

# PRESENT CONDITIONS

## WATER QUALITY

Water quality in the rivers surrounding Sherman Island is variable depending on the water year type and flow conditions (Table 6). Salinity concentrations are lowest (79-140 ppm) during normal years with high flow conditions. Concentrations are highest (390-3,084 ppm) during critical years with high and low flow conditions. Typically, salinity concentrations are highest in July and August, regardless of year type. In below normal and dry years, salinity may increase dramatically as early as May.

Tolerance of native plants to salt concentrations varies by species, as indicated by data from Gray Lodge Wildlife Management Area (WMA) and Suisun Marsh (Table 7). Maximum salt concentrations in the Sacramento and San Joaquin rivers are higher than those found at Gray Lodge WMA but are lower than those in Suisun Marsh. Therefore if water quality in the San Joaquin and Sacramento rivers does not degrade below present conditions, soil salt concentrations should have few if any limitations on the native plants that will be grown on Sherman Island.

## WATER USE

Estimates of current water diversions on Sherman Island vary from 16,908 acre-feet in a wet year to 23,026 acre-feet in a critical year (Appendix B, Table B1). These estimates are based on DWR's land use and crop ET (evapotranspiration) values and are provided here as a rough approximation of applied water and drainage values. Actual estimates may vary depending on cropping patterns and precipitation. Estimates of annual water diversions include both water actively diverted from the channel through siphons and water

Table 6. D-1485 water quality standards for agriculture at Emmaton (Sacramento River) and Jersey Point (San Joaquin River) in various year types.<sup>a</sup>

Location	Year type	0.45 EC <sup>b</sup> (mmho/cm) required from 1 April to date shown	EC (mmho/cm) from date shown to 15 August (ppm)
Emmaton	Wet	15 August	
	Above normal	1 July	0.63 (352)
	Below normal	20 June	1.14 (637)
	Dry	15 June	1.67 (934)
	Critical	No standard	2.78 (1554)
Jersey Point	Wet	15 August	
	Above normal	15 August	
	Below normal	20 July	0.74 (392)
	Dry	15 June	1.35 (716)
	Critical	No standard	2.20 (1166)

<sup>a</sup>Taken from Association of State Water Project Agencies. Sacramento-San Joaquin Delta: a summary of facts. September 1979.

<sup>b</sup>0.45 EC is equal to 251 ppm.

Table 7. Soil salinities in dominant stands of various wetland plants at Gray Lodge Wildlife Management Area (WMA) and Suisun Marsh.

Species	Range of soil salinity in dominant stands (ppm)	
	Gray Lodge WMA <sup>a</sup>	Suisun Marsh <sup>b</sup>
Sago pondweed		0-9,500
Spikerush	256-2,176	
Sprangletop	320-3,520	
Smartweed	384-1,024	
Hardstem bulrush	384-1,984	2,000-22,000
Alkali bulrush	384-2,944	6,900-32,500
Swamp timothy	448-3,200	
Watergrass	512-1,920	
Cattail	512-2,304	8,100-25,500
Olney bulrush		8,500-20,700
Brass buttons		8,900-30,500
Saltgrass		11,600-43,500
Fathen		12,800-49,200
Baltic rush		16,200-23,600
Pickleweed		18,500-81,000

<sup>a</sup>Taken from Hintz, D. 1980.

<sup>b</sup>Taken from Mall, R. E. 1969.

passively entering the island as seepage. Diversions are highest from June to August and lowest from December to March.

The volume of water returned to the river channels ranges from 4,100 acre-feet in a below normal year to 6,964 acre-feet in an above normal year (Appendix C, Table C1). However, channel returns in a wet year are much higher (13,604 ac-ft). During the annual cycle, channel returns are highest from January through March and again in July. Returns are lowest in November and December.

Current consumptive water use on the island is estimated to be 27,391 acre-feet, based on evapotranspiration rates of the agricultural crops grown on the island (Table 8). Rainfall provides an additional 1.66 acre-feet/acre, and thus more than makes up the difference between consumptive water use and diversions.

Table 8. Base soil salinity<sup>a</sup>, adjacent water channel salinity, and worst case scenario for soil salinity following irrigation on Sherman Island.

Location on island	Base soil salinity (ppm)	Adjacent channel water salinity (ppm)	worst case soil water following irrigation (ppm)
East side	1920-2560	104-672	2024-3232
South side	2560-3200	117-995	2677-4195
North side	2560-3200	92-1700	2652-4900
West side	3070-4350	118-2883	3188-7223

<sup>a</sup>Taken from CH2M Hill Inc. 1976. Salinity study of Suisun Bay/Delta. Prepared for U.S. Army Corps of Engineers, San Francisco District.

Schoonover, W.E. 1974. A study of Delta water quality in relation to Delta agriculture. Prepared for Department of Water Resources.

<sup>b</sup>Assuming soil water salinity and channel water salinity are additive.