

**Appendix D. Yolo Bypass-Related Targets and  
Programmatic Actions from the CALFED  
Ecosystem Restoration Program Plan,  
Volume II**

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The following text presents the verbatim Yolo Bypass-Related CALFED Targets and Programmatic Actions that appear to realistically be relevant to issues addressed by the Yolo Bypass Working Group. The following list includes the specific section and page number where these Targets and Programmatic Actions are located in the Ecosystem Restoration Program Plan, Volume II.

### ***Yolo Basin Ecological Management Zone***

#### **Central Valley Streamflow**

Target 1: More closely emulate natural seasonal patterns in Cache and Putah Creeks by providing additional flows, when available from existing water supplies. Flows in the Yolo Bypass (Bypass) would be supplemented, as needed, by the Colusa basin drain through the Knights Landing Ridge Cut Canal, extending the Tehama-Colusa Canal, and the Sacramento River through the Fremont weir. Supplemental flows may be needed in fall if water temperature and flow in the lower Bypass are insufficient for passage from Cache Slough to upstream areas in the Sacramento River. Supplemental flows may be needed in winter and spring to sustain downstream migrating juvenile salmon and steelhead on their journey through the Bypass to the Delta. Supplemental flows would be needed along with irrigation water from spring to fall to sustain native fish, wetlands, and riparian habitats in channel sloughs of the Bypass.

Programmatic Action 1C: Cooperatively evaluate the feasibility of providing water for the upper Bypass portion of the Cache Creek Unit by redirecting water from Colusa basin drain through the Knights Landing Ridge Cut Canal, an extension of the Tehama-Colusa Canal, and the Sacramento River through the Grays Bend-Old River-Fremont weir complex. Page 322

## **Natural Floodplain and Flood Processes**

Target 1: More closely emulate natural stream channel configurations in Cache and Putah Creeks, as well as in channels and sloughs of the upper Bypass, consistent with flood control requirements.

Programmatic Action 1A: Cooperatively evaluate feasibility of modifying the cross sections and channel configurations in Cache and Putah Creeks to provide a more natural configuration, while maintaining consistency with flood control requirements and minimizing impacts to adjoining established land uses. Page 323

Target 2: Increase overbank flooding potential to floodplains, where feasible and consistent with flood protection, to support a desirable vegetation succession process.

Programmatic Action 2A: Evaluate opportunities to provide flow to Bypass from Colusa basin drain, extending the Tehama-Colusa Canal, and Sacramento River (through Fremont Weir) in dry and normal water years, as well as normally occurring overflow in wetter years. Page 323

Target 3: Increase the area of flooding to the active Cache and Putah Creeks floodplains during the wet season, where feasible and consistent with flood protection.

Programmatic Action 3A: Evaluate the feasibility of expanding floodplain overflow areas in the lower Cache and Putah Creeks floodplains. Such areas would include sloughs and creek channels, setback levees, and wetlands, where feasible and consistent with flood protection. Page 324

Target 4: Establish a desirable level of floodwater retention potential by expanding, where feasible and consistent with flood protection, the floodplain area of the Bypass, lower Cache Creek, and lower Putah Creek, and by developing off-channel water storage facilities.

Programmatic Action 4A: Cooperatively evaluate the feasibility of reoperating and modifying the Yolo Basin to increase its capacity for floodwater detention and sediment retention by reconfiguring levees, channels, and other physical constraints to large volume flow events. Page 324

## **Riparian and Riverine Aquatic Habitat**

Target 1: Restore riparian vegetation along Cache Creek, Putah Creek, and Bypass and Solano Ecological Management Unit (EMU) channels and sloughs, where possible, to provide

cover and other essential habitat requirements for native resident fish species and wildlife.

- Programmatic Action 1A: Develop a cooperative program to restore riparian vegetation, where possible, and fill gaps in forest continuity. Page 324
- Programmatic Action 1B: Develop a cooperative program to protect existing riparian corridors along creeks, streams, sloughs and channels connecting to the Delta. Page 324
- Programmatic Action 1C: Develop a cooperative program to plant riparian vegetation and provide for early development until it becomes naturally self-sustaining. Page 324
- Programmatic Action 1D: Develop a cooperative control program for nonnative riparian plants, where necessary, to promote development of healthy natural riparian corridors. Page 324

### **Water Diversions**

Target 1: Screen all diversions in the Bypass channels and sloughs.

- Programmatic Action 1A: Evaluate the feasibility of screening diversions in the Bypass with positive-barrier fish screens. Page 325

### **Dams and Other Structures**

Target 1: Improve fish passage between the Delta and spawning grounds in the upper watersheds.

- Programmatic Action 1A: Evaluate the feasibility of constructing fish passage facilities at the Grays Bend-Old River-Fremont weir complex at the upper end of the Bypass. Page 325

### **Invasive Riparian and Marsh Plant Species**

Target 1: Reduce populations of invasive nonnative plant species that compete with the establishment and succession of native riparian vegetation along Cache and Putah Creeks. This will help to reestablish native riparian vegetation in floodplains, increase SRA cover for fish, and increase habitat values for riparian-associated wildlife.

Programmatic Action 1A: Develop a cooperative program to monitor the distribution and abundance of nonnative plants and develop cooperative control programs as needed. Page 326

### **Predation and Competition**

Target 1: Reduce predation and competition on native fish species.

Programmatic Action 1A: Develop a cooperative program to modify the stream channel and improve aquatic habitats. Page 326

### **Stranding**

Target 1: Prevent adult salmon and steelhead stranding in the Bypass during their upstream migrations.

Programmatic Action 1A: Evaluate the feasibility of constructing fish passage facilities at the Grays Bend-Old River-Fremont weir complex at the upper end of the Bypass. Page 326

Programmatic Action 1B: Develop a cooperative program to construct a weir or screen at the lower end of the Knights Landing Ridge Cut Canal to keep adult salmon and steelhead from migrating upstream into the Colusa basin drain. Page 326

## ***Sacramento-San Joaquin Delta Ecological Management Zone (North Delta Management Unit)***

### **Natural Floodplain and Flood Processes**

Target 1: Expand the floodplain area in the North, East, South, and Central and West Delta EMUs by putting approximately 10% of leveed lands into the active floodplain of the Delta.

Programmatic Action 1A: Convert leveed lands to tidal wetland/slough complexes. Permanently convert island tracts (Little Holland, Liberty, and Prospect) at the south end of the Bypass to tidal wetland/slough complexes. Page 100

Target 4: Restore 50–100 miles of tidal channels (303–606 acres) in the southern Bypass within the north Delta, while maintaining or improving the flood carrying capacity of the Bypass. *(Note: This target is in addition to targets and programmatic actions presented in the Delta Slough habitat section.)*

Programmatic Action 4A: Construct a network of channels within the Bypass to connect the Putah and Cache Creeks sinks, and potentially the Colusa drain, to the Delta. These channels should effectively drain all flooded lands in the Bypass after floodflows stop entering the Bypass from the Fremont and Sacramento Weirs. The channels would maintain a base flow through the spring to allow juvenile anadromous and resident fish to move from rearing and migratory areas. Page 102

Programmatic Action 4B: Reduce flow constructions in the Bypass such as those in the openings in the railway causeway that parallels Interstate 80. Page 102

### **Delta Hydrodynamics**

Target 2: Restore hydrodynamic conditions in the rivers and sloughs of the Delta sufficient to support targets for the restoration of aquatic resources.

Programmatic Action 2A: Restore 3,000–4,000 acres of tidal perennial aquatic habitat and 20,000–25,000 acres of tidally influenced freshwater marsh. *(Note: these recommendations are contained within programmatic actions presented in this section for tidal perennial aquatic habitat and fresh emergent wetland (tidal) and are not additions to acreages presented in the targets and programmatic actions for habitat).* Page 101

### **Tidal Perennial Aquatic Habitat**

Target 1: Restore 1,500 acres of shallow-water habitat in the North Delta EMU; 1,000 acres of shallow-water habitat in the East Delta EMU; 2,000 acres of shallow-water habitat in the South Delta EMU; and 2,500 acres of shallow-water habitat in the Central and West Delta EMU.

Programmatic Action 1B: Restore 1,000 acres of shallow-water habitat in the downstream (south) end of the Bypass (Little Holland and Liberty Islands) within the North Delta EMU. Page 104

### **Nontidal Perennial Aquatic Habitat**

Target 2: Develop 21,000 acres of shallow, open-water areas (less than 4–6 feet deep) in restored fresh emergent wetland habitat areas in the Delta to provide resting, foraging, and brood habitat for water birds and habitat for fish and aquatic plants and semi-aquatic animals.

Programmatic Action 2D: Develop 1,000 acres of shallow, open-water areas within restored fresh emergent wetland habitats in the North Delta EMU. Page 105

### **Delta Sloughs**

Target 1: Restore ecological structure and functions of the Delta waterways network by increasing the land-water interface ratio a minimum of 50–75% compared to 1906 conditions and by restoring 65–165 miles of small distributary sloughs (less than 50–75 feet wide) hydrologically connected to larger Delta channels. *(Note: This target is in addition to the Delta slough target presented in the target section for Delta Channel Hydraulics.)*

Programmatic Action 1A: The short-term solution to lost slough habitat in this Ecological Management Unit (EMU) is to restore 10 miles of slough habitat. In the North Delta EMU the long-term solution is to restore 30 miles of slough habitat (61–182 acres each). Page 105

Programmatic Action 1B: Restore tidal action to portions of islands with appropriate elevation, topography, and water-landform conditions. This will sustain tidally influenced freshwater marshes with 20–30 linear miles (121–182 acres) of narrow, serpentine-shaped sloughs within the wetlands and floodplain. Page 105

### **Fresh Emergent Wetland Habitat (Tidal)**

Target 1: Increase existing tidal freshwater marsh habitat in the Delta by restoring 30,000–45,000 acres of lands designated for floodplain restoration.

Programmatic Action 1A: Develop tidal freshwater marshes in the North Delta EMU. Page 106

### **Fresh Emergent Wetland Habitat (Nontidal)**

Target 1: Restore a total of 2,000 acres of nontidal freshwater marshes in the North Delta EMU and 1,000 acres in the East Delta EMU; restore 4,000 acres of nontidal fresh emergent wetland in the South Delta EMU as part of a subsidence control program; and restore 10,000 acres of nontidal fresh emergent wetland in the Central and West Delta EMU as part of a subsidence control program (total of 17,000 acres).

Programmatic Action 1B: Restore 1,000 acres of nontidal freshwater marshes in the Bypass. Page 107

## **Seasonal Wetland Habitat**

Target 1: Restore and manage at least 2,000 acres of additional seasonal wetland habitat and improve management of 1,000 acres of existing, degraded seasonal wetland habitat in the North Delta EMU.

Programmatic Action 1A: Improve management of 1,000 acres of existing, degraded seasonal wetland habitat in the Bypass. Page 108

Programmatic Action 1B: Restore and manage 2,000 acres of additional seasonal wetland habitat in association with the Yolo Basin Wildlife Area. Page 108

## **Riparian and Riverine Aquatic Habitats**

Target 3: Restore 10–15 linear miles of riparian and riverine aquatic habitat in the North Delta EMU along the Sacramento River below Sacramento of which 80% is to be more than 75 feet wide and 20% over 300 feet wide (145–218 acres).

Programmatic Action 3A: Obtain conservation easements for, or purchase from willing sellers, land needed to restore 10–15 linear miles of riparian habitat along the Sacramento River in the North Delta EMU. Obtain conservation easements for, or purchase from willing sellers, land needed to create corridors of riparian vegetation. Page 109

Target 6: Restore or plant riparian and riverine aquatic habitats and recreate slough habitat and set back levees.

Programmatic Action 6A: Obtain conservation easements for, or purchase from willing sellers, land needed to restore riparian habitat along newly created sloughs and sloughs with new levee setbacks. Page 109

Programmatic Action 6B: Obtain conservation easements for, or purchase from willing sellers, land needed to restore riparian habitat along new or upgraded Delta levees. Page 109

## **Perennial Grass**

Target 1: Restore 4,000–6,000 acres (total) of perennial grasses in the North, East, South, and Central and West Delta EMUs associated with existing or proposed wetlands and floodplain habitats.



Programmatic Action 1A: Develop a cooperative program to restore 1,000 acres of perennial grassland through either conservation easements or purchase from willing sellers. Page 111

## **Agricultural Lands**

Target 1: Cooperatively manage 40,000–75,000 acres of agricultural lands.

Programmatic Action 1A: Increase the area of Delta corn fields and pastures flooded in winter and spring to provide high-quality foraging habitat for wintering and migrating waterfowl and shorebirds and associated wildlife. Page 111

Programmatic Action 1B: Periodically flood pasture from October through March in portions of the Delta relatively free of human disturbance to create suitable roosting habitat for wintering greater sandhill crane, and for other wintering sandhill crane subspecies. Page 111

Programmatic Action 1C: Create permanent or semipermanent ponds in Delta farm areas that provide suitable waterfowl nesting habitat but lack suitable brooding habitat, to increase resident dabbling duck production. Page 111

Programmatic Action 1D: Increase the acreage farmed for wheat and other crops that provide suitable nesting habitat for waterfowl and other ground-nesting species in the Delta. Page 111

Programmatic Action 1E: Convert agricultural lands in the Delta from crop types of low forage value for wintering waterfowl, wintering sandhill cranes, and other wildlife to crop types of greater forage value. Page 111

Programmatic Action 1F: Defer fall tillage on corn fields in the Delta to increase the forage for wintering waterfowl, wintering sandhill cranes, and associated wildlife. Page 111

Programmatic Action 1G: Develop a cooperative program to improve management on 8,000 acres of Delta corn and wheat fields and to reimburse farmers for leaving a portion of the crop in each field unharvested as forage for waterfowl, sandhill cranes, and other wildlife. Page 111

## **Levees, Bridges, and Bank Protection**

Target 1: Increase shoreline and floodplain riparian habitat in the Delta by changing the vegetation maintenance practices on both the water and the land side of berms on 25–75 miles of the Sacramento, Mokelumne, and San Joaquin rivers, and on 25–100 miles of other Delta channels and sloughs confined by levees.

Programmatic Action 1A: Enter into agreements with willing levee reclamation districts to change levee and berm vegetation management practices that establish mature shoreline vegetation. This will restore and maintain the health of Delta aquatic resources. Reimburse districts for any additional maintenance and inspection costs. Page 115

## **Invasive Aquatic Plants**

Target 1: Manage existing and restored dead-end and open-ended sloughs and channels within the Sacramento–San Joaquin Delta Ecological Management Zone so that the total surface area of these sloughs and channels covered by invasive nonnative aquatic plants is reduced.

Programmatic Action 1A: Conduct large-scale, annual weed eradication programs throughout existing and restored dead-end and open-ended sloughs and channels within each of the Delta’s EMUs. The goal is that less than 1% of the surface area of these sloughs and channels is to be covered by invasive nonnative aquatic plants within 10 years. Page 116

## **Invasive Riparian and Salt Marsh Plants**

Target 1: Reduce surface area covered by nonnative plants to less than 1%.

Programmatic Action 1A: Implement a program throughout the Delta to remove and suppress the spread of invasive-nonnative plants that compete with native riparian vegetation by reducing the aerial extent of species such as False Bamboo, eucalyptus, and nonnative cordgrass by 50%. Page 116

Target 2: Reduce the area of invasive nonnative woody species, such as Giant Reed (i.e., Arundo or false bamboo) and eucalyptus, that compete with native riparian vegetation, by reducing the area of nonnatives by 50% throughout the Delta and by eradicating invasive woody plants from restoration areas.

Programmatic Action 2B: Implement a program throughout the Delta that, before restoration actions, eliminates invasive woody plants that could interfere with the restoration of native riparian vegetation. Page 116

### **Predation and Competition**

Target 1: Reduce loss of juvenile fish in Clifton Court Forebay to predation by 75–90%.

Programmatic Action 1A: Evaluate alternate operational strategies to reduce entrainment of juvenile fish into Clifton Court Forebay. Page 117

### **Contaminants**

Target 1: Reduce loading, concentrations, and bioaccumulation of contaminants of concern to ecosystem health in the water, sediments, and tissues of fish and wildlife in the Sacramento–San Joaquin Delta Ecological Management Zone by 25–50% as measured against current average levels.

Programmatic Action 1A: Reduce the input of herbicides, pesticides, fumigants, and other agents toxic to fish and wildlife by changing land management practices and chemical uses on 50,000 acres of urban and agricultural lands that drain untreated into Delta channels and sloughs. Actions will focus on modifying agricultural practices and urban land uses on a large scale (see other info, page 118).

### **Stranding**

Target 1: Reduce or eliminate the stranding of juvenile chinook salmon on floodplains, shallow ponds, and levee borrow areas.

Programmatic Action 1A: Conduct surveys of stranding in the Bypass under a range of low conditions and develop recommendations to resolve the problem. Page 119