

CHAPTER 6. PLAN IMPLEMENTATION

[Note to Reviewers: This full draft of chapter 6, Implementation Plan, includes revised sections previously distributed to the Steering Committee (SC) and new sections. A prior draft of Section 6.1 Implementation Schedule text and schedule graphic was provided to SC on October 8, 2009 and an updated schedule graphic and presentation of schedule assumptions on August 12, 2010. Section 6.2 Compliance and Progress Reporting is a new section. A draft of Section 6.3 Regulatory Assurances, Changed Circumstances and Unforeseen Circumstances was distributed to the SC on January 7, 2010, and a revised draft of the subsection 6.3.2 Changed Circumstances was provided to the SC on August 12, 2010. Section 6.4 Permit Duration and Renewal, Plan Amendment, Permit Suspension and Revocation, is a new section. All sections provided to SC as earlier drafts have been revised to address comments from SC members.]

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Chapter 6. Plan Implementation

1
2 The BDCP Implementing Entity, as described in Chapter 7, *Implementation Structure*, will be
3 responsible for the implementation of the Conservation Strategy. This chapter provides
4 descriptions of various components of plan implementation involving the Implementing Entity,
5 Authorized Entities, and the fish and wildlife agencies that are important to the success of the
6 BDCP. The chapter includes a reasonable schedule for implementation of all of the conservation
7 measures presented in Chapter 3, *Conservation Strategy*, and depicts the cumulative increase in
8 benefits for natural communities and how the implementation of conservation actions over time
9 compares to the timing of adverse effects of covered activities. Regular work plans, budgets,
10 reviews and progress reports are necessary to schedule and fund year-by-year implementation of
11 conservation measures and monitoring and to continually revise various aspects of the Plan
12 through adaptive management based on annual and supra-annual evaluations and reviews. The
13 chapter includes descriptions of required regular planning documents, compliance reporting, and
14 scientific reviews that ensure regular communication across various agencies and the public and
15 allow for continuous input of new information and ideas during implementation.

16 A primary goal of the BDCP is a stable regulatory framework and the chapter provides a
17 discussion of regulatory assurances under the federal ESA and California NCCPA that are
18 expected to come with the issuance of permits and authorizations. Significant events in the Plan
19 Area, such as levee failures and fire, can result in changed circumstances for species and natural
20 communities conserved under the BDCP implementation. Potential changed circumstances and
21 the commitment to responses are presented in the chapter and an approach for addressing
22 unforeseen circumstances is laid out.

23 The size and complexity of developing and implementing the BDCP call for having long-term
24 and durable federal and State permits. To provide more durability to the permits, the chapter
25 includes processes for amendment and renewal of permits such that they may last their full term
26 and possibly longer. Unanticipated declines in species populations and viability can result in
27 situations where the fish and wildlife agencies must consider permit suspension or revocation
28 and the chapter includes a process for communication and joint planning to address such
29 instances and to strive to reverse negative trends and stabilize species populations such that
30 suspension or revocation does not become necessary.

31 This chapter, in combination with Chapter 3 *Conservation Strategy*, Chapter 7 *Implementation*
32 *Structure*, and Chapter 8 *Implementation Costs and Funding Sources*, provides the full
33 description of actions, commitments, and coordination required to implement the BDCP.

34 6.1 Plan Implementation Schedule

35 The general schedule for implementation of each of the BDCP conservation measures is
36 presented in Figure 6-1. Figure 6-2 illustrates the cumulative benefits of implementing BDCP
37 conservation measures over the term of the BDCP. Year 0 of implementation is the year in

1 which all permits, authorizations, and approvals are provided for the BDCP to initiate
2 implementation of the BDCP Conservation Strategy, as described in Chapter 3, *Conservation*
3 *Strategy*. The plan implementation schedule represents the anticipated schedule for when
4 conservation actions associated with each of the conservation measures will be implemented.
5 Meeting the specific schedule presented here is not a requirement of the BDCP, but rather, the
6 implementation schedule serves as a guide for the Implementing Entity and as a tool for other
7 evaluations in the BDCP. The plan implementation schedule served as the basis for determining
8 funding requirements over the term of BDCP implementation (see Chapter 8, *Implementation*
9 *Costs and Funding Sources*) and was used in the effects analysis to determine the anticipated
10 timing of biological impacts and benefits to covered species and natural communities (see
11 Chapter 5, *Effects Analysis*).

12 The implementation schedule represents a reasonable estimate of the temporal sequence for
13 implementation of the various interdependent conservation actions over the term of the BDCP
14 based on the best available information. The BDCP is a large and complex plan and, to ensure
15 successful implementation, the Implementing Entity will need to retain a degree of flexibility to
16 address new information that is developed over the term of BDCP that may require adjustments
17 in the implementation schedule to better ensure that the biological goals and objectives are
18 achieved. Consequently, the actual timing of implementation of some conservation actions may
19 vary from the implementation schedule described below. Any variance in the implementation
20 schedule will be addressed through the adaptive management process described in Section 5.8,
21 *Adaptive Management Program*.

Figure 6-1. BDCP Conservation Measure Implementation Periods following Issuance of BCDP Permits

Conservation Actions	Near-Term Period Implementation Year (1-year intervals)										Long-Term Period Implementation Year (5-year intervals)							
	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
CM1: Water Facilities and Operation																		
Water facilities start up and construction ¹	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green
Water operations	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
CM2 [CM14]*: Yolo Bypass Fisheries Enhancements																		
Fremont Weir Modifications and Operation	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
Fremont Weir passage improvement	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
Lisbon Weir passage improvement	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
Sacramento Weir improvements	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
Lower Putah Creek passage improvements	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue	Light Blue
CM3 [CM18]*: Preserve Natural Communities																		
Protect 87 acres of vernal pool complex terrain ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 44 acres of vernal pool complex terrain ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 43 acres of vernal pool complex terrain ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 93 acres of vernal pool complex terrain ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 33 acres of vernal pool complex terrain ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 9 acres of alkali seasonal wetland complex ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 8 acres of alkali seasonal wetland complex ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 8 acres of alkali seasonal wetland complex ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 8 acres of alkali seasonal wetland complex ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 267 acres of alkali seasonal wetland complex ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 100 acres of alkali seasonal wetland complex ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 500 acres of grassland ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 500 acres of grassland ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 500 acres of grassland ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 500 acres of grassland ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 1,000 acres of grassland ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 1,000 acres of grassland ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 1,000 acres of grassland ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 1,000 acres of grassland ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 1,000 acres of grassland ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Protect 1,000 acres of grassland ³	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 1,500 acres of cultivated habitat ⁴	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 1,700 acres of cultivated habitat ⁴	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 2,745 acres of cultivated habitat ⁴	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 1,500 acres of cultivated habitat ⁴	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 1,000 acres of cultivated habitat ⁴	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 1,000 acres of cultivated habitat ⁴	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 4,600 acres of rice land ⁵	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 1,100 acres of cultivated habitat ⁴	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 3,490 acres of cultivated habitat ⁴	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 3,590 acres of cultivated habitat ⁴	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 2,645 acres of cultivated habitat ⁴	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 2,590 acres of cultivated habitat ⁴	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 2,590 acres of cultivated habitat ⁴	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Preserve 2,590 acres of cultivated habitat ⁴	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green

Figure 6-1. BDCP Conservation Measure Implementation Periods following Issuance of BCDP Permits

Conservation Actions	Near-Term Period Implementation Year (1-year intervals)										Long-Term Period Implementation Year (5-year intervals)							
	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
CM4 [CM10]*: Tidal Habitat Restoration²	Restore 14,000 acres by Year 10										Restore 25,000 acres by Year 15 and 65,000 acres by Year 40							
Restore 1,000 acres of tidal habitat																		
Restore 2,500 acres of tidal habitat																		
Restore 3,500 acres of tidal habitat																		
Restore 3,500 acres of tidal habitat																		
Restore 3,500 acres of tidal habitat																		
Restore 11,000 acres of tidal habitat																		
Restore 8,000 acres of tidal habitat																		
Restore 8,000 acres of tidal habitat																		
Restore 8,000 acres of tidal habitat																		
Restore 8,000 acres of tidal habitat																		
Restore 8,000 acres of tidal habitat																		
CM5 [CM13]*: Seasonally Inundated Floodplain Restoration	Restore 1,000 acres by Year 15										Restore 1,000 acres by Year 15							
Restore 1,000 acres of seasonally inundated floodplain																		
Restore 3,000 acres of seasonally inundated floodplain																		
Restore 3,000 acres of seasonally inundated floodplain																		
Restore 3,000 acres of seasonally inundated floodplain																		
CM6 [CM11]*: Channel Margin Habitat Enhancement	Enhance 5 miles by Year 10										Enhance 10 miles by Year 20, 15 miles by							
Restore 5 miles of channel margin habitat																		
Restore 5 miles of channel margin habitat																		
Restore 5 miles of channel margin habitat																		
Restore 5 miles of channel margin habitat																		
CM7 [CM12]*: Riparian Habitat Restoration	Restore 400 acres by year 15 and 5,000 acres by Year 40										Restore 400 acres by year 15 and 5,000 acres by Year 40							
Restore 5 acres of riparian habitat																		
Restore 5 acres of riparian habitat																		
Restore 4 acres of riparian habitat																		
Restore 417 acres of riparian habitat																		
Restore 190 acres of riparian habitat																		
Restore 1,397 acres of riparian habitat																		
Restore 1,397 acres of riparian habitat																		
Restore 199 acres of riparian habitat																		
Restore 1,386 acres of riparian habitat																		
CM8 [CM17]*: Grassland Communities Restoration	Restore 1,000 acres by Year 10										Restore 1,250 acres by year 15 and 2,000 acres by Year 30							
Restore 250 acres of grassland																		
Restore 250 acres of grassland																		
Restore 250 acres of grassland																		
Restore 250 acres of grassland																		
Restore 250 acres of grassland																		
Restore 250 acres of grassland																		
Restore 250 acres of grassland																		
Restore 250 acres of grassland																		
CM9 [CM16]*: Vernal Pool Complex Terrain Restoration²	Restore 100 acres by year 10										Restore 150 acres by year 15 and 200 acres by Year 20							
Restore 58 acres of vernal pool complex habitat																		
Restore 29 acres of vernal pool complex habitat																		
Restore 29 acres of vernal pool complex habitat																		

Figure 6-1. BDCP Conservation Measure Implementation Periods following Issuance of BCDP Permits

Conservation Actions	Near-Term Period Implementation Year (1-year intervals)										Long-Term Period Implementation Year (5-year intervals)							
	1	2	3	4	5	6	7	8	9	10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
Restore 42 acres of vernal pool complex habitat																		
Restore 42 acres of vernal pool complex habitat																		
CM10 [CM15]*: Nontidal Marsh Restoration⁶	Restore 400 acres by year 10																	
Restore 100 acres of nontidal marsh																		
Restore 100 acres of nontidal marsh																		
Restore 100 acres of nontidal marsh																		
Restore 100 acres of nontidal marsh																		
Other Stressors Conservation Measures																		
CM11 [CM19]*: Enhance and Manage Preserved Natural																		
CM12 [CM8]*: Methylmercury Management ⁷																		
CM13 [CM9]*: Nonnative Aquatic Vegetation Control ⁸																		
CM14 [CM2]*: Stockton Deep Water Ship Channel Dissolved																		
CM15 [CM6]*: Predator Control																		
CM16 [CM7]*: Non-physical Fish Barriers																		
CM17 [CM4]*: Hatchery and Genetic Management Plans																		
CM18 [CM3]*: Illegal Harvest																		
CM19 [CM5]*: Conservation Hatcheries																		

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[]*Former Conservation Measure #
¹Assumes no ground disturbance in the first year
²Implemented in Conservation Zones 1, 2, 4, 5, 7, and 11.
³Implemented in Conservation Zones 1, 8, and/or 11.
⁴Acreage implementation encompasses a range based upon quality of habitat.
⁵Implemented in Conservation Zone 2.
⁶Implemented in Conservation Zones 2 and 4.
⁷Phased implementation occurs in conjunction with tidal habitat restoration schedule.
⁸Implementation occurs at tidal habitat restoration sites 3 years following restoration.

Legend

	Near-term operations
	Long-term operations
	Conservation measure becomes functional (for habitat restorations, initial function may be low, with increasing function over time)
	Interagency coordination, feasibility evaluations, site acquisition, planning, environmental compliance, and construction

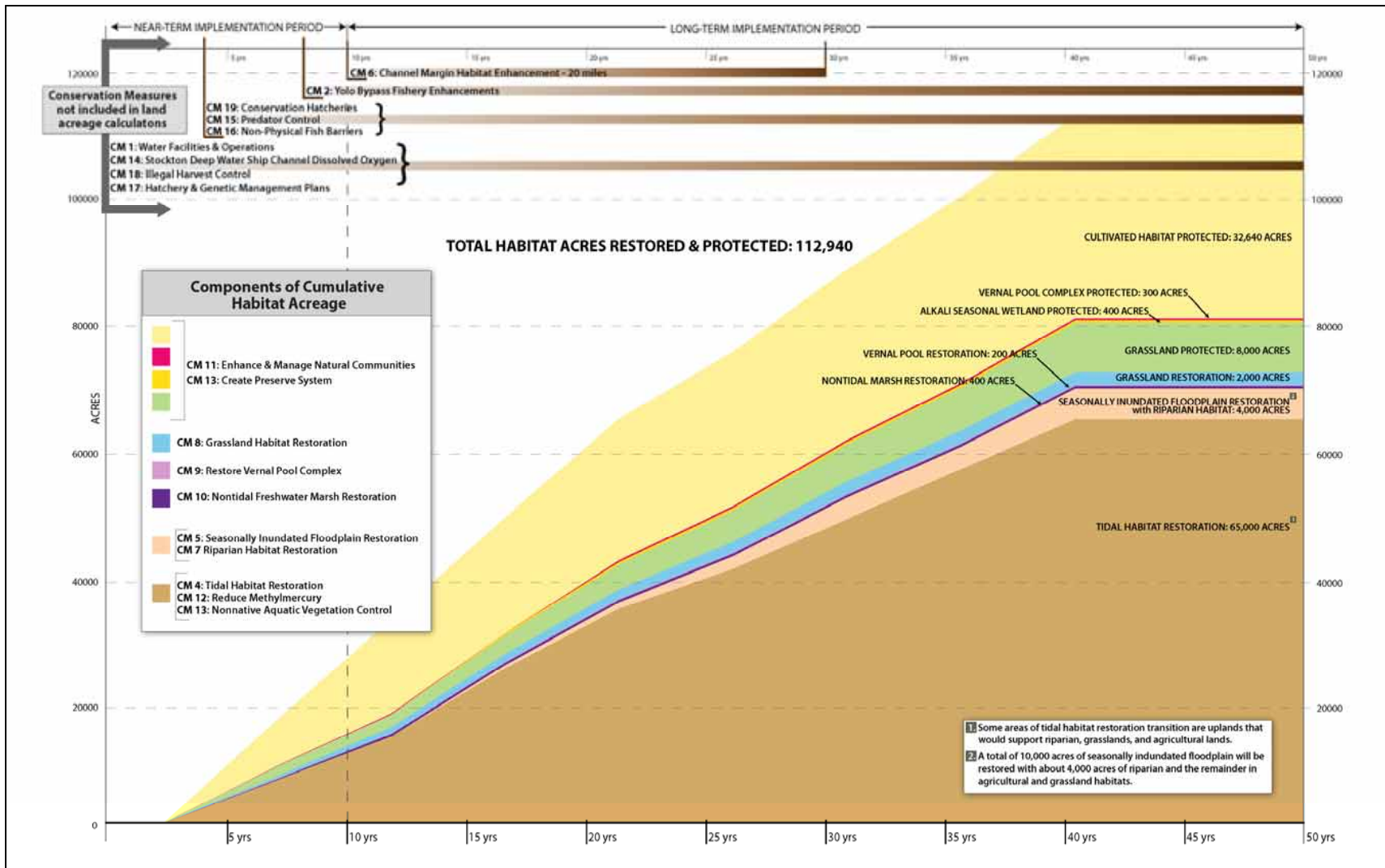


Figure 6-2. Cumulative Benefits of Implementing BDCP Conservation Measures

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2
3

1 Information used to develop the implementation schedule included:

- 2 • The near-term, early long-term, and late long-term restoration targets established for
3 tidal, seasonally inundated floodplain, and channel margin habitats (see Section 3.4,
4 *Conservation Measures*) and the extent of habitat restoration effects on natural
5 communities and covered species habitats (see Chapter 5, *Effects Analysis*);
- 6 • Vernal pool complex and grassland restoration targets (see Section 3.4, *Conservation*
7 *Measures*) and the extent of habitat restoration effects on natural communities and
8 covered species habitats (see Chapter 5, *Effects Analysis*);
- 9 • Vernal pool complex, alkali seasonal wetland complex, grassland, and agricultural habitat
10 protection/preservation targets (see Section 3.4, *Conservation Measures*); and
- 11 • The pipeline/tunnel construction schedule and the extent of construction effects on
12 natural communities and covered species habitats (see Chapter 5, *Effects Analysis*).

13 The length of time needed for implementation of each of the conservation measures were
14 developed based on timing information from similar type actions already completed and on input
15 from individuals experienced with similar types of projects.

16 **6.1.1 Ecosystem-Level Conservation Measures**

17 [*Note to reviewers: Conservation measure (CM) numbering has changed again (due to*
18 *organizational revisions to Chapter 3 Conservation Strategy). New CM numbers are used here,*
19 *with the old number in brackets to allow you to connect to older BDCP documents.*]

20 Ecosystem-level conservation measures address actions that effect large areas of the Delta and
21 large scale ecosystem processes including flow, hydrodynamics, water quality, and large areas of
22 terrestrial, floodplain, and aquatic habitat.

23 **6.1.1.1 Conservation Measure CM1 [CM1]: Water Facilities and Operation**

24 **6.1.1.1.1 Near-Term Water Operations**

25 The implementation schedule assumes that near-term water operations of the SWP and CVP are
26 implemented in the first year following BDCP approvals and continue until long-term water
27 operations are implemented (see Figure 6-1). Operation of the modified Fremont Weir is
28 assumed to commence in year 7 following completion of construction necessary to install an
29 operable gate on Fremont Weir (see Section 6.1.1.4, *Yolo Bypass Fisheries Enhancements*).
30 Changes in operation of the Suisun Marsh Salinity Control Gate require changes to existing
31 agreements that are assumed to become effective in early long-term implementation period.

32 **6.1.1.1.2 Construction of North Delta Diversion and Conveyance Facilities**

33 The implementation schedule is based on an assumption that construction of the new north Delta
34 diversion and conveyance facilities and related actions will require up to 10 years to complete

1 (see Figure 6-1). Scheduled activities that would be implemented during this period include
2 acquisition of lands, preparation and submittal of regulatory permit applications, preparation and
3 letting of construction-related contracts, and facilities construction. This construction time
4 assumption is based on rough estimates provided by DHCCP engineers.

5 **6.1.1.1.3 Long-Term Water Operations**

6 Implementation of the long-term water operations conservation measures is dependent on
7 completion of construction of the north Delta diversion and conveyance facilities, assumed to be
8 10 years. Long-term operations would then continue over the remaining 50-year term of the
9 BDCP. The schedule is based on the assumption that construction of the north Delta diversion
10 and conveyance facilities will be completed in year 10 and that long-term water operations will
11 commence in year 11 (see Figure 6-1).

12 **6.1.1.2 Conservation Measure CM2 [CM14]: Yolo Bypass Fisheries** 13 **Enhancements**

14 The implementation schedule of this conservation measure assumes that modifications to the
15 Fremont Weir and any attendant modifications necessary to the configuration of the Yolo Bypass
16 to allow for operation of the weir will be completed in year 6 following BDCP approvals.
17 Implementation activities assumed to occur and to be completed by year 6 include completion of
18 project planning, environmental compliance documentation, permitting, engineering design,
19 acquisition of flood easements and land (if necessary), modification of the Fremont Weir, and
20 construction of Bypass modifications that may be necessary to direct and contain bypass flows
21 (e.g., construction of dikes and training structures) resulting from operation of the modified weir.
22 Planning, permitting, and construction of improvements to the Fremont Weir fish passage
23 structures are assumed to be completed by the end of year 4 and the modified passage structures
24 to be operational in year 5.

25 The implementation schedule assumes that modifications to the Lisbon Weir, lower Putah Creek
26 channel, and any other modifications of the bypass to improve fish passage will be completed by
27 year 6. Initial grading, excavation, and filling that may be required to reduce the potential for
28 fish stranding is also expected to be completed by year 6, although localized actions to further
29 reduce fish stranding are expected to occur in subsequent years under the Adaptive Management
30 Program based on results of fish stranding monitoring. Implementation activities assumed to
31 occur and to be completed by year 6 include completion of any additional regulatory compliance
32 processes, acquisition of land or easements necessary to implement the Bypass modifications,
33 and construction-related activities.

34 **6.1.1.3 Conservation Measure CM3 [CM18]: Preserve Natural Communities**

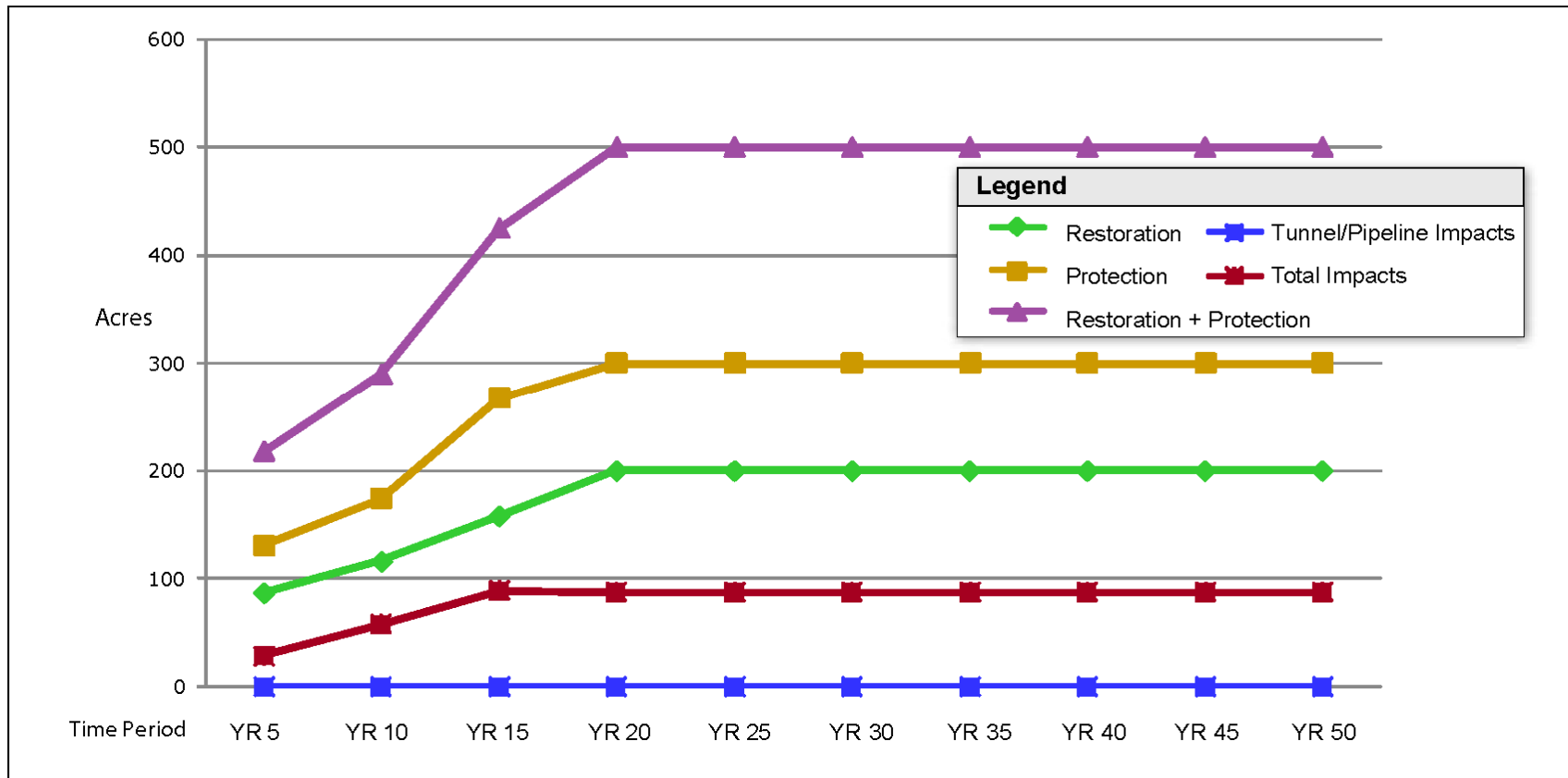
35 The implementation schedule for this conservation measure assumes that acquisition,
36 protection/preservation, enhancement, and management of existing vernal pool complex, alkali
37 seasonal wetland complex, grassland habitat and agricultural habitats will be implemented

1 concurrent with or in advance of the commensurate adverse effects of BDCP implementation on
2 these natural communities and the covered species habitats they support. The schedule assumes
3 that, except for protection actions implemented in the second year following BDCP
4 authorization, a 2 year period will be necessary to identify and bring under protection (e.g.,
5 through conservation easement, fee title acquisition, or other means) existing natural
6 communities. Based on the expected timing of adverse impacts on natural communities and
7 covered species habitat resulting from construction activities early in BDCP implementation, the
8 schedule is based on the assumption that planning for the first increment of protection of existing
9 alkali seasonal wetland complex, grassland, and agricultural habitat will be initiated prior to
10 BDCP authorization.

11 In addition to the protection of existing natural communities and covered species habitat, natural
12 communities and covered species habitat that will be restored under Conservation Measures
13 CM4-CM10 will be included within the BDCP preserve system. The implementation schedule
14 for habitat restoration actions is described in Section 6.1.2, *Natural Community-Level*
15 *Conservation Measures*.

16 The schedule for protection of natural communities and covered species habitat includes time for
17 activities by the Implementing Entity to identify specific parcels of land that are available for
18 acquisition that have the physical and biological characteristics that make the lands suitable for
19 achieving habitat protection targets.

20 Figures 6-3 through 6-6 show the timing of effects of BDCP actions on existing vernal pool
21 complex, alkali seasonal wetland complex, grassland, and agricultural habitats in relation to
22 when these habitat protection/preservation actions are implemented. The implementation
23 schedule assumes that monitoring and management of protected/preserved habitats will occur
24 over the remainder of the term of the BDCP following completion of each restoration increment
25 as described in Conservation Measure CM11: Enhance and Manage Preserved Natural
26 Communities.



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Figure 6-3. Vernal Pool Habitat Restoration and Protection versus Permanent Impacts

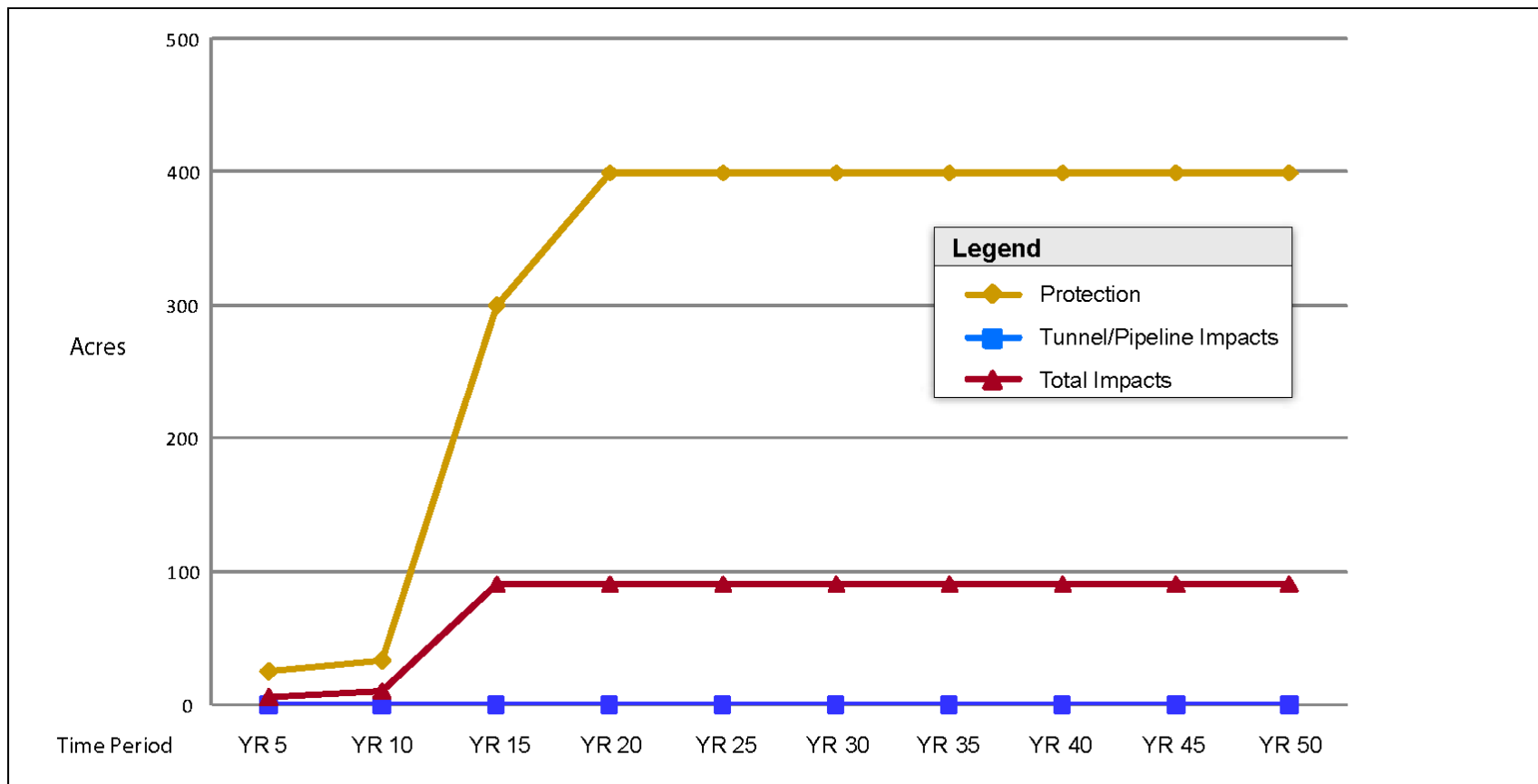
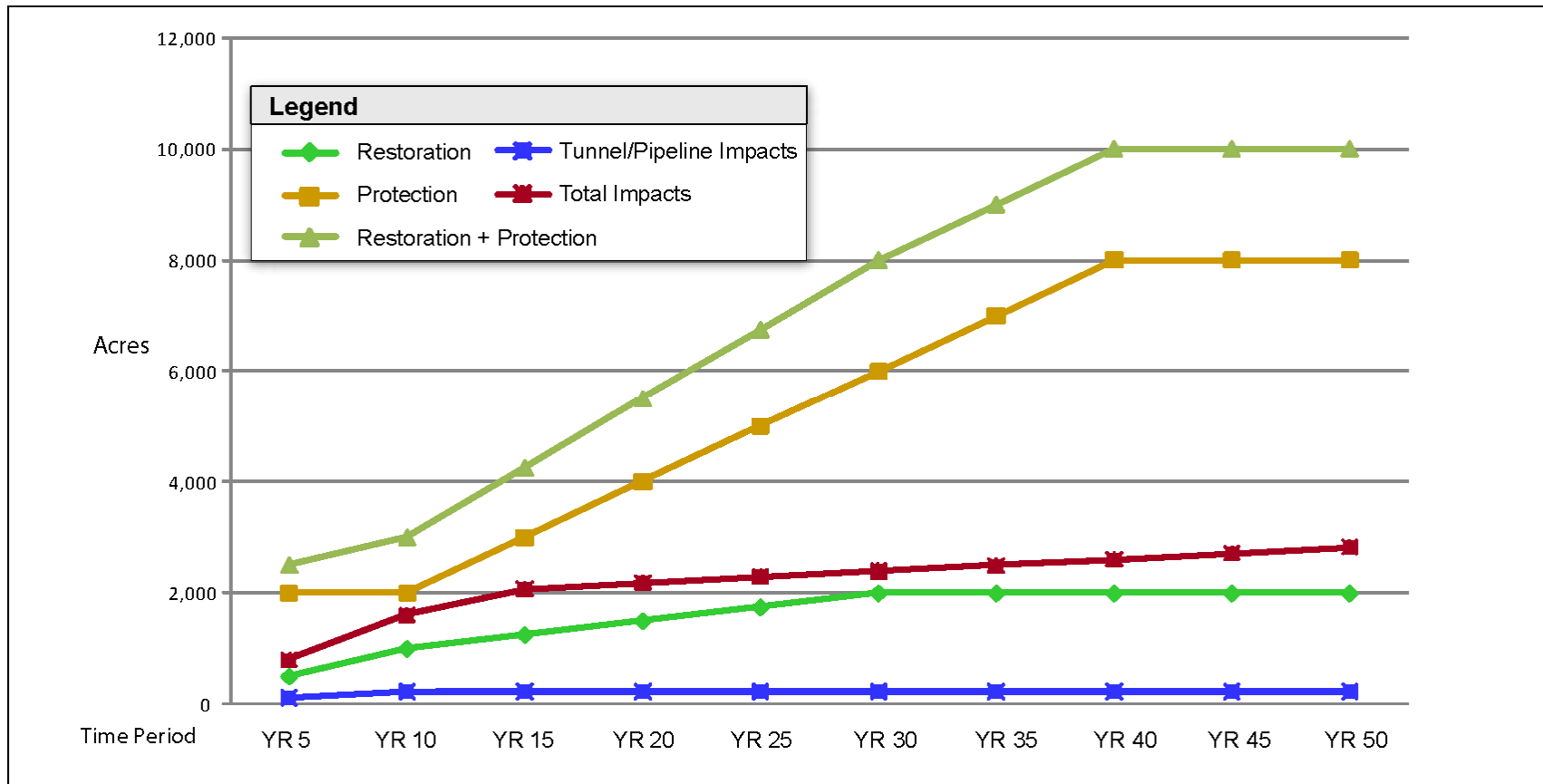


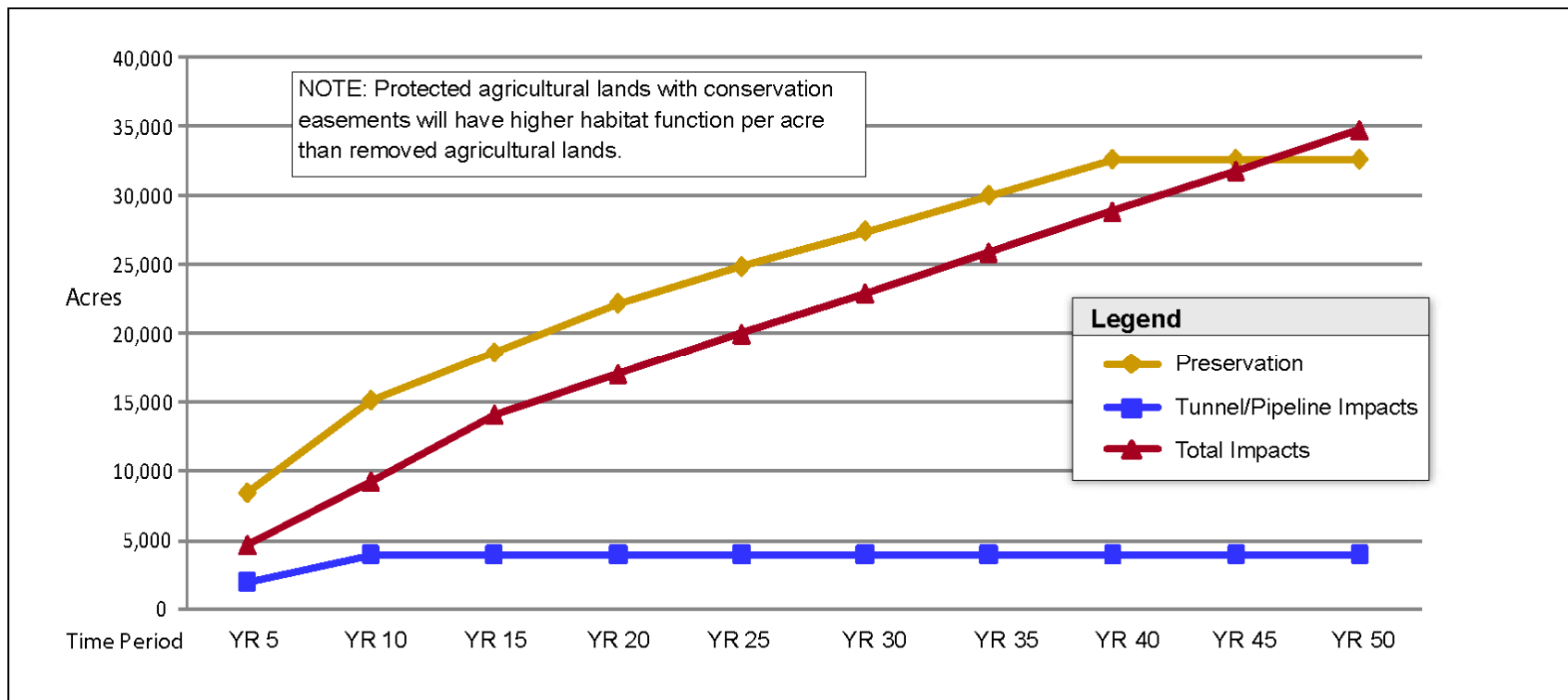
Figure 6-4. Alkali Seasonal Wetland Habitat Protection versus Permanent Impacts

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Figure 6-5. Grassland Habitat Restoration and Protection versus Permanent Impacts



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Figure 6-6. Cropland Preservation versus Permanent Impacts

1 6.1.2 Natural Community-Level Conservation Measures

2 Natural community conservation measures address actions to restore tidal, riparian, seasonally
3 inundated floodplain, vernal pool complex, and grassland habitat; enhance channel margin
4 habitat; and enhance and manage BDCP preserve lands. The schedule for implementing each
5 habitat restoration action is comprised of the following elements:

- 6 • Habitat enhancement and restoration site acquisition;
- 7 • Enhancement and restoration planning and design;
- 8 • Regulatory compliance; and
- 9 • Habitat restoration and enhancement implementation activities.

10 These elements are generally expected to be implemented concurrently and are aggregated in the
11 implementation schedule (see Figure 6-1).

12 **Habitat enhancement and restoration site acquisition.** This implementation element includes
13 all activities related to identifying specific parcels of land that are available for acquisition and
14 that have the physical and biological characteristics that render the lands suitable for achieving
15 habitat protection, enhancement, and restoration objectives, and acquisition of the lands. Site
16 acquisitions for actions that involve modifications to levees (e.g., setting back levees to restore
17 seasonally inundated floodplain habitat) include obtaining concurrence of the responsible
18 agencies to initiate planning studies.

19 **Enhancement and restoration planning and design.** This implementation element includes all
20 activities related to:

- 21 • Development of conceptual habitat enhancement and restoration designs, including
22 coordinating development of conceptual restoration designs with stakeholders (e.g., local,
23 state, and federal agencies and potentially affected landowners);
- 24 • Development of detailed habitat enhancement and restoration designs and cost estimates;
- 25 • Development of bid specifications and drawings; and
- 26 • Preparation of habitat enhancement and restoration contracts and contractor selection

27 **Regulatory compliance.** This implementation element includes the preparation and submittal of
28 documents and applications associated with compliance with and acquisition of the permits
29 associated with applicable laws and regulations, including:

- 30 • Additional project-level review under the California Environmental Quality Act (CEQA),
31 and National Environmental Policy Act (NEPA);
- 32 • Sections 401 and 404 of the Federal Clean Water Act, including Nationwide Permit 27,

- 1 Stream and Wetland Activities;
- 2 • California Water Code sections 1000 et seq. (water rights);
- 3 • Water Code sections 13000 et seq. (water quality);
- 4 • Sections 10 (33 USC 403) and 14 (33 USC 408) of the Rivers & Harbors Act of 1899;
- 5 • Section 1602 of the California Fish and Game Code (Streambed and Lakebed Alteration
- 6 Agreements);
- 7 • Section 106 of the National Historic Preservation Act; and
- 8 • Encroachment permits for work on levees from the Central Valley Flood Protection
- 9 Board and reclamation districts.

10 **Habitat restoration and enhancement implementation activities.** This implementation

11 element includes all activities related to completing habitat restoration actions including:

- 12 • Contractor mobilization;
- 13 • Site preparation, including grading, excavation, and placement of fill;
- 14 • Construction/installation of water management, utility and other operational
- 15 infrastructure;
- 16 • Demolition of or refurbishment of existing infrastructure;
- 17 • Construction of dikes, levees, and roads; and
- 18 • Planting vegetation.

19 **6.1.2.1 CM4 [CM10]: Tidal Habitat Restoration**

20 The implementation schedule for tidal habitat restoration actions is based on the assumption that

21 site acquisition, planning, and regulatory compliance related activities are initiated prior to

22 BDCP authorization for first 7,000 acres of tidal habitat to be restored in the near-term

23 implementation period. These initial restoration actions could, therefore, be constructed

24 immediately following BDCP authorization. These initial restoration actions are expected to

25 require less time to acquire and permit because they are assumed to be implemented on sites that

26 will be readily available to the Implementing Entity (e.g., state and federal owned lands). The

27 schedules for implementation of subsequent tidal habitat restoration actions are based on the

28 assumption that 5 years are required for all the elements of restoration. It is anticipated that most

29 or all of tidal habitat restored during the near-term implementation period will be restored in the

30 Cache Slough Complex, Suisun Marsh, and West Delta areas.

31 Figure 6-7 shows the timing of adverse effects of construction activities on existing tidal habitats

32 in relation to when tidal habitat restoration actions are implemented. The implementation

33 schedule assumes that monitoring and management of restored tidal habitats will occur over the

1 remainder of the term of the BDCP following completion of each restoration increment as
2 described in Conservation Measure CM11: Enhance and Manage Preserved Natural
3 Communities.

4 Implementation of the tidal habitat restoration conservation measure will restore varying
5 amounts of subtidal aquatic, tidal mudflat, and tidal marsh habitat over time depending on
6 location and restoration design within the Plan Area. Figure 6-8 presents reasonable
7 representations of how restored tidal habitat may develop over time within 1,000 acre conceptual
8 restoration sites at Suisun Marsh, the Cache Slough Complex, and the south Delta. The habitat
9 functions supported for covered species will also change over time as marsh vegetation
10 composition, structure, and density and tidal channels evolve over time.

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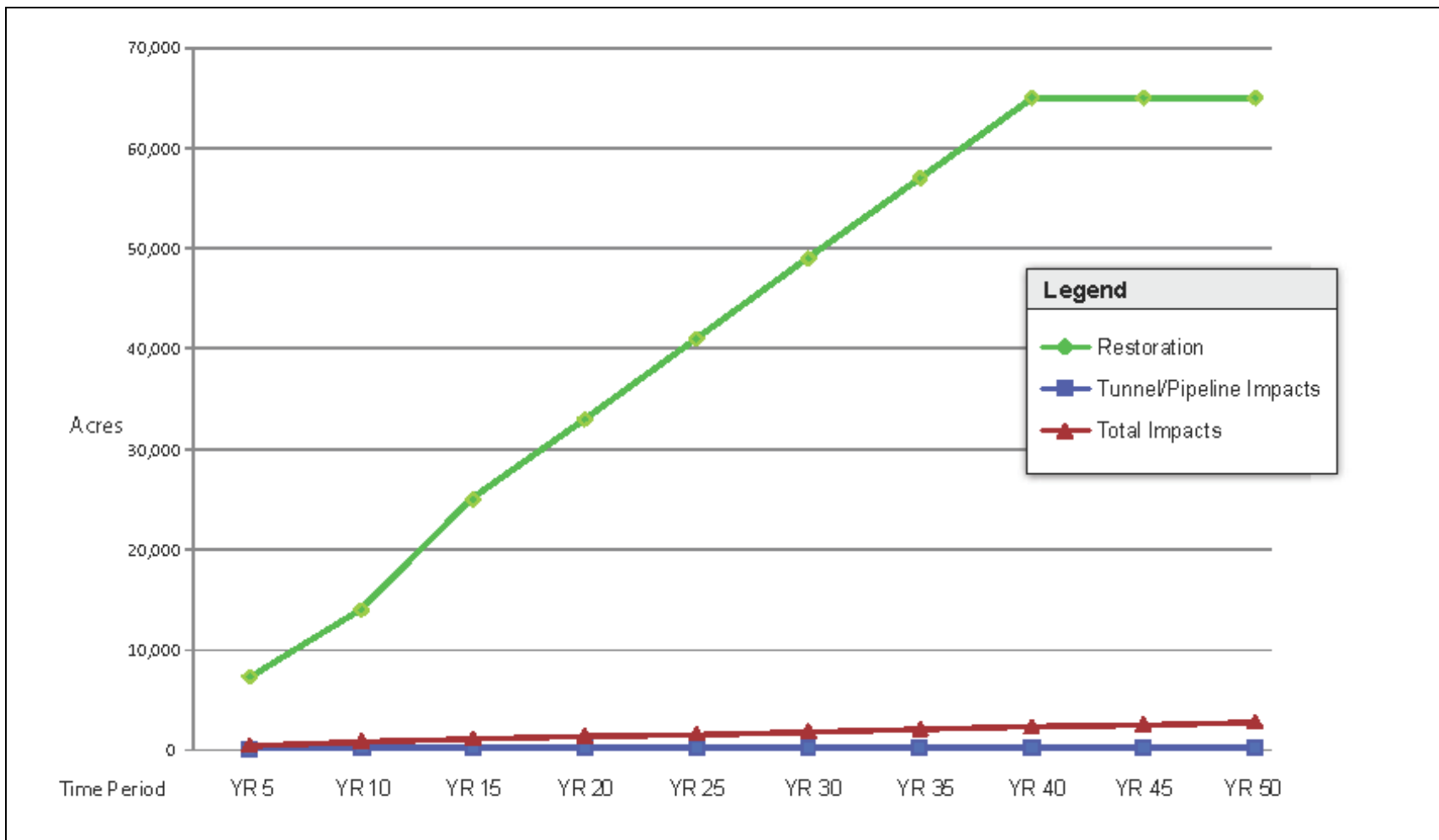
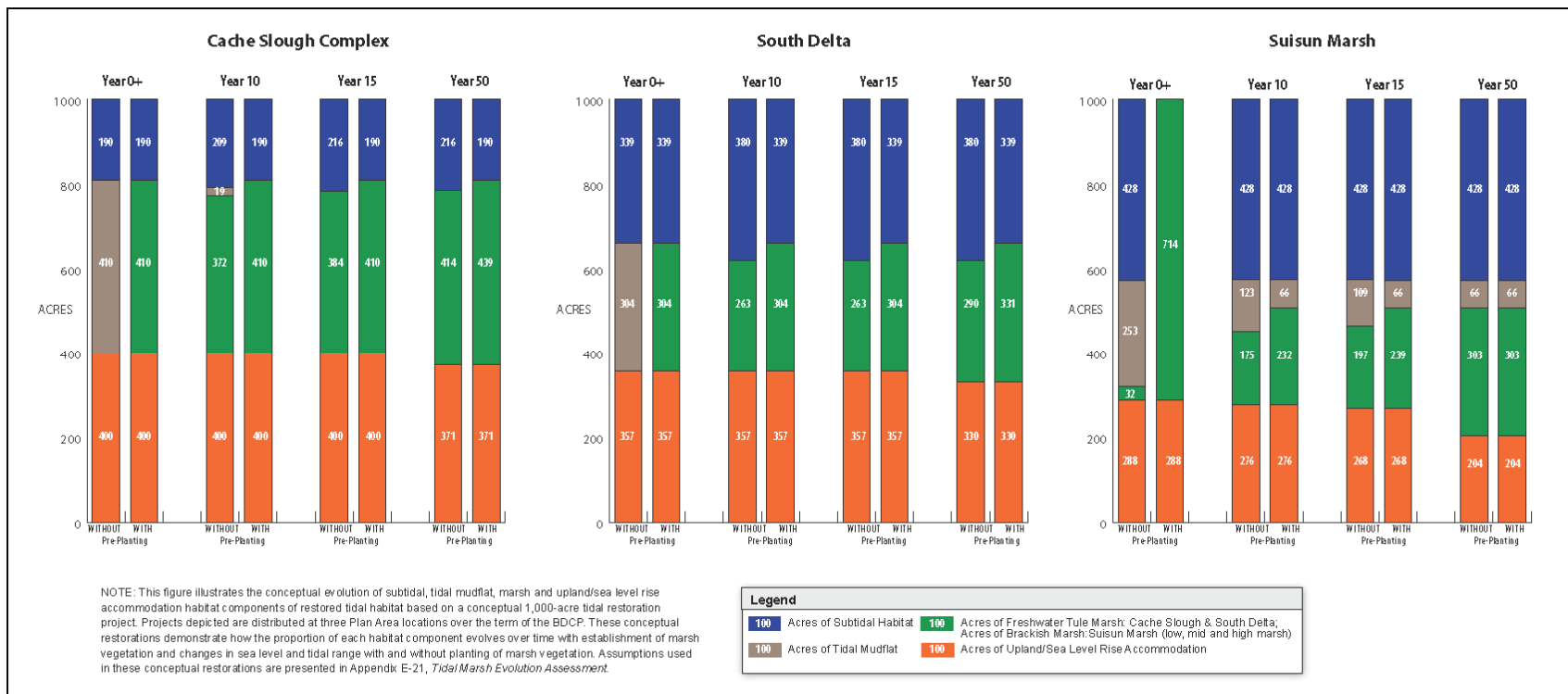


Figure 6-7. Tidal Habitat Restoration versus Permanent Impacts

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Figure 6-8. Conceptual Evaluation of Restored Tidal Habitat with and without Pre-Planting of Marsh Vegetation at Three Plan Area Locations

1 **6.1.2.2 Conservation Measure CM5 [CM13]: Seasonally Inundated Floodplain**
2 **Restoration.**

3 Restoration of seasonally inundated floodplain habitat will require extensive levee setbacks to
4 reconnect historical floodplain with Delta channels. The implementation schedule assumes that
5 at least 1,000 acres of floodplain will be restored by year 15 and that restoration of the remaining
6 9,000 acres of floodplain restoration will be completed in increments of 3,000 acres by years 25,
7 30, and 40, respectively. Each floodplain restoration increment will, on average, require five
8 years to identify potential floodplain restoration sites, coordinate planning with USACE, DWR
9 and other flood control agencies and Reclamation Districts, and conduct feasibilities studies prior
10 to implementation. Following approval of floodplain restoration plans, an additional 5 years are
11 assumed to be required to acquire restoration lands, obtain any outstanding regulatory approvals
12 and permits, develop bid specifications and drawings, construct the new levees and floodplain,
13 and breach existing levees.

14 The implementation schedule assumes that monitoring and management of restored seasonally
15 inundated floodplains will occur over the remainder of the term of the BDCP following
16 completion of each restoration increment as described in CM11: Enhance and Manage
17 Preserved Natural Communities.

18 **6.1.2.3 Conservation Measure CM6 [CM11]: Channel Margin Habitat**
19 **Enhancement**

20 The implementation schedule for enhancing channel margin habitat assumes that channel margin
21 enhancements will be completed in increments of 5 miles of channel (achieved at multiple sites
22 for a total of 5 miles of channel margin length) by years 10, 20, 25, and 30, respectively. Each
23 channel margin habitat enhancement increment will, on average, require 5 years to identify
24 potential channel margin enhancement sites, coordinate planning with USACE, DWR, and other
25 flood control agencies and Reclamation Districts, and conduct feasibilities studies prior to
26 implementation. Following approval of enhancement plans, an additional five years are assumed
27 to be required to obtain any outstanding regulatory approvals and permits and develop bid
28 specifications and drawings and implement channel margin enhancements.

29 The implementation schedule assumes that monitoring and management of enhanced channel
30 margin habitats will occur over the remainder of the term of the BDCP following completion of
31 each restoration increment as described in Conservation Measure CM11: Enhance and Manage
32 Preserved Natural Communities.

33 **6.1.2.4 Conservation Measure CM7 [CM12]: Riparian Habitat Restoration**

34 Restoration of riparian habitat will be a component of tidal habitat restoration, seasonally
35 inundated floodplain restoration, and channel margin habitat enhancement projects; therefore, the
36 schedule for planning, site acquisition, environmental compliance, and implementation of
37 riparian restoration actions is the same as the implementation schedule for those tidal, floodplain,

1 and channel margin habitat restoration actions. The amount of riparian habitat restored varies
2 greatly among the three restoration types. The preponderance of the 5,000 acres of riparian
3 habitat to be restored will be performed in conjunction with seasonally inundated floodplain
4 restoration and tidal habitat restoration in the south Delta in the early long-term and late long-
5 term evaluation periods.

6 Figure 6-9 shows the timing of adverse effects of construction activities on existing riparian
7 habitats in relation to when riparian restoration actions would be implemented. There is a
8 temporal loss of habitat function as a result of the time lag between when riparian habitats are
9 affected and when riparian habitat is restored and become functional as habitat for associated
10 covered species (see Figure 6-9).

11 The implementation schedule assumes that monitoring and management of restored riparian
12 habitat will occur over the remainder of the term of the BDCP following completion of each
13 restoration increment as described in Conservation Measure CM11: Enhance and Manage
14 Preserved Natural Communities. Figure 6-10 illustrates how restored riparian habitats are
15 expected to evolve from riparian scrub to riparian forest and to develop habitat functions that
16 support covered species over time. A description of methods used to identify riparian habitat
17 maturation rates is provided in Appendix X [riparian forest maturation].

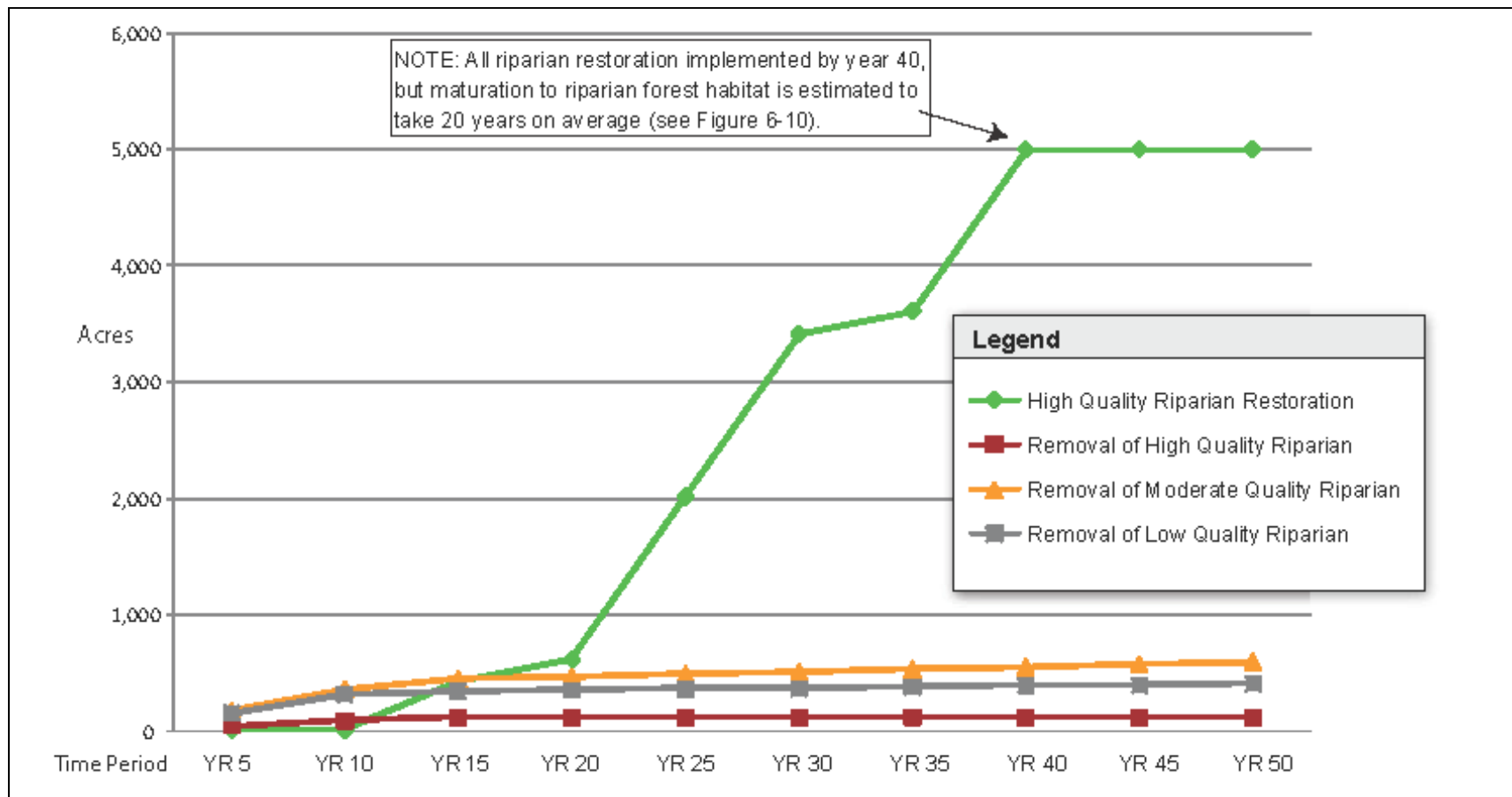
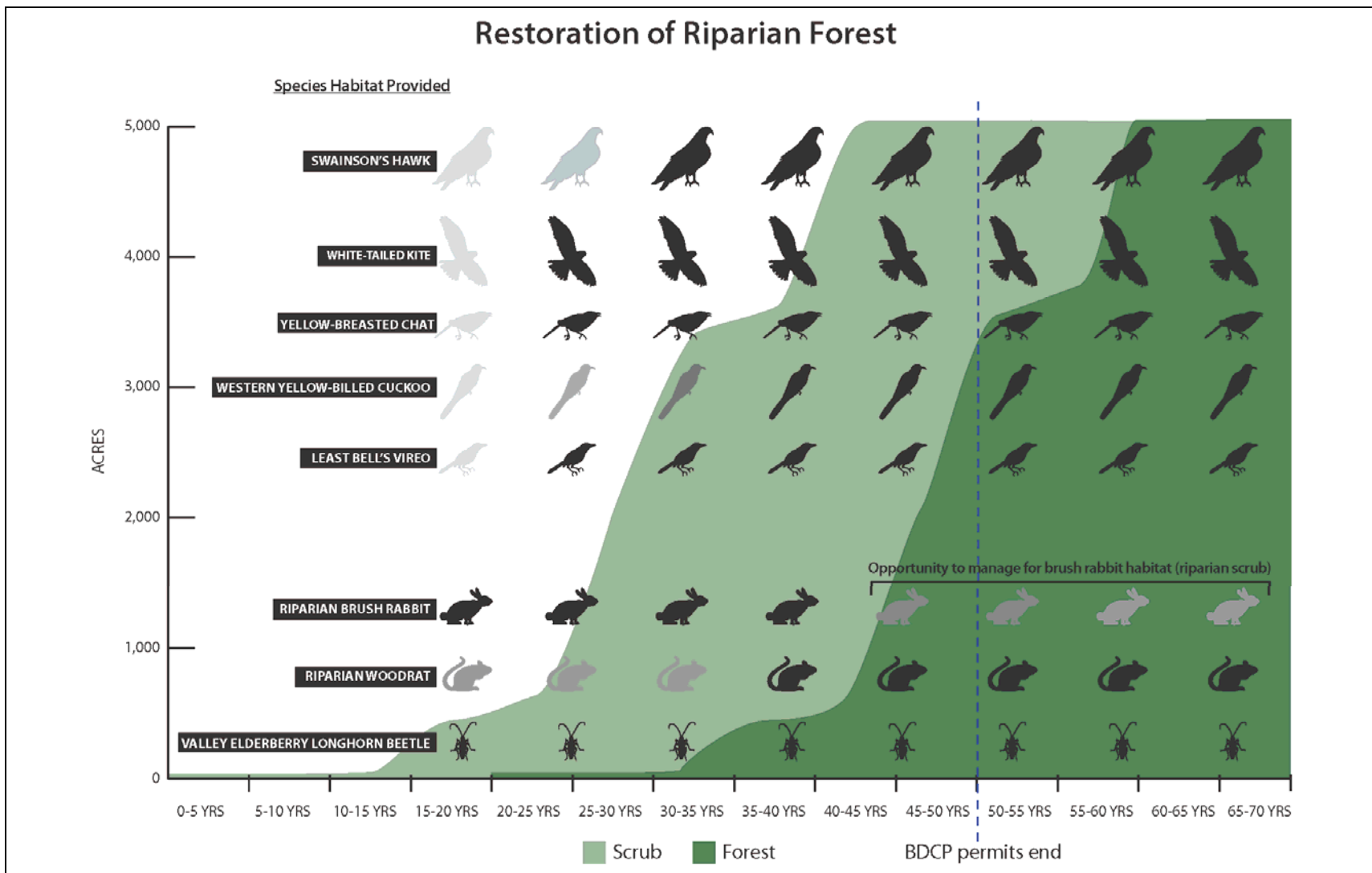


Figure 6-9. Cumulative Riparian Habitat Restoration versus Cumulative Permanent Removal

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Figure 6-10. Evolution of Covered Species in Relation to Riparian Forest Restoration

6.1.2.5 **Conservation Measure CM8 [CM17]: Grassland Communities Restoration**

The implementation schedule assumes that all grassland habitat restoration actions will be implemented between years 3 and 30. A total of 1,000 acres of grassland will be restored in the near-term implementation period, 250 acres in the early long-term implementation period, and 750 acres in the late long-term implementation period. The implementation schedule assumes that site acquisition, planning, and regulatory compliance related activities for the first 250 acres of grassland restoration to be completed in year 3 is initiated in the first year following BDCP authorization and requires a total of 2 years to complete those implementation elements. All subsequent restoration increments also require a 2 year period to complete site acquisition, planning, and regulatory compliance prior to implementing restoration actions.

Figure 6-5 shows the timing of adverse effects of BDCP activities on existing grassland habitats in relation to when grassland restoration actions are implemented. The implementation schedule assumes that monitoring and management of restored grassland habitat will occur over the remainder of the term of the BDCP following completion of each restoration increment as described in Conservation Measure CM11: Enhance and Manage Preserved Natural Communities.

6.1.2.6 **Conservation Measure CM9 [CM16]: Vernal Pool Complex Terrain Restoration**

The implementation schedule assumes that all vernal pool complex habitat restoration actions will be implemented between years 2 and 15. A total of 116 acres of vernal pool complex will be restored in the near-term implementation period, 42 acres in the early long-term implementation period, and 42 acres in the late long-term implementation period. The implementation schedule assumes that site acquisition, planning, and regulatory compliance related activities for the first 58 acres of vernal pool complex restoration to be completed in year 2 is initiated before BDCP authorization and requires a total of 3 years to complete those implementation elements. All subsequent restoration increments also require a 3 year period to complete site acquisition, planning, and regulatory compliance prior to implementing restoration actions.

Figure 6-3 shows the timing of adverse effects of BDCP activities on existing vernal pool complex habitats in relation to when vernal pool complex restoration actions are implemented. The implementation schedule assumes that monitoring and management of restored vernal pool complex will occur over the remainder of the term of the BDCP following completion of each restoration increment as described in Conservation Measure CM11: Enhance and Manage Preserved Natural Communities.

6.1.2.7 **Conservation Measure CM10 [CM15]: Nontidal Marsh Restoration**

The implementation schedule assumes that all nontidal freshwater marsh restoration actions will

1 be completed by year 9 in the near-term implementation period. The restored nontidal
2 freshwater marsh will be designed specifically to support giant garter snake habitat and would be
3 completed in the near-term implementation period to provide benefits for this endangered species
4 as early as practicable. The implementation schedule assumes that site acquisition, planning,
5 and regulatory compliance related activities for each 100 acres of restoration requires 2 years to
6 complete with the restoration actions being completed in the third year.

7 The implementation schedule assumes that monitoring and management of restored nontidal
8 freshwater marsh will occur over the remainder of the term of the BDCP following completion
9 of each restoration increment as described in Conservation Measure CM11: Enhance and
10 Manage Preserved Natural Communities.

11 **6.1.2.8 Conservation Measure CM11 [CM19]: Enhance and Manage Preserved** 12 **Natural Communities**

13 This conservation measure applies to all BDCP protected and restored habitats and is
14 implemented at the time each parcel of land is acquired for the BDCP conservation lands system.
15 Within two years of acquisition of conservation land parcels, the Management Entity will
16 conduct surveys to collect the information necessary to assess the ecological condition and
17 function of conserved species habitats and supporting ecosystem processes (note that such
18 surveys would be in addition to due-diligence biological and physical surveys conducted prior to
19 site acquisitions, see Chapter 3, *Conservation Strategy*). Based on results of the assessment, the
20 Management Entity will develop management plans. These management plans may be prepared
21 for specific parcels or for multiple preserved parcels within a specified geographic area that
22 describe habitat enhancement and management actions necessary to achieve the biological
23 objectives established for the preserve lands addressed by each plan. Subsequent habitat
24 enhancement and management actions will be implemented in accordance with the preserve-
25 specific habitat enhancement and management schedule for each plan.

26 **6.1.2.9 Conservation Measure CM12 [CM8]: Methylmercury Management**

27 This conservation measure provides for specific tidal habitat restoration design elements to
28 reduce the potential for methylation of mercury and/or its bioavailability in tidal habitats.
29 Consequently, this conservation measure is implemented as part of the tidal habitat restoration
30 design schedule indicated in Figure 6-1.

31 **6.1.2.10 Conservation Measure CM13 [CM9]: Nonnative Aquatic Vegetation** 32 **Control**

33 This conservation measure provides for control of nonnative aquatic vegetation in subtidal
34 habitats restored as a component of BDCP tidal habitat restoration actions. The implementation
35 schedule assumes that non-native aquatic vegetation control actions will be required at each tidal
36 habitat restoration site 3 years following the restoration. Because current nonnative aquatic
37 vegetation control methods are dependent on the use of herbicides, the implementation schedule

1 assumes 3 years to complete planning and environmental compliance for the first tidal habitat
2 restoration to be completed in year 2. Thereafter, the schedule assumes that planning and
3 environmental compliance processes will be streamlined, requiring no more than 2 years to
4 complete, and run concurrent with planning and compliance elements conducted for each of the
5 subsequent tidal habitat restoration actions.

6 **6.1.3 Species-Specific Conservation Measures**

7 **6.1.3.1 Conservation Measure CM14 [CM2]: Stockton Deep Water Ship** 8 **Channel Dissolved Oxygen Levels**

9 The implementation schedule assumes the current Stockton Deep Water Ship Channel dissolved
10 oxygen diffuser demonstration project will be implemented immediately following BDCP
11 authorization (i.e., continued operation). The implementation schedule assumes the dissolved
12 oxygen diffuser technology will need to be modified to provide substantial biological benefits for
13 the covered fish species. The implementation schedule also assumes completion of a
14 demonstration study by at the end of year 1 that will provide guidance on how to modify the
15 diffusers. Additional planning, coordination, environmental compliance, and construction is
16 assumed to require an additional 2 years and, assuming modifications are necessary, the
17 modified dissolved oxygen diffusion facilities becoming operational in Year 4 with operations
18 continuing over the term of the BDCP.

19 **6.1.3.2 Conservation Measure CM15 [CM6]: Predator Control**

20 The implementation schedule assumes that predator control actions to remove artificial structures
21 and abandoned boats from Delta channels will require 2 years of planning and environmental
22 compliance, with actions being implemented in year 3. Authorizations to implement actions to
23 remove non-native predatory fish from specific locations are assumed to be completed in the first
24 year following BDCP authorization and implemented in year 3. Following the first year of their
25 implementation, predator control actions are assumed to be implemented annually over the term
26 of BDCP.

27 **6.1.3.3 Conservation Measure CM16 [CM7]: Non-Physical Fish Barriers**

28 The existing non-physical fish barrier serving as a pilot project at the Head of Old River is
29 assumed to continue to be operated immediately following BDCP implementation. Planning and
30 compliance activities for placing barriers at the Delta Cross Channel and Georgiana Slough are
31 assumed to be initiated in the year following BDCP approval, requiring 2 years to complete,
32 followed by construction and operation in the third year. The schedule assumes that up to four
33 additional barriers may be constructed at operated if studies indicate substantial benefits for the
34 covered fish species. The implementation schedule assumes 2 years of studies will be conducted
35 following BDCP authorization and, assuming the studies indicate the placement of barriers will
36 be beneficial, that 2 years will be required for planning and compliance and 1 year for
37 construction as described above for the initial barriers.

1 **6.1.3.4 Conservation Measure CM17 [CM4]: Hatchery and Genetic**
2 **Management Plans**

3 The implementation schedule assumes that preparation of each of the 12 hatchery and genetic
4 management plans is initiated in the year following BDCP authorization and are all completed at
5 the end of the third year of implementation. Because preparation of some plans will have been
6 initiated before BDCP authorization, some of the plans may be completed earlier. The schedule
7 subsequently assumes each plan will be updated every 5 years, requiring 1 year to complete.
8 Staff support for implementing and updating plans is assumed to be implemented the year that
9 the initial hatchery and genetic management plans are completed.

10 **6.1.3.5 Conservation Measure CM18 [CM3]: Illegal Harvest**

11 The implementation schedule assumes that planning and coordination with DFG and the existing
12 Delta-Bay Enhanced Enforcement Program (DBEEP) necessary to expand DBEEP staffing will
13 immediately following BDCP authorization such that the conservation measure is implemented
14 by the end of year 2. The funding for enhanced staffing support is assumed to be maintained
15 over the term of the BDCP.

16 **6.1.3.6 Conservation Measure CM19 [CM5]: Conservation Hatcheries**

17 The implementation schedule assumes that site acquisition, planning, and environmental
18 compliance necessary for construction of the new USFWS conservation hatchery facility will
19 require 3 years following BDCP authorization; an additional 2 years would be necessary for
20 construction; and the facility would become operational in year 6. Planning and environmental
21 compliance necessary for the expansion of the UC Davis conservation hatchery are assumed to
22 be initiated before BDCP authorization such that the facility expansion is completed by the end
23 of the second year of BDCP implementation, becoming operational in the year 3 of
24 implementation. Both the USFWS and UC Davis facilities are assumed to be operated over the
25 term of the BDCP once they have become operational.

26 **6.2 Compliance and Progress Reporting**

27 The BDCP Implementing Entity will regularly prepare planning documents and implementation
28 reports to demonstrate compliance with the Plan and its associated authorizations and to facilitate
29 interagency coordination, scientific exchange, and public outreach. Under ESA, habitat
30 conservation plans are required to establish monitoring programs to assess the effects of plan
31 implementation on covered species¹ and the USFWS/NMFS Five-Point Policy² recommends that
32 such plans provide for annual reporting of compliance with permit terms and conditions.
33 Similarly, the NCCPA requires that implementation agreements include “provisions for periodic
34 reporting to wildlife agencies and the public for purposes of information and evaluation of plan

¹ 50 C.F.R. § 17.22(b)(1) and 50 C.F.R. § 222.307(b)(5)

² Five-Point Policy for HCPs, 65 FR 106, June 1, 2000

1 progress.”³ The Implementing Entity will, over the term of the BDCP, submit various reports and
2 plans to the fish and wildlife agencies that serve the following purposes:

- 3 • Provide the necessary data and information to demonstrate that the BDCP is being
4 properly implemented;
- 5 • Publish monitoring results and analyses to report the effect of plan implementation on
6 covered species and on the effectiveness of the Conservation Strategy at advancing the
7 BDCP biological goals and objectives;
- 8 • Document the process and results of adaptive management (decisions, changes,
9 corrective actions);
- 10 • Disclose issues and challenges concerning plan implementation, and identify potential
11 modifications to the Conservation Strategy that would increase the likelihood of success;
- 12 • Provide plans and budgets for the implementation of actions over one-year and five-year
13 timeframes; and
- 14 • Provide adequate information to the Delta Stewardship Council on matters relating to the
15 implementation of the BDCP, including the status of monitoring programs and adaptive
16 management.

17 Throughout the course of plan implementation, the Implementing Entity will prepare and submit
18 to the fish and wildlife agencies the following documents, as described in this chapter:

- 19 • Annual Workplan & Budget;
- 20 • Annual Water Operations Strategy and Monitoring and Research Plan;
- 21 • Annual Progress Report;
- 22 • Annual Water Operations Report;
- 23 • Five-Year Comprehensive Review; and
- 24 • Five-Year Implementation Plan.

25 The Implementing Entity will work in partnership with DWR, Reclamation, USFWS, NMFS,
26 DFG, the BDCP Stakeholder Committee, the Delta Stewardship Council, and the Delta Science
27 Program in the development of these planning and reporting documents. The totality of these
28 documents will enable the range of interested public and private stakeholders, and the general
29 public, to assess on an ongoing basis the progress and performance of the BDCP toward meeting
30 the biological goals and objectives of the Plan and make informed recommendations to the
31 Implementing Entity regarding matters relating to plan implementation. To accommodate access
32 to this information, these reports will be available to the public and posted on the BDCP website.

³ California Fish & Game Code § 2820(b)(7)

1 6.2.1 Annual Workplan & Budget

2 On an annual basis⁴, the Implementing Entity will prepare a workplan and budget for the
3 upcoming implementation year. The workplan will identify planned actions for the
4 implementation of conservation measures and the monitoring, research, and adaptive
5 management programs. The budget will identify planned expenditures and sources of funding
6 for those expenditures. A final workplan and budget will be completed no later than one month
7 prior to the beginning of the implementation year. A draft of the annual workplan and budget
8 will be provided to DWR, Reclamation, USFWS, NMFS, DFG, and the BDCP Stakeholder
9 Committee for review no later than one month prior to the due date for the final plan.

10 At a minimum, the workplan and budget will contain the following information:

- 11 • A description of the planned actions to implement conservation measures (for water
12 operations conservation measures, see Section 6.2.2 *Water Operations Plan*) and the
13 entities that will carry out the actions;
- 14 • A description of the planned monitoring actions and the entities that will implement those
15 actions;
- 16 • A description of the anticipated research studies to be undertaken, and the entities that
17 will conduct the studies;
- 18 • A budget reflecting the costs of implementing the planned actions, including a line item
19 for each specific action;
- 20 • A summary of the projected and actual budgets for all prior implementation years; and
- 21 • A description of the sources of funding to support the budget.

22 6.2.2 Annual Water Operations Strategy and Monitoring and Research Plan

23 The Implementing Entity will work closely with CVP and SWP operation managers to ensure the
24 proper implementation of operations conservation measures. DWR and Reclamation will retain
25 their authority and obligation to determine overall water project operations consistent with their
26 various permit terms and conditions and other applicable requirements. DWR and Reclamation
27 will conduct Delta operations in close coordination with DFG, FWS and NMFS and in
28 accordance with permitted operating criteria, and consistent with the following aspects.

29 **Annual Water Operations Strategy and Monitoring and Research Plan.** No later than
30 December 15 each year, DWR, Reclamation, DFG, FWS, and NMFS will develop a Water
31 Operations Strategy and Monitoring and Research Plan that identifies:

⁴ The Implementing Entity will decide how the planning year will be bounded (e.g., calendar year, federal fiscal year, state fiscal year; or water year).

- 1 • Operations priorities for both fishery and water supply for the coming year;
- 2 • Expected operations or “most likely” operations criteria within the real-time operations
- 3 ranges identified in the permitted operations criteria; and
- 4 • Monitoring, data collection, research, and adaptive management experiments associated
- 5 with that water year’s water operations.

6 An initial draft of the Annual Water Operations Strategy and Monitoring and Research Plan will
7 be submitted for review to an independent science panel in an open, public forum. The
8 independent science panel will review the draft plan and provide a comprehensive written review
9 of the draft plan.

10 The Annual Water Operations Strategy and Monitoring and Research Plan will include the first
11 of three Seasonal Operations Strategies (see below).

12 **Seasonal Operations Strategies.** No later than December 31, March 31, and July 31 of each
13 year, DFG, FWS, and NMFS will seasonally evaluate then current hydrologic and fishery
14 information and will update the expected operating criteria within the real-time operations range,
15 as necessary. Based on this information, DWR and Reclamation will prepare Seasonal
16 Operations Strategies that update their operating forecasts and expected water supply projections.
17 The Seasonal Operations Strategies documents will be completed no later than January 15, April
18 15, and August 15.

19 **Real-Time Operations Response Team.** DFG, FWS and NMFS will continuously monitor
20 Delta conditions and, with input from DWR and Reclamation, will provide real-time operating
21 criteria to DWR and Reclamation within the operating range described as part of the permitted
22 water operations criteria and the Annual Water Operations Strategy and Monitoring and
23 Research Plan. Real-time water operations criteria will be designed to increase fish benefits
24 while meeting the water supply target in the Annual Water Operations Strategy and Monitoring
25 and Research Plan as revised in the Seasonal Operations Strategies.

26 **6.2.3 Annual Progress Report**

27 At the end of each implementation year⁵, the Implementing Entity will prepare an Annual
28 Progress Report. These reports will provide a summary of the activities carried out during the
29 previous implementation years. The Annual Report, for instance, will include a description and
30 accounting of land acquisitions and habitat restoration activities, and detail the status of the
31 monitoring and adaptive management programs, including a discussion of the synthesis and use
32 of data and information and the identification of important trends. Annual reports will be
33 completed within 3 months of the close of the reporting year, which will provide sufficient time
34 to compile data and complete analyses.

⁵ The Implementing Entity will decide how the implementation year will be bounded (e.g., calendar year, federal fiscal year, state fiscal year; or water year).

1 At minimum, the annual reports will contain the following elements:

2 1. Documentation of the implementation of habitat conservation measures (i.e., protection/
3 enhancement/ creation/ restoration) in relationship to the implementation schedule set
4 out in Section 6.1, *Plan Implementation Schedule*, including:

5 a) A summary of the completed or in-progress habitat conservation action, including
6 information related to type, extent, location, and species associations. The
7 summary will include a description of the relationship between the action and
8 specific conservation measures and the entity(ies) responsible for its
9 implementation. If the action involves the conveyance of a conservation
10 easement, the report will identify the recipient of the easement. The report will
11 document, on an annual and cumulative basis, the habitat conservation actions
12 that have been carried out.

13 b) The extent to which each conservation action is expected to advance applicable
14 ecosystem, natural community, and species-specific biological objectives.

15 c) A description of the type, extent, and location of avoidance and minimization
16 measures implemented to address potential impacts of Covered Activities on
17 covered species during the reporting period.

18 d) A summary of the cumulative impacts of BDCP Covered Activities on covered
19 natural communities and covered species habitats and the habitat mitigation
20 implemented to address these impacts.

21 e) A summary of the relationship of the cumulative impacts on covered natural
22 communities and covered species habitats to the cumulative implementation of
23 conservation measures for the same resources, including a description of how
24 implementation of conservation measures is roughly proportional in time and
25 extent to the impacts on covered species and their habitat.

26 f) The proportion of completion of each habitat conservation measure;

27 g) Identification of habitat protection, restoration, or enhancement actions that have
28 not been implemented in accordance the implementation schedule (i.e., behind or
29 ahead of schedule) and an explanation for the deviation from the schedule.

30 2. A summary of the water operations conservation measures implemented during the prior
31 year (a detailed description of water operations will be included in the Annual Water
32 Operations Report [see section 6.2.4]), including:

33 a) Documentation of compliance with the water operation criteria in effect during
34 the reporting period.

35 b) Documentation and rationale for any deviations from the water operation criteria

- 1 in effect during the reporting period.
- 2 c) Documentation of “real time” operational decisions.
- 3 d) Documentation of Fremont Weir operations, including:
- 4 i) Periods of operation.
- 5 ii) Flow volume by operation period.
- 6 iii) Documentation and rationale for any deviations from the Fremont Weir
- 7 operation ranges in effect during the reporting period.
- 8 3. A description of the status of covered natural communities, covered habitats and covered
- 9 species, including:
- 10 a) An assessment of nature and extent of the impacts of covered activities on
- 11 covered natural communities and covered species. The report will also contain:
- 12 i) The entity that carried out the covered activity.
- 13 ii) The location of habitat permanently or temporarily disturbed.
- 14 iii) A description of activity that disturbed natural communities and covered
- 15 species habitats.
- 16 b) The status of the BDCP conservation lands system assembly with respect to
- 17 authorized take/habitat loss, and an assessment of the progress toward all
- 18 acquisition goals, including those related to land-cover types, landscape linkages,
- 19 covered plant populations, and wetland protection. This assessment will include
- 20 evaluation of compliance with the reserve design and assembly principles as
- 21 described in Chapter 3, *Conservation Strategy*.
- 22 c) A summary of all land management activities undertaken on BDCP conservation
- 23 lands and a discussion of the management issues facing the Implementing Entity
- 24 at each preserve unit.
- 25 4. An evaluation of the results of monitoring and research activities, including:
- 26 a) A description of the ecosystem/landscape-level, natural-community level and
- 27 species level monitoring activities (as described in Section 3.6, *Monitoring and*
- 28 *Research Plan* or in monitoring plans subsequently developed during
- 29 implementation) undertaken during the reporting period and a summary of
- 30 monitoring results with appropriate assessment of population trends and status of
- 31 covered species.
- 32 b) An assessment of the appropriateness of performance indicators and metrics based

- 1 on results of biological effectiveness monitoring and recommended changes to
2 performance indicators and metrics.
- 3 c) A description and assessment of the efficacy of the monitoring undertaken during
4 the reporting period, and a description of any remedial actions (e.g., adaptive
5 management changes to monitoring protocols) undertaken during the reporting
6 period.
- 7 d) A description of all BDCP directed research conducted during the reporting
8 period, a summary of research results to date, and a description of how these
9 results were integrated into the adaptive management and monitoring programs.
- 10 e) A presentation of the conceptual ecological models developed to date and any
11 changes to those models as a result of new information and research findings.
- 12 5. A description of adaptive management activities, including:
- 13 a) A description of the adaptive management decisions made during the reporting
14 period, including how existing information was used to guide these decisions and
15 the rationale for the action.
- 16 b) A description of the use of independent scientists or other experts in the adaptive
17 management decision making processes.
- 18 c) A description of adopted and recommended changes to the operating conservation
19 program based on interpretation of monitoring results and research findings.
- 20 6. A financial report that details the following:
- 21 a) Funds provided to the Implementing Entity by source.
- 22 b) Expenditures, set out by the cost categories described in Chapter 8,
23 *Implementation Costs and Funding Sources*.
- 24 c) Funding received and expended by cost category from the time of BDCP
25 authorization.
- 26 d) Economic assumptions on which Plan implementation costs were based relative to
27 actual costs.
- 28 e) Any deviations in expenditures from the annual budget.
- 29 f) Transfers of funds between cost categories and the rationale for such transfers
30 (e.g., transfer of funds initially associated with a specific conservation measure to
31 support another conservation measure(s) based on decisions made through the
32 adaptive management process to reduce or discontinue implementation of an
33 ineffective conservation measure).

- 1 7. A description of actions implemented or pending to respond to changed circumstances,
2 including:
 - 3 a) A description of the changed circumstance and its effects on covered species and
4 natural communities.
 - 5 b) A description of the actions taken to address the changed circumstance and the
6 effectiveness of those actions, including the outcomes of actions to address
7 changed circumstances from earlier years.
- 8 8. A summary of any administrative changes, minor modifications, or major amendments to
9 the Plan proposed or approved during the reporting period.

10 **6.2.4 Annual Water Operations Report**

11 No later than November 15 of each year, DWR and Reclamation, with participation from DFG,
12 FWS and NMFS, will prepare a Water Operations Report on the prior water year's (October 1 to
13 September 30) operational effects on covered species. The report will include:

- 14 • A summary of the prior year's operations, including a comparison of the actual
15 operations with planned operations;
- 16 • A discussion of new data collected and information from new scientific research;
- 17 • Evaluation of the effectiveness of actions for covered fish species and ecological
18 processes, including the responses to real-time operational changes;
- 19 • Description of the extent to which water supply projections in the prior year's Annual and
20 Seasonal Operations Strategies were met, and if not, identification factors affecting the
21 ability to meet projections;
- 22 • Consideration of whether any protective actions should be altered in light of new
23 information, an inability to meet fishery protection or water supply reliability targets, or
24 to address changed circumstances.

25 The agencies will provide a draft of the Water Operations Report for review to an independent
26 science panel in an open, public forum. The independent science panel will review the report and
27 provide a comprehensive written review of the report.

28 **6.2.5 Five-Year Comprehensive Review**

29 The implementation of the BDCP will undergo a comprehensive review every five years
30 throughout the term of the plan. As part of this review, the Implementing Entity will prepare a
31 report, which will be known as the Five-Year Comprehensive Review, memorializing the finding
32 of this review.

33 The objectives of the Five-Year Comprehensive Review are threefold:

- 1 • To provide an overview of the status of plan implementation, including implementation
2 of conservation measures and the progress made toward meeting biological goals and
3 objectives;
- 4 • To assess covered species trends and habitat conditions associated with BDCP
5 implementation relative to overall trends and conditions for covered species and natural
6 communities;
- 7 • To evaluate the relevance of the various monitoring actions and research projects to the
8 implementation of conservation measures; and
- 9 • To evaluate changes that have been made in the implementation of the BDCP and set out
10 potential modifications that may be advisable in the future based on new information and
11 lessons learned.

12 The primary purpose of the Five-Year Comprehensive Review is to provide a periodic, program-
13 level assessment of the progress made under the BDCP toward achieving the biological goals
14 and objectives. As such, the Review will be focused on identifying and evaluating broad
15 ecological trends within the Delta, including covered species abundance, variability, distribution,
16 and population growth rate; ecological processes and stressors such as hydrodynamics,
17 foodwebs, and contaminants; natural community distribution, function, and diversity; habitat
18 restoration extent and functionality; and other relevant measures.

19 In contrast to the annual reports, the Five-Year Comprehensive Reviews will require significant
20 analysis and synthesis of data collected over time, utilizing data and information compiled from
21 various sources. Five-Year Comprehensive Reviews will include critical evaluations of the
22 assumptions and model outputs upon which the BDCP has been based and of the efficacy of the
23 conservation measures in light of monitoring data and the analysis and synthesis of information
24 through the adaptive management process.

25 The Five-Year Comprehensive Review will also include an evaluation of the BDCP monitoring
26 program, assessing such issues as the program's capacity to adequately measure the Plan's
27 progress toward achieving biological goals and objectives. The Review will discuss the lessons
28 that have been learned during the course of implementation and reach conclusions regarding how
29 best to approach monitoring into the future. The Review will also afford an opportunity to
30 evaluate the BDCP biological goals and objectives and assess their continued relevance in light
31 of new information that has become available.

32 The Five-Year Comprehensive Review will be developed in close coordination with the
33 Interagency Ecological Program (IEP), Delta Science Program, and Independent Science Board.
34 The Implementing Entity will work with the IEP Lead Scientist and Chief Scientist for the Delta
35 Science Program to consolidate data and information from a range of sources. The Review may
36 be scheduled to coincide with the Delta Science Conference to capitalize on the gathering of the
37 community of scientists engaged in Delta issues.

1 The Implementing Entity will post the Five-Year Comprehensive Review on the BDCP website
2 and include a summary of the Review to assist stakeholders and the public in their review of the
3 report.

4 **6.2.6 Five Year Implementation Plan**

5 Based on the Five-Year Comprehensive Review, the Implementing Entity will prepare a Five-
6 Year Implementation Plan for the implementation of the BDCP over the following five years. In
7 contrast to the Annual Workplan and Budget, the Five-Year Implementation Plan will provide a
8 broad overview of future actions and will focus on proposed adaptive management changes and
9 other modifications to BDCP implementation. At a minimum, the Five-Year Implementation
10 Plan will contain the following information:

- 11 • Description of adaptive management changes to BDCP implementation of conservation
12 measures, monitoring, research, and program administration;
- 13 • Modifications, if necessary, to biological goals and objectives;
- 14 • Identification of any changes to the BDCP that would require amendments to the permits
15 or other authorizations;
- 16 • Summary of the planned actions and schedule to implement conservation measures;
- 17 • Description of the long-term and system-wide monitoring actions and anticipated
18 research studies; and
- 19 • Summary budget projection reflecting the costs of implementing the planned actions.

20 The Implementing Entity will receive and consider the comments on an initial draft of the Five-
21 Year Plan from the BDCP Stakeholder Committee, Interagency Ecological Program, Delta
22 Science Program, and Independent Science Board prior to submitting the plan to the DWR,
23 USBR, USFWS, NMFS, and DFG for approval. All five agencies must agree on any adaptive
24 management adjustments, and any adjustments must be within the adaptive range ranges
25 described in the BDCP.

26 In years when Five-Year Plans are prepared, the Annual Workplan and Budget may be included
27 within or prepared separately from the Five-Year Plan, but all of the requirements for the Annual
28 Workplan and Budget must be included.

29 **6.3 Regulatory Assurances and Changed Circumstances and** 30 **Unforeseen Circumstances**

31 **6.3.1 Regulatory Assurances**

32 ESA regulations and provisions of the NCCPA each provide for regulatory and economic
33 assurances to parties covered by approved HCPs and/or NCCPs concerning their financial
34 obligations under a plan. Specifically, these assurances are intended to provide a degree of

1 certainty regarding the overall costs associated with species mitigation and other conservation
2 measures, and add durability and reliability to agreements reached between permittees and the
3 fish and wildlife agencies. That is, if unforeseen circumstances occur that adversely affect
4 species covered by an HCP or NCCP, the fish and wildlife agencies will not require additional
5 land, water, or financial compensation or impose additional restrictions on the use of land, water,
6 or other natural resources.

7 The assurances provided under the ESA and the NCCPA do not limit or constrain USFWS,
8 NMFS, or DFG, or any other public agency, from taking additional actions to protect or conserve
9 species covered by an NCCP and/or HCP. The state and federal agencies may use the variety of
10 tools at their disposal and take actions to reduce the effects of other stressors to ensure that the
11 needs of species affected by unforeseen events are adequately addressed.

12 **6.3.1.1 Regulatory Assurances under the ESA - The No Surprises Rule**

13 Under the No Surprises Rule,⁶ once an incidental take permit has been issued pursuant to an
14 HCP, and its terms and conditions are being fully implemented, the federal government will not
15 require additional conservation or mitigation measures, including land, water (including quantity
16 and timing of delivery), money, or restrictions on the use of those resources.⁷ If the status of a
17 species addressed under an HCP unexpectedly declines, the primary obligation for undertaking
18 additional conservation measures rests with the federal government, other government agencies,
19 or other non-federal landowners who have not yet developed HCPs. As explained by the federal
20 fish and wildlife agencies:

21 *“Once an HCP permit has been issued and its terms and conditions are being fully*
22 *complied with, the permittee may remain secure regarding the agreed upon cost of*
23 *conservation and mitigation. If the status of a species addressed under an HCP*
24 *unexpectedly worsens because of unforeseen circumstances, the primary obligation for*
25 *implementing additional conservation measures would be the responsibility of the*
26 *Federal government, other government agencies, and other non-Federal landowners who*
27 *have not yet developed an HCP.”⁸*

28 However, the federal fish and wildlife agencies may, in the event of unforeseen circumstances,
29 require additional measures provided they are limited to modifications within conserved habitat
30 areas or to the conservation plan’s operating conservation program for the affected species, and
31 that these measures do not involve additional financial commitments or resource restrictions
32 without the consent of the permittee. These assurances are provided to all HCP permittees that
33 properly implement their plans. However, they are not available to federal agencies. As such,
34 the Bureau of Reclamation, which will use the BDCP as the basis for biological assessments

⁶ *Id.*

⁷ The No Surprises rule was promulgated jointly by the Department of the Interior (Service) and the Department of Commerce (National Marine Fisheries Service).

⁸ 63 FR at 8867.

1 (BA) to support the issuance of take authorizations from USFWS and NMFS pursuant to section
2 7 of the ESA for its actions in the Delta, will not received the benefits of the No Surprises Rule.

3 The assurances provided by the No Surprises rule, however, are not absolute and are tempered
4 by other regulatory provisions of the ESA. The “Permit Revocation” rule moderates the scope of
5 the No Surprises rule, providing that in instances where a species covered by an HCP is
6 threatened with extinction, assurances may be nullified and USFWS and/or NMFS may revoke
7 the HCP permit.⁹ The federal fish and wildlife agencies may exercise this authority even if a
8 permittee is in compliance with the terms and conditions of the permit, provided the permitted
9 activity would appreciably reduce the likelihood of the survival and recovery of the species in
10 the wild.¹⁰

11 *[Note to Reviewers: Additional text will be added regarding the application of the No Surprises*
12 *rule to the various BDCP authorized entities]*

13 **6.3.1.2 Regulatory Assurances under the NCCPA**

14 Under the NCCPA, DFG provides assurances to permittees commensurate with the long-term
15 conservation measures and associated actions that will be implemented under the plan. In its
16 determination of the level and term of the assurances to be afforded a permittee, DFG takes into
17 account the conditions specific to the plan, including such factors as: the level and quality of
18 information regarding covered species and natural communities, the sufficiency and use of the
19 best available scientific information in the analysis of impacts on these resources, reliability of
20 mitigation strategies, and appropriateness of monitoring techniques, including the use of
21 centralized information to evaluate the effectiveness of the plan; the adequacy of funding
22 assurances; the range of foreseeable circumstances that are addressed by the plan; and the size
23 and duration of the plan.¹¹

24 The assurances provided by DFG pursuant to the NCCPA to the BDCP applicable permittees
25 will, at a minimum, ensure that if there are unforeseen circumstances, no additional financial
26 obligations or restrictions on the use of resources will be required of the permittees without their
27 consent. Specifically, the NCCPA directs that, “If there are unforeseen circumstances, additional
28 land, water, or financial compensation or additional restrictions on the use of land, water, or
29 other natural resources shall not be required without the consent of plan participants for a period
30 of time specified in the implementation agreement, unless [DFG] determines that the plan is not
31 being implemented consistent with the substantive terms of the implementation agreement.”
32 However, like the provision of ESA regulation, the NCCPA requires that DFG suspend or revoke
33 a permit, in whole or in part, if the continued take of a covered species would jeopardize its
34 continued existence.

⁹ 50 C.F.R. § 17.22(b)(8) [CHECK NMFS REGS]

¹⁰ 69 Fed. Reg. 71723, 71727 (December 10, 2004).

¹¹ DFG bases its determination of the level of assurances on multiple factors. See Fish and Game Code section 2820(f).

1 6.3.2 Changed Circumstances

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

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

16 Responses to the changed circumstances provided for in the BDCP will largely be developed and
17 implemented as part of the adaptive management program.¹³ For certain specified changed
18 circumstances, measures beyond the scope of the adaptive management program have been
19 developed, as described in this section. The responsive measures set out in the plan reflect
20 approaches that are both practicable and roughly proportional to the impacts of covered activities
21 on covered species and habitat.

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

32 To address the potential for changed circumstances, the BDCP sets out funding commitments for
33 remedial measures that may be implemented as part of the adaptive management program (see

¹² 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)).

¹³ See generally, U.S. Fish and Wildlife Service and National Marine Fisheries Service Habitat Conservation Planning Handbook, page 3-28 (November 1996).

1 Section 3.7, *Adaptive Management*). The BDCP also identifies contingency funding to
2 implement measures to address those changed circumstances not contemplated in the adaptive
3 management program, as described in Chapter 8, *Implementation Costs and Funding Sources*. In
4 the event that changed circumstances occur, the Management Entity will implement the remedial
5 measures identified in this chapter. However, the BDCP sets out the range of financial
6 commitments of the participating entities, which includes limitations on funding to remediate
7 changed circumstances. As such, remedial measures for changed circumstances will be
8 implemented within the levels of funding set out in the BDCP for these purposes. [*Note to*
9 *Reviewers: The levels of funding for remedial measures have not yet been determined.*]

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 Committee 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 fish and wildlife agencies, will determine specific
30 remedial actions that are consistent with the responses described in Section 6.3.2.2, *Changed*
31 *Circumstances Addressed by the BDCP*, for the particular changed circumstance and develop a
32 schedule for implementation. For those actions that are to be implemented through the adaptive
33 management program, the decision-making process described in Section 3.7, *Adaptive*
34 *Management*, will be used. For other responsive actions, the Management Entity will implement
35 the identified measures after conferring with the relevant fish and wildlife agencies. After
36 implementing remedial actions, the Management Entity will monitor the effectiveness of the
37 measures and report the associated results and findings.

1 **6.3.2.2 Changed Circumstances Addressed by the BDCP**

2 **1. Availability of Land Necessary for the Implementation of Habitat Conservation** 3 **Measures**

4 *Nature of the Changed Circumstance*

5 The BDCP Conservation Strategy assumes that sufficient land will be available within the Plan
6 Area to implement the habitat conservation measures set out in the Plan. In the event that land
7 suitable for these purposes is not available, these changed circumstances will be addressed as set
8 out in this section. A shortfall in available land necessary to implement habitat conservation
9 measures will be deemed to have occurred if land with suitable site conditions and characteristics
10 (e.g., topography, soils, hydrology, proximity to occupied covered species habitats) and in
11 appropriate locations within the Plan Area cannot be feasibly obtained.

12 *Planned Response*

13 During the course of BDCP implementation, the Management Entity may determine that land
14 suitable for meeting one or more of the habitat restoration and protection targets is not available
15 within the Plan Area. In such instances, the Management Entity, through the adaptive
16 management process and with the concurrence of the fish and wildlife agencies, will: (a)
17 undertake habitat restoration or protection of habitat in areas outside of the BDCP designated
18 Conservation Zone(s), including tidal habitat restoration opportunity areas (ROAs), but within
19 the Plan Area, at locations that would benefit the affected covered species, (b) restore or protect
20 habitat in suitable locations outside of the Plan Area, in coordination with local governments, to
21 benefit the associated covered species, or (c) identify and implement alternative conservation
22 measures that would provide equivalent or greater benefits to the affected covered species.

23

1 2. Levee Failures

2 *Nature of Changed Circumstance*

3 During the course of BDCP implementation, it is expected that levee failures will occur within
4 the Plan Area, and that such failures may affect benefits to covered species provided by the
5 BDCP. To address such circumstances, the BDCP identifies a range of actions that will be
6 carried out by the Management Entity to respond to such events. To guide responses to such
7 events, levee failures will be considered a changed circumstance under the BDCP if the failure:
8 (a) diminishes significantly the function of BDCP restored and protected natural communities as
9 habitat for covered species, as jointly determined by the Management Entity and the fish and
10 wildlife agencies, (b) precludes implementation of habitat conservation measures, and/or (c)
11 impedes the implementation of water operations conservation measures. *Planned Responses*

12 The following sets out several foreseeable scenarios involving the failure of levees that may
13 adversely affect ecological benefits provided by the BDCP, and describes the response that
14 would be provided for under the BDCP.

15 ***Failure of levees constructed as part of a BDCP activity result in substantial reduction of the***
16 ***level of benefits to covered species produced by restored tidal habitat.*** To reduce the potential
17 for failure of BDCP levee, BDCP levees will be designed to appropriate standards. However,
18 notwithstanding the integrity of constructed levees, the BDCP Management Entity may
19 encounter circumstances in which levees constructed pursuant to a BDCP activity subsequently
20 fail. In such an event, the Management Entity will be responsible for undertaking actions to
21 restore the functions of habitat degraded or lost as a result of the failure. If such restoration of
22 habitat functions is not practicable, the Management Entity will, through the adaptive
23 management process, restore habitat of comparable biological value elsewhere in the Plan Area
24 or at other locations to replace lost or degraded habitat functions, as provided for under Changed
25 Circumstance No. 1. The affected habitat may also be replaced at the location of the levee
26 failure site if the breach results in newly created habitat of sufficient value to replace the lost
27 habitat and the new habitat area is available to the Management Entity for protection.

28 ***Failure of levees not constructed as part of a BDCP activity reduce the benefits to covered***
29 ***species produced by restored tidal marsh.*** The Management Entity, including DWR, will
30 collaborate with local Reclamation Districts, other flood control entities, and landowners as
31 appropriate to determine if there is sufficient justification for repair of failed levees and
32 restoration of damage to the function of BDCP habitats. Following repair of the levee, the
33 BDCP Management Entity will, to the extent practicable, identify and undertake actions through
34 the adaptive management process to restore the degraded or lost habitat. To the extent feasible,
35 the Management Entity will coordinate restoration efforts with the entity or entities with
36 responsibility for repair and rehabilitation of the levee.

37 ***Failure of levees unrelated to BDCP actions that inhibit implementation of water operations***
38 ***conservation measures or reduce the covered species and ecosystem benefits that would result***

1 ***from such conservation measures.*** In the event of a levee failure that affects the implementation
2 of BDCP water operations conservation measures, the Management Entity will invoke the
3 adaptive management process to determine, in coordination with the Authorized Entities and the
4 fish and wildlife agencies, appropriate adjustments to water operations, on a temporary basis and
5 within the established adaptive range of water operations, necessary to minimize adverse effects
6 of the levee failure(s) on covered species. Once the circumstances affecting the implementation
7 of the water operations conservation measures have been addressed, the Projects will resume
8 operations under the parameters that were in place prior to the levee failure.

9 ***Failures of levees unrelated to BDCP activities that are not repaired by the responsible flood***
10 ***control entity and inhibit the implementation of water operations conservation measures or***
11 ***reduce the covered species and ecosystem benefits that would be provided by the conservation***
12 ***measure.*** Should a levee failure occur with no subsequent repair, the BDCP Management Entity
13 will, through the adaptive management process and subject to the specific circumstances of the
14 event, implement one or more of the following actions to obtain the intended benefits of water
15 operations conservation measures precluded by levee failures: (a) adjust water operations within
16 the permitted adaptive range of water operations to restore benefits to covered species and
17 habitat provided by the measures, to the extent practicable or (b) identify and implement, within
18 the context of the adaptive management program, alternative conservation measures (e.g.,
19 additional restoration of physical covered fish species habitats, increase in magnitude of other
20 stressors conservation measures) that will provide similar types and levels of covered species
21 benefits intended by the affected conservation measures.

22 ***Failure of multiple Delta levees substantially alter aquatic conditions such that conservation***
23 ***measures cannot be implemented and/or the covered species habitat benefits provided by***
24 ***conservation measures are substantially reduced as a result of altered aquatic ecosystem***
25 ***conditions or changes in the behavior or distribution of covered fish species.*** A widespread or
26 catastrophic change in ecological conditions within the Plan Area due to multiple levee failures
27 would be at such magnitude so as to render most responses through the BDCP infeasible. As
28 such, in the event of this changed circumstance, no specific responses would be required under
29 the BDCP; the Management Entity, however, will meet and confer with the fish and wildlife
30 agencies to determine the efficacy of a response.

31 To the extent that actions can be undertaken within the parameters of the BDCP adaptive
32 management program that would help to moderate the ecological effects of multiple levee
33 failures, the BDCP Management Entity would identify and implement such measures. For
34 instance, such adaptive management responses may include identifying alternative locations for
35 habitat restoration actions.

36

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

2 *Nature of Changed Circumstance*

3 For the purpose of this provision, a failure of water operations infrastructure will be deemed to
4 have occurred if a malfunction or breakdown of water operations conveyance facilities, including
5 the pipeline/tunnel, intake and fish screen facilities, pumping facilities, upstream reservoir
6 operations facilities, and other appurtenant facilities, and the failure precludes or substantially
7 inhibits the ability to manage water operations within the adaptive ranges as defined in the
8 BDCP Conservation Strategy.

9 *Planned Response*

10 The water operations infrastructure of the CVP and the SWP are routinely and diligently
11 maintained to greatly reduce the potential for failure. In the unlikely event of such a failure, the
12 Management Entity would request that DWR and/or Reclamation repair the affected facilities or
13 make adjustments or modifications to other facilities to restore full operational capacity
14 necessary to implement BDCP conservation measures, as soon as feasible, and temporarily
15 adjust water operations within the adaptive range of water operations if such action is deemed
16 necessary to minimize adverse effects on covered species. Upon completion of facility repairs or
17 alternative modifications to other infrastructure, operations would return to pre-existing levels
18 and parameters. If the infrastructure failure does not permit operations within the adaptive
19 management range the Management Entity will operate under the emergency procedures
20 described in Chapter 4, *Covered Activities*.

21 **4. Fire**

22 *Nature of Changed Circumstance*

23 Fire is defined as any fire not prescribed by the Management Entity on BDCP protected lands
24 that removes a sufficient extent of vegetation such that the intended habitat functions of the
25 protected land for covered species is substantially degraded, as jointly determined by the
26 Management Entity and fish and wildlife agencies.

27 Fire may substantially degrade the intended habitat functions of natural communities and
28 covered species habitats protected and/or restored under the BDCP. However, the non-aquatic
29 lands within the BDCP Plan Area are primarily characterized by intensively managed
30 agriculture, which generally does not provide the conditions for uncontrolled or extensive fire
31 events. Moreover, within the BDCP Plan Area, the extensive network of waterways serves as
32 barriers to the rapid spread of fire. While fire is typically a natural component of grassland
33 communities, which represent approximately 8% of the BDCP Plan Area, most natural
34 communities in the Plan Area, including valley/foothill riparian, wetlands, and agriculture, are
35 typically not prone to fire.

1 *Planned Response*

2 To minimize the risk of fire, the Management Entity will identify protected lands that pose a
3 high risk of fire (e.g., grasslands situated near roadways) and carry out a number of preventative
4 measures on those lands. The Management Entity will ensure that fuel breaks are established
5 and maintained around such lands, that steps are taken to coordinate efforts with state and local
6 fire agencies to improve fire suppression preparedness for protected lands, and that post-fire
7 monitoring plans are developed.

8 In the event of a fire, the Management Entity will assess the proportion of the protected habitat
9 area that has burned and its likely effects on habitat use by covered species, will make an initial
10 determination of whether or not a changed circumstance exists, and will notify the fish and
11 wildlife agencies of the fire event. If a changed circumstance is determined to exist, the
12 Management Entity will implement the appropriate post-fire monitoring plan for a two-year
13 period following the fire. If over the course of the monitoring period it is determined that
14 vegetation is not recovering sufficiently in the burned area to reestablish the original functions of
15 the affected habitat, the Management Entity will develop and implement through the adaptive
16 management program a habitat restoration plan to enhance recovery of the affected habitat area.
17 Elements of habitat restoration plans may include provisions for planting and caring for native
18 vegetation and controlling the establishment of invasive plant species.

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

20 *Nature of the Changed Circumstance*

21 In the course of implementing the BDCP, the Management Entity will seek to obtain various
22 State and federal permits and authorizations necessary to carry out certain conservation actions.
23 The Management Entity may discover that, in some instances, the implementation of a
24 conservation measure may conflict with the requirements of a State and/or federal law or
25 regulation. The apparent conflict could necessitate changes to the conservation measure or an
26 elimination of the measure altogether.

27 *Planned Response*

28 In the event that it is determined that the implementation of a conservation measure would likely
29 conflict with a State or federal environmental law or regulation, the Management Entity will
30 pursue one or more of the following actions through the adaptive management process: (a)
31 modify implementation of the conservation measures to ensure compliance with all applicable
32 State and/or federal laws or regulations; (b) identify and implement alternative conservation
33 measures that provide equivalent ecological benefits for the affected covered species. In the
34 alternative, the Management Entity may also sufficiently reconcile the apparent regulatory
35 conflict in conjunction with the relevant State and/or federal agency and proceed with the
36 implementation of the conservation measure(s).

1 **6. New Species Listings**

2 *Nature of the Changed Circumstance*

3 The USFWS, NMFS, or DFG may list additional species as threatened or endangered under the
4 ESA or CESA¹⁴ that are not BDCP Covered Species. In the event that a fish and wildlife agency
5 lists a species not covered by the BDCP, the provisions of this changed circumstance will be
6 automatically triggered.

7 *Planned Response*

8 Upon a new listing of a species under State or federal endangered species laws, the Management
9 Entity will undertake the following measures:

- 10 • Evaluate the potential impacts of covered activities on the newly-listed species and
11 conduct an assessment of the presence of suitable habitat in areas of potential effect.
- 12 • Implement measures to avoid impacts to the newly listed species until such time as the
13 BDCP has been amended to include the newly listed species as a covered species.

14 In the event that a species not covered by the BDCP becomes listed as threatened or endangered
15 or designated as a candidate species, or is proposed or petitioned for listing, the Management
16 Entity, on behalf of the Authorized Entities, may request that the appropriate fish and wildlife
17 agency add the species to the relevant take authorizations issued pursuant to the BDCP. In
18 determining whether to seek take coverage for the species, the Management Entity will consider,
19 among other things, whether the species is present in the Plan Area and if the covered activities
20 could result in the take of the species. If such take coverage is sought, the BDCP and its
21 authorizations will be amended. Alternatively, the Management Entity, on behalf of the
22 Authorized Entities could seek new and separate take authorizations. The procedures for Plan
23 modifications and amendments are described in Section 6.4 *Permit Duration, Amendment,*
24 *Renewal, and Enforcement.*

25 **7. Invasive Species**

26 *Nature of Changed Circumstance*

27 A changed circumstance that involves the introduction of an invasive species will be considered
28 to have occurred if the Management Entity and the fish and wildlife agencies jointly determine
29 that such a species is present and has been established within the Plan Area and that the presence
30 of the invasive species will substantially diminish the benefits to covered species provided by the
31 BDCP conservation measures.

¹⁴ A species designated by the State as a “candidate” for listing also receives regulatory protection during the pendency of the candidacy. As such, the provisions set out in this changed circumstance will apply to State-designated candidate species.

1 *Planned Response*

2 As described in Section 3.6, *Monitoring and Research Plan*, the Management Entity will take
3 steps to detect, through the monitoring program and through collaboration with other responsible
4 entities, the establishment of new invasive species in the Plan Area. If a new invasive species is
5 discovered, the Management Entity in coordination with the fish and wildlife agencies, will
6 conduct an assessment to determine the possible threats of the invasive species to covered
7 species and the Delta ecosystem. Based on results of the assessment, the Management Entity
8 will implement the following responses:

9 ***Introduction of new, invasive non-native species diminishes benefits to covered species***
10 ***produced by conservation measures related to habitat restoration and protection.*** The BDCP
11 Management Entity, through the adaptive management process, will identify and implement
12 measures to reduce and/or control the adverse effects of new non-native species on the functions
13 provided by habitat restored and protected under the Plan (e.g., control of non-native plant
14 species in restored tidal marsh that affect food web functions). If methods to adequately reduce
15 and/or control adverse effects of the non-native species are not available or practicable, the
16 Management Entity will identify alternate design, implementation, and management approaches
17 to future habitat restoration actions to avoid or minimize potential adverse effects of the invasive
18 species on covered species. If such modifications are not practicable, the Management Entity,
19 through the adaptive management process, will identify and implement alternative conservation
20 measures that provide equivalent levels of benefit to applicable covered species.

21 ***Introduction of a new, invasive non-native species diminishes benefits to covered species***
22 ***provided by conservation measures related to water operations or other stressors.*** The BDCP
23 Management Entity, through the adaptive management process, will identify and implement
24 measures to reduce and/or control adverse effects of a new non-native species on the beneficial
25 outcomes associated with water operations or other stressors conservation measures. If methods
26 are not practicably available to reduce and/or control such effects, the BDCP Management
27 Entity, within defined adaptive management ranges, will identify and implement alternative
28 conservation measures that provide equivalent or greater benefits to covered species and their
29 habitats.

30 **8. Toxic or Hazardous Spills**

31 *Nature of Changed Circumstance*

32 Toxic or hazardous spills will be considered a changed circumstance if the spills of chemicals
33 into Delta waterways or BDCP restored and protected habitats could substantially and adversely
34 affect habitat restored and/or protected through the BDCP, as jointly determined by the
35 Management Entity and the Fish and Wildlife Agencies.

36

1 *Planned Responses*

2 The Management Entity will respond to toxic or hazardous spill events that occur in habitat areas
3 that have been protected, enhanced, or restored through BDCP actions. To minimize the
4 potential effects of a toxic or hazardous spill, the BDCP Management Entity will develop a toxic
5 and hazardous spill response plan in coordination with responsible regulatory entities (e.g., local,
6 state and federal specialized response teams) to guide its initial responses on detection of a spill
7 event.

8 For a spill event that is caused by a BDCP action, the BDCP Management Entity will coordinate
9 its response with DFG's Office for Oil Spill Prevention, the Regional Water Quality Control
10 Board, and other state or federal regulatory entities as appropriate to the nature of the spill event
11 to curtail the immediate spread and minimize the effects of the spill. The Management Entity
12 will also identify and undertake management measures sufficient to remediate the effects of the
13 toxic substance on covered species and affected habitats (i.e., removal or isolation of the
14 material) and restore the ecological functions of the degraded habitat. If the affected habitat
15 areas cannot be feasibly and effectively restored, the Management Entity, through the adaptive
16 management process, will identify and implement measures to contain the ecological effects of
17 the spill and either compensate for the loss of habitat functions at other locations or implement
18 alternative conservation measures (e.g., expanded or additional contaminant reduction measures)
19 that provide equivalent or greater ecological benefits to the affected covered species.

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

26 **9. Climate Change**

27 *Nature of Changed Circumstance*

28 Changed circumstances related to climate change will be considered to have occurred in the
29 event that changes in sea level and watershed hydrology are of greater magnitude or significance
30 than was assumed during the development of the BDCP conservation strategy, such that
31 conservation measures cannot be implemented or such measures would be unlikely to yield
32 significant benefit to covered species or natural communities (e.g., climate change conditions
33 affect availability of suitable restoration sites).

34 BDCP conservation measures were developed based on modeled estimates of future changes in
35 sea level and watershed hydrology over the term of the BDCP. If actual changes in sea level or
36 in watershed hydrology exceed climate change estimates used to develop the conservation
37 measures, the ability to implement conservation measures and/or their efficacy for producing

1 covered species benefits could be diminished. The existence of this changed circumstance will
2 be determined through actual measurements of climate change effects over the term of the BDCP
3 and results of conservation measure effectiveness monitoring.

4 *Planned Response*

5 In the event of this changed circumstance, the BDCP Management Entity would identify and
6 implement actions through the parameters of the adaptive management program to the extent
7 such actions could be effective at moderating the ecological effects of these hydrological
8 changes. Such adaptive management responses may include expanding the range of
9 environmental gradients to provide for shifting species distributions and habitats. Measures
10 beyond those contemplated by the adaptive management program would likely be impracticable
11 and ineffective given the magnitude and pervasiveness of such changes within Plan Area and, as
12 such, are not provided for under the BDCP.

13 **10. Water Temperature Changes**

14 *Nature of Changed Circumstance*

15 Changed circumstances related to water temperature changes are defined as those changes in
16 water temperatures within the Plan Area that exceed the tolerance level for one or more covered
17 fish species, such that one or more of the following conditions occur: (a) a covered fish species
18 no longer inhabits BDCP restored habitats; (b) a covered fish species is no longer present in the
19 Plan Area; (c) a covered fish species no longer accrues benefits from BDCP water operations,
20 habitat restoration, or other stressors conservation measures; and/or (d) a covered fish species'
21 population demonstrates a sustained downward trend in abundance.

22 *Planned Response*

23 Significant changes in water temperature within the Plan Area would likely have widespread,
24 catastrophic impacts on ecological conditions within the Plan Area. As such, the effects of water
25 temperature changes would be of such magnitude as to render any response through the BDCP
26 infeasible. As such, in the event of this changed circumstance, no specific responses would be
27 required under the BDCP; the Management Entity, however, would meet and confer with the fish
28 and wildlife agencies to determine the efficacy of a response. To the extent that actions can be
29 undertaken within the parameters of the BDCP adaptive management program that would help to
30 moderate the ecological effects of water temperature changes, the BDCP Management Entity
31 would identify and implement such measures. For instance, such adaptive management
32 responses may include identifying alternative locations for habitat restoration actions.

11. Changes in Ocean Conditions

Nature of Changed Circumstance

Changed circumstances that involve changes in ocean conditions are defined as changes in ocean habitat conditions (e.g., water temperature, upwelling) and ecosystem processes (e.g, food web productivity) that support covered anadromous fish species to a degree that biological goals and objectives cannot be achieved for covered anadromous fish species within the Plan Area. For example, changed ocean conditions could result in lower survival of Chinook salmon in the ocean, resulting in fewer adults returning to spawn upstream of the Delta, which could result in population declines.

Planned Response

Adverse effects on covered anadromous fish species and their habitats resulting from changed ocean conditions could not be feasibly addressed by the BDCP. Actions to remedy those effects would be well-beyond the capacity of the Management Entity or the Authorized Entities. As such, in the event of this changed circumstance, no specific responses would be required under the BDCP; the Management Entity, however, will meet and confer with the fish and wildlife agencies to determine the efficacy of a response.

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

12. Long-Term Changes in Precipitation and Temperature

Nature of Changed Circumstance

Long-term changes in precipitation and temperature will be considered a changed circumstance in the event that such changes in the timing and amount of rainfall and ambient air temperature in the Plan Area as a result of climate change are of a magnitude sufficient, as jointly determined by the Management Entity and Fish and Wildlife Agencies, to diminish the benefit to covered species provided by natural communities restored and protected pursuant to the BDCP conservation measures.

Planned Response

Changes in precipitation and temperature patterns may affect vegetation composition and structure of BDCP protected, enhanced, and restored habitat areas. In the event of this changed circumstance, the BDCP Management Entity will identify and implement actions through the

1 parameters of the adaptive management program to the extent such actions would help to
2 moderate the ecological effects of changes in precipitation and temperature. Such adaptive
3 management responses may include expanding the range of environmental gradients to provide
4 for shifting species distributions and habitats. Measures beyond those contemplated by the
5 adaptive management program would likely be impracticable and ineffective given the
6 magnitude and pervasiveness of such changes within Plan Area and, as such, are not provided for
7 under the BDCP.

8 **6.3.3 Unforeseen Circumstances**

9 The USFWS and NMFS define unforeseen circumstances as those changes in circumstances that
10 affect a species or geographic area covered by an HCP that could not reasonably have been
11 anticipated by the plan participants during the development of the conservation plan, and that
12 result in a substantial and adverse change in the status of a covered species.¹⁵ Under ESA
13 regulations, if unforeseen circumstances arise during the life of the BDCP, USFWS and/or
14 NMFS may not require the commitment of additional land or financial compensation, or
15 additional restrictions on the use of land, water, or other natural resources other than those
16 agreed to in the Plan, unless the BDCP authorized entities consent.

17 Within these constraints, USFWS and/or NMFS may require additional measures, but only if: (1)
18 the agencies prove an unforeseen circumstance exists; (2) such measures are limited to
19 modifications of the BDCP's operating conservation program for the affected species; (3) the
20 original terms of the Plan are maintained to the maximum extent practicable; and (4) the overall
21 cost of implementing the BDCP is not increased by the modification. USFWS and/or NMFS
22 bear the burden of demonstrating that unforeseen circumstances exist. A finding of unforeseen
23 circumstances must be clearly documented, based upon the best available scientific and
24 commercial information and made considering certain specific factors.¹⁶ If such a finding is
25 made and additional measures are required, the BDCP authorized entities will work with
26 USFWS and/or NMFS to appropriately redirect resources to address the unforeseen
27 circumstances.

28 Similarly, unforeseen circumstances are defined in the NCCPA as changes affecting one or more
29 species, habitat, natural community, or the geographic area covered by a conservation plan that
30 could not reasonably have been anticipated at the time of plan development, and that result in a
31 substantial adverse change in the status of one or more covered species.¹⁷ The NCCPA further
32 provides that, in the event of unforeseen circumstances, DFG shall not require additional land,
33 water, or financial compensation or additional restrictions on the use of land, water, or other

¹⁵ 50 C.F.R. §17.3; 50 C.F.R. §222.102

¹⁶ 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).

¹⁷ Fish and Game Code §2805(k)

1 natural resources without the consent of the plan participants for a period of time specified in the
2 Implementation Agreement. However, such assurances are not applicable in those circumstances
3 in which DFG determines that the plan is not being implemented consistent with the substantive
4 terms of the Implementation Agreement.¹⁸

5 **6.3.4 Applicability of Other Federal Endangered Species Act Issues to the** 6 **BDCP**

7 **6.3.4.1 Future Recovery Plans**

8 Recovery plans under the ESA delineate actions necessary to recover and protect federally-listed
9 species. However, these plans are not intended to establish obligations of permittees to undertake
10 specific tasks.

11 The Plan Participants, USFWS, and NMFS acknowledge that ESA recovery plans will have no
12 effect on the implementation of the BDCP, except to the extent that they may contribute
13 information to the Adaptive Management Program. Any recovery plan applicable to any Covered
14 Species within the BDCP Plan Area that is developed after the approval of the BDCP will:

- 15 • Not require any additional water, land, or financial compensation be provided by the
16 Authorized Entities;
- 17 • Be finalized only after the USFWS or NMFS has conferred with and requested input
18 from the Management Entity on the preparation of the recovery plan; and
- 19 • In no way diminish the take authorizations provided pursuant to the BDCP, the IA, and
20 the companion biological assessment.

21 **6.3.4.2 Future Section 7 Consultations**

22 The USFWS and NMFS will evaluate the direct, indirect and cumulative effects of the Covered
23 Activities in its internal biological opinion that will be issued in connection with the BDCP and
24 issuance of the section 10(a) permits and the biological opinion that will be issued to
25 Reclamation. Accordingly, in any consultation under *Section 7* that occurs after the approval of
26 the BDCP, the USFWS and NMFS will ensure that any biological opinion issued in connection
27 with the proposed project that is the subject of the consultation is consistent with the BDCP
28 biological opinions. The proposed project must be consistent with the terms and conditions of the
29 BDCP and the IA. Any reasonable and prudent measures included under the terms and
30 conditions of a biological opinion issued subsequent to the approval of the BDCP with regard to
31 the Covered Species and Covered Activities will, to the maximum extent appropriate, be
32 consistent with the measures of the BDCP and the IA. Neither the USFWS nor NMFS will
33 impose measures in excess of those that have been or will be required by the Authorized Entities
34 pursuant to the BDCP, the IA, or the companion biological assessment.

¹⁸ Fish and Game Code §2820(f)(2)

6.4 Permit Duration and Renewal, Plan Amendments, Permit Suspension and Revocation

6.4.1 Permit Duration and Extension

The Plan Participants are seeking to take authorizations from the State and federal fish and wildlife agencies with terms of 50 years. The term of the take authorizations issued under the BDCP would begin from the date of their issuance. Prior to their expiration, the authorized entities may apply to the fish and wildlife agencies to renew their take permits. To provide adequate time for the review and processing of a permit renewal, the authorized entities will initiate the permit renewal process five years prior to the expiration of the initial 50-year period.

The proposed 50-year term is necessary to achieve the overall BDCP goals of water supply reliability and ecosystem restoration. Many of the key elements of the BDCP, including the development of substantial new water conveyance infrastructure, restoration of tidal and estuarine habitats, restoration of seasonal floodplain habitat, and establishment and maturation of riparian forest habitat will require substantial commitments of funding and a protracted period to fully realize. The duration of the permits must be sufficient to justify such expenditures of funds, allow for proper sequencing and effective implementation of the actions contemplated by the Plan, and to afford regulatory stability with respect to the operation of the primary water delivery systems for the State of California. A permit term of 50 years provides a practicable time frame to perform the activities that will be authorized under the Plan, including adaptive management strategies, and maximize the benefits of these activities to species and their habitats.

6.4.2 Modifications and Amendments to the BDCP

BDCP modifications and amendments are not anticipated to occur on a regular basis. However, certain events may trigger modifications or amendments, both minor and major, to the BDCP.

6.4.2.1 Modifications

6.4.2.1.1 Clerical Changes

Clerical changes to the BDCP will be made by the Implementing Entity on its own initiative or in response to a written request submitted by any Authorized Entity or by the Fish and Wildlife Agencies, which will include documentation supporting the proposed clerical change. Clerical changes will not require amendments to the BDCP, the Implementation Agreement (IA), or permits or other authorizations. Clerical changes include corrections to typographical, grammatical, and similar editing errors that do not change the intended meaning. Clerical changes may also include corrections to any maps or exhibits to address insignificant errors. The Plan Participants anticipate that most clerical changes to the BDCP will occur during the early phases of plan implementation. Annual reports submitted to the Fish and Wildlife Agencies will include a summary of clerical changes made to the BDCP during the preceding calendar year.

1 **6.4.2.1.2 Adaptive Management Changes**

2 Except as otherwise provided in the BDCP, changes to conservation measures, including actions
3 to avoid, minimize, and mitigate impacts and those that contribute to conservation, or
4 modifications to habitat management strategies developed through and consistent with the
5 Adaptive Management Program described in Chapter 3 will not require any amendment to the
6 BDCP, the IA, or any related Permits/Authorizations.

7 **6.4.2.2 Minor Amendments**

8 Minor Amendments encompass those changes to the BDCP that are of a minor or technical
9 nature and where the effect of the change on Covered Species, level of take, or on the obligations
10 of Authorized Entities/Permittees is not significantly different than those described in the BDCP
11 as adopted. Minor Amendments to the BDCP will not require amendments to the IA or the
12 Permits/Authorizations.

13 **6.4.2.2.1 List of Minor Amendments**

14 Minor Amendments to the BDCP and the Permits/Authorizations are listed below. Any such
15 changes will be administratively implemented pursuant to the procedures below. Minor
16 Amendments are limited to the following:

- 17 1. Minor corrections to land ownership boundaries or descriptions;
- 18 2. Minor revisions to survey, monitoring, reporting and/or management protocols that do
19 not adversely affect Covered Species or habitat functions and values;
- 20 3. Transfer of targeted acreages between Restoration Opportunity Area (ROA) consistent
21 with criteria set out in Chapter 3, *Conservation Strategy*;
- 22 4. Transfer of targeted habitat acreages amount BDCP Conservation Zones, provided such
23 change does not preclude meeting preserve assembly requirements, significantly increase
24 the cost of the BDCP management or preclude achieving Covered Species and natural
25 community goals and objectives;
- 26 5. Minor extension of earth moving or ground disturbance outside the rights-of-way limits
27 analyzed in the BDCP for covered activities involving infrastructure development or
28 habitat restoration; and
- 29 6. Updates/corrections to the vegetation or other resource maps and/or species occurrence
30 data.

31 **6.4.2.2.2 Procedures for Minor Amendments**

32 Any Authorized Entity or fish and wildlife agency may propose Minor Amendments to the
33 BDCP or the IA by providing written notice to all other parties. Such notice will include a
34 description of the proposed Minor Amendment, an explanation of the reason for the proposed

1 Minor Amendment, an analysis of its environmental effects including any impacts to Covered
2 Species, and a description of why that party believes the effects of the proposed Minor
3 Amendment:

- 4 1. Would not be significantly different from, and are at least biologically equivalent to, the
5 effects described in the BDCP, as originally adopted;
- 6 2. Would not be inconsistent with the terms and conditions of the BDCP, as originally
7 adopted; and
- 8 3. Would not cause significant impairment of the implementation of the BDCP
9 Conservation Strategy.

10 The fish and wildlife agencies may submit comments on the proposed Minor Amendments in
11 writing within 60 days of receipt of such notice. Any party may institute the informal meet and
12 confer process set forth in section XX of the IA to resolve disagreements concerning Minor
13 Amendments. If the fish and wildlife agencies do not concur with the justification for the Minor
14 Amendment, the proposed change will be subject to the Major Amendment process. If the fish
15 and wildlife agencies concur with the proposed Minor Amendment, or if they fail to respond
16 within the 60-day period, the Minor Amendment will be approved.

17 **6.4.2.3 Major Amendments**

18 Major Amendments are those proposed changes to the BDCP that are not Modifications or
19 Minor Amendments. Major Amendments to the BDCP will require subsequent amendments to
20 the IA and the Authorizations/Permits, as required by applicable laws and regulations. The
21 BDCP Implementing Entity will be responsible for submitting any proposed Major Amendments
22 to the Fish and Wildlife Agencies.

23 **6.4.2.3.1 List of Major Amendments**

24 Major amendments include, but are not limited to, any of the following:

- 25 1. All amendments not contemplated in the BDCP or the IA as Modifications or Minor
26 Amendments to the BDCP, except subsequent minor changes which are not specifically
27 listed as such but that the Fish and Wildlife Agencies have determined to be insubstantial
28 and appropriate for implementation as a Minor Amendment;
- 29 2. Changes to the boundary of the BDCP Plan Area;
- 30 3. Addition of species to the Covered Species list;
- 31 4. Changes in funding strategies and implementation schedules that would have substantial
32 adverse effects on the Covered Species;
- 33 5. Changes in water operations that would result in operations outside of the
34 permitted/authorized adaptive management range for water operations.

6.4.2.3.2 Procedures for Major Amendments

Major Amendments will require the same process followed for the original BDCP approval. A Major Amendment will require modifications to the BDCP and the IA to properly address the new circumstances, subsequent publication and public notification, CEQA/NEPA compliance, and intra-Service Section 7 consultation, if deemed necessary. Major Amendments will be subject to review and approval by the Implementing Entity and the Authorized Entities/Permittees, as appropriate, at a noticed public hearing. The Fish and Wildlife Agencies will use reasonable efforts to process proposed Major Amendments within 120 days after publication.

6.4.3 Annual Review and Oversight

The BDCP incorporates a variety of mechanisms to provide for regular notification to the State and federal Fish and Wildlife Agencies regarding BDCP activities as well as to facilitate annual review and oversight of Plan implementation. These mechanisms are described in Section 6.2, *Compliance and Progress Reporting* and Chapter 7, *Implementation Structure*.

6.4.4 Permit Revocation and Suspension

The fish and wildlife agencies may suspend or revoke the permits issued pursuant to the BDCP under several circumstances summarized in this section. Processes are described that could avoid the need for permit revocation in particular instances.

6.4.4.1 The Federal Permit Revocation Rule

The No Surprises Rule, as promulgated in 1998, did not address circumstances in which a species covered by a permitted HCP experienced significant decline and the continuation of an activity covered by the HCP would contribute to the likelihood of jeopardy to the species. To address such circumstances, the USFWS issued a regulation in 2004, known as the “Permit Revocation Rule,” that allows the FWS to nullify regulatory assurances granted under the No Surprises rule and revoke the section 10 permit in instances where a species covered by an HCP is threatened with extinction and the impact of the permitted activity on the species has not been remedied in a timely manner.¹⁹

If unforeseen circumstances arise under the BDCP, the USFWS and/or NMFS would work with the BDCP Implementing Entity and the Authorized Entities to obviate the need for such a revocation. The federal Fish and Wildlife Agencies would engage in the following process prior to taking any steps to revoke the BDCP permits:

1. The BDCP Implementing Entity and the Fish and Wildlife Agencies would determine, through the adaptive management process or otherwise, whether changes can be made to

¹⁹ 69 Fed. Reg. 71723, December 10, 2004

1 the BDCP's operating conservation program to remedy the situation.

- 2 2. The USFWS and/or NMFS would determine whether the Fish and Wildlife Agencies or
3 other State and federal agencies can undertake actions that would remedy the situation. It
4 is recognized that the Fish and Wildlife Agencies have available a wide array of
5 authorities and resources that can be used to provide additional protection for the species,
6 as do other State and federal agencies.
- 7 3. The Implementing Entity and the Fish and Wildlife Agencies will determine whether
8 there are additional voluntary conservation actions that the Implementing Entity could
9 undertake to remedy the situation.
- 10 4. The USFWS and/or NMFS would begin the revocation process if no solutions are found
11 and it is determined that continuation of a BDCP covered activity would appreciably
12 reduce the likelihood of survival and recovery for one or more covered species and that
13 no remedy can be found and implemented. The USFWS and/or NMFS would follow the
14 administrative procedures set out in the BDCP IA.

15 **6.4.4.2 State Permit Revocation and Suspension**

16 The NCCPA requires revocation of a *Section 2835* take permit, in whole or in part, if the plan
17 participants do not maintain rough proportionality between impacts on habitats or covered
18 species and conservation measures and do not, within 45 days, remedy such condition or develop
19 a plan with the DFG to provide remedy.²⁰

20 The NCCPA requires that the implementation agreement include specific terms and conditions
21 that, if violated, result in suspension or revocation of the *Section 2835* take permit. Such terms
22 and conditions must include suspension or revocation of the permit if the plan participants fail to
23 provide adequate funding to implement the plan; do not maintain proportionality between
24 impacts on habitats or covered species and conservation measures; adopt or approve changes to
25 the plan that are not consistent with the objectives and requirements of the approved plan without
26 concurrence of the wildlife agencies; or allow the level of take to exceed the permit limits.²¹

27 The DFG must also suspend or revoke a *Section 2835* take permit if continued take would result
28 in jeopardy to a species.²²

29 If such circumstances for permit revocation or suspension arise under the BDCP, the DFG would
30 work with the BDCP Implementing Entity and the Authorized Entities to obviate the need for
31 permit revocation or suspension. The DFG would engage in the following process prior to
32 taking any steps to revoke the BDCP permits:

- 33 1. The BDCP Implementing Entity will work with DFG to remedy or develop a plan to

²⁰California Fish & Game Code section 2820(c).

²¹California Fish & Game Code section 2820(b)(3).

²²California Fish & Game Code section 2823.

- 1 remedy any failure to maintain rough proportionality between impacts on habitats or
2 covered species and conservation measures. Such remedies or plan for remedies will be
3 developed within 45 days of a notice from DFG to the Implementing Entity that such a
4 condition exists. Note that the BDCP monitoring program is designed to identify such
5 issues and that the Implementing Entity must report such issues in annual reports.
- 6 2. The BDCP Implementing Entity and the DFG would determine, through the adaptive
7 management process or otherwise, whether changes can be made to the BDCP’s
8 operating conservation program to remedy situations that could result in permit
9 revocation or suspension.
- 10 3. The DFG would determine whether the DFG or the federal fish and wildlife agencies or
11 other State and federal agencies can undertake actions that would remedy the situation. It
12 is recognized that the fish and wildlife agencies have available a wide array of authorities
13 and resources that can be used to provide additional protection for the species, as do other
14 State and federal agencies.
- 15 4. The Implementing Entity and DFG will determine whether there are additional voluntary
16 conservation actions that the Implementing Entity could undertake to remedy the
17 situation.
- 18 5. The DFG would begin the revocation or suspension process if no solutions are found and
19 it is determined that the continuation of a BDCP covered activity would result in jeopardy
20 to a species or violate any of the terms and conditions for permit revocation or suspension
21 identified in the IA.