NORTH SAN JOAQUIN WATER CONSERVATION DISTRICT
WATER SUPPLY UPDATE
November 28, 2016

WATER SOURCE 1: NSJWCD PERMIT 10477

Projected 2016 Supply: Projecting water available beginning Dec. 1 under direct diversion right

No water was stored for NSJWCD during 2016. However, the NSJWCD Permit 10477 direct diversion right begins Dec. 1st. Water may become available under Permit 10477 beginning Dec. 1 if EBMUD is required to bypass inflow due to flood control requirements (which has already been occurring).

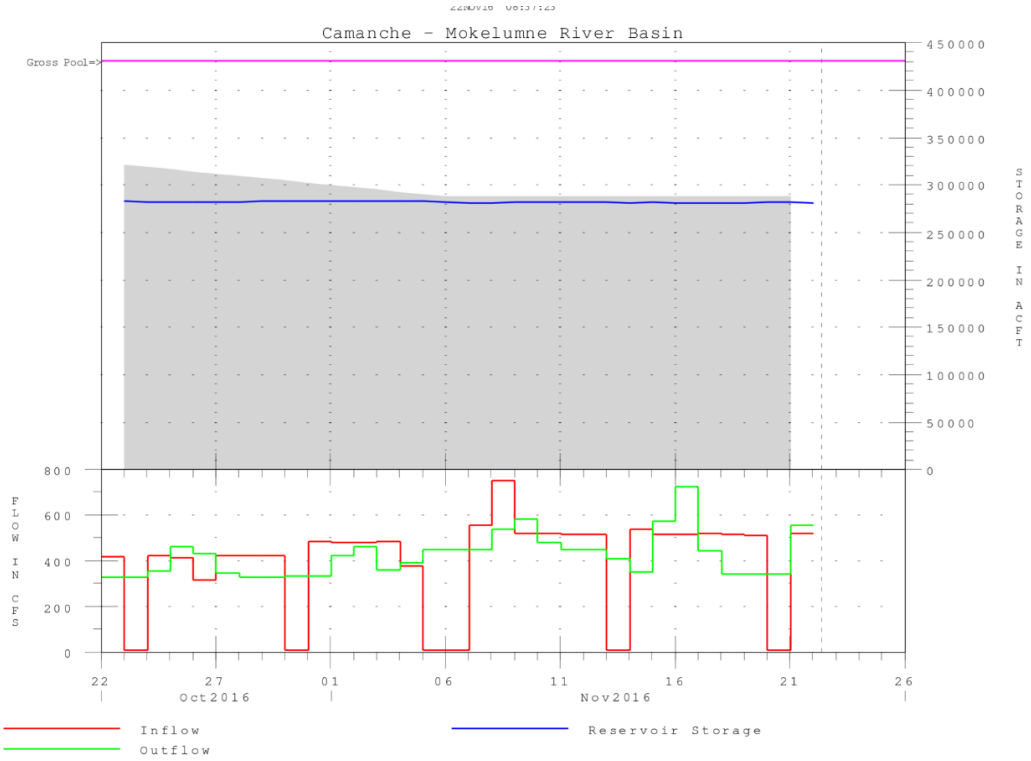
The City of Lodi has requested to purchase 600 AF of water from NSJWCD during December 2016 and January 2017.

WATER SOURCE 2: 2014 PROTEST DISMISSAL AGREEMENT BETWEEN NSJWCD, EBMUD, ETC.

Projected 2016 Supply: None. If water is not available under Permit 10477, 6,000AF of dry year supply could have been available under the terms of this Agreement, except that the required banking program and export permit was not yet in place. The District must design this project and comply with CEQA before proceeding.

Flood Control Operations

The current reservoir capacity in comparison to mandatory flood storage space at Camanche Reservoir is displayed below. This information is current as of 11/22. Based on the information published on USACE's Water Control Data Site, Camanche and Pardee are at or very near maximum combined storage levels.



RESERVOIR ELEVATION AND STORAGE

	Elevation		Storage		%	Max. Elev	Max. Storage	Rlse	Spill
EBMUD	Feet	Change	Ac-Ft	Change	Full	Feet	Ac-Ft	cfs	cfs
MOKELUMNE									
Pardee	562.26	-0.07	192,000	-150	94%	567.65	203,795	519	0
Camanche	215.66	-0.02	281,190	-120	67%	235.50	417,120	557	0
EAST BAY									
Briones	573.90	-0.01	57,400	0	97%	576.14	58,960	0	0
Chabot	200.30	0.00	3,410	0	33%	227.25	10,350	0	0
Lafayette	442.48	0.00	3,440	0	81%	449.16	4,250	0	0
San Pablo	308.85	0.04	34,690	30	90%	313.68	38,600	0	0
USL	452.09	-0.16	33,140	-110	85%	459.98	38,905	0	0
TOTAL EAST BAY RES.			132,080	-80	87%		151,065		
TOTAL EBMUD STORAGE			605,270	-350	78%		771,980		

	Storage		%	Capacity
PG&E CO.	Ac-Ft	Change	Full	Ac-Ft
Old Reservoirs	8,565	-199	32%	26,560
Salt Springs	75,698	-192	53%	141,857
Lower Bear	25,440	-34	49%	52,025
TOTAL PG&E STORAGE	109,703	-425	50%	220,442

RIVER FLOWS AND RELEASES	
Mokelumne River Natural Flow	318 Cfs
Pardee Reservoir Inflow	532 Cfs
*Pardee Release to JVID	0 Cfs
Pardee Release to Camanche Reservoir	519 Cfs
Camanche Release to Mokelumne River	557 Cfs
Mokelumne River near Elliott Rd	412 Cfs
*WID Diversion	42 Cfs
Mokelumne River below WID	241 Cfs

* Diversions:
JVID - Jackson Valley Irrigation District
WID - Woodbridge Irrigation District

The JSA (Joint Settlement Agreement) dictates required fishery flows based on time of year and year-type. The total combined reservoir capacity in Pardee and Camanche is at or near full capacity. **The Current JSA Year Type is NORMAL/ABOVE. THIS CHANGE OCCURRED IN OCTOBER.**

WATER YEAR TYPE DETERMINATION

Year Type	Normal/Above	Below Normal	Dry	Critically Dry
Oct. - Mar. (1) (Pardee/Camanche Storage)	Max Allowable (2)	Max Allowable to 400 TAF	399 TAF to 270 TAF	269 TAF or Less
Apr. - Sep. (3) (Unimpaired runoff)	890 TAF or More	889 TAF to 500 TAF	499 TAF to 300 TAF	299 TAF or Less (4)

Notes:
(1) October through March minimum flows are determined by total Pardee and Camanche storage on November 5th. Year type storage limits are based on the capacities of Pardee and Camanche Reservoirs in 1995.

(2) Maximum allowable storage on November 5th, shall be determined in accordance with the Army Corps of Engineer's Water Control Manual for Camanche Dam and Reservoir dated September, 1981.

(3) April through September minimum flows are determined by the water year unimpaired runoff into Pardee Reservoir as forecasted by DWR in the April 1st Bulletin 120 Report except when combined Pardee/Camanche Nov. 5 storage is projected to be less than 200 TAF.

(4) April through September minimum flows shall be critically dry whenever Nov. 5 combined Pardee/Camanche storage is projected to be 200 TAF or less based on the runoff forecast in DWR bulletin 120, beginning April 1st.

JSA Fishery Flows for ABOVE NORMAL years are set forth below. For An ABOVE normal year type, the total JSA flow releases are expected to be 325 cfs from October 1 to March 30. As a result, the total amount of mandatory releases from Comanche under the JSA is about **117,120 AF between October 1 and March 31**.

Average/Above Average Year Flows

Attachment 1

Normal and Above Year Flows
Mokelumne River Minimum Flow Schedule (1)

Life Stage	Period		Days	Agreed Release From Camanche Dam (cfs)	Expected Flow Below Woodbridge Dam (cfs)
Adult Immigration	10/1-10/15	(2)	15	325	100
Spawn/Incubation	10/16-10/31	(2)	16	325	100
	11/1-11/30	(3)	30	325	100
	12/1-12/31	(3)	31	325	100
Incubation/Alevin	1/1-1/31	(3)	31	325	100
	2/1-2/28	(3)	28	325	100
Fry Rearing	3/1-3/31	(3)	31	325	100
	4/1-4/15	(4),(5)	15	325	150
	4/16-4/30	(4),(5)	15	325	150
Fry Rearing/Juvenile Rearing/ Outmigration	5/1-5/31	(5)	31	325	300
	6/1-6/30	(5)	30	325	300
Oversummer	7/1-9/30		92	100	25
	Total Days		365		

NOTES:
(1) Due to changes in water conditions or to optimize fishery conditions, EBMUD may modify the above Flow Standards upon written concurrence of CDF&G and USFWS, provided the total quantity of water released for fishery purposes in Normal and Above year types is not less than the quantity provided by this flow schedule.
(2) During October, EBMUD will maintain minimum flows of 325 cfs below Camanche Dam and 100 cfs below WID's dam in Normal and Above year types.
(3) During the period when WID dam boards are pulled out and Lodi Lake is empty (approximately Nov. 1 through March 31), EBMUD shall make minimum releases of 325 cfs from Camanche Dam in Normal and Above year types. This release from Camanche dam is expected to provide at least 100 cfs below WID dam during this period. However, EBMUD shall not be obligated to increase releases above 325 cfs during this period in Normal and Above year types.
(4) During April, EBMUD will maintain minimum flows of 325 cfs below Camanche Dam and 150 cfs below WID's dam in Normal and Above year types.
(5) For the months of April, May, and June during Normal and Above year types, additional release of up to 200 cfs is required depending on combined Pardee and Camanche storage levels relative to the maximum allowable for the end of the prior month as follows:
Less than 10 TAF below maximum allowable storage (BMAS), additional release is 200 cfs for subsequent month.
10 TAF <= BMAS < 20 TAF, additional release is 150 cfs for subsequent month.
20 TAF <= BMAS < 30 TAF, additional release is 100 cfs for subsequent month.
30 TAF <= BMAS < 40 TAF, additional release is 50 cfs for subsequent month.

CITY OF LODI TRANSFER AGREEMENT

NSJWCD's obligation to transfer up to 1,000 AF to the City of Lodi is contingent on 20,000 AF of water being available under Permit 10477 as of May 1st of each year. The potential transfer period is the following October 15th to March 30th. However, Lodi may also purchase water that becomes available under NSJWCD's direct diversion right.

We notified the City of Lodi that water may be available this winter. Lodi has requested 600 AF of water between December 2016 and January 2017. We are working to coordinate between Lodi, WID and EBMUD for delivery.

Records of NSJWCD's Monthly Diversion Totals

Below is a spreadsheet that contains EBMUD's records of the total monthly diversion totals by NSJWCD from the Mokelumne River between 1958-2013.

North San Joaquin Water Conservation District
Monthly Diversions 1958 through 2013
(Acre-Feet)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1958									23	0	0	1	24
1959	0	0	15	2	26	0	0	0	0	0	0	0	43
1960	0	0	0	0	106	185	1	148	160	0	0	0	600
1961	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	139	275	319	443	386	272	56	0	0	1,890
1963	0	0	0	0	42	202	342	318	250	65	6	0	1,225
1964	0	0	0	0	0	268	307	307	119	0	0	0	1,001
1965	0	0	0	0	520	954	1,142	901	740	298	0	0	4,555
1966	0	0	24	624	729	1,185	1,364	1,109	451	89	0	0	5,575
1967	0	0	2	8	721	1,226	1,726	1,765	974	350	0	0	6,772
1968	0	30	41	827	1,644	1,725	1,851	1,513	742	147	0	0	8,520
1969	0	0	24	444	1,620	1,442	1,771	1,667	731	126	0	0	7,825
1970	0	0	84	1,233	1,609	1,582	1,845	1,699	847	230	0	0	9,129
1971	0	0	238	1,252	1,331	1,507	1,540	1,288	772	196	0	0	8,124
1972	0	0	735	1,481	1,594	1,590	1,748	1,592	717	0	0	0	9,457
1973	0	0	1	797	1,878	1,974	2,198	1,883	728	29	0	0	9,488
1974	0	0	33	55	1,416	1,785	1,933	1,891	993	268	0	0	8,374
1975	0	0	2	344	1,805	1,832	2,204	1,786	800	177	0	0	8,950
1976	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	19	1,015	1,599	1,788	1,082	780	431	94	0	6,808
1979	0	0	3	382	1,315	1,660	1,609	1,277	617	688	96	0	7,647
1980	0	1	0	292	944	1,514	1,594	1,223	539	832	612	1	7,552
1981	0	0	0	294	1,083	1,564	1,826	1,083	664	101	0	0	6,615
1982	0	0	0	0	721	1,430	1,590	1,104	465	26	0	0	5,336
1983	0	0	0	0	267	1,243	2,130	1,034	595	473	0	0	5,742
1984	0	0	0	544	1,158	1,550	1,637	968	822	394	25	3	7,101
1985	0	0	0	130	1,056	1,377	1,547	1,038	456	125	0	0	5,729
1986	0	0	0	91	1,022	1,400	1,659	873	682	313	0	0	6,040
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	322	769	890	610	479	129	0	0	3,199
1994	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	46	540	688	772	413	184	0	0	2,643
1996	0	0	0	0	232	523	696	620	500	0	0	0	2,571
1997	0	0	0	473	514	478	654	434	347	108	0	0	3,008
1998	0	0	0	0	1	206	635	509	378	240	0	0	1,969
1999	0	0	0	30	343	530	657	496	429	289	22	2	2,798
2000	5	1	0	54	313	857	503	545	511	0	0	0	2,789
2001	0	0	0	0	13	9	8	0	0	0	0	0	30
2002	0	0	0	52	277	407	299	375	300	185	0	0	1,895
2003	0	0	0	0	9	236	788	717	690	712	0	0	3,152
2004	35	4	79	82	264	525	548	400	292	186	231	216	2,862
2005	0	0	0	0	0	558	568	465	390	206	0	0	2,187
2006	0	0	0	0	149	335	627	610	292	144	0	0	2,157
2007	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	60	70	0	261	425	531	369	296	225	29	0	2,266
2010	0	49	26	0	439	748	719	453	299	59	124	107	3,023
2011	218	0	12	89	238	374	644	632	504	551	149	0	3,411
2012	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0
Average	1	1	26	197	538	757	885	704	399	156	22	4	3,690