Water Hyacinth Control Program

FINAL

Programmatic Environmental Impact Report

Volume I – Chapters 1 to 7

November 30, 2009

A program for effective control of Water Hyacinth in the Sacramento-San Joaquin Delta and its tributaries.

Copies of this Final Programmatic Environmental Impact Report in hard copy form, or on computer compact disc (CD), can be obtained from the California Department of Boating and Waterways.

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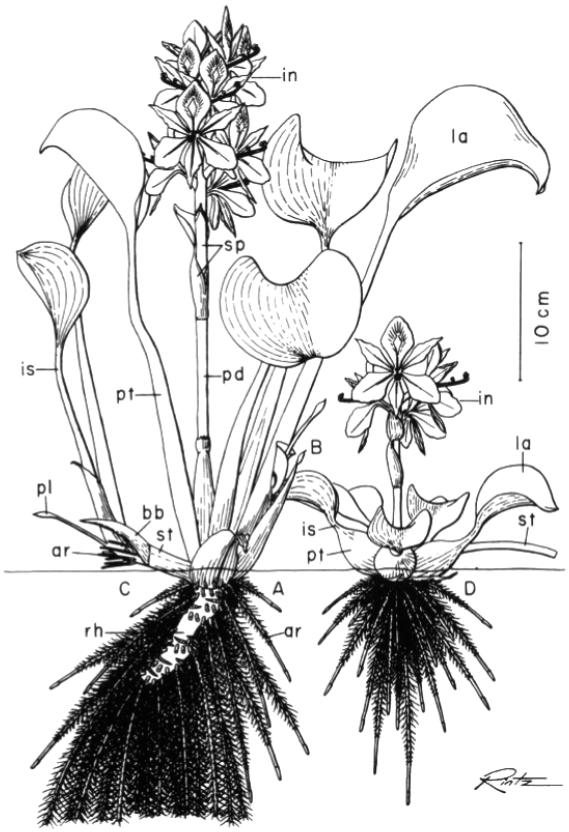

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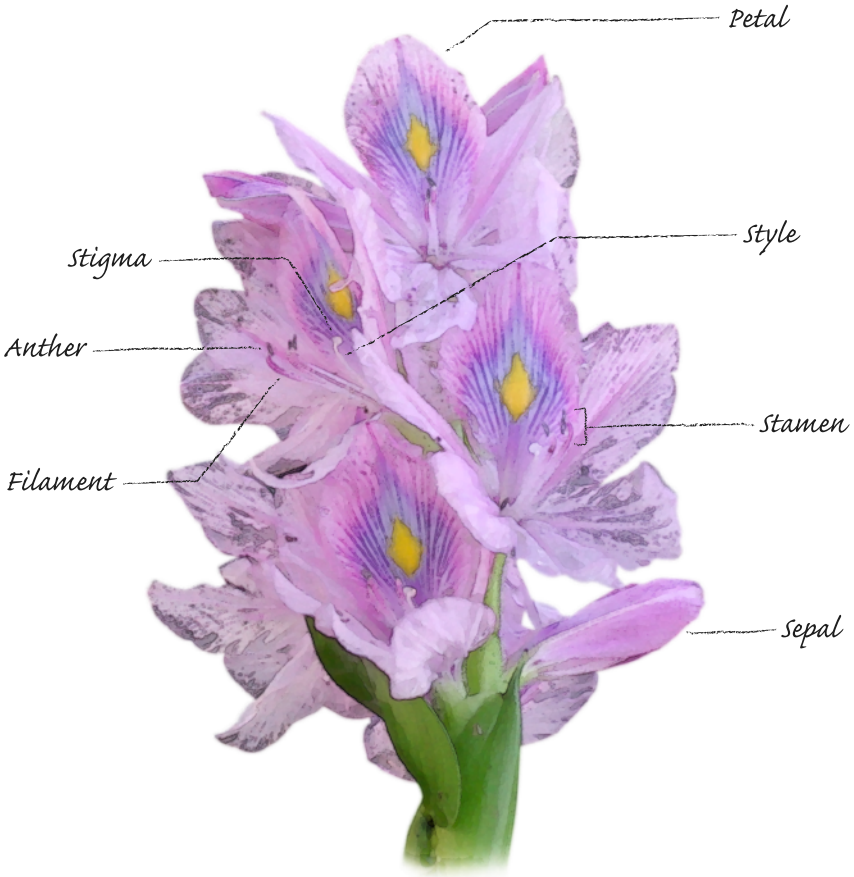
Water hyacinth *(Eichhornia crassipes)*



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Acronyms and Abbreviations

Acronyms and Abbreviations

1. **2,4-D** – 2,4-dichlorophenoxyacetic acid
2. **2,4,5-T** – 2,4,5-trichlorophenoxyacetic acid
3. **ADI** – Acceptable Daily Intake
4. **a.e.** – Active ingredient
5. **AGR** – Agricultural supply (Basin Plan beneficial use)
6. **AHS** – Agricultural Health Study
7. **ALS** – Amyotrophic lateral sclerosis
8. **AMPA** – Aminomethylphosphonic acid
9. **APMP** – Aquatic Pesticide Monitoring Program
10. **Bay-Delta Estuary** – San Francisco Bay and Sacramento-San Joaquin Delta
11. **BA** – Biological Assessment
12. **BDCP** – Bay Delta Conservation Plan
13. **BMP** – Best Management Practices
14. **BO** – Biological Opinion
15. **C** – Centigrade/Celsius
16. **CAC** – County Agricultural Commissioner
17. **CALFED** – California-Federal Bay Delta Program
18. **CCWD** – Contra Costa Water District
19. **CDFA** – California Department of Food and Agriculture
20. **CDFG** – California Department of Fish and Game
21. **CE** – California Endangered
22. **CEQA** – California Environmental Quality Act
23. **CESA** – California Endangered Species Act
24. **cfs** – Cubic feet per second
25. **CI** – Confidence Interval
26. **COA** – Coordinated Operations Agreement
27. **COMM** – Commercial sport fishing (Basin Plan beneficial use)
28. **COLD** – Cold freshwater habitat (Basin Plan beneficial use)
29. **CNDDB** – California Natural Diversity Database
30. **CNPS** – California Native Plant Society
31. **CR** – California Rare
32. **CSC** – California Species of Special Concern

Acronyms and Abbreviations *(continued)*

33. **CT** – California Threatened
34. **CVP** – Central Valley Project
35. **CVRWQB** – Central Valley Regional Water Quality Control Board
36. **CWA** – Clean Water Act
37. **dBA** – Decibels
38. **DBW** – California Department of Boating and Waterways
39. **DCC** – Delta Cross Channel
40. **Delta** – Sacramento-San Joaquin Delta
41. **DMA** – Dimethylamine salt
42. **DO** – Dissolved oxygen, measured in mg/l or ppm
43. **DOC** – California Department of Conservation
44. **DPR** – California Department of Pesticide Regulation
45. **DPS** – Distinct Population Segment
46. **DRERIP** – Delta Regional Ecosystem Restoration Implementation Plan
47. **DWSP** – Delta Water Supply Project
48. **DWR** – California Department of Water Resources
49. **EA** – Environmental Assessment
50. **EC50** – Effective concentration for 50 percent of target
51. **EDCP** – *Egeria densa* Control Program
52. **EFH** – Essential Fish Habitat
53. **EIR** – Environmental Impact Report
54. **EIS** – Environmental Impact Statement
55. **ERP** – Ecosystem Restoration Program
56. **ESA** – Endangered Species Act (federal)
57. **EST** – Estuarine habitat (Basin Plan beneficial use)
58. **ESU** – Evolutionary Significant Unit
59. **EWA** – Environmental Water Account
60. **FC** – Federal Candidate (for consideration of endangered or threatened status)
61. **FCH** – Federal Critical Habitat
62. **FCHP** – Federal critical habitat for this species proposed
63. **FE** – Federal Endangered
64. **FETAX** – Frog Embryo Teratogenesis Assay – *Xenopus*
65. **FIFRA** – Federal Insecticide, Fungicide, and Rodenticide Act
66. **FMWT** – Fall Midwater Trawl

Acronyms and Abbreviations *(continued)*

67. **FONSI** – Finding of No Significant Impact
68. **FT** – Federal Threatened
69. **GI** – Gastrointestinal
70. **GWR** – Groundwater recharge (Basin Plan beneficial use)
71. **HAPC** – Habitat Areas of Particular Concern
72. **HCP** – Habitat Conservation Plan
73. **HQ** – Hazard Quotient
74. **IARC** – International Agency for Registration of Carcinogens
75. **IEP** – Interagency Ecology Program
76. **IND** – Industrial service supply (Basin Plan beneficial use)
77. **IPM** – Integrated Pest Management
78. **K_{oc}** – Soil adsorption coefficient, normalized by organic matter
79. **LC5** – Lethal concentration for 5 percent of subjects
80. **LC10** – Lethal concentration for 10 percent of subjects
81. **LC50** – Lethal concentration for 50 percent of subjects
82. **LD50** – Lethal dose or lethal dietary dose for 50 percent of subjects
83. **LH** – Luteinizing hormone
84. **LOC** – Level of Concern
85. **LOD** – Limit of detection
86. **LOEC** – Lowest Observable Effect Concentration
87. **LOEL** – Lowest Observable Effect Level
88. **MAF** – Million acre feet
89. **MATC** – Maximum Acceptable Toxicant Concentration
90. **MCL** – Maximum Contaminant Level
91. **MCP** – Maintenance Control Practices
92. **MCPA** – 4-chloro-2-methylphenoxyacetic acid
93. **MIGR** – Migration of aquatic organisms (Basin Plan beneficial use)
94. **mM** – millimolar, a concentration of one thousandth of a mole per liter
95. **MOE** – Margin of Error or Margin of Safety
96. **MOU** – Memorandum of Understanding
97. **MRA** – Montane Riverine Aquatic
98. **MRDL** – Maximum Residual Disinfectant Level
99. **MSA** – Magnuson-Stevens Fishery Conservation and Management Act

Acronyms and Abbreviations *(continued)*

100. **MSDS** – Material Safety Data Sheet
101. **MUN** – Municipal and domestic supply
102. **NAV** – Navigation (Basin Plan beneficial use)
103. **NBA** – North Bay Aqueduct
104. **NCCP** – Natural Community Conservation Plan
105. **ND** – Non-detectable
106. **NFPE** – Nontidal Freshwater Permanent Emergent
107. **NHL** – Non-Hodgkin lymphoma
108. **NIH** – National Institute of Health
109. **NMFS** – National Marine Fisheries Service
110. **NOAA-Fisheries** – National Oceanic and Atmospheric Administration-Fisheries (also previously referred to as NMFS, National Marine Fisheries Service)
111. **NOEC** – Non-observable effect concentration
112. **NOEL** – Non-observable effect level
113. **NOI** – Notice of Intent
114. **NOP** – Notice of Preparation
115. **NPDES** – National Pollution Discharge Elimination System
116. **NPE** – Nonylphenol ethoxylates
117. **NRDC** – Natural Resources Defense Council
118. **NTU** – Nephelometric Turbidity Units
119. **OCAP** – Operations Criteria and Plan
120. **OMP** – Operations Management Plan
121. **OMR** – Old and Middle River
122. **OR** – Odds Ratio
123. **OSHA** – Occupational Safety and Health Administration
124. **PCA** – Pest Control Advisor
125. **PEIR** – Program Environmental Impact Report
126. **PFMC** – Pacific Fisheries Management Council
127. **PG&E** – Pacific Gas and Electric
128. **POD** – Pelagic Organism Decline
129. **POEA** – Polyethoxylated tallowamine
130. **ppb** – parts per billion (μg/l)
131. **ppm** – parts per million (mg/l or mg/kg)

Acronyms and Abbreviations *(continued)*

132. **ppt** – parts per thousand (g/l)
133. **PPE** – Personal Protective Equipment
134. **PRO** – Industrial process supply (Basin Plan beneficial use)
135. **PUR** – Pesticide Use Recommendations
136. **QAC** – Qualified Applicator Certificate
137. **QAPP** – Quality Assurance Project Plan
138. **RARE** – Rare, threatened, or endangered species (Basin Plan beneficial use)
139. **RCRA** – Resource Conservation and Recovery Act
140. **REC-1** – Water contact recreation (Basin Plan beneficial use)
141. **REC-2** – Non-water contact recreation (Basin Plan beneficial use)
142. **RfD** – Reference Dose
143. **ROD** – Record of Decision
144. **RPA** – Reasonable and Prudent Alternative
145. **RQ** – Risk Quotient
146. **RR** – Risk Ratio
147. **RUP** – Restricted Use Permit
148. **SDIP** – South Delta Improvement Program
149. **SFA** – Seasonally Flooded Agricultural
150. **SFEI** – San Francisco Estuary Institute
151. **SJRRP** – San Joaquin River Restoration Program
152. **SHELL** – Shellfish harvesting (Basin Plan beneficial use)
153. **SMR** – Standard Mortality Ratio
154. **SMUD** – Sacramento Municipal Utility District
155. **SOD** – Superoxide dismutase
156. **SPWN** – Spawning, reproduction, and/or early development (Basin Plan beneficial use)
157. **STS** – Soft tissue sarcoma
158. **SVWMA** – Sacramento Valley Water Management Agreement
159. **SWB** – State Water Board (Water Resources Control Board)
160. **SWP** – State Water Project
161. **SWRCB** – State Water Resources Control Board
162. **TDF** – Through-Delta Facility
163. **TFE** – Tidal Freshwater Emergent
164. **THM** – Trihalomethane

Acronyms and Abbreviations *(continued)*

165. **TPA** – Tidal Perennial Aquatic
166. **UC** – Upland Cropland
167. **USBR** – United States Bureau of Reclamation
168. **USDA-ARS** – United States Department of Agriculture – Agricultural Research Service
169. **USFS** – United States Forest Service
170. **USFWS** – United States Fish and Wildlife Service
171. **VAMP** – Vernalis Adaptive Management Plan
172. **VFR** – Valley/Foothill Riparian
173. **VRA** – Valley Riverine Aquatic
174. **WARM** – Warm freshwater habitat (Basin Plan beneficial use)
175. **WHCP** – Water Hyacinth Control Program
176. **WHO** – World Health Organization
177. **WILD** – Wildlife habitat (Basin Plan beneficial use)
178. **WOE** – Weight-of-evidence
179. **X2** – the line at which 2ppt (parts per thousand) saline occurs