APPENDIX E. Performance Measures for the Delta Plan

Delta Plan Amendments

June 2022

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Appendix E
Performance Measures for the Delta Plan

Performance Measure Types

Delta Plan performance measures have been placed into three general categories:

- Administrative performance measures describe decisions made by policy makers and managers to finalize plans or approve resources (funds, personnel, projects) for implementation of a program or group of related programs.
- Output (also known as “driver”) performance measures evaluate the factors that may be influencing outcomes; including on-the-ground implementation of management actions, such as acres of habitat restored or acre-feet of water released, as well as natural phenomena outside of management control (such as a flood, earthquake, or ocean conditions).
- Outcome performance measures evaluate responses to management actions or natural outputs.

Core Output/Outcome Performance Measure Criteria

- Metrics define the unit(s) of measure and other characteristics for tracking aspects of performance over time.
- Baselines are standards or historical reference conditions for comparing with current conditions.
- Targets are the desired future conditions or trends.

Adaptive Management

Performance measures are an integral component of the Delta Plan Adaptive Management framework. Assessments of performance measures will inform the adaptive management of the Delta Plan. The Delta Reform Act requires the Council to review the Delta Plan at least once every five years.

The Five-Year Review of the Delta Plan ensures that the Delta Plan is reviewed periodically, and updated if the Council deems appropriate, to incorporate new information or to modify policies and recommendations to further achievement of the coequal goals. Five-year assessments of performance measures are based on evaluation of interim milestones set for each measure. Assessments of performance measures will inform the Five-Year Review findings and recommendations. The Five-Year Review process also sets a framework for conducting an evaluation of performance measures for their effectiveness.

Chapter 4: Protect, Restore, and Enhance the Delta Ecosystem

Note: The performance measures corresponding to other chapters of the Delta Plan are not part of the proposed amendment and are not included in this document.

The Delta Plan core strategies addressed in this appendix are:

- Core Strategy 4.1: Create More Natural Functional Flows
- Core Strategy 4.2: Restore Ecosystem Function
- Core Strategy 4.3: Protect Land for Restoration and Safeguard Against Land Loss
- Core Strategy 4.4: Protect Native Species and Reduce the Impact of Nonnative Invasive Species
- Core Strategy 4.5: Improve Institutional Coordination to Support Implementation of Ecosystem Protection, Restoration, and Enhancement

Outcome Performance Measures

Core Strategy 4.1 Create More Natural Functional Flows

Performance Measure 4.2 Functional Flows (NO CHANGE)

Restoring to a healthier estuary using more natural functional flows—including in-Delta flows[1] and tributary-input flow—to support ecological floodplain processes (e.g., spring peak flows along the Sacramento River, and more gradual recession flows at the end of the wet season).

Metric

1. Area and duration of inundation in the Yolo Bypass, evaluated annually on a five-year rolling basis.
2. Frequency of two-year return interval peak flows, between November 1 to April 30, evaluated annually on a five-year rolling basis, at Bend Bridge on the Sacramento River.

[1] Please see Chapter 6 *Water Quality* performance measure on salinity in-Delta flows for X2.

3. Rate of change in the hydrograph on the receding limb as measured from spring high flows to summer low flows, evaluated annually on a five-year rolling basis, at Bend Bridge on the Sacramento River.[2]

4. 10-year rolling average slope of the Delta outflow-inflow ratio, disaggregated by seasonal, annual, and 10-year periods and evaluated annually; outflow-inflow ratio in dry and critically dry years, evaluated annually on a five-year rolling basis.

Baseline

1. Modeling, for the years 1997–2012, estimates that events with a 14-day duration inundated 45,100 acres in 33 percent of years; 19,700 acres in 50 percent of years; and 16,400 acres in 67 percent of years. Events with a duration of at least 21 days are estimated to have covered 36,300 acres in 33 percent of years; 15,800 acres in 50 percent of years; and 10,000 acres in 67 percent of years, between November 1 and May 30.[3]

2. Hydrograph data for the Bend Bridge gage station (USGS gage 11377100) indicate that the magnitude of flow for pre-Shasta Dam (1891–1943) and post-Shasta Dam (1960–2013) events, with 14-day duration, are similar at approximately 20,000 cubic feet per second (cfs).[4] However, the pre-Shasta Dam historical 1.5-year recurrence interval peak flow (approximately 75,000 cfs) even now occurs approximately every two years, and the pre-Shasta Dam 10-year recurrence interval flow (206,200 cfs) has been nearly halved (133,842 cfs).[5]

[2] For this performance measure, the focal period is from April 1 to July 31, but the start of spring flows will differ depending on water-year type and water-management actions. The definition of spring high flows, or the start of spring recession, is defined as the third consecutive day of decreasing flow following the last peak flow between March 15 and June 1. Low flows are defined as the date when the daily recession rate average, over five days, is less than 3.5 percent per day.

[3] This baseline reflects the existing Fremont Weir configuration as of 2017. Department of Water Resources (DWR). 2015. Yolo Bypass Salmonid Habitat Restoration and Fish Passage Hydrodynamic Modeling Draft Report. April 21. Provided courtesy of DWR.

[4] DWR 2016, Central Valley Flood Protection Plan Conservation Strategy, Appendix H, Tables 3-1 and 4-1. Shasta Dam was completed in 1943. The dates here coincide with dates used in the Central Valley Flood Protection Plan, and are illustrative of the pre- and post-Shasta periods.

[5] M. Michalková, H. Piégay, G.M. Kondolf, and S.E. Greco. 2011. Lateral Erosion of the Sacramento River, California (1942–1999), and Responses of Channel and Floodplain Lake to Human Influences. Earth Surface Processes and Landforms. 36(2): pp. 257–272. Available at: https://doi.org/10.1002/esp.2106

Constantine, C.R. 2006. Quantifying the Connections Between Flow, Bar Deposition, and Meander Migration in Large Gravel-bed Rivers. University of California, Santa Barbara. In: Michalková, M., Piégay, H., Kondolf, G.M., and Greco, S.E. 2011. Lateral Erosion of the Sacramento River, California (1942–1999), and Responses of Channel and Floodplain Lake to Human Influences. Earth Surface Processes and Landforms. 36(2): pp. 257–272. Available at: https://doi.org/10.1002/esp.2106

Micheli, E.R. and E.W. Larsen. 2011. River Channel Cutoff Dynamics, Sacramento River, California, USA. River Research and Applications. 27(3): pp. 328–344. Available at: https://doi.org/10.1002/rra.1360.

3. Long-term hydrograph data from the U.S. Geological Survey gage station at Bend Bridge (USGS 11377100).

4. Long-term ratio of Delta outflow to Delta inflow. The period before construction of the Central Valley Project, State Water Project, and select major dams (hydrograph between 1931–1954) had a Delta outflow-inflow ratio of 0.88. Post-completion of most components of the State Water Project (hydrograph between 1981–2015), the Delta outflow-inflow ratio was 0.75.[6]

Target

1. By 2030, allow for at least 17,000 acres of inundation for at least 14 days in two out of three years, and at least 21 days in one out of two years, between November 1 and March 15.[7]

2. By 2030, at least one peak flow greater than 75,000 cfs, lasting at least 48 hours in duration, every two years, at Bend Bridge on the Sacramento River.[8]

3. By 2030, daily decrease in flow will be less than 3.5 percent per day, as calculated by a five-day rolling average during the period of spring flow recession, in at least 1 out of 5 years, at Bend Bridge on the Sacramento River.[9]

4. By 2030, 10-year rolling average slope of Delta outflow-inflow ratio is greater than zero (i.e., positive),[10] and annual average Delta outflow-inflow ratio in dry as well as in critically dry years is greater than 0.5.[11]

Core Strategy 4.2: Restore Ecosystem Function

Performance Measure 4.15 Seasonal Inundation (NEW)

Restoring land-water connections to increase hydrologic connectivity and seasonal floodplain inundation.

Metric

Acres within the Sacramento-San Joaquin Delta and Suisun Marsh that are:

[6] Delta Inflow and Net Delta Outflow Index estimates for the period of 1929–1955 can be retrieved from DWR: http://www.water.ca.gov/dayflow
[7] This performance measure may be refined to ensure consistency with the State Water Resources Control Board update of the Bay-Delta Water Quality Control Plan.
[8] This performance measure may be refined to ensure consistency with the State Water Resource Control Board update of the Bay-Delta Water Quality Control Plan.
[9] Target recession rate informed by research and analyses conducted for the Environmental Flows Tool (Alexander et al. 2014) and Stillwater Sciences (2007).
[10] Positive slope of the 10-year rolling average of Delta outflow-inflow ratio means an increasing portion of inflow water flowing out of the Delta over a given period of time.
[11] Following the State Water Resources Control Board's completion of updates to the Bay-Delta Water Quality Control Plan, this performance measure will be reevaluated for consistency with the Board's regulations.

1. Hydrologically connected to fluvial and tidally influenced waterways.
2. A nontidal floodplain[12] area that inundates[13] at least once every two years.

Metric will be evaluated annually.

Baseline

As of the year 2018:

1. An estimated 75,000 acres of land physically connected to the fluvial river and tidal system.
2. Approximately 15,000 acres of the connected land inundated at a two-year interval, calculated as a long-term average for 1985-2018.

Target

By 2050:

1. Additional 51,000 acres added to the 75,000-acre baseline that are physically connected to the fluvial river and tidal system, for a total of 126,000 acres.
2. At least an additional 19,000 acres of non-tidal floodplain area is inundated on a two-year recurrence interval, for a total of at least 34,000 acres.

Performance Measure 4.16 Acres of Natural Communities Restored (NEW)

Restoring large areas of natural communities to provide for habitat connectivity and crucial ecological processes, along with supporting viable populations of native species.

Metric

Acres of natural communities restored. This metric will be updated and evaluated every five years.

Baseline

Acres of natural communities from the 2007 Vegetation Classification and Mapping Program (VegCAMP) dataset by the California Department of Fish and Wildlife (CDFW), as designated below:

[12] Area that is inundated on a two-year recurrence frequency and is connected via surface water to the fluvial river or tidal system.
[13] There is no depth threshold for the inundation analysis, as inundation is deemed to occur at any depth. While depth of inundation is important for ecological processes, the available data do not include depth measurements.

Ecosystem Type	Baseline Acres (2007 VegCAMP)
Seasonal Wetland Wet Meadow Nontidal Wetland	5,100
Willow Riparian Scrub/Shrub Valley Foothill Riparian Willow Thicket	14,200
Tidal Wetland	19,900
Stabilized Interior Dune Vegetation	20
Oak Woodland	0
Grassland	33,000
Vernal Pool Complex	5,100
Alkali Seasonal Wetland Complex	700

Target

Net increase of target acres of natural communities by 2050:

Ecosystem Type	Target Acres Net Increase (from Baseline Acres)	Total Area (Baseline Acres Plus Net Increase)
Seasonal Wetland Wet Meadow Nontidal Wetland	19,000	24,100
Willow Riparian Scrub/Shrub Valley Foothill Riparian Willow Thicket	16,300	30,500
Tidal Wetland	32,500	52,400
Stabilized Interior Dune Vegetation	640	660
Oak Woodland	13,000	13,000
Grassland	No net loss	33,000
Vernal Pool Complex	670	5,770
Alkali Seasonal Wetland Complex	230	930

Strategy 4.4: Protect Native Species and Reduce the Impact of Nonnative Invasive Species

Performance Measure 4.10 Terrestrial and Aquatic Invasive Species (NO CHANGE)

Prevention and reduction of key nonnative terrestrial and aquatic invasive species in the Delta and Suisun Marsh.

Metrics

To be evaluated annually:

1. Number of key new nonnative invasive species of fish, plants, and invertebrates establishing populations in the Delta (e.g., quagga and zebra mussels, *Hydrilla verticillata*, and others as they are identified).
2. Managing nonnative fish:
    i. Percentage of the total biomass of fish that are native fish species based on U.S. Fish and Wildlife Service (USFWS) beach seine surveys (and other relevant surveys).
    ii. Percentage of total relative abundance that are native species in the Delta and Suisun Marsh based on USFWS beach seine surveys (and other relevant surveys).
3. Managing invasive nonnative vegetation:
    i. Number of acres treated for invasive plants as defined by individual plans and projects (e.g., Central Valley Flood Protection Plan Conservation Strategy, *Arundo* control project, California Division of Boating and Waterways aquatic invasive species control programs).
    ii. Peak coverage, in acres, of invasive nonnative plant species (e.g., *Eichhornia crassipes*, *Ludwigia* spp., *Egeria densa*, *Arundo donax*, and *Phragmites australis*) in the Delta and Suisun Marsh.

Baseline

As of the year 2013[14]:

1. Species reported as established in the Delta prior to 2013 Delta Plan adoption will be used for baseline identification of new invasive species establishing post-2013.
2. Fish:
    i. Average percentage of total fish biomass that are native fish species based on USFWS beach seine surveys from the period of 1995-2015.
3. Vegetation:
    i. Number of acres treated set at zero as of 2013.
    ii. Peak coverage estimates, in acres, for nuisance nonnative aquatic plant species based on available hyperspectral and Landsat remote sensing surveys conducted in the Delta during the period of 2003–2016. *Arundo*

[14] Species reported as established in the Delta prior to 2013 Delta Plan adoption will be used for baseline identification of new invasive species established post-2013.

donax surveys conducted for the Delta Conservancy in 2015. Suisun Marsh vegetation surveys conducted between 1999–2013.

Target

To be achieved by 2030:

1. Zero new nonnative invasive species of fish, plants, and invertebrates established in the Delta.
2. Fish:[15]
   i. 20 percent increase in the biomass of the native inshore fish community, relative to total fish biomass.
   ii. 20 percent increase in the relative abundance of the native inshore fish community, compared to total relative abundance.
3. Vegetation:
   i. Acreage targets for treatment of invasive plants as defined by individual plans and projects:
      a. 680 acres within lower Sacramento River area.[16]
      b. 800 acres within lower San Joaquin River area.[17]
      c. 15 acres in the Cache Slough Complex (*Arundo* control project).
      d. 5,000 acres annually, for herbicide floating aquatic vegetation treatment in the Delta.[18]
      e. 2,500 acres during treatment seasons for herbicide submersed aquatic vegetation treatment in the Delta.[19]

[15] Fish targets were calculated and derived from Mahardja, B., Farruggia, M.J., Schreier, B., and Sommer, T. (2017). *Evidence of a Shift in the Littoral Fish Community of the Sacramento-San Joaquin Delta*. PLOS ONE, 12(1), e0170683. Percentage increase in native fish biomass and in relative abundance reflects percentage decrease in nonnative fish species of the respective metric. Nonnative fish may prey upon native species, compete for food, take over habitat space, and alter food webs.
[16] See the 2016 Draft Central Valley Flood Protection Plan Conservation Strategy for more details: http://www.water.ca.gov/conservationstrategy/docs/cs_draft.pdf.
[17] See the 2016 Draft Central Valley Flood Protection Plan Conservation Strategy for more details: http://www.water.ca.gov/conservationstrategy/docs/cs_draft.pdf.
[18] See the California State Parks Division of Boating and Waterways' Floating Aquatic Vegetation (FAV) Control Programs: http://www.dbw.ca.gov/?page_id=28995.
[19] This reduction in invasive vegetation is based on efforts from large-scale projects that address impacts of invasive species. This includes but is not limited to: individual plans and projects that include treatment, California EcoRestore program, and project and nonproject levee vegetation management. A full list of efforts will be described in the datasheet.

ii. A 50 percent reduction in peak nonnative invasive plant species coverage (acres), including, but not limited to: *Eichhornia crassipes*, *Ludwigia* spp., *Egeria densa, Arundo donax*, *Rubus armeniacus*, *Lepidium latifolium*, and *Phragmites australis*.

Performance Measure 4.6 Doubling Goal for Central Valley Chinook Salmon Natural Production (REVISED)

Increase in Central Valley Chinook salmon population recovery with natural production to reach the state and federal doubling goal.

Metric

Annual average natural production of all Central Valley Chinook salmon runs and for individual run types on select rivers: fall, late-fall, spring, and winter. Census will be conducted annually for the general population in the Central Valley and select rivers.

Baseline

Set by the Central Valley Project Improvement Act (CVPIA), the baseline is the 1967–1991 Chinook salmon natural production annual average of 497,054 for all Central Valley runs, and for individual run types on select rivers, the baseline values are specified below.[20]

Target

The 15-year rolling annual average of natural production for all Central Valley Chinook salmon runs increases for the period of 2035-2065, and reaches 990,000 fish by 2065, for each run on select rivers, the target values are specified below.[21]

[20] The baseline values in the table do not add up to the baseline for all runs because not all tributaries are included. The Council will only track individual run types for the select rivers specified in the table.
[21] The targets in the table do not add up to the target for all runs because not all tributaries are included. The Council will only track individual run types for the select rivers specified in the table.

Central Valley Chinook Salmon Natural Production Baseline and Target Levels by Run Type and Selected Rivers

Baseline (1967–1991)		Target (2065)	
Sacramento River Watershed	San Joaquin River Watershed	Sacramento River Watershed	San Joaquin River Watershed
Sacramento River mainstem Fall: 115,369 Late-Fall: 33,941 Spring: 29,412 Winter: 54,316	Tuolumne River Fall: 18,949	Sacramento River mainstem Fall: 230,000 Late-Fall: 68,000 Spring: 59,000 Winter: 110,000	Tuolumne River Fall: 38,000
American River Fall: 80,874	Merced River Fall: 9,005	American River Fall: 160,000	Merced River Fall: 18,000
Feather River Fall: 86,028	Stanislaus River Fall: 10,868	Feather River Fall: 170,000	Stanislaus River Fall: 22,000
	Mokelumne River Fall: 4,680		Mokelumne River Fall: 9,300

Output Performance Measures

Core Strategy 4.2: Restore Ecosystem Function

Performance Measure 4.14 Increased Funding for Restoring Ecosystem Function (NEW)

Increased funding for projects that possess priority attributes to restore ecosystem functions and support a resilient, functioning Delta ecosystem.

Metric

Project funding of covered actions that file a certification of consistency under New ER Policy "A" (Disclose Contributions to Restoring Ecosystem Function). This metric excludes funding for projects that do not include protection, enhancement, or restoration of the Delta ecosystem. This metric will be reported annually.

Baseline

Set at zero as of the effective date of New ER Policy "A."

Target

By 2030, 80 percent of total funding for covered action projects that file certifications of consistency with New ER Policy "A" is for projects with Ecosystem Restoration Tier 1 or 2 attributes.

Core Strategy 4.3: Protect Land for Restoration and Safeguard Against Land Loss

Performance Measure 4.12 Subsidence Reversal for Tidal Reconnection (NEW)

Subsidence reversal[22] activities are located at shallow subtidal elevations to prevent net loss of future opportunities to restore intertidal wetlands through tidal reconnection in the Delta and Suisun Marsh.

Metric

1. Acres of Delta and Suisun Marsh land with subsidence reversal activity located on islands with large areas at shallow subtidal elevations. This metric will be reported annually.
2. Average elevation accretion at each project site presented in centimeters per year. This metric will be reported every five years. Tracking will continue until a project is tidally reconnected.

Baseline

1. In 2019, zero acres of subsidence reversal on islands with large areas at shallow subtidal elevations.
2. Soils in the Delta are subsiding between 0 cm/year and 1.8 cm/year.

Target

1. By 2030, 3,500 acres in the Delta and 3,000 acres in Suisun Marsh with subsidence reversal activities on islands with at least 50 percent of the area or at least 1,235 acres at shallow subtidal elevations.
2. For each project, an average elevation accretion of at least 4 centimeters per year until the project is tidally reconnected.

[22] Subsidence reversal is a process that halts soil oxidation and accumulates new soil material in order to increase land elevations. Examples of subsidence reversal activities are rice cultivation, managed wetlands, and tidal marsh restoration.

Core Strategy 4.4: Protect Native Species and Reduce the Impact of Nonnative Invasive Species

Performance Measure 4.13 Barriers to Migratory Fish Passage (NEW)

Remediate fish passage at priority barriers and select large rim dams in the Sacramento–San Joaquin River watershed, and screen priority diversions along native, anadromous fish migration corridors within the Delta.[23]

Metric

Priority fish migration barriers and select large rim dams in the Sacramento–San Joaquin River watershed, and unscreened diversions along native, anadromous fish migration corridors in the Delta and Suisun Marsh. This metric will be evaluated annually.

Baseline

Number of fish passage barriers, large rim dams, and unscreened diversions listed in:

1. CDFW 2018 Priority Barriers.
2. Central Valley Flood Protection Program (CVFPP) 2016 Conservation Strategy (Appendix K).
3. Large rim dams in the Sacramento–San Joaquin River watershed identified in the National Marine Fisheries Service's Central Valley Recovery Plan for Central Valley Salmon and Steelhead (2014) with recovery actions.
4. Unscreened diversions along Delta native, anadromous migration corridors listed in the Passage Assessment Database (PAD) March 2018 version.

Target

1. By 2030, remediate all (100 percent) priority barriers identified in the 2018 CDFW priority barriers list. For subsequent updates, remediate 100 percent within 10 years of being included in the priority barrier list.
2. By 2030, remediate all (100 percent) of the priority fish migration barriers listed in CVFPP 2016 Conservation Strategy.
3. By 2050, remediate fish passage at all (100 percent) large rim dams in the Sacramento-San Joaquin River watershed.

[23] *Remediate* in this context means to provide passage upstream and downstream to migratory fish by constructing, modifying, or removing a barrier.

- For rim dams, remediate means implementing a long-term fish passage program that may include capture, transport, and release of fish at different life stages.
- For unscreened diversions, remediate means to screen the diversion so that juvenile and adult fish are physically protected from entrainment.

4. By 2030, prioritize all (100 percent) unscreened diversions along native, anadromous fish migration corridors in the Delta, and by 2050 screen all (100 percent) priority diversions.

Administrative Performance Measures

Core Strategy 4.1: Create More Natural Functional Flows

- The State Water Resources Control Board adopts updates to the Bay-Delta Water Quality Control Plan, including updates to Delta outflow and Bay-Delta watershed tributary flow objectives, within one year of adoption of amendments to Chapter 4 of the Delta Plan (REVISED, corresponds to ER R1).

Core Strategy 4.2: Restore Ecosystem Function

- 100 percent of proposed actions that include ecosystem protection, enhancement, or restoration use the Good Neighbor Checklist to avoid or reduce conflicts with existing uses (NEW, corresponds to New ER Recommendation "B").

- The U.S. Army Corps of Engineers (USACE) develops an agreed-upon variance process to exempt Delta levees from the USACE's levee vegetation policy, where appropriate (NO CHANGE, corresponds to ER R4).

Core Strategy 4.3: Protect Land for Restoration and Safeguard Against Land Loss

- The San Francisco Bay Conservation and Development Commission (BCDC) updates and certifies components of the Suisun Marsh Protection Plan to address adaptation to sea level rise and ensure consistency with the Suisun Marsh Preservation Act, the Delta Reform Act, and the Delta Plan (REVISED, corresponds to ER R5).

- The BCDC submits amendments of the Suisun Marsh Protection Plan to the Council for review, for consistency (NO CHANGE, corresponds to ER R5).

- The BCDC supports local governments and districts with jurisdiction in the Suisun Marsh in amending their components of the Suisun Marsh Local Protection Program to submit to the Council for review, for consistency with the Delta Plan (REVISED, corresponds to ER R5).

- The BCDC adopts the updated Suisun Marsh Protection Plan and certifies components of the Suisun Marsh Local Protection Program that are consistent with the Delta Plan (REVISED, corresponds to ER R5).

- The Sacramento–San Joaquin Delta Conservancy (Delta Conservancy) develops incentive programs for public and private landowners which encourage land management practices that stop subsidence on deeply subsided lands in the Delta and Suisun Marsh (NEW, corresponds to New ER Recommendation "C").
- State investments in ecosystem restoration in subsided areas, coordinated by DWR, CDFW, and the Delta Conservancy, are directed at projects that both reverse subsidence and restore intertidal marsh habitat (NEW, corresponds to New ER Recommendation "C").
- The California Legislature provides state agencies with funding to provide resources and support to resource conservation districts, reclamation districts, and other local agencies and districts, to restore ecosystem function or improve agricultural land management practices that support native species (NEW, corresponds to New ER Recommendation "D").
- DWR, CDFW, the Delta Protection Commission, the Delta Conservancy, and other state agencies work with local resource conservation districts and other local agencies and districts to adaptively manage agricultural land management practices to improve habitat conditions for native bird and fish species (NEW, corresponds to New ER Recommendation "D").
- State and local agencies have developed management plans, for all publicly owned lands in the Delta or Suisun Marsh, which address subsidence and consider the feasibility of subsidence reversal (NEW, corresponds to New ER Recommendation "E").
- For all publicly owned lands in the Delta or Suisun Marsh, state and local agencies, including Reclamation Districts, should develop or update plans that identify land management goals, identify appropriate public or private uses for the land, and describe the operation and maintenance requirements needed to implement management goals. These activities address subsidence and consider the feasibility of subsidence reversal (NEW, corresponds to New ER Recommendation "E").

Core Strategy 4.4: Protect Native Species and Reduce the Impact of Nonnative Invasive Species

- The Delta Conservancy, Council's Delta Science Program, CDFW, California Department of Food and Agriculture, California Department of Parks and Recreation, Division of Boating and Waterways, and other state and federal agencies, develop and implement communication strategies, based on scientific expertise, to manage existing nonnative invasive species and for rapid response

to address introductions of nonnative invasive species (REVISED, corresponds to ER R7).

- The Delta Conservancy, Council's Delta Science Program, CDFW, California Department of Food and Agriculture, California Department of Parks and Recreation, Division of Boating and Waterways, and other state and federal agencies, develop and implement funding strategies, based on scientific expertise, to manage existing nonnative invasive species and for rapid response to address introductions of nonnative invasive species (REVISED, corresponds to ER R7).
- CDFW prioritizes unscreened diversions in the Delta for remediation (NEW, corresponds to New ER Recommendation "H").
- Public agencies fund and implement projects that improve aquatic habitat conditions and reduce predation risk for juvenile salmon (NEW, corresponds to New ER Recommendation "I").
- CDFW and the USFWS ensure hatcheries develop, or continue to develop, periodically update, and implement scientifically sound Hatchery and Genetic Management Plans (HGMPs) (REVISED, corresponds to ER R8).
- CDFW, in cooperation with the USFWS and the National Marine Fisheries Service, should seek coordination among researchers studying juvenile anadromous fish migration pathways and survival upstream of and within the Delta waterways to improve synthesis of results across research efforts and application to adaptive management actions (REVISED, corresponds to ER R9).

Core Strategy 4.5: Improve Institutional Coordination to Support Implementation of Ecosystem Protection, Restoration, and Enhancement

- The Delta Plan Interagency Implementation Committee (DPIIC) develops strategies for acquisition and long-term ownership and management of lands necessary to achieve ecosystem restoration, consistent with the guidance in Appendix Q2 (NEW, corresponds to New ER Recommendation "F").
- DPIIC develops a funding strategy that identifies a portfolio of approaches to remove institutional barriers and fund Ecosystem Restoration Tier 1 or 2 actions within the Delta (NEW, corresponds to New ER Recommendation "F").
- DPIIC establishes program-level endangered species permitting mechanisms that increase efficiency for Ecosystem Restoration Tier 1 or 2 actions within the Delta and compatible ecosystem restoration projects within the Delta watershed (NEW, corresponds to New ER Recommendation "F").

- DPIIC coordinates with the Delta Science Program to align state, federal, and local resources for scientific support of restoration efforts, including adaptive management, data tools, monitoring, synthesis, and communication (NEW, corresponds to New ER Recommendation “F”).
- DPIIC develops a landscape-scale strategy for recreational access to existing and future restoration sites, where appropriate, and while maintaining ecological value (NEW, corresponds to New ER Recommendation “F”).
- DPIIC coordinates alignment of state, local, and regional restoration strategies, plans, or programs in the Delta to be consistent with the priority attributes described in Appendix Q2 (NEW, corresponds to New ER Recommendation “G”).

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