

MEMORANDUM

To: Katherine Mrowka, Division of Water Rights, State Water Resources Control Board

From: Anna Fock, MWH
Review: Yung-Hsin Sun, MWH
Date: February 12, 2009

Subject: December 12, 2008 Department of Fish and Game Memorandum Regarding Water

Right Application 30358 for the Davis-Woodland Water Supply Project

BACKGROUND

The Davis-Woodland Water Supply Project (DWWSP) is a proposed joint project of the City of Davis, the University of California, Davis, and the City of Woodland to divert and use surface water from the Sacramento River. These entities are jointly referred to in this memorandum as the "Project Partners." Water Right Application 30358 for the DWWSP was filed in 1994 with the State Water Resources Control Board (SWRCB). The final Environmental Impact Report (EIR) for the DWWSP was certified in October 2007, in compliance with the California Environmental Quality Act (CEQA). The Modeling Technical Appendix in Appendix B to the Draft EIR for this proposed project documents the applications and results of the hydrologic, hydrodynamic, water quality, and water temperature modeling that was performed to analyze the proposed project's potential impacts. These analyses were made through the following two comparisons:

- Comparison of With-Project Conditions to Existing Conditions
- Comparison of Cumulative Conditions With Project to Cumulative Conditions Without Project

On December 11, 2008, the California Department of Fish and Game (DFG) submitted a memorandum regarding some aspects of the Modeling Technical Appendix to the Division of Water Rights. On January 16, 2009, Division of Water Rights sent a letter to the Project Partners, requesting additional information to address the concerns in DFG's memorandum. This memorandum provides such information.

SUMMARY OF DFG'S CONCERNS

DFG's December 11, 2008 memorandum states the following concerns:

- During months for which CALSIM results indicate that there will be unappropriated water in the Sacramento River system, "average monthly flow available for DWWSP diversion ranges from approximately 7 cfs to 93 cfs, consistently well below the diversion rate requested in water right Application 30358."
- "[T]he DEIR presents hydrodynamic and water quality modeling simulations that predict there may be an average monthly change in the Delta X2 location of up to 1.1 kilometers (km) eastward under cumulative condition with exercise of DWWSP diversions." "The location of X2

may be directly affected by DWWSP diversions from the Sacramento River or by indirect triggering of changes in upstream State Water Project and federal Central Valley Project (SWP/CVP) reservoir operations or Delta exports."

The Division of Water Rights' January 16, 2009 letter to the Project Partners asked them to provide additional information that will address these concerns.

This memorandum provides information to address this request.

WATER AVAILABILITY

For the CALSIM II modeling simulations that are described in the Modeling Technical Appendix, the amounts of water that are estimated to be diverted by the DWWSP under the Project Water Rights are determined solely by two factors: (a) estimated monthly DWWSP demands; and (b) the SWRCB's Standard Permit Term 91.

Table 2-3 of the Modeling Technical Appendix lists the estimated monthly Project water demands. These same numbers also are shown in the first row of the following **Table 1**. The second row of this Table 1 shows these same demands converted to average monthly flow rates in cubic-feet per second (cfs). (This Table 1 also lists the total estimated annual demand and the equivalent average flow rate for this total estimated annual demand.)

Table 1. DWWSP Water Demands Under With-Project Conditions Scenario

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	AMERICA AND SE
	Monthly	Amount	in Acre-	Feet								Total
5,108	3,517	2,808	2,695	2,535	3,345	4,040	5,312	6,509	7,354	7,272	6,221	56,717
Average	Monthly	Rate in	Cubic Fe	et Per Se	econd				1 - 4 - 4			Average
83	59	46	44	46	54	68	86	109	120	118	105	78

DWWSP diversions from the Sacramento River under Project Water Rights would be constrained by the SWRCB's Standard Permit Term 91. When the diversion prohibition in Term 91 is in effect, Project Partners will not divert any water from the Sacramento River under Project Water Rights. The Term 91 diversion prohibition is described on page 2-6 of the Modeling Technical Appendix.

For With-Project Conditions, Table 4-3 of the Modeling Technical Appendix shows the simulated DWWSP diversions under Project Water Rights (in 1,000 acre-feet) that would occur during each month of the 73-year period of simulation (October 1921 through September 1994). The entry for each month in this table is either: (a) the monthly demand amount shown in Table 1 above for the listed month, if the Term 91 diversion prohibition would not be in effect, or (b) zero, if the Term 91 diversion prohibition would be in effect. A copy of this table is included in this memorandum as **Table 2**. The following **Table 3** shows these same simulated monthly diversions in cfs.

The same approach was used to prepare Table 4-9 of the Technical Modeling Appendix. The following **Table 4** is a copy of this table and the following **Table 5** shows these same monthly diversions in cfs.

The row of averages at the bottom of **Table 3** (just below the row for 1994) shows that the long-term average monthly DWWSP diversions under Project Water Rights range from 7 cfs for July to 93 cfs for September. Because the Term 91 diversion prohibition normally is in effect in July, diversions under Project Water Rights in July would occur only during a few years, which results in the average rate of only 7 cfs for all Julys over the 73-year period. In contrast, the term 91 diversion prohibition normally is

not in effect in September, which results in the much higher average rate for all Septembers over the 73-year period.

Contrary to the statement in the December 11, 2008 DFG memorandum, these 7 and 93-cfs amounts are not indications of the amounts of unappropriated water that will be available in the Sacramento River system for diversion under DWWSP Project Water Rights. Instead, they are the averages of the amounts of water that would be diverted under DWWSP Project Water Rights, by month, over the 73-year period under the limitations of: (a) the monthly DWWSP demands listed in Table 1; and (b) the Term 91 diversion prohibition.

The facts that the numbers in **Tables 3 and 5** are not related to the amounts of unappropriated water that will be available in the Sacramento River is demonstrated by the attached Supplemental Project Water Calculation for January 1 through September 15, 2004 that was prepared by Kevin Long of the Division of Water Rights (see Attachment A). This table shows that, during this period, there were 126 days when the Term 91 diversion prohibition was not in effect. These are the days for which the number in column 32 of this table, titled "Supplemental Project Water," is negative. On such days, the amount of unappropriated water equals the opposite of the amount of "Supplemental Project Water." For example, on January 1, 2004, the table shows -15,368 cfs of "Supplemental Project Water," which means that there were 15,368 cfs of unappropriated water. Over these 126 days, the amount of surplus water averaged over 16,500 cfs. All but one of these 126 days had surplus flow rates greater than the total projected DWWSP demand. On most of these days, the surplus flow rates were substantially greater than the total projected DWWSP demand. Similar tables prepared by Bureau of Reclamation staff for 1998 through 2008 (see Attachment B, which uses May 2008 as an example) demonstrate that, on days when the Term 91 diversion prohibition is not in effect, the surplus flow rates almost always were substantially greater than the total projected DWWSP demand (Reclamation 2009). Ample unappropriated water therefore will be available for DWWSP diversions under Project Water Rights during times when the Term 91 diversion prohibition is not in effect, and no further water-availability analysis is necessary.

Table 2. Table 4-3 from the Modeling Technical Appendix

Hydrologic modeling results

Modeling Technical Appendix

Water Year	Year Type	Oct .	Nov	Dec	Jan	Feb	Mar	Apr	May	ijun	Jul	Aug	Sep .	Total
1922	AN	6	1 35	2.0	27	2.5	3.3	4.6	5.3	8.5	. 00	0.0	6.2	42
1973	BN	5.5		2 B	27	2.5	3.3	4 C 0 O	5.10 U 0.4	0.0	.D.0 10.0	0.0	6.7 0.0	35 f
1625	ă	5		28	27	6.8	1049111194CH 2.3	40	6 2 12 H	0.0	0.0	0.0	E 2	35 6
1886	1)	Б		2.8	27	2 6	3.5		100		0.0	0.0	B 2	30 5
1927	W AN	5		7 B	27	2 5 2 h	33	40	5.3	6577	40.0	0.0		19 1
1928	C	5		26	27	25	3.5	40	E 3 15 15 15 15 15 15 15 15 15 15 15 15 15	0.0	0.0	0.0	6.2 1200	35 E 29 4
1930	Ď	5	1200	2.0	27	2.5	33	4.0	5 3 2 2	.00	0.0	0.0	8.2	32 1
1931	Ç	5		2 6	27	2.5	3 3 🚟	0.00	0.0	no .	0.0		. 00	20.0
1932	D	5.		2.6 2.8	27	25	3.3	4 G 4 G	5.0 m	0.0	0.6	0.0	6?	35.6
1934	č	5.		2.8	27	2.5	3 3	40322		0.0 0.0	00	00	A 2	35 6 24 0
1035	BN	.6	1 36	2 %	2.7	2.5	3.3	40	5.3%	0.0	0.0	no	6.2	35 f
1838	8H	5		28	27	2.6	3.3	4.0	5.3	£ 5	0.0	0.0	8.2	421
1937	BN W	ā 1 5 1	1 26	28	27	2.5	33	4.0	5.3	0.0 6.5	0.0	0.0	62	32 1
1939	Ď	5		2.8	27	23			ao	0.0	0.0	0.0	6.2	26.2
1946	AH	5		7.0	21	2.5	2.3	40	1,0	0.0	0.0	0.0	62	35.E
1541	W			2.0	2.7	2.5	3.5	4.0	6.3	6.5	20 0.0	7.9	60	49.4
1942	W	5		2.0	27	2.5	33	4.0	5 3	6.5	0.0	0.0	6.2	42 1
1344	D	6		2.6	27	2.5	3.5	4.0	b 3 255	0.0	0.0	0.0	62	42 t
1945	Bbt	5 1	1 36	7.8	2.7	2.5	33	4.0	5.33W	0.0	0.0	0.0	B 2	35 €
1946	94 t)	5		26	2.7	2.5	23	4.0	1 3 miles	0.0	0.0		6.2	35 B
1949	BM	6 1		2 B	27	2 h	# # # 2	4 (1)	6.0	0.0	0.0	0.0	6.2	30 S
1949	D	5 1		2.6	2.2	2.5	33	4.0	b 3 12 12	0.0	0.0	0.0	62	35 E
1950	BH	5		2.6	2.7	2.5	3.3	4.0	5.570	- 60	00	ne	62	25.6
1951	AH W	£ 1		2.6 2.6	27	2.5 2.5	3.3	4.0		0.0	0000		6.2	35 6
1952	W	5 1		26	27	25	33	4 C	5.3	6.5	7.4	7 1 0 0	6.2	56.7
1854	Al4	5.1	0.5	2.6	27	2.5	3.3	4033		40	90.	-00	E 2	36.5
1965	D	5.1		2.8	27	2 £	3.3	4 0	6.359	0.0	0.0	0.0	6.2	35.6
1955	W AH	5 1		28	27	2 h 2 h	3.3	40	5.3 5.3题副	4.5	0.0	0.0	6.2	42 (
1958	W	.5 1		2.8	27	2.5	3.3	4.0	5-3 mm	E 56	0.0	7.5	6.2	35.E
1909	BN	5 1	3.6	2.8	2.7	2.4	3.3	4.0	5.3	0.0	0.0	0.0	6.2	35 6
1960	<u>n</u>	5.1		2.6	27	2.5	2.3	4,0	5 3 199	0.0	0.0	0.0	6.2	35 €
1961 1962	D BN	\$ 1 145 9 E 6 0		2.8	2.7	2.5	3.0	4.0	6 0 io	0.0	0.0	0.0	62 62	36.8
1963	W	5 1	3.5	2.0	27	2.5	0.0	4.0	5.3	6.5 5 5 H	0.0	0.0	6.2	42.1
1964	D	5.3		2.0	27	2.5		0.0	t. 3 [2]	0.0	0.0 -0.0	0.0	6.2	31.4
(965	W HM	5.1		3.8	2.7	2.5	3.3	4.0	5.3	6.5		7.5	6.7	49.4
1966 1962	M. 1284	51		2.B 2.8	2.7	2.5	33	4.0	63	6 £	7.4	0.0	82	50 S
1960	BH	5.1		26	2.7	2.5	3.3	4.0	5.0EEE	0.0	100	0.0	E 2	25.6
1989	W	5 1		2 6	27	2 5	3.3	4 13	5.3	. 0 5	0.0	7.3	B 2	48 4
1976	₩	5.1		2.6	27	2.5	2.9	3 O	6.0	0.0	0.0	0.0	87	35 E
1972	HN	5 1		2 A	27	25	33	40	5.3	6.52	0.0	0.0	62	42 t 35 6
1975	AN	5 1		2.6	27	2 5	3.5	4.0	5.3	00	9.0	0.6	6.7	35.6
1974	W	5 1		26	2.7	2.5	3.3	4 0	5.3	4.5	7.4	7.3	6.7	56.7
1975	W C	5 1		2.8	27	2.5 2.6	3.3	4.0	5.3 Harri 0.00 3 H	3 5 M		73	6.5	49 4
1973	ő	51		28		190.00		100 m	0.0	00 00	0.0	0.0	6.2 6.2	36.2 23.7
1978	AH	5 1		2.6	27	2.5	3.3	4.0	5.3	6.5	0.0	0.0	6.5	42 1
1979	BN	5 1		2 8	27	2.6	2 7	4.0	6300	0.0	0.0		6.2	36 p
1906	AN D	5 1		2.8	27	2.6	0.3	4.6	6.3 6.3 (8)(c)	E 6 158	0.0	un	62	42 1
1982	W	51		2.0	27	7.5	33	4.0	t o	8.5	0.0	0.0	6.2 6.2	95 6 49 4
(\$03	W	5.1	4.5	2.0	27	2,5	3.7	4.0	5.3	8,5	7.45	0.0		43 2
1544	M		100	2 8	2.7	2.5	0.3	4 0	6.75	0.0	0.0	73	6.2	38.3
1986	W	5.1	3.5	2.0	27	2.5	33	4.0年間	5 3 5 2 H	0.0	0.0	0.0	6.2	30.3
1907	D	5 1		7 8	27	2.4	3.3 %		0.0	0.0	0.0	0.0	6.2	25.6 26.2
1900	C	5.1		26	21	2.5	3 3	40	5 3	0.0	0.0	0.0		79.4
1989	1)	5 1	3.5	2 11	27	2.5	3.3	40	0.0	0.0	0.0	0.0	6.2	30.2
1990	C	5 1	A I. DURNINGER	7.0	2.7	2.5 2.5	33	40	5.3 Steller 5.3 Steller	.00	1.00	0.0	82	31.5
1992	č	5.1		28	27	2.5	33	4000	.00	60	0.0	0.0	0.0	20.5
1893	Ald	5 1	2.5	2.6	. 27	2.5	3.3	4.0	53	65	0.0	00	6.2	42 1
(984	G	51	3.6	2.6	27	2.6	33	4 0 (689)	0.0	0.0	0.0	0.0	6.2	30.9
Assimption Massimum		5.0	13	2.6	27	25	3.3	57	42	21	04 24	10	65	36 6
Watering		0.0	0.0	2.8	27	0.0	0.0	. 40	53	8.5	0.0	73	6.2	56 7 16 7
Average	₩.	5.1	7.3	2.6	2.4	25	3.3	4.0	5.3	5.6	14	35	58	45.2
Avarage	44	5 1	35	2.8	2.1	2.5	3 3	4 &	4.8	2.0	6.6	11.0	6.2	37 /
Амегаде Амегаде	6N 0	47	33	2 B	27	26	3.3	4.0	4 9 2 3	6.0	0.0	0.0	6.2	35.5
- rest es 141										2, 11	63.12	0.0	Fi 7	72 6

Note: 1. Water year types are based on Sacramento Valley Index: Wet (W), Above Normal (AN), Below Normal (BN), Dry (D), and Cráical (C).

2. Shaded period area represents that Term 91condition is in effect.

March 2007

Table 3. Project Partners' Water Right Diversion Under With-Project Conditions in cfs

	Year Type		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1922	AN	83	59	46	44	46	54	68	86	109	0	. 0	
1923 1924	BN	83	59	46	44	46	54	68	86	0	0	0	MEN LEWIS
1924	C	83	59	46	44		0,	0.00		0	0.	0	資本於
1926	D	83 83	59 59	46	44	46 46	54	68	86	0		01	
1927	w	83	59	46 46	44	46	54 54	68		100	0	. 0	
1928	AN	83	59	46				68	86	109	0	0	
1929	C				44	. 44	54	68	86	0,	0	.0	Salwiceles
1930	D	83	59	46	44	46	54	68	. 86	0	0	0	
1931		83	PERSONAL PROPERTY.	46	44	46	54	68	86	hojak ex o s	0.4	0.1	
1931	C	83	59	46	44	46		0	Allendanio.	0.	. 0	. 0	e-alestan
1932		83	59	46	44	44	54	68	86	0	0	0	
	С	83	59	46	44	46	54	68	86	0,	0	0	DESTRUCTION OF THE PARTY
1934	C	83	59	46	44	46	54		0	. 0	0	0	
1935	BN	83	59	46	44	46	54	68	86	0	9 (1) (1)	0	
1936	BN	83	59	46	44	44	54	68	86	109	0	0	
1937	BN		0 (1)	46	44	46	54	68		0	.0	0	
1938	W	83	59	46	44	46	54	68	86	109	. 0	.0	
1939	D	83	59	46	44	46	54	0	0	0	. 0	0.	
1940	AN	83	59	46	44	44	54	68	86	0.00	0.	0	
1941	W	83	59	46	44	46	54	68	86	109 🏭	0	118	
1942	W	83	59	46	44	46	54	68	86	109 🞎	0	0	
1943	W	83	59	46	44	46	54	68	86	109	0	. 0	
1944	D	83	59	46	44	44	54	68	86	0	0	.0	
1945	BN	83	59	46	44	46	54	68	86	0	54 A 100	0.1	
1946	BN	83	59	46	. 44	46	54	68	86	. 0	0	0	
1947	D	83	59	46	44	46	54		0		0	0	
1948	BN	83	59	46	44	44	54	68	86	109	0	0	
1949	D	83	59	46	44	46	54	68	86	0	0	10	
1950	BN	83	59	46	44	46	54	68	86	0	0	1 (0	
1951	AN	83	59	46	44	46	54	68	86		0.	0	
1952	W	83	59	46	44	44	54	68	86	109	120	118	
1953	W	83	59	46	44	46	54	68	86	109	0	0	
1954	AN	83	59	46	44	46	54	68		0.	0	0	
1955	D	. 83	59	46	44	46	54	68	86	0 1	0	0	
1956	W	83	59	46	44	44	54	68	86	109	5 O r	0	
1957	AN	83	59	46	44	46	54	68		. 0	0	0	
1958	W	83	59	46	44	46	54	68	86	109	. 0	118	
1959	BN	83	59	46	44	46	54	68	86	0	0	0	
1960	D	83	59	46	44	44	54	68	86	0	0	0	
1961	D	83	59	46	44	46	54	68	86	0	0	. 0	
1962		0 = 1	59	46	44	46	54	68	86	0	0	0	
1963	W	83	59	46	44	46	54	68	86	109	0	0	
1964	D	83	59	46	44	44		0		0.	0	. 0	
1965	· W	83	59	46	44	46	54	68	86	109	0	118	
1966	BN	83	59	46	44	46	54		0			###### 0	us was e
1967	W	83	59	46	44	46	54	68	86	109	120	118	
1968	BN	83	59	46	44	44	54	68		0	0	0	
1969	- W	83	59	46	44	46	54	68	86	109 💀	0	118	
1970	W	83	59	46	44	. 46	54	68	86		0	0	
1971	W	83	59	46	44	46	54	68	86	109	0	. 0	
1972	BN	83	59	46	44	44	54	68	86	. 0	0	0	
1973	AN	83	59	46	44	46	, 54	68	86	0	0	0	
1974	W	83	59	46	44	46	54	68	86	109	120	118	
1975	W	83	59	46	44	46	54	68	86	109 👯		118	
1976	С	83	59	46	44	44	54	68	0.	0	10	. 0	
1977	С	83	59	46		0		0	0		0	. 0	
1978	AN	83	59	46	44	46	54	68	86	109	0		
1979	BN	83	59	46	44	46	54	68		0.	0	0	
1980	. AN	83	59	46	44	44	54	68	86	109	0	0	
1981	D	83	59	46	44	46	54	68		0,	0	0 1	
1982	W	83	59	46	44	46	54	68	86	109	0	118	MAY A.
1983	W	83	59	46	44	46	54	68	86	109	120 🗿	0	THE R
1984	W	83	0	46	44	44	54	68	86	0	0	118	
1985	D	83	59	46	44	46	54	68	0	0	0	0	
1986	W	83	59	46	44	46	54	68	86	0	0	. 0	
1987	D	83	59	46	44	46	54		0.2	0	0	0	
1988	С	83	59	46	44	44	54	68	86	0	0	0	THE REAL PROPERTY.
1989	D	83	59	46	44	46	54		0	0.	0	0	
1990	С	83	59	46	44	46		0	86	Ö	- 0	0	
1991	С	83	0	46	44	46	54	68	86	0.77	0.0	0	
1992	С	83	0	46	44	44	54	68	0	0	0		觀湖
1993	AN	83	59	46	44	46	54	68	86	109	0	0	********
1994	С	83	59	46	44	46	54	68	0		0	0	
verage		82	55	46	44	45	54	61	69	36	7	16	
eximum		83	59	46	44	46	54	68	86	109	120	118	
nimum		0	0	46	44	0	0	0	0	0	0	0	
erage	W	83	56	46	44	45	54	68	86	94	23	56	
erage	AN	83	59	46	44	45	54	68	78	44	0	0	
erage	BN	77	55	46	44	45	54	68	80	16	0	0	
verage	D	83	55	46	44	45	54	55	54	0	0	0	

Note:

1. Water year types are based on Sacramento Valley Index: Wet (W), Above Normal (AN), Below Normal (BN), Dry (D), and Critical (C).

2. Shaded period area represents that Term 91 condition is in effect.

Table 4. Table 4-9 from the Modeling Technical Appendix

Modeling Technical Appendix

Hydrologic modeling results

Water Year	Year Type"	Oct	Nov	Dec	.Jan	Feb	Mar	Apr	May	Jun	Jul	puA	Sep	Total
1922	AM	5 :	3.5	2.0	27	2.5	3.3	4.5	3 5	3 6	E SHEET BOOK		6.2	42.1
1923	BN C	5 1 5 1	3 £	2.8	27	25 25%	2.3	NAME OF THE PERSON		0 0				35 b 16 7
1925	0	51	26	7.0	27	2.5	3.3	4	Samuella S	3. 0		00	H 2	36.6
1926	D	h 1	3.5	2.8	2.7	2.5	2.3			o a	0 00			30.3
1927	W AN	5 1 5 1	3 5 3 5	2 B	27	2 h	3.3	41		5 H			6 ? 6 2	42 1 35 6
1929	C	51.	3.5	2 8	27	25	2.3	41		3 0	0 00		MARINAD	25.4
1900	D	5 !	13.5	3 B	2.7	2.5	3.5	4		9		no	6.2	35 ñ
1932	D D	5 t 5 T	3 5 3 5	2.8	27	2.5 2.5	334	41		0 0			62	26 û 25 fi
1933	C	51	2.5	2.0	27	2.5	33	41	5	32 1 0	0 .00	0.0	6.7	35 6
1934	C	£ t	3.6	28	27	2.5	3.3	.0		o u	0 00	0.0	00	20 ô
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1937	BN	51	3 5	28	27	26	33	4 1		2 10000000				35 b
1938	W	5.1	3 5	2.8	27	2.5	3.3	41) 5	3 8	5 0.0	0.0	6.2	42.1
1939	D	£ 1	31 t	58	2.7	2.5		Name of		0 0			67	26 2
1940	W	51	3.5	28	27	2.6	3,3	41		3 6				35 E 42 t
1912	W	5.1	2.6	2.8	27	2.6	3.3	4 (D 6.		0.0	62	42.1
1943	W	5.1	3.5	2.0	2.7	25	3.3	41		3 6				47,1
1944	D BN	f. 1 f. 1	3 f. 3 f.	2 B	27	2.6	8,3 8.3	41		37 D				35.6
1948	BN	51	35	7.0	27	2.5	3.3	41	3 5	31 11 0			82	35.6
1947	D .	F- 1	3 5	2.8	:2	2.5	3 3			0 0	0.0	0.0	62	30 3
1949	D D	5 1 5 1	35	28	27	2.5	33	41		3 6	5 0'0 0 00		6.2 8.2	42 1 35 E
1950	BN	5 1	25	2.8	2.7	25	33	41		3 0			62	35 6 35 6
1951	AN	51	3,5	2.8	2.7	2.5	3.3	41	5	3160000	0.0	0.0		35 fi
1957	W	51	3.5	2.8	27	2.5	3.3	41		3 6	5 7.4 ************************************	7.1	82	56.7
1953	AN	5,1 5.1	35	26	2.7	25	3.5						62	42 t 30 3
1955	D	5 1	3.6	28	27	2.5	3.3	4 (3 6				35 6
1956	W	5.1	2 f.	2.8	2.7	2.5	3.3	41		3 6				42.1
(958	AM W	5.1	36	28	2.7	2 5 2 5	3.3	4 (3 6 6			6.2	35 6 48 4
:559	8N	. 41	3.6	2.8	2.7	2.5	33	4 (S FEBRUAR			6.2	36 €
1960	D	5.1	3.5	24	27	2.5	2.3	44	: 5	力制的现代也	0.0	0.00	E 2	35 6
1961	D BN	5.1	36	2.0	27	2.5	33	4.6		3 0		0.0	6.2 E.2	* 35 E
1962	W	51	3 5	211	27	2.5	33	40		3 8			62	42 1
1964	D	5 1	2 5	2.0	2.7	2.5	335	DU	5	3-0	0.0	0.0	6.2	315
- 1965 1966	BN	51	36	28	2.7	2.5	3.3	4.0	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5				8.7	48 4
1567	N.	51	25	28	27	25	33	40		0 m 5 0		7 1	62	30 2 56 7
1561	BN	5. 1	3.5	28	27	2.5	2.3	40	5	OF THE PARTY OF	0	0.0	6.7	25 €
1969	W	5.1	26	28	27	28	2.3	40		2 17 612 12 16 16 16 16 16 16 16 16 16 16 16 16 16	5 00 0 00		6.7	42.3
1971	W	51	3.5	2.6	27	2.5	2.3	41			0.0		6.2	35 6
: 277	84	5 1	2.5	2.6	2.7	25	3.0	4.0	5	3 0	0	0.0	6.2	25.6
1973	Alt	5 1	3.5	2.8	27	2.5	3.5	40		26300000			6.2	35 6
1974	W	5 1	35	2.8 2.8	27	2.5	33	46			5 7.4 () () () () () () () () () ()	73	62	56.7 49.4
1836	C C	5,1	36	2.8	2.7	2.5	3.3	41	0.0	0 0			6.2	30.5
1977	C	5.1	3.6	28	27	2.6	3 3 接					0.0	6.2	26.2
1979	14A 14B	51	35	7 × 2 8	2.7	2 5 2 5	3.3	40		3 6		00 00	6.7	42 1 35 6
1960	HA	5.1	3.6	2.8	27	2.6	3.3	4 (5	3 8	0.0	10.	E 2	42 1
1401	D	5.1	3.5	211	2.3	2.5	3.3			0			6.2	20.2
1902	W	51	28	20	27	2.5	3.3	40				73	6.2	49 4
1691	W		0.0	26	27	25	33	4.0		a state of	0.0	7.3	1.3	50 5 99 9
:905	D	5.1	36	2.8	7;	25	3.2		D		0.00		6.2	30 3
1906	W	5 1	3 f. 3 f.	2 B	51	2.5	23 2250	40		0 0		0.0	62	35.6
1 50161	ő	5.1	25	78	27	2.5	. 3.3	40				0.0	0.0	26.2 26.4
15419	D	5.1	3.5	2.8	27	25	23	4 1	a de la companya de l	0 . B.	0.0	0.0	6.2	20.3
1980	0	<u> </u>	3 5	2.6	27	7.5		0.0				U UO	6.2	31.5
1991	0	5.1 5.1	900	· 28	27	2 b 2 5	33	40		3 (1) 0 0:		00 00	67	20.5
1993	AN	5.1	3.5	. 28	27	2.5	3.9	4.0	5	3 6:	0.0	0.0	62	42 1
1994	C	5.1	35	2.8	2.7	2.5	3.3	40				0.0	6.2	30 3
Avorage Managam		5 t	34	26	2.7	2.5	3.3	3.6				0.6 7.8	5 8 6 2	36 7 66 7
Mamum		5.1	0.0	2.8	2.7	23	0.0	0.0	0			0.0	0.0	16.7
Average	W	5.1	3.3	7.8	27	2.5	3.3	4.0	5.	3 5.1	1 1 4	31	5.8	45.2
Average Average	At:	5.1	3 5	28	27	25 25	3.3	4.0				00	0.2 6.2	37 Y 36.1
· vie alla	D	41	3.6	28	27	2.5	3.3	3.3				0.0	6.2	32.5
Average														

Note: 1. Water year types are based on Sacramento Valley Index; Wet (W), Above Normal (AN), Below Normal (BN), Dry (D), and Critical (C).

2. Shaded period area represents that Term 91 condition is in effect.

Table 5. Project Partners' Water Right Diversion Under Cumulative Conditions in cfs

	Year Type*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Se
1922	AN	83	59	46	44	46	54	68	86	. 109	D	0.0	
1923	BN	83	59	46	44	46	54	68	86	.0	0	. 0	Nova vateba
1924	С	83	59	46	44		0	0	10	. 0		0	
1925	<u>D</u>	83	59	46	44	46	54	68	86	1000年第00	0	CHARGEO	
1926	. D	83	59	46	44	46	54	68 5	0.	0.18	0	0	
1927	W	83	59	46	44	46	54	68	86	109		0	
1928	AN	83	59	46	44	44	54	68	86	. 0	0	0	and a con-
1929	С	83	59	46	44	46	54	68	86	0	0	0	342
1930	D	83	59	46	44	46	54	68	86	10	0	0:	
1931	С	83	59	46	44	46			0	0	O. State of	00	
1932	D	83	59	46	44	44	54	68	86	0	0	0	
1933	С	83	59	46	44	46	54	68	86	0	0	0	
1934	С	83	59	46	44	46		0	0	. 0	0	0	
1935	BN	83	59	46	44	46	54	68	86	10	- D		
1936	BN	83	59	46	44	44	54	68	86	109	0	0	
1937	BN	83	59	46	44	46	54	68		0	0	. 0	
1938	W	83	59	46	44	46	54	68	86	109		0	
1939	D	83	59	46	44	46	54	0	. 0	0	0	0	
1940	AN	83	59	46	44	44	54	68	86	0	D	0	
1941	W	83	59	46	44	46	54	68	86	109	. 0	0	
1942	W	83	59	46	44	46	54	68	86	109	0	0	
1943	W	83	59	46	44	46	54	68	86	109	. 0	0	
1944	D	83	59	46	44	44	54	68	86	0	0	1 0	
1945	BN	83	59	46	44	46	54	68	86	Ö.	O		
1946	BN	83	59	46	44	46	54	68	86	0	0.00	0 ***	
1947	D	83	59	46	44	46	54		0	0	0	0	
1948	BN	83	59	46	44	44	54	68	86	109	0	D	
1949	D	83	59	46	44	46	54	68	86	. 0	. 0	0	
1950	BN	83	59	46	44	46	54	68	86	- 0	0	0	
1951	AN	83	59	46	44	46	54	68	86	0.0	15 to 10 to	0	
1952	W	83	59	46	44	44	54	68	86	109	120	118	
1953	W	83	59	46	44	46	54	68	86	109 發	0	10	
1954	AN	83	59	46	44	46	54	68		10000000000000000000000000000000000000	0	0	
1955	D	83	59	46	44	46	54	68	86	0	0.0	0	
1956	w	83	. 59	46	44	44	54	68	86	109	0.	0,1170	
1957	AN	83	59	46	44	46	54	68		0	0	0	
1958	W	83	59	46	- 44	46	54	68	86	109			
1959	BN	83	59	46	44	46	54	68	86 %	0	0	118 118	
1960	D	83	59	46	44	44	54		51				
1961	D	83	59	46	44	46	54	68 68	86	0	0	0	
1962	BN	83	59	46		46	54		86	TOTAL SECTION SELECTION SE	. 0	0	
1963	W	83	59	46	44	46	54	68	86	0	0	0	
1964	D	83	59	46				68 0	86	109	0		
1965	W	83	59	46	44 44	44 46			86	0	0	0.12	
1966	BN	83	59	46	44	46	54 54	68	86	109	0.	118	
1967	W	83	59	46	44	46	54	68		100		0.00	
196,8	BN	83	59	46				68	86	109	120	118	
	W				44	44	54	68		0	0	. 0	
1969	W	83	59	46	44	46	54	68	86	109	Ô	0	
1970		83	59	46	44	46	54	68	86 2		0	0	
1971	W	83	59	46	44	46	54	68	86	109	0	0	
1972	BN	83	59	46	44	44	54	68	86	0	0	0	
1973	AN	83	59	46	44	46	54	68	86	0	0	0	
1974	W	83	59	46	44	46	54	68	86	109	120	118	
1975		83	59	46	44	46	54	68	86	109	0.0	118	
1976	C	83	59	46	44	44	54	68	0	. 0	0	0	
1977	C	83	59	46	44	46		Ö	0	0.	0	. 0	
1978	AN	83	59	46	44	46	54	68	86	109	0	10	
1979	BN	83	59	46	44	46	54	68		0	0	0	
1980	AN	83	59	46	44	44	54	68	86	109	0	CAL TO	
1981	D	83	59	46	44	46	54	68	0	. 0	0	0	
1982	W	83	59	46	44	46	54	68	86	109	0	118	C236
1983	W	83	59	46	44	46	54	68	86	109	120	118	
1984	W	83		46	44	44	54	68	86	0	. 0	118	
1985	D	83	59	46	44	46	54	68	0	10.00	0.0	0	
1986	W	83	59	46	44	46	54	68	86	0	0	0	
1987	D	83	59	46	44	46			0	0	0	0	Mark Name
1988	С	83	59	46	44	44	54	68	86	0	0	0	
1989	D	83	59	46	44	46	54	68	0	0	. 0	0	
1990	С	83	59	46	44	46		0	86	0	0	0	
1991	С	83	59	46	44	46	54	68	86	.0	0 **	0.	
1992	С		0,0	46	44	44	54	68	.0	0	0	0	調整物
1993	AN	83	59	46	44	46	54	68	86	109	0	0	
1994	С	83	59	46	44	46	54	68		0	0	0	
verage		83	57	46	44.	45	54	60	67	36	7	15	
aximum		83	59	46	44	46	54	68	86	109	120	118	
inimum		83	0	46	44	44	0	0	0	0	0	0	
verage	W	83	56	46	44	45	54	68	86	94	23	51	
verage	AN	83	59	46	44	45	54	68	78	44	0	0	
verage	BN	83	59	46	44	45	54	68	80	16	0		
									OU	10	U	0	
rerage	D	83	59	46	44	45	54	55	49	0	0	0	

Note:
1. Water year types are based on Sacramento Valley Index: Wet (W), Above Normal (AN), Below Normal (BN), Dry (D), and Critical (C).
2. Shaded period area represents that Term 91 condition is in effect.

X2 LOCATIONS

X2 is defined as the location of the 2 parts per thousand (ppt) salinity isohaline at 1 meter above the bottom of the Sacramento River Channel (measured as 2,640 microSiemens per centimeter (μ S/cm) surface salinity). As documented in the 2002 CALSIM II Benchmark Studies Assumptions (California Department of Water Resources 2002), the Kimmerer and Monismith monthly equation developed in 1992 (Kimmerer and Monismith 1992a) is used in CALSIM II to estimate the mean monthly location of X2 relative to the monthly averaged Delta outflow in that month and the location of X2 in the previous month. This equation is:

$$X2_t = 122.2 + 0.3278 X2_{t-1} - 17.65 log_{10}NDOI$$

where:

X2_t = Monthly averaged distance of the 2,640 μS/cm surface isohaline from the Golden Gate Bridge, in kilometers (km) and along the main shipping channel during the present month;

 $X2_{t-1}$ = Monthly averaged distance of this parameter during the previous month;

NDOI = Monthly averaged Net Delta Outflow Index in cfs in the month during which X2 is computed.

This equation indicates that a reduction in the Net Delta Outflow Index will increase the distance of X2 from the Golden Gate Bridge (that is, cause X2 to move eastward). In 1992, Kimmerer and Monismith made comparisons of the monthly X2 locations that were calculated with the above equation to observed X2 data for October 1967 through November 1991 (Kimmerer and Monismith 1992b). The coefficient of determination, R², for this comparison was 0.96, which demonstrates a very high correlation between the observed values and the predicted values. The standard error for this prediction was 2.30 km.

As shown in the preceding Table 1, the maximum DWWSP diversion would be 120 cfs. Accordingly, the maximum direct effect that DWWSP diversions could have on the NDOI would be to reduce NDOI by 120 cfs. At an NDOI of 5,000 cfs, a reduction in NDOI of 120 cfs (to 4,880 cfs) would increase X2 by approximately 0.2 km. ($(\log_{10}5000 - \log_{10}4880) \times 17.65 = 0.187$.) At higher NDOI values, the increase in X2 that would be caused by a 120-cfs reduction in NDOI would be smaller.

This calculation demonstrates that DWWSP diversions will not directly cause significant shifts in X2 locations, even with the assumption that a 120-cfs upstream diversion would result in an equivalent reduction in NDOI. In actual operations, the Net Delta Outflow Index is the result of many factors, including inflows into the Delta, Delta precipitation, CVP and SWP Delta exports, in-Delta diversions, and Delta channel depletions. CALSIM II uses an optimization routine to simulate the system operations through weighting multi-objectives functions and requirements. Because of these multiple factors and different weightings, a reduction in Delta inflows from DWWSP diversions may cause the CALSIM II modeling simulation to shift some of these other factors, which in turn sometimes may lead to modeled shifts in X2 that are somewhat greater than the shifts that are directly caused by the DWWSP diversions.

Table 5-18 of the Modeling Technical Appendix shows the monthly changes in the X2 under the Cumulative Conditions With Project scenario compared to the Cumulative Conditions Without Project scenario. All of the simulated X2 shifts that are shown in Table 5-18 are significantly less than the 2.3-km standard error of the Kimmerer and Monismith monthly equation. None of these simulated shifts therefore is statistically significant.

Table 5-18 indicates that modeled increases in X2 of greater than the 0.2 km, which, as discussed above, is the maximum increase that could be directly caused by DWWSP diversions, would occur during 25 months of the 876-month simulation period. These infrequent (less than 3 percent) modeled X2 shifts are the artifacts of CALSIM II's simulations of changes in CVP and SWP operations and are not direct effects of DWWSP diversions. This point is highlighted by the three largest modeled shifts, which are for Augusts of 1945, 1949 and 1954. These modeled shifts all are for months for which there are no DWWSP diversions, which demonstrates that they are artifacts of the CALSIM II modeling rather than actual effects of DWWSP diversions.

In summary, because the modeled shifts in X2 of greater than 0.2 km all are statistically insignificant, occur only very infrequently and are not the direct results of DWWSP diversions, it is reasonable to conclude that the effects of the proposed DWWSP diversions on X2 will be insignificant.

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Kimmerer, W, and S. G. Monismith. 1992b. Memorandum: Revised Estimates of Position of 2 PPT Salinity. May 18.

Reclamation. 2009. http://www.usbr.gov/mp/cvo/pmdoc.html. January 1998 to January 2009: Water Accounting Reports SWP-CVP Coordinated Operations - Term 91.

Attachment A

SWRCB Division of Water Rights Supplemental Project Water Calculation Prepared by Kevin Long

January 1 through September 15, 2004

SWRCB Division of Water Rights Water Calculation - values in cfs unless SPAM

Calculated

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USBR

18.5355
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	SPW	Calculated	JSBR	-24,845	250,032							-13,334	-17,001	18,862	21,136	-20.966	-25,378	-24,783	-23,483	-23,198	-24,933	-18,774	-18,825	22,697	21,851	10.248	20,501	-20,088	18,321	10,210	-763	-165	177-	2,343	2.782	6,599	6,727	9,853	3,498	213	5,233	-10,238	-8,749 10.006	-9,533	3,575
	(32)	olemental Ca	(15)-(12)	-23,953	353	15.944	13,900	14,043	7.975	159	-3,698	-13,212																														-10,067			
	1) 25	ulation Proje	5 (26)	894	272	020	963	984	28.0	973	196	964	.003	595	458	3,5	27	0 6	38.0	255	827	808	853	468	269	324 108	42	0	368	102	00	0	96	0	00	0	00	0	00	0 (- c			0 0	0 0
on Hallon	5	(N.C.) Calo	381-15 Pg		0.310		_			_	0.310		0.310		_			_		_													0.180		0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.190
4 Whater Cal	0	ort C.	(29) W	3865	945	289	106	5.475	8 8	138	96	17	235	929	478	2 6	990	6	115	823	98	909	751	511	.247	2005	232	000	042	292	283	187	535	584	681	922	282	941	405	656	330	-2,420	501	257	96
antel Broles	(30)	A Exp 1-15 Inde	a																																							1,067 -2.			
of Sundam	28) (2	R @ 2/3*8	ē		3,543																																					3,241 1,0			
PCB Term	(27)	P+CCC Ver	ပ																																							1,888 3			
W.	26)	Slorage To	+ (22) +	-10,716	11,913	29,098	26,779	26,932	21,091	13,059	9,254	18	3,815	5,287	10,611	10,402	15,207	15,076	14,291	13,379	-8,765	-6,909	5,796	12,480	10,839	10,904	12,190	12,220	-8,172	-2,106	5.111	6.201	7,067	9,030	8.527	8.411	8,456	12,124	5,296	1,835	8 4	-8.179	6,552	7,842	5969
	25) 宗皇宗(6	O(17) Total	(14)	1,702	2,243	4,868	3,401	-128	1,288	2,430	3,877																															-2,095			
	3	S S																																											
	(21)	om Total D	3R Sum	30 12,373	30 11,018	30 12,164	30 11,946	30 11,935	30 12,145	30 11,957	33 17 077	35 12,160	38 12,114	40 10.677	40 10,040	35 10 104	30 10,093	30 9,689	30 9,153	30 9,553	30 11,035	30 11,018	30 11,128	30 9,707	30 10,263	40 8.400	40 8,242	40 7,852	42 9,861	45 8,050	45 5,488	45 6,361	45 7,741	45 8,772	42 5,265	40 1,811	40 1,856	40 2,268	40 1,799	40 1,619	400.1	40 1,928	40 1,823	1,864	1,709
ta Export		Banks Fols (HRO) S. C.	CDECHUS	7,896	6,539	7.698	7,500	7.487	1,791	7,599	7,592	7.7.7	7,669	6,874											5,569	3,657	3,456	3,303	5,171	5,770	3,442	3,314	3,305	1,950	286	1,472	1,519	1,362	1,455	0 8	262	1,556	966	1,467	
å		RP), Canal	EC.USBR	471 2	244	432 4	413	366 1	321 3	7 125	324 89	320 88	320 87	674 89									385 117		383 281																	0 332		200	350
ô			M167 CE	923	3,401 4	742																				2				200															93
Oroville (OR	100	al Constant	č	655 4	746 3.	438 -2,	,555 -1,	2 689	.003	.109	138 6	436 -6,	025	395 -7					_						_														•			3,424 -1,726			3
Lake	1	Qeeb.	DWR-OCO	·, u		*7	Α,	7 17	. o	Ę÷		-12	7 5	5.5																															
Total Federal	Storage	me-Adjusted	to Delta	-21,907	9,870	24,230	23,378	28.519	22,379	15,489	9,328	5,498	2,199	-1,966	4,548	-6,327	-8,231	-7.743	-8.106	7.262	-7.244	-5.912	6,168	-8,300	5.293	8.127	-6,927	6,663	-8.275	-1,293	1,924	901	6.479	6,259	7.099	8,063	4,732	6,232	3,987	1,998	-3,885	5.084	-5,738	5,916	-2,845
1000	(13)	Ampde Ti	9+(11)-(12)	-2.479	1,683	-919	-767	1,048	1,987	2,146	1,736	1,397	5,175	-2,576	-2,162	-2,040	2,028	-2.257	-1,940	12	575	60 5	8 8	-18	F 8	-814	-649	-559	1,284	4,358	4,129	3,128	1,300	1,377	2,775	2,700	3,131	2.575	585	£ 8	8 2	503	421	£ 5	Ŕ
ake (FOL)	(12)	Inflow	CDEC	5,605	4,802	4.160	3,907	4,209	5,163	5,298	5,391	5.079	5,618	6.246	5,832	5,776	5,783	6,244	6,137	5,022	4,736	4.253	4,062	4,153	3.613	3,833	3,902	3,677	3,907	3,868	3,668	3,486	3,844	3,441	2,892	3,060	2,377	2,370	2,669	3,285	2,630	2,754	3,585	3,410	2,873
Folsom	Follow #	Deliveries	CDEC	99	59	2	E E	2	92		8	107	2 5	117	112	135	15	146	135	124	12	5 5	130	133	133	135	4															212			
	(10) Naforna	Release Dell	COEC	3,060	3,060	3,171	3,059	3,077	3,091	3,061	3,539	3,575	3,504	3,553	3,558	3,601	3,610	3,841	4,062	4 643	4,040	4,026	4,027	4.002	3,636	3,084	3,109	3,18/	5,042	8,072	7,626	6.428	4,967	4,663	5,515	5,596	5,357	4,809	3,816	3,305	3,060	3,045	2,542	2.552	2,561
	(/) (8) (9) Spring Cr. Storage Whiskeylown +	asta Withdr	24 207	27.827	23,427	17,476	15,277	7,254	3,596	2,008	-1,972	-2,835	6.191	-6,196	5,326	-6,335	5.418	-5,337	-5,414	200.00	-6,275	5,562	6,313	5.014	4.836	-2,577	3.772	3.328	-1,337	4.276	5,600	5,243	4,370	1,735	2,915	2,011	-1,385	4,544	5,806	5.471	-1,859	-1,982	-828	514	88
	(8) Storage W	Withdr St	24 328	27.412	20,230	14,374	8.243	3,993	333	3306	-5,342	6,251	664	-8,520	-7,938	-7.794	7,331	-7,282	-8,879	-11.390	-9,993	-10,252	-9,682	-8,379	-6.844	4,638	-6,049	1,430	-2,937	3,727	3,352	3,030	2,509	1 266	066	5 5	3,254	5,920	-7,568	-7,264	-3,708	4.216	2,715	-1,943	-1,071
(SHA)	() pring Cr	P release	1 018	1,311	4,012	4,040	4.034	4,053	4,100	4.05	4,155																										1,980	1.891	1,923	4 8	1,960	1.964	1,960	1,998	26.
옫	Creek	USGS	780		52 4 82 83						291	282	275	27.1	R 98	263	8 6	28	98 F	3 62	272	è	285	ž	Q 28	250	249	247	246	243	241	240	238	240	241	240	, io	390	297	242	561	% K	249	236	231
	5815	Inflow	23.241	20.082	16,581	15,629	12,768	13,318	13,437	13,075	13,036	12,236	12,960	11,956	11,203	11,493	10,363	9,953	9,768	12,218	10,364	90,00	10,313	9,962	8,997	8,325	9,503	9,200	7.29	8.305	8,139	8.415	7,427	6 994	7,197	6,574	7,753	12,459	11,684	11,367	8,397	9,758	8,554	7.900	7,565
197	Keswick Computed	I release (KES)	48.587		40,264						11,849	10,104	7,405	6,352	5,825	5,577	5,186	4,961	4.817	4,518	4,596	4.493	4.432	4,346	4,540	6,032	5,965	6,052	6.137	13,341	13,915	13,817	12,010	10,319	10,207	7.578	6.479	6,041	6,039	6,110	6,849	7,513	7.799	8,483	8,478
	Storage	E .		415	3.004	3,102	3,209	3,261	3,263	3,236	3,370	3,416	2,306	2,324	1,214	1,459	1,530	1,945	3,465	2,995	3,718	3,383	3,369	2,365	2,008	2,061	1,277	1,625	1,600	1,732	2,248	2,213	1,861	1,835	1,925	1,906	1,869	1,559	1,762	1,803	1,849	1,875	1,887	626	.926
Ĭ,			1,829	1,562		1,347								863		682													426													348			
own Lake	Carr (JCR) Natural	EC WHILK	118	£ 18	3,101	3,285	3,100	3,376	3,329	3,323	2,952	3,370	2,040	2,100	1,751	1,769	1,585	1,960	3,362	3,351	3,406	3,385	3,384	2,410	1,259	1,943	1,620	1,634	1,696	1,715	2,395	475	7.977	,609	7.077	,213	2770	.022	746.	251.32	.849	2,777	,782 of3	.685	446
Whiskey	WHI Carr	m CDEC CDEC CDEC	1,947	1,680	7,367	4,632	4.277	502	4.496	4.426	4,028	4,386	2,951	2,963	2,488	2,451	2,160	2,561	3 6	4,333									2,124		2,812	2,844	3,428	3,032									3,104	2,990 2	
- 1	WH	from CDEC (1/04 1,798	776.1 977	104 4.470	704 4 395	704 4,386	3/04 4,390	704 4,399	4,339	4.446	4.372	3,219	3,187	1.95	2,141	2,105	2.546	3,853	3,977	4.497	4054	4,056	2,537	2,637	2,595	2,113	2,052	2,026	2.052	2,665	2,603	2,312	2,258	2,261	2,227	2,231	2223	2,220	522	222	2223		2,234	2,215
	i	Date	03/01/04	03/02/04	03/04/04	03/05/04	03/07/04	03/08/04	03/10/04	03/11/04	03/12/04	03/14/04	03/15/04	03/16	03/18/04	03/15	03/21	22/20	03/24	03/25	03/26	03/28	03/29/04	03/31	04/01.	04/02	0404	04/05	04/05/04	04/08	04/09	04/11/	04/12/04	04/14	04/15	04/17	04/18/04	04/20	04/21	04/23/	04/24/04	04/26/04	04/28/1	04/29/04	W130

Page 2 of 5

		į	SPW	à	USBR	-7.049	3,301	3,596	1.545	119	3,171	-510	210,5	3.535	4,043	2,907	3,034	1,487	2,193	4 470	2.464	673	1,434	2,043	2.219	1,159	3,660	1,365	1,275	358	-1,923	118	6.464	7,832	4,064	1.452	6.869	8,902	6,207	8.509	7,697	7,865	10 281	9,887	10,196	10.433	11,798	10,538	11,977	10,805	10,004	11,364	11,847	
		81-15	Supplemental C	Project Water	(26)-(27)-(31)	3 964	3,251	-3,181	-1.401	-629			1,056	4.020		2,929	3051	1,507	2,210	1.498	2,436	069	1,472	1,804	4.230	1,175	3,677	1,378	122	371	-1,924	37	6.481	7,848	4,081	1,491	6,910	8,920	6,230	8,540	7,724	7,888	10.260	9,903	10,223	10.442	11,788	10,536	12,001	10,794	9,987	11,342	11,775	
		Order WR	aler.	alcutation	202	00	0	0 0	00	0	0	0 0		00	0	0	0 0	0 0	0 0	0	0	0	0	0 0		0	0	0 0	0 0	0	2	55	00	0	0	0 0	38	24	368	8 8	179	64	60	6	0	5 6	92	83	0	g c	N.	20	o vo	
		er Calculation -	Carriage.W	Factor (N.C.) Ca	WR 81-15.	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.180	01180	0.180	0.180	0.180	0.180	0.180	180	0.180	0.180	0.180	0.180	0.180	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	
		olect Wat	Export	, vapul	627824	-2,603	-2,691	2000	3,519	3,423	-2.247	2 897	-2.837	-2,946	3,327	3,339	3,167	2 887	-2,350	-1.840	-1,130	-1,590	384	1 108	8	-1,015	-546	8 6	1381	2,181	4,538	1 443	27.1	20	1,223	2.418	4,151	4,934	5,535	5.074	4.746	4,745	3,678	4,038	3,733	4 090	4,316	4,344	3,94	4 234	4,226	3 710	4.020	
		emental P	3.S.A	3 81-15	30e:5) (27	000	1,000	900	1,000	1,000	000	000	000	000	1,000	00	8 8	3 8	8 8	1,000	1,000	00.	000	36	1000	1,000	000	900	000	1,000	1 20	287	287	267	£ 54	9 9	267	267	18 18	26.	267	282	267	267	267	èk	267	292	28	19.50	792	267	267	
		OB Supp	SJR @ 2	Wallame, W	CDECIF (F	3,255	3,352	3 368	3,264	3,210	3,179	3,282	3,321	3,242	3,216	3,079	2,909	2010	2,835	2,682	2,516	2,331	2,120	1 936	1.822	1,740	1,702	1,727	1,792	1.840	1,772	1551	1,452	1,392	1.444	374	1,345	1,282	212.	1,285	1,322	340	307	1,245	375	8 12	715	.684	.674	545	809	529	410	
	-	WRCB Terr	of Div	L CCC																																																		
	5	AS (9	TorageT		1		_				1		_										*																															
		DESERVE (17) Total	Day.	MAR	375	193	66	127	176	99	2 =	22	06																																								
		-18(25	ORO.	A DE	2000	7	76	-	1.8	-	7. 4.	7 7	ΨĢ	٦	-	7 .	0 60	0	7	•	1.2		•	· ch	7	ES !	2.	1.1	F.	8 :	≥ 26	13.	1.1	2,01	3,55	3,67	4.83	20.4	6.14	5,50	6.95	4.07	4	3,98	4.16	10.4	4.61	8, 1	5,59	4.4	3,92	5,78	3,97	
		((21)	otal Delta	Look .	1,660	1,692	1.701	1.362	785	827	1.552	1507	1,513	1,336	8	8 2	1.590	1,082	1,538	1,897	2,441	8 2	787	1,798	1,753	1,776	200	3,444	4,218	5,063	5.591	3,301	2,030	2,402	2,979	601.	5.813	5,533	E 2	9.676	382	207	199	009	183	161	347	25	126	18	146	8 <u>18</u>	742	
	7	300000	Folsom	SAP	40	9	8 8	8	8	8 8	3.5	ឧ	8	9	3 8	8 8	8 8	8	8	8				_	_															8	8 8	8 8	8	88	8 5	88	49	S F	6 f	5 #5 10 PU	45	& 15 10 10	£	
Column C	Delta Exp		C. Banks	R COFC	80 904	84 1,468	73 1.4/9	0 750	5 740	2 /82	5 432	5 1,480	5 1,479	20	2 366	727	5 799	5	3 467	5 824	38 1,165	2 2	208																															
		多いなど	Tracy C.	CDECUS	536	00	1.423	572	00	0 00	288	0	0	1,282	916		736	1,026	1,015	1,013	2,013	1014	1,015																															
March Marc	(0)	130		04167)	023	599	920	.468	-533	3 -	186	140	502	900	010	12	614	280	66-	630																																		
Column C	Droville (O)	Deserve	Wilhdraw	200 (x 0.5	-								508	900	800																																							
Column C	Lake	語語	Slorag	DWR	1	9	7 77	-5	7	,					-		-	2,	•	- •	o -	: '(-	E,	-	vi c	1 2		- 6	2.6	3,5	7.	1 0		6	7.5	12.1	2,6	9.0	9.	7.9	8,2	5.6	6,7	6	1,1	0.6	0,0	2.6	1.4	P. C.	14.2	12,6	
Main	Total Federal	Storage	Tme-Adjusted	1 to Detta	-2.424	705	438	-591	171.1	1	1	2,652	4,026	1 1	3.774	3,285	2,437	2,330	3,062	2.1.2	2530	2,578	1,767	3,034	2,283	3.981	3,924	3,582	4,147	4.678	5,917	6,373	7,321	3.418	2.242	9.627	10.776	9,784	10,186	9,916	10,345	10,249	10,965	11.476	11,815	12,521	13,551	12 285	12,415	13,123	12,222	12,269	13,500	
Main		(13)	Withdr	0)+(11)+(1	-109	75	-1,446	1,129	8.1	1	240	-355	7 7	11	224	-115	198	-118	- 12	140	-139	0	301	610	177	83	ē	-213	9 6	172	-166	- 25	8 4	8	767	1.14	512	966	743	368	882	496	1.391	1,617	1.801	2,410	1,589	1.485	1.45	1,749	1,696	1,834	2,305	
Color Colo	ke (FOL)	(12)	Inflow	CDEC: (1	2,907	3,246	4,247	3,899	3,710	1																																												
March Marc	Folsom La	(11)	Verles	DEC	237	245	243	22	237	238	241	88	3 8	245	245	244	245	7 5	3 5	3 2	242	243	8	9 5		3	11	2 2		29	69	29	. 4	8	99	£ 5	8 8	63	22	3 2	22	23	22	2 89	22	e 6	7 7	22	100	92 :	4 0	9 9	2	
March Marc		(10)	lease De	DEC LEC	2,561	2,925	2,558	2,542	2,425	2,520	2,510	2,525	2535	2,556	2,678	2,264	2,070	2,076	2.000	1.974	1,825	1,828	1,825	1,785	1813	1,736	1,804	208	1,805	1,796	1,788	967'	797	1,792	1,982	2,299	2,288	2,316	2,329	2331	2,305	2,307	552	541	544	248	538	536	545	535	534	543	,03s	
Comparison Com	1	NE + ump	Withdr. Re	9A																																																		
Comparison Com	100	(9) Whiskey	Shasta V	(4) + (6)									2.82	3.20	1 2,74	3,51	2,08	77.	2.73	1.67	2,22	3,89	3.83	3,000,0	474	5,065	6,067	7.37	7,706	3,462	2,746	8 73	10,155	8,867	9,490	9,173																		
Comparison Com	(8)	Slorage	Withdr	(5)-(6)-(7							3,491	2,010	2721	3,097	2,614	3,396	2,558	1 633	2,622	1,582	2,125	3,777	3,680																8,799	8,153	8,637	9,002	7,926	9,013	8,813	0000	8,869	8,430	9,189	9,863	7,695	9.039	7	
Comparison Com		Spring Cr.	PP releas	- Drev co	8 8	1,94	7.67						, 0	0			9	60-		0	0	0 0	0 6	00	0	0	0 0	00	0	0	510	404	1,462	469	1,337	1326	96	1,167	1,514	585	1.470	1.584	2,302	1.775	2,004	1 854	2,007	2,197	2,344	200	2,268	1,639		
Comparison Com	Clear	Creek	usas	244	243	242	241	240	240	240	338	238	237	235	235	ž i	3 5	238	232	235	233	252	335	230	230	23	2 2	8	228	E	3 8	161	175	174	176	174	174	174	S E	13	Ę.	5	17	170	2	140	137	165	20	20 20	164	150		
Mail	(6)	mputed	nflow	8 647	6,750	7,966	7,612	6,897	1	1 000	7.353	6,896	6,280	5,919	6,412	2,021	6.350	6,740	5,717	6,419	5,928	4,000	512	5,352	5,086	5,579	4.012	3,847	3,484	7,806	2,392	4,690	3,367	4.821	4.587	5,677	5,055	4.675	3,502	4,182	4,455	1020	4,403	4.182	3,992	4.239	3,852	4.179	3,197	3,545	4.773	4,036		
Mail	(5)	swick. Co	(KES)	8.951	8,970	9,164	10,018	11,186	1	1 00	10.363	9,469	9,001	9,016	9,026	60.0	8.971	8,373	8,339	8.001	8,053	8 514	8.595	9,525	9,620																			_										
Widel,	35.00	Y.	val release	62	22	8 8	2 2	92	1	1 %	3.5	12	20	8 2	2 8	2 -	12	7	-	= !		2 10				v) «			-																									
Well,	(*)	Storag	Withdray	8 1.9	9 1.9	6.0	4	2																	21		2 2 2	18	9						78	1.4	50.1	1,29	1,93	1,69	1.58	2.15	2,38	1.87	2,16	1,931	2,07	2,26	2.100	1,956	2,212	1,663		
Color Colo	(3)	Natural	Will in JC	24	27	25 80	23	12		Ç	16.	23	2	= 6	n d	10.	14	, eo	Ď	12.	- 6	25	*	27		6 6	12	*	86	4 7	23	21	5 5	4 9	3.5	28	2 5	4 01	98	47	36	25	88	2 8	66	72	F 2	5 6	42	2	220	, 5		
MANIPALE AND	Judge	arr (JCR)		2,568	2,312	2,408	1,501	270	118	118	167	7	1 100	5 5	118	118	266	118	121	747	118	118	118	118	9		118	118	118	121	878	286	1,227	1 283	1,053	1,470	1,365	1,430	1,673	1,724	1.749	2,162	2,346	2,175	2,204	2,039	2,092	1041	2,056	2,095	1 924	2,036		
Elegan and the contract of the	the state of the	WHIC	COEC	0 2,816	1 2,591	2.704	8 1,735	4 692	1 1	4 228	4 330	4 249	8 8	38	1 210	122	2 406	200	754	9 7	212	111	141	145	7	116	130	4:	151										1,759	1.1	1.974	2,235	2,431			2,111	2,163	1.972	2,096	2,149	1.930	2,136		
8 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	(2)	TW.	from CDE	11/04 2,21	2,20	404 2,22	5/04 1,01	6/04 21	3/04	9/04 21	0/04 21	1/04 21	200	404 218	5/04 214	5/04 214	7/04 40	210	MA 21.	MA 214	7/04 214	3/04 214	1/04 216	5/04 214	17	104 214	1/04 214	104 214	MA 212																2,237	2,003	2,144	2508	2,148	2,010	125	04 1,763		
		Oat		080	020	020	020	020	05/0	05/05	05/1	1/20	27/30	05/14	05/15	05/16	.1/50	95/12	200	050	05/22	05/23	05/24	9825	27/50	05/28	05/29	05/30	06/01	06/02	06/03	0604	9090	06/07/	06/08	60/90	06/11/	06/12/	06/13/	06/14	06/16/	06/17/	06/18/	06/20	06/21/	06/22/	DECAM	06/25/1	06/26/1	06/27/	06/29/0	D6/30A		

	MAS	alculated	USBR	12,161	9,182	0.722	10,584	8,544	6,915	8,643	9,151	9,856	9,453	9,678	8.349	9,194	7,824	8,830	8,490	7,909	5.404	7,600	6.742	9.420	8,723	6,980	7,905	5,346	6.018	5,635	8,073	5,557	6,938	7,083	3,647	5,505	3,939	3,162	-105	802	801	8 5	8	-1,076	-2,123	-1,765	
	81-15	Supplemental Calculate	(26)-(27)-(31)-	12,150	9,177	10,645	10,063	8,527	6,903	8,642	9,145	9,589	9.445	10,498	8,337	9,181	7,812	8,797	8,478	7,883	5,302	7,577	6,712	9.310	8,703	6,958	7,877	5,322	5,970	5,758	7,879	5,605	6,841	7.081	3,636	5,496	3,635	3.474	-123	309	697	-79	2	-1,093	-2,136	-1,769	
	(31)	(E)	換	474	E	884	806	1,184	1.454	1,514	1,524	1,557	1,590	1,613	1,613	1,615	0/6/1	1,581	1.591	1,513	1,622	1,627	1,625	1,485	1,315	1,423	1,356	1,437	1,524	8.6	1,058	1,048	1,134	1,064	1,292	1.407	1,426	1,130	1.422	1,434	1,351	1,328	1,379	1,393	1,375	1,264	
	SWRCB 16fm 91 Supplemental Project Water Calculation - Order WR 81-15 (27) (28) (29)	Carriage Wate		0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	
	(30)	xport	(28)-(29)	5.974	7,212	7.682	7,783	9,852	10,057	10,307	10,349	10,488	10,626	10.774	10,721	10,730	10,540	10,589	10,631	10,303	10,757	10,780	10,769	10,187	9,481	9,928	9,650	9,996	10,351	8,339	8.403	8,368	8,726	8,435	9,384	9,862	9,940	8,707	9.926	575.6	9.629	9,534	9,745	9,805	9,563	9,268	
	Mental Pro	SA	ge 6) (27)	0 0	00	00	0 0	0 0	0	0 0	00	0	0 0	00	0	0 0	0 0	0	0	0 0	0	0	0 0	0	0				55			25	733	8 2	233	8 8	733		_						55		
	28) - (62	R. @ 2/3	DEC. (Pa	27.0	792	325	1,236	134	66	-	178	90.	1.084	022	590	119	2 1 2	215	182	2 6	115	148	620	982	910.	100	140	970	060	092	.082	100	750	521	926	130	187	960	984	690	202	301	583	186	44	1,397	
	Z7)	S CCC	IRO) ™C	7.287		2006	9,019		- 00	.	1,487	_	1,710																		10,223				11,073								11,741		570 1.	.167 1.	
i	S. F. A. C.	orage To	25) + 1	986	427	853	980	3 8	19,505	.573	22.20	7	22,745	21.843	21,736	22.645	344														19,160				16,003										124	93	
	. C (26	Total Storage	(14)		18,427																																						13,162		, t	0,0	
	(25)	ORO (17) w3-day lag	Service Control	7.17	6.479	707	8,06	7.76	7.7	70.6	9,15	9,310	9,312	8,22	9.28	9,25	60	9.37	8,85	7.19	6,22	6.79	7.41	6.79	6,602	7.07	7.658	6,980	7,355	6,633	9989	7.504	6,566	6,592	6,653	5.657	7,287	6,735	6,041	5,959	6,214	6,192	6,428	5,108	4,667	3,482	
	(21)	tal Delta		8,009	5,529	750.6	0,069	11,066	198	8 6	527	.628	8 5	2 SS	1831	666	963	884	200	928	226	976	140	219	547	2 2	575	845	22	214	273	249	. 236	2 2	11,113	200	11,900	581	758	618	614	737	10.	2 2	5 25	217	
	STATE OF	Canal Export	USBR	4	8 8	88	28 E	8 8	8	4 6	8	40 1	8 8	8 8	\$	8 5	88												8 8		88	8 8	40 10	4 5 5	40 11	8 8	6 1	5 15	45 1	5 th	₹ ¥	\$ \$4 . ±	88	88	88	88 E.E.	
Della Even	Services:	Banks at (HRO)	RICDEC		3,908						2 6,880			_				-			-		_	-	-, -																6.900			1.0.7		6,823	
	STREET,	TRP) Can	DECIUSB		4,330 241																							0		-					408 245									394 259	(396 245	323	
6		of s	504167		8,068				,				282			376																													2,321 4,	•	
ake Orovilla (ORO	71) 55-01	E	ě								-																																				
Lake	が発送	Siorage	DWR	7	15,827	15.	15.	18	6. 6	18.470	17.	16,30	18,41	15,34	17,223	17.	15,3	14,265	13.4	12,358	14.7	2.5	12,1	14.0	15.1	14.5	14.0	13.	11.4	14.8	13,023	11.6	13,1	12	14,45	13,3	11,983	11.8	12,3	12.21	12,7	10,1	8.1	60.6	4,604	7.0	
Total Federal	Storage	Time-Adjusted	13 294	13,777	11,948	12,780	11,858	14,135	11,750	12,793	13,053	13,424	14,995	13,623	12,454	13,456	13,661	12,806	13.089	14,055	12,573	13,884	15,370	15,172	13,914	13,833	13,098	11,573	11,643	11,340	12,294	10,280	11,905	9.820	9,350	9,795	9,633	8,404	7,613	7,396	7,403	6,943	7.301	6,916	5.819	7,220	
13	13)	T T	2454	2,041	2,128	2,264	1,886	2,134	2,261	2,437	2,508	2,723	2,414	1,794	1.877	2,193	2,331	2,150	2,538	2,111	2.031	465	1.781	1,516	323	1,761	1,759	1961	131	1361	55 S	833	948	28 28	969	202	000	351	7 5	-128	393	402	578	579	3 28 (320	
(FOL)	(2)	Mo.	842 842	1,276	1,255	1,062	448	1,178	1070	376	1,275	986	350	2,029	978	1,662	1,528	52.	353	192	.452	357	710	338	528	.062	990				797				745			576			105	402	218	239	247	485	
olsom La	(1)	eries	257	568	279	272	276	258	27.1	27.1	280	277	263	279	278	275	278	8 8	313	291	298	287	282	290	21.5	112	263	212	279	273	787	281	287	279	275	255	757	262	288	100	255	242	246		252		
	(O)	Release Delh	3,039	3,049	3.054	3.054	3,058	3,054	3,518	3,542	3,503	534	1501	1,544	1,577	280	1,581	582	578	1881	195	562	576	574	574	366	28	97.0	.074	.073	570.	.075	990	790	070	070	062	062	561	262	559	562	282	574	1,562	269	
	ENG + um	thdr. Re	3														.,	.,		.,	., .		,,		4 (4	14		4 10			N N	7	~ ~	. 64	~ ~		~ ~										
	Whiskeyto	Shasta W	9.658	9,764	9.616	10,239	10,616	10,916	12,207	11,209	10,660	11,513	11,468	10,475	10,878	11,517	10,462	12,311	13,878	13,391	12,396	12,510	11,337	9,814	11,230	11,209	10,933	9.820	11,072	10,794	9,127	10,519	9,006	8,459	7,972	7,066	7.531	6.475	6,332	6,723	6,222	5,842	6,848	6,543	6,642	6.252	
	Storage.	Withdr	7,824	7,541	7.588	7.705	9,364	8,614	9,955	8,846	8,562	8,306	9.195	8,219	8 720	9,253	8.086	10.305	10,693	11,105	9,079	10,278	9,150	7.633	9,136	8,986	8,503	7.504	8,975	8,987	7,049	8,570	6.501	6,599	6,131	5,202	7,347	6.291	6,167	5,649	4.403	3,968	5,734	5,554	5,558	4.225	
(SHA)	pring Cr	P release	1,755	2,213	1,998	1 910	1,188	2,283	2,242	2,328	2,077	2.205	2,197	2,257	2,130	2,246	2,320	2,247	2,184	2,217	2 191	2,207	2,239	2,186	2,12	2,225	2,232	2.222	2,028	1,735	1.83	1,900	1.832	1,781	1,783	1,759	0.00	60 C	n on	946	1.768	1,755	8 8	220.	993	1,981	
asta Lake	Creek	JSGS F	118	= 5	10	5 5	88	80 E	8 K	2	22	2 12	2	2 5	2 2	2	21	2 22	8	88	8 8	2	7	2 2	5	E 6	0 5	, <u></u>	95	5	<u> </u>	E 6	5 5	£ ;		5 6		£ 6	8 8	88	812	12 K	2 2	K K	25	52	
Sh	mputed :	(KES) Inflow USGS PP release Withor Shasta Withor Releas	5,059	2,496	5,091	4.557	3,957	3,785	3,333	3,780	3.448	3,727	3,412	4,371	3,847	3,139	1 364	3,507	3,432	2,762	3.962	3,146	4.077	3,753	3,226	3,175	3,663	3,693	2,276	2,305	3,597	2,048	3,722	3,188	4,061	3,559	3,086	3,776	3,366	2,900	3,183	3,328	3,333	3,431	3,196	2.821	
	wick Cor	(KES)	4,638	4.735	14,677	4.619	14,509	4,662	15,530	14,954	14,888	14,881	14,804	14,847	14,752	14,638	15,817	16,059	6,309	5,064	15,998	5,631	15,466	4.410	1,484	396	906	3,419	3,279	5,027	12,480	12,518	12,055	.568	10,573	520	10,441		9,542						9,510		
1	Š	3.0	1				-		_	- '		-	-				-	-	-			-			-			-			-		-	-	==	==	=	<u> </u>	, 0,								
(4)	Storage	withdraw (2) - (3)	1,83	2,02	2.028	1.95	1,25	2.45	2,25	2,36	2.20	2,22	2.27																						1.89.1			2 2		1.074		1.653	-		1,084		
IKE (WHI)		HI II JOI	36	5 6		20	22	8 8	6	R i	7	28	7 1	3 83	3.	20 5	2 %	4	-921	200	61	. 47	123	514	109	28 4	32	-13	t o	יו מ	-128	9 3	-17	4	-27	-24	8	8-1-	-76	9 6	27	Pr	47-	P R	7 7	8	
Judge Lake	WHI WHI Carr (JCR):	CDEC W	2,051	2,105	2,105	2,053	1,397	2,313	2,438	2,050	2,662	2,563	2,093	2,144	2,318	1,995	2.646	2,349	3,329	2,325	2,217	2,217	2370	2,785	1,945	2,233	2,340	2,455	1,831	2,021	1,989	1912	1,995	1,969	2,050	1.338	110	110	= :	2,054	2,306	1,202	1,412	1.178	1,321 -41	2,017	
T. A.	WHI	COEC	3 2,090	5 2,196	2,615 2,208	0 2,110	2.351	9 2,343	7 2,503	2,068	2,703	2,619	2,089	2,179	2,349	2,049	2,672	2,393	2,408	2,325	2,278	2,26	2.5	2.271	2,054	2.354	2,372	2.442	4 8	2.014	1,861	825	1,978	1.971	2,023	322	₽:		8 8	2,060	2,335	1,205	1,338	1,149	1,280	2,046	
(2)	MHI	from CDEC	07/01/04 1,873	3/04 2,116	07/04/04 2,099 07/05/04 2,615	5/04 2,010	7704 1,274 304 2,374	9/04 2,485	3/04 2,31,	MA 2 149	3/04 2,248		5/04 2,269 5/04 2,339				1/04 2,327		202 2 200		VOA 2,279	704 2,275	704 2.310	104 2,261				104 2,303	304 2,110	1779		1.845	0.00		1,864		80	8 8	2 3	1,827	1,846	1,666	1,040	1,073	1.080	2,056	
	ž	5	07.0	07/0	0770	07/0	07/08/04	07/09/04	07/10/04	07/12/04	07/13/04	07/14/04	07/15/04	07/17/04	07/18/04	07/19/04	07/21/04	07/22/04	0777404	07/25/04	07/26/04	07/27/04	07/29/04	07/30/04	07/31/04	08/02/04	08/03/04	08/04/04	08/05/04	08/07	08/08/04	06/10/04	08/11/04	06/12/04	08/14/0	08/15/04	08/17/0	06/19/04	08/20/04	08/22/04	08/23/04	08/25/04	08/25/04	08/28/04	08/29/04	08/31/	

Attachment B

United States Department of the Interior
Bureau of Reclamation – Central Valley Project – California
Supplemental Project Water

May 1 to 31, 2008

U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA

RUN DATE: August 5, 2008 Page 1 of 3

DAILY CVP-SWP COORDINATED OPERATION

	100	WHISKEYTTOWNILAKE	E		SHASTALL	LAKE		N		FOLSOMILAKE	N/Œ			
	GREEK GREEK AND SPRING	NATURAL ST FLOW WIT	SITORAGE	KESWICK GOMPUTED FELENSE INTROVE		SPRING REDID		Willister Trown	INATIONIA D	DEUIVIERIES EROM	OMIPUTED :		REDEKALL STORAGE WITH	
							DESCRIED DESCRIED W	O SHANSHA SHORAGE Vit Hidravye		FOLSOM	Mary Property Services	WITH DRAWAL	DRAWL Abjusted	
- (283	316	-33	8.041	5.018	83		2 907	1 064	236	2 047			
2 0	283	207	92	8.014	5.074	83	2.857	2.933	1.060	243	2.917	-1.61/	-499	
o 4	283	163	120	8.259	5.603	83	2.573	2.693	1.059	240	2.916	-1.617	-669	
רט ז	283	175	400	8.275	5.536	83	2.656	2.770	1.066	245	3.194	-1.883	-217	
		2	001	8.270	5.515	83	2.672	2.780	1.061	253	2.442	-1.128	1.079	
9 1	717	256	161	8.265	7.179	217	698	1.030	1.064	235	3.660	-2.361	1.779	
- 00	283	103	2 6	8.278	6.935	87	1.256	1.366	1.057	237	4.169	-2.875	572	
6	283	181	102	8.264 8.266	5.370	833	1.811	1.901	1.063	240	3.831	-2.528	-182	
10	283	211	72	8 268	061.7	8	186	1.089	1.058	251	3.095	-1.786	242	
			1.	0.200	660.0	83	1.530	1.602	1.060	259	3.207	-1.888	994	
	282	283	7 (8.266	6.354	82	1.830	1.829	1.064	259	3.380	-2.057	-852	
7 2	282	250	56	8.265	6.540	82	1.643	1.669	1.056	253	3.394	-2.085	-691	
5 4	282	169	121	8.261	6.432	82	1.747	1.868	1.058	257	3.180	-1.865	-184	
Ť.	286	90	4 0	9.475	6.323	82	3.070	3.184	1.062	272	3.146	-1.812	-776	
2		00	061	10.881	5.996	86	4.799	4.989	1.064	274	3.274	-1.936	-210	
16	491	211	280	9.064	7.651	291	1.122	1.402	1.061	284	4.522	-3.177	2	
- 27	202	180	103	9.044	7.895	83	1.066	1.169	1.063	284	4.125	-2.778	-1 444	
9 5	283	160	123	9.960	6.642	83	3,235	3,358	1.061	296	4.370	-3.013	-910	
20	283	138	145	10.067	7.459	83	2.525	2.646	1.067	291	3.484	-2.126	171	
5			2	00:01	0.530	60	1.626	L//.T	1.060	276	3.290	-1.954	2.863	
2,00	398	109	289	10.019	4.574	198	5.247	5.536	1.496	258	2.680	-926	-552	
23	283	143	9/9	10.049	5.845	764	3.440	4.319	1.563	263	2.344	-518	243	
24	282	278	041	10.047	5.498	8 8	4.466	4.606	1.567	278	1.896	-51	2.840	
25	282	170	112	10.067	6.166	82	3.399	3.403	1.509	244	1.964	-211	2.595	
90	000					70	0.019	3.931	116.1	738	2.324	-5/5	1.560	
27	282	126 155	156	10.056	6.232	82	3.742	3.898	1.562	253	1.873	-58	4.961	
28	520	115	370	10.047	7.098	325	2.624	2.994	1.537	262	1.992	-193	4.261	
29	283	124	159	10.039	7.061	320	-691	-286	1.780	254	1.531	503	4.413	
30	326	112	214	10.038	6.956	126	2.956	3.170	1.994	250	2.055	200	3.906	
. 31	283	125	158	10.052	5 861	83	4 108	A 266	1 066	27.4	000	7 0	1 266	
COMMENTS:						}		504.	006.1	117	7.000	901	4.200	

UNITED STATES DEPARTMENT OF THE INTERIOR U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA

DAILY CVP-SWP COORDINATED OPERATION

	FOLSOM SOUTH GARLE	52	20	20	50	90	20	20	20	20	8 4	00 5	20	95	20		oc 1	20	00.5	20		200	200	8 6	20 6		2 2	20	20	20	2	3 .
	TOTAL PELTA EXPORT	1.690	1,592	1,738	1,701	900'1	1,653	1,764	1,502	1.816	1 783	1726	1 764	1727	1,752	1 627	1,02,1	7,727	4 042	1,689	1 830	1 484	2.214	2,540	2,850	2 756	1.836	2.479	2.478	2,686	1 903	2
ो≣-1/4 =४१०० हरा	GLIFTON: COURT FOREBAY	803	969	695	069	000	069	989	260	694	684	686	989	900	669	480	103	/60	908	522	873	605	1.495	1 495	1,062	1 499	1.038	1,175	1.188	1,498	1 199)) :
(PE)	STATE DELTA PUNPING PLANT	924	517	645	596 550	0 0	550	503	647	719	688	633	677	614	618	497	6	1 050	801	548	712	377	975	1.334	1,570	1 478	541	1,182	1,187	1.370	586	
	DMC CCCANAL FSCANAL+ FED DELTA	767	1,075	1,093	1,105	7 7 6	1,103	1,101	1,094	1,096	1.095	1.093	1,087	1,113	1,134	1.130	1 135	1.138	1.142	1,141	1.118	1.107	1,240	1,307	1,280	1.278	1,295	1,297	1,291	1,316	1,317	
ονίμιε	STORAGE With DRAWALL	-1,221	526	446	-128	2 056	-1.734	-1.620	-1,809	-1,218	-1,733	-1,882	-1,356	-1,512	-2,810	-4,394	-3.854	-2,836	-2.642	-1,205	-278	479	723	268	778	630	1,874	522	2,287	1,796	994	
LAKEOROVILLE	COMPUTED INFEOW	4,645	3,752	4.723	5,014	6.329	6.036	5,981	6,102	5,418	5,830	5,859	5,163	5,230	6,373	7,872	7,404	6.429	6,238	5,137	4,652	3,785	3,453	3,924	3,449	3,662	2,465	3,854	2.143	2,638	3,277	
	DAY	← (7 "	٥ ٨	. ro	œ	^	80	6	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	67	30	31	COMMENTS:

SUPPLEMENTAL PROJECT WATER

	000000																																
SUPPLEMENTAL PROJECT WATER		-2,621	-3,470	-4,211	-3,088	? !	-2/1	7.270	3.506	-2,505	1 205	602,4-	24,170	111.6-	2 703	067'0-	-2,931	-4.133	-5.858	-6 116	-2,630	7	2,100	-3,632	676-	-761		2,978	2,743	2,762	3 360	606,0	2,935
GÄRRIAGE WATER		0	0 (0 (00	0 0	0 0	> c	o c	0	c	o c	o c	0 0	0 0	0	0	0	0	0	0	c	0 0	0 0	0 0	o c		0 (0 6	-	> <	o 1	0
EKPORT INDEX	0100	-3,073	-3,180	5,076	-3,093	3 225	3.150	-3,130	-3 264	-3,098	-3 287	-3.504	-3.296	3.214	-3 162	20.10	-3,178	-3,534	-2,522	-2.852	-3,061	207.6	201,2	1.636	877-	-424	683	700-	060'1-	-200	-326	0 0	-938
SEASONAL ADJUST	1 000	000,1	000,1	000,1	1,000	1,000	1,000	1,000	1,000	1,000	1 000	1,000	1 000	1 000	1,000		1,000	1,000	1,000	1,000	1,000	1.000	1 000	0001	1,000	1,000	1 000	1,000	1,000	1,000	1,000	000	1,000
SANJOAGIIN RIVER	3 711	3 722	3766	3.744	3.777	3 828	3.864	3.855	3,955	3,864	4.020	4.180	4.010	3 891	3,864		3,755	3,711	3,660	3,744	3,700	3 482	3 230	2,200	2.368	2,224	2 288	2 104	2,104	2.017	1,962	1 707	1.67,1
TOTAL DIVERSION	1.638	1.542	1.688	1.651	1,608	1.603	1.714	1,552	1,691	1,766	1,733	1.676	1,714	1.677	1,702	į	1,577	1,177	2,138	1,892	1,639	1.780	1.434	2.164	2,590	2,800	2.706	1 786	2.429	2.428	2,636	1 853	200
AWALS TOTAL	-983	-1,928	-2,523	-1,438	1,605	1,332	444	-905	-1,814	-740	-2,472	-2,500	-1,402	-2,509	-2,092	1 254	-1,354	-2,956	-3,720	-4,223	-991	-3,388	-2,399	1,635	2,317	2,039	5.684	4.529	5,191	4.536	6,005	4 788	?
WITHORAW STATE	-484	-1,662	-1,854	-1,221	526	-447	-128	-723	-2,056	-1,734	-1,620	-1,809	-1,218	-1,733	-1,882	1 256	966,1-	21,512	-2,810	-4,394	-3,854	-2,836	-2,642	-1,205	-278	479	723	268	778	630	1,874	522	
STORAGEWITHDR FEDERAL STATE	-499	-266	699-	-217	1,079	1,779	572	-182	242	994	-852	-691	-184	922-	-210	0	7 1111	- 1,444	-910	1/1	2,863	-552	243	2,840	2,595	1,560	4.961	4.261	4.413	3,906	4,131	4,266	
DÁY	1	2	က	4	S	9	7	80	6	10	11	12	13	14	15	16	1 2	- 7	Σ ς	19	20	21	22	23	24	25	26	27	28	29	30	31	

MINIMUM FILING FEE: \$100.00 FILE ORIGINAL & ONE COPY TYPE OR PRINT IN BLACK INK (For explanation of entries required, acc booklet "How to File an Application to Appropriate Water in California")

STATE OF CALIFORNIA STATE WATER RESOURCES CONTROL BOARD DIVISION OF WATER RIGHTS

901 P Street, Sacramento P.O. Box 2000, Sacramento, CA 95812-2000

\boxtimes	APPLIC	ATION T	O APPROL	ንጀስሻ <i>ል የ</i> ቦፓን ገ	W.A. mean			
(Check one box only)		ATION I	U AFRRU	CAIL	WATE	R BY P.	ERN _k	
	or							
Ш	REGIS	TRATIO	N OF SMA	LL DOM	ESTIC	TISE A	PPROP	RIATION#
(If this is used to register a terms "application" and app	small domestic uso plicant "herein, and in	appropriation,	he shall		20110	COL	ii i koi	MIATION.
mean 'registration' and registr	munt.")		A	pplication	No			
1. APPLICANT						(Leave	blank)	
Yolo County F	lood Control a	& Water (ongervation	District	(016)	(00.00	0.05	
(Nan	ne of applicant)		JOHN THEOD	District		622-02		u may be reached
34274 State His	shway 16				between	8 a.m. and	5 p.m inclu	de area code)
-		Woodla	ınd	(Californ	ia	95695	
(Mailing addres	is)	(City or	town)		(State)	14	(Zip Code)
2. SOURCE								
a. The name of the se	ource at the point	of diversion i	Sacramente	River	•			
tributary to Suisus	n Bay		(If unnamed, s	tate that it is a	un unnamed	d stream, s	pring, etc.)	
							571	
b. In a normal year do what months is it us	sually deu? Esom	up at any po	int downstream			s L	NO 🛛	If yes, during
What alternate sour	ces are available to	your project	should a portion	to to	oursted di	rent diver	lon	L .
excluded because of	a dry stream or n	onavailability	of water? loca	l groundy	vater the	rough c	oniuntive	e-iise program
S. I CALLED OF DI	version an	O KEDIV	ERSION *					Problem.
a. The point(s) of dive	ersion will be in th	e County of	Yolo or Tel	hama				
		-						
List all points giving coor	rdinate distances from	n I	Point is wit (40-acre subdi		Section	Township	Range	Base and
regulations i.e. California	Coordinate System		(40-acre aubu)	VIEION)				Meridian
A:N298,400;E 1,943,	550 (Zone 1)		SE 1/4 of	NE 1/4	33	27N.	3W.	M.D.
B:N367,950;E 2,105,6	350 (Zone 2)		SE 1/4 of	SW 1/4	27	10N.	3E.	M.D.
C:N339,550;E 2,129,2	200 (Zone 2)		SE 1/4 of	NE 1/4	29	9N.	4E.	M.D.
D:N357,550;E 2,114,800 (Zone 2)		SE 1/4 of	SE 1/4	2	9N.	3E.	M.D.	
o De	v of the second		П	K7				
c. Does applicant own	the land at point of	f diversion?	YES U N	0 🖾				
d. If applicant does not obtain right of access	s: See attached	Table 1	e name and add	ress of owner	and what	steps have	e been take	en to
* Alternate points	of diversion as	re listed. C	nly one ultin	nately will b	e develo	bee bee	d	
TOME OF U	DE, ANUUUN	and Si	CASON					
a. In the table below, s	tate the purpose(s)	for which w	ster is to be an	propriated, th	e quantitie	s of water	r for each p	игрозс
and the dates between (approximately 16,00								
PURPOSE		DIRECT DIV			Gistration			
OF USE (Irrigation, Domestic, etc.)	QUAN		SEASON OF				STORAGE	
(****Barron, Doulesite, etc.)	RATE	AMOUNT		1	AMO		OLLECTION	SEASON
	(Cubic feet per	(Acre-feet	Beginning Date	Ending Date (Mo.&Day)			eginning Me	Ending Date (Mo.&Day)
	second or galions per day)	per year)	(Mo.&Day)			-	do.&Day)	(110.00)
[Municipal,Irrigation	//				-			
and Agricultural,								
Fisheries and								
Aquaculture Research	250	45,000	Jan. 1	Dec. 31				

b. Total combined amount taken by direct diversion and storage during any one year will be

* Not to exceed 4,500 gallons per day by direct diversion or 10 acre-feet per annum by storage.

45,000

TOTAL AMOUNT

** As limited by SWRCB Standard Permit Term 91

FOR0053-R1

acre feet.

TOTAL AMOUNT

45.000

Proposed Davis-Woodland Water Supply Project
Calendar Year 2040 Projected Monthly Water Consumption, AF/month
(Assumes water supply project is sized to meet projected 2040 demands)
Sacramento River Water Treatment Plant Capacity = 51.8 mgd (23 Davis, 27 Woodland, 1.8 UC Davis)

City of Davis

	Surface Water			
	Sacramento River	Solano Project	Ground Water	Total
January	1,031	0	. 0	
February	916	n	0	1,031
March	1,168	0	U	916
April	1,626	0	0	1,168
May	1. 0000000	0	0	1,626
June	2,130	, 0	0	2,130
	2,118	0	562	2,679
July	2,188	0	880	3,069
August	2,188	0	835	5550
September	2,118	n	493	3,023
October	2,153	Õ		2,611
November	1,420	0	. 0	2,153
December		Ü	0	1,420
Annual	. <u>1.076</u>	<u>0</u>	<u>0</u>	1.076
Allitual	20,131	0	2,769	22,900

City of Woodland

	Surface Water	<u>er</u>		
	Sacramento River	Solano Project	Ground Water	<u>Total</u>
January	1,308	0	<u> </u>	
February	1,192	0	0	1,308
March	1.645	U	U	1,192
		0	0	1.645
April	1,938	0	0	1,938
May	2,569	0	68	
June	2,486	0		2,636
July	2.569		630	3,116
August		0	814	3,383
_	2,569	0	882	3,451
September	2,486	0	417	2,903
October	2,340	0	0	
November	1,593		-	2,340
December	•	0	0	1,593
	· <u>1,312</u>	<u>0</u>	0	<u>1,312</u>
Annual	24,006	0	2,811	26,817

UC Davis

	Surface Water	19			
•	Sacramento River	Solano Project	Ground Water		Total
January	170	170	36		376
February	153	153	72		
March	170	170	99		379
April	164	164	98		439
May	170	170	227		427
June	164	164	264		567
July	170	170	298		593
August	170	170			638
September	164	164	291		630
October	170	170	237		566
November	164		170	Ç.	510
December	170	164	119		448
Annual	2,000	<u>158</u> 1,988	1,912		328 5.900

All Project Partners				
	Surface Wa	ater		
	Sacramento River	Solano Project	Ground Water	Total
January ·	2,508	170	36	2,714
February	2,261	153	72	
March	2,983	170	99	2,486
April	3,728	164		3,252
May	4,868		98	3,990
June	1.00	170	295	5,333
July	4,768	164	1,456	6,388
	4,927	170	1,993	7,090
August	4,927	170	2,007	7,104
September	4,768	164	1,147	6,079
October	4,662	170	170	
November	3,178	164	119	5,002
December	2,558	<u>158</u>		3,461
Annual	46,137	1,988	<u>0</u>	2,716
	10,101	1,500	7,492	55.617