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8E.1 Bromide Methodology

Bromide was modeled quantitatively for the Delta in two ways. First, a quantitative assessment utilizing a mass-balance approach (DSM2 fingerprinting data combined with historical source water quality data) was employed. Additionally, results of a second modeling approach utilizing DSM2-QUAL modeled EC, EC to chloride, and chloride to bromide relationships were used to supplement the results of the mass-balance approach. Section 8.3.1.3 and the bromide discussion under section 8.3.1.7 provide more detailed information regarding the assessment methodology for bromide and the details of the quantitative approaches. Figures and tables to support the assessment are provided below.

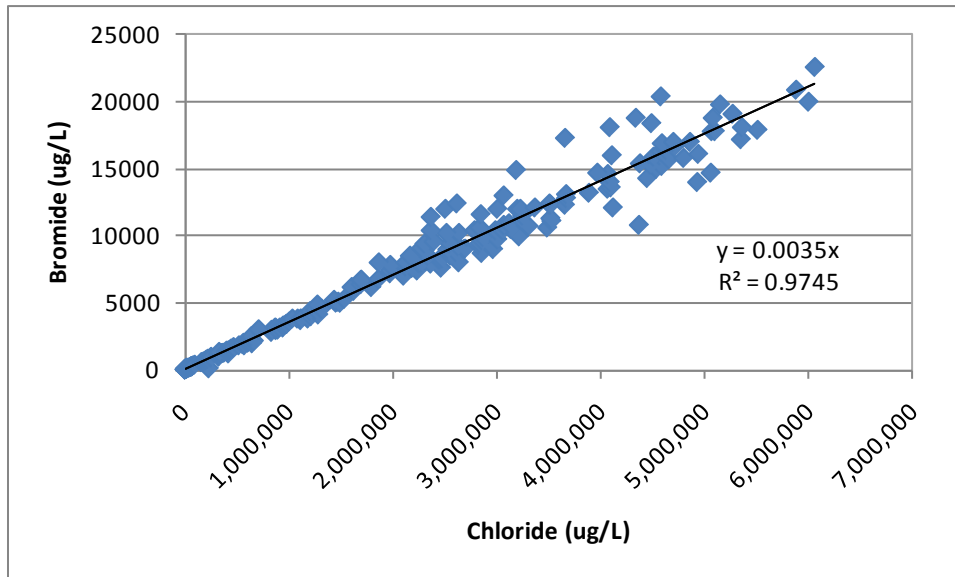


Figure 1. Bromide to chloride ratio for Mallard Island monitoring station.

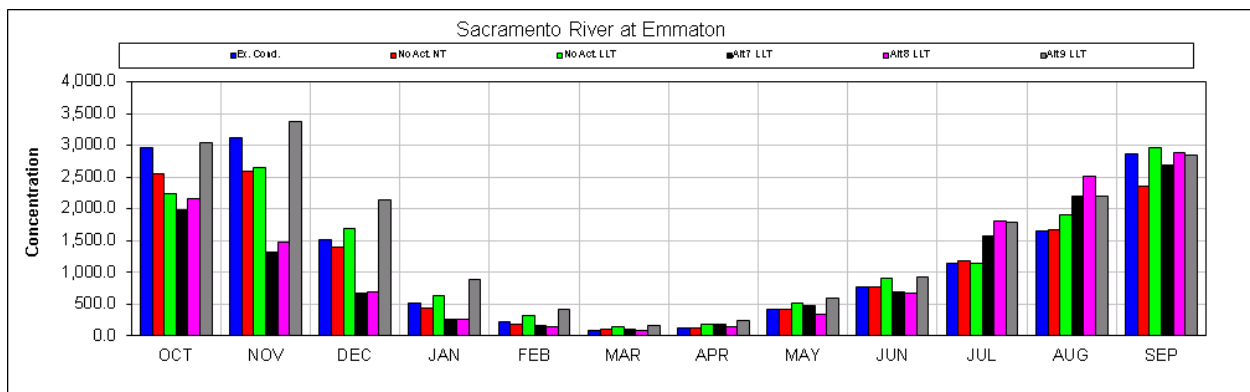


Figure 2. Long-term average estimated bromide concentrations for the Sacramento River at Emmaton for existing conditions, No Action LLT, and Alternatives 7–9 (mg/L).

1 **Bromide Table 1: Monthly Martinez Bromide Concentrations ($\mu\text{g/L}$) Used in Assessment.**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean ($\mu\text{g/L}$)	22,757	17,592	13,149	16,013	18,388	18,069	23,312	24,481	27,879	29,723	32,951	28,088
Minimum ($\mu\text{g/L}$)	28	95	39	28	28	658	3,283	13,335	10,500	7,700	17,465	767
Maximum ($\mu\text{g/L}$)	42,700	43,050	39,200	39,200	33,985	34,895	37,800	36,750	38,500	38,850	43,750	44,100
75th Percentile ($\mu\text{g/L}$)	34,493	29,820	22,313	24,150	27,536	27,703	29,768	30,223	33,845	34,913	38,500	38,150
99th Percentile ($\mu\text{g/L}$)	42,438	42,438	38,763	38,745	33,749	34,318	37,254	36,659	38,227	38,759	43,295	44,009
Data Source	BDAT											
Station(s)	See footnote in text											
Date Range	1980 - 2007											
ND Replaced with RL	No											
Data Omitted	None											
No. of Data Points	26	26	26	27	26	26	27	27	27	27	27	27

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1 **Bromide Table 2: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for the No Action Alternative**
 2 **LLT using the Mass-Balance Modeling Approach.**

Bromide No Act. LLT	Location	Period ^a	Period Average Concentration ug/L		Other Relevant Threshold (50 µg/L) ^b		Other Relevant Threshold (100 µg/L) ^c	
					Frequency of Criterion/Objective Exceedance (%)		Frequency of Criterion/Objective Exceedance (%)	
			Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	50	48	47	43	1	1
		DROUGHT	51	50	52	42	0	0
	SJR at Buckley Cove	ALL	259	242	100	100	100	100
		DROUGHT	272	243	100	100	100	100
	Franks Tract	ALL	598	502	99	99	82	85
		DROUGHT	737	660	100	98	78	80
	Old R. at Rock Slough	ALL	520	444	99	100	91	94
		DROUGHT	622	556	100	100	90	92
Western Delta	Sac. R. at Emmaton	ALL	1,284	1,275	82	86	72	79
		DROUGHT	1,800	1,950	98	98	93	95
	SJR at Antioch	ALL	3,798	3,402	98	98	93	94
		DROUGHT	4,896	4,703	100	100	100	100
	Sac. R. at Mallard Island	ALL	8,926	8,436	98	98	91	93
		DROUGHT	11,315	10,927	100	100	100	100
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	51	50	49	40	0	1
		DROUGHT	54	54	55	57	0	0
	Contra Costa PP #1	ALL	501	432	100	100	96	97
		DROUGHT	608	555	100	100	98	98
	Banks PP	ALL	415	363	100	100	100	100
		DROUGHT	490	435	100	100	100	100
	Jones PP	ALL	387	339	100	100	100	100
		DROUGHT	446	396	100	100	100	100

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.

^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 3: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for the No Action Alternative**
 2 **LLT using the EC to Chloride and Chloride to Bromide Relationship Modeling Approach.**

Bromide No Act. LLT	Location	Period ^a	Period Average Concentration (µg/L)		Other Relevant Threshold (50 µg/L) ^b		Other Relevant Threshold (100 µg/L) ^c	
			Frequency of Criterion/Objective Exceedance (%)		Frequency of Criterion/Objective Exceedance (%)		Frequency of Criterion/Objective Exceedance (%)	
			Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT	Ex. Cond.	No Act. LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	65	64	97	98	3	1
		DROUGHT	68	67	100	100	3	0
	SJR at Buckley Cove	ALL	405	356	100	99	89	89
		DROUGHT	542	450	100	100	100	100
	Franks Tract	ALL	420	355	100	100	76	72
		DROUGHT	535	490	100	100	93	88
Old R. at Rock Slough	ALL	378	328	100	100	86	83	
	DROUGHT	476	438	100	100	98	97	
Western Delta	Sac. R. at Emmaton	ALL	903	909	100	100	69	75
		DROUGHT	1,273	1,422	100	100	90	93
	SJR at Antioch	ALL	2,648	2,393	100	100	82	86
		DROUGHT	3,507	3,465	100	100	98	98
Sac. R. at Mallard Island	ALL	6,182	5,861	100	100	87	89	
	DROUGHT	8,211	8,113	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	66	66	100	100	1	2
		DROUGHT	65	66	100	100	0	0
	Contra Costa PP #1	ALL	422	367	100	100	95	94
		DROUGHT	500	466	100	100	98	98
	Banks PP	ALL	356	319	100	100	91	90
		DROUGHT	469	430	100	100	100	100
	Jones PP	ALL	381	355	100	100	92	91
		DROUGHT	507	476	100	100	100	100

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 4: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 1A LLT using the**
 2 **Mass-Balance Modeling Approach.**

Bromide Alt 1 LLT	Location	Period ^a	Period Average Concentration ug/L			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Ex. Cond.	No Act. LLT	Alt 1 LLT	Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
						Ex. Cond.	No Act. LLT	Alt 1 LLT	Ex. Cond.	No Act. LLT	Alt 1 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	50	48	61	47	43	73	1	1	3
		DROUGHT	51	50	62	52	42	75	0	0	2
	SJR at Buckley Cove	ALL	259	242	247	100	100	100	100	100	100
		DROUGHT	272	243	253	100	100	100	100	100	100
	Franks Tract	ALL	598	502	571	99	99	100	82	85	93
		DROUGHT	737	660	663	100	98	100	78	80	88
Old R. at Rock Slough	ALL	520	444	503	99	100	100	91	94	97	
	DROUGHT	622	556	568	100	100	100	90	92	95	
Western Delta	Sac. R. at Emmaton	ALL	1,284	1,275	1,504	82	86	89	72	79	84
		DROUGHT	1,800	1,950	2,036	98	98	98	93	95	98
	SJR at Antioch	ALL	3,798	3,402	3,740	98	98	100	93	94	99
		DROUGHT	4,896	4,703	4,688	100	100	100	100	100	100
Sac. R. at Mallard Island	ALL	8,926	8,436	9,245	98	98	100	91	93	95	
	DROUGHT	11,315	10,927	11,225	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	51	50	71	49	40	51	0	1	22
		DROUGHT	54	54	104	55	57	77	0	0	48
	Contra Costa PP #1	ALL	501	432	503	100	100	100	96	97	99
		DROUGHT	608	555	550	100	100	100	98	98	100
	Banks PP	ALL	415	363	277	100	100	77	100	100	70
		DROUGHT	490	435	366	100	100	95	100	100	88
	Jones PP	ALL	387	339	244	100	100	78	100	100	76
		DROUGHT	446	396	306	100	100	93	100	100	90

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 5: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 1A LLT using the**
 2 **EC to Chloride and Chloride to Bromide Relationship Modeling Approach.**

Bromide Alt 1 LLT	Location	Period ^a	Period Average Concentration (µg/L)			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Ex. Cond.	No Act. LLT	Alt 1 LLT	Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
						Ex. Cond.	No Act. LLT	Alt 1 LLT	Ex. Cond.	No Act. LLT	Alt 1 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	65	64	69	97	98	98	3	1	4
		DROUGHT	68	67	71	100	100	100	3	0	2
	SJR at Buckley Cove	ALL	405	356	345	100	99	100	89	89	90
		DROUGHT	542	450	457	100	100	100	100	100	100
	Franks Tract	ALL	420	355	402	100	100	100	76	72	82
		DROUGHT	535	490	495	100	100	100	93	88	97
Old R. at Rock Slough	ALL	378	328	364	100	100	100	86	83	90	
	DROUGHT	476	438	447	100	100	100	98	97	100	
Western Delta	Sac. R. at Emmaton	ALL	903	909	1,067	100	100	100	69	75	80
		DROUGHT	1,273	1,422	1,496	100	100	100	90	93	97
	SJR at Antioch	ALL	2,648	2,393	2,656	100	100	100	82	86	92
		DROUGHT	3,507	3,465	3,481	100	100	100	98	98	98
Sac. R. at Mallard Island	ALL	6,182	5,861	6,574	100	100	100	87	89	91	
	DROUGHT	8,211	8,113	8,416	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	66	66	74	100	100	100	1	2	10
		DROUGHT	65	66	89	100	100	100	0	0	22
	Contra Costa PP #1	ALL	422	367	416	100	100	100	95	94	99
		DROUGHT	500	466	456	100	100	100	98	98	100
	Banks PP	ALL	356	319	251	100	100	99	91	90	71
		DROUGHT	469	430	352	100	100	100	100	100	95
	Jones PP	ALL	381	355	287	100	100	99	92	91	73
		DROUGHT	507	476	393	100	100	100	100	100	92

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 6: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 2A LLT using the**
 2 **Mass-Balance Modeling Approach.**

Bromide Alt 2 LLT	Location	Period ^a	Period Average Concentration ug/L			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Ex. Cond.	No Act. LLT	Alt 2 LLT	Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
						Ex. Cond.	No Act. LLT	Alt 2 LLT	Ex. Cond.	No Act. LLT	Alt 2 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	50	48	62	47	43	74	1	1	4
		DROUGHT	51	50	63	52	42	80	0	0	2
	SJR at Buckley Cove	ALL	259	242	248	100	100	100	100	100	100
		DROUGHT	272	243	253	100	100	100	100	100	100
	Franks Tract	ALL	598	502	465	99	99	100	82	85	93
		DROUGHT	737	660	624	100	98	100	78	80	87
Old R. at Rock Slough	ALL	520	444	422	99	100	100	91	94	97	
	DROUGHT	622	556	544	100	100	100	90	92	98	
Western Delta	Sac. R. at Emmaton	ALL	1,284	1,275	1,264	82	86	89	72	79	82
		DROUGHT	1,800	1,950	1,911	98	98	98	93	95	97
	SJR at Antioch	ALL	3,798	3,402	3,128	98	98	100	93	94	99
		DROUGHT	4,896	4,703	4,362	100	100	100	100	100	100
Sac. R. at Mallard Island	ALL	8,926	8,436	8,452	98	98	100	91	93	95	
	DROUGHT	11,315	10,927	10,801	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	51	50	63	49	40	38	0	1	17
		DROUGHT	54	54	94	55	57	63	0	0	38
	Contra Costa PP #1	ALL	501	432	416	100	100	100	96	97	98
		DROUGHT	608	555	512	100	100	100	98	98	100
	Banks PP	ALL	415	363	225	100	100	74	100	100	64
		DROUGHT	490	435	343	100	100	91	100	100	86
	Jones PP	ALL	387	339	208	100	100	75	100	100	70
		DROUGHT	446	396	296	100	100	90	100	100	86

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 7: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 2A LLT using the**
 2 **EC to Chloride and Chloride to Bromide Relationship Modeling Approach.**

Bromide Alt 2 LLT	Location	Period ^a	Period Average Concentration (µg/L)			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Ex. Cond.	No Act. LLT	Alt 2 LLT	Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
						Ex. Cond.	No Act. LLT	Alt 2 LLT	Ex. Cond.	No Act. LLT	Alt 2 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	65	64	70	97	98	98	3	1	5
		DROUGHT	68	67	72	100	100	100	3	0	3
	SJR at Buckley Cove	ALL	405	356	365	100	99	100	89	89	90
		DROUGHT	542	450	484	100	100	100	100	100	100
	Franks Tract	ALL	420	355	336	100	100	100	76	72	87
		DROUGHT	535	490	474	100	100	100	93	88	98
Old R. at Rock Slough	ALL	378	328	322	100	100	100	86	83	90	
	DROUGHT	476	438	440	100	100	100	98	97	100	
Western Delta	Sac. R. at Emmaton	ALL	903	909	893	100	100	100	69	75	78
		DROUGHT	1,273	1,422	1,401	100	100	100	90	93	95
	SJR at Antioch	ALL	2,648	2,393	2,193	100	100	100	82	86	92
		DROUGHT	3,507	3,465	3,216	100	100	100	98	98	100
Sac. R. at Mallard Island	ALL	6,182	5,861	5,785	100	100	100	87	89	91	
	DROUGHT	8,211	8,113	7,947	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	66	66	70	100	100	100	1	2	10
		DROUGHT	65	66	84	100	100	100	0	0	20
	Contra Costa PP #1	ALL	422	367	361	100	100	100	95	94	99
		DROUGHT	500	466	437	100	100	100	98	98	100
	Banks PP	ALL	356	319	221	100	100	98	91	90	64
		DROUGHT	469	430	331	100	100	100	100	100	90
	Jones PP	ALL	381	355	239	100	100	99	92	91	69
		DROUGHT	507	476	353	100	100	100	100	100	88

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.

^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 8: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 3 LLT using the**
 2 **Mass-Balance Modeling Approach.**

Bromide Alt 3 LLT	Location	Period ^a	Period Average Concentration ug/L			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Ex. Cond.	No Act. LLT	Alt 3 LLT	Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
						Ex. Cond.	No Act. LLT	Alt 3 LLT	Ex. Cond.	No Act. LLT	Alt 3 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	50	48	60	47	43	71	1	1	3
		DROUGHT	51	50	62	52	42	73	0	0	2
	SJR at Buckley Cove	ALL	259	242	247	100	100	100	100	100	100
		DROUGHT	272	243	252	100	100	100	100	100	100
	Franks Tract	ALL	598	502	567	99	99	100	82	85	93
		DROUGHT	737	660	673	100	98	100	78	80	87
Old R. at Rock Slough	ALL	520	444	499	99	100	100	91	94	96	
	DROUGHT	622	556	572	100	100	100	90	92	93	
Western Delta	Sac. R. at Emmaton	ALL	1,284	1,275	1,481	82	86	87	72	79	83
		DROUGHT	1,800	1,950	1,979	98	98	98	93	95	97
	SJR at Antioch	ALL	3,798	3,402	3,715	98	98	99	93	94	97
		DROUGHT	4,896	4,703	4,609	100	100	100	100	100	100
Sac. R. at Mallard Island	ALL	8,926	8,436	9,197	98	98	100	91	93	95	
	DROUGHT	11,315	10,927	11,074	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	51	50	69	49	40	48	0	1	22
		DROUGHT	54	54	99	55	57	77	0	0	47
	Contra Costa PP #1	ALL	501	432	489	100	100	100	96	97	98
		DROUGHT	608	555	564	100	100	100	98	98	98
	Banks PP	ALL	415	363	300	100	100	91	100	100	83
		DROUGHT	490	435	370	100	100	97	100	100	90
	Jones PP	ALL	387	339	266	100	100	90	100	100	85
		DROUGHT	446	396	308	100	100	97	100	100	90

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.

^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 9: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 3 LLT using the**
 2 **EC to Chloride and Chloride to Bromide Relationship Modeling Approach.**

Bromide Alt 3 LLT	Location	Period ^a	Period Average Concentration (µg/L)			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Ex. Cond.	No Act. LLT	Alt 3 LLT	Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
						Ex. Cond.	No Act._LLT	Alt 3 LLT	Ex. Cond.	No Act._LLT	Alt 3 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	65	64	69	97	98	98	3	1	2
		DROUGHT	68	67	71	100	100	100	3	0	2
	SJR at Buckley Cove	ALL	405	356	344	100	99	100	89	89	90
		DROUGHT	542	450	455	100	100	100	100	100	100
	Franks Tract	ALL	420	355	398	100	100	100	76	72	82
		DROUGHT	535	490	500	100	100	100	93	88	95
Old R. at Rock Slough	ALL	378	328	360	100	100	100	86	83	91	
	DROUGHT	476	438	449	100	100	100	98	97	97	
Western Delta	Sac. R. at Emmaton	ALL	903	909	1,049	100	100	100	69	75	80
		DROUGHT	1,273	1,422	1,443	100	100	100	90	93	95
	SJR at Antioch	ALL	2,648	2,393	2,627	100	100	100	82	86	90
		DROUGHT	3,507	3,465	3,394	100	100	100	98	98	98
Sac. R. at Mallard Island	ALL	6,182	5,861	6,520	100	100	100	87	89	90	
	DROUGHT	8,211	8,113	8,231	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	66	66	72	100	100	100	1	2	9
		DROUGHT	65	66	85	100	100	100	0	0	18
	Contra Costa PP #1	ALL	422	367	399	100	100	100	95	94	98
		DROUGHT	500	466	463	100	100	100	98	98	100
	Banks PP	ALL	356	319	265	100	100	100	91	90	76
		DROUGHT	469	430	358	100	100	100	100	100	93
	Jones PP	ALL	381	355	291	100	100	100	92	91	82
		DROUGHT	507	476	374	100	100	100	100	100	97

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.

^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 10: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Scenarios H1-H4 of**
 2 **Alternative 4 LLT using the Mass-Balance Modeling Approach.**

Bromide Alt 4 LLT	Location	Period ^a	Period Average Concentration ug/L						Other Relevant Threshold (50 µg/L) ^b						Other Relevant Threshold (100 µg/L) ^c					
			Ex. Cond.	No Act. LLT	H1	H2	H3	H4	Frequency of Criterion/Objective Exceedance (%)											
									Ex. Cond.	No Act. LLT	H1	H2	H3	H4	Ex. Cond.	No Act. LLT	H1	H2	H3	H4
Delta Interior	Moke. R. (SF) at Staten Island	ALL	50	48	62	63	62	62	47	43	73	76	73	70	1	1	3	3	3	3
		DROUGHT	51	50	63	63	63	63	52	42	80	83	80	80	0	0	2	2	2	2
	SJR at Buckley Cove	ALL	259	242	248	248	248	248	100	100	100	100	100	100	100	100	100	100	100	100
		DROUGHT	272	243	252	252	252	253	100	100	100	100	100	100	100	100	100	100	100	100
	Franks Tract	ALL	598	502	537	522	456	450	99	99	100	100	100	100	82	85	92	94	91	93
		DROUGHT	737	660	654	648	599	597	100	98	100	100	100	100	78	80	85	93	83	90
Old R. at Rock Slough	ALL	520	444	475	464	411	407	99	100	100	100	100	100	91	94	97	98	96	96	
	DROUGHT	622	556	562	560	520	517	100	100	100	100	100	100	90	92	97	98	97	97	
Western Delta	Sac. R. at Emmaton	ALL	1,284	1,275	1,461	1,488	1,268	1,271	82	86	88	86	88	87	72	79	82	81	82	81
		DROUGHT	1,800	1,950	1,993	1,986	1,881	1,886	98	98	98	98	98	98	93	95	97	97	97	97
	SJR at Antioch	ALL	3,798	3,402	3,586	3,590	3,131	3,131	98	98	100	100	100	100	93	94	98	98	98	97
		DROUGHT	4,896	4,703	4,569	4,548	4,315	4,331	100	100	100	100	100	100	100	100	100	100	100	100
	Sac. R. at Mallard Island	ALL	8,926	8,436	9,054	9,032	8,453	8,435	98	98	100	100	100	100	91	93	95	94	95	95
		DROUGHT	11,315	10,927	11,099	11,064	10,779	10,796	100	100	100	100	100	100	100	100	100	100	100	100
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	51	50	69	72	62	63	49	40	48	56	39	40	0	1	20	20	18	16
		DROUGHT	54	54	101	106	92	95	55	57	75	83	63	67	0	0	43	47	37	38
	Contra Costa PP #1	ALL	501	432	479	458	410	406	100	100	100	100	100	100	96	97	98	99	98	98
		DROUGHT	608	555	545	543	501	498	100	100	100	100	100	100	98	98	98	100	98	100
	Banks PP	ALL	415	363	261	257	234	224	100	100	83	83	82	76	100	100	69	71	65	64
		DROUGHT	490	435	352	334	326	312	100	100	92	90	88	83	100	100	85	80	83	77
	Jones PP	ALL	387	339	245	225	224	217	100	100	90	85	85	80	100	100	83	77	76	73
		DROUGHT	446	396	328	300	306	304	100	100	100	97	98	93	100	100	97	88	92	86

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 11: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Scenarios H1-H4 of**
 2 **Alternative 4 LLT using the EC to Chloride and Chloride to Bromide Relationship Modeling Approach.**

Bromide	Alt 4 LLT	Location	Period ^a	Period Average Concentration ug/L				Other Relevant Threshold (50 µg/L) ^b				Other Relevant Threshold (100 µg/L) ^c								
				Frequency of Criterion/Objective Exceedance (%)				Frequency of Criterion/Objective Exceedance (%)												
				Ex. Cond.	No Act. LLT	H1	H2	H3	H4	Ex. Cond.	No Act. LLT	H1	H2	H3	H4	Ex. Cond.	No Act. LLT	H1	H2	H3
Delta Interior	Moke. R. (SF) at Staten Island	ALL	65	64	70	70	70	70	97	98	98	98	98	98	3	1	3	3	4	4
		DROUGHT	68	67	72	72	72	72	100	100	100	100	100	100	3	0	2	3	3	3
	SJR at Buckley Cove	ALL	405	356	365	366	365	365	100	99	100	100	100	100	89	89	90	90	90	90
		DROUGHT	542	450	484	485	484	485	100	100	100	100	100	100	100	100	100	100	100	100
	Franks Tract	ALL	420	355	380	373	328	330	100	100	100	100	100	100	76	72	88	88	87	87
		DROUGHT	535	490	494	492	455	460	100	100	100	100	100	100	93	88	98	98	98	98
Old R. at Rock Slough	ALL	378	328	348	346	311	317	100	100	100	100	100	100	86	83	91	93	90	93	
	DROUGHT	476	438	448	452	420	427	100	100	100	100	100	100	98	97	98	100	98	100	
Western Delta	Sac. R. at Emmaton	ALL	903	909	1,035	1,052	901	903	100	100	100	100	100	100	69	75	78	77	78	77
		DROUGHT	1,273	1,422	1,466	1,451	1,381	1,381	100	100	100	100	100	100	90	93	95	97	95	97
	SJR at Antioch	ALL	2,648	2,393	2,534	2,538	2,204	2,210	100	100	100	100	100	100	82	86	90	89	90	89
		DROUGHT	3,507	3,465	3,387	3,354	3,183	3,196	100	100	100	100	100	100	98	98	100	100	100	100
Sac. R. at Mallard Island	ALL	6,182	5,861	6,364	6,351	5,803	5,799	100	100	100	100	100	100	87	89	91	90	91	90	
	DROUGHT	8,211	8,113	8,280	8,226	7,934	7,951	100	100	100	100	100	100	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	66	66	73	74	70	71	100	100	100	100	100	100	1	2	9	11	9	10
		DROUGHT	65	66	89	90	84	85	100	100	100	100	100	100	0	0	22	25	20	22
	Contra Costa PP #1	ALL	422	367	391	384	349	356	100	100	100	100	100	100	95	94	99	99	99	99
		DROUGHT	500	466	453	459	427	434	100	100	100	100	100	100	98	98	100	100	100	100
	Banks PP	ALL	356	319	241	242	226	222	100	100	99	99	99	98	91	90	71	71	66	66
		DROUGHT	469	430	338	319	320	304	100	100	100	100	100	100	100	100	88	83	86	80
	Jones PP	ALL	381	355	272	255	254	248	100	100	99	99	98	98	92	91	78	73	74	68
		DROUGHT	507	476	387	351	362	351	100	100	100	100	100	100	100	100	100	93	97	88

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 12: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 5 LLT using the**
 2 **Mass-Balance Modeling Approach.**

Bromide Alt 5 LLT	Location	Period ^a	Period Average Concentration ug/L			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
			Ex. Cond.	No Act. LLT	Alt 5 LLT	Ex. Cond.	No Act. LLT	Alt 5 LLT	Ex. Cond.	No Act. LLT	Alt 5 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	50	48	59	47	43	67	1	1	2
		DROUGHT	51	50	62	52	42	77	0	0	2
	SJR at Buckley Cove	ALL	259	242	247	100	100	100	100	100	100
		DROUGHT	272	243	253	100	100	100	100	100	100
	Franks Tract	ALL	598	502	503	99	99	100	82	85	90
		DROUGHT	737	660	632	100	98	100	78	80	82
Old R. at Rock Slough	ALL	520	444	452	99	100	100	91	94	96	
	DROUGHT	622	556	546	100	100	100	90	92	93	
Western Delta	Sac. R. at Emmaton	ALL	1,284	1,275	1,300	82	86	86	72	79	81
		DROUGHT	1,800	1,950	1,931	98	98	100	93	95	97
	SJR at Antioch	ALL	3,798	3,402	3,314	98	98	99	93	94	97
		DROUGHT	4,896	4,703	4,448	100	100	100	100	100	100
	Sac. R. at Mallard Island	ALL	8,926	8,436	8,651	98	98	99	91	93	94
DROUGHT		11,315	10,927	10,899	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	51	50	63	49	40	38	0	1	18
		DROUGHT	54	54	98	55	57	68	0	0	38
	Contra Costa PP #1	ALL	501	432	443	100	100	100	96	97	98
		DROUGHT	608	555	536	100	100	100	98	98	97
	Banks PP	ALL	415	363	291	100	100	94	100	100	90
		DROUGHT	490	435	356	100	100	95	100	100	90
	Jones PP	ALL	387	339	285	100	100	93	100	100	91
		DROUGHT	446	396	339	100	100	97	100	100	95

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 13: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 5 LLT using the**
 2 **EC to Chloride and Chloride to Bromide Relationship Modeling Approach.**

Bromide Alt 5 LLT	Location	Period ^a	Period Average Concentration (µg/L)			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Ex. Cond.	No Act. LLT	Alt 5 LLT	Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
						Ex. Cond.	No Act. LLT	Alt 5 LLT	Ex. Cond.	No Act. LLT	Alt 5 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	65	64	68	97	98	98	3	1	2
		DROUGHT	68	67	71	100	100	100	3	0	0
	SJR at Buckley Cove	ALL	405	356	354	100	99	100	89	89	90
		DROUGHT	542	450	469	100	100	100	100	100	100
	Franks Tract	ALL	420	355	357	100	100	100	76	72	83
		DROUGHT	535	490	474	100	100	100	93	88	95
Old R. at Rock Slough	ALL	378	328	332	100	100	100	86	83	90	
	DROUGHT	476	438	431	100	100	100	98	97	98	
Western Delta	Sac. R. at Emmaton	ALL	903	909	926	100	100	100	69	75	79
		DROUGHT	1,273	1,422	1,413	100	100	100	90	93	97
	SJR at Antioch	ALL	2,648	2,393	2,341	100	100	100	82	86	89
		DROUGHT	3,507	3,465	3,278	100	100	100	98	98	100
Sac. R. at Mallard Island	ALL	6,182	5,861	6,005	100	100	100	87	89	90	
	DROUGHT	8,211	8,113	8,044	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	66	66	70	100	100	100	1	2	9
		DROUGHT	65	66	86	100	100	100	0	0	20
	Contra Costa PP #1	ALL	422	367	366	100	100	100	95	94	98
		DROUGHT	500	466	441	100	100	100	98	98	100
	Banks PP	ALL	356	319	261	100	100	100	91	90	75
		DROUGHT	469	430	358	100	100	100	100	100	93
	Jones PP	ALL	381	355	301	100	100	100	92	91	83
		DROUGHT	507	476	400	100	100	100	100	100	97

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 14: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 6A LLT using the**
 2 **Mass-Balance Modeling Approach.**

Bromide Alt 6 LLT	Location	Period ^a	Period Average Concentration ug/L			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Ex. Cond.	No Act. LLT	Alt 6 LLT	Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
						Ex. Cond.	No Act. LLT	Alt 6 LLT	Ex. Cond.	No Act. LLT	Alt 6 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	50	48	70	47	43	85	1	1	10
		DROUGHT	51	50	70	52	42	88	0	0	5
	SJR at Buckley Cove	ALL	259	242	247	100	100	100	100	100	100
		DROUGHT	272	243	251	100	100	100	100	100	100
	Franks Tract	ALL	598	502	244	99	99	100	82	85	99
		DROUGHT	737	660	287	100	98	100	78	80	97
Old R. at Rock Slough	ALL	520	444	278	99	100	100	91	94	100	
	DROUGHT	622	556	295	100	100	100	90	92	100	
Western Delta	Sac. R. at Emmaton	ALL	1,284	1,275	951	82	86	88	72	79	76
		DROUGHT	1,800	1,950	1,503	98	98	98	93	95	90
	SJR at Antioch	ALL	3,798	3,402	2,100	98	98	100	93	94	98
		DROUGHT	4,896	4,703	3,130	100	100	100	100	100	100
Sac. R. at Mallard Island	ALL	8,926	8,436	7,344	98	98	100	91	93	95	
	DROUGHT	11,315	10,927	9,605	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	51	50	61	49	40	38	0	1	17
		DROUGHT	54	54	92	55	57	63	0	0	37
	Contra Costa PP #1	ALL	501	432	294	100	100	100	96	97	100
		DROUGHT	608	555	304	100	100	100	98	98	100
	Banks PP	ALL	415	363	16	100	100	0	100	100	0
		DROUGHT	490	435	16	100	100	0	100	100	0
	Jones PP	ALL	387	339	16	100	100	0	100	100	0
		DROUGHT	446	396	16	100	100	0	100	100	0

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 15: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 6A LLT using the**
 2 **EC to Chloride and Chloride to Bromide Relationship Modeling Approach.**

Bromide Alt 6 LLT	Location	Period ^a	Period Average Concentration (µg/L)			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
			Ex. Cond.	No Act. LLT	Alt 6 LLT	Ex. Cond.	No Act. LLT	Alt 6 LLT	Ex. Cond.	No Act. LLT	Alt 6 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	65	64	73	97	98	98	3	1	5
		DROUGHT	68	67	75	100	100	100	3	0	5
	SJR at Buckley Cove	ALL	405	356	367	100	99	100	89	89	90
		DROUGHT	542	450	487	100	100	100	100	100	100
	Franks Tract	ALL	420	355	235	100	100	100	76	72	90
		DROUGHT	535	490	293	100	100	100	93	88	100
Old R. at Rock Slough	ALL	378	328	362	100	100	100	86	83	92	
	DROUGHT	476	438	453	100	100	100	98	97	100	
Western Delta	Sac. R. at Emmaton	ALL	903	909	678	100	100	100	69	75	70
		DROUGHT	1,273	1,422	1,090	100	100	100	90	93	88
	SJR at Antioch	ALL	2,648	2,393	1,476	100	100	100	82	86	91
		DROUGHT	3,507	3,465	2,276	100	100	100	98	98	100
Sac. R. at Mallard Island	ALL	6,182	5,861	4,759	100	100	100	87	89	90	
	DROUGHT	8,211	8,113	6,686	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	66	66	69	100	100	100	1	2	6
		DROUGHT	65	66	82	100	100	100	0	0	17
	Contra Costa PP #1	ALL	422	367	436	100	100	100	95	94	99
		DROUGHT	500	466	503	100	100	100	98	98	100
	Banks PP	ALL	356	319	50	100	100	98	91	90	0
		DROUGHT	469	430	50	100	100	100	100	100	0
	Jones PP	ALL	381	355	50	100	100	98	92	91	0
		DROUGHT	507	476	50	100	100	100	100	100	0

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).

^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.

^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 16: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 7 LLT using the**
 2 **Mass-Balance Modeling Approach.**

Bromide Alt 7 LLT	Location	Period ^a	Period Average Concentration ug/L			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
			Ex. Cond.	No Act. LLT	Alt 7 LLT	Ex. Cond.	No Act. LLT	Alt 7 LLT	Ex. Cond.	No Act. LLT	Alt 7 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	50	48	63	47	43	80	1	1	2
		DROUGHT	51	50	64	52	42	88	0	0	0
	SJR at Buckley Cove	ALL	259	242	250	100	100	100	100	100	100
		DROUGHT	272	243	263	100	100	100	100	100	100
	Franks Tract	ALL	598	502	405	99	99	100	82	85	99
		DROUGHT	737	660	495	100	98	100	78	80	97
Old R. at Rock Slough	ALL	520	444	391	99	100	100	91	94	100	
	DROUGHT	622	556	469	100	100	100	90	92	100	
Western Delta	Sac. R. at Emmaton	ALL	1,284	1,275	1,028	82	86	86	72	79	77
		DROUGHT	1,800	1,950	1,529	98	98	98	93	95	90
	SJR at Antioch	ALL	3,798	3,402	2,532	98	98	100	93	94	97
		DROUGHT	4,896	4,703	3,479	100	100	100	100	100	100
	Sac. R. at Mallard Island	ALL	8,926	8,436	7,621	98	98	100	91	93	95
DROUGHT		11,315	10,927	9,764	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	51	50	50	49	40	29	0	1	8
		DROUGHT	54	54	72	55	57	57	0	0	22
	Contra Costa PP #1	ALL	501	432	420	100	100	100	96	97	100
		DROUGHT	608	555	493	100	100	100	98	98	100
	Banks PP	ALL	415	363	143	100	100	37	100	100	30
		DROUGHT	490	435	199	100	100	29	100	100	27
	Jones PP	ALL	387	339	111	100	100	31	100	100	28
		DROUGHT	446	396	130	100	100	25	100	100	25

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 17: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 7 LLT using the**
 2 **EC to Chloride and Chloride to Bromide Relationship Modeling Approach.**

Bromide Alt 7 LLT	Location	Period ^a	Period Average Concentration (µg/L)			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
			Ex. Cond.	No Act. LLT	Alt 7 LLT	Ex. Cond.	No Act. LLT	Alt 7 LLT	Ex. Cond.	No Act. LLT	Alt 7 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	65	64	71	97	98	98	3	1	4
		DROUGHT	68	67	73	100	100	100	3	0	5
	SJR at Buckley Cove	ALL	405	356	354	100	99	100	89	89	90
		DROUGHT	542	450	468	100	100	100	100	100	100
	Franks Tract	ALL	420	355	320	100	100	100	76	72	90
		DROUGHT	535	490	416	100	100	100	93	88	100
Old R. at Rock Slough	ALL	378	328	400	100	100	100	86	83	92	
	DROUGHT	476	438	532	100	100	100	98	97	100	
Western Delta	Sac. R. at Emmaton	ALL	903	909	720	100	100	100	69	75	71
		DROUGHT	1,273	1,422	1,091	100	100	100	90	93	90
	SJR at Antioch	ALL	2,648	2,393	1,758	100	100	100	82	86	89
		DROUGHT	3,507	3,465	2,501	100	100	100	98	98	100
Sac. R. at Mallard Island	ALL	6,182	5,861	5,004	100	100	100	87	89	90	
	DROUGHT	8,211	8,113	6,802	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	66	66	65	100	100	100	1	2	2
		DROUGHT	65	66	75	100	100	100	0	0	7
	Contra Costa PP #1	ALL	422	367	473	100	100	100	95	94	99
		DROUGHT	500	466	580	100	100	100	98	98	100
	Banks PP	ALL	356	319	138	100	100	98	91	90	30
		DROUGHT	469	430	174	100	100	100	100	100	29
	Jones PP	ALL	381	355	124	100	100	98	92	91	25
		DROUGHT	507	476	140	100	100	100	100	100	25

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 18: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 8 LLT using the**
 2 **Mass-Balance Modeling Approach.**

Bromide Alt 8 LLT	Location	Period ^a	Period Average Concentration ug/L			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
			Ex. Cond.	No Act. LLT	Alt 8 LLT	Ex. Cond.	No Act. LLT	Alt 8 LLT	Ex. Cond.	No Act. LLT	Alt 8 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	49.7	48.1	63.9	47	43	80	1	1	2
		DROUGHT	51.4	49.8	64.9	52	42	87	0	0	0
	SJR at Buckley Cove	ALL	259.0	242.2	245.8	100	100	100	100	100	100
		DROUGHT	272.0	242.6	247.7	100	100	100	100	100	100
	Franks Tract	ALL	597.8	502.1	375.0	99	99	100	82	85	98
		DROUGHT	736.9	660.1	464.5	100	98	100	78	80	93
Old R. at Rock Slough	ALL	519.8	444.3	363.2	99	100	100	91	94	100	
	DROUGHT	622.1	555.8	434.6	100	100	100	90	92	100	
Western Delta	Sac. R. at Emmaton	ALL	1,283.7	1,275.2	1,099.7	82	86	84	72	79	72
		DROUGHT	1,800.0	1,950.3	1,616.2	98	98	93	93	95	85
	SJR at Antioch	ALL	3,797.7	3,401.7	2,548.9	98	98	100	93	94	97
		DROUGHT	4,895.9	4,703.1	3,489.1	100	100	100	100	100	100
	Sac. R. at Mallard Island	ALL	8,926.3	8,436.1	7,563.7	98	98	99	91	93	95
DROUGHT		11,314.6	10,926.5	9,630.5	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	51.5	49.9	53.8	49	40	34	0	1	10
		DROUGHT	53.5	53.6	80.2	55	57	62	0	0	27
	Contra Costa PP #1	ALL	500.9	432.2	385.2	100	100	100	96	97	100
		DROUGHT	608.3	554.9	443.0	100	100	100	98	98	100
	Banks PP	ALL	415.0	362.9	113.5	100	100	35	100	100	29
		DROUGHT	490.2	435.2	148.9	100	100	30	100	100	30
	Jones PP	ALL	386.9	339.2	97.6	100	100	31	100	100	28
		DROUGHT	445.9	396.0	109.5	100	100	25	100	100	25

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 19: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 8 LLT using the**
 2 **EC to Chloride and Chloride to Bromide Relationship Modeling Approach.**

Bromide Alt 8 LLT	Location	Period ^a	Period Average Concentration (µg/L)			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
			Ex. Cond.	No Act. LLT	Alt 8 LLT	Ex. Cond.	No Act. LLT	Alt 8 LLT	Ex. Cond.	No Act. LLT	Alt 8 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	65	64	70	97	98	98	3	1	3
		DROUGHT	68	67	73	100	100	100	3	0	2
	SJR at Buckley Cove	ALL	405	356	359	100	99	100	89	89	90
		DROUGHT	542	450	471	100	100	100	100	100	100
	Franks Tract	ALL	420	355	303	100	100	100	76	72	89
		DROUGHT	535	490	392	100	100	100	93	88	100
Old R. at Rock Slough	ALL	378	328	386	100	100	100	86	83	92	
	DROUGHT	476	438	508	100	100	100	98	97	100	
Western Delta	Sac. R. at Emmaton	ALL	903	909	769	100	100	100	69	75	68
		DROUGHT	1,273	1,422	1,143	100	100	100	90	93	82
	SJR at Antioch	ALL	2,648	2,393	1,770	100	100	100	82	86	89
		DROUGHT	3,507	3,465	2,485	100	100	100	98	98	98
Sac. R. at Mallard Island	ALL	6,182	5,861	4,941	100	100	100	87	89	89	
	DROUGHT	8,211	8,113	6,610	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	66	66	67	100	100	100	1	2	4
		DROUGHT	65	66	80	100	100	100	0	0	12
	Contra Costa PP #1	ALL	422	367	456	100	100	100	95	94	99
		DROUGHT	500	466	546	100	100	100	98	98	100
	Banks PP	ALL	356	319	129	100	100	99	91	90	27
		DROUGHT	469	430	165	100	100	100	100	100	30
	Jones PP	ALL	381	355	118	100	100	99	92	91	27
		DROUGHT	507	476	124	100	100	100	100	100	25

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 20: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 9 LLT using the**
 2 **Mass-Balance Modeling Approach.**

Bromide Alt 9 LLT	Location	Period ^a	Period Average Concentration ug/L			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
			Ex. Cond.	No Act. LLT	Alt 9 LLT	Ex. Cond.	No Act. LLT	Alt 9 LLT	Ex. Cond.	No Act. LLT	Alt 9 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	50	48	48	47	43	33	1	1	1
		DROUGHT	51	50	49	52	42	40	0	0	0
	SJR at Buckley Cove	ALL	259	242	259	100	100	100	100	100	90
		DROUGHT	272	243	330	100	100	100	100	100	87
	Franks Tract	ALL	598	502	472	99	99	100	82	85	100
		DROUGHT	737	660	689	100	98	100	78	80	100
Old R. at Rock Slough	ALL	520	444	293	99	100	100	91	94	100	
	DROUGHT	622	556	340	100	100	100	90	92	100	
Western Delta	Sac. R. at Emmaton	ALL	1,284	1,275	1,550	82	86	86	72	79	81
		DROUGHT	1,800	1,950	2,374	98	98	100	93	95	97
	SJR at Antioch	ALL	3,798	3,402	2,953	98	98	100	93	94	97
		DROUGHT	4,896	4,703	4,296	100	100	100	100	100	100
Sac. R. at Mallard Island	ALL	8,926	8,436	8,749	98	98	98	91	93	93	
	DROUGHT	11,315	10,927	11,278	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	51	50	61	49	40	41	0	1	16
		DROUGHT	54	54	100	55	57	80	0	0	42
	Contra Costa PP #1	ALL	501	432	303	100	100	100	96	97	100
		DROUGHT	608	555	336	100	100	100	98	98	100
	Banks PP	ALL	415	363	329	100	100	99	100	100	81
		DROUGHT	490	435	442	100	100	100	100	100	77
	Jones PP	ALL	387	339	330	100	100	99	100	100	80
		DROUGHT	446	396	442	100	100	100	100	100	77

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 21: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Alternative 9 LLT using the**
 2 **EC to Chloride and Chloride to Bromide Relationship Modeling Approach.**

Bromide Alt 9 LLT	Location	Period ^a	Period Average Concentration (µg/L)			Other Relevant Threshold (50 µg/L) ^b			Other Relevant Threshold (100 µg/L) ^c		
			Ex. Cond.	No Act. LLT	Alt 9 LLT	Frequency of Criterion/Objective Exceedance (%)			Frequency of Criterion/Objective Exceedance (%)		
						Ex. Cond.	No Act. LLT	Alt 9 LLT	Ex. Cond.	No Act. LLT	Alt 9 LLT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	65	64	64	97	98	99	3	1	1
		DROUGHT	68	67	65	100	100	100	3	0	0
	SJR at Buckley Cove	ALL	405	356	222	100	99	100	89	89	84
		DROUGHT	542	450	310	100	100	100	100	100	95
	Franks Tract	ALL	420	355	458	100	100	100	76	72	90
		DROUGHT	535	490	673	100	100	100	93	88	100
Old R. at Rock Slough	ALL	378	328	393	100	100	100	86	83	91	
	DROUGHT	476	438	519	100	100	100	98	97	100	
Western Delta	Sac. R. at Emmaton	ALL	903	909	1,132	100	100	100	69	75	78
		DROUGHT	1,273	1,422	1,797	100	100	100	90	93	97
	SJR at Antioch	ALL	2,648	2,393	2,148	100	100	100	82	86	91
		DROUGHT	3,507	3,465	3,289	100	100	100	98	98	100
	Sac. R. at Mallard Island	ALL	6,182	5,861	6,199	100	100	100	87	89	89
DROUGHT		8,211	8,113	8,625	100	100	100	100	100	100	
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	66	66	72	100	100	100	1	2	9
		DROUGHT	65	66	94	100	100	100	0	0	23
	Contra Costa PP #1	ALL	422	367	451	100	100	100	95	94	99
		DROUGHT	500	466	545	100	100	100	98	98	100
	Banks PP	ALL	356	319	269	100	100	100	91	90	76
		DROUGHT	469	430	385	100	100	100	100	100	90
	Jones PP	ALL	381	355	91	100	100	85	92	91	36
		DROUGHT	507	476	85	100	100	100	100	100	0

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 22: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Existing Conditions, No**
 2 **Action Alternative ELT, Alternative 4A, 2D, and 5A ELT using the Mass-Balance Modeling Approach.**

Bromide Alt 4A/2D/5A	Location	Period ^a	Period Average Concentration ug/L					Other Relevant Threshold (50 µg/L) ^b					Other Relevant Threshold (100 µg/L) ^c				
			Ex. Cond.	No Act. ELT	Alt 4A ELT	Alt 2D ELT	Alt 5A ELT	Frequency of Criterion/Objective Exceedance (%)					Frequency of Criterion/Objective Exceedance (%)				
								Ex. Cond.	No Act. ELT	Alt 4A ELT	Alt 2D ELT	Alt 5A ELT	Ex. Cond.	No Act. ELT	Alt 4A ELT	Alt 2D ELT	Alt 5A ELT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	50	50	54	55	52	47	51	54	59	54	1	1	2	2	1
		DROUGHT	51	52	54	55	54	52	57	57	60	62	0	0	2	2	0
	SJR at Buckley Cove	ALL	259	243	245	245	243	100	100	100	100	100	100	100	100	100	100
		DROUGHT	272	244	247	247	244	100	100	100	100	100	100	100	100	100	100
	Franks Tract	ALL	598	549	414	404	489	99	99	100	100	99	82	84	86	88	85
		DROUGHT	737	733	595	535	636	100	98	100	100	97	78	78	82	80	75
Old R. at Rock Slough	ALL	520	483	374	370	436	99	100	100	100	100	91	92	93	92	93	
	DROUGHT	622	621	506	456	542	100	100	100	100	100	90	90	88	87	88	
Western Delta	Sac. R. at Emmaton	ALL	1,284	1,278	1,267	1,143	1,286	82	84	86	87	85	72	77	77	75	76
		DROUGHT	1,800	1,959	1,931	1,776	1,955	98	98	98	98	98	93	95	93	92	95
	SJR at Antioch	ALL	3,798	3,527	3,240	3,034	3,412	98	98	99	100	99	93	95	97	98	96
		DROUGHT	4,896	4,886	4,644	4,407	4,751	100	100	100	100	100	100	100	100	100	100
	Sac. R. at Mallard Island	ALL	8,926	8,577	8,426	8,091	8,455	98	98	100	100	99	91	92	94	93	92
		DROUGHT	11,315	11,171	11,020	10,733	11,012	100	100	100	100	100	100	100	100	100	100
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	51	49	50	50	49	49	35	40	40	36	0	0	0	1	0
		DROUGHT	54	52	54	53	52	55	50	58	55	53	0	0	0	0	0
	Contra Costa PP #1	ALL	501	469	373	376	421	100	100	100	100	100	96	96	97	96	98
		DROUGHT	608	601	486	448	523	100	100	100	100	100	98	98	98	97	98
	Banks PP	ALL	415	391	223	209	291	100	100	87	74	95	100	100	71	65	89
		DROUGHT	490	482	334	294	372	100	100	97	92	97	100	100	90	83	93
	Jones PP	ALL	387	366	217	201	288	100	100	85	80	94	100	100	78	71	90
		DROUGHT	446	436	301	278	341	100	100	97	98	97	100	100	90	93	93

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 **Bromide Table 23: Period Average Bromide Concentration and 50 µg/L and 100 µg/L Frequency of Exceedance for Existing Conditions, No**
 2 **Action Alternative ELT, Alternative 4A, 2D, and 5A ELT using the EC to Chloride and Chloride to Bromide Relationship Modeling Approach.**

Bromide Alt 4A/2D/5A	Location	Period ^a	Period Average Concentration ug/L					Other Relevant Threshold (50 µg/L) ^b					Other Relevant Threshold (100 µg/L) ^c				
			Frequency of Criterion/Objective Exceedance (%)					Frequency of Criterion/Objective Exceedance (%)					Frequency of Criterion/Objective Exceedance (%)				
			Ex. Cond.	No Act. ELT	Alt 4A ELT	Alt 2D ELT	Alt 5A ELT	Ex. Cond.	No Act. ELT	Alt 4A ELT	Alt 2D ELT	Alt 5A ELT	Ex. Cond.	No Act. ELT	Alt 4A ELT	Alt 2D ELT	Alt 5A ELT
Delta Interior	Moke. R. (SF) at Staten Island	ALL	65	65	66	67	65	97	98	98	98	98	3	2	3	4	2
		DROUGHT	68	67	68	69	68	100	100	100	100	100	3	2	3	3	2
	SJR at Buckley Cove	ALL	405	353	362	361	356	100	99	99	99	99	89	87	86	86	87
		DROUGHT	542	456	474	474	465	100	100	100	100	100	100	100	100	100	100
	Franks Tract	ALL	420	386	302	287	344	100	100	100	100	100	76	71	77	76	71
		DROUGHT	535	538	448	398	467	100	100	100	100	100	93	87	93	90	87
Old R. at Rock Slough	ALL	378	350	286	279	318	100	100	100	100	100	86	81	87	85	84	
	DROUGHT	476	477	408	365	419	100	100	100	100	100	98	97	98	98	98	
Western Delta	Sac. R. at Emmaton	ALL	903	907	897	796	904	100	100	100	100	100	69	71	69	69	71
		DROUGHT	1,273	1,413	1,396	1,268	1,403	100	100	100	100	100	90	92	90	90	92
	SJR at Antioch	ALL	2,648	2,465	2,267	2,087	2,373	100	100	100	100	100	82	83	86	88	85
		DROUGHT	3,507	3,559	3,379	3,166	3,441	100	100	100	100	100	98	98	98	98	98
	Sac. R. at Mallard Island	ALL	6,182	5,898	5,739	5,425	5,783	100	100	100	100	100	87	88	88	89	88
		DROUGHT	8,211	8,187	8,021	7,727	8,013	100	100	100	100	100	100	100	100	100	100
Major Diversions (Pumping Stations)	NBA at Barker Slough PP	ALL	66	65	66	66	65	100	100	100	100	100	1	1	1	1	1
		DROUGHT	65	65	66	66	66	100	100	100	100	100	0	0	0	0	0
	Contra Costa PP #1	ALL	422	392	329	328	357	100	100	100	100	100	95	91	97	97	94
		DROUGHT	500	499	422	388	436	100	100	100	100	100	98	97	100	98	98
	Banks PP	ALL	356	332	230	212	259	100	99	99	99	99	91	89	67	66	75
		DROUGHT	469	455	344	300	361	100	100	100	100	100	100	100	92	85	95
	Jones PP	ALL	381	358	243	234	295	100	99	98	98	100	92	89	73	70	81
		DROUGHT	507	487	348	326	391	100	100	100	100	100	100	100	95	95	97

^a ALL: Water years 1975-1991 represent the 16-year period modeled using DSM2. DROUGHT: Represents a 5 consecutive year (water years 1987-1991) drought period consisting of dry and critical water year types (as defined by the Sacramento Valley 40-30-30 water year hydrologic classification index).
^b CALFED Drinking Water Program goal for bromide of 50 µg/L as a long-term average as applied to municipal drinking water intakes drawing water from the Delta.
^c Minimum bromide concentration believed to be sufficient to meet currently established drinking water criteria for disinfection byproducts.

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1 Bromide Table 24. Flow-Bromide Concentration Regression for San Joaquin River at Vernalis – Data Used in Assessment and Results

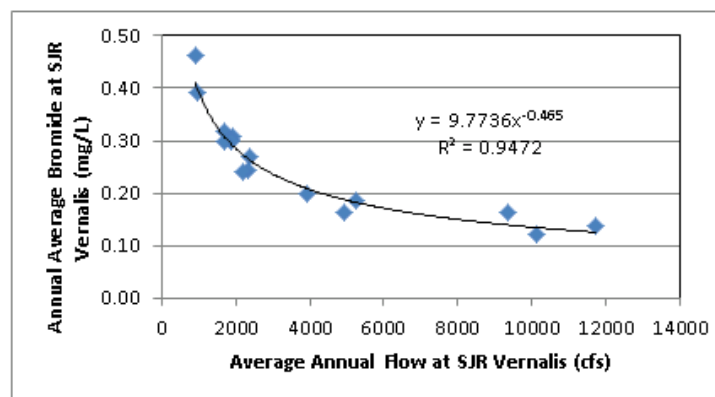
Alternative	Average Annual Flow (cfs)	Annual Average Concentration (ug/L)	% Change in Flow			Change in Concentration (ug/L)			% Change in Concentration		
			Alt - EC	Alt - NA ELT	Alt - NA LLT	Alt - EC	Alt - NA ELT	Alt - NA LLT	Alt - EC	Alt - NA ELT	Alt - NA LLT
Existing Conditions	4237	0.201	--	--	--	--	--	--	--	--	--
No Action LLT	3987	0.207	-5.9%	--	--	0.01	--	--	2.9%	--	--
Alternative 1 LLT	3994	0.207	-5.7%	--	0.2%	0.01	--	0.00	2.8%	--	-0.1%
Alternative 2 LLT	3985	0.207	-5.9%	--	-0.1%	0.01	--	0.00	2.9%	--	0.0%
Alternative 3 LLT	3993	0.207	-5.8%	--	0.2%	0.01	--	0.00	2.8%	--	-0.1%
Alternative 4 H1 LLT	3988	0.207	-5.9%	--	0.0%	0.01	--	0.00	2.9%	--	0.0%
Alternative 4 H2 LLT	3991	0.207	-5.8%	--	0.1%	0.01	--	0.00	2.8%	--	0.0%
Alternative 4 H3 LLT	3987	0.207	-5.9%	--	0.0%	0.01	--	0.00	2.9%	--	0.0%
Alternative 4 H4 LLT	3992	0.207	-5.8%	--	0.1%	0.01	--	0.00	2.8%	--	-0.1%
Alternative 5 LLT	3990	0.207	-5.8%	--	0.1%	0.01	--	0.00	2.8%	--	0.0%
Alternative 6 LLT	3989	0.207	-5.9%	--	0.1%	0.01	--	0.00	2.8%	--	0.0%
Alternative 7 LLT	3987	0.207	-5.9%	--	0.0%	0.01	--	0.00	2.9%	--	0.0%
Alternative 8 LLT	3989	0.207	-5.9%	--	0.1%	0.01	--	0.00	2.8%	--	0.0%
Alternative 9 LLT	3992	0.207	-5.8%	--	0.1%	0.01	--	0.00	2.8%	--	-0.1%
No Action ELT	4184	0.202	-1.3%	--	--	0.00	--	--	0.6%	--	--
Alternative 4A ELT	4187	0.202	-1.2%	0.1%	--	0.00	0.00	--	0.6%	0.0%	--
Alternative 2D ELT	4186	0.202	-1.2%	0.0%	--	0.00	0.00	--	0.6%	0.0%	--
Alternative 5A ELT	4187	0.202	-1.2%	0.1%	--	0.00	0.00	--	0.6%	0.0%	--

Baselines Flows (cfs, Average all Years)		
EC	ELT	LLT
4237	4184	3987

Baselines Concentrations (ug/L, Average All Years)		
EC	ELT	LLT
0.20	0.20	0.21

$$B_0 = B_1(\text{annual flow}^{B_2})$$

B ₁	9.7736
B ₂	-0.465



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1 **Bromide Table 25. Estimated Bromide Concentrations at San Joaquin River at Antioch and Sacramento**
 2 **River at Mallard Island for February through April of Wet and Above Normal Water Year Types (i.e.,**
 3 **Periods of Historically Acceptable Water Quality for Withdrawal) Using the Mass-Balance Modeling**
 4 **Approach.**

		San Joaquin River at Antioch			Sac. River at Mallard Island	
		Bromide Concentration (µg/L)			Bromide Concentration (µg/L)	
		Feb	Mar	Apr	Feb	Mar
Existing Conditions	Wet	83	104	133	132	109
	Above Normal	91	92	112	263	94
No Action Alternative LLT	Wet	79	103	156	150	141
	Above Normal	91	92	125	195	89
Alternative 1A	Wet	138	155	243	207	185
	Above Normal	145	157	197	292	132
Alternative 2A	Wet	129	155	208	203	187
	Above Normal	143	157	199	319	135
Alternative 3	Wet	107	133	234	199	184
	Above Normal	117	127	174	292	127
Alternative 4 H1	Wet	114	146	204	206	191
	Above Normal	124	145	196	315	130
Alternative 4 H2	Wet	118	150	163	204	191
	Above Normal	129	150	154	260	126
Alternative 4 H3	Wet	114	150	204	206	193
	Above Normal	122	145	195	316	130
Alternative 4 H4	Wet	119	151	163	206	191
	Above Normal	125	148	154	276	126
Alternative 5	Wet	96	118	182	195	177
	Above Normal	102	110	160	283	122
Alternative 6A	Wet	129	155	198	197	183
	Above Normal	145	157	190	277	140
Alternative 7	Wet	116	143	197	198	189
	Above Normal	124	143	189	291	139
Alternative 8	Wet	112	143	184	207	190
	Above Normal	122	141	172	244	130
Alternative 9	Wet	107	123	201	152	138
	Above Normal	127	129	154	193	100
No Action Alternative ELT	Wet	86	106	140	114	119
	Above Normal	92	94	116	206	85
Alternative 4A ELT	Wet	113	141	164	130	130
	Above Normal	125	137	149	253	108
Alternative 2D ELT	Wet	131	152	177	121	127
	Above Normal	142	146	165	187	100
Alternative 5A ELT	Wet	96	119	152	107	113
	Above Normal	105	108	135	220	85

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1 **Bromide Table 26. Estimated Bromide Concentrations at San Joaquin River at Antioch and Sacramento**
 2 **River at Mallard Island for February through April of Wet and Above Normal Water Year Types (i.e.,**
 3 **Periods of Historically Acceptable Water Quality for Withdrawal) Using the EC to Chloride and**
 4 **Chloride to Bromide Modeling Approach.**

	Water Year Type	San Joaquin River at Antioch			Sac. River at Mallard Island	
		Bromide Concentration (µg/L)			Bromide Concentration (µg/L)	
		Feb	Mar	Apr	Feb	Mar
Existing Conditions	Wet	84	82	76	68	68
	Above Normal	98	88	89	74	67
No Action Alternative LLT	Wet	79	79	80	73	79
	Above Normal	92	81	86	77	67
Alternative 1A	Wet	114	95	113	89	90
	Above Normal	153	147	139	97	83
Alternative 2A	Wet	109	95	94	87	90
	Above Normal	152	148	140	100	83
Alternative 3	Wet	88	89	113	81	90
	Above Normal	103	96	116	83	72
Alternative 4 H1	Wet	91	92	94	83	92
	Above Normal	116	128	137	88	78
Alternative 4 H2	Wet	93	93	79	84	91
	Above Normal	129	137	130	87	80
Alternative 4 H3	Wet	92	93	94	83	92
	Above Normal	115	128	137	88	78
Alternative 4 H4	Wet	95	93	79	85	91
	Above Normal	122	133	130	86	79
Alternative 5	Wet	85	85	89	78	87
	Above Normal	97	87	102	81	70
Alternative 6A	Wet	112	95	89	85	89
	Above Normal	163	147	139	99	83
Alternative 7	Wet	96	93	90	82	91
	Above Normal	135	126	132	89	79
Alternative 8	Wet	95	93	84	83	92
	Above Normal	134	126	128	86	78
Alternative 9	Wet	96	84	99	74	73
	Above Normal	138	117	112	82	72
No Action Alternative ELT	Wet	81	77	74	66	69
	Above Normal	95	83	85	73	65
Alternative 4A ELT	Wet	92	84	77	72	72
	Above Normal	121	124	109	84	77
Alternative 2D ELT	Wet	106	86	80	76	72
	Above Normal	157	137	115	89	79
Alternative 5A ELT	Wet	84	80	77	67	68
	Above Normal	99	87	91	75	66

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