2-450. Surface Water Supplied to SWP Article 21 Central Coast and Tulare Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	300	319	426	399	365
10%	47	42	137	110	133
20%	1	1	26	17	46
30%	1	1	1	1	1
40%	1	0	1	1	1
50%	0	0	1	1	1
60%	0	0	0	1	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
100%	0	0	0	0	0
Mean	19	12	34	31	36

Table H1a2-451. Surface Water Supplied to SWP Article 21 Central Coast and Tulare Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	8	12	18	14	24
D	10	9	35	31	17
BN	4	6	13	11	11
AN	7	5	18	10	12
W	45	21	63	60	83
All	19	12	34	31	36

H1a2.6.64 SWP Article 21 South Bay Aqueduct

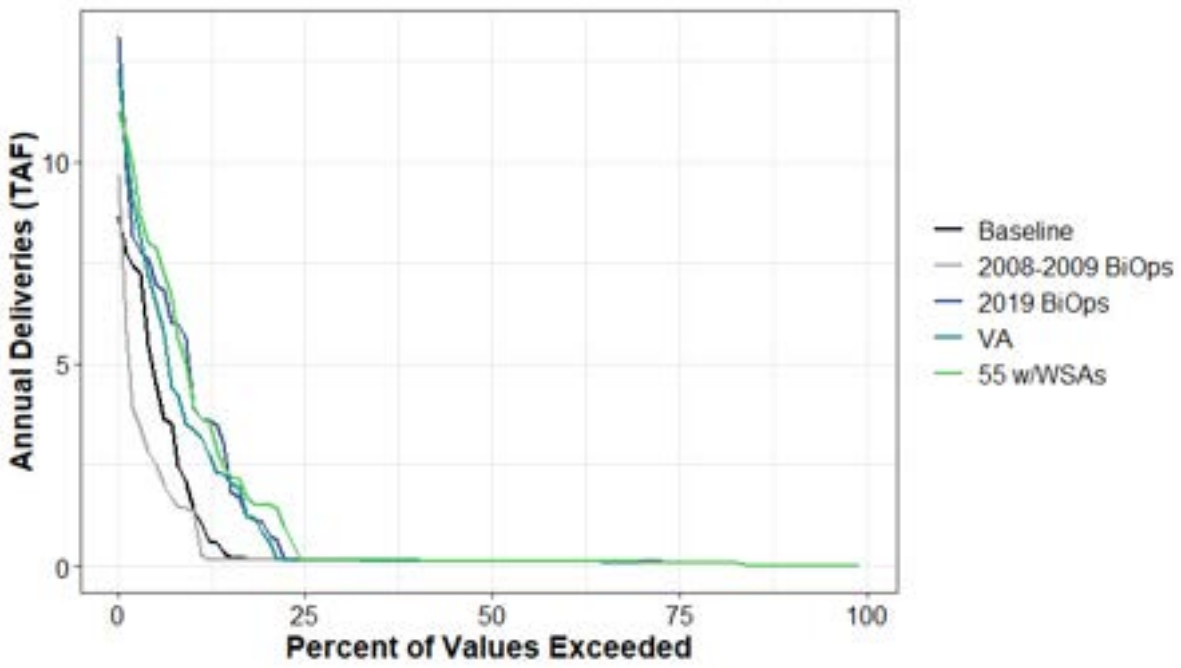

Figure H1a2-224. Surface Water Supplied to SWP Article 21 South Bay Aqueduct Annual Percent Exceedance Plot.

Table H1a2-452. Surface Water Supplied to SWP Article 21 South Bay Aqueduct Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	8.6	9.7	13.1	12.3	11.2
10%	1.5	1.4	4.3	3.4	4.2
20%	0.2	0.1	0.9	0.7	1.5
30%	0.1	0.1	0.1	0.1	0.2
40%	0.1	0.1	0.1	0.1	0.1
50%	0.1	0.1	0.1	0.1	0.1
60%	0.1	0.1	0.1	0.1	0.1
70%	0.1	0.1	0.1	0.1	0.1
80%	0.1	0.1	0.1	0.1	0.1
90%	0	0	0	0	0
100%	0	0	0	0	0
Mean	0.7	0.4	1.1	1	1.2

Table H1a2-453. Surface Water Supplied to SWP Article 21 South Bay Aqueduct Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	0.3	0.4	0.6	0.5	0.8
D	0.4	0.4	1.2	1	0.6
BN	0.2	0.3	0.5	0.4	0.4
AN	0.3	0.3	0.6	0.4	0.5
W	1.4	0.7	2	1.9	2.6
All	0.7	0.4	1.1	1	1.2

H1a2.6.65 SWP Article 21 South Coast

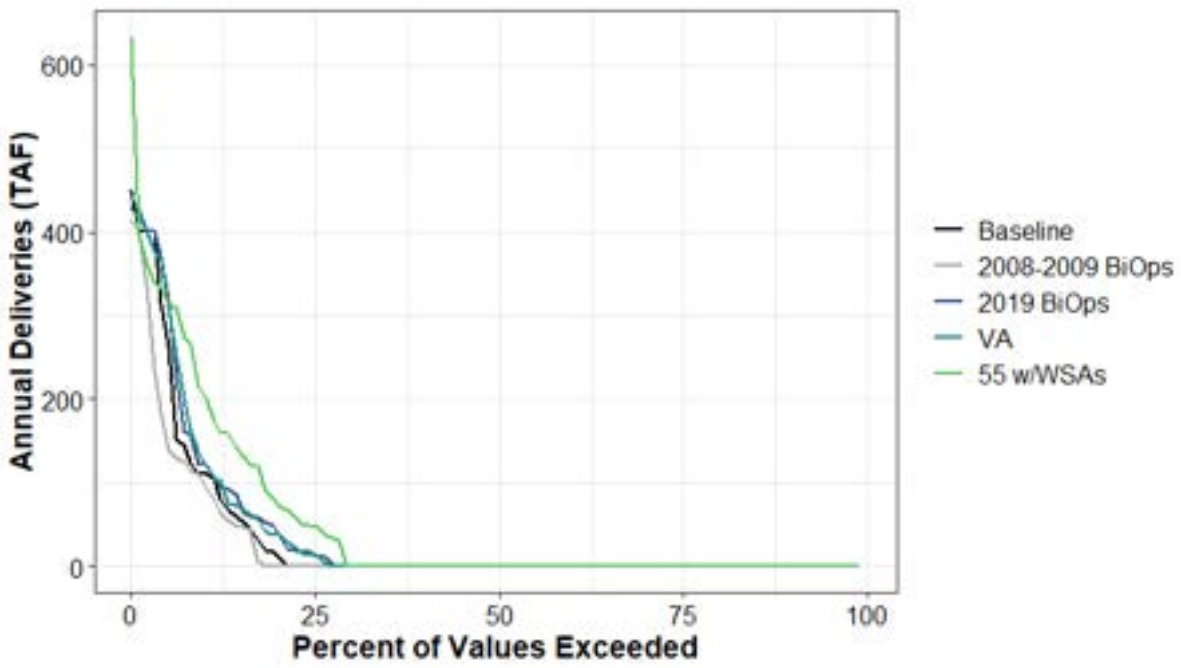

Figure H1a2-225. Surface Water Supplied to SWP Article 21 South Coast Annual Percent Exceedance Plot.

Table H1a2-454. Surface Water Supplied to SWP Article 21 South Coast Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	449	414	429	444	634
10%	111	97	122	123	203
20%	12	0	41	37	75
30%	0	0	0	0	1
40%	0	0	0	0	0
50%	0	0	0	0	0
60%	0	0	0	0	0
70%	0	0	0	0	0
80%	0	0	0	0	0
90%	0	0	0	0	0
100%	0	0	0	0	0
Mean	34	27	40	40	53

Table H1a2-455. Surface Water Supplied to SWP Article 21 South Coast Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	7	12	15	11	23
D	11	9	17	18	14
BN	4	6	8	5	11
AN	46	48	48	53	92
W	80	52	87	89	110
All	34	27	40	40	53

H1a2.6.66 SWP Article 21 Napa

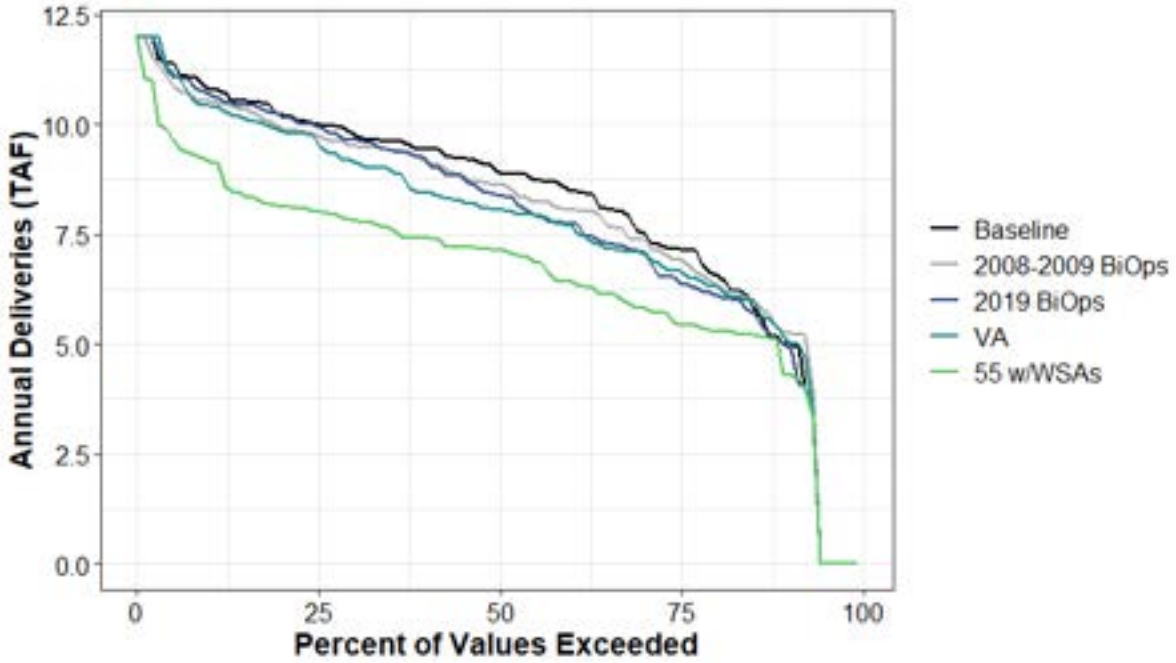

Figure H1a2-226. Surface Water Supplied to SWP Article 21 Napa Annual Percent Exceedance Plot.

Table H1a2-456. Surface Water Supplied to SWP Article 21 Napa Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	12	12	12	12	12
10%	10.8	10.5	10.7	10.4	9.2
20%	10.2	9.9	10.2	9.9	8.1
30%	9.8	9.5	9.7	9.2	7.8
40%	9.4	9.2	9.2	8.5	7.4
50%	8.9	8.6	8.4	8.1	7.1
60%	8.5	8.1	7.7	7.7	6.4
70%	7.5	7.4	7.1	7.1	5.8
80%	6.6	6.4	6.1	6.3	5.3
90%	5	5.3	5	5.2	4.3
100%	0	0	0	0	0
Mean	8.2	8	7.9	7.8	6.7

Table H1a2-457. Surface Water Supplied to SWP Article 21 Napa Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	5.7	5.7	5.6	5.8	5.5
D	7.3	7.3	6.6	6.7	5.8
BN	8.5	8.3	8	7.9	6.1
AN	9.3	9.1	9	8.2	7.3
W	9.6	9.2	9.6	9.4	8
All	8.2	8	7.9	7.8	6.7

H1a2.6.67 SWP Feather River Service Area (Agricultural)

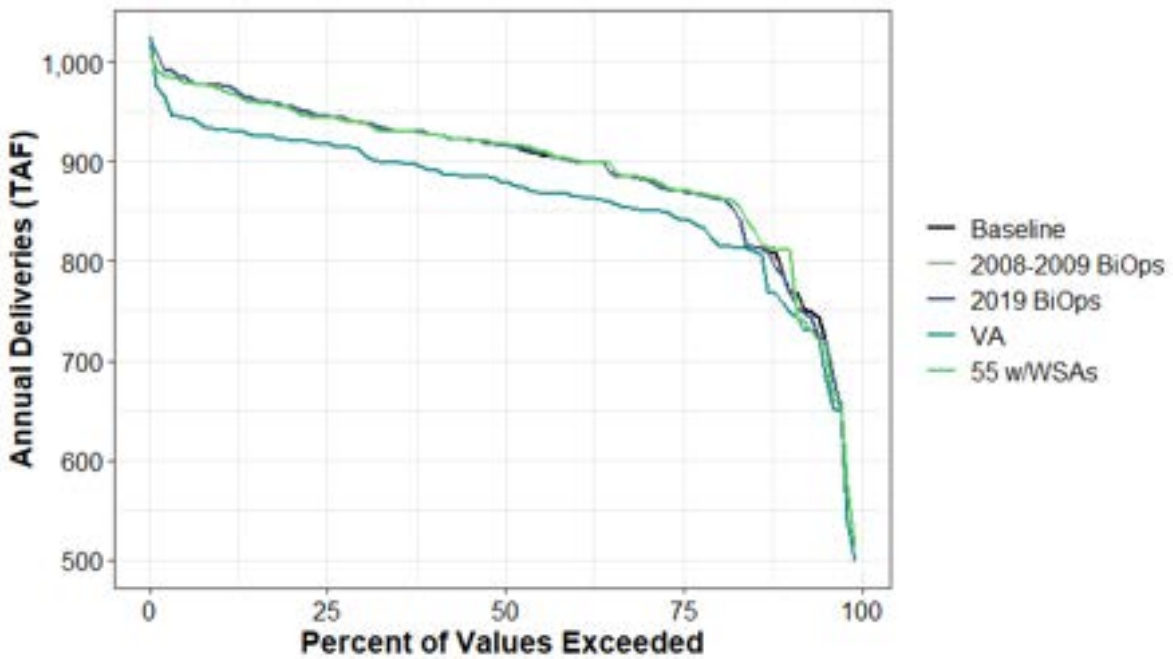

Figure H1a2-227. Surface Water Supplied to SWP Feather River Service Area (Agricultural) Annual Percent Exceedance Plot.

Table H1a2-458. Surface Water Supplied to SWP Feather River Service Area (Agricultural) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	1,022	1,022	1,022	1,026	1,010
10%	976	976	976	932	973
20%	953	953	955	922	953
30%	939	939	940	910	940
40%	928	928	928	891	928
50%	916	916	916	879	917
60%	901	901	901	865	903
70%	883	883	883	851	884
80%	864	864	864	821	866
90%	781	781	781	755	812
100%	498	498	498	498	513
Mean	894	893	894	862	895

Table H1a2-459. Surface Water Supplied to SWP Feather River Service Area (Agricultural) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	830	827	827	830	815
D	932	931	932	868	937
BN	913	914	914	858	917
AN	890	891	890	836	899
W	889	889	889	889	890
All	894	893	894	862	895

H1a2.6.68 SWP Settlement (Urban)

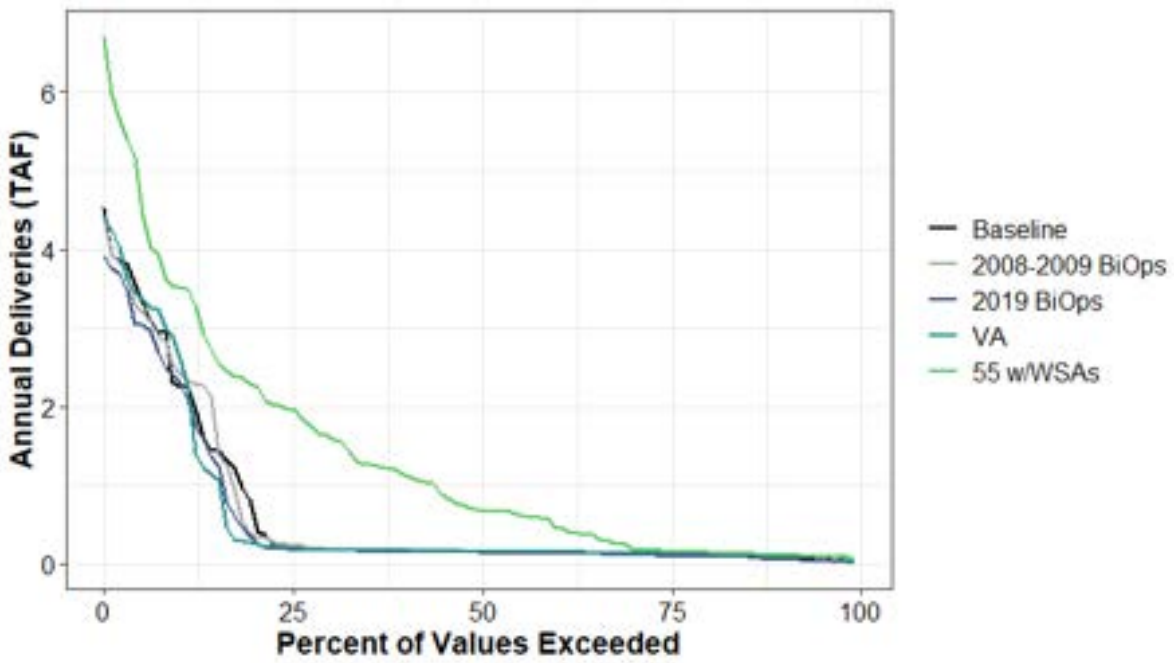

Figure H1a2-228. Surface Water Supplied to SWP Settlement (Urban) Annual Percent Exceedance Plot.

Table H1a2-460. Surface Water Supplied to SWP Settlement (Urban) Annual Exceedance Probability Distribution by Scenario (TAF).

	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
0%	4.5	4.4	3.9	4.4	6.7
10%	2.3	2.5	2.3	2.7	3.5
20%	0.6	0.4	0.3	0.3	2.3
30%	0.2	0.2	0.2	0.2	1.6
40%	0.2	0.2	0.2	0.2	1.1
50%	0.2	0.2	0.1	0.2	0.7
60%	0.1	0.1	0.1	0.2	0.5
70%	0.1	0.1	0.1	0.1	0.2
80%	0.1	0.1	0.1	0.1	0.1
90%	0.1	0.1	0.1	0.1	0.1
100%	0	0	0	0	0.1
Mean	0.6	0.6	0.5	0.6	1.3

Table H1a2-461. Surface Water Supplied to SWP Settlement (Urban) Average by Water Year Type (TAF).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	2.5	2.5	2.3	2.6	3.8
D	0.4	0.4	0.2	0.2	1.3
BN	0.3	0.3	0.3	0.3	1.1
AN	0.1	0.2	0.1	0.1	0.6
W	0.1	0.1	0.1	0.1	0.4
All	0.6	0.6	0.5	0.6	1.3

H1a2.7 Groundwater Storage and Flows

H1a2.7.1 Total Groundwater Pumping

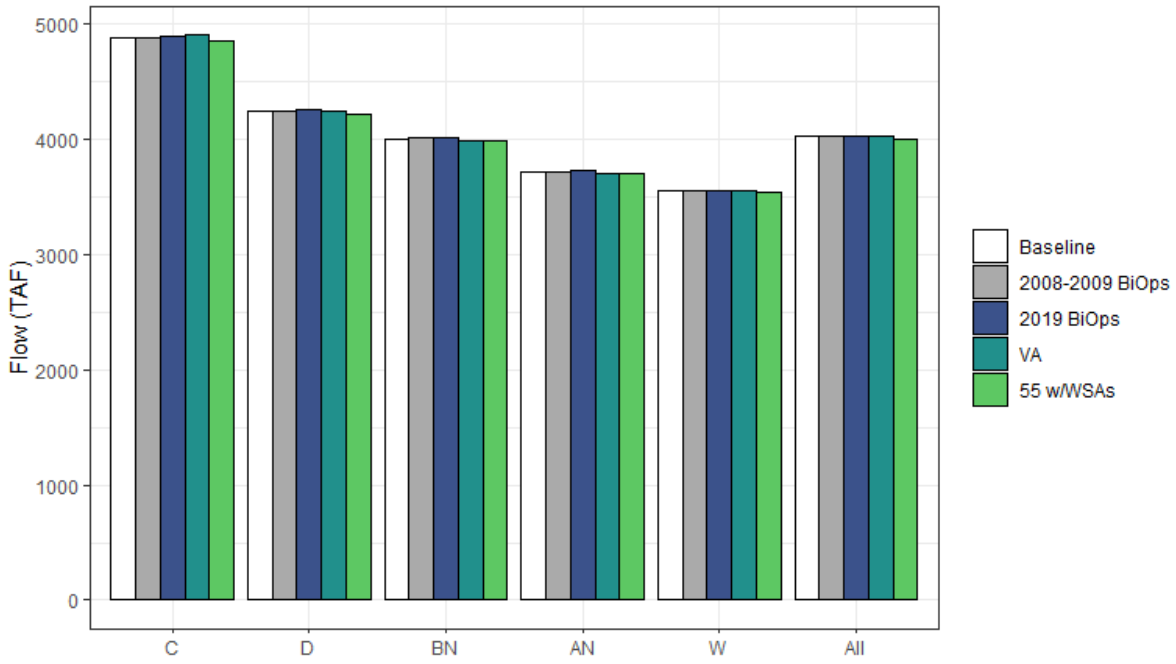

Figure H1a2-229. Average Annual Groundwater Pumping Across All Basins by WYT and Scenario (TAF/yr).

Table H1a2-462. Average Annual Groundwater Pumping Across All Basins by WYT and Scenario (TAF/yr).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	4,884	4,885	4,889	4,907	4,849
D	4,242	4,248	4,250	4,240	4,212
BN	4,006	4,013	4,012	3,986	3,984
AN	3,721	3,721	3,725	3,702	3,703
W	3,546	3,550	3,547	3,551	3,535
All	4,027	4,031	4,031	4,025	4,004

H1a2.7.2 Total Groundwater Pumping — Delta Eastside Tributaries

The groundwater basins underlying the Delta Eastside Tributaries region include the Cosumnes and a portion of the Eastern San Joaquin basins. Groundwater pumping for this region is considered to be the sum of groundwater pumping for all demands in water budget areas 60N and 60S; pumping for demands in water budget area 61N is excluded.

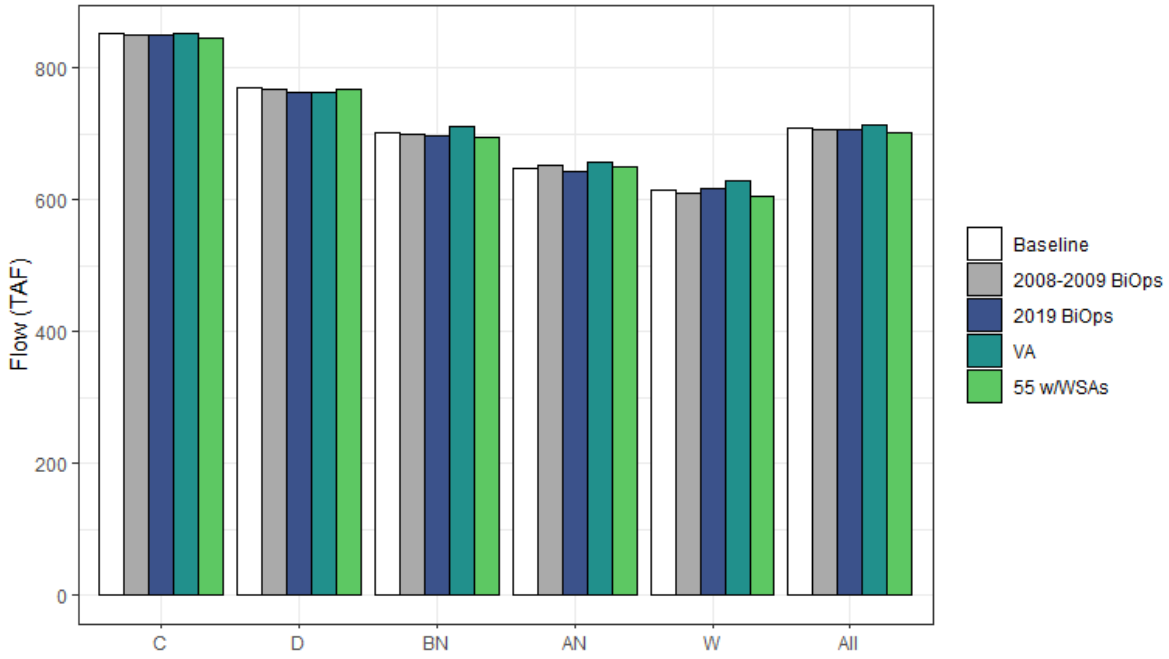

Figure H1a2-230. Average Total Annual Groundwater Pumping for the Delta Eastside Tributaries Region by WYT and Scenario (TAF/yr).

Table H1a2-463. Average Total Annual Groundwater Pumping for the Delta Eastside Tributaries Region by WYT and Scenario (TAF/yr).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	851	851	850	852	844
D	770	768	764	763	766
BN	701	699	696	711	696
AN	647	653	644	657	649
W	614	610	617	629	604
All	708	706	706	714	702

H1a2.7.3 Groundwater Pumping — Sacramento River Watershed

The groundwater basins underlying the Sacramento River Watershed region include the American, Butte, Red Bluff-Corning, Redding, Sutter-Yuba, Yolo-Solano, and Colusa basins.

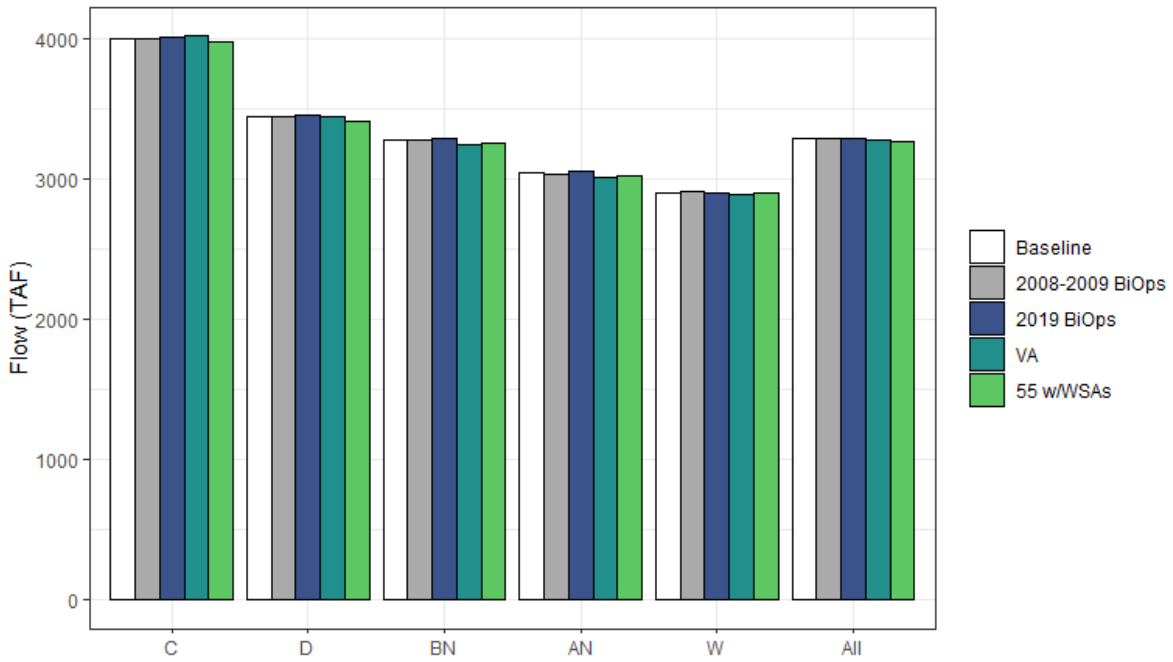

Figure H1a2-231. Average Total Annual Groundwater Pumping for the Sacramento Watershed Region by WYT and Scenario (TAF/yr).

Table H1a2-464. Average Total Annual Groundwater Pumping for the Sacramento Watershed Region by WYT and Scenario (TAF/yr).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	3,998	4,000	4,004	4,020	3,970
D	3,439	3,446	3,453	3,444	3,413
BN	3,273	3,282	3,283	3,243	3,256
AN	3,043	3,038	3,050	3,014	3,024
W	2,902	2,910	2,899	2,891	2,900
All	3,287	3,292	3,293	3,279	3,270

H1a2.7.4 Groundwater Pumping by Basin

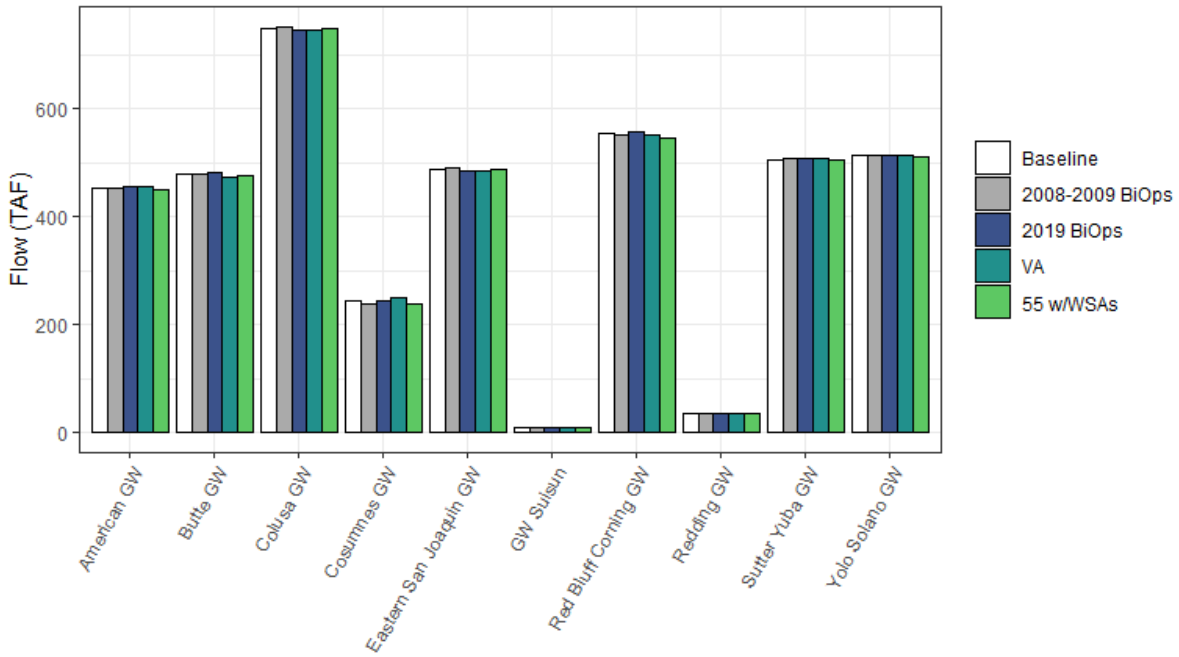

Figure H1a2-232. Annual Average Groundwater Pumping by Basin (TAF/yr).

Table H1a2-465. Annual Average Groundwater Pumping by Basin and Change from Baseline (TAF/yr).

Basin	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
American GW	453	1	2	4	-2
Butte GW	479	0	2	-8	-4
Colusa GW	747	5	-2	-2	2
Cosumnes GW	243	-3	0	8	-5
Eastern San Joaquin GW	487	2	-2	-2	0
GW Suisun	10	0	0	0	0
Red Bluff Corning GW	554	-2	3	-2	-7
Redding GW	36	0	0	0	0
Sutter Yuba GW	506	1	2	0	-1
Yolo Solano GW	513	0	0	0	-3

H1a2.7.5 Total Groundwater Recharge

Total groundwater recharge includes stream gain/loss, infiltration from applied water and precipitation, and transmission losses to all of the groundwater basins.

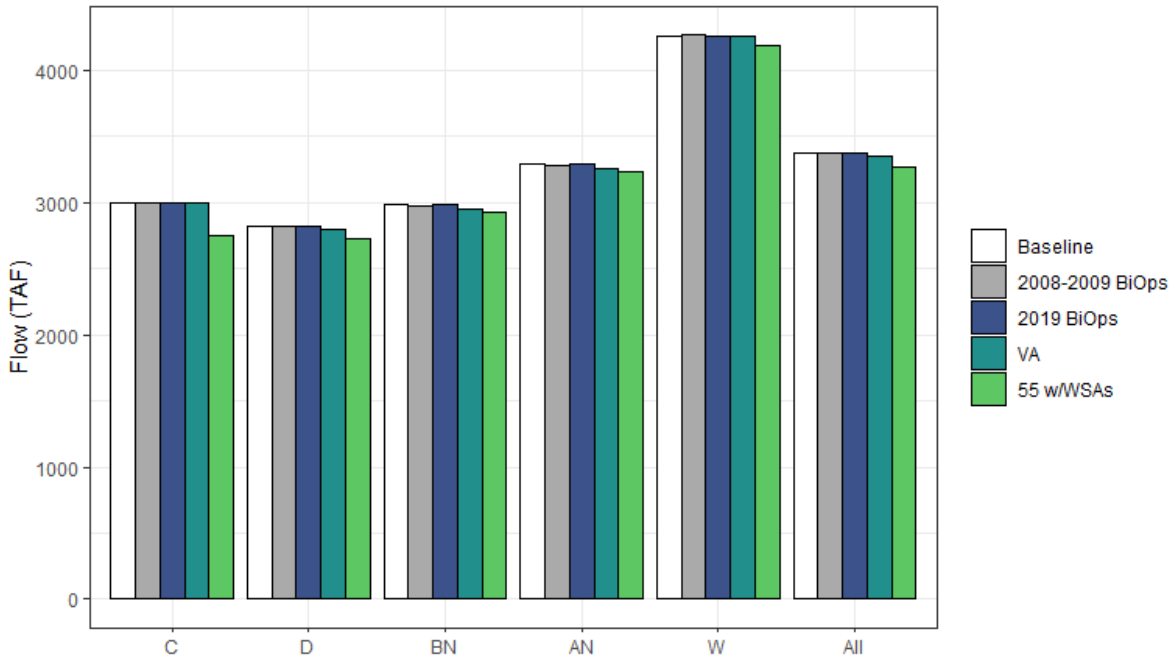

Figure H1a2-233. Total Average Annual Groundwater Recharge by WYT and Scenario (TAF/yr).

Table H1a2-466. Total Average Annual Groundwater Recharge by WYT and Scenario (TAF/yr).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	3,001	2,996	2,996	2,993	2,754
D	2,819	2,823	2,820	2,795	2,723
BN	2,982	2,975	2,985	2,946	2,925
AN	3,291	3,282	3,291	3,256	3,235
W	4,264	4,271	4,263	4,259	4,193
All	3,375	3,375	3,375	3,355	3,274

H1a2.7.6 Total Groundwater Recharge — Delta Eastside Tributaries

Total groundwater recharge includes stream gain/loss, infiltration from applied water and precipitation, and transmission losses to all of the groundwater basins. The groundwater basins underlying the Delta Eastside Tributaries region include the Cosumnes and a portion of the Eastern San Joaquin basins. All sources of recharge within water budget areas 60S and 60N are included in the summary of recharge for the Delta Eastside Tributaries region.

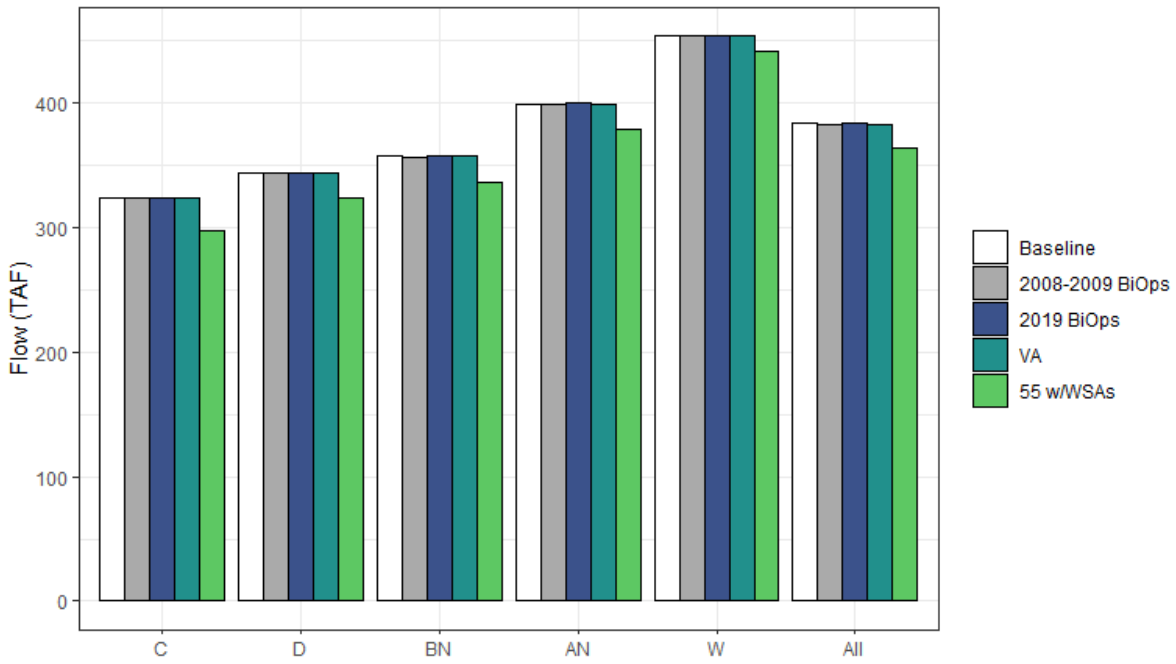

Figure H1a2-234. Total Average Annual Groundwater Recharge for the Delta Eastside Tributaries Region by WYT and Scenario (TAF/yr).

Table H1a2-467. Total Average Annual Groundwater Recharge for the Delta Eastside Tributaries Region by WYT and Scenario (TAF/yr).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	324	324	324	324	297
D	344	344	344	343	323
BN	357	357	357	358	337
AN	399	399	399	398	379
W	454	454	454	454	442
All	383	383	383	383	364

H1a2.7.7 Total Groundwater Recharge — Sacramento River Watershed

Total groundwater recharge includes stream gain/loss, infiltration from applied water and precipitation, and transmission losses to all of the groundwater basins. The groundwater basins underlying the Sacramento watershed region include the American, Butte, Red Bluff-Corning, Redding, Sutter-Yuba, Yolo-Solano, and Colusa basins.

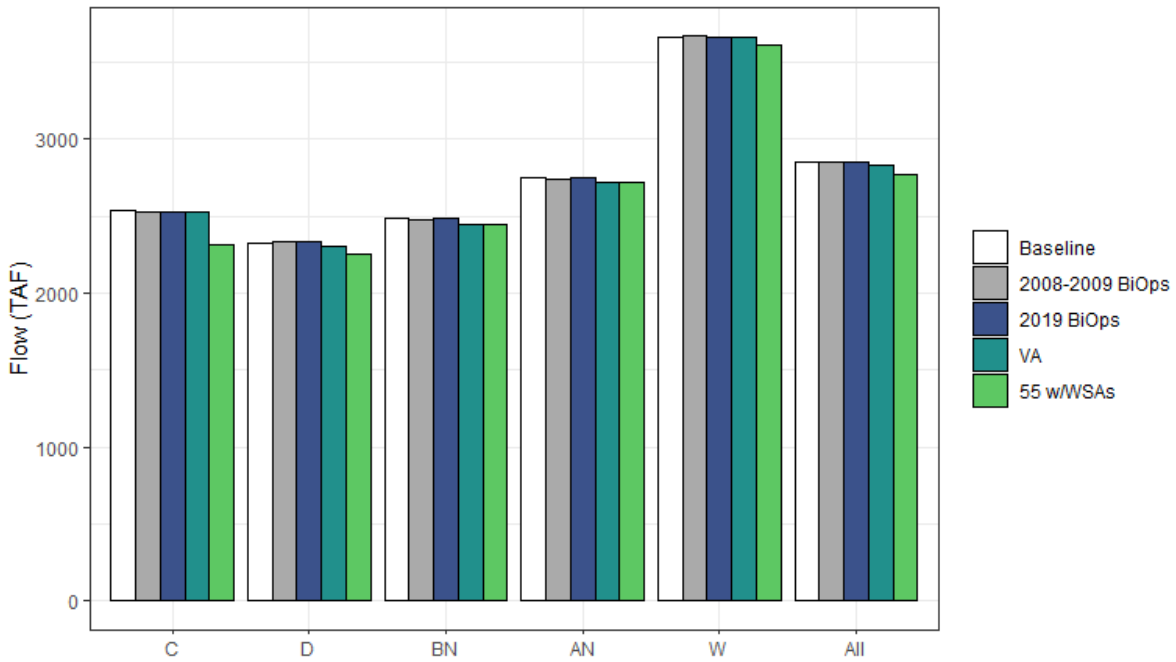

Figure H1a2-235. Total Average Annual Groundwater Recharge for the Sacramento River Watershed by WYT and Scenario (TAF/yr).

Table H1a2-468. Total Average Annual Groundwater Recharge for the Sacramento River Watershed by WYT and Scenario (TAF/yr).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	2,534	2,529	2,529	2,525	2,315
D	2,330	2,335	2,332	2,307	2,257
BN	2,485	2,478	2,487	2,447	2,450
AN	2,752	2,742	2,751	2,717	2,717
W	3,667	3,674	3,666	3,663	3,609
All	2,849	2,849	2,849	2,830	2,769

H1a2.7.8 Total Groundwater Recharge by Basin

Total groundwater recharge includes stream gain/loss, infiltration from applied water and precipitation, and transmission losses.

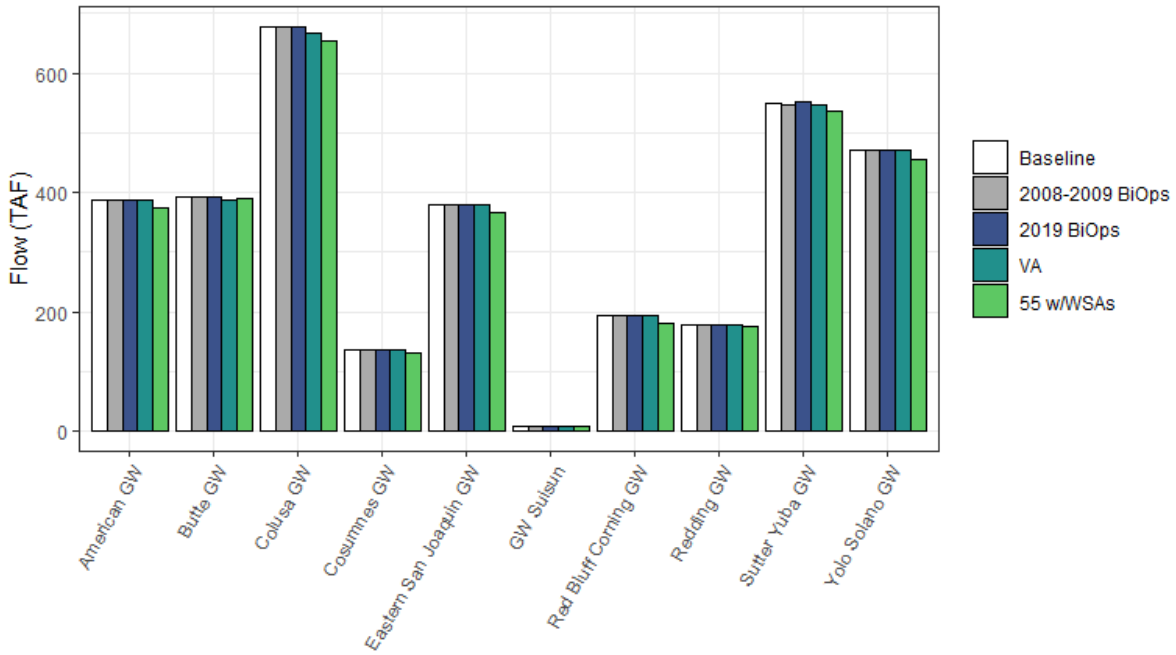

Figure H1a2-236. Annual Average Groundwater Recharge by Basin (TAF/yr).

Table H1a2-469. Annual Average Groundwater Recharge by Basin and Change from Baseline (TAF/yr).

Basin	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
American GW	388	0	0	-1	-13
Butte GW	393	0	-1	-6	-2
Colusa GW	678	0	-2	-10	-25
Cosumnes GW	137	0	0	0	-7
Eastern San Joaquin GW	380	0	0	0	-12
GW Suisun	9	0	0	0	-1
Red Bluff Corning GW	193	0	0	0	-13
Redding GW	179	0	0	-1	-2
Sutter Yuba GW	549	-1	3	-1	-11
Yolo Solano GW	471	0	0	0	-14

H1a2.7.9 Total Stream-Groundwater Flux

Total stream-groundwater flux represents the net flow from streams to underlying groundwater basins.

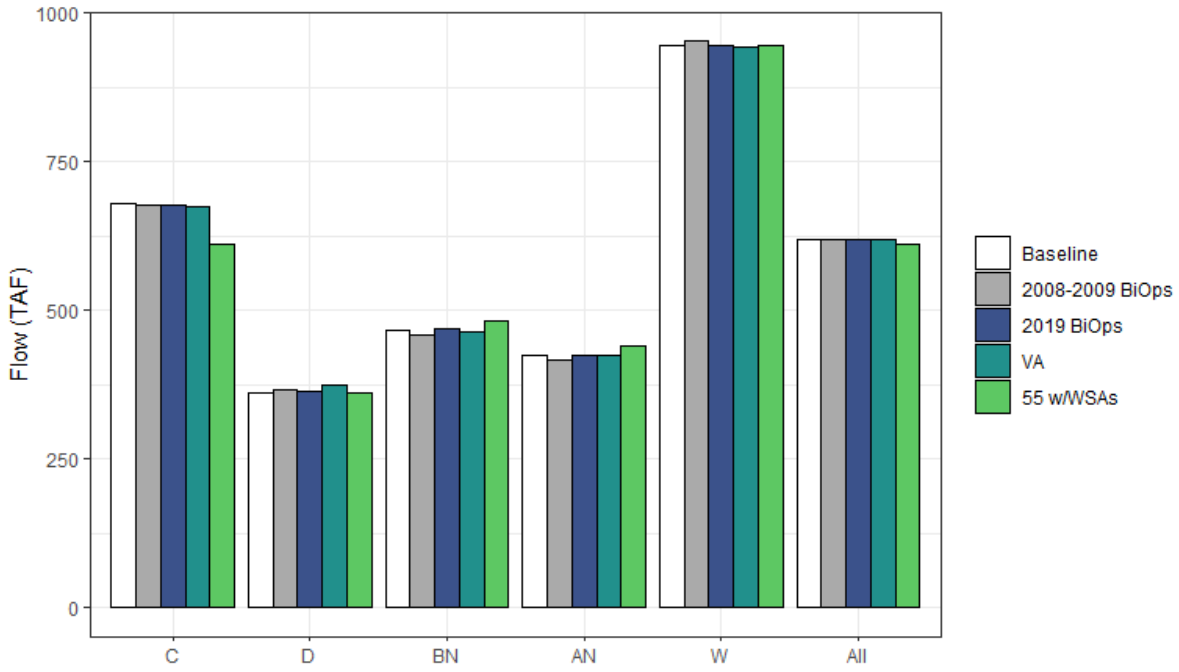

Figure H1a2-237. Total Average Annual Stream-Groundwater Flux (Net Groundwater Gain) by WYT and Scenario (TAF/yr).

Table H1a2-470. Total Average Annual Stream-Groundwater Flux (Net Groundwater Gain) by WYT and Scenario (TAF/yr).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	680	676	677	674	612
D	363	368	365	376	362
BN	466	458	468	464	483
AN	426	416	425	425	440
W	946	953	945	941	946
All	618	618	618	618	612

H1a2.7.10 Total Stream-Groundwater Flux — Delta Eastside Tributaries

For the Delta Eastside Tributaries, this summary includes stream-groundwater flows associated with the Cosumnes, Mokelumne, and Calaveras River watersheds.

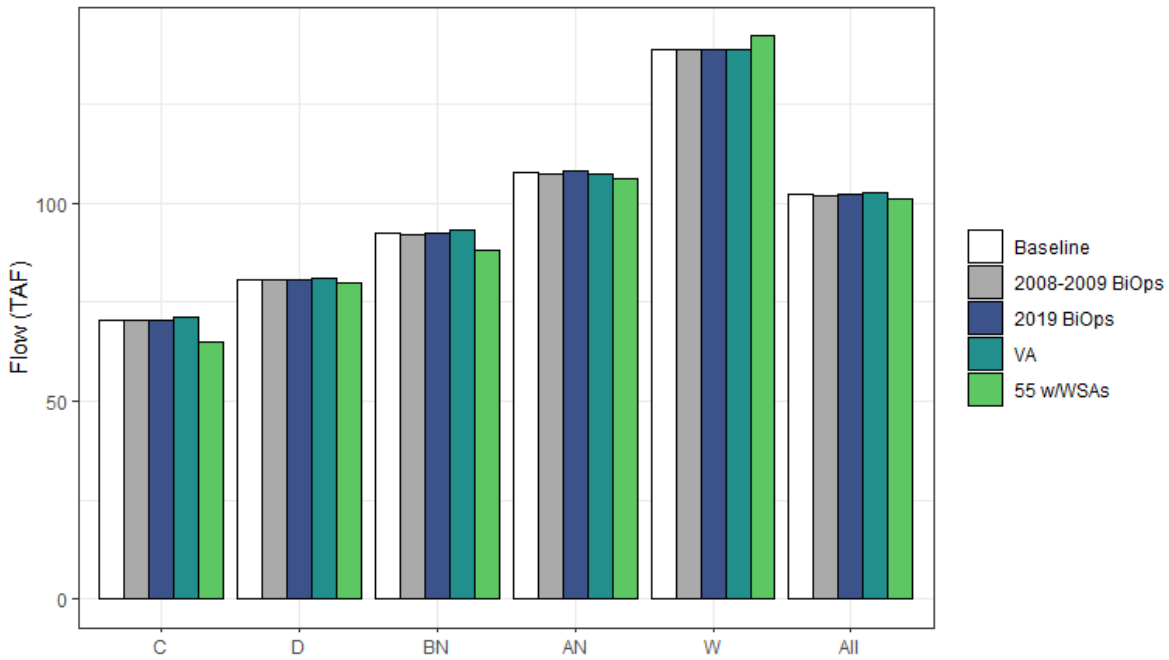

Figure H1a2-238. Total Average Annual Stream-Groundwater Flux (Net Groundwater Gain) for Delta Eastside Tributaries Region by WYT and Scenario (TAF/yr).

Table H1a2-471. Total Average Annual Stream-Groundwater Flux (Net Groundwater Gain) for Delta Eastside Tributaries Region by WYT and Scenario (TAF/yr).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	70	70	70	71	65
D	81	80	81	81	80
BN	92	92	92	93	88
AN	108	107	108	107	106
W	138	139	139	139	142
All	102	102	102	102	101

H1a2.7.11 Total Stream-Groundwater Flux — Sacramento River Watershed

For the Sacramento River Watershed, this summary includes all stream-groundwater flows in the American, Butte, Red Bluff-Corning, Redding, Sutter-Yuba, Yolo-Solano, and Colusa basins.

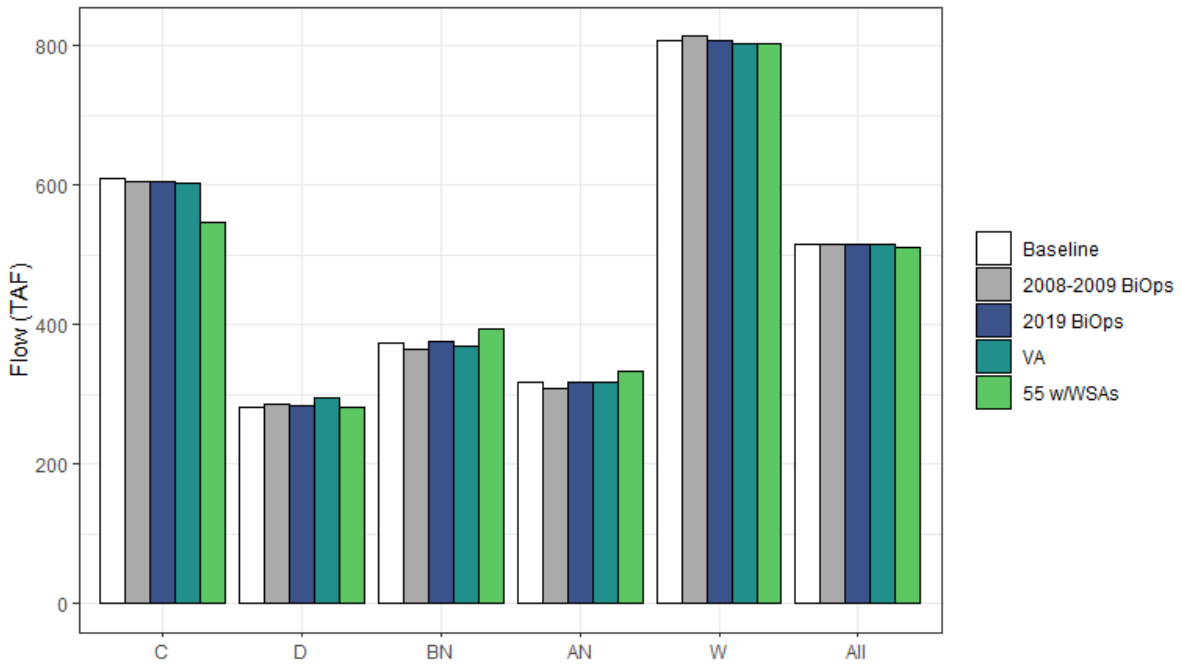

Figure H1a2-239. Total Average Annual Stream-Groundwater Flux (Net Groundwater Gain) for Sacramento River Watershed by WYT and Scenario (TAF/yr).

Table H1a2-472. Total Average Annual Stream-Groundwater Flux (Net Groundwater Gain) for Sacramento River Watershed by WYT and Scenario (TAF/yr).

WYT	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
C	610	606	607	603	547
D	282	287	284	295	282
BN	373	366	376	371	395
AN	318	309	317	318	334
W	807	815	807	803	804
All	516	516	516	516	511

H1a2.7.12 Stream-Groundwater Flux by Basin

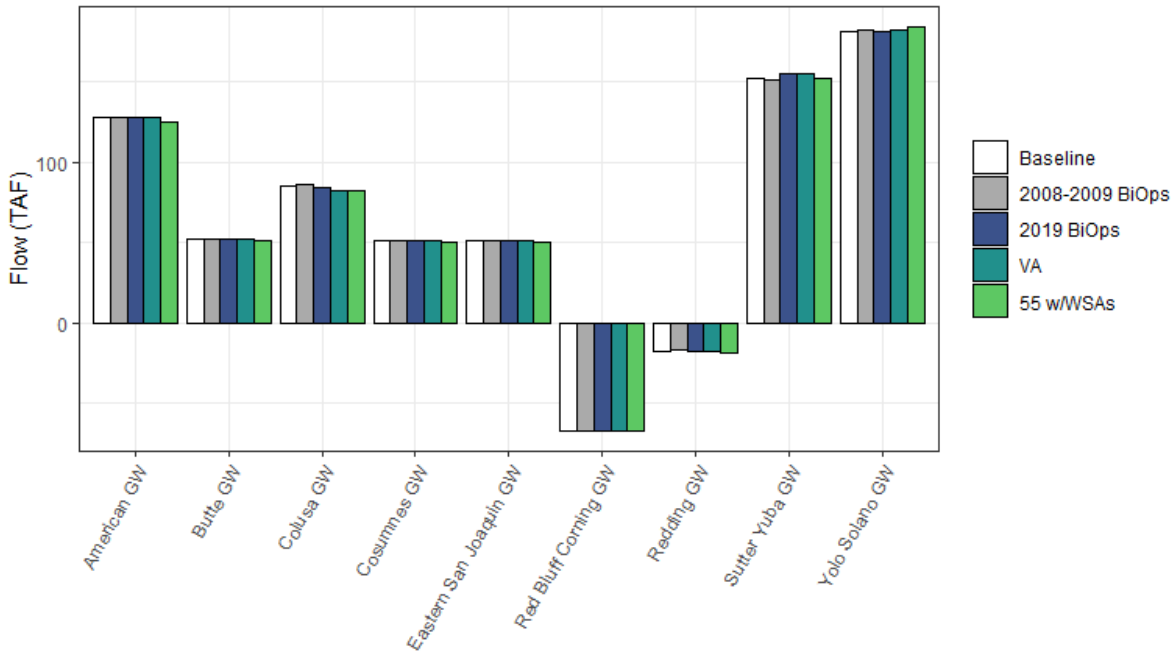

Figure H1a2-240. Stream-Groundwater Flux (Net Groundwater Gain) by Basin (TAF/yr).

Table H1a2-473. Annual Average Stream-Groundwater Flux by Basin and Change from Baseline (TAF/yr).

Basin	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
American GW	128	0	0	0	-3
Butte GW	52	0	-1	-1	-1
Colusa GW	86	0	-2	-3	-3
Cosumnes GW	51	0	0	0	-1
Eastern San Joaquin GW	51	0	0	0	0
Red Bluff Corning GW	-67	0	0	0	0
Redding GW	-17	0	0	0	-1
Sutter Yuba GW	152	-1	3	3	0
Yolo Solano GW	182	0	0	0	3

H1a2.7.13 Groundwater Storage by Basin

Table H1a2-474. Annual Average Rate of Change in Storage by Basin (TAF/yr).

Basin	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
American GW	-65	-66	-67	-70	-76
Butte GW	-86	-87	-89	-85	-84
Colusa GW	-69	-73	-68	-77	-95
Cosumnes GW	-106	-103	-106	-114	-107
Eastern San Joaquin GW	-108	-110	-105	-106	-119
GW Suisun	-1	-1	-1	-1	-2
Red Bluff Corning GW	-361	-359	-364	-358	-366
Redding GW	143	143	143	142	141
Sutter Yuba GW	43	41	44	41	32
Yolo Solano GW	-42	-42	-43	-42	-53

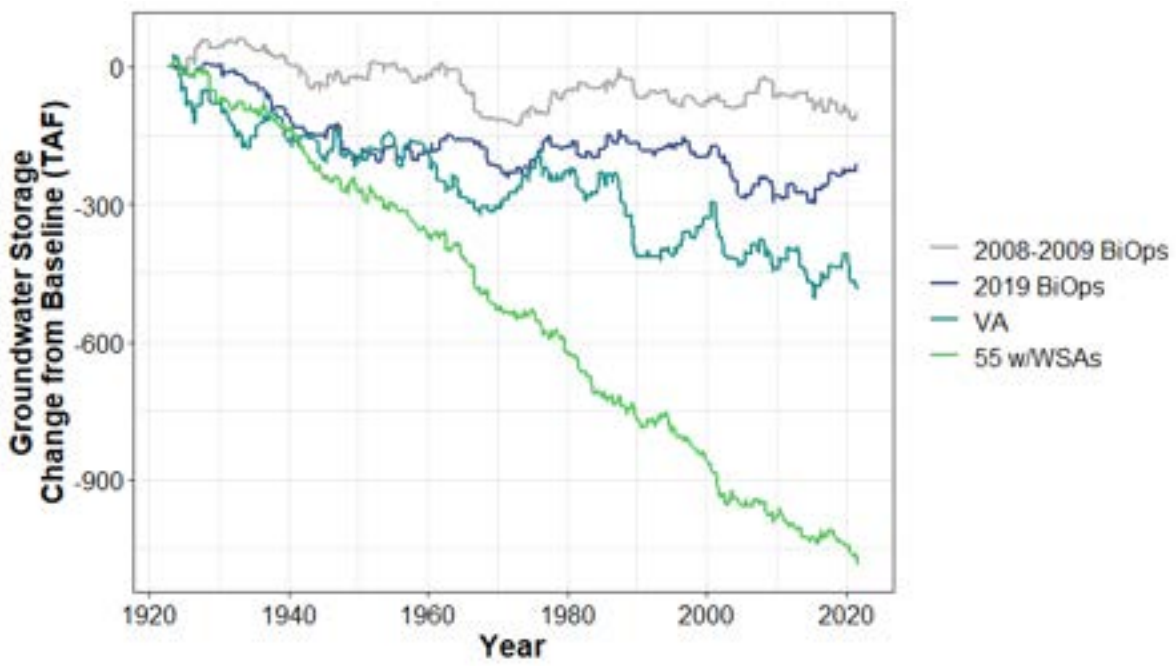

Figure H1a2-241. American River Groundwater Basin End of Year Storage—Change from Baseline (TAF)

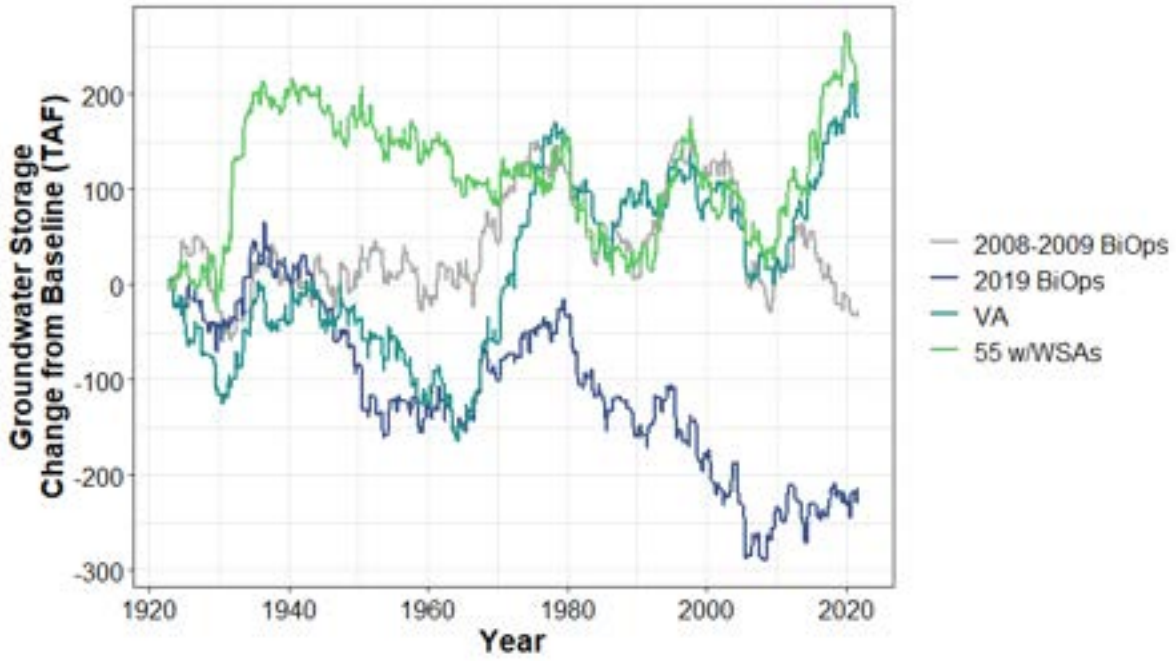

Figure H1a2-242. Butte Groundwater Basin End of Year Storage—Change from Baseline (TAF)

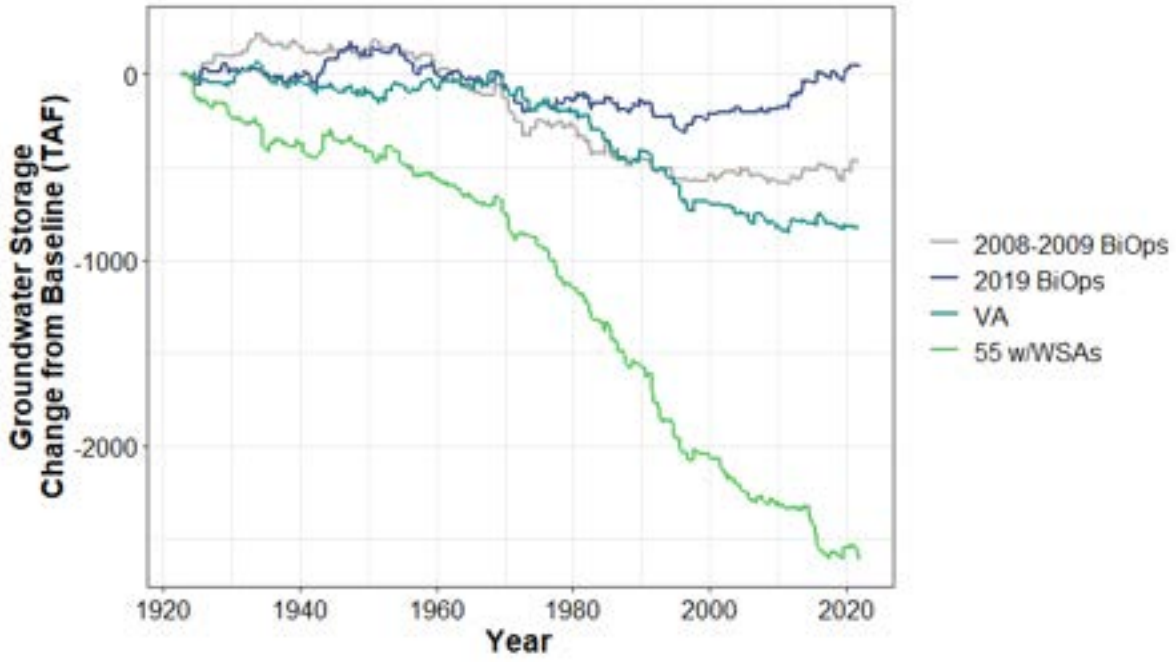

Figure H1a2-243. Colusa Groundwater Basin End of Year Storage—Change from Baseline (TAF)

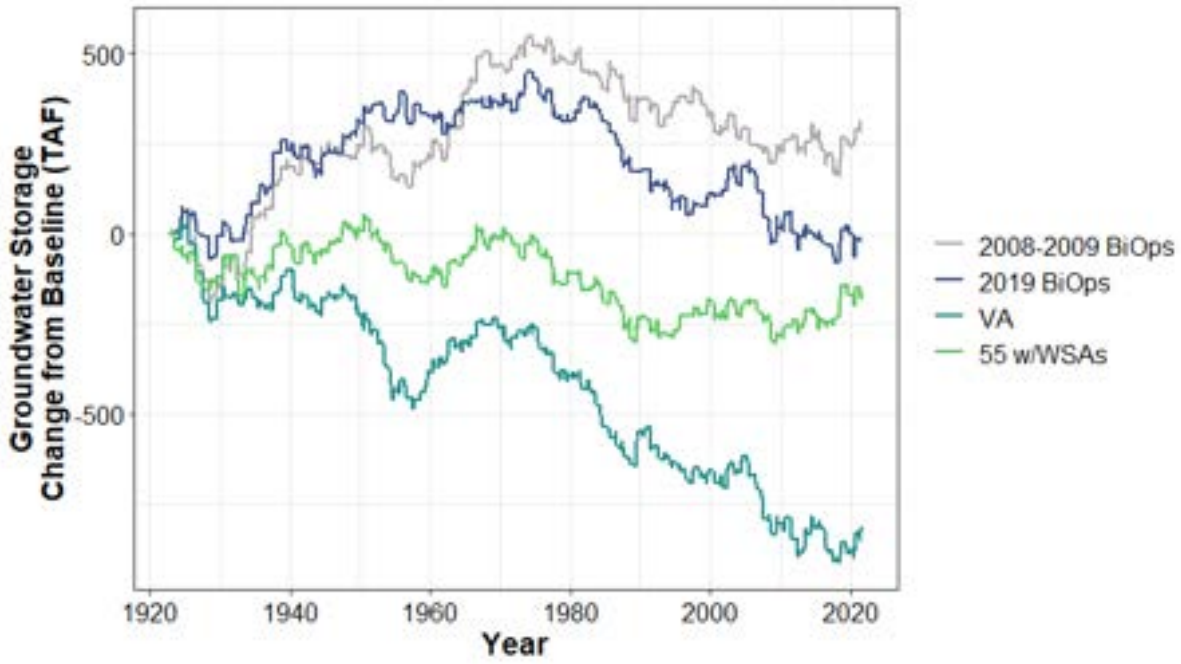

Figure H1a2-244. Cosumnes Groundwater Basin End of Year Storage—Change from Baseline (TAF)

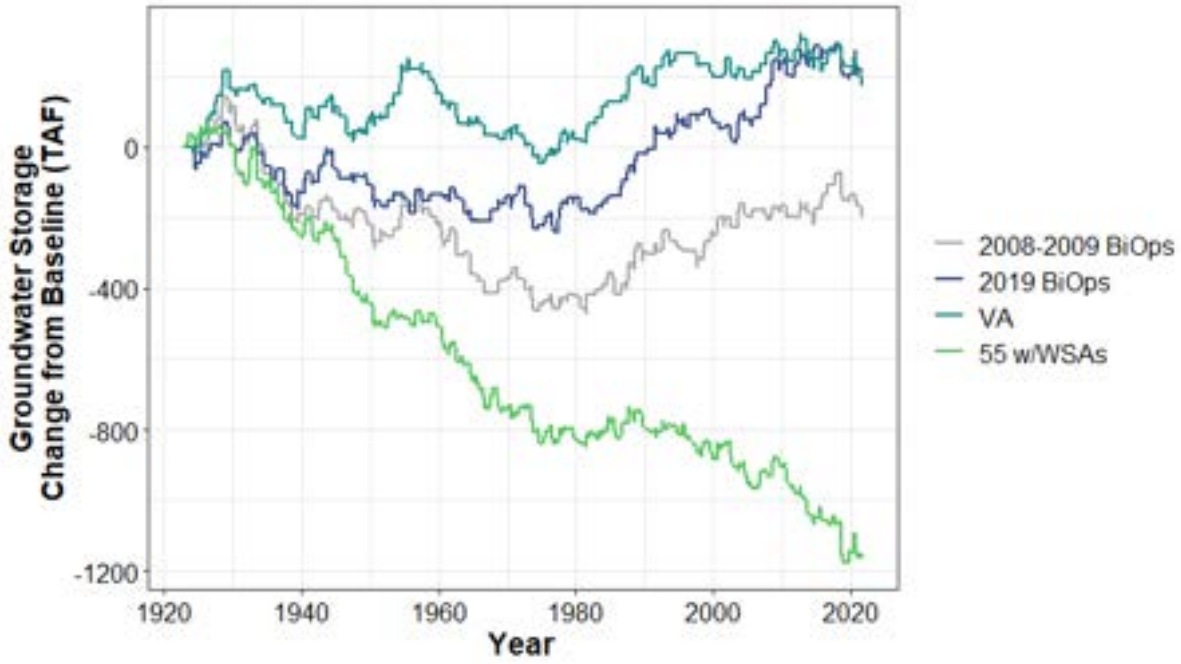

Figure H1a2-245. Eastern San Joaquin Groundwater Basin End of Year Storage—Change from Baseline (TAF)

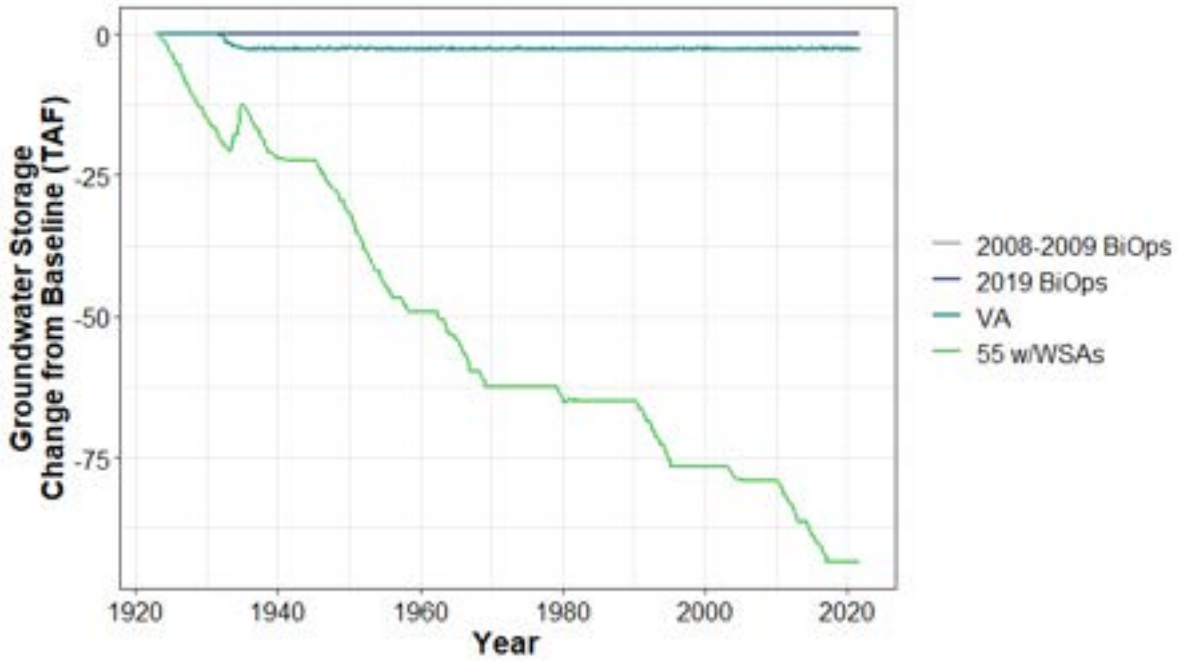

Figure H1a2-246. Suisun Groundwater Basin End of Year Storage—Change from Baseline (TAF)

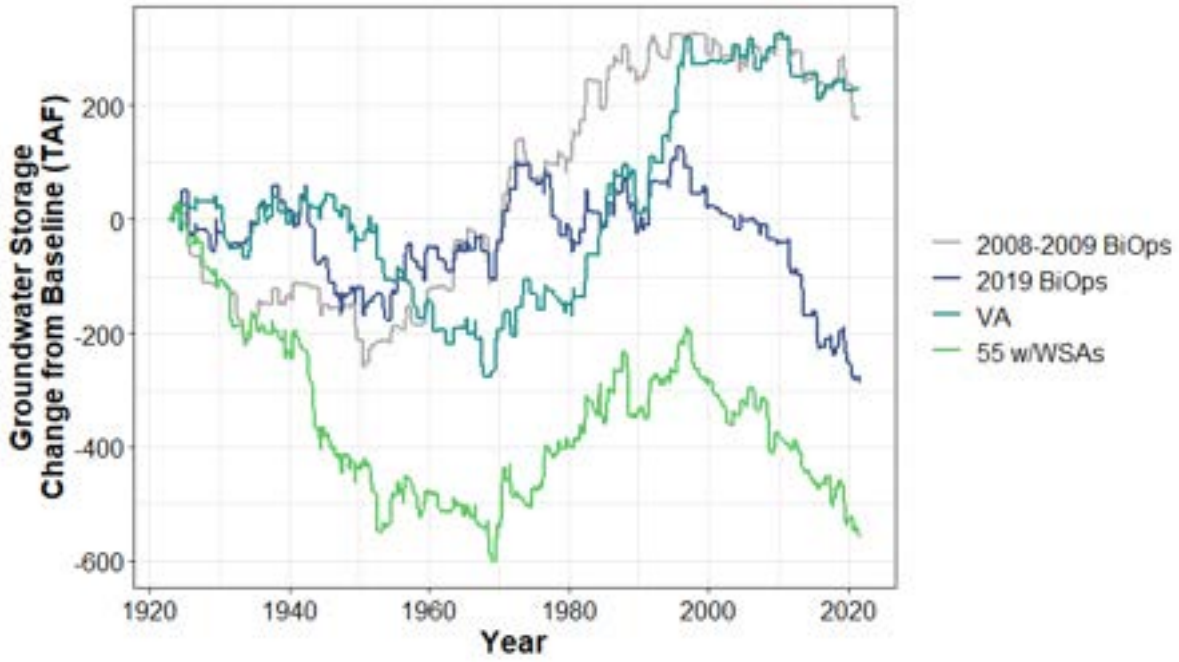

Figure H1a2-247. Red Bluff-Corning Groundwater Basin End of Year Storage—Change from Baseline (TAF)

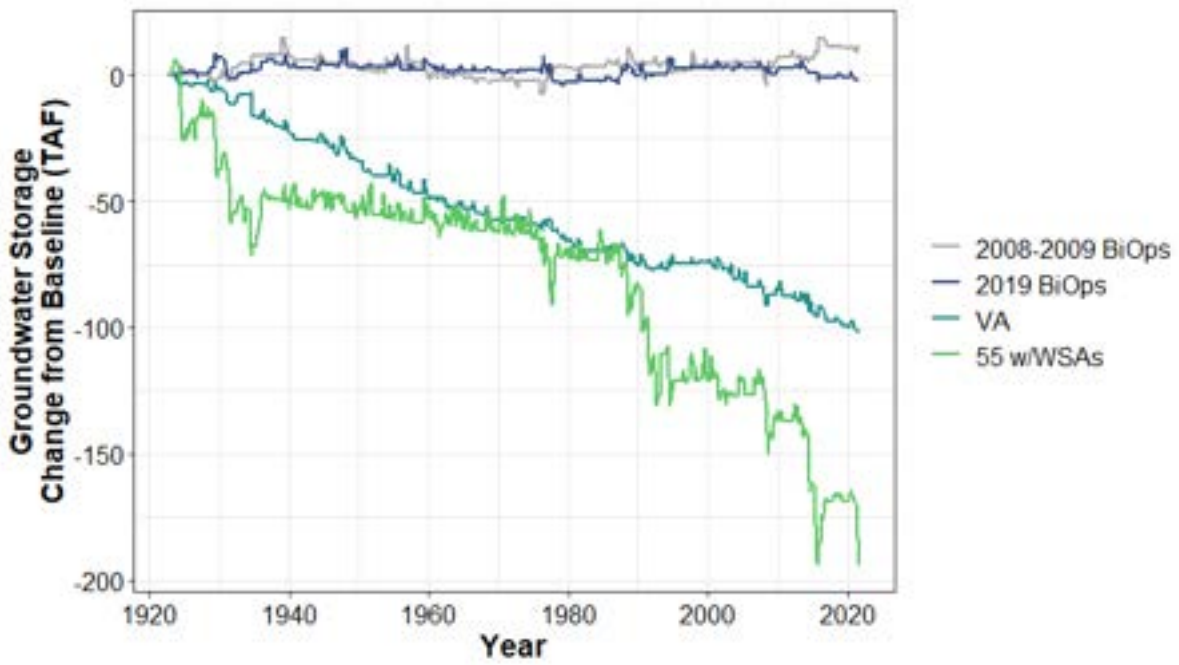

Figure H1a2-248. Redding Groundwater Basin End of Year Storage—Change from Baseline

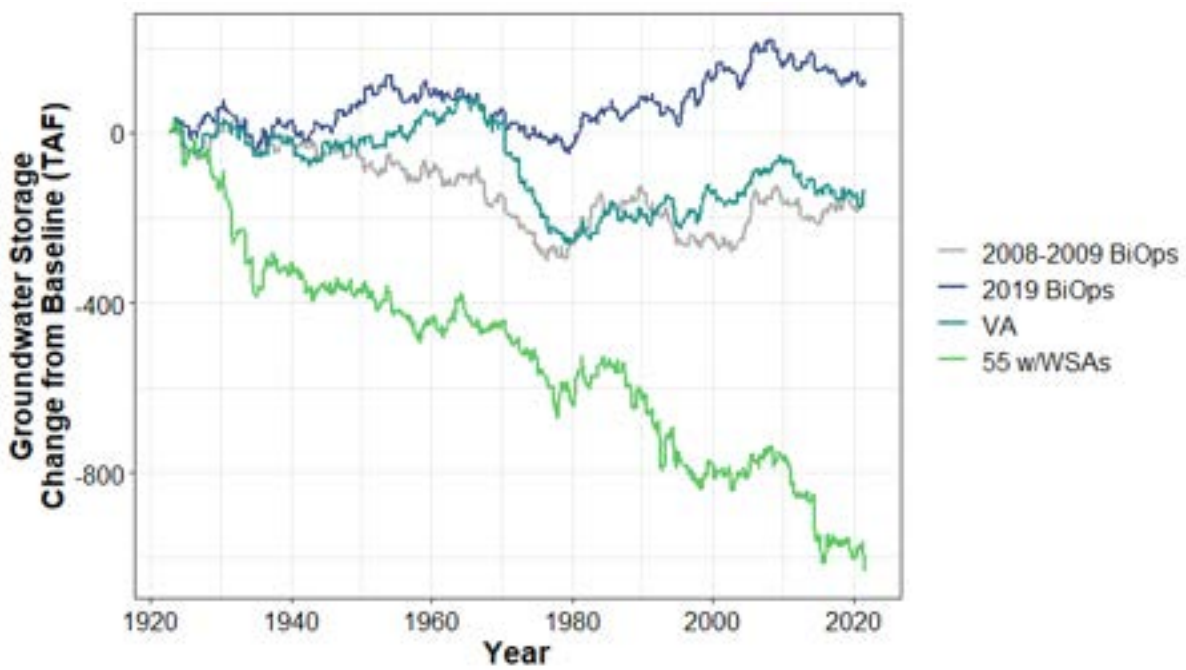

Figure H1a2-249. Sutter-Yuba Groundwater Basin End of Year Storage—Change from Baseline

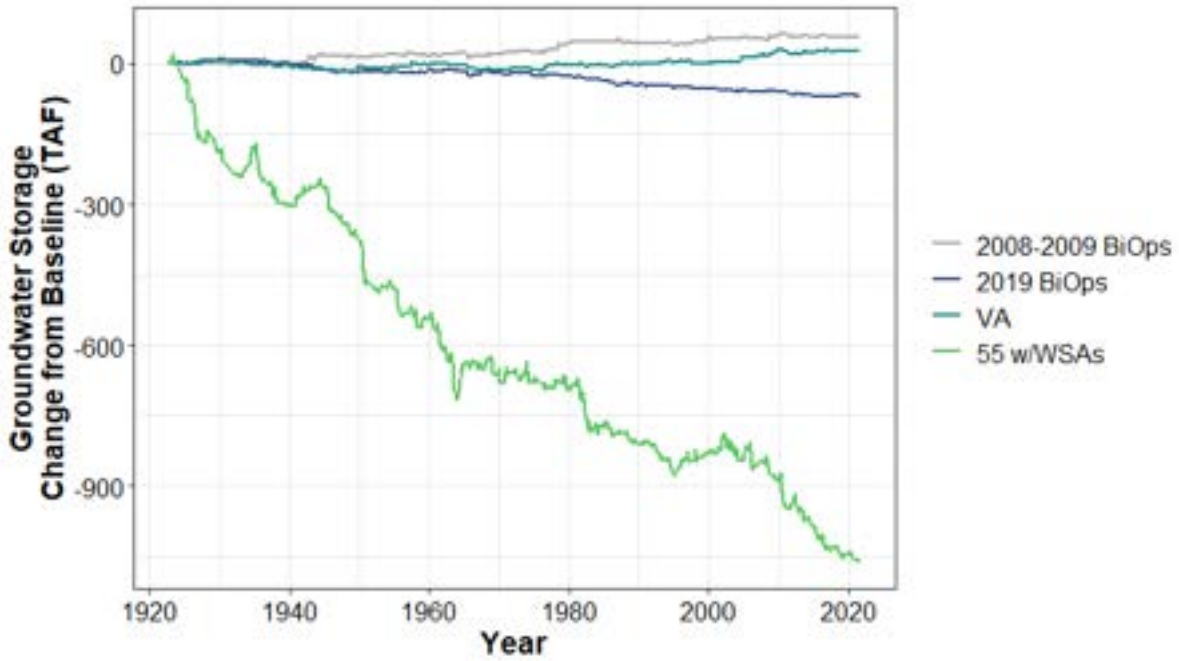

Figure H1a2-250. Yolo-Solano Groundwater Basin End of Year Storage—Change from Baseline

H1a2.8 Unmet Instream Flow Requirements

Unmet instream flow requirements are presented as a count of months and percent of months in which the flow requirement was not met. There are a total of 1,188 months in the 1923–2021 simulation period presented here, though many instream flow requirements are not in effect in every month of the simulation period. The flow requirement was considered unmet if the shortfall was greater than 5% of the monthly requirement. Results are presented for "REG" flow requirements, which represent existing regulatory flow requirements. The VA scenario makes use of a subset of "SWRCB" flow requirements (SWRCB Camanche, SWRCB Folsom, SWRCB Delta, SWRCB Putah Creek, and SWRCB Sacramento at Knights Landing) as well as REG High Flow Channel to implement VA flow requirements. These requirements are always met in the VA scenario.

Table H1a2-475. Number of Months (Percent of Months) with Unmet REG Instream Flow Requirements

Requirement	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
REG American River at Fair Oaks	3 (0)	2 (0)	3 (0)	3 (0)	0 (0)
REG Bear River below Lower Bear Dam	18 (2)	18 (2)	18 (2)	18 (2)	18 (2)
REG Below Little Grass Valley Dam	14 (1)	14 (1)	14 (1)	14 (1)	14 (1)
REG below SFF Tunnel	14 (1)	14 (1)	14 (1)	14 (1)	14 (1)
REG Below Tiger River Regulator	2 (0)	2 (0)	2 (0)	2 (0)	2 (0)
REG Clear Creek below Igo	153 (13)	155 (13)	149 (13)	149 (13)	150 (13)
REG Cole Creek below Diversion Dam	12 (1)	12 (1)	12 (1)	12 (1)	12 (1)
REG D893 H St	3 (0)	1 (0)	3 (0)	3 (0)	0 (0)
REG Downstream of Forbestown Dam	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)
REG Downstream of Lost Creek Dam	2 (0)	2 (0)	2 (0)	2 (0)	2 (0)
REG Hamilton Branch	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)
REG HighFlow Channel	1 (0)	2 (0)	1 (0)	0 (0)	0 (0)

Requirement	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
REG Kellogg Creek below Los Vaqueros	194 (16)	194 (16)	194 (16)	194 (16)	194 (16)
REG Little Rubicon below Diversion	22 (2)	22 (2)	22 (2)	22 (2)	22 (2)
REG Lodi1950 Base	10 (1)	10 (1)	10 (1)	10 (1)	10 (1)
REG Lodi1950 HiMayStorage	79 (7)	79 (7)	79 (7)	79 (7)	77 (6)
REG Lodi1950 LoMayStorageHiEOMStorage	48 (4)	48 (4)	48 (4)	48 (4)	62 (5)
REG Lodi22415 Base	10 (1)	10 (1)	10 (1)	10 (1)	10 (1)
REG Lodi22415 HiPrecipHiEOMStorage	63 (5)	63 (5)	63 (5)	63 (5)	70 (6)
REG Lodi22415_HiPrecipLoEOMStorage	2 (0)	2 (0)	2 (0)	2 (0)	2 (0)
REG Lodi22415 LoPrecipHiEOMStorage	2 (0)	2 (0)	2 (0)	2 (0)	2 (0)
REG LowFlowChannel	1 (0)	1 (0)	1 (0)	0 (0)	0 (0)
REG Middle Yuba below Our House Dam	59 (5)	59 (5)	59 (5)	59 (5)	59 (5)
REG Mormon Ravine	99 (8)	99 (8)	99 (8)	99 (8)	99 (8)
REG NF American below Lake Valley Canal	137 (12)	137 (12)	137 (12)	137 (12)	137 (12)
REG NF Mokelumne below Salt Spring Dam	2 (0)	2 (0)	2 (0)	2 (0)	2 (0)
REG NS Fork Long Canyon below Dam	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)
REG Rubicon below Rubicon Dam	21 (2)	21 (2)	21 (2)	21 (2)	21 (2)
REG Silver Creek below Oyster Creek	93 (8)	93 (8)	93 (8)	93 (8)	93 (8)
REG Stony Creek below Black Butte	4 (0)	4 (0)	4 (0)	4 (0)	25 (2)
REG Stony Creek below East Park Dam	3 (0)	3 (0)	3 (0)	3 (0)	23 (2)
REG Stony Creek below Northside Dam	4 (0)	4 (0)	4 (0)	4 (0)	22 (2)
REG Stony Creek below Stony Gorge	4 (0)	4 (0)	4 (0)	4 (0)	21 (2)
REG Trinity River below Lewiston	3 (0)	3 (0)	1 (0)	1 (0)	1 (0)
REG Yuba River near Marysville	3 (0)	3 (0)	3 (0)	3 (0)	3 (0)
REG Yuba River near Smartville	3 (0)	3 (0)	3 (0)	3 (0)	3 (0)

Table H1a2-476. Number of Months (Percent of Months) with Unmet SWRCB Instream Flow Requirements

Requirement	Baseline	2008-2009 BiOps	2019 BiOps	VA	55 w/WSAs
SWRCB Black Butte	-	0 (0)	0 (0)	0 (0)	14 (1)
SWRCB Clear Lake	-	0 (0)	0 (0)	0 (0)	52 (4)
SWRCB Cosumnes River	-	0 (0)	0 (0)	0 (0)	6 (1)
SWRCB Oroville	-	0 (0)	0 (0)	0 (0)	9 (1)
SWRCB Stony Creek	-	0 (0)	0 (0)	0 (0)	5 (0)