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Volume 2: Strategy Descriptions

The following descriptions offer greater detail on the specific strategies and actions proposed in this Strategic Plan.

Goal #1 of the Strategic Plan – “Establish the Delta ecosystem and a reliable water supply for California as the primary, co-equal goals for sustainable management of the Delta” – is an overarching priority that informs all strategies and actions. It does not have any specific strategies associated with it. The numbering in this volume therefore begins with Strategy 2.1 (the strategies are numbered according to the goals of which they are a part; e.g. Strategy 2.1 pertains to goal 2, etc).

For the context and overall strategic direction in which these strategies should be understood, please refer to Volume 1.

Note for redline version of Staff Draft 4: Volume 1 is largely new text compared to Staff Draft 3, and is therefore not included here. Volume 2 contains 16 strategies, revised directly from the strategies proposed in Staff Draft 3, and reorganized. This redline version of Staff Draft 4 presents the strategies in the revised order. Strategies 9 and 18 from Staff Draft 3 are not directly comparable to the new strategies, but some content from these strategies were incorporated into the strategies proposed for Staff Draft 4.

19

1
2 **Strategy 11. ~~Designate the Delta as a unique~~**
3 **~~and valued place~~2.1. Utilize State and**
4 **~~Federal special designation areas to reinforce~~**
5 **~~the value and uniqueness of the Delta.~~**
6

Vision recommendations met:

2, 9

7 Our Vision strongly declared that the Delta “is a
8 unique and valued area, warranting recognition
9 and special legal status from the state of
10 California.” Despite the risks and inevitable
11 changes that will confront the Delta in the
12 coming decades, our strategic plan urges
13 recognition of the Delta’s unique natural,
14 cultural and historic character, rather than
15 abandonment of the region. Indeed, such
16 recognition is warranted at a national, as well as
17 state, level. As noted in Volume 1, the Delta is
18 the “third leg of the stool,” along with the two
19 co-equal goals, in forming the foundation for
20 the Strategic Plan.

Performance measures:

Acres of land providing public benefits of
habitat, flood conveyance, subsidence
reversal, or carbon sequestration (+)

Gross regional product from recreation
and tourism (+)

Gross regional product from sustainable
agriculture (+)

Expenditures by public agencies for land
acquisition, management, and
maintenance (+)

Application steps completed for special
designations (+)

21
22 Recognition of the Delta should occur through a
23 range of designations and initiatives. These
24 designations should be structured to increase the
25 visibility of the Delta within the state of
26 California and nationally; to strengthen the
27 recreational, tourist, and agricultural economies
28 in the Delta; and to increase visitation. ~~This~~The
29 latter requires making the Delta more “imageable” and marketable, and improving visitation
30 infrastructure (including recreation sites) at appropriate locations. As the recommendations of
31 Delta Vision and other initiatives are implemented, priority should be given to using the
32 capacities of Delta institutions and businesses wherever possible.

33
34 State and federal recognition of the Delta should be designed to support the Delta as a place,
35 regardless of actions taken on behalf of the environment and water supply. Recognition should
36 also contribute directly to the Delta’s economic vitality by facilitating aggressive pursuit of new
37 economic opportunities, and by identifying appropriate ways to enhance the agricultural
38 economy.

39
40 Market forces will largely guide agricultural activity in the future as they do today. But
41 incentives to farm in ways that achieve carbon sequestration, habitat restoration and other public
42 purposes should be instituted where appropriate. The Delta is already a highly productive
43 agricultural area, but the state must support continued innovation and diversification of
44 production and marketing opportunities so that agriculture can continue to thrive in the Delta of
45 the future.
46

Innovative high-value land uses, especially those that can contribute to levee financing and local tax rolls, and that do not increase flood risks, should also be encouraged. On-island water storage, materials handling, and other such land uses may have an important role to play in the future Delta.

The critical elements of our strategy for designating the Delta include:

1. ~~By 2015, achieve~~Apply for the designation of the Delta as a federally recognized National Heritage Area (NHA) by 2010, through the three major steps described below. NHAs are places designated by the U.S. Congress “where natural, cultural and recreational resources combine to form a cohesive, nationally-distinctive landscape arising from patterns of human activity shaped by geography.” Despite being a federal designation, NHAs do not entail any federal ownership or regulation of land. The National Park Service and the Department of the Interior review proposed NHA management plans to see that intended actions ~~tend to~~ advance the mission of the Park Service and the NHA program, but otherwise the federal role is limited to partnering in marketing efforts. The NHA must be consistent, as well, with the CDEW Plan.
 - a. Beginning immediately, the Delta Protection Commission (DPC) and interested local entities should work to secure public support within the Delta for the designation, jointly conduct the required feasibility study, and identify the appropriate agency or non-profit to serve as the ongoing management entity.
 - b. Upon completion of the feasibility study, the State of California and the local management entity should apply to the U.S. Congress for the designation.
 - c. Upon receiving the designation, the management entity and its partners must develop a management plan within three years that describes how the NHA will combine preservation, recreation, economic development, heritage tourism, and heritage education to interpret and promote the region’s distinctive landscape.
2. ~~By 2010, the California Department of Food and Agriculture, commodity boards, and local government should create market structures or incentives for Delta agriculture to produce public benefits in addition to food and fiber. Create a multi-unit State Recreation Area in the Delta, potentially combining existing and newly designated areas, by 2010. Beginning immediately, the California State Parks Department should complete a feasibility and siting study that considers at least the following:~~
 - a. A northern unit that includes Liberty and Prospect Islands and Little Holland Tract;
 - b. A southern unit located on Sherman Island, in an area that is visible from the Antioch Bridge, is easily accessible from Highway 160, and potentially allows cost-effective levee upgrades to protect the recreation site and major electricity and natural gas infrastructure;

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- c. The consolidation of Brannan Island State Recreation Area, Franks Tract State Recreation Area, and Delta Meadows River Park into the new multi-unit structure.
 - 3. **Create market structures or incentives for a sustainable Delta agriculture that produces public benefits by 2010.** Such public benefits include wildlife habitat, subsidence reversal, carbon sequestration, flood management, and recreational and tourism opportunities. Actions to carry ~~out~~ this ~~strategy out~~ should include:
 - a. Ensuring that carbon farming is officially recognized as an emissions reduction mechanism under AB32 (a.k.a. The Global Warming Solutions Act).
 - b. The California Department of Food and Agriculture, commodity boards, and local governments should work together to allocate available U.S. Department of Agriculture (USDA) Farm Bill funding to begin a regional labeling program and assist in direct marketing of Delta produce in nearby cities.
 - c. The California Department of Food and Agriculture should also earmark directed specialty crop funding in support of Delta agriculture, including labeling, direct marketing and the development of new crops and crop varieties.
 - d. In addition, the State should use its working lands conservation programs in a coherent manner to leverage the conservation funding available through the USDA Farm Bill, such as that available through the Cooperative Conservation Partnership Initiative.
 - e. Federal, state and local mitigation requirements and agricultural easement programs should also be crafted to support the transition of Delta growers to multifunctional forms of agriculture, particularly wildlife habitat and flood management.
 - f. ~~By 2010, the Governor's Office of Planning Research should issue a model ordinance to local governments to create~~ Conduct a Delta-wide study (similar to that done by the University of California's Agricultural Issues Center for Solano County) in which barriers and opportunities to improve agricultural sustainability are identified through economic analysis and stakeholder interviews. The study should also include analysis of the potential to achieve habitat and water management objectives while maintaining an economic base of agriculture in potential restoration areas.
 - g. Require an augmentation of the University of California's research and extension capacity in the Delta, and of the technical field staff of the U.S. Department of Agriculture's Natural Resources Conservation Service, in support of crops that slow or reverse subsidence, improve water use efficiency and quality, are compatible with wildlife, and are compatible with floodplain management.

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- h. Devise protection strategies for farmlands threatened by urbanization that rely on the establishment of strategic agricultural preserves supported by agricultural conservation easements, Williamson Act contracts, and transfer of development rights arrangements.
 - i. Require the Delta Protection Commission to continue working with the USDA to seek approval of funding for a Resource Conservation and Development (RC&D) Council to promote natural resource-based economic development. Among other functions, the RC&D should seek funding to develop housing for agricultural laborers in and around the Delta.
4. **Create special enterprise zones at the major “gateways” to the Delta.** ~~By 2013, the legislature should pass legislation providing tax breaks and/or low-interest loans within these zones to appropriate investments in welcome centers, interpretive centers, recreational support services, and transportation (both land and water) from these locations to points of interest throughout the region.~~ Though recreation and tourism should be enhanced throughout the Delta, the buildings and services required to expand the industry should be concentrated in highly visible locations near highways and population centers, and in areas with relatively low disaster risks (i.e. above sea level or well protected by high-quality levees for other purposes).
- a. By 2010, the Governor’s Office of Planning Research should issue a model ordinance to local governments to create these zones.
 - b. By 2013, the legislature should pass legislation providing tax breaks and/or low-interest loans within these zones to appropriate investments in welcome centers, interpretive centers, recreational support services, and transportation (both land and water) from these locations to points of interest throughout the region.
 - c. Potential sites for such gateways include Rio Vista on the west; Freeport, West Sacramento, or the Yolo Bypass on the north; Stockton on the east; and Antioch, Discovery Bay or Lathrop on the south.
 - d. There should be at least one gateway on each of the four sides of the Delta to ensure visibility and access.
- ~~•By 2013, the Legislature should create a multi-unit State Recreation Area in the Delta, potentially combining existing and newly designated areas. Beginning immediately, the California State Parks Department should complete a feasibility and siting study that considers at least the following:~~
- ~~○A northern unit that includes Liberty and Prospect Islands and Little Holland Tract;~~
 - ~~○A southern unit located on Sherman Island, in an area that is visible from the Antioch Bridge, is easily accessible from Highway 160, and potentially allows~~

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~~cost-effective levee upgrades to protect the recreation site and major electricity and natural gas infrastructure;~~

~~○The consolidation of Brannan Island State Recreation Area, Franks Tract State Recreation Area, and Delta Meadows River Park into the new multi-unit structure.~~

1 **Strategy ~~6~~3.1: Restore extensive interconnected habitats, especially critical land-water**
2 **interfaces, within the Delta and Delta watershed**
3
4

5 Estuarine ecosystems like the historic Delta
6 are complex, highly variable systems ~~of~~with
7 many interrelated components. Each must be
8 present and fully capable of providing its
9 function to sustain the ecosystem as a whole.
10 Major disruptions of this ecosystem complex –
11 and each of its parts – have ~~led~~contributed
12 significantly to the systemic failures
13 confronting California today.

14
15 Revitalizing the Delta ecosystem is
16 challenging and cannot be implemented
17 piecemeal; all restoration components must be
18 present and function together (see Figure 4).
19 Furthermore, revitalization must be conducted
20 and managed consistently across agencies and
21 jurisdictions and must effectively incorporate
22 science-based adaptive management.
23 ~~Authority and organizational~~The governance
24 structure must be capable of supporting this
25 goal.

26
27 This strategy focuses on creating diverse
28 mosaics of habitats and ecosystem processes
29 that are appropriately connected, and is the
30 cornerstone upon which other restoration
31 strategies are built. - This strategy specifically
32 calls for restoration of ~~selected~~intertidal
33 marshes, seasonal floodplains, and open water embayments. ~~Other restoration actions~~
34 ~~functionally connected to these habitats are described under subsequent strategies.~~The
35 preservation and linkage to adjacent upland areas that support grasslands and seasonal wetland
36 complexes including vernal pools are described in the Land Use Strategy (#6.2).

37
38 ~~Unless otherwise stated, studies and restoration work would be carried out by the California~~
39 ~~Department of Fish and Game (DFG), the U.S. Fish and Wildlife Service (USFWS), the~~
40 ~~Department of Water Resources (DWR), the federal Bureau of Reclamation (Reclamation), the~~
41 ~~Delta Conservancy, the Delta Engineering and Science Board, and various scientific research~~
42 ~~organizations, within a time frame concurrent with the type of restoration recommended below.~~
43 ~~(See strategy 15 for more description of the governance structure that would carry out these and~~
44 ~~other revitalization strategies.)~~While current understanding cannot give quantitative
45 predictability in ecosystem response to restoration and other revitalization efforts combined with

Vision recommendations met:

1, 3

Performance measures:

Acres of restored tidal marsh, Delta (not accounting for sea level rise) (+)

Acres of restored tidal marsh, Suisun (not accounting for sea level rise) (+)

Acres of restored shallow open water habitat in the Delta (+)

Acres of active floodplain (+)

Acres of seasonal wetlands and grasslands (+)

Acres of fall open water habitat between 0.5-6 parts per thousand salinity (+)

Percent of aquatic food web support by diatoms (+)

Number and geographic distribution of large habitat complexes incorporating two or more interconnected habitat types (+)

1 uncertainty in the nature of climate change, sea level rise, population growth, seismicity, and
2 similar uncontrollable drivers of change, it is sufficient to guide initial actions from which much
3 can be learned. Initial experiences in some recent large scale restorations such as in the Yolo
4 Bypass provide encouraging evidence of quick responses. The eventual total amounts and types
5 of restoration needed can be determined only through implementation within a rigorous adaptive
6 management framework that will identify when the goal and objectives have been achieved.

7
8 **The critical elements of this strategy include:**

9
10 **~~•Increase frequency of floodplain inundation and establish new floodplains.~~**

- 11
12 ~~○Increase interannual inundation frequency on the Yolo Bypass by 2015 without~~
13 ~~compromising flood protection. DFG, DWR, the Delta Conservancy, and other~~
14 ~~participants shall design and implement the necessary infrastructure and~~
15 ~~operational modifications to allow the Yolo Bypass to flood at least 60 days~~
16 ~~continuously between January and April every other year except during critical~~
17 ~~dry years. Improvements shall address passage impediments to adult and juvenile~~
18 ~~salmon, sturgeon, and splittail at the Fremont Weir, Lisbon Weir, Toe Drain, and~~
19 ~~other barrier points.~~
- 20
21 ~~○Establish new seasonal floodplains where the Mokelumne River enters the Delta by~~
22 ~~2015. DFG, DWR, the Delta Conservancy, and other participants shall acquire the~~
23 ~~necessary lands and update the Draft North Delta Flood Protection EIR to provide~~
24 ~~for integrated seasonal floodplain habitat, linkage to adjacent intertidal marsh, and~~
25 ~~additional flood protection for lands along the lower Mokelumne and Cosumnes~~
26 ~~River corridors.~~
- 27
28 ~~○Investigate lower San Joaquin River floodplain establishment along both banks of~~
29 ~~the San Joaquin River below Vernalis and along Old River to Fabian Tract and~~
30 ~~implement any feasible projects by 2015. DWR, Reclamation, U.S. Army Corps~~
31 ~~of Engineers (USACE), DFG, USFWS, National Marine Fisheries Service~~
32 ~~(NMFS), the Delta Conservancy, and other participants shall identify suitable~~
33 ~~lands in context of available San Joaquin River flows, channel carrying capacity~~
34 ~~to convey flood flows, and land surface elevations all necessary to provide~~
35 ~~seasonal floodplain habitats as part of flood protection efforts.~~
- 36
37 ~~○Investigate the potential for (and implement by 2015 where feasible) additional~~
38 ~~floodplain habitats further upstream along all the rivers and streams entering the~~
39 ~~Delta capable of supporting salmonid rearing and splittail reproduction. DWR,~~
40 ~~Reclamation, USACE, DFG, USFWS, NMFS, the Delta Conservancy, and other~~
41 ~~participants shall identify suitable lands in context of available flows, channel~~
42 ~~carrying capacity, and land surface elevations all necessary to provide seasonal~~
43 ~~floodplain habitats as part of flood protection efforts.~~

44
45 **~~Restore intertidal marsh (see To focus public policy processes on the types and scales of~~**
46 **~~restoration needed, targets for several types of habitat are proposed. In most cases these targets~~**

1 are derived from the best available analyses of the Delta, largely organized through CALFED,
2 but have not yet been tested through discussion in public policy processes or full scientific
3 review. The needed scientific review can be completed in a relatively short time period
4 concurrent with the policy making process. Initiating action is critical and will provide improved
5 information for policy making over time.
6

7
8 Unless otherwise stated, studies and restoration work would be carried out by the Delta
9 Conservancy (described below under Goal 7), the California Department of Fish and Game
10 (DFG), the U.S. Fish and Wildlife Service (USFWS), the Department of Water Resources
11 (DWR), the federal Bureau of Reclamation (Reclamation), the Delta Engineering and Science
12 Board, and various scientific research organizations, within a time frame concurrent with the
13 type of restoration recommended below. (See strategy 7.1 for more description of the
14 governance structure that would carry out these and other revitalization strategies.)
15

16 In concert with the proposed governance structure, restoration and associated scientific
17 monitoring and research efforts, regardless of implementing organization, must follow an
18 adopted CDEW Plan and Adaptive Management Plan with the Delta Science and Engineering
19 Board reviewing and approving design, research, and monitoring programs for consistency with
20 these plans. Any restoration efforts implemented prior to establishment of the CDEW Plan and
21 its Adaptive Management Plan shall be reviewed by the CALED Science Program and the ERP
22 Implementing Agencies (CDFG, USFWS, NMFS) for consistency with the Draft ERP Stage 2
23 Conservation Strategy and existing monitoring and research priorities and science as described in
24 the DRERIP Delta Conceptual Models. Development of the CDEW Plan itself should build
25 directly upon the work contained in Delta Vision’s *Initial Ecosystem Restoration Activities*
26 prepared in December 2007, the ERP Stage 2 Conservation Strategy, the DRERIP Delta
27 Conceptual Models, findings from the POD studies, updates to endangered species recovery
28 plans, updates to biological opinions prepared for OCAP, and findings from BDCP.
29

30 With this as context, initial short term targets are recommended, with the recognition that over
31 time additional areas for ecosystem restoration will be identified and prioritized. As studies
32 demonstrate a direct correlation between restoration strategies and improved functioning of the
33 ecosystem, and the need for more restoration, it is projected that as many as one hundred
34 thousand acres might be restored over time. The implementation of these restoration projects
35 should be led by the proposed Delta Conservancy, with substantial local representation on its
36 governing body and effective working relationships with local governments, land owners and
37 other stakeholders.
38

39 The key elements of this strategy are as follows:
40

- 41 **1. Increase frequency of floodplain inundation and establish new floodplains.**
42 Floodplains provide ecosystem benefits as well as flood management, possible
43 conjunctive use and improving levee protections downstream by reducing peak flood
44 stages.
45

- 1 a. **Sacramento River/Yolo Bypass.** Increase interannual inundation frequency
2 on the Yolo Bypass by 2015 without compromising flood protection, as this is
3 its primary function. Modify Fremont Weir and internal waterway features as
4 needed to allow the Yolo Bypass achieve two inundation conditions to the
5 extent possible: (1) flood at least 60 days continuously between January and
6 April every other year except during critical dry years, and (2) provide
7 multiple inflow pulses at 2-3 week intervals during this inundation period.
8 These conditions promote primary and secondary productivity, splittail
9 spawning and rearing success, and juvenile Chinook salmon rearing success
10 (see DRERIP conceptual models). Improvements shall address passage
11 impediments to adult and juvenile salmon, sturgeon, and splittail at the
12 Fremont Weir, Lisbon Weir, Toe Drain, and other barrier points. These
13 actions will be balanced with existing fish and wildlife benefits provided in
14 the bypass.
- 15 b. **Mokelumne River.** Establish new seasonal floodplains where the Mokelumne
16 River enters the Delta by 2015. Acquire the necessary lands and update the
17 Draft North Delta Flood Protection EIR (Staten and McCormick-Williamson
18 Tract) to provide for integrated seasonal floodplain habitat, linkage to planned
19 adjacent intertidal marsh, and additional flood protection for lands along the
20 lower Mokelumne and Cosumnes River corridors. Investigate incorporating
21 northern portion of New Hope Tract into flood corridor.
- 22 c. **San Joaquin River.** Establish lower San Joaquin River floodplain along
23 either bank of the San Joaquin River below Vernalis and along Old River to
24 Fabian Tract and implement any feasible projects by 2015. Identify suitable
25 lands in context of available San Joaquin River flows, channel carrying
26 capacity to convey flood flows, options for flood bypass configurations, and
27 land surface elevations all necessary to provide seasonal floodplain habitats as
28 part of flood protection efforts.
- 29 d. **Upstream Floodplains.** Investigate the potential for (and implement by 2015
30 where feasible) additional floodplain habitats further upstream along all the
31 ivers and streams entering the Delta capable of supporting salmonid rearing
32 and splittail reproduction. Identify suitable lands in context of available flows,
33 channel carrying capacity, and land surface elevations all necessary to provide
34 seasonal floodplain habitats as part of flood protection efforts.
- 35 2. **Restore intertidal marsh.** (See Figure 7.) The amount of tidal marsh restoration for
36 the Delta and Suisun Marsh originates from a mixture of prior studies, best available
37 current information, and the recognition that meeting the Delta Vision ecosystem
38 revitalization goal and objectives will require a “substantial” amount of tidal marsh
39 restoration. For Suisun Marsh, the 1999 Habitat Goals Report recommended 17,000-
40 22,000 acres of tidal marsh restoration. The 2000 CALFED Record of Decision called
41 for restoring 7,000-9,000 acres of tidal marsh in Suisun. The 2006 Central Valley
42 Joint Venture Habitat Management Plan identifies that more than 23,000 acres of
43 restoration. For Suisun Marsh, the 1999 Habitat Goals Report recommended 17,000-
44 22,000 acres of tidal marsh restoration. The 2000 CALFED Record of Decision called
45 for restoring 7,000-9,000 acres of tidal marsh in Suisun. The 2006 Central Valley
46 Joint Venture Habitat Management Plan identifies that more than 23,000 acres of

1 managed wetland could be restored to tidal marsh without adversely affecting target
2 waterfowl populations, even without tidal marshes providing food resources for
3 waterfowl (which they do). The Suisun Marsh Plan, currently being developed,
4 follows the CALFED ROD targets. To date, the only plan that contains recommended
5 tidal marsh restoration acreages for the Delta is the Draft ERP Stage 2 Conservation
6 Strategy. This Plan describes large-scale restoration and opportunity areas rather than
7 establishing quantitative targets.

- 8
- 9 a. **Delta, near term.** Restore 15,000 acres of intertidal marsh in the Delta by
10 2020, with geographic priority on locations with the greatest anticipated
11 benefit to ecosystem processes and feasibility for restoration.
12
- 13 b. **Delta, longer term.** Restore up to an additional 15,000 acres intertidal marsh
14 in the Delta by 2040. If adaptive management monitoring indicates prior
15 restoration and other activities have not yet accomplished ecosystem goals,
16 restore as much remaining land of suitable elevation as possible by 2060.
17
- 18 c. **Suisun Marsh, near term.** Restore 12,500 acres of intertidal marsh in Suisun
19 Marsh by 2020.
20
- 21 d. **Suisun Marsh, longer term.** Restore another 12,500 acres of intertidal marsh
22 in Suisun Marsh by 2040 and additional acreage as lands become available if
23 adaptive management monitoring indicates prior restoration and other
24 activities have not yet accomplished ecosystem goals.
25

26 3. Restore tidal open water areas.

- 27
- 28 a. **Complete studies to enhance native foodweb organisms and address**
29 **harmful invasive species interference.** By 2015, initiated under the auspices
30 of the CALFED Science Program and ~~Ecosystem Restoration Program (ERP)~~
31 agencies and then under the proposed governance and science and engineering
32 structures, complete additional scientific studies to examine the most effective
33 strategies for restoring tidal open water embayments in the Delta to increase
34 diatom-based primary productivity and minimize adverse effects of harmful
35 invasive plants, fish, and invertebrates on native fish.
36
- 37 b. **Near term targets if restoration viable.** Restore sufficient acres to achieve
38 20,000 total acres of tidal open water habitats in the Delta by 2020.
39 Restoration locations should be able to achieve fall open water conditions of
40 temperature below critical thresholds and salinity of 0.5 to 6 parts per
41 thousand to support rearing habitat for resident native fish. Achieving this
42 quantity of open water habitat requires a mix of physical habitat restoration
43 and providing appropriate flows.
44
- 45 c. **Longer term targets if restoration viable.** Restore an additional 15,000
46 acres of tidal open water habitats in the Delta by 2040.

1
2 **4. Grasslands and seasonal wetland complexes.** Protection and enhancement of these
3 lands is an essential component of providing ecosystem functions today and allowing
4 for sustainable intertidal communities in the future with projected sea level rise.
5 Strategies for their protection and enhancement are described under Land Use,
6 Strategy 6.2.

7
8 **5. General principles applicable to all types of restoration:**

- 9
10 a. Establish managed wetlands in advance of restoring tidal action in order to
11 reverse subsidence where feasible and needed. Consider marketing carbon
12 sequestration credits for these subsidence-reversal efforts to assist with
13 offsetting restoration implementation costs.
- 14
15 b. Initiate comprehensive land and easement (with purchase option) acquisition
16 programs that make suitable ~~elevation~~ lands available for restoration. For
17 lands targeted for later restoration, use either lease-back approaches or
18 easements with purchase options that allow existing land uses until restoration
19 can proceed.
- 20
21 c. Include large blocks of land encompassing broad topographic variability that
22 support restoration of diverse ecosystem complexes. Thinking of the Delta
23 broadly as a large “bowl”, lands around the perimeter of the Delta are where
24 these conditions are found. Interior Delta islands (the “deep” Delta) do not
25 provide these conditions whereas some islands closer to the margin provide
26 some suitable topographic variability.

27
28 ~~Control existing harmful invasive species populations and take measures to avoid expansion into~~
29 ~~newly restored lands. The NMFS, California Department of Boating and Waterways, the United~~
30 ~~States Department of Agriculture Invasive Species Division, DFG, and USFWS shall ensure this~~
31 ~~control by 2012.~~**Criteria Used for Selecting Restoration Areas and Establishing Restoration**
32 **Priorities**

33
34
35 Ecosystem restoration opportunities in the Delta are defined by a suite of criteria describing
36 opportunities relative to desired outcomes and constraints that preclude restoration altogether or
37 require resolution before moving forward. By applying all these criteria, regions and specific
38 locations emerge where restoration efforts should be targeted by priority. The proposed Delta
39 Conservancy would take the lead in selecting restoration areas and establishing priorities, with
40 accountability to the proposed Council.

41
42 **Opportunity Criteria**

- 43
44 1. **Topography.** Since many ecosystem restoration initiatives will entail reconnecting
45 lands to the estuarine and riverine environments, elevation of the land relative to the
46 tides and rivers is the fundamental criterion for restoration. Tidal marsh must be

1 within modern ranges of the tides. Accommodating future sea level rise must occur in
2 those elevations immediately above current intertidal zones. Shallow open water
3 occurs at elevations below low tide, with target depth dictating how far below low
4 tide is appropriate. Floodplains inherently are above current tidal elevations and
5 suitable elevations depend strongly on how high source river flows can rise during
6 large flow events.

- 7
- 8 2. **Topographic variability and habitat complexity.** Variability in elevations, within
9 the desired ranges, supports the ability to establish interconnected complexes of
10 multiple habitat types.
- 11
- 12 3. **Size and shape to support branching (dendritic) channel networks in tidal**
13 **marshes.** Branching channel networks that are self-maintaining require a minimum
14 drainage area as well as shapes of restoration parcels that are not too “long and
15 narrow” to allow branching to occur. Defining the minimum size is not possible for
16 the Delta at this time, as there are no historical examples nor adequate maps or
17 historical accounts available to assess relationships between marsh size and channel
18 network geometry. The Department of Fish and Game has recently begun
19 investigations into historical accounts that may yield some insight.
- 20
- 21 4. **Length of interfaces across habitat types and associated connectivity.** Restoration
22 parcels that provide for lengthy interfaces between habitat types, including uplands to
23 wetlands, floodplains to wetlands, and wetlands to open water can, *if connected,*
24 provide for a greater magnitude of exchange of organisms, energy, nutrients, water,
25 and other materials which in turn promote greater ecosystem functions.
- 26
- 27 5. **Sea level rise accommodation.** Delta Vision is using the sea level rise numbers
28 recommended in September 2007 by the CALFED Independent Science Board Chair
29 and the CALFED Lead Scientist of 55 inches by 2100, with a greater proportion of
30 that rise occurring later in the 21st century. These numbers do contain considerable
31 uncertainty. Restoration sites that can accommodate sea level rise, primarily by
32 allowing shift of natural habitats into higher elevations through adjusting their
33 position laterally across the landscape, will provide greater long-term sustainability of
34 the ecosystem functions those habitats provide.
- 35
- 36 6. **Known presence of target species and natural communities for actions taken in**
37 **the near term.** Restoration efforts in the near term should focus in locations where
38 the primary species and natural community targets already occur and thus have the
39 greatest potential to provide benefits in the shortest time frame possible. Modern
40 distributions may reflect availability of suitable habitat rather than historical ranges,
41 however. Thus, as conditions improve throughout the system, restoration should
42 proceed over greater geographic extents.
- 43
- 44 7. **Corridors within complexes.** Organisms move within and between natural habitats
45 in order to meet their needs and avoid predation on daily, spring-neap tidal, seasonal,

1 and interannual time scales. Successful movement depends wholly upon availability
2 of corridors for these migrations.

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6 **Constraints Criteria**

- 7
8 8. **Proximity to influence of export pumps.** Export pumps exert major influences on
9 water flow directions and velocities in the Delta. Fish in all life stages as well as their
10 primary and secondary production and the nutrients that support productivity are
11 subject to direct entrainment as well as inability to reach appropriate habitats when
12 subject to export pump effects on Delta hydrology. Thus, locating restoration as far
13 from pumps as possible reduces the significance of this constraint. Conversely,
14 relocating export pumps away from productive habitats reduces the relevance of this
15 constraint.
- 16
17 9. **Position relative to future possible water supply conveyance.** The altered
18 hydrology of the Delta due to conveying water to the export pumps also affects
19 habitat suitability by changing flow direction and minimizing variability important to
20 many species and natural communities. Locating restoration away from modern and
21 possible future effects of conveyance will improve the functionality of those restored
22 habitats.
- 23
24 10. **Proximity to major wastewater inputs.** Loadings of nutrients and contaminants
25 from wastewater inputs can affect species, natural communities, and natural habitats
26 adversely as a function of proximity to these sources. Locating restoration as far from
27 these influences as possible minimizes their effect and maximizes the ability of the
28 restoration areas to provide their target ecological functions. Improving water quality
29 discharged from wastewater treatment plants will also help to minimize this
30 constraint (See Strategy #3.3).
- 31
32 11. **Proximity to high mercury loadings.** Methyl mercury requires a key ingredient –
33 mercury. Though mercury is quite widespread in the natural environment, there are
34 some known source areas of high mercury loadings. Locating restoration areas away
35 from these sources reduces the potential for generating methyl mercury. Also,
36 because of the inevitability of producing methyl mercury in certain restoration efforts,
37 projects should be designed to minimize its transport and availability to biota.
- 38
39 12. **High land values based on existing use.** Restoration of tidal marsh and aquatic
40 habitat necessitates a permanent land use change. Land acquisition costs are always a
41 significant component of restoration costs. High-value real estate will reduce the
42 amount of restoration area that can be acquired for a given amount of available funds.
43 Priority should be given to suitable lands owned or controlled by governments or non
44 profit organizations.
- 45

Elevation Category	Restoration Location, Groupings Based on Landform Divisions													TOTALS
	1) Suisun Marsh	2) Suisun-Cache Corridor	3) Cache Slough	4) Prospect	5) Yolo Bypass	6) Netherlands	7) East Delta, North	8) Sutter Island	9) Mokelumne/Cosumnes	10) East Delta, South	11) South Delta	12) Southwest Delta	13) Dutch Slough	
Elevation Range (ft NAVD88) Used in Analysis														
Upland (area above SLRA to Legal Delta boundary)	12+	12+				12+				10.5+		11+		
Sea Level Rise Accommodation (0-5 ft > MHHW)	7 to 12	7 to 12				7 to 12				5.5 to 10.5		6 to 11		
Intertidal (MLLW - MHHW)	1 to 7					3 to 7				2 to 5.5		2 to 6		
Shallow Subtidal (0-3 ft < MLLW) ¹	-2 to 1					0 to 3				-1 to 2		-1 to 2		
Intermediate Subtidal (3-6 ft < MLLW) ¹	-5 to -2					-3 to 0				-4 to -1		-4 to -1		
Deep Subtidal (deeper than 6ft < MLLW) ¹	< -5					< -3				< -4		< -4		
Area Available to Reach Ecosystem Targets (acres, from USBR GIS analysis August 2008)^{2,3}													TOTAL	
Upland Area	19,705	TBD	31,619	53	29,512	12,017	4,438	150	5,425	1,690	85,255	3,402	39	193,305
Sea Level Rise Accommodation Area	8,482	TBD	9,717	110	16,234	10,371	10,678	550	4,905	7,227	23,351	2,451	242	94,318
Tidal Portion	54,119	0	14,203	1,632	9,183	28,847	15,252	1,898	9,328	16,832	46,205	7,131	924	205,554
Total Area (Upland, SLR, Tidal)	82,307		55,537	1,793	54,928	51,235	30,368	2,599	19,658	25,749	154,811	12,984	1,206	493,175
Area Detail for Tidal Portion													TOTAL	
Intertidal	42,802	0	9,491	1,553	5,454	14,503	6,906	440	4,066	5,531	16,694	2,594	241	110,275
Shallow Subtidal	10,826	0	2,704	59	593	13,391	2,782	585	3,718	4,471	13,592	1,775	342	54,838
Intermediate Subtidal	491	0	1,930	20	1,625	935	2,860	862	1,492	5,737	10,047	1,576	234	27,809
Deep Subtidal	0	0	78	0	1,511	18	2,704	11	52	1,093	5,872	1,186	107	12,632
Total Area, Tidal Portion Detail	54,119	0	14,203	1,632	9,183	28,847	15,252	1,898	9,328	16,832	46,205	7,131	924	205,554

Notes:

- 1 All subtidal areas exclude existing tidal waterways; restoration opportunity areas already exclude the "deep Delta" or deeply subsided islands
- 2 All results based on DVR 2007 LiDAR 2m grid except for southeastern side of South Delta and far northern end of Yolo Bypass derived from 10m USGSDEM
- 3 Based on current sea level heights

1
2

1 **Strategy ~~10.3.2~~. Establish ~~multi-purpose~~ migratory corridors for fish, birds and other**
2 **animals along selected Delta river channels.**

3
4 Enhanced multi-purpose river corridors
5 connected with restored upstream habitat will
6 improve the survival rate of endangered
7 migratory species and popular sport fish,
8 increase recreational opportunities, and increase
9 the ability to manage the co-equal values
10 throughout the watershed. -“Enhanced” river
11 corridors are managed for aquatic conditions
12 conducive to migratory success, are ~~expanded in~~
13 ~~size so that they can safely convey larger~~
14 ~~amounts of flood water, are~~ connected to
15 ~~terrestrial adjacent estuarine~~ habitats where
16 possible, and have streamside vegetation where
17 possible. In addition, each of the Delta’s three
18 major migratory river systems – the Sacramento,
19 San Joaquin, and Mokelumne – should have
20 redundancy in migratory corridors to allow
21 migratory passage under a broad range of
22 conditions and in order to protect against
23 adverse localized conditions that can emerge.

24
25 Various factors now impair the migration and
26 survival of salmon, steelhead, and ~~green~~
27 sturgeon populations in the rivers flowing into or
28 through the Delta. - These barriers to migratory
29 success can be minimized by:

- 31 | 1) Providing adequate flows at the right
32 | time to support adult and juvenile
33 | migrations,
- 34 | 2) Resolving conflicts between
35 | conveyance and migration,
- 36 | 3) Establishing multiple (redundant)
37 | migratory corridors for each river
38 | system,
- 39 | 4) Restoring large areas of floodplain and intertidal habitats along and adjacent to these
40 | corridors, and
- 41 | 5) Restoring riparian and other emergent vegetation habitats along each corridor in
42 | areas away from large restoration areas.

44 Recovery of these fish populations would enhance sport fishing and other recreational
45 opportunities along these corridors. -In addition, as described in Strategy 3, expanded flood

Vision recommendations met:

3—₂ 9

Performance measures:

Number of functional migratory corridors per river system (Sacramento, San Joaquin, Mokelumne/Cosumnes) (+)

Amount of river miles connected to adjacent floodplain, tidal marsh, and shallow open water habitats (+)

Distribution of large habitat complexes along estuarine gradients and with extensive internal connectivity (+)

Incidents of migratory passage delays, blockages, or mortalities due to physical barriers, low dissolved oxygen, high temperatures, or toxics (-)

Dissolved oxygen concentrations in anadromous fish migratory corridors at all times (+)

Percentage of adult salmon, steelhead, and sturgeon surviving migration through Delta (+)

Percentage of juvenile salmon, steelhead,

1 conveyance capacity on selected Delta river channels would allow re-operation of upstream
2 reservoirs, potentially increasing water supply yield from those facilities.

3
4 Implementation will require close coordination and consistency among many parties, including
5 the Delta Conservancy, ~~the California Department of Fish and Game (DFG), the U.S. Fish and~~
6 ~~Wildlife Service (, USFWS), the National Marine Fisheries Service (, NMFS), the Department of~~
7 ~~Water Resources (, DWR), the federal Bureau of Reclamation (Reclamation), USBR, non-~~
8 ~~project water users~~, and other restoration entities.- As above, flow targets recommended here are
9 based on the best available information and are for interim use until relevant agencies can
10 develop and adopt flow targets through a comprehensive and transparent process.

11
12
13 As stated above, decision makers must move to sufficient specificity regarding proposed actions
14 to make informed decisions. These recommendations are based on available analyses and can be
15 refined by additional scientific review concurrent with public policy processes.

16
17 For each major river system, there exist preferred corridors within the Delta based on established
18 migratory patterns, availability of habitat today, projected likelihood of habitat in the future,
19 avoidance of conflicts with existing conveyance and possible future conveyance including
20 operations of gates and barriers.

- 21
22 • Sacramento River corridors are (1) Yolo Bypass – Cache Slough – lower Sacramento
23 River, (2) upper Sacramento River – Steamboat, Sutter, Miner, and lower Cache sloughs
24 – lower Sacramento River, and secondarily (3) Three Mile Slough
25 • San Joaquin River corridors are (1) mainstem San Joaquin River, (2) Old River, and
26 secondarily (3) Middle River
27 • Mokelumne River corridors are (1) North Fork Mokelumne River and (2) South Fork
28 Mokelumne River

29
30 In addition to these major river systems, some benefit may be gained for steelhead through
31 improvements to Marsh Creek and Putah Creek

32
33 The critical elements of this strategy are listed below, by river corridor and priority:

- 34
35 1. **By 2015, the Delta Conservancy, DFG, and other relevant agencies should**
36 **implement high-priority improvements to physical habitats along selected**
37 **corridors. Implement high priority improvements to physical habitats along**
38 **selected corridors by 2015.** Subject to further analysis in the ~~California Delta~~
39 ~~Ecosystem and Water (CDEW)~~ Plan, this should involve:
40
41 a. Implementing Yolo Bypass floodplain habitat improvements, without
42 reducing flood safety (see Strategy ~~6~~, 3.1)
43
44 b. Expanding floodplains along the Mokelumne River upstream of the Delta
45

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altering Sacramento River flows to meet water quality and passage flow needs-

- b. Reducing adverse effects of flow alterations from through-Delta conveyance during migration periods on the Mokelumne River and tributaries, including potential use of temporary or permanent gates and barriers as appropriate-
- c. Achieving net downstream flow at Jersey Point from ~~October~~February through ~~May, and June, and one or two fall~~ pulse flows at Vernalis, as described in Strategy ~~7-3.4~~. Further evaluate the use of temporary barriers at the head of Old River to direct migrants toward the best water quality and least entrainment risk-

4. ~~By 2012, the CDEW Council, the Delta Operations Team, and DWR should resolve high-priority conveyance-driven flow conflicts by~~ Resolve high-priority conveyance-driven flow conflicts by 2012:

- a. Closing the Delta Cross Channel during migration periods, especially November through January.
- b. Integrating Mokelumne River corridor improvements with all aspects of conveyance planning, including changes in through-Delta conveyance and location of ~~a dual conveyance~~ an isolated facility-

5. ~~Beginning immediately, DWR (through Utilize the Central Valley Flood Protection Plan) should, beginning immediately, to identify areas of the lower San Joaquin River, including through the Delta, where flood conveyance capacity can be expanded in a continuous reach (cross-referenced with Strategy 3)-strategy 5.2).~~ Use existing bond funds to begin acquiring title or easement to floodplain lands immediately, especially in areas where urbanization threats are high.

6. ~~Beginning as soon as possible, the Delta Protection Commission (DPC) and Utilize the National Heritage Area planning effort (see Strategy 11) should 2.1), beginning immediately, to identify mechanisms to encourage recreational investments along the key river corridors subject to the improvements described above, and plan their implementation.~~

1 **Strategy 8—~~Reduce or eliminate ecosystem~~**
2 **~~stressors to below critical thresholds~~3.3.**
3 **Promote viable, diverse populations of**
4 **native species by reducing risks of**
5 **entrainment and predation.**
6

Vision recommendations met:

1, 3, 9

7 Numerous stressors to the Delta estuary
8 must be reduced to achieve the
9 revitalization and long-term sustainability
10 of the Delta’s ecosystems. ~~Harmful~~
11 ~~invasive species, contaminants from~~
12 ~~sewage and stormwater discharges~~
13 ~~throughout~~Throughout the watershed,
14 harmful invasive species and entrainment
15 from improperly designed diversions, ~~are~~
16 ~~all important stressors which~~ cause
17 adverse effects to the Delta ecosystems~~s~~.

Performance measures:

Number of new, uncontrolled harmful invasive species (-)

Percentage of 1995-2000 average abundance and distribution of invasive clams (Corbula and Corbicula) (-)

Percentage of 1990-2000 average abundance and distribution of Brazilian waterweed (Egeria) (-)

~~Concentration of methylized mercury in Delta water compared to 2008 baseline (-)~~

Percentage of outmigrating juvenile salmonid population entrained at Delta diversions (-)

Delta smelt and longfin smelt entrained at Delta diversions (-)

Concentrations of contaminants in urban runoff flowing into the Delta (-)

~~Abundance of warm water centrarcid fish species (such as large mouth bass) (-)~~

~~Proportion of population of resident and migratory species (as larvae, juveniles or adults) taken at exports particularly when abundances are low (-)~~

~~Quantity of primary and secondary production taken at exports (-)~~

19 Invasive species adversely affect native
20 species through direct predation,
21 competition for food resources, and altered
22 predator-prey dynamics. ~~Contaminants~~
23 ~~include agricultural pesticides and nutrient~~
24 ~~loads, municipal wastewater discharges,~~
25 ~~and other constituents such as~~
26 ~~methylmercury, all of which can~~
27 ~~contribute to toxic conditions for fish and~~
28 ~~the organisms they feed upon.~~ Fish
29 entrainment occurs at the state and federal
30 export facilities, and at other municipal
31 and agricultural diversions within the
32 Delta. ~~Entrainment effects are related to~~
33 ~~the size of the diversions relative to the~~
34 ~~channel from which they pump, the time~~
35 ~~of year when operations are at highest~~
36 ~~demand, spatial distribution of fish species~~
37 ~~near channel edges or in the water column,~~
38 ~~significantly greater population-level effects when populations are small,~~ and the geographic
39 location of the diversion point.

40
41 Even if appropriate physical habitats and flow conditions are restored, Delta ecosystems may not
42 recover adequately unless these stressors are substantially reduced. ~~Full implementation of~~
43 ~~ongoing and new regulatory approaches, development of innovative strategies, and effective~~
44 ~~monitoring will be necessary to execute this strategy properly. Critical elements of this strategy~~
45 ~~include:~~
46

- 1 | **~~By 2015, the Department of Fish and Game (DFG) should implement~~Implement**
2 | **~~measures to control harmful invasive species at existing locations, and at~~**
3 | **~~minimize or preclude their colonization of new~~ restoration areas- to non-**
4 | **~~significant levels, by 2012.~~** These measures should include:
5 |
6 | i. ~~Controlling~~Control existing populations by direct measures (i.e., chemical
7 | treatment, mechanical removal, etc.) or by altering the habitat in ways that
8 | disfavor unwanted species but not desired species.
9 |
10 | ii. ~~Preparing for~~Minimize the potential of new invasives, including quagga
11 | mussel, zebra mussel, and northern pike ~~by prioritize, by prioritizing~~
12 | restoration of habitats that they are less likely to disturb (e.g., floodplains),
13 | and designing fish screens that will retain their ~~value~~functionality in the
14 | presence of freshwater mussels.
15 |
16 | iii. ~~Reducing~~Reduce the likelihood of new invasives through a combination of
17 | education, regulation and enforcement.
18 |
19 | iv. Experimenting to reverse the spread of freshwater invasives, ~~including~~
20 | ~~considering a carefully designed using an~~ adaptive management experiment to
21 | reduce Delta outflow in summer or fall of critically dry years.
22 |
23 | v. ~~Promoting~~Promote the restoration of floodplains, elevated side channels, or
24 | other habitats that periodically dry out, in order to limit the impact of invasive
25 | species on the seasonal use of such habitats by desirable species.
26 |
27 | **~~By 2012, the Central Valley Water Quality Control Board (CVWQCB) should~~**
28 | **~~develop and implement Total Maximum Daily Load (TMDL) programs for~~**
29 | **~~areas upstream of the Delta to reduce the loads of organic and inorganic~~**
30 | **~~mercury entering the Delta from tributary watersheds.~~** The mercury TMDL
31 | program for the Delta itself should continue.Reduce entrainment and export effects
32 | on fish by instituting diversion management measures by 2009, implementing
33 | near-term conveyance improvements by 2015 (see Strategy 5.1), and relocating
34 | diversions (see Strategies 3.4 and 3.5). As these conveyance and diversion
35 | improvements are carried out, the following criteria should be used to reduce
36 | entrainment:
37 |
38 | i. ~~Beginning in 2009, DFG should comprehensively monitor fish and~~
39 | **~~wildlife health at suspected toxic sites.~~** As part of its governance authority,
40 | the Council should build on the recent work of the U.S. Environmental
41 | Protection Agency (USEPA), the CALFED Science Program and the State
42 | and Regional Water Boards to develop a comprehensive monitoring program
43 | for fish and wildlife health at suspected toxic sites. In particular, these
44 | programs should make a concerted effort to study the overall health effects of
45 | the “soup” of contaminants that cumulatively impact Delta species, as
46 | opposed to examining contaminant-species relationships one at a

time. Consolidate diversions to the extent possible and properly size and screen diversions and operate screens to their specifications to reduce entrainment. This includes in-Delta agricultural diversions as well as upstream diversions that are appropriate for screening

~~•Beginning immediately, the SWRCB, the CVRWQCB, and the USEPA should develop comprehensive strategies to reduce demand relative to reduce contaminant load discharges at all point and non-point sources. These load reductions should be achieved through multiple methods, including:~~

- ~~○Improved treatment processes~~
- ~~○Discharge avoidance through reduced water use, water reuse, and water recycling.~~
- ~~○Ensuring that all point source discharges throughout the Central Valley watershed are in full compliance with existing regulatory requirements.~~
- ~~○Use of treatment wetland systems for contaminant removal at agricultural, municipal, and industrial point sources before discharge into Delta waters and all tributary rivers and streams is an effective approach in many circumstances.~~
- ~~○Use of public education messages and non-point source pollution control technologies at drainage collection points such as storm drains.~~

~~•Beginning immediately, the Department of Water Resources (DWR) should reduce entrainment and export effects on fish by implementing near-term conveyance improvements (see Strategy 4), instituting diversion management measures, and ultimately relocating diversions capacity (see Strategies 4 and 5). As these conveyance and diversion improvements are carried out, the following criteria should be used to reduce entrainment:~~

- ~~○Properly size and screen diversions to reduce entrainment. This includes in-Delta agricultural diversions:~~
 - ~~ii. Alter demand relative to capacity (see Strategies 1 and 4.2) to permit greater flexibility in operations away from times of sensitivity.~~
 - ~~iii. Carefully manage exports during times of greatest sensitivity with resident and migratory fish distribution.~~
 - ~~iv. Relocate diversion points to areas less likely to entrain fish and away from the productivity generated by habitat restoration projects, keeping in mind the potential for merely displacing rather than reducing an entrainment problem~~

1 **Strategy 7-3.4. Restore Delta flows and channels to *reflect California climate patterns and***
2 **support a healthy Delta estuary**

3
4 Freshwater flow conditions in the Delta must
5 change to revitalize the ecosystem and provide
6 conditions needed by estuary-dependent species,
7 including many presently at risk.

8 ~~Appropriate~~Higher and more variable flows
9 ~~provide-do a better job of providing~~ habitat,
10 ~~triggertriggering~~ reproduction and migration,
11 ~~transporttransporting~~ nutrients and organisms,
12 ~~maintainmaintaining~~ and ~~improve-improving~~
13 water quality, and ~~promotepromoting~~ habitat
14 complexity.- California’s vast network of
15 reservoirs, canals and pumps, as well as the
16 major reconfiguration of the Delta’s channel
17 geometry and landscape over several decades,
18 have homogenized flow conditions across
19 seasons and reduced the total water supplied to
20 the ecosystem. ~~This has~~These changes have
21 facilitated the spread of non-native organisms
22 and the decline of native species.- Variable
23 conditions are widely believed to benefit native
24 species and to be detrimental to many invasive
25 species.

26
27 ~~Delta outflows in February through June (as~~
28 ~~measured by the location of the two parts-per-~~
29 ~~thousand salinity threshold, a.k.a. the “X2 line~~
30 ~~Current policies affecting flows are embedded~~
31 ~~principally in the State Water Resources Control~~
32 ~~Board’s (SWRCB) Water Quality Control Plan,~~
33 ~~which requires protection of the low salinity~~
34 ~~zone (as represented by X2), among other~~
35 ~~standards. Significant changes to project~~
36 ~~operations may arise in response to recent court~~
37 ~~orders and new information.~~

38
39 Delta outflows in February through June (as measured by the location of the two parts-per-
40 thousand salinity threshold, a.k.a. “X2”) have historically had a strong and statistically
41 significant correlation with the abundance and/or survival of numerous estuary-dependent
42 organisms in the Bay-Delta ecosystem. That relationship has been modified in recent years for
43 some species in part thought to be due to the effects of the introduced clam, *Corbula*. However,
44 for many aquatic species, the relationships are still statistically significant (see Sommer et al.
45 2007. The collapse of pelagic fishes in the Upper San Francisco Estuary. *Fisheries* 32(6):270-
46 277.)

Vision recommendations met:

1—, 3—, 7

Performance measures:

February to June Delta outflow meeting
target as percent of unimpaired runoff (+,
with greater percent increase at lower
flows and lesser percent increase at higher
flows)

Net downstream flow on San Joaquin
River at Jersey Point ~~Oct~~Feb 1 to Jun 30 (+)

Number of 7-14 day duration fall flow
pulses on San Joaquin River ~~at 2,000-3,000~~
~~efs at~~ Vernalis reaching adopted target
between Sep. and Nov. each year (+)

Number of months between Aug and Nov
with Delta outflow ~~of 12,000-18,000 cfs (+)~~

~~Incidents of migratory passage delays,~~
~~blockages, or mortalities due to physical~~
~~barriers, low dissolved oxygen, high~~
~~temperatures, or toxics (-)~~

~~Dissolved oxygen concentrations~~reaching
targets in anadromous fish migratory corridors
at all times~~below normal, above normal,~~
and wet years (+)

1
2 For most species, higher flows affect survival and abundance in multiple ways, by increasing
3 habitat area, increasing food supply, and facilitating transport within the estuary. -Increasing
4 spring inflows and outflows in most years, in particular, will increase the value of floodplain and
5 open water habitats in the Delta, as well as upstream riverine habitats.

6
7 Delta outflows in the fall months strongly affect habitat quality for estuary-dependent species
8 like delta smelt. Higher fall outflows should follow wet springs and lower fall outflows should
9 follow dry springs. Under natural conditions, wet winters and springs produced later-season
10 storms and larger snowpack that provided relatively greater outflows in their following summer
11 and fall months, the converse being the case for drier winters and springs. Native species life
12 history strategies adapted to these conditions. With modern water supply management, summer
13 and fall flows are partially disconnected to prior winter and spring conditions. Fall dam releases
14 to provide upcoming winter flood storage and to meet water demands have lead to fall flows
15 above natural. Due to the major loss of physical habitats, however, these artificial flows provide
16 important low salinity zone aquatic habitat by matching extent of open water to suitable
17 salinities. Restoring habitats in locations that in the fall would provide suitable low salinity zone
18 aquatic habitats without the same high level of fall Delta outflow would be an alternate
19 mechanism to meet ecological needs. In the late summer and fall of critically dry years (about
20 one year in ten) ~~new~~-flow requirements that create more variable conditions should result in
21 salinity intrusions to the Delta and improved carryover storage in upstream reservoirs.

22
23 ~~Current policies affecting flows are embedded principally in the State Water Resources Control~~
24 ~~Board's (SWRCB) Water Quality Control Plan, which requires protection of the low salinity~~
25 ~~zone (as represented by the X2 line), among other standards. Significant changes to project~~
26 ~~operations may arise in response to recent court orders and new information. The San Joaquin~~
27 ~~River is hydrologically disconnected from the western delta and San Francisco Bay at most~~
28 ~~times. Reconnecting it will revitalize a number of ecological processes at a minimum: (1)~~
29 ~~improving larval survival of delta smelt by ensuring that some smelt spawned in the south delta~~
30 ~~have access to their nursery grounds in the west delta, (2) better outmigration of SJR salmon~~
31 ~~smolts by providing migratory cues and reduced stressors along their migratory corridors, (3)~~
32 ~~improved productivity by facilitating the spread of zooplankton productivity that is at times~~
33 ~~concentrated in the San Joaquin River near Stockton downstream to fish nursery areas, and (4)~~
34 ~~improving delta water quality. Such reconnection (below flood flow levels) can only be achieved~~
35 ~~through flow management in conjunction with the implementation of other actions including~~
36 ~~channel reconfiguration (Strategy 3.2), changes in land use (Strategy 6.2), construction of natural~~
37 ~~habitats to provide resting places for fish and enhance aquatic productivity (Strategy 3.1) and~~
38 ~~reductions in diversions from the south delta (Strategy 3.3). This action addresses only flow~~
39 ~~issues but cannot succeed on its own.~~

40
41 ~~This strategic plan advances additional flow targets, described below. These are interim targets,~~
42 ~~based on the best available information developed through the ongoing efforts of the Interagency~~
43 ~~Ecological Program's Pelagic Organism Decline (POD) Working Group and the CALFED~~
44 ~~ERP's Delta Conceptual Models. These interim targets are to be used in policy making and~~
45 ~~operations until additional flow requirements are developed~~

1 As stated above, decision makers must move to sufficient specificity regarding proposed actions
2 to make informed decisions. These recommendations are based on available analyses and can be
3 refined by additional scientific review concurrent with public policy processes.
4

5
6 Achieving the flow targets described in this strategy broadly involves two approaches: (1)
7 releasing more water from storage to improve flow conditions; (2) altering how water exports are
8 conveyed to the export pumps; and/or (3) reducing the amount of water that is diverted in, from,
9 and upstream of the Delta. From an ecosystem perspective, flow targets are achieved far more
10 effectively through approaches that reduce the amount of water diverted in, from, and upstream
11 of the Delta, by providing alternate supplies, conservation, increasing efficiency, retiring
12 marginal agricultural lands, recycling, reuse, desalination, conjunctive use of surface and
13 groundwater supplies, regulatory re-allocation, and market mechanisms. A variety of policy tools
14 to support this transition exist, including agreements among willing parties.
15

16 This strategic plan advances additional flow targets, described below. These are interim targets,
17 based on the best available information developed through the ongoing efforts of the Interagency
18 Ecological Program’s Pelagic Organism Decline (POD) Working Group
19 (http://www.iep.ca.gov/AES/Pelagic_Organism_Decline.htm) and the CALFED ERP’s Delta
20 Conceptual Models (<http://www.delta.dfg.ca.gov/erpdeltaplan/>). These interim targets are to be
21 used to initiate policy processes and refined through the California Delta Ecosystem and Water
22 Plan (CDEW Plan), the SWRCB’s review of the Bay-Delta Plan, or other formal rule-making
23 processes.
24

25 Implementation responsibility for the actions described within this strategy will reside amongst
26 several entities, most notably the CDEW Council, the SWRCB, the Department of Water
27 Resources (DWR), and the federal Bureau of Reclamation (Reclamation), all in consultation with
28 the California Department of Fish and Game (DFG), the U.S. Fish and Wildlife Service
29 (USFWS), and the National Marine Fisheries Service (NMFS).
30

31 The critical elements of this strategy include:
32

- 33 a. ~~By 2012, the~~ **The** SWRCB should adopt new requirements **by 2012** to increase
34 **spring outflow (in all but the wettest years) and reintroduce fall outflow**
35 **variability, with implementation to commence no later than 2015.** With input
36 from the CDEW Plan and other sources, the Board should revise the Bay-Delta Water
37 Quality Control Plan to include ~~these new~~ spring ~~and fall~~ Delta outflow objectives by
38 2012, ~~and revise water rights permit terms and conditions to ensure attainment. As an~~
39 ~~order of the objectives by 2015.~~

40
41 ~~In the magnitude, scientists estimate that~~ spring, ~~the requirements~~ Delta outflow
42 should provide ~~a minimum of an~~ approximately 10-50% increase in the percentage of
43 unimpaired runoff realized as outflow in most years, with highest compared to the
44 percentage experienced during the 1990 – 1999 period or another sufficiently long
45 reference period accepted by the resource agencies, water quality regulatory agencies,
46 water contractors, non-governmental organizations, and other stakeholders. The

1 largest percentage increases will occur in ~~drier~~dry and “average” years. ~~Wet, while~~
2 wet years generally will require no increase. ~~This allows~~ These variable percent
3 increases allow greater water supply diversions during wet winter and spring periods,
4 in keeping with the co-equal values.

5 ~~- Even with shifting diversions to wet periods, it is important to retain in the CDEW~~
6 Plan the recognition that the magnitude and duration of very high flow events are of
7 significant ecological value. In the past, these flows were not captured nor diverted
8 due to limited storage and conveyance capacity. Improved storage and conveyance
9 capacity offer increased opportunity for reliable water supply while improving
10 ecosystem function.

11 ~~In the fall following below normal, above normal, and wet years, the requirements should~~
12 ~~provide two months between August and November with Delta outflows of 12,000 to~~
13 ~~18,000 cubic feet per second. (Inflow from the Sacramento River currently is higher than~~
14 ~~the unimpaired flow in the summer and fall in order to convey water supply south across~~
15 ~~the Delta to the export pumps, but those flows are not realized as Delta outflow.)~~

- 16
- 17 ~~•The SWRCB should revise its Vernalis flow objectives, and the export criteria for the~~
18 ~~Central Valley Project (CVP) and the State Water Project (SWP), to provide for net~~
19 ~~positive (i.e. downstream) San Joaquin River flows by 2012, and revise water rights~~
20 ~~permits terms and conditions to ensure attainment of the new requirements by 2015.~~

21 ~~Flows at Jersey Point in the short term should be at least 20% of the 2006 Water Quality~~
22 ~~Control Plan flows required at Vernalis, rising to at least 50% in the longer term as~~
23 ~~strategies related to South Delta exports and improved conveyance are carried out. These~~
24 ~~flows will allow downstream transport, and minimize potential entrainment, of larval fish~~
25 ~~and high-quality food items for fish. They will also increase migration success of~~
26 ~~outmigrating juvenile salmon, and facilitate movement of resident fish such as Delta~~
27 ~~smelt.~~

- 28
- 29 ~~•By 2020, DWR should reconfigure Delta waterway geometry to increase variability in~~
30 ~~estuarine circulation patterns and increase aquatic access to floodplains and tidal~~
31 ~~marshes, in conjunction with near-term conveyance modifications described in Strategy~~
32 ~~4. These reconfigurations will include installing removable or operable flow barriers,~~
33 ~~especially in channels of the south Delta, and increasing habitat complexity so that~~
34 ~~channel lengths are greater than tidal excursion distances (see Figure 8). For floodplains,~~
35 ~~these reconfigurations will involve allowing more frequent and longer inundation of~~
36 ~~floodplains, by reducing weir heights, installing gates, and/or removing levees (see~~
37 ~~Strategy 6).~~

- 38
- 39 ~~•Beginning immediately, the SWRCB should mandate the improvement of Delta water~~
40 ~~quality, especially on the San Joaquin River, through increased base flows and pulse~~
41 ~~flows, while other water quality improvement approaches are developed and~~
42 ~~implemented. Low dissolved oxygen and high contaminant build-up are known problems~~
43 ~~for numerous aquatic organisms. Source control of contaminants and oxygen demand~~
44 ~~loads (see Strategy 5) will eventually reduce the need for using flows to minimize their~~
45 ~~impacts.~~

46

1 ~~The initial pulse flow standard should be to provide one to two pulses of 2,000 to 3,000 cubic~~
2 ~~feet per second at Vernalis for a seven to fourteen day duration between September and~~
3 ~~November (i.e. timed to match upmigration timing of fall run salmon).~~

4 In order for these changes to be effective, wet period diversions would need to meet
5 some operational criteria, including:

- 6
- 7 a. Do not initiate diversions immediately with high flows, as many fish use
8 change in flows (or associated turbidity) to initiate movement
- 9 b. Allow in-stream flows in rivers and streams upstream of the Delta during
10 early-season high flow events, as many fish and ecological processes benefit
11 greatly from these early-season flow events
- 12 c. Operate diversions during daylight hours to the extent possible, as fish migrate
13 mostly at night time
- 14 d. Higher flows than necessary to meet regulatory requirements (e.g., X2) should
15 be provided, at least at critical times, as these larger flows provide significant
16 ecological benefits.

- 17
- 18 b. **The SWRCB should adopt new requirements by 2012 to reintroduce fall outflow**
19 **variability with implementation to commence no later than 2015. In the period up**
20 **until Water Year 2000, estuarine habitat for smelt and striped bass occurred at greater**
21 **quantity and quality following wetter springs (Feyrer et al. 2008). Since 2000, fall**
22 **habitat quantity and quality has been consistently at levels previously only seen**
23 **during drought years and the previous substantial monthly variation has largely been**
24 **eliminated. This decline in fall habitat is an important predictor of reproductive**
25 **success of delta smelt and in some years seems to have exacerbated the impact of**
26 **other stressors in the Delta. Inflows to the Delta are largely unchanged over the last**
27 **30 years, but the export of upstream releases has greatly increased so that these flows**
28 **no longer support estuarine habitats in broad areas.**

29

30 For the short term, with input from the CDEW Plan and other sources, the SWRCB
31 should revise the Bay-Delta Water Quality Control Plan to require fall outflows to
32 provide habitat equivalent to the pre-2000 period. As an order of magnitude estimate
33 with which to initiate policy discussions, scientists recommend that in the fall
34 following below normal, above normal, and wet years, the requirements should
35 provide two months between August and November with Delta outflows between 1.5
36 to 3 times those during the 1990s reference period and with overall averages of the
37 four months similar to the conditions of the reference period. In the long term, the
38 CDEW Council should organize the scientific assessment evaluate how changes in
39 delta geometry, habitat restoration, and stressor reduction will affect the level of fall
40 flows necessary to achieve the same amount of suitable habitats.

- 41
- 42 c. **The SWRCB should revise its Vernalis flow objectives and the export criteria for**
43 **the Central Valley Project (CVP) and the State Water Project (SWP) to provide**
44 **for net positive (i.e., downstream) San Joaquin River flows between February**
45 **and June by 2012 with implementation by 2015. The SWRCB noticed two**
46 **workshops in late 2008 on the Vernalis Adaptive Management Program. Those**

workshops could lead to adjustments in the VAMP, due to expire in 2012 and judged to be ineffective by the Department of Fish and Game. The ecosystem goal here is to improve the movement and migration of species and improve south Delta water quality. Measures include the average total San Joaquin inflow, or amount of SJR water flowing to the western Delta (from Vernalis to Jersey Point) or the fraction of time net flows (appropriately averaged) are positive along the migratory path(s) (for example 20% in the near term, 50% in the longer term as improvements are made in channel configurations, and stressors and diversions from the south Delta are reduced).

d. Provide short-duration fall San Joaquin River pulse flows, with implementation by 2015. These pulse flows serve to provide up-migration cues to fall-run salmon and to help improve south Delta water quality. As order of magnitude recommendations with which to initiate policy processes, scientists conclude that the pulse flows are needed between September and November. Each pulse flow should last 7 to 14 days. One or two pulses should be provided. Pulse volumes, as measured at Vernalis, should be in the range of 2,000 to 3,000 cubic feet per second. These pulse flows should be timed to contribute to the broader fall Delta outflow described in Strategy 3.4. If desired benefits are not demonstrated, the standard should be revised by the SWRCB in consultation with the CDEW Council.

e. Reconfigure Delta waterway geometry to increase variability in estuarine circulation patterns, by 2015. These reconfigurations should be planned in conjunction with near- and long-term conveyance modifications described in Strategy 4. These reconfigurations will include installing removable or operable flow barriers, especially in channels of the south Delta, so that channel lengths are greater than tidal excursion distances (see Figure 8). These modifications shall include facilities to allow ongoing navigation. Results of ongoing Delta historical ecology research by DFG could help guide specific modifications.

The purpose of reconfiguring portions of Delta channel geometry is to restore variability to transport processes essential to improving ecosystem function. The morphology of the channel network plus the volume of water that moves through it, in both directions in estuaries, dictate how long water sits in one place (its residence time), how far water travels on any given tidal cycle (its tidal excursion), and thus the amount of mixing. The core estuarine attributes necessary for ecosystem revitalization – environmental water quality, food web productivity, movement of organisms, and support of estuarine habitats – derive from these mixing processes. More complexity of the channel network and more flow variability lead to greater diversity of residence times and mixing characteristics. See recent work from Jon Burau at the USGS (e.g., draft DRERIP Delta Hydrodynamics Conceptual Model).

Humans have constructed numerous “connecting” waterways throughout the Delta for shipping and water supply conveyance. Connecting what were naturally disconnected waterways that produced significant heterogeneity in the aquatic environment has radically altered flow geometry and homogenized the aquatic

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environment, changing flow routes and residence times, adversely affecting fish, their food resources, and water quality. Native species evolved under natural heterogeneous conditions and likely a cause of their decline is the modern homogeneity of the Delta's remaining aquatic environments.

1 **Strategy 3.5. ~~Improve~~Achieve sufficient**
2 **water quality for improvements to meet**
3 **drinking water, agriculture, and the**
4 **ecosystem long-term goals.**

5
6 ~~While focused on water quality~~
7 ~~constituents of concern for Managing water~~
8 ~~quality is critical to advancing the co-equal~~
9 ~~values. For municipal and agricultural~~
10 ~~supplies including water uses salinity and~~
11 ~~organic carbon, these actions also reduce~~
12 ~~pollutants that are harmful to aquatic life~~
13 ~~and other beneficial uses. The water quality~~
14 ~~improvement reduction are critical.~~
15 ~~Contaminants such as agricultural~~
16 ~~pesticides and nutrient loads, municipal~~
17 ~~wastewater discharges, and other~~
18 ~~constituents such as methyl mercury can~~
19 ~~contribute to toxic conditions for fish and~~
20 ~~the organisms they feed upon, and their~~
21 ~~cumulative effects must be reduced. This~~
22 ~~strategy uses a combination of source~~
23 ~~control, with benefits for multiple~~
24 ~~downstream uses, and relocation of intakes~~
25 ~~where necessary to improve water quality~~
26 ~~for municipal and agricultural supplies.~~
27 ~~Many of these actions, along with the~~
28 ~~development and implementation of Total~~
29 ~~Maximum Daily Loads (TMDLs), will also~~
30 ~~reduce pollutants that are harmful to the~~
31 ~~ecosystem.~~

32
33 ~~Given current trends of population growth~~
34 ~~and climate change, Delta water quality~~
35 ~~will be further degraded and the Delta will~~
36 ~~no longer consistently provide a reliable~~
37 ~~supply or fully support the ecosystem~~
38 ~~unless steps are taken to further protect~~
39 ~~water quality. Water conservation,~~
40 ~~pollution prevention, stormwater~~
41 ~~infiltration, water re-use, wastewater~~
42 ~~treatment, and water recycling all work~~
43 ~~together to reduce loads of pollutants. The~~
44 ~~State Water Resources Control Board~~
45 ~~(SWRCB) and Regional Water Quality~~
46 ~~Control Boards should immediately pursue~~

1 Vision recommendations met:

1, 3, 9

1 Performance measures:

~~Percentage of time that ambient levels of 3 mg/L~~
~~TOC and 50 µg/L bromide or better are achieved~~
~~at drinking water intakes (or other applicable~~
~~standards, whichever are more stringent) (+)~~

~~Percentage of agricultural water supplies~~
~~meeting or exceeding current quality standards~~
~~(+)~~

~~Percentage of time that pathogen concentrations~~
~~at Delta drinking water intakes meet the Bin 1~~
~~requirements of the Long Term 2 Enhanced~~
~~Surface Water Treatment Rule (+)~~

~~Percentage of time that contaminants or their~~
~~precursors meet, or are better than, water quality~~
~~targets (+)~~

~~Pathogen concentrations at Delta drinking water~~
~~intakes (-)~~

~~Net levels of salinity in major groundwater aquifers (-)~~

~~Number of nuisance growths of algae or aquatic plants~~
~~in the Delta or water project facilities (-)~~

~~Concentrations of contaminants in urban runoff and~~
~~agricultural drainage flowing into the Delta (-)~~

~~Salinity variability between fresh to brackish~~
~~conditions during periods necessary to meet life~~
~~history requirements of broad range of desirable~~
~~aquatic species (+)~~

~~Number of days per year water temperature exceeds~~
~~life history requirements for broad range of desirable~~
~~aquatic species (-)~~

~~Number, duration, and areal extent of incidences~~
~~during which dissolved oxygen levels drop below~~
~~regulatory standards (-)~~

~~Extent of areas listed as low dissolved oxygen impaired~~
~~water bodies on RWQCB Section 303(d) list (-)~~

~~Number, duration, and areal extent of incidences~~
~~during which pH falls outside regulatory standards (-)~~

~~Concentration of methyl mercury in Delta water and~~
~~sentinel species compared to 2008 baseline and Water~~
~~Quality Control Plan standards (-)~~

~~Concentration of selenium in San Joaquin River, Delta~~
~~waters and sentinel species compared to 2008 baseline~~
~~and Water Quality Control Plan standards (-)~~

~~Concentration of ammonia in Delta waters compared~~
~~to 2008 baseline and Water Quality Control Plan~~
~~standards (-)~~

~~Number of new contaminants added to RWQCB~~
~~Section 303(d) list (-)~~

1 ~~a program of enhanced source control, focused on the Delta, including incentive-based programs,~~
2 ~~new water quality objectives, current permits, appropriate conditional waivers, and effective~~
3 ~~enforcement.~~The Central Valley Regional Water Quality Control Board (CVRWQCB) has
4 ~~assembled water quality information on the numerous rivers, streams, and drains that flow into~~
5 ~~the California Delta. Many have had historical contamination problems, and virtually all have~~
6 ~~current contaminations problems. The main pollutant contributors are old mining operations~~
7 ~~(mercury and other heavy metals), agriculture (pesticides, herbicides, nutrients, and leached~~
8 ~~constituents such as selenium), urban and stormwater discharges (pathogens); wastewater~~
9 ~~treatment plant discharges (ammonia, pathogens), unknown sources (toxicity), or a combination~~
10 ~~of causes (dissolved oxygen).~~

11
12 ~~Relocating intake facilities or modifying the flow of water within the Delta to effectively draw~~
13 ~~water from flowing Delta channels improves the quality of drinking water and agricultural export~~
14 ~~supplies while reducing ecosystem impacts. For example, relocating the current Central Valley~~
15 ~~Project (CVP) and State Water Project (SWP) south Delta intakes to the Sacramento River near~~
16 ~~Hood would reduce bromide in exported water to approximately 5% of current levels and would~~
17 ~~reduce take of Delta smelt. The intake relocation strategy includes immediate steps to relocate~~
18 ~~smaller in Delta drinking water diversions by constructing pipelines and new diversion structures~~
19 ~~on channels with higher water quality and more removed from critical aquatic habitat. The~~
20 ~~larger multi-purpose diversions in the south Delta will be addressed in stages. All of these new~~
21 ~~conveyance facilities can be operated together for more effective and flexible water supply and~~
22 ~~ecosystem management~~Records show that the CVRWQCB has taken more than 7,000
23 ~~enforcement actions since 1990 to address these contamination sources (reference: California~~
24 ~~Integrated Water Quality System data). Virtually all of these actions involve rivers and streams~~
25 ~~directly feeding into the Delta. However, in spite of this enforcement history, pollution pressures~~
26 ~~have continued and, today, virtually all of the rivers, streams and drains have significant water~~
27 ~~quality problems and pose a real and continuing threat to the quality of water in the Delta. This~~
28 ~~represents a potential environmental justice concern as well, as many rural, low-income areas are~~
29 ~~impacted. At the same time, if the costs of making the needed improvements falls on low-~~
30 ~~income residents and workers, this also represents an environmental justice concern. Working~~
31 ~~through these issues requires additional attention.~~

32
33 ~~Near term projects include the Contra Costa Water District (CCWD) Alternative Intake Project~~
34 ~~(already under way), relocation of the North Bay Aqueduct intake, and a pilot project to install a~~
35 ~~flow control barrier in the western Delta near Franks Tract. Projects to be more fully developed~~
36 ~~in the California Delta Ecosystem and Water Plan (CDEW Plan) may include modifications to~~
37 ~~through Delta conveyance (the “Middle River conveyance” system) and relocation of the SWP~~
38 ~~and CVP intakes to the Sacramento River~~Given current levels of population growth and climate
39 ~~change, Delta water quality will be further degraded in the Delta unless significant steps are~~
40 ~~taken. Water conservation, pollution prevention, stormwater infiltration, water re-use, improved~~
41 ~~wastewater treatment processes, and water recycling are all required to improve the water quality~~
42 ~~in the Delta. The burden of dealing with pollutants must include treatment at the source.~~

43
44 ~~Relocating intake facilities or modifying the flow of water within the Delta to effectively draw~~
45 ~~water from flowing Delta channels improves the quality of drinking water and agricultural export~~
46 ~~supplies while reducing direct ecosystem impacts. For example, relocating the current Central~~

1 Valley Project (CVP) and State Water Project (SWP) south Delta intakes to the Sacramento
2 River near Hood would reduce bromide in exported water to approximately 5% of current levels
3 and would reduce take of Delta smelt.

4
5 Changes to Delta conveyance systems and the effects of climate change will have an impact on
6 the reliability and water quality for ~~other water users~~those with intakes located within the Delta.
7 ~~Additional intake locations, conveyance configurations, and connections may be necessary to~~
8 ~~supply some of the Delta's agricultural and municipal water needs.~~ Investing in additional
9 alternative intakes for these users can provide further flexibility in helping change the pattern of
10 diversions to when and where least harmful to the environment.

11
12 a ~~Critical elements of controlling contaminants at the source include:~~Require the
13 CVRWQCB to immediately re-evaluate wastewater treatment plant discharges
14 into Delta waterways and upstream rivers and set discharge requirements at levels
15 that are fully protective of human health and meet ecosystem needs. This process
16 should involve formal consultation with the California Department of Public
17 Health for drinking water needs

18
19 b ~~By 2012, the SWRCB and Central Valley Regional Water Quality Control~~
20 ~~Board (CVRWQCB) should develop water quality objectives for Central~~
21 ~~Valley rivers, tributaries, and the Delta for priority constituents (including~~
22 ~~nutrients, mercury, and selenium) that are fully protective of beneficial~~
23 ~~uses~~Require the CVRWQCB to adopt a long-term program to regulate discharges
24 from irrigated agricultural lands by 2010.

25
26 c ~~By 2013, the CVRWQCB should complete source control elements of the~~
27 ~~Water Boards Bay-Delta Strategic Workplan, clear the backlog of expired~~
28 ~~permits, and conduct all necessary oversight.~~Require the CVRWQCB to
29 review the impacts of urban runoff on Delta water quality and adopt a plan to
30 reduce or eliminate those impacts by 2012.

31
32 ~~•Annually through 2013 and as needed after that, the SWRCB, Department of Water~~
33 ~~Resources (DWR), U.S. Environmental Protection Agency (USEPA), and U.S.~~
34 ~~Department of Agriculture (USDA) should provide financial assistance (loans and~~
35 ~~grants) for local government and individuals to help achieve Delta water quality~~
36 ~~objectives.~~

37
38 d ~~Critical elements of relocating Delta diversions~~Relocate as many of the Delta
39 drinking water intakes as feasible to channels where water quality is higher and
40 away from sensitive habitats (high priority restoration areas, low flow channels
41 and terminal sloughs) include: The North Bay Aqueduct and the Contra Costa
42 Water District intakes should be relocated in the near term, with State and federal
43 south Delta intakes relocated upon completion of the current environmental
44 planning processes. The cost of these actions must be borne by those who benefit.

1 e ~~By 2011, CCWD should complete construction of the CCWD Alternative~~
2 ~~Intake Project~~ which will relocate the Old River intake to the southern third of
3 ~~Victoria Canal~~ Develop and implement Total Maximum Daily Load (TMDL)
4 ~~programs by 2012 for areas upstream of the Delta to reduce the loads of organic~~
5 ~~and inorganic mercury entering the Delta from tributary watersheds. The mercury~~
6 ~~TMDL program for the Delta itself should continue and other TMDLs developed~~
7 ~~as necessary to meet known and future needs.~~

8
9 f ~~By 2011, DWR and the Solano County Water Agency should complete the~~
10 ~~planning and environmental evaluation phase for relocating the North Bay~~
11 ~~Aqueduct intake~~ to a location with higher drinking water quality and with less
12 ~~ecosystem impacts.~~ ~~Comprehensively monitor fish and wildlife health at~~
13 ~~suspected toxic sites, beginning in 2009. As part of its governance authority, the~~
14 ~~CDEW Council should build on the recent work of the U.S. Environmental~~
15 ~~Protection Agency (USEPA), the CALFED Science Program and the State and~~
16 ~~Regional Water Boards to develop a comprehensive monitoring program for fish~~
17 ~~and wildlife health at suspected toxic sites. In particular, these programs should~~
18 ~~make a concerted effort to study the overall health effects of the mixture of~~
19 ~~contaminants that cumulatively impact Delta species, as opposed to examining~~
20 ~~contaminant-species relationships one at a time.~~

21
22 ~~By 2015, DWR and the Solano County Water Agency should complete construction of the~~
23 ~~selected alternative intake for the North Bay Aqueduct.~~

24
25 ~~•By 2011, DWR and the federal Bureau of Reclamation (Reclamation) should complete~~
26 ~~the planning and environmental evaluation phase for Delta conveyance modification~~
27 ~~including re-location of SWP and CVP intakes.~~

28
29 ~~•By 2020, DWR and Reclamation should complete construction of the selected delta~~
30 ~~conveyance alternative and intake.~~

31
32 ~~Critical elements to identify mechanisms to connect legal in-Delta water users to improved Delta~~
33 ~~conveyance facilities include:~~

34
35 ~~•By 2011, DWR and Reclamation should complete a study to identify legal water users~~
36 ~~that are likely to be significantly impacted by conveyance modifications and climate~~
37 ~~change, and should identify potential projects for alternative intakes and~~
38 ~~conveyance configurations to meet their water supply needs.~~

39
40 ~~Additional critical elements for the Legislature to undertake:~~

41
42 ~~•Immediately fund studies to investigate the potential for additional intakes,~~
43 ~~conveyance configurations, and connections to improve Delta water quality and~~
44 ~~water supply reliability.~~

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- ~~•Increase SWRCB and RWQCB staff resources for source control program implementation. An estimated 30-40 additional positions are needed to fully implement these strategies.~~
- ~~•Require and fund a study of source control resource needs then provide funding for financial assistance programs for the State's share of necessary stormwater management, agricultural drainage management, wastewater treatment, and other source control projects.~~
- ~~•Provide State share of funding for intake relocation and Delta conveyance modification projects.~~

1
2 **Strategy 4.1. Vastly improve the efficient**
3 **use of water****Reduce urban, residential,**
4 **industrial and agricultural water**
5 **demand through improved water use**
6 **efficiency and other means.**
7

Vision recommendations met:

1, 4, 6

8 Paramount to the success of our Strategic
9 Plan will be a major shift over the next
10 half-century in water use expectations and
11 behaviors of our communities and our
12 farming economies. We must reduce the
13 consumptive needs in our communities and
14 ~~reduce the water demand necessary more~~
15 ~~efficiently use water~~ to produce the crops
16 that feed us and often provide regional
17 economic foundations.
18

Performance measures:

Water use per capita, relative to 2008
baseline, by hydrologic region (-)

Water use per unit industrial economic
output, relative to 2008 baseline, by
hydrologic region (-)

Water use per unit agricultural economic
output, relative to 2008 baseline, by
hydrologic region (-)

19 On average, California’s communities use
20 over 160 gallons per person per day – with
21 much of the population close to this value, but with some regions tremendously exceeding this
22 rate. Though we enjoy the benefits of a generally temperate Mediterranean climate, these rates
23 often exceed the national average. Over the last decade, we have improved, but we must do
24 better. Governor Schwarzenegger has already established a target of reducing
25 ~~California~~**California’s** per capita water use by 20% by 2020, and has directed state agencies to
26 develop a more aggressive plan of conservation to achieve this target. But we ~~des~~**should** not ~~need~~
27 ~~to~~ stop there. Further adoption of water saving devices and best management practices can have
28 an immediate effect on today’s demand, but the inclusion of this ethic into future planning for
29 future residents – who’s demand has yet to occur – will be just as important. Among other
30 actions, forward thinking that better links urban land-use and expectations with water supply
31 planning at the local level and recognizes the scarcity of this resource will ensure that the future
32 residents of California use water efficiently.
33

34 In agriculture, opportunities to improve the efficient use of water ~~abound~~**exist**, but often they do
35 not currently result in water savings available for other uses. For most farming operations within
36 the Delta Watershed, diversions are made from surface water or groundwater to provide for
37 irrigation demands. Water not physically used by the plants ~~(through evapotranspiration)~~
38 generally returns to the groundwater or surface water systems – though commonly of degraded
39 quality (temperature and constituents) and in quantities ~~and that~~ at times ~~that~~ hamper broader
40 water management opportunities. Again, we must do better. In regions that import Delta water
41 supplies, opportunities to more closely match what is applied with what the plant needs can
42 result in real water savings. However, as a result of increasing delivery costs and less reliable
43 water supplies over the past decade, many easier opportunities to use water more efficiently have
44 already been adopted. ~~But that~~**That** should not dissuade efforts to do even more, especially as
45 water prices are expected to continue to increase.
46

1 Over the long-term of decades, water prices for all uses should be expected to move closer
2 together. Large price differentials will be socially and politically difficult to maintain, water
3 exchanges will tend to equalize prices, and definitions of reasonable use can be expected to
4 require ever more efficient use. With emphasis on use of most productive lands and more
5 effective irrigation equipment and management, California can still be as, if not more, productive
6 with the crops we choose to grow and ensure that the state’s agriculture contributes to the food
7 and fiber needs of the nation. Increased energy prices and policies to reduce the carbon footprint
8 of all activities, including food production, can be expected to shift some of California
9 agriculture to production intended for local and regional use. ~~These trends to higher energy~~
10 ~~prices and policies to reduce carbon footprint, combined with projected higher water costs,~~
11 ~~suggest that production of agricultural commodity crops for international markets may not be as~~
12 ~~viable as in the recent past.~~

13
14 Agriculture ~~is more~~has much broader value than ~~produces~~simply producing food and fiber. It
15 shapes landscapes and greatly influences ecosystems. Monocultures of irrigated agriculture have
16 landscape and ecosystem effects. Abandoning those agricultural uses would result in other
17 landscapes and ecosystems, including risks of harmful dust storms and weeds. That is an
18 undesirable outcome. Between these two extremes are a wide range of forms of land
19 management that result in continued agricultural production and desired ecosystem function.
20 Policies to support evolution in these adjustments should be a high priority.

21
22 Any change in agricultural practices will affect ~~those employed in that sector and both farm~~
23 ~~workers as well as the~~ communities in which agriculture is a large factor. ~~Those~~ Some changes
24 can result in short-term negative economic impacts, but they are not necessarily negative in the
25 longer-term, and always occur in the context of societal wide economic changes. ~~Indeed, one of~~
26 ~~the great successes of this nation and many others is the increased productivity of the agriculture~~
27 ~~sector in the past 100 years, which increased production with a dramatically reduced proportion~~
28 ~~of total employment, supporting growth in other sectors of the economy.~~

29
30 Change in agriculture’s water use comes with costs. In the past, efficiency improvements have
31 sometimes been rejected or delayed because they were not deemed cost-effective given the profit
32 potential of current crops and the relatively low-cost of water. Farmers have been unable to
33 justify the expense given these constraints. ~~This constraint on expected efficiency is~~
34 ~~unacceptable over the long term as it would preclude any change in agriculture’s water use. It is~~
35 ~~also~~ Avoiding efficiency improvements in the future, however, may be unrealistic given
36 projected increased costs for water.

37
38 This strategic plan requires accelerated investments by individuals, communities, industry and
39 farming to reduce both today’s water demands and that of generations to come. The critical
40 elements include:

- 41
42 a By June 2009, enact~~Enact~~ legislation, such as AB 2175, in a form that would
43 and require DWR to establish a statewide target urban retail water
44 purveyors to implement measures to achieve a 20% reduction in urban per
45 capita water use in~~throughout~~ California by December 31, 2020, and target a
46 40% reduction, especially in non-coastal areas, by 2050. Reduction targets

1 will be compared against the most recent reporting available to DWR as of
2 October 2008, which will constitute the baseline conditions

- 3
- 4 **b** ~~By June 2009, enact~~**Enact** legislation to ~~modify government code sections to~~
5 ~~require~~ **urban and agricultural water purveyors to adopt** more aggressive
6 ~~tiered pricing and related mechanisms,~~ and ~~address challenges in Article 13D~~
7 ~~of the California Constitution (as added by Proposition 218) that potentially~~
8 ~~constrain~~ remove potential constraints to water purveyors’ budgeting methods and
9 authorities ~~so as not to hamper efforts to implement~~ allow conditional-pricing
10 changes during temporary drought or emergency conditions.
- 11
- 12 **c** ~~By June 2009, enact legislation to improve coordination between land~~
13 ~~planning and water planning by further broadening~~**Broaden** the scope and
14 ~~requirements embodied in California Water Code §10910 et. seq. (commonly~~
15 ~~referred to as SB 610 Water Supply Assessments) and related provisions~~
16 ~~under the California Environmental Quality Act (CEQA) to (1) require a~~
17 ~~significant increase in the number of years of projected sufficient water supply~~
18 ~~and a significant decrease in the triggering thresholds, and (2) provide~~
19 ~~opportunities such as: (a) requiring connection fees to vary based on potential per-~~
20 ~~dwelling unit water demands to incentivize aggressive implementation of low-~~
21 ~~water use fixtures as well as adaptation in landscaping expectations and lot sizes,~~
22 ~~(b) recognition of fully funded localized conservation projects, greywater systems~~
23 ~~and other extra-ordinary measures in existing communities as sufficient water~~
24 ~~supplies for new developments,~~
- 25
- 26 **d** ~~By June 2009, enact legislation to modify the Urban Water Management~~
27 ~~Planning Act to require~~**Require all retail water** purveyors to develop an
28 ~~integrated plan for response to~~ Delta water supply curtailments from either
29 (a) drought conditions which reduce by 40 percent for two years the available
30 water exported directly from the Delta or from the Delta Watershed, and (b) one
31 year loss of all surface water imported into the region diverted directly from the
32 Delta. These plans are to be developed pursuant to guidance from the ~~Department~~
33 ~~of Water Resources (DWR)~~ and to be incorporated into ~~urban water management~~
34 ~~plans (UWMPs)~~ submitted for 2015. Plans must address all feasible approaches
35 for both conserving water and increasing water supply under these conditions.
- 36
- 37 **e** ~~By June 2010, the legislature shall authorize~~**Require** DWR ~~and to~~ provide
38 ~~funding for new incentive-based programs to promote the widespread and~~
39 ~~mainstream adoption of aggressive water conservation.~~ These may include
40 concepts such as (1) creating market mechanisms for water quality improvements
41 associated with reducing surface return flows from farming operations, (2)
42 developing “carbon credits” for water utilities for reduced greenhouse gas
43 emission associated with water conservation, and (3) allowing local tax incentives
44 for new communities that meet aggressive conservation criteria.
- 45

1
2 **Strategy 4.2. OptimizeIncrease regional**
3 **self-sufficiency by increasing the diversity of**
4 **local and regionalthrough diversifying**
5 **water supply portfolios while not impacting**
6 **flows into the Delta**

Vision recommendations met:
— 1, 4, 6, 8

7
8 Throughout the ~~State~~state, the general concept
9 of regional self-sufficiency is being embraced
10 through Integrated Regional Water
11 Management (IRWM) planning – a framework
12 for actions to address the uncertainties
13 presented to those providing our farms and
14 communities with water. On their own or with
15 the incentive of grant funding, many water
16 management entities are gatheringworking
17 together to look for opportunities to optimize
18 available water supplies, develop new local
19 supplies, and manage demands in a more
20 comprehensive manner – a manner that
21 accommodates expected ranges in the
22 reliability and quantity of specific supplies
23 from various sources. These collaborative
24 planning efforts must be elevated in their
25 importance and function to ensure regions are
26 adequately addressing risks and investing in
27 strategies to manage an unpredictable future.

Performance measures:

Length of time, at average rates of use over a three-year period, that a given water district’s alternative and stored supplies will last if there is a catastrophic outage of the Delta (+)

Amount of water in accessible surface and ground water storage compared to 2008 baseline (+)

Amount of water exported from the Delta that is recycled or re-infiltrated (excluding water lost to direct consumption by crops and people, or evapotranspiration) compared to 2008 baseline (+)

28
29 Resource flexibility – an inherent component of regional self-sufficiency – requires a diversified
30 portfolio of water management strategies including: (1) creating new places to store supplies -
31 either above or below ground during periods of surplus – for use when particular supply sources
32 are constrained; (2) building new facilities to reclaim or desalt otherwise non-potable or poor
33 quality supplies; (3) managing land uses to improve water quality, capture urban storm water,
34 and control water demands; and (4) improving the efficiency of existing and future agricultural
35 and urban uses of water.

36
37 By implementing more of these strategies throughout all regions of the State, the opportunity for
38 the annual quantity of diverted Delta water supplies to reliably ebb and flow in unison with the
39 need for and availability of water to sustain Delta ecosystem functions will be vastly improved.

40
41 Our Strategic Plan requires greater attention to IRWM planning and subsequent investments in
42 diversified regional water supply portfolios¹. The critical elements of this strategy include:
43

¹ The concept of diversified regional water supply portfolios was extensively outlined in the California Water Plan Update: 2005. Integrated planning to address all potential supply and demand management strategies are strongly encouraged as a critical method to help

1 •~~By 2012, all regions of California as defined by the Department of Water Resources~~
2 ~~(DWR) must collaboratively develop and begin implementing an effective IRWM~~
3 ~~plan to provide reliable water supplies, water quality protection, public safety,~~
4 ~~environmental stewardship, and sustained economic prosperity for a growing population~~
5 ~~in a changing climate. Plans will include an array of elements to be defined in the State’s~~
6 ~~2009 Water Plan Update.~~

7
8 a ~~By 2015, local water agencies must double the current percent of treated~~
9 ~~urban effluent that is captured and reused to obtain greater function from~~
10 ~~water supplies already diverted from natural systems, especially in regions where~~
11 ~~current discharges are lost to ocean or bays, or create unnecessarily adverse water~~
12 ~~quality impacts of rivers, streams and groundwater basins.~~Modify the Water
13 Recycling Act of 1991 to add a statewide target to recycle a total of 1.5
14 million acre-feet of water annually by 2020.² This increase would be aided by
15 ~~requiring encouraging local and regional land-use and water management entities~~
16 ~~to require dual-plumbing when and where appropriate, addressing complications~~
17 ~~with issues associated with seasonal storage, harmonizing State and regional~~
18 ~~permitting requirements, modifying land use planning practices, funding~~
19 ~~educational efforts on the value of this water resource, and significantly~~
20 ~~increasing the State’s committed funding for successful grant and loan programs.~~

21
22 b ~~By 2015, Enact legislation to encourage local water agencies must to at least~~
23 ~~triple the current statewide plant capacity for generating new water supplies~~
24 ~~through the desalting of groundwater and seawater resources.~~ocean and
25 brackish water desalination by 2020³. The State ~~must promote~~should continue
26 ~~promoting~~ research and implementation of coastal and brackish water desalination
27 ~~projects. It is understood that also the expansion of desalination must~~ effectively
28 ~~neutralize address~~ the emissions impact of additional energy requirements
29 ~~(through the use of renewable energy sources and offset programs), as well as the~~
30 ~~environmental issues associated with water intakes and brine discharges.~~

31
32 c ~~By 2010, Require the State Water Resources Control Board (SWRCB) shall~~
33 ~~to set goals for infiltration or and direct use of urban storm water runoff~~
34 ~~throughout the Delta Watershed watershed and export areas and promote~~
35 ~~investment by urban communities in facilities to capture, treat and reuse urban~~
36 ~~storm water runoff.~~2015. Integrate achieving the goals with access to state grant
37 and loan programs. Require local governments to include best management
38 practices necessary to achieve goals in their land use planning and decision
39 making. Goals must also acknowledge and provide resolution for concerns of

² The Water Reclamation Act of 1991 established a statewide goal to recycle a total of 700,000 acre-feet of water per year by 2000, and one million acre-feet of water by 2010. The California Water Plan Update 2005 stated California’s water agencies currently recycle about 500,000 acre-feet of wastewater annually

³ According to the California Water Plan Update: 2005, there currently are about 24 desalting plants operating in California that provide water for municipal purposes. The total capacity of these plants is approximately 79,000 acre-feet per year. These include 16 groundwater, one surface water, and seven seawater desalination plants

1 water quality degradation that could occur with urban stormwater recharge
2 projects.

- 3
4 **d** ~~By 2012, DWR should issue~~ **Require DWR to develop a model stormwater**
5 **management ordinance for urban areas throughout the Delta watershed.**
6 ~~The ordinance should primarily focus on stormwater management associated with~~
7 ~~new urban development projects that helps meet the goals to be set by the~~
8 ~~SWRCB~~

9
10 ~~○By 2012, the legislature should pass a law requiring rainwater harvesting in new~~
11 ~~developments and incentivizing rainwater harvesting retrofits in existing~~
12 ~~developments~~

13
14 ~~○By 2012, revise relevant water management legislation, such as the Urban Water~~
15 ~~Management Planning Act and SB 610, to require coordination between water~~
16 ~~purveyors and wastewater agencies and to require identification of all local~~
17 ~~opportunities for use of recycled wastewater and harvested stormwater.~~

- 18
19 ~~●The State should continue to provide technical assistance for regional recycled water~~
20 ~~and stormwater use, including public education campaigns, promotion of best~~
21 ~~management practices, promulgation of planning guidelines, and partial funding of~~
22 ~~demonstration projects as needed.~~

- 23
24 **e** ~~The legislature shall immediately charge the SWRCB with using its~~
25 ~~authorities in conjunction with DWR, local water districts and counties to~~
26 ~~ensure accurate and timely information is collected on all surface water~~
27 ~~diversions in California and reported to the SWRCB. Require the SWRCB~~
28 ~~to ensure accurate and timely information is collected and reported on all~~
29 ~~surface water diversions in California by 2012. This action will also repeal all~~
30 ~~exemptions from reporting to the SWRCB. ~~In addition, charge~~~~

- 31
32 **f** ~~Require DWR with providing, local water districts and counties to ensure~~
33 ~~accurate and timely information is collected on all groundwater diversions~~
34 ~~and uses in California on a bi-annual basis, as available areas upstream, within~~
35 ~~and that receive exports from the Delta watershed and that such data is~~
36 ~~reported to the SWRCB. Data will be collected through expansion of DWR's~~
37 ~~groundwater monitoring networks, reporting by local and regional entities~~
38 ~~associated with Urban Water Management Plans and Groundwater Management~~
39 ~~Plans. These information systems shall be fully operational by 2012.~~

- 40
41 **g** ~~By 2015, require all local water and land use agencies or their regional~~
42 ~~partnerships to develop and begin implementing AB 3030 Groundwater~~
43 ~~Management Plans as a fundamental component of IRWM plans. Constrain~~
44 ~~public funding sources for plans that do not adequately address groundwater~~
45 ~~resources. Restrict access to state grants and loans as well as approvals from~~
46 ~~DWR or the SWRCB for water transfer activities to entities that are actively~~

1 implementing GMPs and IRWMPs and are providing all necessary reporting data
2 to DWR and the SWRCB.

3
4 h ~~Facilitate~~ Enact legislation encouraging groundwater banking, extraction,
5 and delivery of facilities for State and local surface water supplies in
6 groundwater facilities through. ~~Measures should address~~ immediate revisions of
7 State and federal place-of-use restrictions, adoption of statewide guidelines
8 addressing injection permitting, and continuation of successful DWR and
9 SWRCB grant and loan programs.

10
11 i ~~By 2012, require~~ Require water resource plans, ~~as well as~~ and land use plans
12 ~~(e.g. General Plans, Specific Plans, etc.), to identify mechanisms to (1) protect~~
13 ~~areas needed for groundwater recharge and (2) change urban landscape~~
14 ~~aesthetics to more appropriate choices for California’s climate to enact~~
15 standards for low-water use landscaping. Examples of such standards include
16 “cash for grass” programs that pay homeowners to remove lawns, as well as the
17 landscaping standards being introduced in Santa Ana, Marin County, and
18 elsewhere around the state.

19
20 j ~~DWR and SWRCB shall immediately identify constraints and revise current~~
21 ~~procedural requirements to allow for efficient evaluation of water~~
22 ~~transfers~~ Require DWR and SWRCB to further improve water transfer
23 procedures through the creation of an inter-agency team coupled with existing
24 buyers and sellers. These policies must incorporate reasonable use and public
25 trust principles of water rights laws in California and must not reduce or abrogate
26 the constitutional provision that recognizes that all waters are the interest of the
27 people of California and for the public welfare. DWR shall promote concepts ~~of~~
28 such as rotational fallowing as a mechanism to assure reinvestments of transfer
29 funds into local agricultural economies and evaluate opportunities to pre-approve
30 some transfers to create an available “option” pool for emergency needs.

31
32
33 k Permit DWR, the SWRCB, and DFG to establish and fund the initial
34 development and testing of new market mechanisms to provide water users
35 and ecosystem managers with additional tools to adaptively manage instream
36 flows and diversions. Example concepts could include (1) establishing an
37 endowment fund – paid for by water users – that would be used to purchase
38 additional water supplies, or “buy-down” demands in particular areas to augment
39 ecosystem flow objectives, (2) creating regulatory incentives for water users to
40 protect water assets in a voluntary Water Trust that would manage the supplies for
41 Delta ecosystem objectives, and (3) developing “demand reduction easement”
42 program – similar to a flood easement program – that might allow emergency
43 curtailment of diversions.

1 **Strategy 4—~~Improve the reliability and~~**
2 **~~predictability of water diverted from the~~**
3 **~~Delta Watershed to support the co-equal~~**
4 **~~values~~** 5.1. Expand conveyance, storage
5 and reservoir operation options to meet
6 long-term demands in light of likely
7 future changes in the Delta.
8

Vision recommendations met:

1, 7, 8

9 Whether upstream, within, or exporting
10 from the Delta Watershed, the ability for
11 diverters to rely upon a sufficient and
12 predictable quantity of surface water is
13 inextricably linked to the ability to plan,
14 fund and implement a more diverse water
15 supply portfolio. As a critical source of
16 water for many, unpredictable constraints
17 on Delta diversions continue to result in
18 tensions between and among the various
19 users of this vital-to-all resource –
20 contributing to the continued deterioration
21 of Delta ecosystem functions and

Performance measures:

Likelihood of a catastrophic interruption of
Delta conveyance system (-)

Amount of water in accessible surface and
ground water storage compared to 2008
baseline (+)

22 unacceptable economic hardships. We believe these tensions can be reduced or even avoided
23 altogether if diverters were provided greater predictability under differing hydrologic and
24 ecologic conditions. This knowledge increases the ability to define and invest in appropriate
25 diversification of water supplies and management tools – including significant improvements in
26 water use efficiency, water recycling and conjunctive use. Lacking this predictability has
27 resulted in unsustainable short-term actions by water users such as stumping ~~Avocado~~ avocado
28 trees and letting crops wither. Predictability and reliability of a sufficient Delta supply across a
29 range of defined circumstances would help maximize the benefit of a diversified supply portfolio
30 and move us away from unsustainable short-term actions.

31
32 Issues of reliability and sustainability must be considered in the context of anticipated changes in
33 the Delta due to climate change and the increasing potential for seismic disruptions. Climate
34 change will lead to changes in the amount and timing of snowmelt (and therefore surface water
35 flows) as well as sea level rise. The potential for seismic events affecting the Delta, while not
36 experienced historically, are projected to increase over time after a relatively quiet seismic period
37 following the major Bay area earthquake of 1906, according to the Delta Risk Management
38 Study. While none of these events are certain, not planning for these events based on current and
39 emerging scientific studies would be an abrogation of public trust and sound planning and policy
40 practices.

41
42 The system must also be more robust to allow flexibility in the timing and quantities of
43 diversions to shift away from periods with highest impacts on ecological functions in and
44 upstream of the Delta, while reliably providing predictable and acceptable volumes of quality
45 water for diverted uses. This flexibility is paramount to achieving the strategies necessary for a
46 resilient ecosystem, as detailed in later strategies.

1
2 ~~The degree of flexibility needed to meet the Vision’s co-equal goals is not understood well~~
3 ~~enough at this point to define numeric objectives—With improvements in regional self-~~
4 ~~sufficiency, water users and may never be. Though our strategic plan identifies Delta flow~~
5 ~~related actions believed purveyors will better reflect their willingness to make investments~~
6 ~~necessary to achieve obtain desired ecosystem functions, we do not yet understand the magnitude~~
7 ~~of impact such actions could have on water supply and reliability—especially for those exporting~~
8 ~~directly, including the portion of their portfolio derived from surface water diversions from the~~
9 ~~Delta watershed. We must immediately invest, however, in expanding our knowledge, then~~
10 ~~quickly make decisions as to the desired flexibility and proceed with steps to construct necessary~~
11 ~~infrastructure and entitle management mechanisms. The continued loop of study after study is~~
12 ~~unacceptable. We also need to change the belief that water will reliably be available up to the~~
13 ~~“maximum permitted” as has been the paradigm of the past. “Predictable” “reliable” water for~~
14 ~~diversion will be defined in ranges in tied to hydrological conditions and ecosystem performance~~
15 ~~measures.~~

16
17 ~~We recommend the linchpin to managing Delta water supply and ecosystem functions as co-~~
18 ~~equal objective will be construction of a new canal isolated from the Delta’s natural waterways~~
19 ~~operate in conjunction with modifications to existing Delta channels—the “through Delta”~~
20 ~~portion of a necessary conveyance solution. The size, location and operations of both a new~~
21 ~~canal and modifications to existing channels will require additional analysis, but new~~
22 ~~conveyance functions must be constructed. Diverters who value and require higher reliability of~~
23 ~~Delta watershed supplies will need to fund the necessary means to achieve it, including~~
24 ~~significant investments in storage, conveyance and ancillary facilities to allow for reliability~~
25 ~~objectives to be achieved. Those users currently diverting surface water from the Delta~~
26 ~~watershed who are willing to accept lower average reliability of those supplies – possibly~~
27 ~~because they have other measures in their water supply and demand portfolio – should see lower~~
28 ~~investment requirements.~~

29
30 ~~Our~~ ~~The Delta Vision report calls for “dual conveyance” of water supplies through the Delta as~~
31 ~~its “preferred direction.” Several important issues should be noted related this declaration. First,~~
32 ~~following the lead of the Delta Vision Stakeholder Coordination Group, dual conveyance is a~~
33 ~~rejection of an isolated conveyance facility alone. It recognizes the need to maintain flows~~
34 ~~through the Delta while also accounting for likely future risks.~~

35
36 ~~Second, it is a preliminary recommendation pending the results of analyses (through the~~
37 ~~NEPA/CEQA processes) to substantiate that it achieves the joint objectives of water supply~~
38 ~~reliability while maintaining sufficient flows (under most conditions) for the ecosystem, Delta~~
39 ~~agriculture, recreation and other uses. “Under most conditions” recognizes that in achieving the~~
40 ~~co-equal goals there will be short-term conditions that favor water supply reliability over~~
41 ~~ecosystem and other Delta uses, as well as conditions that favor the ecosystem and other Delta~~
42 ~~uses over water reliability.~~

43
44 ~~Third, the term “dual conveyance” is used rather than “peripheral canal” in recognition that: (1)~~
45 ~~with changes in land use since past discussions of a peripheral canal, most potential~~
46 ~~configurations of a “canal” are likely to be located near the edges but ultimately go through, not~~

1 around Delta, and (2) the original discussions of flow and ways to operate the facility have been
2 taken into account, recognizing the need to equitably control decisions about how much water
3 flows through a “canal” and provide assurances, such as being operated consistent with the
4 proposed California Delta Ecosystem and Water Plan.

5
6 The work of the Task Force will be completed before the requisite studies to confirm the
7 feasibility and acceptability of dual conveyance. Based on the information at hand, however,
8 from highly regarded hydrologists and ecologists with extensive knowledge of the Delta, the
9 Task Force believes dual conveyance is the option most likely to meet the major goals of Delta
10 Vision. This is another reason the Task Force believes the governance structure proposed is
11 essential to ensure attainment of Delta Vision goals.

12
13 Consistent with this approach, our Strategic Plan requires~~proposes~~ (1) construction of new Delta
14 conveyance facilities, for storage and conveyance – as necessary to meet the reliability goals for
15 those dependent on this resource; (2) significant shifting in export surface water diversion timing
16 for users upstream, within and outside of the Delta watershed to accommodate Delta ecosystem
17 functions; and (3) construction of sizable infrastructure to transfer and store water from
18 localized abundance of the wet periods to the drier times and places.~~Because our choices need~~
19 ~~to be adaptive, yet even new physical infrastructure will create constraining side boards, we see~~
20 ~~value in evaluating additional non-physical mechanisms to add to our flexibility. – throughout~~
21 the Delta watershed and in export areas.

22
23 ~~The critical~~Overall, the State to build storage, conveyance and ancillary facilities necessary to
24 allow surface diversions upstream, within and exported from the Delta watershed to be flexibly
25 managed to help meet Delta ecosystem flow objectives while striving to obtain long-term
26 average diversion quantities within historic levels.

27
28 Specific elements of this strategy include:

- 29
30 a. ~~Building~~Direct the DWR in cooperation with the DFG to build upon the studies
31 underway as part of the Bay Delta Conservation Plan (BDCP) efforts,~~direct the~~
32 ~~Department of Water Resources (DWR) in cooperation with the Department of Fish~~
33 ~~and Game (DFG) to~~ immediately begin a 1-year investigation to improve our knowledge
34 of trade-offs associated with increased flexibility and changes in export storage and
35 conveyance requirements to obtain desired flexibility, as well as to document changes in
36 annual surface diversion quantities that would could result from shifting diversion timing
37 to wetter periods (both within and between years) to achieve desired ecosystem flow
38 objectives~~(see Strategy 7).~~
- 39
40 • By ~~June the end of~~ 2010, using a defined set of economic, ecologic and water
41 supply attributes ~~listed~~ as primary indicators, make a decision regarding the
42 degree of flexibility desired size and location of new storage and conveyance
43 facilities and direct creation of a long-term action plan to guide their design and
44 construction of necessary facilities. This decision may result in changes to
45 objectives currently stated in Strategy 7~~the desired ecosystem water flow~~

1 objectives as a result of balancing the co-equal goals given the recent knowledge
2 obtained.

- 3
- 4 • By October 2009, and if no fatal flaws are identified in preliminary evaluations,
5 obtain permits and ground-test the components of a “two-barrier” Middle River
6 Conveyance option, initially as a reversible experiment. In an open, transparent
7 manner, analyze and refine the Middle River Conveyance option, including
8 evaluation and appropriately staged implementation of fish screens, gates and
9 other “testable” components.
 - 10
 - 11 • ~~By December 2010, and based on the decision made regarding the degree of~~
12 ~~desired flexibility, while also addressing the potential risks of climate change and~~
13 ~~levee failures, establish an action plan for the design, funding and construction of~~
14 ~~an isolated facility, as part of the dual conveyance approach. The capacity of an~~
15 ~~isolated portion of a dual conveyance system must recognize and accommodate~~
16 ~~risks of failure to the through-Delta portion from seismic events and sea-level rise~~
17
 - 18 • ~~Require necessary decisions, permits and funding mechanisms for the Delta water~~
19 ~~conveyance system improvements to be expeditiously obtained after the selection~~
20 ~~of a recommended alternative~~Identify mechanisms and "connect" legal water
21 users to improved through Delta conveyance facilities including but not limited to
22 Contra Costa Water District and legal users in the south, central, and north Delta
23 water agencies.
- 24
- 25 b. Export CVP and SWP contractors will pay for the capacity of a dual conveyance facility
26 (should it prove to be the preferred alternative) dedicated to their benefit, and will control
27 that capacity. At least 15 percent of the capacity will be dedicated to the California Delta
28 Conservancy to allow additional management of flows and diversions and paid for by
29 public funds (see Governance discussion).
- 30
- 31 c. By 2020, complete construction of 50% of the identified new surface and groundwater
32 storage and associated conveyance facilities to accommodate the significant storage
33 requirements associated with shifting diversion timing, and in anticipation of changes in
34 the precipitation characteristics resulting from climate change. By 2030 complete the
35 remaining 50% of needed facilities.
- 36
 - 37 • Inform these decisions with completion of CALFED surface storage
38 investigations, which require the legislature and the administration to ensure
39 stable State and federal funding through FY 2010
 - 40
 - 41 • Construction, ownership and operation of significant new state or federal storage
42 facilities – surface and in-ground – will be completed through open and public
43 bidding processes. Public funding for new storage will correspond to public
44 benefit (e.g. control of the associated capacity and/or yield)
- 45

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- Groundwater storage projects and associated conveyance facilities will be governed by regional entities in compliance with local Groundwater Management Planning requirements and applicable ordinances

- d. Desired flexibility in the management of upstream surface diversions will require greater ability to shift from surface diversion and delivery systems to groundwater extraction and delivery systems under different hydrologic and ecologic conditions. Such actions are equally beneficial to all surface water diverters from the Delta watershed as well as public Delta ecosystem goals. Funding for needed conjunctive use facilities, both public and from others reliant on the Delta as a conveyance system, must recognize this broad benefit (i.e. the cost of diversion management should not be borne solely by upstream diverters).

- e. In wetter periods, Delta watershed surface diversions would be allowed to exceed, sometimes significantly, historic diversion rates to enable storage of water supplies by diverters seeking high levels of reliability of this resource for use during periods when surface diversions must be constrained to meet Delta ecosystem flow objectives. This is based on the assumption that adequate groundwater and surface storage facilities exist to store these wet period flows.

1 | **Strategy 3.5.2. Integrate Central Valley**
2 | **flood management with water supply**
3 | **planning**

Vision recommendations met:

1, 8, 9

4 |
5 | The entire Central Valley is either upstream
6 | of the Delta, ~~or~~ reliant on diverted Delta
7 | water for its supplies, ~~or both~~ (see Figure 6).

8 | In a very real sense, the challenges of flood control and water supply reliability in the Delta are
9 | two sides of the same coin. Major multi-
10 | purpose reservoirs exist on many of the
11 | tributaries to the Delta to store surface water
12 | supplies, control floods, generate
13 | hydroelectricity and provide recreation.
14 | Within a given reservoir, water supply storage
15 | and flood control are competing priorities at
16 | certain times of year – more of one means less
17 | of the other. Therefore, it is very important
18 | that flood management operations be tailored
19 | as closely as possible to actual flood
20 | probabilities, without compromising safety, so
21 | that as much reservoir space as possible can
22 | be devoted to water supply storage.

Performance measures:

Additional annual yield from major reservoirs compared to current flood operation requirements (+)

Additional flood conveyance capacity on major rivers leading into the Delta, compared to 2008 baseline (+)

Percentage of precipitation in the Delta watershed that is infiltrated or directly used compared to 2008 baseline (+)

~~Amount of water exported from the Delta that is recycled or re-infiltrated (excluding water lost to direct consumption by crops and people, or evapotranspiration) compared to 2008 baseline (+)~~

23 |
24 | Present management practice focuses on
25 | maintaining a given capacity in the reservoir
26 | and not on the actual threat of flooding.
27 | Improved forecasting capabilities now allow
28 | reservoir managers to modernize flood control
29 | operations diagrams so that more water supply
30 | yield can be obtained without compromising flood safety. Expanding the flood conveyance
31 | capacity downstream of the reservoirs (e.g. available floodplains) also increases management
32 | flexibility by allowing more flood water to be released safely from the reservoir if necessary,
33 | thereby reducing the amount of space within the reservoir that must be reserved for flood
34 | storage. Expansion of the conveyance capacity downstream of the reservoirs must be continuous
35 | along the entire river, and the capacity of the most downstream area sets the upper limit for the
36 | entire system.

37 |
38 | Increased infiltration of precipitation that falls on the Delta watershed has the triple benefit of
39 | reducing flood peaks, storing water for later use in groundwater aquifers, and potentially
40 | reducing the amount of water that has to be exported from the Delta at critical times. It can also
41 | improve the quality of water through the natural filtering capabilities of soils. Communities
42 | throughout the Central Valley should aggressively pursue stormwater harvesting or infiltration
43 | wherever possible. In urban areas, stormwater harvesting can help supply landscape irrigation
44 | and other uses, and infiltration zones can provide valuable open space amenities. Much of the
45 | upper watershed of the Delta is forests, which should be managed for the water holding capacity
46 | of their soils, particularly as climate change produces more rain and less snow in California.

1
2 The critical elements of this strategy include:

- 3
4 a. ~~By 2012, modernize~~ **Modernize** flood control operation diagrams for all major
5 **California reservoirs for which the U.S. Army Corps of Engineers has prescribed**
6 **flood control regulations, by 2012.** The modernization should account for existing
7 technology advances, the hydrologic changes that have occurred since the operations
8 diagrams were created, and the hydrologic changes ~~that are~~ likely to occur because of
9 climate change. - It should also account for any planned increases in the flood
10 conveyance capacity of the downstream rivers. At a minimum, the operations criteria
11 should be based on forecasts and not ~~be based~~ on existing reservoir storage. The
12 Department of Water Resources (DWR) should cooperate with the USACE on both the
13 update of the operations criteria and manuals and the environmental documentation (EIS)
14 ~~that may be~~ required to accomplish the changes in operation.
15
16 b. ~~Beginning immediately, DWR (through the~~ **The Central Valley Flood Protection**
17 **Plan (conducted by DWR) should identify areas of immediately create a flood bypass**
18 **along the lower San Joaquin River, including through the Delta, where flood**
19 **conveyance capacity can be expanded in a continuous reach.** Use existing bond funds
20 to begin acquiring title or easement to floodplain ~~and bypass~~ lands immediately,
21 especially in areas where urbanization threats are high. Identification of
22 ~~floodplains appropriate sites~~ should be ~~complete by 2012 and those floodplains~~
23 ~~completed, and these areas~~ protected by easement or purchase ~~by 2014, as quickly as~~
24 ~~possible.~~
25
26 c. **Beginning immediately, DWR should incentivize additional infiltration and storage**
27 **of runoff and floodwater upstream of the Delta** using both groundwater and floodplain
28 storage in the Sacramento Valley, San Joaquin Valley, and the Tulare Basin, as well as
29 opportune sites in the upper watersheds.
30
31 d. **By 2012, DWR should study, and if feasible implement, a plan to convey water from**
32 **storage reservoirs to groundwater infiltration sites** to expand storage resources and to
33 improve flood control capacities of the reservoirs.

34
35 ~~e~~ Over time, work with the U.S. Forest Service to revise the Forest Plans for the
36 National Forests in the Sierra Nevada to encourage greater infiltration
37
38

39 e. .

- 1 3. Application of the range of levee design types and standards should be keyed to the land
2 uses and services protected, and to the levels of risk reduction deemed appropriate for
3 each.
- 4
- 5 4. A range of environmental enhancements should be applied to fit site conditions and
6 ecosystem goals.
- 7
- 8 5. The Delta should achieve full ~~eongruence~~compatibility between levels of protection and
9 land uses and services at risk.
- 10
- 11 6. All beneficiaries of levee protection should pay their appropriate share of the costs.
- 12

13 ~~This strategy includes the following critical elements:~~

14

15 ~~•Within one year, the Department of Water Resources (DWR) should adopt a Levee~~
16 ~~Policy that will:~~

- 17
 - 18 ~~○Link levee designs with land uses~~
 - 19
 - 20 ~~○Address seismic risk, climate change, subsidence and sea level rise~~
 - 21
 - 22 ~~○Identify appropriate levee protection levels and designs for the following land uses~~
23 ~~and services, at a minimum:~~
 - 24
- 25 7. ~~Wetlands~~Levee improvements and repairs should be based on economic feasibility and a
26 broad evaluation of services provided.
27
 - 28 ~~○In the event of a levee failure prior to the finalization of a Delta-wide CDEW~~
29 ~~Plan, response should consider not only immediate repair and pump-out,~~
30 ~~but other options. These include *no action* pending considered evaluation~~
31 ~~of consequences, and floodplains~~
 - 32
 - 33 ~~○Agricultural lands~~
 - 34
 - 35 ~~○Critical infrastructure~~
 - 36
 - 37 ~~○Peripheral urban areas~~
 - 38
- 39 8. ~~Specific Delta cities, towns,~~breach-repair and communities rest, pending benefit/cost
40 analysis. Major actions and upgrades should await completion of comprehensive
41 planning.
- 42

43 ~~The California Delta Ecosystem and Water (CDEW) Plan (see Strategy 16)~~
44 ~~should~~Recommended Actions:

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- a. ~~Set priorities for levee improvements, maintenance and repairs~~ Immediately adopt the Delta Levee Classifications Table by Executive Order and legislative enactment.
 - ~~Map Delta islands and levees showing priorities and targets for transition to full congruence.~~
 - ~~Include land use considerations, such as restricting land intensification in flood-prone areas.~~
 - ~~Identify beneficiaries of levee improvements and determine cost sharing among identified beneficiaries.~~
- ~~DWR should adjust the levee subventions program to support State interests and take necessary action to extend legislative authority for it.~~**
- b. ~~Require conformity with the Delta Levee Classifications Table in all Delta investments, including infrastructure and land use.~~
- c. ~~As part of the CDEW planning, involve DPC, BCDC, SWRCB, CDFG and DWR and local governments in setting levee configurations and priorities.~~
- d. ~~Require DWR to adopt a levee policy that will address seismic risk, climate change, subsidence and sea level rise; and that is consistent with the Delta Levee Classifications Table, by 2010.~~
- e. ~~Continue the levee subventions program pending long-term policies and funding following the CDEW and related planning efforts.~~
- f. ~~Determine the target levels of protection, by 2010, that are necessary to achieve Delta Vision goals. Set priorities for upgrading levees in the CDEW Plan, considering the role of levees in achieving water quality and flow objectives, and ecosystem needs.~~
- g. ~~Rest authority for levee priorities and funding with the CDEW Council to ensure a rational and cost effective relationship between levee investments and land use, ecosystem, water flow and quality, conveyance, and Delta-as-place values.~~

1 | **Strategy 14.6.2. Ensure appropriate land**
2 | **uses in the Delta region**

3
4 | Despite the existence of the Delta
5 | Protection Act, and the Delta Protection
6 | Commission (DPC), the Delta region as a
7 | whole has continued to experience
8 | development in locations that potentially
9 | threaten state interests, and heighten safety
10 | risks, in the region. ~~Large-scale~~ Urban
11 | development on certain lands outside of the
12 | primary zone can increase flood risks for
13 | existing inhabited areas and foreclose
14 | critical ecosystem revitalization and
15 | climate change adaptation opportunities.
16 | Substantial population increases in the
17 | region are projected for the coming
18 | decades, meaning that urbanization
19 | pressures in the secondary zone – and even
20 | the primary zone – are likely to continue
21 | ~~for the foreseeable future.~~

22
23 | Land use policy in the Delta must also help ensure ~~that~~ ecosystem vitality can be sustained as
24 | climate change unfolds. There is a need to protect upland areas adjacent to restored intertidal
25 | marshlands so ~~that~~ as sea level rises, the marshlands can naturally migrate landward and continue
26 | to provide their important ecosystem functions. The lands subject to this strategy are located
27 | around the entire perimeter of the Delta, with priority placed where intertidal marsh restoration is
28 | most feasible in the shortest time (see strategy ~~63.1~~).

29
30 | In September 2007, the CALFED Independent Science Board recommended that planning
31 | ~~processes for critical facilities and services~~ use a sea level rise projection of 55 inches for the year
32 | 2100, ~~incorporating~~. This considers more recent scientific information than was available when
33 | the California Climate Action Team Report adopted 12 to 36 inches in 2006. Recognizing the
34 | great uncertainty in these projections and that sea level rise will continue beyond the year 2100,
35 | Delta Vision is assuming 60 inches (5 feet) of projected sea level rise for purposes of ~~policy~~
36 | ~~formulation~~ long term planning.

37
38 | As described in Strategy 15, the DPC should continue to be the primary region-wide land use
39 | governance entity, although with an enhanced role. The DPC’s primary new role will be to:

- 40
41 | • Exercise direct permit authority over development proposals in the primary zone (as
42 | opposed to existing appeal authority);
43 | • Ensure that its plans and regulations are consistent with CDEW policies and plans.
44 | • Ensure the consistency of local government plans and decisions for the secondary zone
45 | with the state interests articulated in the California Delta Ecosystem and Water (CDEW)
46 | Plan (see Strategy ~~167.2~~ for description of the Plan).

Vision recommendations met:

2 10 11 12

Performance measures:

Number of people living in legal Delta in areas with less than 200-year flood protection (-)

Number of structures in deep floodplains (more than 10 feet below sea level or river flood stage) that are not protected by 200-year levees (-)

Number of people living and working in deep floodplains (more than 10 feet below sea level or river flood stage) that are not protected by 200-year levees (-)

1 2010, legislation should be enacted to require the respective local governments to adopt
2 special plans that focus on risk reduction not only through emergency response, but
3 through land use changes, including the options of flood proofing, levee upgrade, and/or
4 relocation. The Local Plan shall bring land uses into conformity with the CDEW Plan
5 over time, taking action consistent with existing land use entitlements of property owners.
6 These plans shall be prepared within three years, and be submitted for certification to the
7 DPC, or to the CDEW Council upon its establishment. Pending certification of these
8 plans, DPC Primary Zone authority shall apply.
9

- 10 a. **Isleton/Brannan-Andrus Island** is defined as all of Brannan-Andrus Island not
11 currently in the primary zone. Oversight would address:
- 12 i. Protection of life and property under current conditions, and under sea
13 level rise
 - 14 ii. Emergency services and access, under current conditions and multi-island
15 failure conditions
 - 16 iii. Levee failure response
 - 17 iv. Seismic safety
 - 18 v. Benefit/cost analysis of levee upgrade options
 - 19 vi. Implications of Brannan-Andrus levee failure for other islands, Delta
20 hydrodynamics, and salinity intrusion
- 21
- 22 b. **Bethel Island**, defined as the entire island. Oversight would address:
- 23 i. Protection of life and property under current conditions, and under sea
24 level rise
 - 25 ii. Emergency services and access under current conditions and multi-island
26 failure
 - 27 iii. Seismic safety
 - 28 iv. Levee failure response
 - 29 v. Benefit/cost analysis of levee upgrade options
 - 30 vi. Implications of Bethel Island levee failure for other islands, Delta
31 hydrodynamics, and salinity intrusion
- 32
- 33 3. **Beginning immediately, the DPC and local governments should prepare local plans**
34 **for five at-risk locations within the primary zone:** Walnut Grove (including the
35 ~~portions~~residential area on Grand Island), Locke, Clarksburg, Courtland, and Terminous.
36 These areas were developed prior to the Delta Protection Act and remain at high risk
37 without clear strategies for risk reduction and sustainability. These plans must:
- 38
- 39 a. Identify ways to reduce risk to life and property through land use policies, or
40 combination of land use regulations and levee upgrades, including options for
41 full-island upgrades, island partitions, or ring levees. Recognize that current
42 PL84-99 type levees are not sufficient.
 - 43
 - 44 b. Consider the towns' historic internal needs, the towns' historic growth rates, and
45 ~~the~~their architectural and cultural character ~~of the existing towns.~~
 - 46

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c. Be submitted for review and potential incorporation in the CDEW Plan.

d. Include a rationale for the state’s participation ~~(if any)~~ in levee upgrades.

~~May~~

e. Plans may include common planning issues such as economic development, historic preservation, public services, and infrastructure.

4. **Beginning immediately, the Department of Water Resources (DWR) should form a consortium with the landowner (Ironhouse Sanitary District) to strategize a land use transition to recreation, terrestrial habitat, subsidence reversal, carbon sequestration, dredged material handling, and appropriate agriculture on Sherman, Twitchell, and Jersey Islands.**

5. **By 2010, the CDEW Council, the DPC, and the Sacramento Area Council of Governments should develop a model land-use protection ordinance for protecting sea level rise buffer lands.** The model ordinance will provide cities and counties located around the Delta margins with language for protecting these lands. The specific language should reflect that only land uses incompatible with future ecosystem landward shifts should be precluded; many current land uses, especially including many forms of agriculture, are generally ~~fully~~ compatible with this protection.

6. **By 2020, the Delta Conservancy and related entities should acquire easements, purchase options, management agreements, and/or fee title in areas adjacent to the highest priority ecosystem restoration areas.** Land uses compatible with long-term open space buffer protection can continue on these properties.

7. **By 2040, the Delta Conservancy and related entities should acquire easements, purchase options, management agreements, and/or fee title in areas adjacent to all remaining ecosystem restoration areas.** Land uses compatible with long-term open space buffer protection can continue on these properties.

1 **Strategy 12.6.3. Achieve levels of**
2 **emergency protection consistent with**
3 **federal and state policies**

Vision recommendations met:

9 12

4
5 Our Vision recognized that the Delta faces
6 extraordinary risks in both the near term and
7 the long term. Earthquakes, river floods,
8 “sunny-day” levee failures, and continuing
9 subsidence and sea level rise all pose
10 substantial risks to people, property, and
11 infrastructure in the Delta. Emergency
12 response capabilities must be thoroughly
13 assessed and strengthened immediately.

Performance measures:

Mileage of designated state highways secured against catastrophic failure by adequate levee improvement, elevation, or other means (+)

Number of people who have received Delta Emergency Response Training (+)

14
15 In addition, the most cost-effective strategies
16 for the protection of critical infrastructure
17 systems, including highways, must also be
18 assessed and implemented immediately.

19 Service providers themselves are in the best
20 position to conduct assessment of the long-term risk exposure facing these systems. Highways
21 should be considered separately, since they are directly managed by the state and are essential to
22 emergency response efforts in the Delta. These analyses must consider the full range of
23 economic and life safety consequences of service outages, the likelihood of such outages, and the
24 proportionate share of the collective costs and benefits achievable under co-location strategies.
25 The analyses must consider these costs and benefits over a time period commensurate with the
26 expected lifespan of the infrastructure system in question, not any shorter planning horizon
27 dictated by financial or regulatory processes.

28
29 In concert with our strategy for improving the Delta levee system, we recommend a series of
30 actions to achieve levels of emergency protection and preparedness that are commensurate with
31 the risks the region faces.

- 32
33 1. ~~By 2010, the State should complete~~Complete a collaboratively prepared Delta-wide
34 emergency regional response strategy that includes plan by 2010 which establishes
35 mechanisms for regional coordination of life safety ~~personnel~~, evacuation, animal
36 control, and ~~public safety, as well as~~levee flood fighting ~~needs in an emergency~~functions
37 where needed. The plan must be comprehensive, incorporate existing organizations, and
38 identify ~~problems, such as gaps, overlaps~~issues where regional coordination or ~~conflicts~~
39 ~~among these organizations~~management of common emergency functions would enhance
40 overall response.

- 41
42 a. This collaboration must include the Delta Protection Commission (DPC), the
43 Department of Water Resources (DWR), the Governor’s Office of Emergency
44 Services, the Delta counties Flood Response Group, the U.S. Army Corps of
45 Engineers (USACE), the Department of Defense, the Department of
46 Transportation (U.S. Coast Guard), the regulated utilities, the railroads,

1 reclamation districts, and water purveyors both public and private. Final decision
2 making on final products will remain with those agencies having statutory
3 response authority within the Delta.

- 4
- 5 b. The entities ~~involved in a comprehensive emergency response strategy with~~
6 statutory emergency response responsibilities in the Delta must conduct exercises
7 together to determine ~~what~~ where regional coordination gaps, if any, ~~in emergency~~
8 ~~planning or response~~ still exist following completion of the regional plan.
- 9
- 10 c. The DPC should be a partner with the emergency response agencies, to provide
11 Delta-specific information and insights concerning the social aspects of
12 emergency response efforts, including identified gaps within existing plans and
13 response processes.

- 14
- 15 2. ~~Beginning immediately, all agencies responsible for emergency response in the Delta~~
16 ~~should embark upon a comprehensive series of emergency management and~~
17 ~~preparation actions. Embark upon a comprehensive series of emergency~~
18 ~~management and preparation actions, beginning immediately.~~ These agencies
19 include DWR, the Governor’s Office of Emergency Services, the Delta counties Flood
20 Response Group, USACE, the Department of Defense, the Department of Transportation
21 (U.S. Coast Guard). The actions, which should be jointly identified by these agencies,
22 should include:

- 23
- 24 a. ~~Clarify chains of command for responses to emergencies; Establish unified~~
25 command and multi-agency coordination systems where appropriate to improve
26 overall response.
- 27
- 28 b. Conduct an emergency disaster planning exercise in the Delta, involving all
29 appropriate federal, state and local agencies, to test multi-agency coordination
30 processes.
- 31
- 32 c. ~~Establish clear benchmarks for recommending and demanding~~
33 evacuations; Establish clear criteria for issuance of mandatory evacuation orders.
34 Further establish a clear process for issuance of public advisories on levee
35 conditions below criteria for issuance of a mandatory evacuation order.
- 36
- 37 d. ~~Develop good regional evacuation plans, including evacuation routes and shelter~~
38 ~~locations; Implement the Inland Region Mass Evacuation Plan (already developed,~~
39 but not acted upon by the state), and coordinate local evacuation plans with its
40 procedures.
- 41
- 42 e. ~~Begin~~ Continue emergency response exercises and drills with citizens as well as
43 emergency response personnel; .
- 44

- 1 f. Stockpile and pre-position supplies, including caches for citizen emergency
2 response; and flood fight supplies and materials for preventing levee failure, at
3 strategic locations in the Delta.
4
- 5 g. Earmark money and give spending authority for rapid response; by providing
6 from flood bonds significant emergency funds which can be accessed by the State
7 Flood Operations Center or a local government in order to ensure that the
8 agency/jurisdiction closest to a developing threat to levee integrity, and best
9 placed and able to act effectively and rapidly, has the resources to stabilize the
10 situation. While reasonable control mechanisms must be put in place, agencies
11 capable of managing flood fight activities at all levels of government must be able
12 to act to stabilize a levee without recourse to time-consuming bureaucratic and
13 financial processes.
14
- 15 h. Eliminate historic bureaucratic, budgetary, and jurisdictional barriers to rapid
16 action by any level of government best places to respond effectively and rapidly
17 to a developing threat to levee integrity, or to opportunities to contain and reduce
18 the impact of flood flows following levee failure.
19
- 20 i. Sign contracts for barges along the West Coast to move people and supplies. In a
21 major event, California will likely need help from other states and any existing
22 mutual aid agreements should be assessed and improved as needed;
23
- 24 j. Ensure that adequate human labor resources to repair breaches will be available,
25 and sufficiently mobile in the Delta, after any potential disaster.
26
- 27 k. Set up a Boat Search and Rescue Marshal Program for rapid evacuation of
28 neighborhoods;
29
- 30 l. ChangeIn deep floodplains where the 100-year flood elevation for the area
31 exceeds first floor heights of that building, change building codes to require exits
32 to a building’s roof from the inside;
33
- 34 m. Paint lampposts on every block behind levees to show the 100-year flood or sea
35 level, to address human tendencies to underestimate risks and avoid disaster
36 preparation; and
37
- 38 n. Begin required school programs about emergency training.
39
- 40 3. **By 2012, the Complete a comprehensive analysis of the costs and benefits of highway**
41 **protection strategies, and adopt a policy based on its findings, by 2012. The**
42 **California Department of Transportation should conduct a comparative analysis,**
43 **beginning immediately,** of the costs and benefits of:
44
- 45 a. Reinforcement of levees protecting highways against seismic and other levee
46 failure threats;

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- b. Armoring or raising individual highways or segments;
- c. Co-location of highways with adjacent infrastructure systems into fortified corridors;
- d. Relocation of highways to areas with lower flood risks both now and under expected sea level rise conditions.

By 2012, a

- 4. **Complete a comprehensive analysis of the costs and benefits of infrastructure protection strategies, and adopt a policy based on its findings, by 2012. A** consortium of public utilities and other infrastructure service providers, convened by the California Public Utilities Commission and the California Energy Commission, should conduct a comparative analysis, **beginning immediately**, of the collective long-term costs and benefits of:
 - a. Reinforcement of levees protecting infrastructure systems against seismic and other levee failure threats;
 - b. Co-location of adjacent infrastructure systems into fortified corridors;
 - c. Relocation of infrastructure systems to areas with lower flood risks both now and under expected sea level rise conditions.
 - d. Tunneling infrastructure systems below the Delta.

1 **Strategy ~~15.7.1: Create the California~~**
2 **~~Ecosystem and Water Council (replacing~~**
3 **~~the California Bay-Delta Authority), and~~**
4 **~~create a new governance system—Delta~~**
5 **~~Conservancy to manage the co-equal values~~**
6 **~~and other state interests in the~~**
7 **~~Delta implement ecosystem restoration~~**
8 **~~projects and enhance the roles of the~~**
9 **~~Council.~~**

10
11 When ~~surveying the myriad governing~~
12 ~~agencies and institutions that currently have a~~
13 ~~stake in the Delta, one is struck by the~~
14 ~~realization that no one is in charge. Literally~~
15 ~~viewing the current governance system in the~~
16 ~~Delta three key points emerge: (1) state~~
17 ~~interests are neither clearly expressed nor~~
18 ~~effectively pursued; (2) there are hundreds of~~
19 ~~federal, state and local governmental entities~~
20 ~~can affect the inter-linked with partial~~
21 ~~responsibility for aspects of the Delta and its~~
22 ~~resources in the Delta, but none is ultimately;~~
23 ~~and (3) no one governmental entity is~~
24 ~~responsible for them. Our managing the broad~~
25 ~~range of important state interests.~~

26
27 ~~Based on these findings, our Vision therefore~~
28 ~~called for the creation of a new a more~~
29 ~~effective governance structure for in the Delta. This governance structure must clearly assign~~
30 ~~responsibility for the management of co-equal values and other state interests, but it must do so~~
31 ~~in a way that retains needed flexibility for managing the would ”.ensure integrated action to~~
32 ~~implement this vision.” (Delta over the long term. Vision. 2007: 17). That recommendation~~
33 ~~remains sound. Progress can only be made if there is a new system of governance in the Delta.~~
34 ~~The new governance system must be capable of making difficult decisions and implementing~~
35 ~~effective policies.~~

36
37 ~~To accomplish these objectives, this strategy includes the following elements: This will be~~
38 ~~difficult due to strong arguments over the proper goals to pursue, changes in the natural~~
39 ~~environment, such as climate change and sea level rise, as well as threats to the Delta and our~~
40 ~~water supply system on earthquakes, floods, levee failures and invasive species. Continuation of~~
41 ~~the current system of governance --- really, a ‘system’ in name only --- guarantees continued~~
42 ~~deadlock and inevitable litigation.~~

43
44 We propose the following governance structure:
45

Vision recommendations met:

10 and 12

Performance measures:

~~Percentage of adaptive management actions recommended by CDEW Science Program that are implemented in a timely manner (+)~~

~~Percentage of recommendations by Public Advisory Group that are considered by the CDEW Council in a timely manner (+)~~

~~Percentage of required state and federal permits for ecosystem and water system management obtained in a timely manner (+)~~

~~Percentage of CDEW Council documents and meeting minutes posted online in a timely manner (+)~~

~~Number of federal and state court actions involving the co-equal values (-)~~

To Be Determined

- 1 • ~~By May 2009~~ **A new governance body, the California Legislature should create a**
2 **California Delta Ecosystem and Water (CDEW) Council** ~~to govern~~ **(Council), which**
3 **will replace** ~~the co-equal values of healthy estuarine ecosystem function and a reliable~~
4 **water supply, and to approve policies for enhancing the existing California Bay-Delta as**
5 **a place. Council operation should begin in July 2009.** Authority. **The Council should**
6 **have the following characteristics** will:
7
8 ~~○The Council should consist of five to seven voting individuals, with one designated~~
9 ~~as chair.~~
10
11 ~~○The individuals, and the chair, should be appointed by the Governor and confirmed~~
12 ~~by the Senate.~~
13
14 ~~○The individuals should serve for five year staggered terms and be eligible for re-~~
15 ~~appointment a maximum of one time.~~
16
17 ~~○The appointment process should be transparent to the public.~~
18
19 ~~○The Council shall include ex-officio non-voting state members representing the~~
20 ~~Delta Protection Commission (DPC), the Delta Conservancy, Department of Fish~~
21 ~~and Game (DFG), Department of Water Resources (DWR) and State Water~~
22 ~~Resources Control Board (SWRCB). Federal ex-officio non-voting members~~
23 ~~shall include the Department of Interior, U.S. Environmental Protection Agency~~
24 ~~(USEPA), U.S. Army Corps of Engineers (USACE), and National Ocean and~~
25 ~~Atmospheric Administration (NOAA).~~

26
27 ~~The Council should possess the following responsibilities and powers:~~

- 28
29 ~~○To develop and adopt a CDEW Plan (see Strategy 16). This Delta Vision strategic~~
30 ~~plan should serve as an interim plan until adoption of the CDEW Plan.~~
31
32 ~~○To ensure consistency of state and federal actions with the CDEW Plan under the~~
33 ~~Coastal Zone Management Act (CZMA), including approval of all water, road,~~
34 ~~railroad, utility and levee infrastructure projects in the legal Delta.~~
35
36 ~~○To determine the state's water delivery and ecosystem interests in Delta levee~~
37 ~~systems and to establish policies linking levee types defined by specified design~~
38 ~~standards and allowed land uses.~~
39
40 ~~○To review selected decisions by the DPC for consistency with the adopted CDEW~~
41 ~~Plan and to remand any decision judged inconsistent to the DPC. These reviews~~
42 ~~may be initiated upon the request of any member of the Council and are limited to~~
43 ~~amendment of DPC plans, levee upgrades, state highway routing and upgrade,~~
44 ~~water or sewer capacity changes or extensions, agricultural land conversion, new~~
45 ~~land uses inconsistent with the Strategic Plan's Land-use/Levee Congruence~~
46 ~~Table.~~

- ~~○To provide oversight for specific areas that lie outside the Delta Primary Zone which are critical to meeting Delta Vision goals (see Strategy 14).~~
- ~~○To appoint members of the Governing Board of the Delta Conservancy.~~
- ~~○To maintain a direct working relationship with the Delta Science Program and the Delta Science and Engineering Board.~~
- ~~○To receive and allocate funds raised under the CDEW Act, by all bonds for improvements in the Delta ecosystem, water conveyance systems and scientific activities, and from other sources (see Strategy 17).~~
- ~~○To issue debt financing mechanisms, including revenue bonds, tax anticipation notes and certificates of participation.~~
- ~~○To delegate its authority to achieve the purposes of the CDEW Act to any public or non-profit entity, but not to delegate or abrogate its responsibility to achieve the purposes of the Act.~~
- ~~○To ensure that the CDEW Plan and its implementation meet environmental justice criteria.~~
- ~~○To empanel a permanent Public Advisory Group (PAG) to advise and make formal recommendations to the Council. PAG members should be appointed to staggered terms of two or three years. Among the public constituencies that must be represented are water users, environmental groups, local Delta communities, agriculture, business, and environmental justice advocates, among others.~~

~~●By May 2009, the California Legislature should enhance the capacity of the DPC to improve Delta resource planning and management. The Delta Protection Act has thus far adequately protected the Delta’s primary zone, but there is no guarantee that the current will to do so will be sustained. Land uses outside the primary zone also increasingly impact state interests and the Act does not adequately address this issue. In order to enhance the DPC’s resource planning and management functions in the Delta the following actions should be taken:~~

- ~~○By 2010, the DPC’s Resource Management Plan should be updated to reflect the impact that the 2007 state floodplain development laws will have on communities in the legal Delta, and should be made compatible with the CDEW Plan. (The Resource Management Plan is already being revised; if it is completed before the CDEW Plan, a retroactive amendment may be necessary.)~~
- ~~○By 2009, the composition of the DPC should be revised to include all Cities in the legal Delta as well as representation by the Central Valley Flood Prevention Board and the USACE.~~

- ~~○Beginning immediately, the DPC should carry out the land use planning and oversight described in Strategy 14 for Walnut Grove (including the portions on Grand Island), Locke, Clarksburg, Courtland, and Terminous, as well as the four key areas outside the primary zone: the Cosumnes/Mokelumne floodway, the San Joaquin/South Delta lowlands, Bethel Island, and the City of Isleton on Brannan-Andrus Island.~~
- ~~○Developing Local Plans, in conjunction with relevant local governments, for protection of identified areas (above) and considering local economic development. These areas require clear strategies for risk reduction and sustainability. The Local Plans for each at risk community shall not only manage and reduce risks through emergency response, but also through land use policies, including the options of flood proofing, levee upgrade, and/or relocation. These plans would be submitted for review and potential incorporation in the CDEW Plan. The plans must include a rationale for the state’s participation (if any) in levee upgrades. Local Plans shall be submitted to CDEW Council for certification. Pending certification, DPC shall exert jurisdiction over such areas, as if they were in the Primary Zone. Upon Local Plan certification, implementation authority shall lie with the local governments.~~
- ~~○By 2009, remove DPC’s land acquisition authority and vest that authority in the newly established Delta Conservancy.~~
- ~~○Supporting joint action by Delta local governments and communities in the areas of emergency planning and response and other planning, economic development or cultural activities where joint action is beneficial.~~
- ~~○Permitting all projects in the Delta primary zone currently subject to DPC appeal authority.~~
- ~~○Ensuring the consistency of local government plans and actions in the secondary zone with the CDEW Plan, including appellant authority on proposed projects in the secondary zone.~~
- ~~○Ensuring the consistency of all local government plans and actions (see Strategy 16).~~
- By May 2009, the California Adopt a California Delta Ecosystem and Water (CDEW) Plan to achieve the goals of our Vision and this Strategic Plan
- Exercise authority to determine consistence with the adopted CDEW Plan when reviewing actions of state agencies and to use provisions of the Coastal Zone Management Act to address any inconsistencies in actions of federal agencies
- Allocate funds to programs and projects consistent with its plan

- A new body, the **California Delta Conservancy**, created to implement the Delta ecosystem restoration, consistent with our Vision, this Strategic Plan and the CDEW Plan.
- Expanded authority for the existing **Delta Protection Commission**, including authority over historical areas in the Delta, and responsibility for management of the proposed National Heritage Area designation for the Delta:

Existing state agencies retain existing authorities. The Department of Water Resources, California Department of Fish & Game, State Water Resources Control Board and other state agencies will retain their existing authority. The ongoing effective exercise of their authorities in the following areas in support of the CDEW Plan is critical to the success of this recommended governance system:

- ✓ For the science and regulatory implementation of species protection laws, the California Department of Fish and Game and the federal United States Fish and Wildlife Service (USFWS) and NOAA’s National Marine Fisheries Service (NMFS).
- ✓ For linkage of ecosystem policies and programs focused on the Delta with the larger Delta watershed, the Department of Fish and Game, in cooperation with USFWS and NMFS, through the CALFED Ecosystem Restoration Program and the successor programs to be established by the recommended Council
- ✓ For construction and ownership of water conveyance and storage facilities, the California Department of Water Resources and the United States Bureau of Reclamation.
- ✓ For application of water rights and water quality laws, the State Water Resources Control Board and regional water quality boards.
- ✓ For land use and resource management policies under the Delta Protection Act, the Delta Protection Council.
- ✓ For municipal functions, including police powers and service provision, which contribute to the value of the Delta as place, existing local governments.

The following action should be undertaken to create this structure:

- **The California Legislature should create a California Delta Ecosystem and Water (CDEW) Council to replace the Bay-Delta Authority and subsume CALFED programs.**

The Council should replace the Bay-Delta Authority and subsume programs of CALFED. Since some continuing federal funds are budgeted to CALFED, the Council would assume any remaining authority and program responsibility. Council operations should begin in July 2009.

The Council should have the following characteristics:

- Five to seven voting members, including a chair.

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- Members should be appointed by the Governor and confirmed by the State Senate. No geographic, occupational or representational criteria are proposed for these appointments. Such an approach invites argument over categorization to be included in the original legislation and then arguments over whether or not an individual fits the categories. Instead, the criteria used for appointment of the Delta Vision Blue Ribbon Task Force in Executive Order S-17-06 are appropriate: “..members ..to include diverse expertise and perspectives, policy and resource experts, strategic problem solvers, and individuals having successfully resolved multi-interest conflicts.”
- Members should be entitled to serve for five-year staggered terms.
- The Council should possess the following responsibilities and authorities:
 - To develop and adopt a CDEW Plan, incorporating the plans of other agencies where appropriate to meeting the charge to the Council (see Strategy 7.2). The statute authorizing the CDEW Plan should require other state agencies to exercise their authority to support implementation of the Plan.
 - To assume responsibility for implementation of any conservation or habitat management developed for the Delta under state or federal authority.
 - To ensure federal and state consistency with the CDEW Plan.
 - The Council shall be a designated Trustee Agency pursuant to Public Resources Code Section 21000, et. seq.
 - To determine the consistency of major water, road, railroad, utility and levee infrastructure projects in the legal Delta with the Council’s adopted Plan and to communicate that determination to the responsible agency.
 - To oversee specific areas that lie outside the Delta Primary Zone which are critical to meeting Delta Vision goals (see Strategy 14).
 - To work with the Delta Science Program and the Delta Science and Engineering Board on adaptive management.
 - To receive and allocate funds raised under the CDEW Act or otherwise provided to advance policies and programs related to the Delta. The strategic finance plan is described in Strategy 7.4
 - To address environmental justice in Delta decision-making processes by requiring review of proposed actions against environmental justice criteria

1 defined in the CDEW Plan. The Council should adopt specific
2 environmental justice criteria in the formulation of the CDEW Plan, and
3 periodically review their status.

- 4
- 5 • To empanel a Public Advisory Group (PAG) of stakeholders to advise,
6 make formal recommendations to the Council, and to issue a public
7 biennial report on their activities
- 8 • To sue to ensure specific compliance with the CDEW Plan
9
- 10 • To establish policies and procedures that ensure that the day to day
11 operations of water export systems are consistent with the policies and
12 plan adopted by the Council
- 13
- 14 • To coordinate alternative approaches to dispute resolution (such as
15 arbitration, citizen juries) to reduce reliance on litigation and the courts
16
- 17 • **The California Legislature should create a California Delta Conservancy ~~to~~**
18 ~~undertake ecosystem enhancement and urban waterfront area projects, and conduct other~~
19 ~~activities in support of economic development which are consistent with the CDEW Plan,~~
20 ~~and to serve as an intermediary among government, and non-governmental organizations,~~
21 ~~businesses, property owners, and citizens.~~

22
23 ~~Our Vision identified the need for an entity that “helps mobilize public involvement and~~
24 ~~provides incentives and support for private interests” working in support of the Delta as a~~
25 ~~place. California has no entity responsible for implementation and coordination of Delta~~
26 ~~ecosystem enhancement and related revitalization projects. California has a long and~~
27 ~~successful history with conservancy structures that perform these functions at a regional~~
28 ~~level throughout the state conservancies, and there is widespread agreement that such an~~
29 ~~entity is appropriate for the Delta. The California Delta Conservancy would assume~~
30 ~~responsibility for state ecosystem-related and urban waterfront area projects now~~
31 ~~underway in the Delta, Suisun Marsh, and Local Plan areas.~~

32
33 The California Delta Conservancy should have the following characteristics ~~and~~
34 ~~functions:~~

- 35
- 36 • It should be devoted solely to the ~~Delta and be comprised of 7-10~~
37 ~~members with adequate local representation~~ statutory Delta and the Suisun
38 Marsh.
- 39
- 40 • ~~It should receive adequate funding from the CDEW Council for identified~~
41 ~~purposes, accept donations and dedication of lands, and pursue grant~~
42 ~~opportunities~~ The governing structure of the Delta Conservancy should
43 include 13 to 15 voting members (e.g., 5 appointed by the Governor, 1 by
44 each House of the Legislature and 6 local government representatives).
45 The Conservancy should be authorized to add either non-voting members

1 of their Board, or to create additional advisory bodies to ensure proper
2 representation of local concerns.

3
4 ~~It should implement land-related elements of the CDEW Plan and purchase, rent or~~
5 ~~otherwise~~ The California Delta Conservancy should possess the following responsibilities:
6

- 7 • Responsibility for state ecosystem-related and urban waterfront area
8 projects in the Delta, Suisun Marsh, and Local Plan areas.
- 9
10 • Ability to acquire ~~decision-making control over, or place under its~~
11 management, such land as is needed to implement the CDEW Plan,
12 ~~including acquiring agricultural and conservation easements to support~~
13 ~~ecosystem goals, water reliability goals, and sustainable agriculture.~~ It
14 should have the power to enter into contracts and to buy and sell land and
15 other property.

16
17 ~~It should undertake independent assessment of the Delta's needs consistent with its~~
18 ~~mission.~~

- 19
20 • ~~It should receive properties now~~ When offered, assume responsibility for
21 lands currently in state, federal or local ownership.
- 22
23 • ~~It should work closely with the Council to identify and support needed~~
24 ~~ecosystem restoration activities.~~ Receive adequate funding from the State
25 of California and/or the CDEW Council
- 26
27 • ~~It should support regional~~ Engage in programs and ~~statewide recreation~~
28 ~~interests~~ activities to bolster support appropriate recreation and ecosystem
29 activities in the Delta, including activities to support the local economy, ~~in~~
30 ~~coordination with the~~ and designation of a National Heritage Area (NHA)
31 ~~entity (see Strategy 11-), consistent with the CDEW Plan.~~
- 32
33 • ~~It should implement~~ Implement the CDEW Plan and other state and
34 federal programs to create incentives for mutually beneficial mixtures of
35 traditional agriculture, habitat and recreation, including agri-tourism,
36 wildlife-friendly agriculture practices, ~~bird~~ bird watching, and hunting.
- 37
38 • ~~By December 2010, the~~ The California Legislature should create a ~~strengthen the~~
39 ~~Delta Operations Team and a California Water Utility to manage Delta water flows~~
40 ~~and the State Water Project (SWP) in concert with Central Valley Project (CVP)~~
41 ~~operating guidelines and measures.~~ Protection Commission (DPC).

42
43 ~~Achieving the co-equal values in the Delta will require careful management of water~~
44 ~~flows into and out of the estuary. Increased flexibility in operations will be required to~~
45 ~~achieve wet period diversions. Though the Council will be responsible for ensuring the~~
46 ~~consistency of these functions with the CDEW Plan and the co-equal values, the day to~~

1 ~~day management should be performed by the Delta Operations Team, comprised of~~
2 ~~representatives from state and federal agencies with relevant experience and overseen by~~
3 ~~the Council. The Delta Protection Commission was created in 1992 and given appellate~~
4 ~~review of proposed land uses in the Delta primary zone. The Delta Protection Act and~~
5 ~~the actions of the DPC have protected the primary zone to date, but increased pressure for~~
6 ~~urban growth outside the primary zone, coupled with the increased risk of catastrophic~~
7 ~~flood from sea level rise and earthquakes strongly suggest there is a need to strengthen~~
8 ~~the DPC. These changes must occur as soon as possible.~~

9
10 ~~This continues present practices for the composition of the team, but~~ These changes
11 ~~operations and processes to resolve conflicts. Decisions of the Delta Operations Team~~
12 ~~would~~ should be implemented by the California Water Utility and implementation
13 ~~disputes would be resolved by the Council or its designee. In practice, it is expected that~~
14 ~~the Council will rely on the relevant state and federal agencies to establish decision rules~~
15 ~~and designate one of its employees to resolve any implementation disputes requiring~~
16 ~~quick decision. Any pattern of such disputes would be addressed by the relevant state~~
17 ~~and federal agencies, resulting in new operating decision rules to be adopted by the~~
18 ~~council.~~ made:

- 19
20
- 21 • ~~Separation of the SWP from DWR will allow DWR to focus primarily on~~
22 ~~statewide water and flood control planning and management, including its~~
23 ~~established competencies in water use efficiency and conservation,~~
24 ~~regional self-sufficiency, integrated water resources management and~~
25 ~~project implementation, from design through land acquisition to~~
26 ~~construction~~ The DPC's Land Use and Resource Management Plan must
27 be consistent with the California Delta Ecosystem and Water (CDEW)
28 Plan and should also reflect relevant state legislation, such as the 2007
29 state floodplain development laws.

 - 30 • ~~The California Water Utility would~~ The DPC should carry out the land use
31 planning and oversight described in Strategy 14, including developing
32 Local Plans for each at-risk community.

 - 33 • The DPC should permit all projects in the primary zone and have appellate
34 authority over all projects in the secondary zone.

 - 35 • The DPC's land acquisition authority should be transferred to the Delta
36 Conservancy.

 - 37 • The DPC should ensure consistency of local government plans with its
38 Land Use and Resource Management Plan.

 - 39 ○ The DPC should have the following ~~functions and responsibilities~~ characteristics:
40
41
42
43
44

- ~~The California Water Utility will be a Joint Powers Authority (JPA) or other legal entity formed by state water contractors~~The composition of the DPC should include all Counties and Cities in the legal Delta to better assess and coordinate local land use planning and emergency response. Cities should vote on a weighed basis commensurate with their populations.
- ~~It should assume operation and maintenance of the SWP under an arrangement which retains state ownership of all real property and structures of the SWP.~~The composition of the DPC should include the Central Valley Flood Prevention Board and the USACE to better assess and coordinate flood protection issues.
- ~~The California Water Utility would execute and manage contracts for water delivery under policies established by DWR covering at least the areas of price for water delivered, other financial obligations (such as capital repayment), and compliance with relevant policies of the State of California regarding resources and water rights.~~The DPC should possess the following responsibilities and authorities:
 - ~~The California Water Utility should also pursue increased integration of operations with the CVP, developing a plan for increased integration of operations by 2011 and shall commission an analysis of terms for the possible transfer of the CVP to the State of California, to be completed by 2013. If such a transfer occurs, its terms shall include operation by the California Water Utility under the same policies and obligations as found in the SWP.~~The DPC’s Resource Management Plan must be consistent with the California Delta Ecosystem and Water (CDEW) Plan (discussed below) and should reflect relevant state legislation, such as the 2007 state floodplain development laws.

~~It should operate water conveyance and storage systems to meet the Delta Vision’s co-equal goals consistent with the recommendations in the CDEW Plan.~~

~~The Delta Operations Team, much like the current structure, would be comprised of representatives from relevant state and federal agencies, and have the following functions and responsibilities:~~

- ~~It should coordinate and make operational decisions on water flows affecting the Delta estuary on a day-to-day basis in accord with SWRCB’s Water Quality Standards and Endangered Species Act requirements as developed into operations decision rules.~~
- ~~To achieve the desired flexibility, successful operational decision rules would include (a) guidance for expected contingencies, (b) sufficient description of~~

1 values to upon which decisions can be made in situations not anticipated, and (c)
2 institutionalized processes for incorporating learning into the operational decision
3 rules.

- 4
- 5 • The DPC should carry out the land use planning and oversight described
6 in Strategy 6.2, including ensuring development of Local Plans for each
7 at-risk community.
 - 8
 - 9 • The DPC should permit all projects in the primary zone and have appellate
10 authority over all projects in the secondary zone.
 - 11
 - 12 • The DPC's land acquisition authority should transfer to the Delta
13 Conservancy.
 - 14
 - 15 • The DPC should ensure consistency of local government plans and actions
16 as well as Local Plans with the CDEW Plan.
 - 17
 - 18 • **By September 1, 2009, the CDEW Council should create a Delta Science and**
19 **Engineering Program and a Delta Science and Engineering Board** ~~to support the~~
20 ~~Council in pursuit of the co-equal goals, and to design and oversee the adaptive~~
21 ~~management plan (see Strategy 9).~~

22

23 California must maintain a strong and consistent investment in science and engineering
24 relevant to the Delta. Moreover, there needs to be a more direct link between scientific
25 investigation and real-world management and policy needs. To achieve this, the Council
26 must have access to both a permanent Science and Engineering Program staff and to an
27 independent Science and Engineering Board that reviews and advises upon Council
28 actions. ~~In this light, the Science and Engineering Program should include:~~

- 29
- 30 ○ ~~A~~ The Delta Science and Engineering Board should have the following
31 characteristics:
 - 32
 - 33 • It should consist of between 12 and 20 individuals.
 - 34
 - 35 • All individuals should have relevant natural science, social science,
36 engineering, and policy expertise.
 - 37
 - 38 • The individuals should be appointed by the Council.
 - 39
 - 40 • The term of appointment should be 5 years with a maximum reappointment of
41 one term.
 - 42
 - 43 • There should be a lead ~~scientists~~ scientists appointed by the CDEW Council
44 with a rotating appointment every 3 years.
 - 45

1 **Ensure that environmental justice is adequately addressed** in Delta decision-making
2 processes by requiring review of proposed actions against environmental justice criteria defined
3 in the CDEW Plan.

4
5 Many communities living within, and others dependent upon, the Delta may be
6 vulnerable to disproportionate negative impacts from resource management decisions in
7 the state's interest. The CDEW Council should consider the CDEW Plan's impacts on
8 disadvantaged or minority communities and reduce or mitigate these as fully as possible.
9 These effects will not be limited to the Delta, the Central Valley, or any sector of the
10 economy, as policies affecting water availability, quality and price anywhere in the state
11 will affect incomes and employment patterns. Specifically, the Council should adopt the
12 following environmental justice criteria in the formulation of the CDEW Plan, and
13 periodically review their status.

- 14 ○Public health impacts resulting from mercury or other water contaminants in Delta
15 waters.
- 16
- 17 ○Impacts on drinking water quality for communities reliant on Delta supplies.
- 18
- 19 ○The potential for communities currently lacking potable water supplies to benefit
20 from changes in Delta policies.
- 21
- 22
- 23 ○Targeted assessments of risk to low income and disadvantaged communities from
24 catastrophic events and of the potential of these communities to benefit from
25 emergency response planning.
- 26
- 27 ○Effect on state-wide employment opportunities or other community resources, or the
28 potential to improve economic conditions and job creation.
- 29
- 30 ○Changes in the cost of domestic water and the impact on affordability for low-
31 income communities or communities of color.
- 32
- 33 ○Ecosystem changes that may impact access to cultural resources, especially salmon
34 and other river-related resources critical to maintaining particular Native
35 American resources.
- 36
- 37 ○The potential existence of regressive fees and taxes.
- 38
- 39 ○The Public Advisory Group (PAG) should have the primary responsibility for
40 tracking and protecting environmental justice issues in all components of the
41 governance structure.
- 42

43 ○**Integrating the two co-equal goals of ecosystem revitalization and reliable water**
44 **supplies for California requires not only changed policy making, and changed**
45 **financing (addressed in strategy 17) but also integrated implementation.** The

1 ~~governance and financing strategies provide a foundation for integrated implementation;~~
2 ~~the following actions support achieving the two co-equal goals.~~

3
4 ~~○On an on-going basis, the legislature and governor shall include language requiring~~
5 ~~integrated action in any Delta-related bond or any other financing instrument.~~
6 ~~They should also include language requiring progress on other Delta Vision~~
7 ~~recommended strategies for:~~

8 ~~○improved protection of ecosystems and water quality throughout the Delta~~
9 ~~watershed~~

10 ~~○increased state-wide regional self-sufficiency and~~

11 ~~○increased efficiency and conservation in use of water. Similar provisions~~
12 ~~should be included in any related contracts.~~

13
14 ~~The Delta Vision Blue Ribbon Task Force approved an example of such bond~~
15 ~~language on July 18, 2008:~~

16
17 ~~1. It is the intent of the Legislature, consistent with the recommendations of the~~
18 ~~Governor's Delta Vision Blue Ribbon Task Force, to implement, at the earliest possible~~
19 ~~time a comprehensive and linked program for sustainable management of the Bay-Delta,~~
20 ~~including, among other things, the establishment of a new delta governance entity with~~
21 ~~long-term policy, funding, and oversight authority.~~

22
23 ~~2. The Legislature finds and declares that it is state policy to achieve sustainable~~
24 ~~management of the Bay-Delta through the simultaneous achievement of the co-equal~~
25 ~~goals of a revitalized and resilient ecosystem and a reliable water supply for Californians.~~

26
27 ~~3. Notwithstanding any other provision, to be eligible to be financed pursuant to this~~
28 ~~division, any project, action or activity that will wholly or partially assist in the~~
29 ~~fulfillment of one or both of the co-equal goals specified in #2 shall be consistent, as~~
30 ~~certified by the Secretary for Resources, with the Delta Vision Blue Ribbon Task Force's~~
31 ~~November 2007 Vision and its October 2008 strategic plan, including requirements for~~
32 ~~linked implementation, quantifiable performance measures, monitoring, and adaptive~~
33 ~~management.~~

34
35 ~~4. Bond covenants and contract language for use of the facilities will specify: (a) use of~~
36 ~~any facility financed pursuant to this division shall be operated consistent with the co-~~
37 ~~equal goals and the recommendations of the Governor's Delta Vision Blue Ribbon Task~~
38 ~~Force; and (b) contractors shall optimize water use efficiency, including reducing per~~
39 ~~capita use by 20 percent in their service area with appropriate allowance for early action.~~

40
41 ~~5. Upon establishment of the new delta governance entity contemplated in this chapter:~~

42
43 ~~(a) All unallocated funds previously appropriated under this division for projects, actions~~
44 ~~or activities that will wholly or partially assist in the fulfillment of one or both of the co-~~
45 ~~equal goals specified in #2 shall be transferred to the new entity for expenditure, grant or~~
46 ~~loan consistent with the long-term sustainable management plan adopted by that entity.~~

47
48 ~~(b) All new funds appropriated under this division for projects, actions, or activities and~~
49 ~~all revenues generated by any fee, charge or tax created by this act that will wholly or~~
50 ~~partially assist in the fulfillment of one or both of the co-equal goals specified in~~
51 ~~paragraph 2 shall also be received by the new entity and shall be expended, granted or~~
52 ~~loaned consistent with the long-term sustainable management plan adopted by that entity.~~

1
2 The intent of such language is to achieve more effective integration of state policies.
3 Once overall plans are formalized, any project or funding stream should be consistent
4 with, and effectively represent, a subset of recommendations developed in those
5 broader plans.
6

- 7 ~~■ On an on-going basis, any bond and/or appropriation of state funds should link~~
8 ~~expenditures and results in ecosystem revitalization and improving water supply~~
9 ~~reliability to a shared calendar.~~

10
11 California has existing water conveyance facilities in the Delta, owns lands in the
12 Delta and is currently undertaking limited ecosystem improvement projects in the
13 Delta. In the next years, much more activity is expected, largely focused on
14 improving ecosystem performance and increasing water supply reliability, but new
15 initiatives regarding floodplain management and levees will also impact the Delta.
16 The federal government, through the Bureau of Reclamation (Reclamation) and the
17 U.S. Army Corps of Engineers (USACE), is active in the Delta, and policies of the
18 Federal Emergency Management Agency regarding levees and flood risks will have
19 large impacts. Local governments, including counties, cities and reclamation districts
20 are also making decisions and investments in the Delta. Delta Vision has produced a
21 graphic which identifies many of the activities in the Delta and proposed decision
22 points over time.
23

24 This action seeks to ensure that implementation of ecosystem revitalization and water
25 supply reliability projects move forward together on a shared calendar. Success in
26 linking these critical activities will provide anchor points around which other
27 decisions can be made and calendars linked.
28

29 The Bay Delta Conservation Plan (BDCP) proposes a calendar for decision making
30 on a Conservation Plan (<http://resources.ca.gov/bdcp/>). Improved conveyance is a
31 large element of that program and an Environmental Impact Report (EIR)/
32 Environmental Impact Statement (EIS) process is being launched to support a
33 decision regarding conveyance. The final BDCP Conservation Plan is likely to also
34 include ecosystem projects, such as increased inter-tidal areas, as part of a California
35 Natural Communities Conservation Plan and a federal Habitat Conservation Plan.
36

37 To ensure that both improvements in water system reliability and ecosystem
38 revitalization of the conservation plan are achieved, a shared time line for projects is
39 required. To that end, authorizing statutes and any bond or other financing instrument
40 should include accountability measures linked to the decision-making, capital
41 investment and operations and management phases of projects supporting these two
42 co-equal goals.
43

- Long-term governance-reliable water supply and the value of the Delta will be centered upon the CDEW Plan, to as a place. This plan will build upon, and integrate, other plans. Those other plans include, but are not limited to: the Ecosystem Restoration Program being developed by the Department of Fish and Game, the Land Use and Resource Management Plan developed by the Delta Protection Commission, any local Habitat Conservation Plan within the Delta, the Suisun Marsh plan under development, sections of the California Water Plan that address reliable water supply being developed by the Department of Water Resources and the Conservation Program resulting from the BDCP. Those responsible for implementing these other plans shall do so in a manner to facilitate of achieving the adopted CDEW Plan.

Existing governance in the Delta lacks a cohesive and integrated structure. The CDEW Plan is the document that will provide guidance for governing bodies and governance decisions. The CDEW Plan will be created/adopted by the CDEW Council. Authoring/Development of the CDEW Plan will begin with engaging existing plans and planning, working to achieve an integrated plan for Council adoption. Legislation establishing the Council and the CDEW Plan should provide for resolution of any conflicts between other plans and planning and the CDEW Plan. Developing an integrated CDEW Plan should be required within a set time period of less than five years, and the Council should be authorized to adopt interim Plans until completion of the full Plan and to make decisions and allocate funds on the basis of an adopted interim Plan.

Approving a legally binding Plan and overseeing its implementation over decades will allow the Council to ensure consistency of action among existing state, federal and local agencies and achieve the level of flexibility appropriate to the Delta’s management challenges. The CDEW Plan will provide guidance and a framework for the functions of the Council, the Delta Protection Commission (DPC), and the Delta Conservancy, as well as other state, federal and local agencies actively engaged in Delta resource management. Local governments and other state and federal agencies will continue planning, decision making and operations appropriate to their authorities. The statute creating the CDEW Plan authority should require that they exercise their authority in manners that support implementation of the CDEW Plan, the approach used in some similar contexts, such as the Tahoe Regional Plan. The goal of the CDEW Plan is consistency in effort among all these entities.

Institutionalize adaptation through the Plan: The Delta is characterized not only by complexity, but also by uncertainty. Recognizing both uncertainty in knowledge and uncertainty about outcomes of policies and programs has very specific implications for future Delta management. One of those implications is that adaptive management must be at the center of Delta governance and decision making and the creating and updating the Plan offers a structure within which to institutionalize adaptation.

There are two kinds of uncertainty in the Delta ecosystem: lack of understanding cause and effect relationships and unexpected change. Equally important is the uncertainty about the effectiveness of policy tools.

1
2 Adaptive management is defined by the federal government as follows:

3
4 “Adaptive management is a type of natural resource management in which
5 decisions are made as part of an ongoing science-based process. Adaptive
6 management involves testing, monitoring, and evaluating applied strategies, and
7 incorporating new knowledge into management approaches that are based on
8 scientific findings and the needs of society. Results are used to modify
9 management policy, strategies, and practices.”

10
11 Importantly, adaptive management is not a series of after-the-fact reactions to changes in
12 ecosystem performance. Rather, adaptive management requires decision making which
13 recognizes the probability of less than desired results and makes decisions based on the
14 best available science and best available policy tools. Adaptive management equally
15 commits to observing, analyzing and understanding the results of those prior actions.
16 Finally, adaptive management requires the political, managerial and operational capacity
17 to design and implement improved actions.

18
19 This cycle is repeated, incorporating over time, changes in the underlying systems,
20 advances in scientific understanding, new policy tools, and changing policy decisions. To
21 gain the advantages of local knowledge and increased stakeholder commitment to not
22 only particular decisions, but also to the iterative character of adaptive management,
23 considerable attention must be given to effectively incorporating stakeholders over long
24 periods of time. As authority for making and/or implementing relevant policies is often
25 fragmented among several state, federal and local agencies, similar attention must be
26 given to effectively linking multiple agencies over long periods of time.

27
28 The CDEW plan recommended here has the advantages of integrating the actions of
29 many relevant agencies and also of being regularly revised on five year cycles. These
30 regular reviews and updates also provide a schedule of review activities in which to gain
31 the value of stakeholder participation. This rhythm of review cycles also requires
32 organizing scientific understanding and program assessment to a point where they can
33 inform policy making.

34
35 In this context, the CDEW Plan must:

- 36
37 ○ ~~Establish targets and management objectives for the Delta ecosystem~~
38 incorporatingIncorporate any plan developed under species protection laws that
39 impacts Delta resources.
40
41 ○ ~~Establish targets and management objectives for water supply reliability for all~~
42 users of water diverted upstream, within, and exported fromIncorporate any legal
43 requirement for water flow and water quality in the Delta.
44

- 1 | ○ ~~Establish~~ **Define specific** state land use interests in and around the Delta,
2 | especially those that impact the ecosystem, water supply reliability and flood
3 | concerns **and work through the DPC to protect the specified state interests.**
- 4 |
- 5 | ○ Provide guidelines and procedures for adaptive management **(See Strategy 9).**
- 6 |
- 7 | ○ Provide ~~other~~ **financial, legal, and political** mechanisms for ensuring adaptability
8 | and resiliency in governing the Delta.
- 9 |
- 10 | ○ Incorporate and build upon the recommendations of this Strategic Plan.
- 11 |
- 12 | ~~○ Identify state interests and set performance targets in the legal Delta and beyond~~
13 | ~~with respect to floodplain management and water quality.~~
- 14 |
- 15 | ~~○ Articulate a finance plan laying out needed expenditures and identifying sources for~~
16 | ~~needed revenues.~~
- 17 |
- 18 | ○ ~~Contain~~ **Articulate a detailed finance plan that identifies project costs, benefits,**
19 | **and payment mechanisms.**
- 20 |
- 21 | ○ **Include** a plan for data collection, ~~data~~ management, monitoring, analysis and
22 | interpretation to support policy making and management decision making.
- 23 |
- 24 | ○ Serve as the foundational document for a programmatic EIS/EIR as well as any
25 | projects undertaken requiring California Environmental Quality Act (CEQA)
26 | and/or National Environmental Policy Act (NEPA) permits.
- 27 |
- 28 | ■ **In We recommend the next two years, California Legislature and the CDEW Council**
29 | **should carry out the following actions to develop and adopt the CDEW Plan:**
- 30 |
- 31 | ○ By May 2009, the California Legislature should adopt the Delta Vision Strategic
32 | Plan as the Interim CDEW Plan, as consistent with California’s Coastal
33 | Management Plan (CMP) under the CZMA.
- 34 |
- 35 | ○ By August 2009, the CDEW Council, in coordination with the Attorney General,
36 | should develop a legal and procedural outline for adopting the CDEW Plan in the
37 | context of California’s CMP under the CZMA
- 38 |
- 39 | ○ By August 2009, the CDEW Council in coordination with the Attorney General
40 | should prepare a list of all applicable legal requirements in the Delta that must be
41 | incorporated into the CDEW Plan. This list will include federal and state
42 | Endangered Species Acts management actions and plans, among other legal
43 | requirements.
- 44 |
- 45 | ○ By September 2009, the CDEW Council should begin process of developing the
46 | CDEW Plan in line with the procedural and substantive requirements of the

1 CZMA as well as California law. These requirements include active coordination
2 in plan development with stakeholders as well as state and federal agencies. A
3 beginning point in this process must be assessing existing plans and planning
4 efforts for consistency with the goals of Delta Vision and incorporating those
5 responsible for those plans into developing the CDEW Plan. Effective
6 participation of local, state and federal agencies in development of the CDEW
7 Plan will be critical to achieving the appropriate integration of their
8 responsibilities and capacities.
9

- 10 ○ The CDEW Plan should be actively coordinated with the CDEW Council’s Public
11 Advisory Group (PAG) to not only ensure stakeholder participation but to
12 actively address environmental justice concerns consistent with the CDEW
13 Council’s adopted environmental justice policies (see Strategy 15).
14
- 15 ○ By December 2010, the CDEW Council should adopt CDEW Plan. If the
16 complete Plan is not ready for adoption, the Council may adopt an interim plan.
17 Activities not covered in the adopted interim plan shall be guided by the adopted
18 Delta Vision Strategic Plan until the full CDEW Plan is adopted.
- 19
- 20 ○ By December 2010, SWRCB should ~~begin modifying~~identify any inconsistencies
21 in the State Water Resources Control Board’s (SWRCB) Water Quality Control
22 Plans in light of CDEW Plan recommendations and actions and develop a plan to
23 address those inconsistencies within a reasonable time or inform the Council in
24 writing of why it cannot address the inconsistencies and propose alternative
25 action.
- 26
- 27 ○ The CDEW Council will review and if required, amend the CDEW Plan every
28 five years or upon a shorter time period at the direction of the Governor.
29

30 ■ ~~Achieve~~The CDEW Plan must achieve governance consistency among the various
31 layers of governing agencies with the adopted CDEW by using a combination of the
32 following mechanisms:. The California Legislature should enact legislation that:
33

- 34 ○ ~~The enabling legislation creating the governing structure should~~
35 empowerEmpowers the CDEW Council to link funding distribution to
36 accomplishment of identified tasks. (See Strategy 17).
- 37
- 38 ○ ~~The enabling legislation creating the governing structure should~~
39 empowerAuthorizes the CDEW Council to link specified actions in the CDEW
40 Plan to other specified actions to ensure simultaneous achievement.
- 41
- 42 ○ ~~The enabling legislation should require~~Requires annual assessments of progress
43 and consistency with the CDEW Plan allowing for modifications of budgets and
44 priorities where lack of progress or inconsistency with the CDEW Plan is
45 apparent.
46

- 1 | ○ ~~The enabling legislation should require~~**Compels** annual reports to the Legislature
2 | and the Governor tracking the effectiveness of the CDEW Plan against the
3 | performance measures as well as the consistency of agency action with the
4 | CDEW Plan.
- 5 |
- 6 | ○ ~~The enabling legislation should call for~~**Requires** outside audits of progress and
7 | consistency and allows for legislative response to inadequacies.
- 8 |
- 9 | ○ ~~The enabling legislation should give~~**Grants the** DPC the authority to review and
10 | approve local plans for consistency with the CDEW Plan. ~~In cases where there is~~
11 | ~~disagreement, the CDEW Council would make the final determination. The DPC~~
12 | ~~would also retain its appeal authority within its existing purview as the lead~~
13 | ~~regional land use planning agency.~~
- 14 |
- 15 | ○ The CZMA requires approval by the Secretary of Commerce (or his or her
16 | designee) for the CDEW Plan, and the CDEW Council should have consistency
17 | review determination of federal action in the context of the CDEW Plan. The
18 | CZMA has an appeal process through mediation to resolve disputes between
19 | federal agencies and an “inconsistency” determination.
- 20 |
- 21 | ○ Federal legislative language could require consistency with the CDEW Plan in
22 | cases where federal appropriations will be made for actions within areas subject to
23 | the CDEW Plan.
- 24 |
- 25 | ○ Federal legislation could require annual reporting to Congress on actions taken in
26 | the Delta by federal agencies and their consistency with the CDEW Plan under
27 | the legal requirements of the CZMA.
- 28 |

29 | **Remedy inconsistent actions by federal, state, or local agencies in the Delta with the CDEW**
30 | **Plan, through the following possible mechanisms of the CDEW Council:**

- 31 |
- 32 | ○ ~~Where~~**The CDEW Council should seek the leadership of the Governor of**
33 | **California and the President of the United States in ensuring consistency of action**
34 | **under the CDEW Plan.**
- 35 |

36 | **The CDEW Council should remedy inconsistent actions by federal, state, or local**
37 | **agencies in the Delta with the CDEW Plan, through the following mechanisms:**

- 38 |
- 39 | ○ ~~Use of CZMA’s mediation components for~~ federal ~~agencies are involved, use of~~
40 | ~~the mediation components in the CZMA~~**inconsistent action**, in which the ~~CDEW~~
41 | ~~Council’s~~ proponent of the perceived inconsistent project has the burden of
42 | proving consistency with the CDEW Plan.
- 43 |
- 44 | ○ Where state and local agencies are involved, the CDEW Council ~~has~~**should**
45 |

1 | **Strategy ~~17.7.3~~. Finance the activities called**
2 | **for in the California Delta Ecosystem and**
3 | **Water (CDEW) Plan ~~through user fees and~~**
4 | **~~other effective and transparent financing~~**
5 | **~~tools from multiple sources.~~**

Vision recommendations met:
9 10 12

6
7 | Successful governance of the Delta will
8 | depend on a coherent, effective and reliable
9 | financing structure. That system will include
10 | financing to pay capital costs, revenue
11 | generation, procedures for expenditure as
12 | approved by the CDEW Council, and
13 | obligations placed upon recipients of benefits
14 | from those expenditures.

Performance measures:
Finance tools deployed efficiently (+)
Projects and programs implemented with
reliable finding (+)
Percentage of required Delta revenues collected
in a timely manner (+)
Correspondence of expenditures by agencies
and others with CDEW Plan (+)

15
16 | **~~The following principles should guide~~**
17 | **~~design of financing systems:~~**Financing will
18 | require a flexible approach. We do not yet
19 | know all the benefits, costs, obligations, and
20 | risks that will be involved, and must therefore
21 | move forward with a certain level of uncertainty. Commitments to transparency, cost
22 | effectiveness, incentives and criteria for efficiency will expedite financing processes in the face
23 | of uncertainty. New participants will be identified and new funding sources developed. We
24 | must also maximize the availability and use of federal funding, and access all currently available
25 | bond funding.

26
27 | A wide range of financing instruments, including appropriations, bonds, user fees, lease
28 | revenues, payments incurred under contracts, and others, should be employed. **The following**
29 | **principles should guide design of financing:**

- 30
31 | 1. Private beneficiaries should be assigned proportional shares of revenue obligations and of
32 | risks and liabilities, while the public of California is responsible for activities of broader
33 | benefit. A wide range of financing instruments should be employed: effective and
34 | equitable financing for activities as extensive and expensive as those proposed in this
35 | Strategic Plan should rely on multiple revenue streams rather than a single source.
36 | “Layering” of revenue sources better allows matching revenues collected to perceived
37 | value and actual beneficiaries. For example, as part of the management of the co-equal
38 | values, there should be a per-acre-foot fee levied on water diversions within the Delta
39 | watershed, and a separate fee on any water conveyed through or around the Delta.
40
41 | 2. Revenues should be received by and allocated by the CDEW Council to ensure consistent
42 | action to implement its policies. Protections against diversion of these funds to other
43 | purposes will be needed, possibly including a provision stating that if any funds devoted
44 | to CDEW Plan activities are used for other purposes, no water shall be conveyed through
45 | the State Water Project (SWP). This Strategic Plan expects that water required to support
46 | and revitalize the Delta will not be obtained by purchase or through market

1 mechanisms. Clear linkages should be established between commitments to help finance
2 the program and the implementation of actions that generate corresponding value in a
3 sustainable system that includes a revitalized ecosystem and reliable water supplies.

- 4
- 5 3. Private beneficiaries should be assigned proportional shares of revenue obligations and of
6 risks and liabilities, while the public of California should be responsible for activities of
7 broader benefit.
- 8 4. Revenues should be received by and allocated by the CDEW Council to ensure consistent
9 action to implement its policies. These funds should not be diverted to other purposes and
10 should be protected by a provision stating that if any funds devoted to CDEW Plan
11 activities are used for other purposes, no water shall be conveyed through the Delta for
12 the State Water Project (SWP). This is required both to protect revenues against diversion
13 in tight budget years and also to ensure that all elements of the plan advance together.
- 14
- 15 5. No public payment for water required for ecosystem revitalization is anticipated in this
16 finance plan; the legal and fiscal arguments against such inclusion are persuasive.
- 17
- 18 6. Access to state funding for any purpose related to ~~the~~ implementation of the CDEW Plan
19 must be contingent upon a project contractor or a water right holder demonstrating full
20 compliance with all aspects of California resources laws and policies, including:
21 a. possessing a legal right to divert, store, convey, and use water;
22 b. satisfying all applicable water quality and ecosystem regulations determined to
23 protect the resources and values of the state; and
24 c. complying with provisions of the CDEW Plan and the decisions of the Council
- 25
- 26 7. Federal, state, and local agencies that conduct activities that are inconsistent with the
27 CDEW Plan will have funding derived from the CDEW Council reduced or terminated.
- 28

29 **Substantial capital investments and continuing support will be required to implement the**
30 **recommendations of Delta Vision.** No independent estimate of those costs has been undertaken
31 in Delta Vision. However, as many of the recommendations of this Strategic Plan parallel those
32 developed in other processes, some information on probable capital costs over the next 10-15
33 years is available.

- 34
- 35 ■ The range of estimated costs for alternative conveyance provided by DWR (May 2008) is
36 \$4.2 billion for an eastern alignment to \$7.2 billion for a western alignment. DWR
37 estimated through-Delta improvements to cost from \$1.2 to \$9.6 billion depending on the
38 seismic robustness. The earlier Delta Risk Management Study (DRMS) analyses
39 projected much larger costs: \$26 billion for alternative conveyance and \$32 billion for
40 armored through Delta conveyance.
- 41
- 42 ■ A late 2007 summary of cost estimates of proposed Delta ecosystem revitalization
43 projects undertaken totaled to \$2.5 billion.
- 44
- 45 ■ The other large capital cost is levee improvements, where the upper estimate provided by
46 DRMS is \$20 billion. Four billion is used here as a preliminary estimate.

1
2 These estimates suggest that **the range of** capital expenditures required for the Delta in the next
3 10-15 years will range from \$12 to \$24 billion, with a high estimate of \$80 billion. These
4 estimates do not include additional costs that may be associated with additional water use
5 efficiency and wet-period diversion shifts. This large cost estimate range will be refined as
6 policy choices are made regarding conveyance, ecosystem revitalization and levees. Bond funds
7 are available for some of these capital investments and water contractors are prepared to pay the
8 capital costs of alternative conveyance. No attempt has yet been made to estimate annual
9 operating costs.

10
11 ~~In 2004, a coalition of water and environmental interests proposed principles for CALFED~~
12 ~~decisions on financing which remain useful starting points for analyzing possible financing~~
13 ~~systems~~**Seek new participants and new revenue sources.** We should opportunistically identify
14 new types of benefits and beneficiaries to increase sources and amounts of revenues. Examples
15 where actions will create new benefits include:

- 17 • ~~Adhere to the “beneficiary pays” principle~~Delta conveyance: Economic benefits of
18 salinity reductions have been quantified, but benefits of reduced concentrations of other
19 important water quality constituents, such as disinfection by-product precursors, have
20 not. Additional understanding and development of water quality benefits is needed to
21 identify beneficiaries and the form of benefits.
- 22
23 • ~~Provide guidelines for apportioning costs of projects with both local and public~~
24 ~~benefits.~~Levee improvements: New benefits and beneficiaries may include navigation,
25 recreation, fish and wildlife and environmental enhancement. These benefits might
26 justify an expanded federal role.
- 27
28 • ~~Public benefits should be financed through federal appropriations, state bond funds, and~~
29 ~~state general fund dollars, recognizing the current budgetary restraints on the State of~~
30 ~~California Resources Agency~~Ecosystem restoration: Revenues could be generated
31 through conservation and mitigation banking, and by sequestering carbon and reducing
32 carbon emissions. Reduced energy use through conservation might also be used to claim
33 CO2 offsets.

34
35 ~~Encourage local interests to develop a finance plan to pay for the local share of a capital~~
36 ~~project.~~**Revenues to support core activities.** Stable revenues will be required to fund the core
37 policy making and management activities required to achieve the co-equal values and enhance
38 the value of the Delta as a place. These core activities include the work of the Council itself,
39 associated science and engineering, adaptive management processes, performance monitoring
40 and reporting and oversight of program implementation to determine consistency with the
41 CDEW Plan. These core activities cannot be successful if dependent on bond funds or other
42 irregular revenue sources. Ecosystem revitalization, improvements in conveyance, levee projects
43 and specific activities to support the Delta as place are critical, but will be addressed on a project
44 or program basis.

1 **Private and voluntary contributions.** Contributions from landowners can help pay costs of
2 ecosystem projects. Landowners can sometimes reduce their estate taxes by donations of fee
3 simple or land easements. Recent and ongoing changes to estate tax laws may substantially
4 change the incentive to provide donations.
5

6 **Recommended Actions:**
7

- 8 1. Incorporate language requiring integrated action consistent with an adopted CDEW Plan
9 in any Delta-related bond or any other financing instrument. Similar provisions should
10 be included in any related contracts.
11
12 2. For specific projects, require local interests to develop a finance plan to pay for the local
13 share of a capital project. Local cost shares should be related to benefits received and
14 cost of services provided. Require a completed finance plan as a precondition for the
15 design and construction phases of a major capital project.
16
17 3. Require beneficiaries (public and private) of CDEW Council financing to support and
18 conform to the following conditions:
19
20 • California State government organizations must make an affirmative
21 determination that relevant actions support the adopted CDEW Plan.
22
23 • Ensure full transparency in all fiscal arrangements.
24
25 • Condition access to and participation in any Delta related program on compliance
26 with all existing policies and programs.
27
28 • Use bond control language and contract provisions to ensure policy consistency.
29
30 • Use life-cycle costing and benefit-cost calculations to inform decision making.
31
32 • Require full allocation of costs and risks, in proportion to benefits received.
33
34 • ~~Water pricing rate structures could be improved~~ Structure water rates to
35 encourage conservation by greater use of variable rates, tiered rates and
36 connection ~~fee conservation incentives~~ fees.
37
38 • Use bidding to inform investment decisions and allocate uses.
39
40 • Develop and implement processes to achieve timely decisions and accelerate
41 implementation.
42

43 **Below is a proposed strategy for moving through the funding process:**
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- ~~Develop list of projects requiring funding.~~
- ~~Identify costs of the projects, including both capital costs and operations and maintenance (O&M) costs.~~
- ~~Identify willing financiers of the identified projects (or portions of the projects).~~
- ~~Identify remaining costs of each identified project absent portion for willing financiers.~~
- ~~Identify entities that seek to benefit from these projects including both private benefit and widespread public benefit.~~
- ~~Determine as practically as possible the benefits received by identified beneficiaries and the associated costs associated with these benefits.~~
- ~~If beneficiary pays is not determinative, negotiate with these entities to pay the remaining costs of the projects where applicable.~~
- ~~Identify mechanisms to pay the costs of these projects based upon the available alternative financing mechanisms.~~
- ~~Enable identified entities to pay the remaining costs of the projects.~~
- ~~Identify mechanisms to pay the O&M costs of identified projects.~~
- ~~Enable appropriate entities to use funding mechanisms allowing them to pay the ongoing O&M costs of identified projects where applicable.~~
 - Develop a comprehensive funding plan for capital projects anticipated over the next 30 years, including operation and maintenance of new infrastructure and beneficiaries of each project.
 - Establish a mechanism to identify unassigned project costs (capital and O&M) and negotiate with identified beneficiaries to pay the remaining costs of the project.
 - On an on-going basis, any bond and/or appropriation of state funds should link expenditures and results in ecosystem revitalization and improving water supply reliability to a shared calendar.