

Table of Contents

Table of Contents	i
List of Figures.....	ii
List of Tables	iv
Executive Summary	1
California Coastal Watershed Planning and Assessment Program.....	1
General Assessment Approach	1
The general steps in our large-scale assessments include:.....	1
Scale of Assessment and Results	2
Assessment Products.....	2
Salmonids, Habitat, & Land Use Relationships.....	2
Salt River Basin.....	3
Salt River Management Issues.....	4
Response to Assessment Questions.....	6
Salt River Basin Profile	12
Introduction.....	12
Location and Area.....	12
Climate	12
Hydrology	14
Salt River Delta.....	14
Wildcat Tributaries	15
Fluvial Geomorphology	17
Land Reclamation	17
Tide Gates and Levees	21
Channelization	23
The Old River and Perry Slough.....	24
Salt River Timeline	27
Floods	31
Geology.....	32
Geology of the Eel River Delta.....	32
Earthquakes.....	32
Landslides	33
Subsidence	33
Sediment and Erosion.....	34
Eel River	34
Salt River	34
Soil Types on the Salt River Delta.....	38
Vegetation	38
Historic Vegetation Composition	38
Current Vegetation Composition	39
Instream Vegetation	39
Managing Riparian Areas	41
Riparian Deforestation	41
Land Use	43

Native Inhabitants	43
Historic Land Use	44
Shipping	44
Timber Harvest	45
Eel River Fishery	45
Current Land Use.....	46
Agricultural Land Use.....	46
Urbanization.....	47
Recreation and Public Lands	48
Water Quality.....	48
Wastewater Treatment	48
Farm Wastes.....	49
Water Temperature	51
Wildlife Habitat Relationships.....	53
Eel River Delta.....	53
Eel River Estuary	53
Salmonid Fisheries Resources.....	55
Fishes of the Salt River	55
Fish Habitat Relationships.....	57
Salt River Tributary Analysis.....	62
Fish Passage Barriers	68
Stream Crossings	68
Dry Channel	70
Tide Gates	70
Channelization	70
Bibliography	72
Glossary	76
Salt River Restoration Appendix.....	80
Salt River Tributary Appendix	98
Williams Creek	98
Francis Creek	99
Russ Creek	100

List of Figures

Figure 1. Eel River Delta	13
Figure 2. Assessment Area: Salt River Delta and Wildcat Tributaries.....	16
Figure 3. Plan of reclamation of the Salt River tidelands in 1884. The caption reads: "Land to be reclaimed marked X". The reclaimed area in this map adds up to 2,025 acres.	17
Figure 4. Map of the Centerville Slough area concerning the Supreme Court Trial in 1901. The highlighted area is that which had been cut off to tidal influence by 1898.	18
Figure 5. Map of Coffee Creek wetland that was drained in the late 1800's (left). Aerial photograph of the same location in 1965 (right).....	19
Figure 6. Wetlands and tidelands that are known to have been reclaimed. The area in black is estimated; the remaining areas have been confirmed with historic documentation.	20
Figure 7. Tidegates in the Salt River system	22

Figure 8. Cutoff Slough tide gate.....	22
Figure 9. Reas Creek in its lower reaches has been realigned and channelized as it runs 8,200 feet across the Salt River Delta (Left), One of the historic paths of Reas Creek in 1921 flowed straight through Port Kenyon (Right). The channel alteration increased the length of Reas Creek across the delta by 30%.....	23
Figure 10. Aerial Photographs of the confluence of Williams Creek and the Salt River 1996 (left), 2000 (right). Note the change in the Williams Creek drainage in the center of the photos from a westward course in the Salt River (left) to an eastward course into the Old River (right). This action has caused a 42% reduction in Salt River Watershed size.....	24
Figure 11. Williams Creek, Salt River and the Old River in February 2004. Red arrow indicates the sediment plug in the Salt River at river mile 7.5.	25
Figure 12. Salt River and Old River Watersheds, 2004.....	26
Figure 13. The Salt River at Dillon Road Bridge in 1963, 1965, 1988, 2000.	29
Figure 14. The Salt River during February 2004.....	30
Figure 15. Preventable (left) and non-preventable erosion (right).	34
Figure 16. Reas Creek upstream of Meridian Road on October 20th, 2004.....	37
Figure 17. Reas Creek upstream of Meridian Road on December 3rd, 2004.....	37
Figure 18. Vegetation types on the Salt River Delta and Wildcat tributaries.....	40
Figure 19. Steamer Argo docked at Port Kenyon.....	44
Figure 20. The confluence of Francis Creek and the Salt River and Eastside Drainage in 1854 (left) and in 1894 (right).	47
Figure 21. Westward aerial view of the Ferndale waste water treatment plant during February 2004. The ponded area on the right is known as Lake Vevoda. Francis Creek flows around the settling pond, Arlynda Corners is in the foreground.....	49
Figure 22. Canopy density and the relative percentage of coniferous, deciduous and open canopy above surveyed streams in the Salt River Basin analyzed by reach. Target value is greater than 80%.	62
Figure 23. Percent of pool habitat, flatwater habitat, riffle habitat by survey length in the Salt River Basin.....	63
Figure 24. Cobble embeddedness categories as measured at pool tailouts in surveyed streams in the Salt River Basin.	64
Figure 25. Percent length of survey composed of pools in the Salt River Basin.....	65
Figure 26. Average pool shelter ratings from stream surveys in the Salt River Basin.....	65
Figure 27. Primary pools in the Salt River Basin	67
Figure 28. Cobble embeddedness in the Salt River Basin.	67
Figure 29. Canopy density in the Salt River Basin.	67
Figure 30. Definitions of barrier types and their potential impacts to salmonids (from Taylor 2001)	68
Figure 31. Centerville Road culvert on Russ Creek (left) and fish barrier on Russ Creek 500 ft. above Centerville Road (right).....	69
Figure 32. Possible barriers to fish movement.....	71
Figure 33. Examples of erosion in the upland Salt River Tributaries.....	81
Figure 34. Examples of fish passage barriers in the upland Salt River tributaries.	81
Figure 35. Trans-delta reach of Williams Creek.....	82
Figure 36. Trans-delta reach of Francis Creek.....	82
Figure 37. Trans-delta reach of Reas Creek.....	82

Figure 38. The Salt River- then and now; steamer Mary Hume 1885 at Port Kenyon (left) and mainstem channel at nearby Dillon Road Bridge 2004 (right).....	83
Figure 39. Salt River Estuary upstream of Smith Creek, note the wide floodplain and vegetation composition.....	84
Figure 40. Tide gate on Cutoff Slough.....	84
Figure 41. 2,900 acres of Salt River tideland were reclaimed prior to 1900.....	84

List of Tables

Table 1. Salt River tributary information.....	15
Table 2. Tidal area of Salt River measured in 1901 in reference to figure 4.....	18
Table 3. Hydrological changes have reduced the size of the Salt River Basin and have created the Old River/ Perry Slough Basin.	25
Table 4. Historic floods of the Eel River. Flood stage for Fernbridge is 20 feet.....	31
Table 5. Wildcat geologic formation group. (USGS Fortuna Quad, OFR 85-1SF).	32
Table 6. Salt River has two major problems concerning sediment: factors that increase sediment deposition and factors that reduce the Salt Rivers capacity to flush the sediment to the ocean (USDA 1993).	35
Table 7. Sediment yield to the Salt River channel from upland subwatersheds- average annual estimates for watershed conditions originally published in 1993. Adapted to reflect changes in watershed conditions since 1993.	36
Table 8. Vegetation habitat types in the Eel River Estuary. The following information is a summary of the vegetation survey of the Eel River Delta that was written by Annie Eicher and Mignonne Bivin as part of the larger Biological Conditions of the Eel River Delta that was prepared for the Eel River Conservation District in 1991	42
Table 9. Records of canned salmon from the Cutting and Packing Company (Edeline, 1983)	46
Table 10. Water temperature criteria	52
Table 11. MWAT's for the locations in the Salt River Basin.....	52
Table 12. Macroinvertebrate sampling conducted in 1996.....	54
Table 13. Macroinvertebrate sampling conducted in 1990 by the USDA Soil Conservation Service.....	54
Table 14. Presence of fish species observed in Salt River tributaries upstream of Centerville/ Grizzly Bluff Road in 2003 and 2004 (DFG 2003; DFG 2004).	55
Table 15. Presence of fish species observed in the estuarine portions of the Salt River in 1977 and 1995 (DFG, 1977 and Cannata 1995).	55
Table 16. Summary of stream surveys conducted in the Salt River by the California Department of Fish and Game and private consultants. All comments are taken from survey sheets.	57
Table 17. Average canopy density groupings by percent length of habitat units sampled for canopy density.	63
Table 18. Percent length of a survey composed of pools in the Salt River tributaries based on maximum residual depths.	64
Table 19. Dominant and subdominant pool cover types; 1 indicating most dominant.....	66
Table 20. Summary of fish habitat assessment results in the Salt River Basin and habitat target values defined by Flosi et al. 1998.....	66
Table 21. Culverts surveyed for barrier status in the Salt River Basin (Taylor, 2000)	69
Table 22. Proposed Salt River restoration activities.....	85