




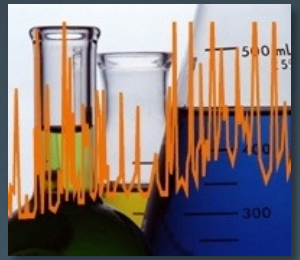

Exponent®

City of Stockton
Rebuttal Testimony to SWRCB
WaterFix Part 2 Proceedings

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STKN-66

Summary of Testimony

- WaterFix operating Scenario CWF H3+ will have greater water quality impacts at Stockton's intake than those described in Exhibits STKN-25 and STKN-26 for Existing Conditions, the NAA, and all other WaterFix scenarios.

- The residence time of water in the Delta is expected to increase significantly, particularly during summer and fall months when water temperatures are high, for Scenario CWF H3+ relative to existing conditions (EBC2) and NAA; thus, I expect that operation of California WaterFix under CWF H3+ will increase the likelihood of *Microcystis* blooms in the Delta.

- DWR's analysis of temperature is insufficient to support DWR's conclusions regarding *Microcystis*, and DWR has not presented additional information on the temperature of waters in the Delta for Scenario CWF H3+.

WaterFix operating Scenario CWF H3+ will have greater water quality impacts at Stockton's intake than those described in Exhibits STKN-25 and STKN-26 for existing conditions, the NAA, and all other WaterFix scenarios.

Table 1. Number of equivalent days per year that water at Stockton's intake exceeds 110 mg/L chloride for WaterFix model scenarios for each water year between 1976 and 1991 (update to STKN-26 Table 4).

Water year	Water Year Type	Total Days	Number of equivalent days per year water at Stockton's intake exceeds chloride threshold of 110 mg/L						
			EBC2	NAA	H4	B1	H3	B2	CWF H3+
1976	Critical	366	25	0	29	11	30	87	30
1977	Critical	365	9	76	70	56	73	71	88
1978	Normal	365	45	82	74	105	78	24	110
1979	Normal	365	12	29	19	33	18	31	18
1980	Normal	366	50	23	4	34	12	1	12
1981	Dry	365	12	14	47	5	46	82	58
1982	Wet	365	20	23	2	30	2	4	30
1983	Wet	365	0	0	0	0	0	0	0
1984	Wet	366	0	0	0	0	0	0	0
1985	Dry	365	7	1	42	7	42	76	42
1986	Wet	365	26	20	7	4	7	15	7
1987	Dry	365	11	6	47	63	47	81	63
1988	Critical	366	15	10	33	18	29	88	49
1989	Dry	365	93	125	107	109	105	71	145
1990	Critical	365	54	24	12	11	10	57	22
1991	Critical	365	75	139	126	143	135	72	175
Summary	(all)		454	572	619	629	634	759	**848**

STKN-066

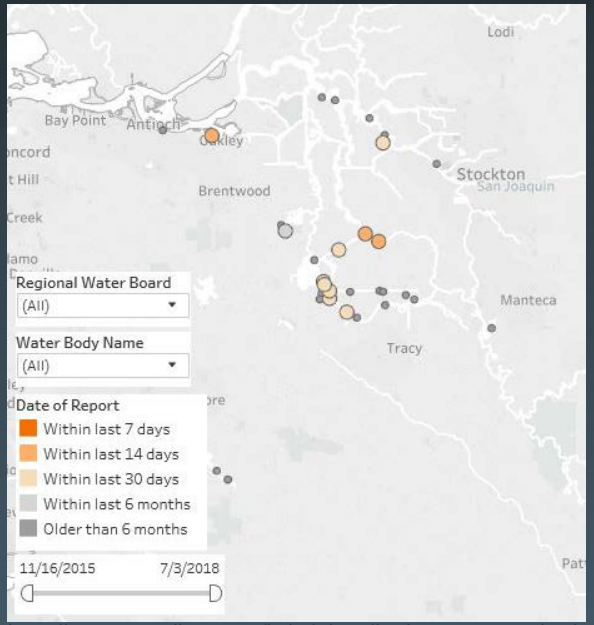
The residence time of water in the Delta is expected to increase significantly, particularly during summer and fall months when temperatures are high, for Scenario CWF H3+ relative to existing conditions (EBC2) and NAA; thus, I expect that operation of California WaterFix under CWF H3+ will increase the likelihood of *Microcystis* blooms in the Delta.

- Maximum velocities and absolute values of velocity are unrelated to residence time in a “sloshing” tidal system.
- Tidally- or daily-averaged velocity is much lower than the maximum channel velocity throughout most of the Delta and is more appropriate when considering velocity as a surrogate for residence time.
- My analysis of CWF H3+ indicates that residence times will be higher than for existing conditions (EBC2) and NAA, particularly during the summer and fall months when Delta water temperatures are warmest.

DWR's analysis of temperature is insufficient to support DWR's conclusions regarding *Microcystis*, and DWR has not presented additional information on the temperature of waters in the Delta for Scenario CWF H3+.

- DWR relies on 82-year monthly averages, which are insufficient to capture variations in water temperature
- DWR did not run an existing conditions scenario
- Warming from climate change and longer residence times will be exacerbated by CWF H3+ and increase the likelihood of *Microcystis* blooms

HAB Incident Reports Map



https://mywaterquality.ca.gov/habs/where/freshwater_events.html