

1 **Draft Changed Circumstances**
2 **(Section 6.3.2 of Chapter 6, *Plan Implementation*)**

3 *Note to Reviewers: the following Changed Circumstances section was previously presented at*
4 *the January 7, 2010 Steering Committee meeting.*

5 **6.3.2 Changed Circumstances**

6 Ecological conditions in the Delta are likely to change as a result of future events and
7 circumstances that may occur during the course of the implementation of the BDCP. The BDCP
8 identifies changes in circumstances that are reasonably foreseeable and that could adversely
9 affect species and natural communities covered by the plan, consistent with the “changed
10 circumstances” provisions of ESA regulations and in the NCCPA.¹ To ensure successful
11 implementation of the BDCP conservation strategy, the plan further sets out measures designed
12 to respond to these anticipated future changes.

13 The changed circumstances provisions of the BDCP are intended to address reasonably
14 foreseeable events, both inside and outside of the Delta, that may impede or prevent the BDCP
15 from achieving its biological goals and objectives within the Plan Area. The BDCP identifies a
16 broad range of potential changed circumstances, including events or conditions that may cause
17 population-level declines in covered species, such as new invasive species and significant
18 releases of pollutants, or that may substantially degrade habitat functions, such as flooding and
19 climate change.

20 Responses to the changed circumstances provided for in the BDCP will largely be developed and
21 implemented as part of the adaptive management program.² For certain specified changed
22 circumstances, measures beyond the scope of the adaptive management program have been
23 developed, as described in this section. The responsive measures set out in the plan reflect
24 approaches that are both practicable and roughly proportional to the impacts of covered activities
25 on covered species and habitat.

26 Changed circumstances provisions are not intended to remedy events or conditions that are
27 beyond the control of the permittees. Rather, these provisions are intended to protect the plan’s
28 operating conservation program in the face of such events. Thus, for example, in the event of
29 changes in water temperatures in the Delta, the BDCP would not provide for actions to moderate
30 such temperature changes. The BDCP, however, would require that the Management Entity
31 implement responsive actions or contingency plans that provide for a recalibration of habitat
32 restoration strategies or other actions within the context of the defined range of the adaptive
33 management program.. Similarly, an occurrence of a major flood event that results in substantial
34 loss of tidal marsh habitat restored under the BDCP would trigger actions under the adaptive
35 management program to restore functions of tidal marsh habitat for covered species.

¹ USFWS and NMFS regulations define changed circumstances as “changes in circumstances affecting a species or geographic area covered by a conservation plan that can reasonably be anticipated by plan developers and the [USFWS and NMFS] and that can be planned for...” (50 C.F.R. §17.3; 50 C.F.R §222.102). The NCCP Act defines changed circumstances as “...reasonably foreseeable circumstances that could affect a covered species or geographic area covered by the plan.” (Fish and Game Code §2805(c)).

² See generally, U.S. Fish and Wildlife Service and National Marine Fisheries Service Habitat Conservation Planning Handbook, page 3-28 (November 1996).

1 To address the potential for changed circumstances, the BDCP sets out funding commitments for
2 remedial measures that may be implemented as part of the adaptive management program. The
3 BDCP also identifies contingency funding to implement measures to address those changed
4 circumstances not contemplated in the adaptive management program, as described in X.X. In
5 the event that changed circumstances occur, the Management Entity will implement the remedial
6 measures identified in this chapter. However, the BDCP sets out the range of financial
7 commitments of the participating entities, which includes limitations on funding to remediate
8 changed circumstances. As such, remedial measures for changed circumstances will be
9 implemented within the levels of funding set out in the BDCP for these purposes.

10 In the event of such changed circumstances, the BDCP Management Entity would implement the
11 responsive measures described in this chapter. The following describes the process for
12 identifying the occurrence of changed circumstances, the changed circumstances that would be
13 addressed by the BDCP, and the measures that would be implemented in response to such
14 occurrences.

15 **6.3.2.1 Process to Identify Changed Circumstances**

16 For changed circumstances that are anticipated in the BDCP, the Management Entity, in
17 conjunction with the fish and wildlife agencies, will develop thresholds and triggers as part of the
18 adaptive management program that will be used to signal the onset of changed circumstances.
19 The occurrence of a changed circumstance will generally become apparent to the Management
20 Entity through information gained from systems or effectiveness monitoring, scientific study, or
21 by notification received from another party (e.g., a levee failure reported by a reclamation
22 district). Upon an indication that a changed circumstance has occurred, or is likely to occur, the
23 Management Entity will take immediate steps to investigate and confirm the occurrence of such
24 an event. If a changed circumstance appears to have occurred, the Management Entity will
25 contact the appropriate fish and wildlife agencies to confirm the changed circumstance. The
26 Management Entity will notify the BDCP Authorized Entities, relevant Supporting Entities, and
27 the Implementation Council of the changed circumstance.

28 After establishing an occurrence of a changed circumstance identified in this chapter, the
29 Management Entity, in coordination with the Fishery Agencies, will determine specific remedial
30 actions that are consistent with the responses described in Section 6.3.2.2 for the particular
31 changed circumstance and develop a schedule for implementation. For those actions that are to
32 be implemented through the adaptive management program, the decision-making process
33 described in Section 3.6, *Adaptive Management*, will be used. For other responsive actions, the
34 Management Entity will implement the identified measures after conferring with the relevant fish
35 and wildlife agencies. After implementing remedial actions, the Management Entity will
36 monitor the effectiveness of the measures and report the associated results and findings.

37 **6.3.2.1 Changed Circumstances Addressed by the BDCP**

38 **1. Availability of Land for Habitat Restoration**

39 During the course of BDCP implementation, the Management Entity may determine that land
40 suitable for restoration of habitat is not available in sufficient quantities or appropriate locations
41 to meet the habitat restoration targets. In such instances, the Management Entity, through the
42 adaptive management process, will identify lands within other ROAs suitable for like-kind

1 habitat restoration and will restore those lands at levels sufficient to make up the shortfall in
2 meeting the habitat restoration targets. Alternative sites must be in locations and possess those
3 features sufficient to produce benefits to covered species substantially similar to those that were
4 expected from such actions in the original ROA. If appropriate restoration sites are not
5 available in any of the ROAs, the Management Entity, through the adaptive management process
6 and with the approval of the Fish and Wildlife Agencies, will: (a) undertake restoration of habitat
7 in areas outside of the designated ROAs at locations that would benefit the associated covered
8 species, (b) restore habitat in suitable locations outside of the Plan Area, in coordination with
9 local governments engaged in regional conservation planning efforts, to benefit the associated
10 covered species, or (c) identify and implement alternative conservation measures that provide
11 equivalent or greater benefits to the affected covered species.

12 **2. Levee and Dike Failures**

13 *Failure of levees constructed as part of a BDCP activity result in substantial reduction of the*
14 *level of benefits to covered species produced by restored tidal marsh*

15 The BDCP Management Entity will repair levees constructed pursuant to a BDCP activity that
16 subsequently fail and will undertake actions to restore the functions of habitat degraded or lost as
17 a result of the failure. If such restoration of habitat is not practicable, the BDCP Management
18 Entity will, through the adaptive management process, restore habitat of comparable biological
19 value elsewhere in the Plan Area or at other locations as provided for under Changed
20 Circumstance 1 to replace lost or degraded habitat functions.

21 *Failure of levees not constructed as part of a BDCP activity reduces the benefits to covered*
22 *species produced by restored tidal marsh*

23 In the event of a failure of a levee not constructed as part of a BDCP action, the entity with
24 jurisdiction and responsibility for the levee will be expected to make all necessary repairs.
25 Following repair of the levee, the BDCP Management Entity will, to the extent practicable,
26 identify and undertake actions through the adaptive management process to restore the degraded
27 or lost habitat. The Management Entity will seek to obtain funding from the party responsible
28 for the levee failure for the actions necessary to restore habitat functions provided by the tidal
29 marsh.

30 *Failure of levees unrelated to BDCP actions that inhibit implementation of water operations*
31 *conservation measures or reduce the covered species and ecosystem benefits that would result from such*
32 *conservation measures*

33 In the event of a levee failure that affects the implementation of water operations conservation
34 measures, the Management Entity will direct, in coordination with the Authorized Entities and the
35 “Fishmaster”, adjustments to water operations, on a temporary basis and within the established adaptive
36 range of water operations, necessary to minimize adverse effects of the levee failure(s) on covered
37 species. Operations will return to pre-levee failure operations once the circumstances affecting the
38 implementation of the conservation has been remedied.

39 *Failures of levees unrelated to BDCP activities that are not repaired by the responsible flood control*
40 *entity and inhibit the implementation of water operations conservation measures or reduce the covered*
41 *species and ecosystem benefits that would be provided by the conservation measure*

1 Should a levee failure occur with no subsequent repair, the BDCP Management Entity will, through the
2 adaptive management process and subject to the specific circumstances of the event, implement one or
3 more of the following actions to obtain the intended benefits of water operations conservation measures
4 precluded by levee failures: (a) adjust water operations within the permitted adaptive range of water
5 operations to restore benefits to covered species and habitat provided by the measures, to the extent
6 practicable or (b) identify and implement alternative conservation measures (e.g., additional restoration of
7 physical covered fish species habitats, increase in magnitude of other stressors conservation measures)
8 that will provide similar types and levels of covered species benefits intended by the affected
9 conservation measures.

10 *Failure of multiple Delta levees substantially alter aquatic conditions such that conservation*
11 *measures cannot be implemented and/or the covered species habitat benefits provided by*
12 *conservation measures are substantially reduced as a result of altered aquatic ecosystem*
13 *conditions or changes in the behavior or distribution of covered fish species*

14 A widespread or catastrophic change in ecological conditions within the Plan Area due to
15 multiple levee failures would be at such magnitude so as to render most responses through the
16 BDCP infeasible. However, the Management Entity, through the adaptive management
17 program, will seek to identify measures to moderate the effects of such an event within the
18 parameters of the adaptive range.

19 **3. Failure of water operations infrastructure**

20 *Failure of water operations infrastructure necessitates that management of water operations*
21 *deviate from the BDCP conservation measures and the defined adaptive ranges set out in the*
22 *conservation strategy.*

23 In response to failures of infrastructure that requires changes in operations that are outside the
24 parameters of the BDCP, the Management Entity will request that DWR and/or Reclamation
25 repair the affected facilities or make adjustments or modifications to other facilities to restore full
26 operational capacity, as soon as feasible, and temporarily adjust water operations within the
27 permitted adaptive range of water operations if necessary to minimize adverse effects of the
28 facility failure(s) on covered species. Upon completion of facility repairs or alternative
29 modifications to other infrastructure, operations would return to routine levels and parameters.

30 If the infrastructure failure does not permit operations within the adaptive management range the
31 Management Entity will operate under the emergency procedures described in Chapter 3,
32 *Conservation Strategy.*

33 [Note to Reviewers: emergency provisions will be developed for chapter 3]

34 **4. Wildfires**

35 The BDCP will address the effects of wildfires that substantially alter the extent of plant
36 communities within areas protected, enhanced, and/or restored as a result of BDCP actions, such
37 that expected benefits to covered species are significantly reduced. The BDCP Management
38 Entity will, through the adaptive management program, identify and implement management
39 actions sufficient to reestablish intended habitat functions of the affected natural communities.

40 **5. Conflicts Related to State or federal environmental laws or regulation**

1 In the event that it is determined that the implementation of a conservation measure would
2 conflict with a State or federal environmental law or regulation, the Management Entity will
3 pursue one or more of the following actions through the adaptive management process: (a)
4 modify implementation of the conservation measures to ensure compliance with all applicable
5 State and/or federal laws or regulations; (b) identify and implement alternative conservation
6 measures that provide equivalent ecological benefits for the affected covered species. In the
7 alternative, the Management Entity may also sufficiently reconcile the apparent regulatory
8 conflict in conjunctions with the relevant State and/or federal agency and proceed with the
9 implementation of the conservation measure(s).

10 **6. New Species Listings**

11 *Listing of a BDCP covered species under the ESA or CESA occurs during the implementation of*
12 *the plan.*

13 Consistent with 63 FR 35 (February 23, 1998), USFWS and NMFS will automatically authorize take of
14 newly listed covered species under their respective jurisdictions. [ADD TEXT AND NEW
15 CITATIONS] Consistent with Fish and Game Code §2805(c) and §2835, DFG will automatically
16 authorize take of newly listed covered species.

17 *Listing of a species not covered by the BDCP under the ESA or CESA occurs during the*
18 *implementation of the plan.*

19 The Management Entity will evaluate the potential for incidental take of a species proposed for
20 listing or designated as a candidate for listing related to the implementation of the covered
21 activities and will assess the degree to which the species benefits the existing conservation
22 measures. Following the assessment, the Management Entity will identify any additional
23 measures necessary to protect any such species and engage, as appropriate, in the regulatory
24 processes necessary to add such species to the BDCP incidental take permits and authorizations.

25 **7. Invasive Species**

26 *Introduction of new, invasive non-native species diminishes benefits to covered species produced*
27 *by conservation measures related to habitat restoration.*

28 The BDCP Management Entity, through the adaptive management process, will identify and
29 implement measures to reduce and/or control the adverse effects of new non-native species on
30 the functions provided by habitat restored under the plan (e.g., control of non-native plant
31 species in restored tidal marsh that affect food web functions). If methods to adequately reduce
32 and/or control adverse effects of the non-native species are not available or practicable, the
33 Management Entity will identify alternate design, implementation, and management approaches
34 to future habitat restoration actions to avoid or minimize potential adverse effects of the invasive
35 species on covered species. If such modifications are not practicable, the Management Entity,
36 through the adaptive management process, will identify and implement conservation measures
37 that provide equivalent levels of benefit to applicable covered species.

38 *Introduction of a new, invasive non-native species diminishes benefits to covered species*
39 *provided by conservation measures related to water operations or other stressors.*

1 The BDCP Management Entity, through the adaptive management process, will identify and
2 implement measures to reduce and/or control adverse effects of a new non-native species on the
3 beneficial outcomes associated with water operations or other stressors conservation measures.
4 If methods are not practicably available to reduce and/or control such effects, the BDCP
5 Management Entity, within defined adaptive management ranges, will identify and implement
6 alternative conservation measures that provide equivalent or greater benefits to covered species
7 and their habitats.

8 **8. Toxic or Hazardous Spills**

9 The BDCP will address toxic or hazardous spill events that occur in habitat areas that have been
10 protected, enhanced, or restored through BDCP actions. For a spill event that is caused by a
11 BDCP action, the BDCP Management Entity will identify and undertake management measures
12 sufficient to remediate the effects of the toxic substance on covered species and affected habitats
13 (i.e., removal or isolation of the material) and restore the ecological functions of the degraded
14 habitat. If the affected habitat areas cannot be feasibly and effectively restored, the Management
15 Entity, through the adaptive management process, will identify and implement measures to
16 contain the ecological effects of the spill and either compensate for the loss of habitat functions
17 at other locations or implement alternative conservation measures (e.g., expanded or additional
18 contaminant reduction measures) that provide equivalent or greater ecological benefits to the
19 affected covered species.

20 If the spill event is not caused by a BDCP action, the BDCP Management Entity, in coordination
21 with responsible regulatory agencies, will identify for the party(ies) responsible for the spill
22 event and the measures it will need to fund and/or undertake to adequately remediate the effects
23 of the spill and restore the ecological functions of the affected habitat. The Management Entity
24 will ensure that any such remediation and restoration actions are conducted in an appropriate
25 manner.

26 **9. Climate Change**

27 During the course of the implementation of the BDCP, the Management Entity may ascertain
28 that the effects of climate change on sea level and watershed hydrology are of greater magnitude
29 or significance than was assumed during the development of the BDCP conservation strategy,
30 such that conservation measures cannot be implemented or such measures would be unlikely to
31 yield significant benefit to covered species or natural communities (e.g., climate change
32 conditions affect availability of suitable restoration sites).

33 To the extent that actions can be undertaken through the parameters of the adaptive management
34 program that would help to moderate the ecological effects of these hydrological changes, the
35 BDCP Management Entity will identify and implement such measures. Such adaptive
36 management responses may include expanding the range of environmental gradients to provide
37 for shifting species distributions and habitats.

38 **10. Water Temperature Changes**

39 Water temperature may change within the Plan Area to levels that exceed the tolerance of one or
40 more covered fish species, such that one or more of the following conditions occur: (a) a
41 covered fish species no longer inhabits BDCP restored habitats; (b) a covered species no longer
42 inhabits the Plan Area; (c) a covered fish species no longer accrues benefits from BDCP water

1 operations, habitat restoration, or other stressors conservation measures; and/or (d) a covered fish
2 species' population demonstrates a sustained downward trend in abundance.

3 Significant changes in water temperature within the Plan Area would likely have widespread,
4 catastrophic impacts on ecological conditions within the Delta. As such, the effects of water
5 temperature changes would be of such magnitude as to render any response through the BDCP
6 infeasible. To the extent that actions can be undertaken within the parameters of the BDCP
7 adaptive management program that would help to moderate the ecological effects of these
8 temperature changes, the BDCP Management Entity would identify and implement such
9 measures. For instance, such adaptive management responses may include identifying
10 alternative locations for habitat restoration actions.

11 **11. Changes in Ocean Conditions**

12 Changes may occur in ocean conditions that preclude achieving biological goals and objectives
13 for covered anadromous fish species within the Plan Area. Adverse effects on covered species
14 and their habitats resulting from changed ocean conditions on covered species, however, would
15 not be addressed by the BDCP. Events that affect ocean conditions or actions to remedy those
16 effects are neither under the control of nor the responsibility of the Management Entity or the
17 Authorized Entities.

18 Significant changes in ocean conditions would have widespread, catastrophic impacts on
19 ecological conditions within the Delta. To the extent that actions can be undertaken within the
20 parameters of the BDCP adaptive management program that would help to moderate the
21 ecological effects of these changes in ocean conditions, the BDCP Management Entity would
22 identify and implement such measures. Such adaptive management responses may include
23 identifying alternative locations for habitat restoration actions.

24 **12. Changes in Precipitation and Temperature**

25 Changes in precipitation and temperature patterns may affect vegetation composition and
26 structure of BDCP protected, enhanced, and restored habitat areas. Within the defined range of
27 the adaptive management program, the BDCP Management Entity will identify and implement
28 management actions to maintain the intended habitat functions of affected habitat areas.

29 **6.3.3 Unforeseen Circumstances**

30 Unforeseen circumstances are changes in circumstances affecting a species or geographic area
31 covered by an HCP that could not reasonably have been anticipated by the plan participants
32 during the development of the conservation plan, and that result in a substantial and adverse
33 change in the status of a covered species.³ Under ESA regulations, if unforeseen circumstances
34 arise during the life of the BDCP, USFWS and/or NMFS may not require the commitment of
35 additional land or financial compensation, or additional restrictions on the use of land, water, or
36 other natural resources other than those agreed to in the Plan, unless the BDCP permittees
37 consent.

38 Within these constraints, USFWS and/or NMFS may require additional measures, but only if: (1)
39 the agencies prove an unforeseen circumstance exists; (2) such measures are limited to

³ 50 C.F.R. §17.3; 50 C.F.R. §222.102

1 modifications of the BDCP's operating conservation program for the affected species; (3) the
2 original terms of the Plan are maintained to the maximum extent practicable; and (4) the overall
3 cost of implementing the BDCP is not increased by the modification. USFWS and/or NMFS
4 bear the burden of demonstrating that unforeseen circumstances exist. A finding of unforeseen
5 circumstances must be clearly documented, based upon the best available scientific and
6 commercial information and made considering certain specific factors.⁴ If such a finding is made
7 and additional measures are required, the BDCP permittees will work with USFWS and/or
8 NMFS to appropriately redirect resources to address the unforeseen circumstances.

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⁴ These factors include the following: (1) Size of the current range of the affected species; (2) Percentage of range adversely affected by the conservation plan; (3) Percentage of range conserved by the conservation plan; (4) Ecological significance of that portion of the range affected by the conservation plan; (5) Level of knowledge about the affected species and the degree of specificity of the species' conservation program under the conservation plan; and (6) Whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild. 50 C.F.R. §17.22(b)(5)(iii)(C); 50 C.F.R. §222.307(g)(3)(iii).