BDCP

Bay Delta Conservation Plan

Highlights of the BDCP

December 2010

For nearly four years, the State of California has worked collaboratively with federal resource agencies, conservation organizations, water agencies, local agencies, and others in a groundbreaking effort to improve the Delta ecosystem and California's water supplies. This effort has resulted in the Bay Delta Conservation Plan (BDCP). Together, we have made more progress on one of California's most challenging environmental and economic sustainability issues than any time in recent history. For the first time ever, we have assembled a strategy that integrates water flows and quality, habitat restoration, and other ecological actions to help reverse the decline of the Delta's native fish, plant, and wildlife species. We have identified water conveyance facilities that can help secure water supplies for 25 million Californians–against seismic risk, levee failure, and climate change. And there is more to do.

The BDCP is a complex, challenging, and ongoing effort. The California Natural Resources Agency, Department of Water Resources, and Department of Fish and Game have collaborated in the preparation of this report to provide the reader with an overview of the Plan's most central elements, approaches to some of its most challenging issues, and concerns or differing opinions from participants in the BDCP process. While we have consulted with various BDCP interests, this document does not represent any final positions. It is not intended to substitute for the years of effort by the Steering Committee and the more than 3,000 pages of material available at www.baydeltaconservationplan.com.

While the effort awaits new leadership from the State of California, it is absolutely critical that we not lose momentum in completing a draft Plan. Scientific and technical analysis is ongoing and will provide valuable insight and refinements to the contents and structure of the conservation plan. This important work must be completed prior to the issuance of a draft BDCP and draft Environmental Impact Report and Statement in 2011. In addition, as the BDCP planning process continues, it must do so with the active engagement of Delta counties on aspects of the Plan and, equally as important, other active programs to improve flood protection and support the ongoing role of agriculture and recreation in the Delta. The environmental review process will be an important forum for actions to address impacts to cultural resources, land uses, recreation, tourism, air quality, water quality, economics, and others with the goal of keeping Delta communities whole.

We remain committed to the ongoing engagement of stakeholders in the BDCP. We look forward to continued dialogue in resolving the remaining tough issues. The BDCP represents the best, most collaborative decision-making effort to date on these elusive and intractable issues. Its successful completion and implementation is imperative for California's future.

Lester A. Snow
Secretary for Natural Resources
The Natural Resources Agency

Cover and this page
Photo courtesy of DWR

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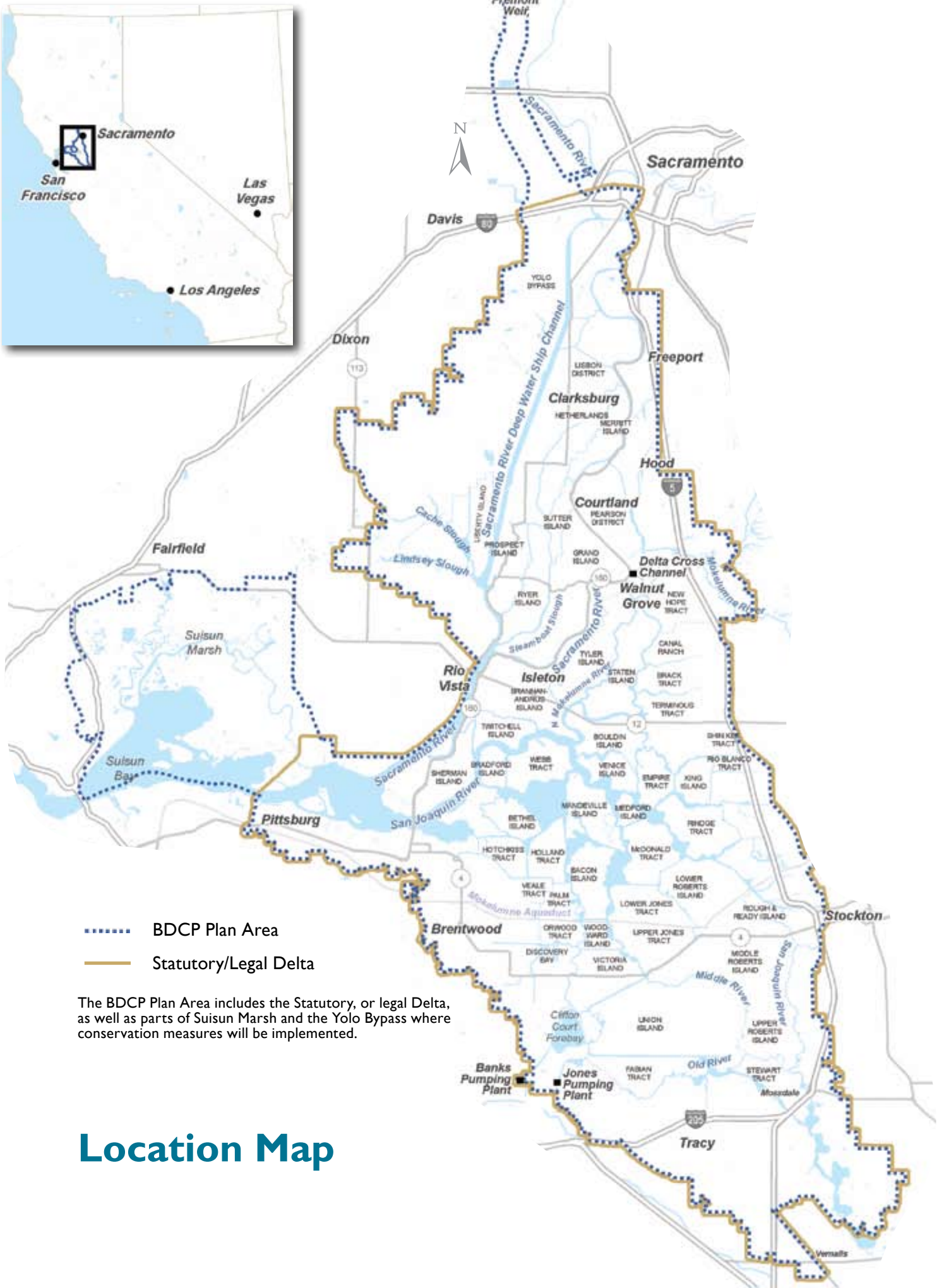
Photo courtesy of DWR



The BDCP Plan Area includes the Statutory, or legal Delta, as well as parts of Suisun Marsh and the Yolo Bypass where conservation measures will be implemented.

Location Map

Introduction

The Delta

The Sacramento-San Joaquin River Delta (Delta) is a vitally important ecosystem and home to hundreds of aquatic and terrestrial species, many of which are unique to the area. It is also a critical part of California's water conveyance system.

Freshwater originating in the Sierra Nevada flows to the Delta, providing water supplies for 25 million Californians in the San Francisco Bay Area, the Central Valley, and Southern California, and helping to produce nearly half the nation's domestically grown fresh produce. The Delta and its waterways also provide transportation corridors for ships and boats; support extensive infrastructure of statewide importance; and serve as a key recreational destination, particularly for boaters, birders, and anglers.

Once a vast marsh and floodplain dissected by meandering channels and sloughs, the Delta provided a dynamic habitat for a rich diversity of fish, wildlife, and plants. The Delta of today has been altered by a system of man-made levees, reservoirs, and dredged waterways constructed to support farming and urban development, as well as to provide flood protection on lands that historically supported marshes and floodplains. The water flow in the Delta is also affected by the movement of water for operations of the State Water Project (SWP) and Central Valley Project (CVP). Many other factors affect species health in the Delta, including toxic substances, other water quality issues (e.g., dissolved oxygen), nonnative species, hatchery management, illegal fishing, and smaller, local water diversions.

The Delta of the future will be affected by worsening land subsidence, heightened seismic risk and possible effects of climate change (both sea level rise and changes in storm timing, intensity, and frequency).

In this highly altered environment, several fish species have declined to the lowest population numbers in their recorded histories. In response, federal regulatory actions to protect threatened and endangered fish species have limited through-Delta conveyance, and have made water supplies increasingly unreliable. The proposed Bay Delta Conservation Plan (BDCP) is a 50-year plan that would address these issues with an ecosystem-based approach. This would help to restore fish and wildlife species in the Delta in a way that also would provide for the protection and restoration of water supplies while minimizing impacts to Delta communities and farms.

This *Highlights of the BDCP* document is a summary of major plan elements and outstanding issues as envisioned by the California Natural Resources Agency based on technical information completed and stakeholder input received to date.

This *Highlights of the BDCP* document is not endorsed by members of the BDCP Steering Committee. More detailed information about the status of all required plan elements is included in the November 18, 2010, Working Draft plan at **www.baydeltaconservationplan.com**

This *Highlights of the BDCP* document does not take the place of the "public review" as pursuant to Section 7.4.3 of the BDCP Planning Agreement.

Balancing Water Supplies and Ecosystem Restoration

The co-equal planning goals of the BDCP are to:

- Restore and protect the ecological health of the Delta.
- Restore and protect water supplies.

The BDCP is being developed in compliance with the federal Endangered Species Act (ESA), the California Endangered Species Act (CESA), and the California Natural Community Conservation Planning Act (NCCPA). The conservation plan will be subject to environmental review under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

The BDCP is being developed with the guidance of a Steering Committee, which is a collaboration of state, federal, and local water agencies, state and federal fish and wildlife agencies, environmental organizations, agricultural organizations, and other interested parties. These entities are assisting the California Department of Water Resources (DWR) in the development of an application for incidental take under state and federal endangered species laws.

BDCP Steering Committee

California Natural Resources Agency (chair)
California Department of Water Resources
Bureau of Reclamation
*Delta Stewardship Council
*California State Water Resources Control Board
*U.S. Army Corps of Engineers

FISH & WILDLIFE AGENCIES

California Department of Fish and Game
*U.S. Fish and Wildlife Service
*National Marine Fisheries Service

POTENTIAL REGULATED ENTITIES (PRE'S)

Kern County Water Agency
Metropolitan Water District of Southern California
Mirant Delta
San Luis & Delta-Mendota Water Authority
Santa Clara Valley Water District
Westlands Water District
Zone 7 Water Agency
Friant Water Authority

* Participating in an ex officio capacity

ENVIRONMENTAL ORGANIZATIONS

American Rivers
Defenders of Wildlife
Environmental Defense Fund
Natural Heritage Institute
The Bay Institute
The Nature Conservancy

OTHER ORGANIZATIONS

California Farm Bureau Federation
Contra Costa Water District
North Delta Water Agency

Public Process to Date

The BDCP process has been open, collaborative, and active in soliciting public participation and comment from a broad and balanced variety of public and private interests. Public outreach activities have supported these objectives. All 122 Steering Committee meetings have been open to the public with remote access via conference calling and web-supported access to materials. In total, nearly 300 public meetings, workshops, and briefings have been held in Delta communities and across the state over the past three years. All Steering Committee documents, maps, and other public information materials are available on the project website, as are all public comments that have been submitted in writing.

Delta Communities

Many of the actions contemplated by the BDCP—substantial restoration of tidal and floodplain habitat, new water delivery facilities, conservation of plant and wildlife habitats, and other actions—would bring change to the Delta over time. It is essential that local communities have a strong role in shaping this change.

First, as the BDCP planning process continues, it will continue to do so in coordination with Delta communities in maintaining flood protection, sustaining the Delta economy, and maintaining the Delta's recreational and historical treasures, among others. The overlap of these efforts provides new opportunities for state and local government partnerships that can leverage precious public resources to meet multiple needs.

Second, all the actions proposed in the BDCP are subject to environmental review for their impacts to Delta communities, and will include a separate program for mitigating those impacts. The environmental review process will be an important forum for ideas and actions to address impacts to cultural resources, land uses, recreation, tourism, air quality, water quality, economics, and others with the goal of keeping Delta communities whole.

Finally, the BDCP implementation horizon extends 50 years into the future. Many of the actions described in the Plan, habitat restoration in particular, are defined to meet broad biological goals and objectives over time but are flexible to accommodate future land use changes in the Delta. A BDCP "implementing organization," as described on page 59, would be responsible for decision-making about specific BDCP activities and is structured for open public discussion and a strong voice for local Delta communities.

Background

BDCP in Context of Other Delta Efforts

There are many threats to the sustainability of the Delta resulting from state and federal policies over the last 150 years that placed the health of the estuary second to human needs. The Delta Reform Act—landmark legislation passed in 2009—made it state policy to manage the Delta in support of the co-equal goals of water supply reliability and ecosystem restoration in a manner that acknowledges the evolving nature of the Delta as a place for people and communities. The legislation also redefined institutional oversight of various competing resource needs in the Delta. While the BDCP is a cornerstone of balancing water supply reliability with ecosystem restoration, many additional efforts are underway to address flood protection, economic sustainability, land-use planning, and other issues essential to a Delta future that is sustainable for people and the environment.

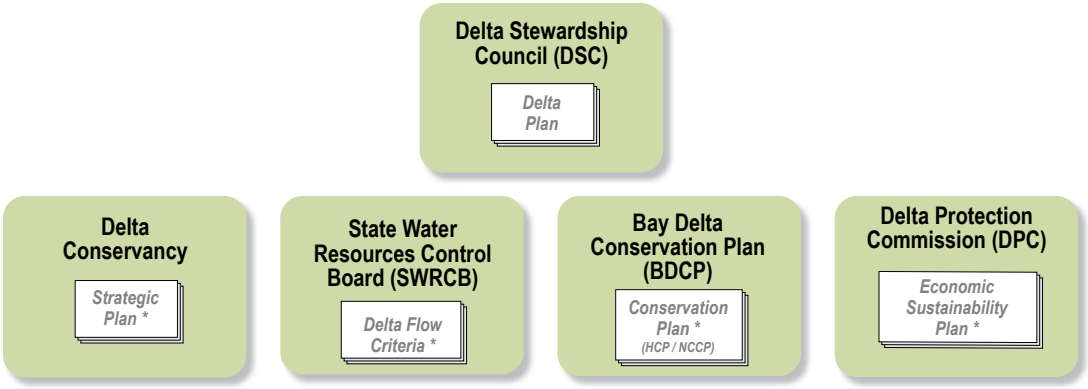
Delta Stewardship Council

The Delta Reform Act of 2009 created the Delta Stewardship Council (DSC), an independent state agency. **Its mission is to help achieve the two co-equal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta's ecosystem. These goals must be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.**

The DSC is required to develop a comprehensive management plan for the Delta (Delta Plan) by January 1, 2012. This long-term plan will be reviewed and possibly revised at least once every five years. State and local agencies proposing actions or projects within the Delta will need to certify for the DSC that those efforts are consistent with the Delta Plan. The planning efforts of a reorganized Delta Protection Commission, newly formed Delta Conservancy, and the BDCP, along with other conservation planning efforts, will inform the DSC as it develops and implements a Delta Plan.

The DSC and the BDCP

To be incorporated into the Delta Plan and for public funds to be available for public restoration benefits, the BDCP must be approved by the Department of Fish and Game (DFG) as a Natural Community Conservation Plan (NCCP). DFG must determine that the BDCP otherwise meets the requirements of Water Code Section 85320. If this determination is appealed to the DSC, the DSC may review whether it believes DFG's determination that the BDCP meets the requirements of Water Code Section 85320 was accurate for the purpose of deciding whether the BDCP can be included in the Delta Plan. DWR and others involved in the planning process will continue to consult with the DSC, and the Delta Independent Science Board, as the BDCP is developed.



* Document will inform the Delta Stewardship Council's Delta Plan due January 1, 2012.

State and Federal Program Coordination

In the Delta, a variety of state, local, and federal agencies are responsible for flood, water supply, and ecosystem management. Key federal agencies include the U.S. Army Corps of Engineers, U.S. Department of the Interior, Bureau of Reclamation (Reclamation), Federal Emergency Management Agency, U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration, and the United States Environmental Protection Agency.

Key state agencies include California Natural Resources Agency, Central Valley Flood Protection Board, DWR, DFG, California Emergency Management Agency, and the DSC. Key local agencies include local (cities and counties) emergency responders, reservoir operators, levee maintaining agencies, local flood districts, agricultural and urban water districts and agencies, CVP water users, and State Water Contractors. Many other agencies, non-governmental organizations, and interest groups also are stakeholders in managing public safety, water supply, and ecosystems in the Delta.

These federal, state, and local agencies are already working to support a wide variety of programs, planning efforts, and studies to improve the management of flood, water supply, and ecosystems in the Delta. Key programs include the Central Valley Flood Management Planning Program, Central Valley Integrated Flood Management Study, DSC Delta Plan, Delta Risk Management Strategy, Delta Islands and Levees Feasibility Study, Delta Levees Special Flood Control Projects, Delta Levees Maintenance Subventions Program, and CALFED Levee Stability Program.

Consistency with Sacramento-San Joaquin Delta Reform Act (Senate Bill X1)

On November 12, 2009, Governor Schwarzenegger signed into law Senate Bill 1 (SB1) that included the Sacramento-San Joaquin Delta Reform Act of 2009 (Division 35 of Water Code, Commencing from Section 85000). The Sacramento-San Joaquin Delta Reform Act prescribes that the BDCP must undergo comprehensive review and analysis of the following items:

- A reasonable range of flow criteria, rates of diversion, and other operational criteria required to satisfy the criteria for approval of a NCCP and other operational requirements and flows necessary for recovering the Delta ecosystem and restoring fisheries under a reasonable range of hydrologic conditions, which will identify the remaining water available for export and other beneficial uses
- Reasonable range of Delta conveyance alternatives, including through-Delta, dual conveyance, and isolated conveyance alternatives and capacity and design options of a lined canal, an unlined canal, and pipelines/tunnels
- The potential effects of climate change, possible sea level rise of up to 55 inches, and possible changes in total precipitation and runoff patterns on the conveyance alternatives and habitat restoration activities considered in the environmental impact report (EIR)
- The potential effects on migratory fish and aquatic resources
- The potential effects on Sacramento River and San Joaquin River flood management
- The resilience and recovery of Delta conveyance alternatives in the event of catastrophic loss caused by earthquake, flood, or other natural disaster
- The potential effects of each Delta conveyance alternative on Delta water quality

These criteria must be addressed before the BDCP can be incorporated into the Delta Plan by the DSC.

Habitat Conservation Planning

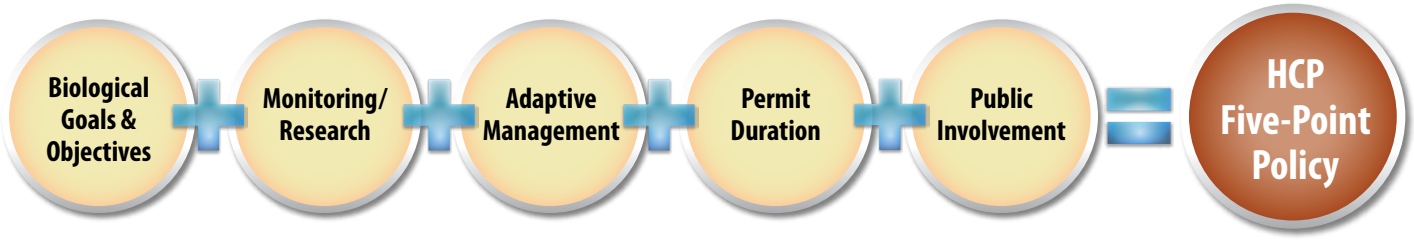
What is a Habitat Conservation Plan and a Natural Community Conservation Plan?

A Habitat Conservation Plan (HCP) and a Natural Community Conservation Plan (NCCP) are planning documents required as part of permit applications under the federal ESA and the California Natural Community Conservation Planning Act.
A joint HCP/NCCP generally describes, among other things:

- The activities to be covered by the conservation plan
- The measures that will be implemented to appropriately minimize and mitigate for the effects of the covered activities and that will provide for the conservation of covered species and their habitats
- The likely effect of implementing the actions described in the Plan on covered species and their habitats
- The funding that will be available to implement the Plan

The goal of an HCP/NCCP is to provide for the conservation of species and habitats covered by the Plan.

Habitat Conservation Plan Five-Point Policy



Biological Goals are broad principles that guide the Conservation Strategy to meet statutory criteria of state and federal law. **Biological objectives** are measurable targets for achieving goals. Conservation measures are the actions taken to meet these goals and objectives.

Monitoring/Research is designed to evaluate biological effectiveness of the plan over time to determine whether it is producing the anticipated biological results. The effectiveness of the conservation measures will be evaluated through the monitoring program.

Adaptive Management is the process of adjusting elements of the plan to meet established biological goals and objectives. The adjustments are based on knowledge gained from monitoring and newly acquired knowledge.

Permit Duration is the anticipated length of time necessary to implement all components of the conservation program and for which regulatory authorizations under NCCPA and ESA will be valid.

Public Involvement Extensive opportunities for public involvement have been, and will continue to be, provided during the planning and implementation process. The public will have the opportunity to assess, review, and critique the plans in accordance with state and federal laws.

Why is an HCP/NCCP the Best Choice for Achieving the Co-Equal Goals?

The regulatory approach under the federal ESA in the Delta regulates one stressor, namely the SWP and CVP operations, on a species by species analysis. A more holistic approach is needed to look at multiple stressors on the ecosystem, the needs of multiple species, and the natural communities that support them.

The BDCP is intended to:

- Provide for the conservation and management of covered species within the Plan Area
- Preserve, restore and enhance aquatic, riparian and associated terrestrial natural communities and ecosystems that support covered species within the Plan Area through conservation partnerships
- Allow for projects to proceed that restore and protect water supply, water quality, and ecosystem health within a stable regulatory framework
- Provide a means to implement covered activities in a manner that complies with applicable state and federal fish and wildlife protection laws that include CESA and ESA, and other environmental laws, including CEQA and NEPA
- Provide a basis for permits necessary to lawfully take covered species
- Provide a comprehensive means to coordinate and standardize mitigation and compensation requirements for covered activities within the Plan Area
- Provide a less costly, more efficient project review process which results in greater conservation values than project-by-project, species-by-species review
- Provide clear expectations and regulatory assurances regarding covered activities occurring within the Plan Area

How do the BDCP and the EIR/EIS work together in the Environmental Review?

A combined environmental impact report (EIR) and environmental impact statement (EIS) will be prepared to review the environmental effects of the proposed BDCP, and a reasonable range of alternatives, including a "no action" alternative. This evaluation will help determine the ultimate preferred alternative and final plan.

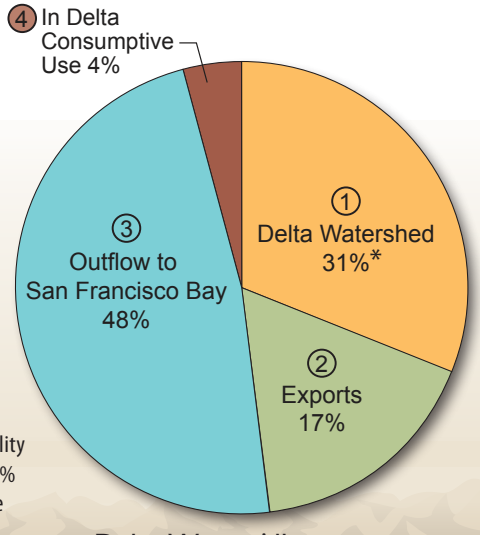
The EIR/EIS will evaluate the potential impacts of the BDCP including impacts to local communities, cultural resources, and the physical and biological environment. The lead agency for the state-required EIR is DWR. The co-lead agencies for the federally required EIS are Reclamation, National Marine Fisheries Service (NMFS), and USFWS. A draft EIR/EIS is expected in late 2011.

How Water Currently Flows Through the Delta

A conservation goal of the BDCP is to contribute to a more natural flow pattern within the Delta. Before natural conditions were altered, water from the Sacramento River and San Joaquin River watersheds flowed into the Delta and out to the Pacific Ocean through the San Francisco Bay. Today, there are significant upstream and in-Delta diversions of water that occur before flows reach the ocean, resulting in reduced flow rates and altered flow patterns.

What Delta Flows will the BDCP Address?

Water that flows through the Delta starts its journey as precipitation in the Sacramento River and San Joaquin River Basins. On average, approximately 31 percent of that water is diverted from the system before it reaches the Delta, 48 percent flows through the Delta and into San Francisco Bay, 4 percent is used within the Delta, and 17 percent is exported to the San Francisco Bay Area, Southern California, and the San Joaquin Valley through the state and federal water projects. The BDCP will address the manner in which water is exported from the Delta via the SWP and CVP. The BDCP cannot address overall Delta flows because most of the water taken out of the system is non-CVP and non-SWP water.

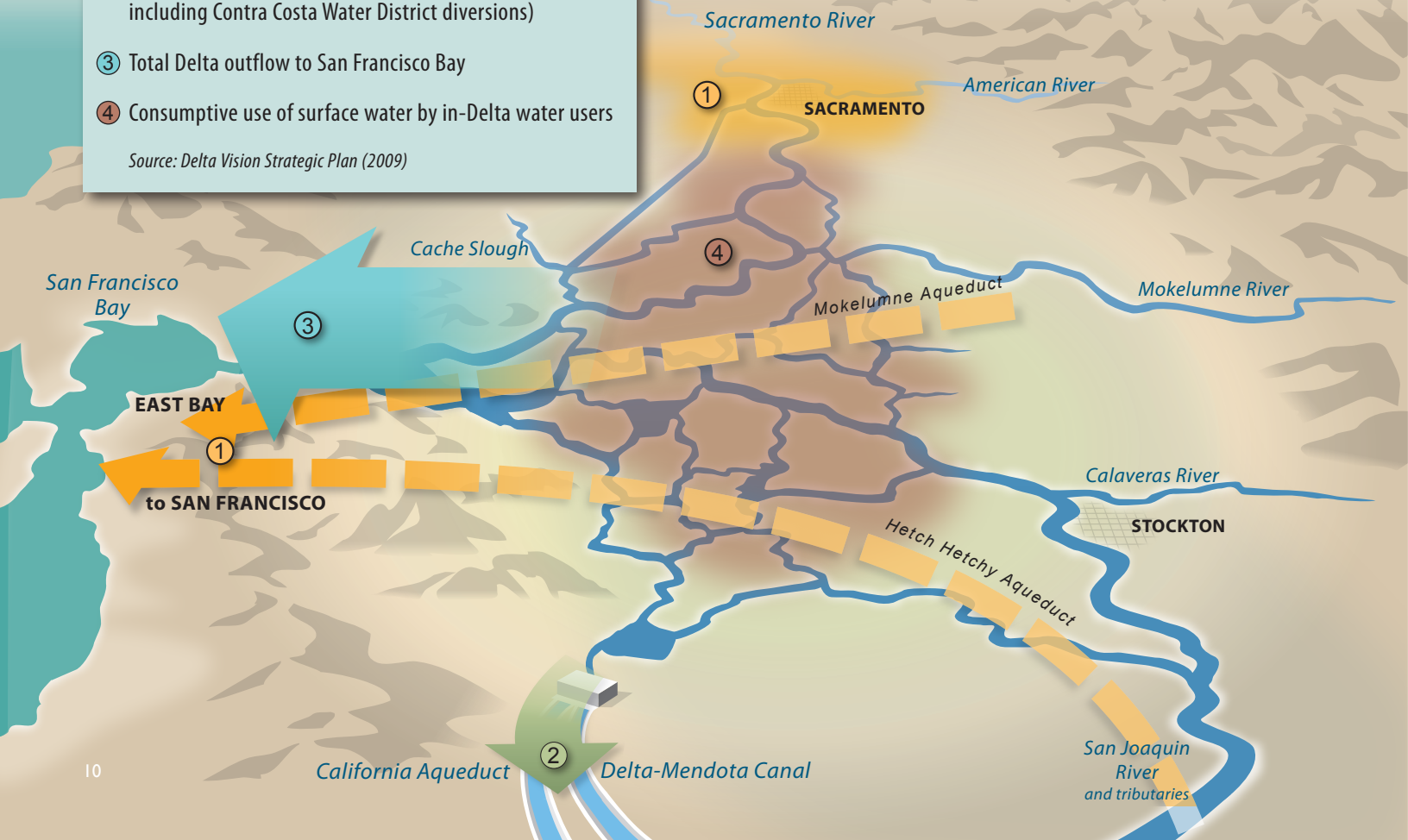


Delta Water Allocations
(average annual)

*The San Francisco Public Utilities Commission (SFPUC) and the East Bay Municipal Utility District (EBMUD) represent 1.3% of the total diversions from the Delta Watershed.

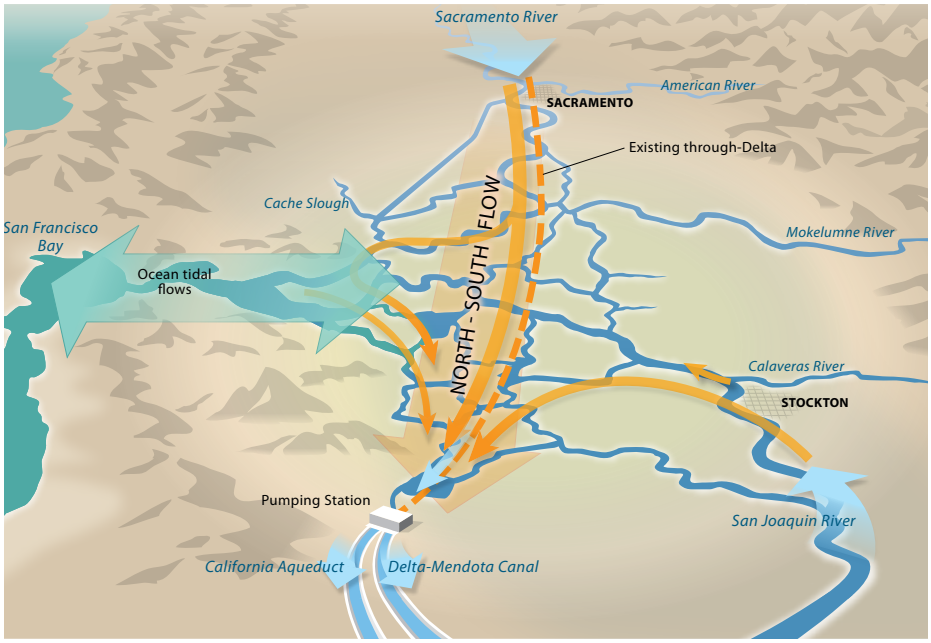
1. Delta watershed consumptive use of applied water and diversions for Friant-Kern Canal, East Bay Municipal Utility District's Mokelumne Aqueduct, and San Francisco Public Utilities Commission's Hetch Hetchy Aqueduct *
2. Combined CVP and SWP diversions from the Delta (not including Contra Costa Water District diversions)
3. Total Delta outflow to San Francisco Bay
4. Consumptive use of surface water by in-Delta water users

Source: Delta Vision Strategic Plan (2009)

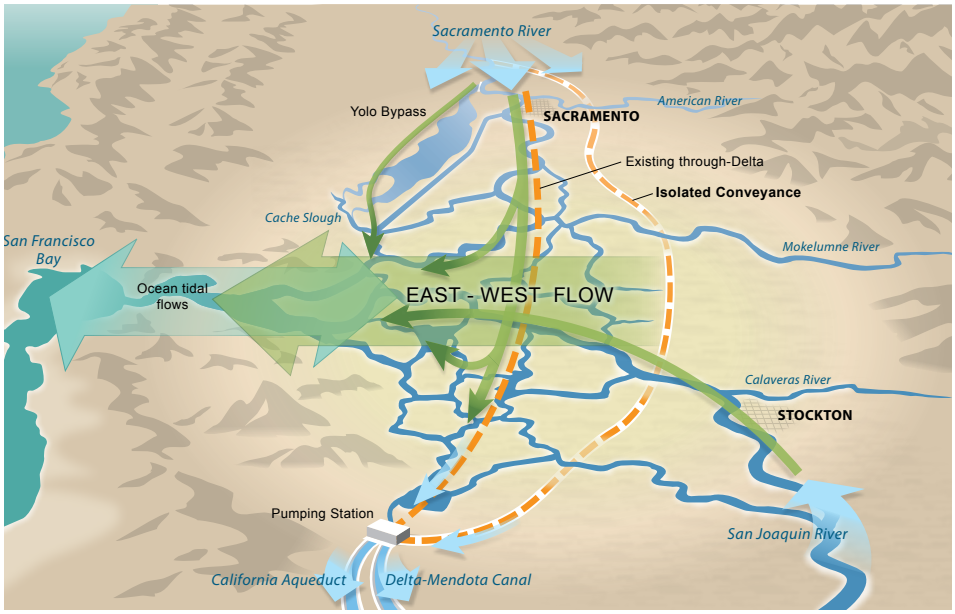


How State and Federal Water Project Supplies Flow Through the Delta

The natural conditions of the watershed and the Delta have been significantly altered over the past 150 years. Reservoirs, river diversions, downstream exports, agricultural development, and land reclamation have significantly altered how water flows through the Delta, changing quantity, quality, and flow direction. Many scientists believe that the way in which water currently flows through the Delta has caused a significant change in fish habitat, resulting in less favorable conditions for native species, including those related to temperature, volume, direction, velocity, turbidity, and residence time.



As a tidal estuary, the Delta has large volumes of water that move back and forth with the two tidal cycles that occur each day. This twice-daily ebb and flow of water is often orders of magnitude greater than the net daily water flow entering the interior channels of the Delta. The influence of SWP and CVP pumping often causes net flow reversals in Central and South Delta channels and affects fish movement, especially those life stages that are free floating or have weak swimming capability. This often results in drawing these fish toward the pumping facilities where they can be entrained. In addition, there are other stressors that can affect flow conditions.



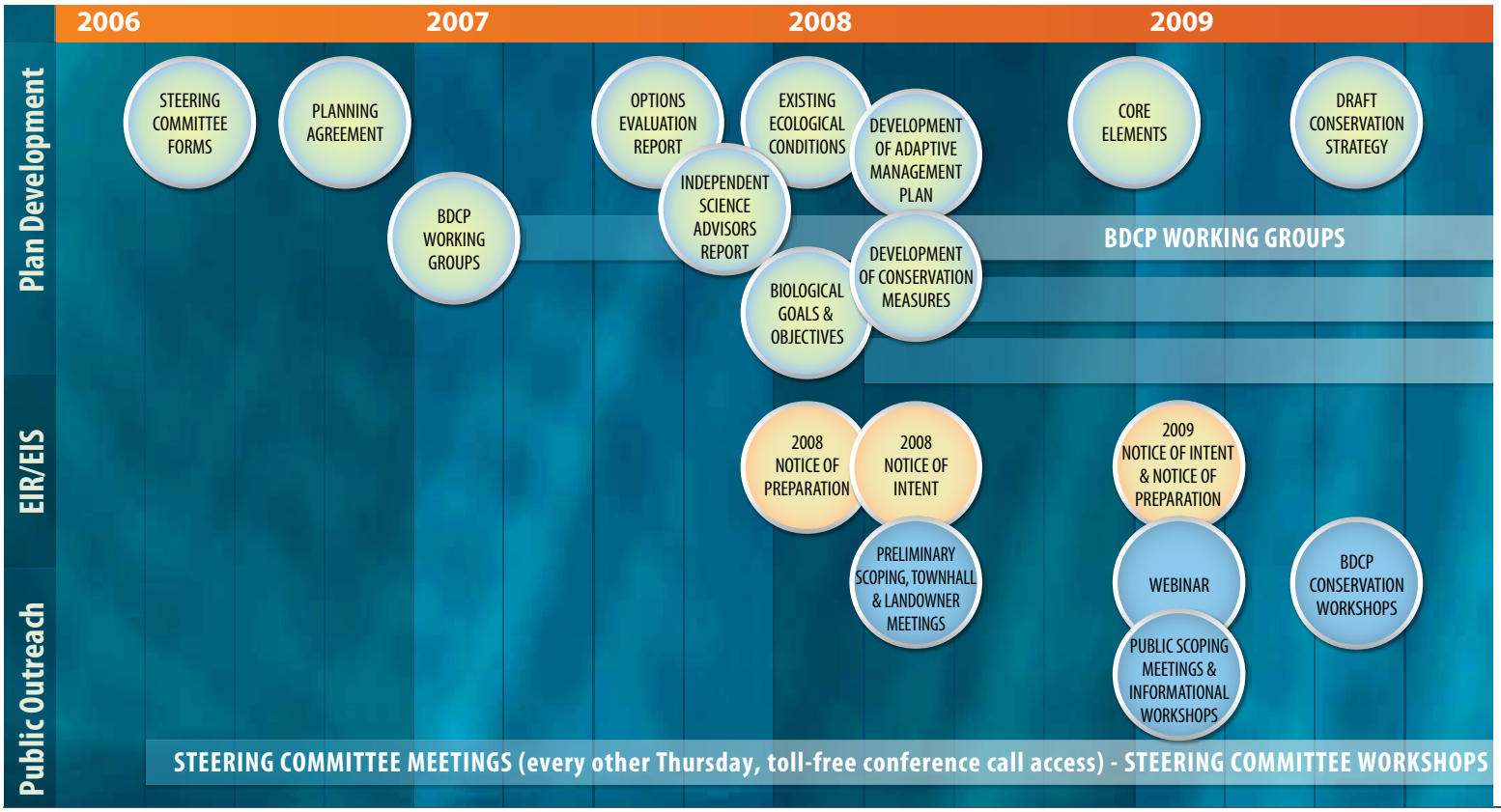
Contributing to More Natural Flow Patterns Under the BDCP

A major piece of the conservation plan would be a conveyance facility that would move water around or under, instead of through, the Delta. This facility would reduce through-Delta conveyance and thus minimize reverse flow conditions. As a result, this option would help restore the natural east-to-west flow of the Delta, reduce the entrainment of fish, and improve Delta habitat for multiple species.

Plan Development Chronology

Planning Milestones to Date

- Development of the Plan has been guided by a Steering Committee formed in 2006, comprised of a diverse group of public water agencies, environmental and conservation organizations, regulatory agencies, and other interested parties. The Steering Committee is the principal forum within which key policy and strategy issues pertaining to the BDCP are discussed and considered.
- The Steering Committee formed a number of working groups and technical teams that focused on specific technical issues and provided information and recommendations back to the Steering Committee. These working groups were formed to further develop conservation measures addressing water operations, habitat restoration, and other stressors.
- In December 2006, the Steering Committee members entered into a formal Planning Agreement which defined the goals, commitments, and expectations of the parties.
- From early 2006 through November 2010, 122 Steering Committee meetings were held. All Steering Committee meetings and working groups have been open to the public. Agendas and work products are available on the website.
- Throughout 2007, the Steering Committee met to evaluate different conceptual approaches to the development of the BDCP. At this stage, the BDCP Steering Committee considered a wide variety of potential strategy options. Ten conservation strategies were analyzed and narrowed to four conservation options, which then were evaluated in detail.
- During 2008, a series of 10 preliminary scoping meetings were held throughout the state. Public comments sought at this stage of the process were intended to support the preparation of an EIR/EIS, to obtain suggestions and information from other agencies and the public on the scope of alternatives and issues to be addressed in the EIR/EIS, and to identify important issues raised by the public related to the development and implementation of the BDCP.
- DWR also held eight landowner workshops in Delta communities on the status of the BDCP planning process, and the environmental review process associated with the Plan.



- In early 2009, a series of 12 public scoping meetings were held throughout the state.
- In summer 2009, a draft of a partial Conservation Strategy addressing aquatic resources (Chapter 3) was released. Four workshops were held to gather public input on the draft Conservation Strategy. Comments were provided to the Steering Committee as they continued to develop the Plan.
- In 2010, the Steering Committee identified an initial set of long-term water operations for the purpose of evaluation in the effects analysis; revised conservation measures based on input from Steering Committee members and the public; engaged independent scientists in the development of metrics for measuring the biological effectiveness of conservation measures; reviewed Plan implementation cost information; discussed an implementation approach; and developed the conservation strategy for terrestrial resources.

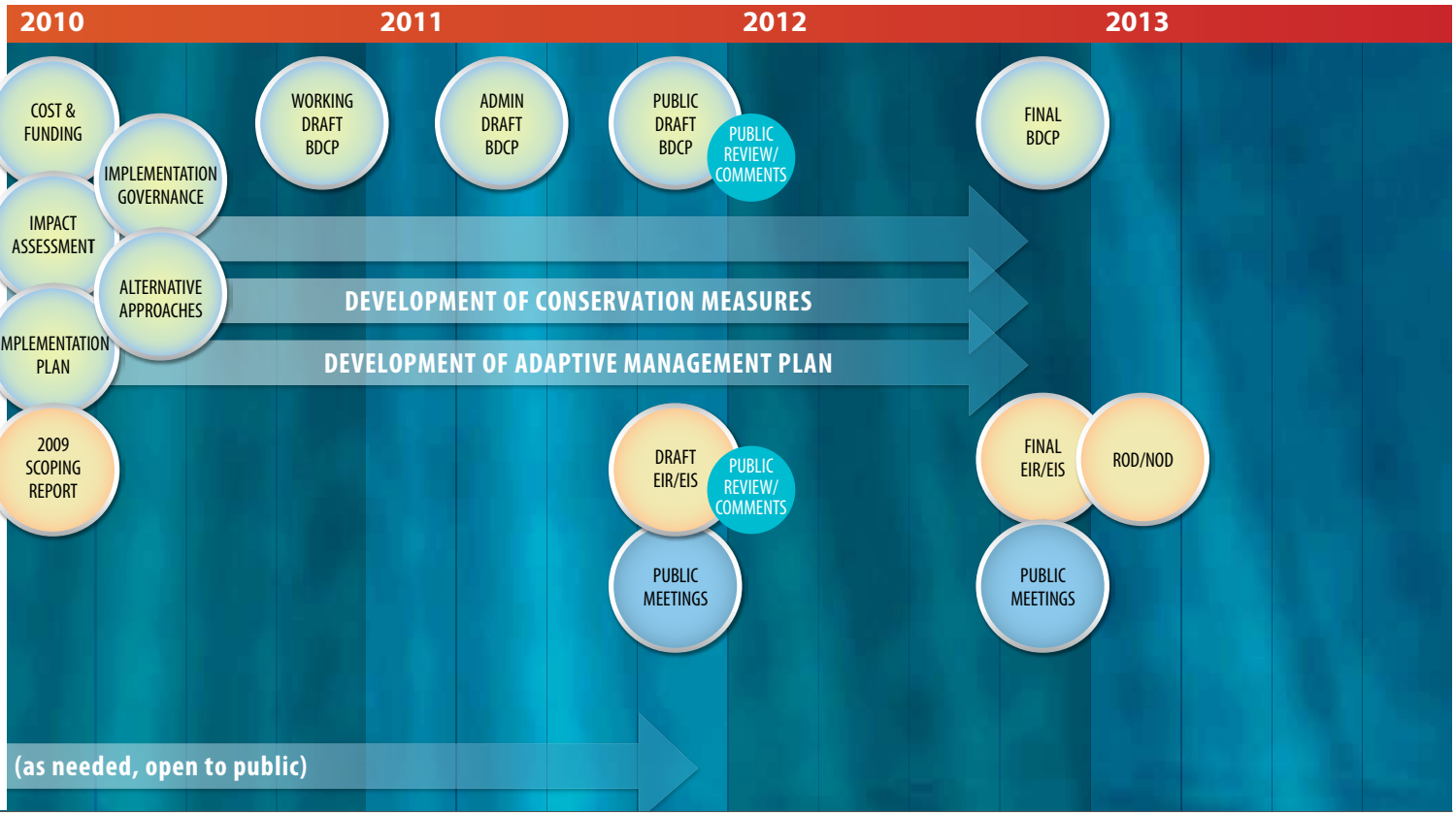
Current Status

On November 18, 2010, the Steering Committee released a Working Draft of all Plan components completed to date. This draft represents the first time the draft Plan has been compiled in one place and is intended to provide the Steering Committee and the public an opportunity to review and formulate opinions about how best to proceed with further development and revisions of the Plan in 2011. The public review draft remains in development, with the effects analysis to be completed in early 2011. Discussions will continue in order to resolve outstanding issues.

What's next to complete and approve the Plan?

A public draft BDCP is expected to be completed and available for public review in 2011. Following a public review period, a final BDCP is expected before the end of 2012. Permits, authorizations, and approvals would be provided by state and federal agencies for implementation of the BDCP Conservation Strategy when the EIR/EIS has been certified and it has been determined that the Plan meets applicable regulatory standards.

For a full list of next steps to complete the Public Review Draft BDCP, see page 70.



Science Review and Input

Conservation plans require an extensive body of scientific investigation, study, and analysis. In California, the NCCPA requires the establishment of a process for inclusion of independent science input to guide conservation plans as they are developed. To meet these obligations, the BDCP sought and engaged independent scientific advice throughout the planning process and enlisted well-recognized experts in ecological and biological sciences. The BDCP Independent Science Advisory Panels produced reports on the following topics:

- BDCP Conservation Principles – September 2007
- Non-aquatic Resources – September 2008
- Adaptive Management – December 2008
- Goals, Objectives, and Metrics– March and August 2010

Delta Regional Ecosystem Restoration Implementation Plan Evaluation

In 2009, the BDCP convened a team of 50 experts to review each of the draft conservation measures to identify their effectiveness using the Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) evaluation process.

These evaluations focused on potential ecological outcomes of specific actions in the Delta using a set of ecosystem and species' life history conceptual models developed specifically for the Delta. The effort also included a synthesis assessment of the likely ecological effects of simultaneous implementation of multiple conservation measures based on results of individual conservation measures.

The predicted magnitude and certainty of effects of actions on species of fish were identified by groups of species experts through an organized process of evaluation.

Small Working Groups

In 2010, the BDCP Steering Committee created a working group of independent scientists in four scientific review and input sessions on the refinement of biological goals and objectives for Delta fish species, as well as the development of monitoring metrics for conservation actions designed to help restore fisheries.

The next steps for independent science include involvement and advice from the Delta Science Program (DSP) and other experts with regard to the following:

- Further development of the biological goals and objectives
- Determination of metrics for assessing progress towards achievement of the goals and objectives
- Identification of monitoring elements
- Refinement of the adaptive management program

Overview of the Plan

Description of Chapters

Chapter 1 – Introduction provides background, planning goals, regulatory context, a description of the scope of the Plan including the Plan Area and covered species, overview of the planning process, and details of how the Plan is organized.

Chapter 2 – Ecological Conditions provides context through a description of historical ecological conditions in the Delta, as well as a description of existing conditions in both the physical environment and in natural communities.

Chapter 3 – Conservation Strategy describes biological goals and objectives and the conservation measures in detail, including the methods and approach. The goals and objectives and conservation measures are organized in the chapter based on the scale at which they function, from large scale to small scale: ecosystem level, natural community level, and species level.

Chapter 4 – Covered Activities describes activities "covered" by the Plan, meaning activities for which regulatory agencies will provide necessary permits as a result of the project proponents agreeing to implement the Conservation Plan.

Chapter 5 – Assessment of Effects of the Plan and Levels of Take provides results of extensive analyses conducted to determine the effects of the Plan on ecosystem processes, natural communities and covered species. It is important to note that other environmental impacts are being evaluated in the EIR/EIS.

Chapter 6 – Plan Implementation provides descriptions of compliance monitoring and reporting procedures, requested regulatory assurances, changed circumstances and remedial measures, approach to addressing unforeseen circumstances, permit amendment procedures, and the expected implementation schedule.

Chapter 7 – Implementation Structure describes the institutional structure and organizational arrangements that will be established to govern and implement the BDCP, and identifies the roles, functions, authorities, and responsibilities of the various entities that will participate in Plan implementation.

Chapter 8 – Implementation Costs and Funding Sources outlines implementation cost estimates over the proposed 50-year term of the Plan, including the costs related to each of its primary components.

Chapter 9 – Alternatives to Take describes alternatives BDCP considered that would either reduce the amount of "take" or increase the level of conservation of listed species. The chapter also describes in detail why each alternative was ultimately found to be impractical or otherwise insufficient.

Chapter 10 – Independent Science Advisory Process describes the role of independent scientific advice used to guide the development of the BDCP.

Chapter 11 – List of Preparers identifies the entities and individuals who participated in preparing the Plan.

Chapter 12 – References lists the information sources cited in the Plan.

Appendix A – Covered Species Accounts provide detailed descriptions of each covered species' distribution and habitat requirements as well as species habitat models developed specifically for the BDCP.

Other Appendices – Provide additional detail on various technical topics related to and supporting BDCP chapter content.

This *Highlights of the BDCP* document provides an overview of some, but not all, chapters included in the November 18, 2010, Working Draft. Key aspects of the following chapters are discussed in this document: Chapter 3-Conservation Strategy; 5-Assessment of Effects of the Plan and Levels of Take; 6-Plan Implementation; 7-Implementation Structure; and 8-Implementation Costs and Funding Sources. Please refer to the November 18, 2010, Working Draft for more detailed information.

Purpose and Approach

The BDCP approach to addressing the Delta's challenges reflects a significant departure from the species-by-species approach utilized in previous efforts to manage Delta-specific species and habitats. Instead, the BDCP seeks to improve the health of the ecological system as a whole. Each conservation measure plays a part in an interconnected web of conservation activities designed to improve the health of natural communities and, in so doing, improve the overall health of the Delta ecosystem.

For a description of the habitat features that are most important to aquatic species, see pages 20, 21, and 38.

The purpose of the Plan is regulatory in nature. In the most basic sense, the BDCP provides a regulatory vehicle for project proponents to agree to implement a suite of habitat restoration measures, other stressor reduction activities, and water operations criteria in return for regulatory agency approval of the necessary long-term permits for the various projects and water operations (covered activities) to proceed.

The BDCP attempts to balance contributions to the conservation of species in a way that is feasible given the variety of important uses in the Delta including flood protection, agriculture, and recreation, to name a few. The Plan is undergoing intensive environmental review—in the form of a state EIR and federal EIS—to evaluate the impact of the Plan on all aspects of the environment, including the human environment, and identify alternatives and potential mitigation actions.

For more information about the EIR/EIS, see page 74.

Implementation of the Plan will occur over a 50-year time frame by a number of agencies and organizations with specific roles and responsibilities as prescribed by the Plan. A major part of implementation will be monitoring conservation measures to evaluate effectiveness, and revising actions through the adaptive management decision process.

For more details about Governance and Implementation, see page 58.

For more details about the Adaptive Management decision process, see page 55.

What the BDCP Will Do:

- Provide for a more reliable water supply for California by modifying conveyance facilities to create a more natural flow pattern.
- Provide a comprehensive restoration program for the Delta
- Provide the basis for permits under federal and state endangered species laws for activities covered by the Plan based on the best available science
- Identify sources of funding and new methods of decision-making for ecosystem improvements
- Provide for an adaptive management and monitoring program to enable the plan to adapt as conditions change and new information emerges
- Streamline permitting for projects covered by the Plan

What the BDCP Will Not Do:

- Solve all environmental challenges in the Delta
- Address all factors (such as ocean conditions) that may affect covered species
- Eliminate other permitting requirements

Photo courtesy of DWR

Covered Species

What Species Will Be Addressed by the BDCP?

Covered species identified in the BDCP include endangered or sensitive terrestrial and aquatic species whose conservation and management will be provided by the Plan. The draft Conservation Strategy includes biological goals and objectives for 52 sensitive wildlife and plant species and 11 fish species, and identifies conservation measures to help in their recovery.

Fish Species:

- Delta smelt
- Longfin smelt
- Winter-run Chinook salmon
- Spring-run Chinook salmon
- Fall-run and late fall–run Chinook salmon
- Central Valley steelhead
- Green sturgeon
- White sturgeon
- Sacramento splittail
- River lamprey
- Pacific lamprey

DELTA SMELT

Photo courtesy of USFWS

LONGFIN SMELT

Reclamation photo by René Reyes

CHINOOK SALMON

winter, spring, fall, and late fall

Reclamation photo by René Reyes

GREEN AND WHITE STURGEON

Reclamation photo by René Reyes

CENTRAL VALLEY STEELHEAD

Photo courtesy of USFWS

SACRAMENTO SPLITTAIL

Reclamation photo by René Reyes

RIVER LAMPREY

Reclamation photo by René Reyes

PACIFIC LAMPREY

Reclamation photo by René Reyes

Plant and Wildlife Species:

- San Joaquin kit fox
- Riparian woodrat
- Salt marsh harvest mouse
- Riparian brush rabbit
- Townsend's big-eared bat
- Suisun shrew
- Tricolored blackbird
- Suisun song sparrow
- Yellow-breasted chat
- Least Bell's vireo
- Western burrowing owl
- Western yellow-billed cuckoo
- California least tern
- Greater sandhill crane
- California black rail
- California clapper rail
- Swainson's hawk
- White-tailed kite
- Giant garter snake
- Western pond turtle
- California red-legged frog
- Western spadefoot toad
- California tiger salamander
- Lange's metalmark butterfly
- Valley elderberry longhorn beetle
- Vernal pool tadpole shrimp
- Conservancy fairy shrimp
- Longhorn fairy shrimp
- Vernal pool fairy shrimp
- Midvalley fairy shrimp
- California linderiella
- Alkali milk-vetch
- San Joaquin spearscale
- Boggs Lake hedge-hyssop
- Heckard's peppergrass
- Legenere
- Heartscale
- Brittlescale
- Slough thistle
- Suisun thistle
- Soft bird's-beak
- Delta button-celery
- Dwarf downingia
- Contra Costa wallflower
- Carquinez goldenbush
- Delta tule pea
- Suisun Marsh aster
- Mason's lilaeopsis
- Delta mudwort
- Antioch Dunes evening-primrose
- Side-flowering skullcap
- Caper-fruited tropidocarpum

WHITE-TAILED KITE

Photo courtesy of Kevin Cole

The Delta Ecosystem Approach

The Delta was once a vast marsh and floodplain dissected by meandering channels and sloughs that provided a dynamic habitat for a rich diversity of fish, wildlife, and plants. The Delta of today has been altered by a system of artificial levees, reservoirs, and dredged waterways constructed to support farming and urban development on islands, as well as to provide flood management. Changes to the Delta landscape have resulted in losses of fish spawning and rearing habitat, fish migration corridors, and food web production. These changes significantly affect the ability of threatened and endangered fish species to survive and thrive.

The BDCP aims to enhance the ecosystem processes and function, including seasonal floodplain habitat, intertidal and associated subtidal habitat, hydrologic conditions, and salinity within the Delta estuary, as well as to reduce direct losses of fish and other aquatic organisms. Because it is a permitting vehicle, the BDCP is in a unique position to implement restoration while simultaneously securing a sufficient, reliable freshwater source for human use.

The Current State of the Delta

Lack of Floodplain Habitat –
Many historical floodplains are disconnected from water channels by levees. The inability to inundate floodplains at critical periods of time leaves fish without valuable habitat for spawning and rearing.

Marginalized Channels –
Levees and riprap do not provide the types of habitat features that are beneficial to fish, such as overhanging shade, instream woody material, and shallow benches.

Lost Tidal Marsh –
Ninety-eight percent of the lands that historically provided intertidal marsh and shallow subtidal habitat have been lost due to levees and dikes built to provide flood management. This has resulted in less habitat for fish and lower production of phytoplankton, zooplankton, and organic material.

Altered Flow and Entrainment –
Water flow in the interior Delta is affected by the operation of SWP and CVP pumps. Fish can be pulled toward and into the pumps. Some fish can get disoriented and get lost or stuck in channels.

Toxic Contaminants, Nutrients and Invasive Species –
Toxic contaminants and encroaching invasive species affect water quality, fish health, and habitat conditions, as well as throw off the natural balance in the ecosystem.

How the BDCP Plans to Address the Problem

Reconnect Floodplains to improve the production of phytoplankton, zooplankton, and other organic material, as well as spawning and rearing habitat.

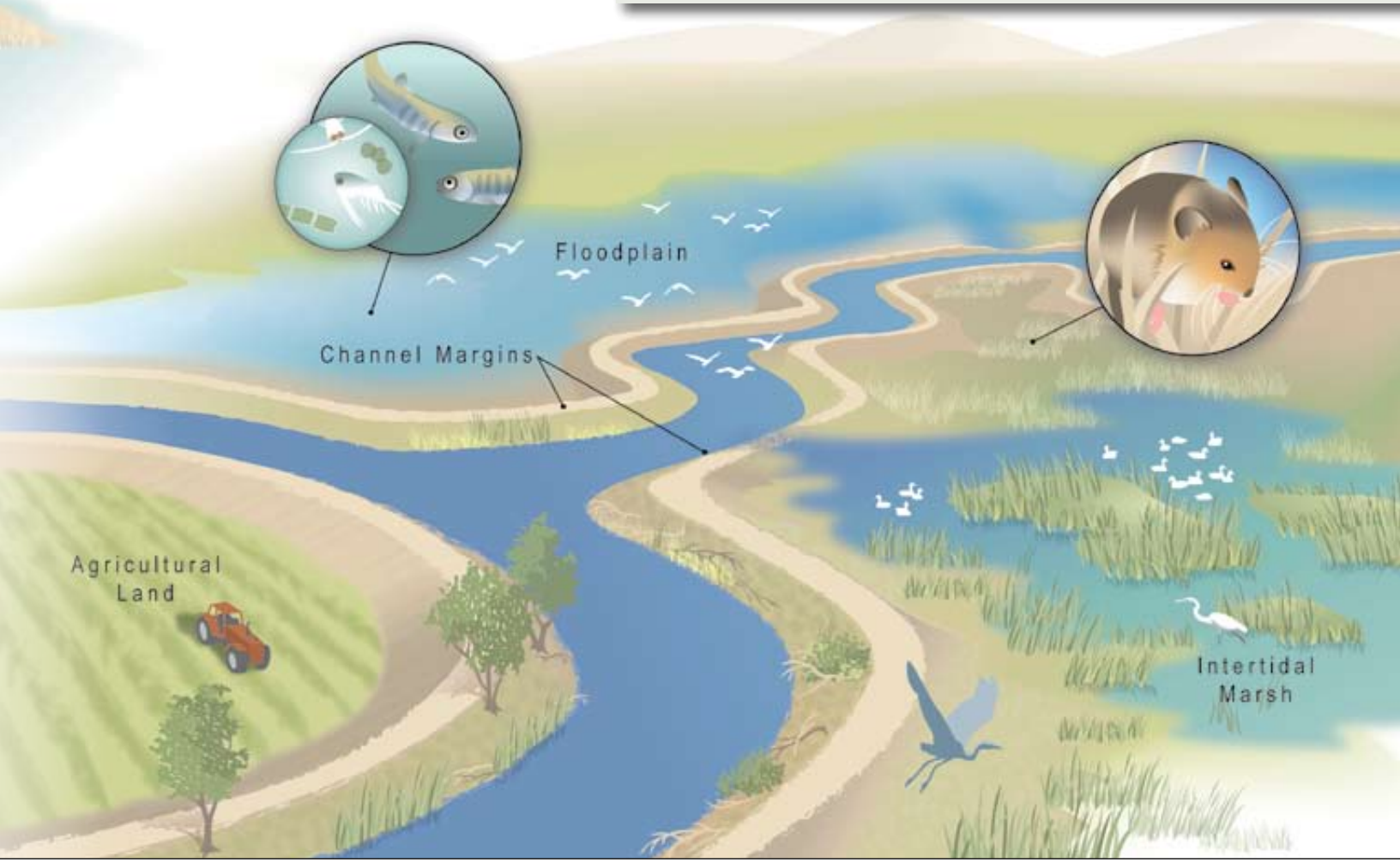
Develop New Tidal Marsh Habitat of brackish and freshwater tidal marsh and shallow subtidal habitat.

Return Riverbanks to a More Natural State through addition of logs, trees, bushes, and shallow benches to increase suitable habitat for healthy fish populations.

Decrease Toxicity of water to improve fish health and work to decrease toxic contaminant loads to improve food availability.

Control Invasive Species to protect fish from predation and help support a natural balance.

Align Water Operations to Better Reflect Natural Seasonal Flow Patterns by creating new diversions equipped with state-of-the-art fish screens, thus reducing reliance on South Delta exports. Flow management would allow for greater seasonal variability in flows when fish need it most.



Integrated Statewide & Regional Water Management

The BDCP is being developed in the context of rising risk and uncertainty for California water supplies. There is a new urgency with which we must embrace water use efficiency in the context of climate change and increased urban demand. Improved water conveyance is a strategy from past water plans, but is now presented with renewed significance given the context of a Delta ecosystem in continued decline and the threats of seismicity and sea level rise. Conveyance improvements can provide the operational flexibility to divert and move water at times and from places that are less harmful to fisheries or to reliably transport environmental water supplies to locations where or at times when it can benefit fish and water quality.

In addition to statewide improvements, local resource strategies such as conservation, water recycling, groundwater storage and conjunctive use, urban runoff management, and more can converge in the context of Integrated Regional Water Management planning. Other aspects of water management benefits of conveyance improvements are described below in the following excerpt from the California Water Plan Update of 2009:

> *Conveyance can improve water quality by moving more water when water quality conditions are better or less impacted by the movement of water, or by supplementing natural river flows and preventing excessive saltwater intrusion that can impair established beneficial uses and harm legal users of water in the Delta.*
>
> *Given the high-intensity, short duration characteristics of California's hydrology, improved conveyance capacities combined with adequate surface water or groundwater storage can enable diversions of more water during high flow, less competitive periods, and consequently reduce the pressure to divert water during low flow, highly competitive periods. This strategy could have additional benefits as an adaptation to future climate change.*
>
> *Water quality in the Delta may be enhanced through sophisticated management projects controlling source water mixing and reducing salinity intrusion from seawater.*
>
> *Enlarged and enhanced conveyance systems may increase flood control capability with higher and more controlled flow through the Delta.*
>
> *Increases in water use efficiency decrease the water demand for a given region and reduce demand for conveyance through the Delta. As a result, system-wide reliability improves by reducing the burden on the Delta and its fragile levees.*
>
> *Redundancy in the Delta conveyance system will provide increases in resiliency and may, therefore, ensure some continuation of services during extreme events such as a long-term drought or following a catastrophic seismic event in the Delta.*
>
> *A larger conveyance will allow more pumping of water at optimal times, when energy costs are lower, and decrease pumping at peak energy demand periods, when energy costs are higher. Energy costs for pumping at night, for example, are less than costs during daytime when California's energy demand peaks for industrial and air conditioning uses.*

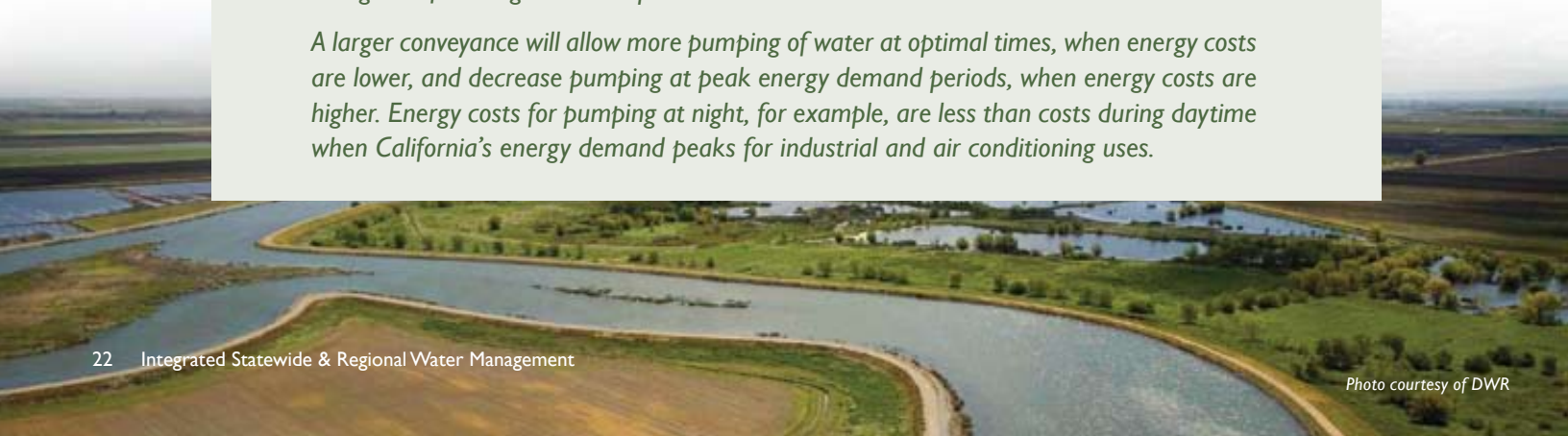


Photo courtesy of DWR

Conservation Strategy

What is a Conservation Measure?

A conservation measure is a prescribed action designed to achieve the biological goals and objectives of the Plan and to satisfy state and federal regulatory requirements.

What is a Covered Activity?

Covered activities are those that support water supply and power generation, such as water conveyance and facilities maintenance and improvements, as well as any restoration efforts that impact threatened and endangered species.

Why are Conservation Measures also Covered Activities?

Some conservation measures intended to advance the biological objectives of the Plan may also result in the incidental take of covered species. Consequently, these conservation measures are characterized as covered activities to ensure their coverage under the regulatory authorizations issued under the BDCP.

Why is Isolated Conveyance Both a Covered Activity and a Conservation Measure?

The proposed construction and operation of a new isolated conveyance system may provide substantial ecological benefits to certain aquatic species that would not be feasible with the existing through-Delta conveyance system. To articulate these benefits as part of the overall Conservation Strategy, isolated conveyance has been included as a conservation measure.

To see a list of the conservation measures, see pages 28 and 29.

Overview of the Conservation Strategy

A goal of the BDCP is to contribute to the recovery of at-risk species in the Delta. To contribute to the conservation of these species, the Plan identifies conservation and management actions—based on the best available science—to improve habitat conditions within the Delta's natural communities.

These actions, called conservation measures, make up a conservation strategy and fall into three distinct categories:

Water Flow and Conveyance

Velocity, direction, residence time, depth, timing, nutrient transport, and migration corridors, for example.

Aquatic and Terrestrial Habitat

Aquatic: Water-based habitat features from the water surface to the channel bottom (e.g., channel geometry, depth, slope, substrate type, water quality, amount and type of vegetation, and amount of tidal energy) that support aquatic ecosystem processes.

Terrestrial: Land-based habitat features that support non-aquatic species and aquatic ecosystem processes (e.g., aquatic food production).

Other Stressors Reduction

Non-physical habitat-related and non-flow-related activities intended to help species survive and thrive (e.g., reducing adverse effects of toxic substances and invasive species on covered species).

These conservation measures are designed to work together to meet the Plan's objectives and to address the large spatial scale of the Delta. The schedule on pages 60 and 61 shows the evolution of the Plan as various conservation measures are sequenced.

An important aspect of the Conservation Strategy is the use of adaptive management–informed by biological goals, objectives, and monitoring–to improve outcomes of conservation actions over time.

In addition to restoring water supplies and meeting water supply reliability goals, the water conveyance approach envisioned by BDCP contributes to the conservation of covered fish species and their habitats in these six fundamental ways:

1. Align Water Operations to Better Reflect Natural Seasonal Flow Patterns

Flow management envisioned by the BDCP would allow for greater seasonal variability in flows when covered fish species need it most.

2. Reduce Physical Impact of a Southern Diversion Point (Risk of Entrainment)

Diverting water only from the South Delta creates greater conflicts between water operations and the needs of covered fish species. By adding a point of diversion for the SWP and CVP in the North Delta and allowing for real-time, flexible operation of both South Delta and North Delta diversion points, fish can be better protected. North Delta diversion points under consideration display lower entrainment risks for delta smelt due to lower local populations of the species.

3. Protect Fish with State-of-the-Art Fish Screens

New northern diversion points would be fitted with state-of-the-art fish screens to avoid and minimize the likelihood of entrainment of fish and other aquatic organisms.

4. Improve Natural Flow Conditions in the Estuary

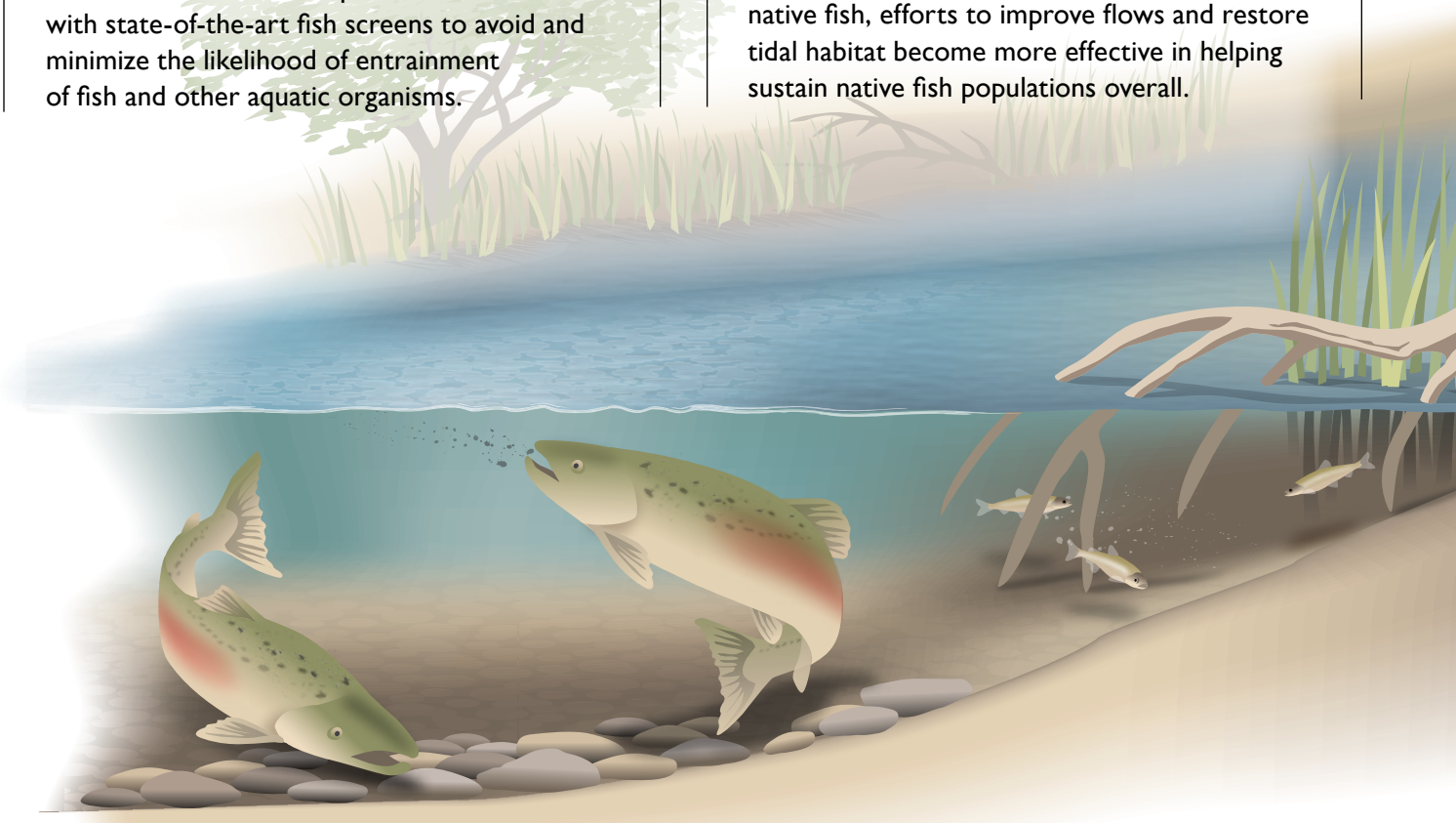
Reducing the frequency, duration and rate of reverse flow—by minimizing South Delta pumping and providing for a more natural east-to-west flow pattern through dual conveyance—improves conditions for fish.

5. Create New Habitat Areas

New flow patterns linked with habitat restoration areas create opportunities to re-establish important ecological processes associated with the interaction between land and water in a way that is beneficial to fish and that more closely resembles natural estuary function.

6. Reduce the Effects of Other Stressors on Native Fish Species

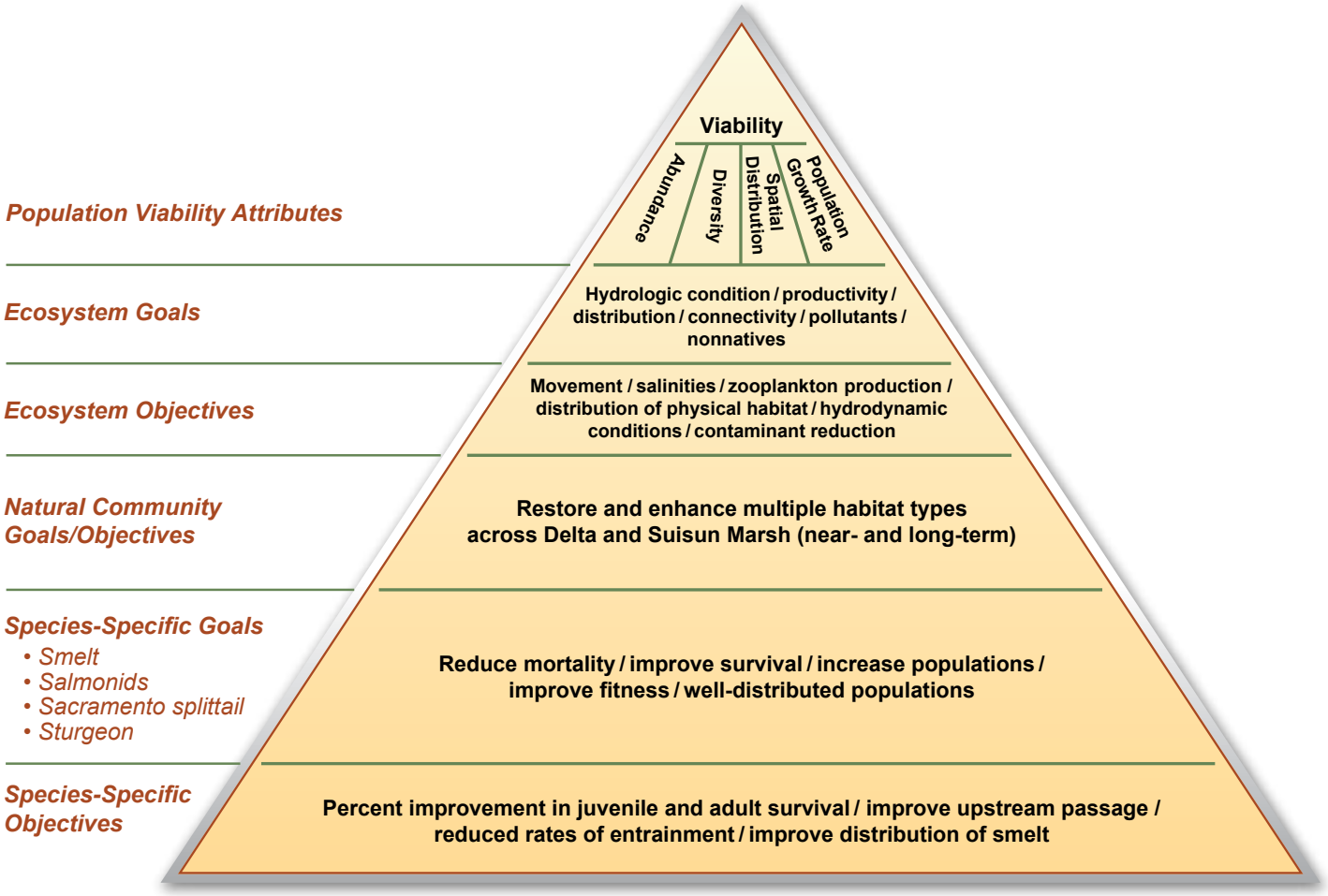
By addressing other ecological problems, such as invasive vegetation that provides habitat for nonnative predatory fish and illegal harvest of native fish, efforts to improve flows and restore tidal habitat become more effective in helping sustain native fish populations overall.



Biological Goals and Objectives

The Conservation Strategy is based on the best scientific data available and is being built on a set of core hypotheses about how to restore the ecological processes and functions necessary to achieve biological goals and objectives over time. The biological goals and objectives are intended to contribute to the goals and objectives of existing recovery plans and other regional plans. They are designed to serve three important functions in the Conservation Strategy:

1) Articulate the desired biological outcomes of the Conservation Strategy.
2) Describe how those outcomes will contribute to the long-term conservation of covered species and their habitats.
3) Provide metrics to measure progress in achieving the desired biological outcomes.



- **Ecosystem goals and objectives** focus on improvements to the hydrodynamic, chemical, and biological processes of the Delta including more natural flow patterns, increased food production, reductions in the effects of nonnative species, reduction in the adverse effects of contaminates and increases in the extent and spatial distribution, function, and connectivity of natural communities. For the covered wildlife and plant species, these goals and objectives address the desired extent, distribution, connectivity, and ecological function of ecosystems supporting their habitats and life requirements within the BDCP landscape.

- **Natural community goals and objectives** are focused on maintaining or enhancing ecological functions and values of natural communities. Achieving natural community goals and objectives serves to expand and conserve habitat of associated covered species and other native species and provides for sustaining and increasing the abundance and distribution of covered and other native species.

- **Species-specific goals and objectives** address stressors and habitat needs that are not addressed under the higher order ecosystem and natural community goals and objectives.

To ensure that biological goals, objectives and metrics are meaningful and reliable, the Natural Resources Agency supports an approach such that in some cases, the goals and objectives would be most appropriately expressed with specificity; in other cases, more generally. Similarly, for some goals and objectives, specific metrics would be developed to assist in the monitoring of progress; for others, precise measurements may not be practical or available at present. Through the BDCP monitoring program, the strategy as a whole and the individual conservation measures will be evaluated on an ongoing basis to assess their effectiveness in advancing the biological goals and objectives of the Plan. Those conservation measures that do not produce expected biological benefits may be modified or replaced through the adaptive management process. Biological objectives will be identified for each species, including metrics that will be used for monitoring purposes.

Outstanding Issues

Biological goals and objectives for covered fish species are being developed, refined, and revised by a logic chain linking them to stressors, conservation measures, expected outcomes, and monitoring metrics. This process has been the subject of independent scientific review and developed expressly for the BDCP planning process. While not intended to identify regulatory requirements, it will inform the development and implementation of the Plan. The biological goals and objectives included in the November 18, 2010, Working Draft reflect the current work in progress by the BDCP technical experts and consultants. The objectives in their current state do not represent a consensus position of the Steering Committee regarding the objectives of the BDCP.

There is disagreement among BDCP participants about the level of detail and quantification necessary for biological goals and objectives prior to BDCP authorization. The Working Draft includes a detailed outline for recommended next steps for continuing and completing the development of objectives and metrics (see page 3-141 of the Working Draft).

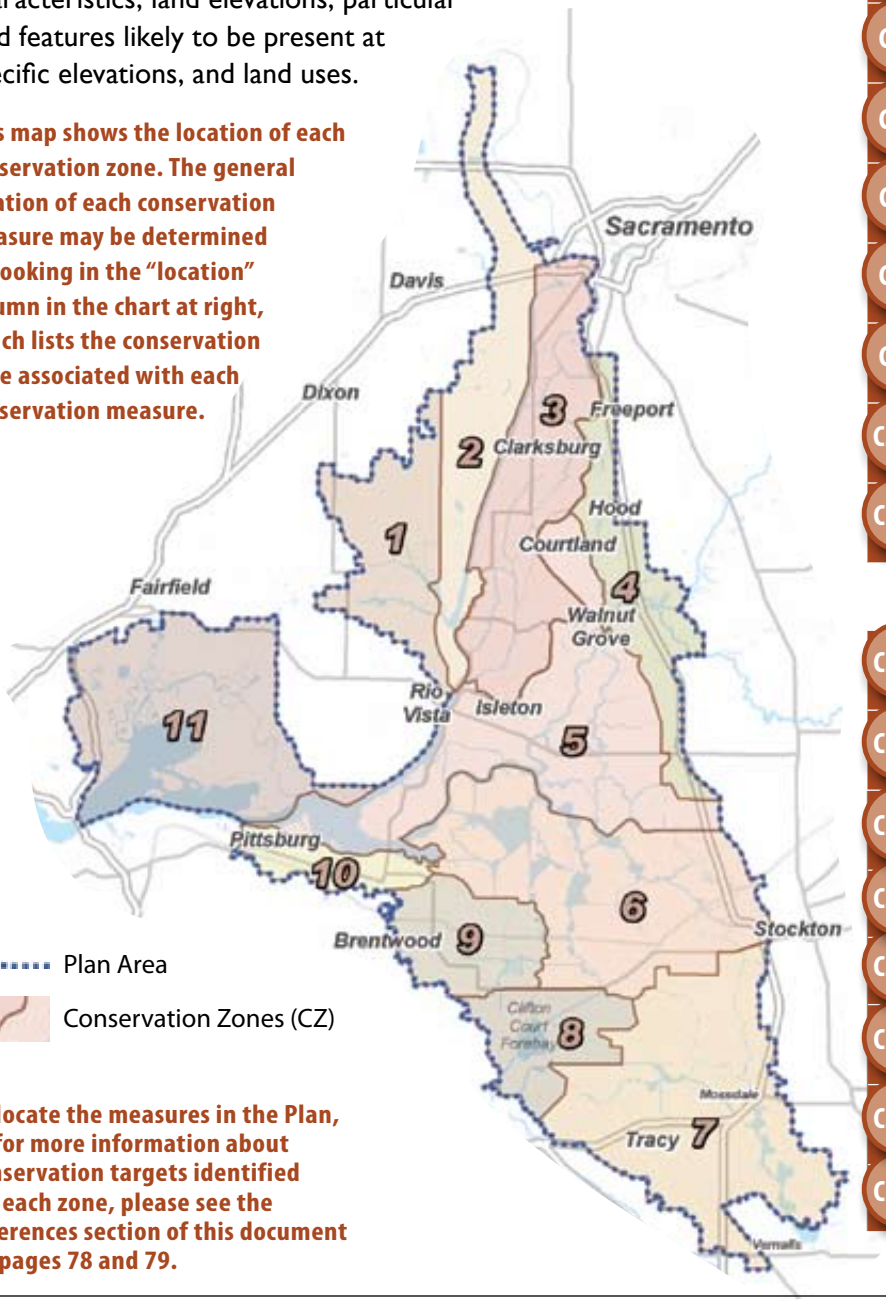
Conservation Measures

The Conservation Strategy includes 19 conservation measures (CM), listed in the chart at right. While they are organized in the Plan by ecosystem level, natural community level, and species level, as described on page 27, they are organized in this document by type: water flow/conveyance, habitat, and other stressors.

Conservation Zones

Conservation zones are geographic areas defined by the biological needs of the species covered under the Plan. They were identified based on landscape characteristics, land elevations, particular land features likely to be present at specific elevations, and land uses.

This map shows the location of each conservation zone. The general location of each conservation measure may be determined by looking in the "location" column in the chart at right, which lists the conservation zone associated with each conservation measure.



To locate the measures in the Plan, or for more information about conservation targets identified for each zone, please see the references section of this document on pages 78 and 79.

Measure	Title
Water Flow	
CM1	Water Facilities and Operation
Habitat	
CM2	Yolo Bypass Fishery Enhancement
CM3	Natural Communities Protection
CM4	Tidal Habitat Restoration
CM5	Seasonally Inundated Floodplain Restoration
CM6	Channel Margin Habitat Enhancement
CM7	Riparian Habitat Restoration
CM8	Grassland Communities Restoration
CM9	Vernal Pool Complex Restoration
CM10	Nontidal Marsh Restoration
CM11	Natural Communities Enhancement and Management
Other Stressors	
CM12	Methylmercury Management
CM13	Nonnative Aquatic Vegetation Control
CM14	Stockton Deep Water Ship Channel Dissolved Oxygen Levels
CM15	Predator Control
CM16	Non-Physical Fish Barriers
CM17	Hatchery and Genetic Management Plans
CM18	Illegal Harvest Reduction
CM19	Conservation Hatcheries

Location (Conservation Zone)	Level	Notes	Page
Plan Area-wide	Ecosystem	Includes pipeline/tunnel alignment facilities (15,000 cubic feet per second [cfs], 5 intakes, etc.) and water operations criteria	31
CZ 2	Ecosystem	Seasonal modification of the Yolo Bypass to improve the timing, frequency and duration of inundation to improve fish habitat.	41
CZ 1 through 9, and 11	Ecosystem	Up to 8,000 acres of grassland; up to 400 acres of alkali seasonal wetland complex; up to 300 acres of vernal pool complex, 16,620 to 32,640 acres of agricultural lands	44
CZ 1, 2, 4 through 7, and 11	Natural Community	Up to 65,000 acres – Minimum distribution: **CZ 1 and 2** - 5,000 acres; **CZ 4** - 1,500 acres; **CZ 5** - 2,100 acres; **CZ 7** - 5,000 acres; **CZ 11** - 7,000 acres	45
Plan Area-wide	Natural Community	Up to 10,000 acres	47
CZ 3 and 7	Natural Community	Up to 20 levee miles	48
CZ 1 through 9 and/or 11	Natural Community	Up to 5,000 acres – primarily in association with CMs 4, 5, and 6	49
CZ 1, 8, and/or 11	Natural Community	Up to 2,000 acres	50
CZ 1, 8, and/or 11	Natural Community	Up to 200 acres	50
CZ 2 and 4	Natural Community	Up to 400 acres that supports giant garter snake habitat	51
Plan Area-wide	Natural Community	Applies to all BDCP-protected and restored habitats under CMs 3-10	51
CZ 1, 2, 4 through 7, and 11	Species	Minimize the risk for methylation of mercury in habitats restored under CMs 4-6	52
CZ 1, 2, 4 through 7, and 11	Species	Control the establishment of nonnative aquatic vegetation in restored tidal habitats	52
CZ 6	Species	Maintain dissolved oxygen concentrations above levels that impair covered fish species between Turner Cut and Stockton.	52
Plan Area-wide	Species	Reduce the abundance of predatory fish in high predator density locations	53
CZ 5, 6, 7, and 8	Species	Placement of non-physical fish barriers at strategic locations throughout the Delta	53
Plan Area-wide	Species	Nimbus Hatchery, Feather River Hatchery, Mokelumne River Hatchery, Merced River Hatchery, Coleman National Fish Hatchery, and Livingston Stone National Fish Hatchery	53
Plan Area-wide	Species	Increase enforcement of fishing regulations in Bay-Delta waterways to reduce illegal harvest of Chinook salmon, Central Valley steelhead, green sturgeon and white sturgeon	53
Plan Area-wide	Species	Expand and establish conservation hatcheries for delta smelt and longfin smelt	53

CM = Conservation Measure CZ = Conservation Zone

Water Flow and Conveyance

CM1 Water Facilities and Operation

A cornerstone of the BDCP strategy is the widely shared conclusion that the existing water conveyance system is not conducive to long-term restoration goals. CM1 consists of a "dual conveyance" water delivery system made up of new (N) North Delta Diversion facilities and an isolated conveyance system to carry water to the existing SWP and CVP facilities in the (S) South Delta. This dual system allows for far greater flexibility in balancing the needs of the estuary with reliable water supplies.

CM1 will also define operational criteria for the existing through-Delta conveyance system until a new dual conveyance water delivery system would be constructed and operable. These operations, also called near-term water operations, would be included as part of the permitted BDCP. The new permit terms would replace the existing biological opinions issued by the USFWS and the national Marine Fisheries Service (NMFS) in 2008 and 2009, respectively, that govern current Delta operations of the state and federal water projects. To date, the planning process has not engaged in detailed discussions about near-term operations to the same level as the long-term dual conveyance system; therefore, near-term operations were not included in the November 18, 2010, Working Draft.

Challenges to near-term water operations:

- Lack of flexibility afforded by long-term dual conveyance
- Lack of agreement on operating criteria necessary to protect covered fish species
- Criteria in existing biological opinions have been challenged in federal court

Dual conveyance operating criteria will describe when, where and how much water could be diverted based on natural hydrological conditions and where covered fish species are in the system. These criteria take into account such factors as water quality, tributary inflow, in-Delta flows, and Delta outflows and will help guide operations of structures such as the Delta Cross Channel and the Suisun Marsh Salinity Control Gates. These criteria will help determine how much water can be sustainably delivered by the system.

Dual Conveyance

(N) The North Delta Diversion would be the primary diversion point using specific operating criteria.

(N) (S) The North Delta Diversion would be used in conjunction with the existing South Delta Diversion when it is necessary to maintain water quality and when it minimizes impacts to fish.

(S) The South Delta Diversion would only operate on its own when the North Delta Diversion is non-operational during infrequent periods for maintenance or repair.

The map at right describes the biological objectives of various dual conveyance elements that have the most effect on fisheries and water operations.

CM2 Yolo Bypass*

Objectives: (1) Modify Fremont and Sacramento Weirs to improve fish passage and to increase the frequency and duration of Yolo Bypass inundation, (2) increase spawning and rearing habitat for splittail, juvenile and adult salmon, and sturgeon (3) provide alternate migration corridor to the mainstem Sacramento River, and (4) increase availability and quality of food and habitat in Cache Slough.
(Yolo Bypass operations are covered under Conservation Measure 2).

Operate the Montezuma Slough Salinity Control Gate during the long-term implementation period for environmental benefits.

Objectives: Reduce delays in outmigration of juvenile salmonids and sturgeon by allowing more water and fish to flow past Chipps Island, and improve access of splittail, salmonids, and sturgeon to existing and future restored intertidal marsh habitats in Suisun Marsh.

Rio Vista Flows

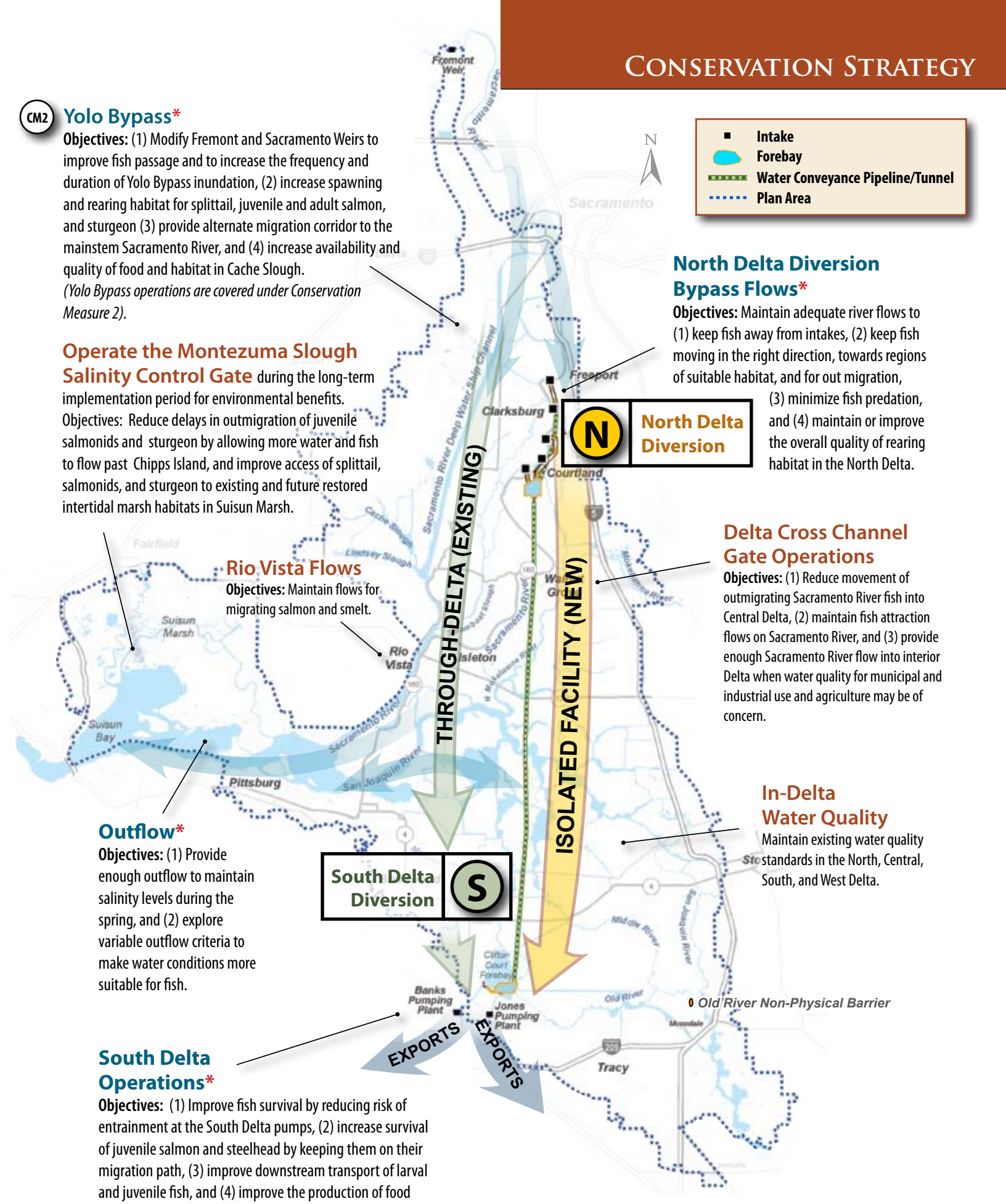
Objectives: Maintain flows for migrating salmon and smelt.

Outflow*

Objectives: (1) Provide enough outflow to maintain salinity levels during the spring, and (2) explore variable outflow criteria to make water conditions more suitable for fish.

South Delta Operations*

Objectives: (1) Improve fish survival by reducing risk of entrainment at the South Delta pumps, (2) increase survival of juvenile salmon and steelhead by keeping them on their migration path, (3) improve downstream transport of larval and juvenile fish, and (4) improve the production of food resources within the Delta and Suisun Bay.



North Delta Diversion Bypass Flows*

Objectives: Maintain adequate river flows to (1) keep fish away from intakes, (2) keep fish moving in the right direction, towards regions of suitable habitat, and for out migration, (3) minimize fish predation, and (4) maintain or improve the overall quality of rearing habitat in the North Delta.

Delta Cross Channel Gate Operations

Objectives: (1) Reduce movement of outmigrating Sacramento River fish into Central Delta, (2) maintain fish attraction flows on Sacramento River, and (3) provide enough Sacramento River flow into interior Delta when water quality for municipal and industrial use and agriculture may be of concern.

In-Delta Water Quality

Maintain existing water quality standards in the North, Central, South, and West Delta.

*** Primary Delta Flow Management Factor**

CM1 Water Facilities and Operation (Cont'd)

Water Operations Criteria

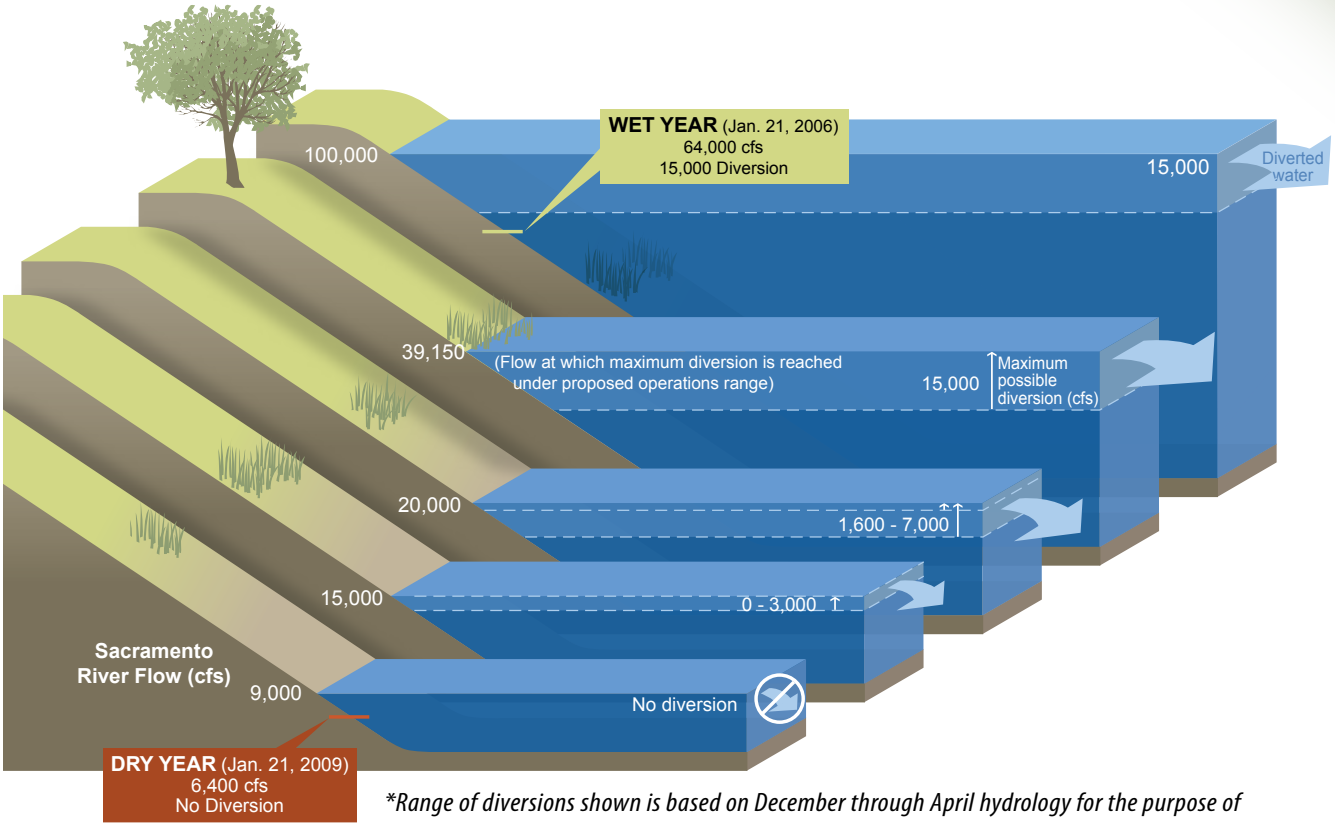
In January 2010, the Steering Committee developed a set of potential dual conveyance operating criteria for detailed analysis of its effects on biological resources; namely individual fish and wildlife species, the natural communities of these species, and the Delta ecosystem as a whole.

These criteria included:

- Rules for preferentially operating new North Delta diversions and existing South Delta diversions
- Bypass requirements for the North Delta diversions
- Delta outflow rules
- Rules for operating the Delta Cross Channel
- Rio Vista flow rules
- Requirements to meet in-delta water quality for agricultural, municipal, and industrial water quality
- Operation of the Montezuma Slough salinity control gate

Water supplies exported from new North Delta diversions will be subject to specific year-round operational criteria. However, the most sensitive time of year for Delta fisheries is during December through April. Operations during this time period would vary depending on the hydrologic year type and include a minimum Sacramento River flow before water supplies could be diverted. Once minimum flows are established, a set percentage of flows could be diverted. Ranges of potential diversions are depicted in the graphic below for illustration purposes only.

North Delta Diversion Operations Criteria
(December through April)



**Range of diversions shown is based on December through April hydrology for the purpose of demonstrating operational rules. For the full draft proposed long-term BDCP Water Operations Range of Criteria for effect analysis, see the November 18, 2010, Working Draft, Chapter 3 (Table 3-13).*

The Steering Committee has identified other water operations criteria that would be more or less restrictive of exports and that could provide different approaches for fishery protections and water supply. In developing these criteria, the BDCP considered the requirements of existing biological opinions and water right decisions, plus the information used by both the State Water Resources Control Board and DFG in the development of flow criteria reports released in 2010, including: improved Old and Middle River (OMR) flows in the winter, spring and fall; protection of San Joaquin River outflow in the winter, spring and fall; provision of flows from the Sacramento River past Chipps Island in the winter and spring; provision of increased fall Sacramento River outflow (fall X2); and expanded flow through the Yolo Bypass.[1] Some BDCP participants believe additional consideration of these reports is needed. A detailed table of the BDCP long-term water operations criteria, including an "analytical range" of criteria identified by the Steering Committee for analysis and sensitivity testing for their effects on fisheries and water supply can be found in the November 18, 2010, Working Draft Plan on page 3-312.

State and federal fish and wildlife agencies believe that possible ways to address the issues, identified at right, include some of the criteria previously identified for analysis, such as incorporating a fall X2 requirement, positive OMR flows in the spring and fall, and a permanent operable gate at the head of Old River.

Preliminary reviews of these concepts indicate potential annual average water supply reductions of 300,000 acre-feet to 500,000 acre-feet from the initial operating criteria evaluated to date. Ongoing refinement could further modify these projections. Some BDCP participants have identified ways in which these issues may be addressed through expansion of existing proposed habitat restoration and other stressor reduction conservation measures that would not require modifications to initial operations criteria.

Additional review and refinement of all these approaches will lead to the description of a proposed Conservation Strategy, including initial long-term operating criteria for further evaluation in the effects analysis.

[1] *While these reports look specifically at potential flow benefits for biological resources, they do not address the balancing of multiple beneficial uses of water (such as agricultural and municipal uses) as required in the water rights process.*

Outstanding Issues and Analyses

Water operations criteria may be modified based on the results of the BDCP effects analysis now underway, and/or the evaluation of alternatives under CEQA/NEPA. Based on preliminary results from the effects analysis to date, state and federal fish and wildlife agencies and other BDCP participants have identified several issues that may necessitate changes to the initial long-term operating criteria, including:

- Reduced flows and elevated water temperatures in some water year types on the Sacramento River during the fall
- Reduced Sacramento River flows downstream of the North Delta intakes
- Refinement of April through May South Delta operations
- Winter and spring X2 and outflow effects on longfin smelt
- Summer and fall X2 and outflow effects on delta smelt

These issues will be further examined and the criteria refined in a way that enhances fishery protections while maintaining sensitivity to water supplies. As the effects analysis continues, additional issues may also arise.

The fall X2 criteria and the limitations on southern Delta exports by the SWP and CVP, as a function of San Joaquin River inflow, are contained in the existing biological opinions by the USFWS and NMFS, respectively. There is substantial disagreement over the biological merits of these two criteria. Both criteria have been challenged in federal court.

CM1 Water Facilities and Operation (Cont'd)

Water Supplies Resulting from Potential Operations Criteria Undergoing Analysis

Dual conveyance operational criteria would produce variable annual water supplies measured in million acre-feet (MAF), depending on water year types and hydrological conditions. The table below describes estimated water supplies that would result from continued operations of the existing system under current biological opinion restrictions compared to potential operations based on initial operating criteria proposed for analysis, and subsequent tentative findings of ongoing analysis. Comparisons are based on climate change conditions estimated in 2025 to reflect the potential timing when new facilities could be constructed and operable. This estimate reflects the latest information available and is subject to further change. Ultimately, the effects analysis process will inform an operational starting point. It will also provide information that will be used to define an adaptive management range of operational criteria with defined sideboards that would provide for responses within the boundaries established in the Plan, to positive or negative changes in the ecosystem. This range is not described in the table below.

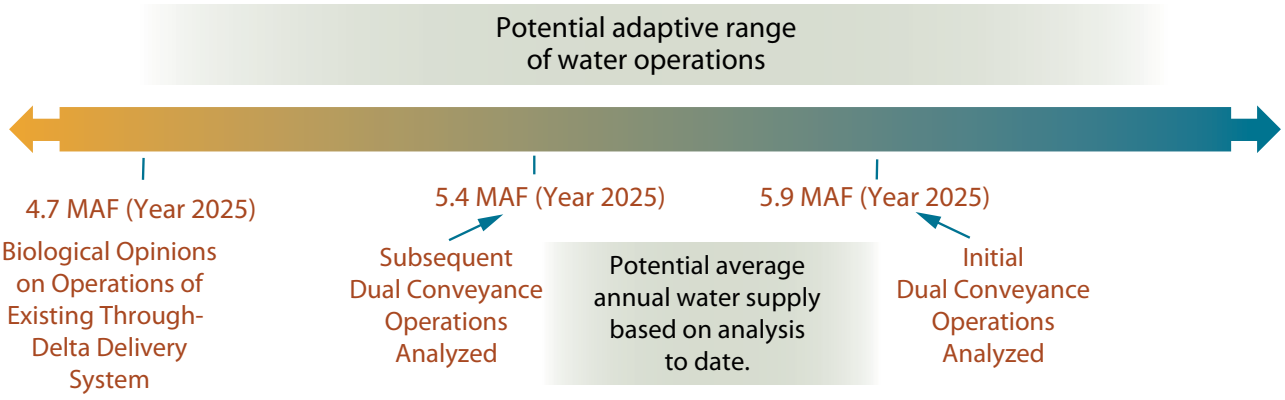
Work to be Done

- Ongoing technical and scientific analysis to inform the determination of permitted water operations
- Triggers that would require changes in water operations within the permitted adaptive range

Year Type	2025		
	Through-Delta Criteria Existing BiOp Restrictions (MAF)	Dual Conveyance Criteria (MAF)	
		Initial Operations Under Analysis	Additional Operations Under Analysis*
Average of All Year Types	4.7	5.9	5.4
Wet	5.9	7.4	6.7
Above Normal	5.0	6.9	6.1
Below Normal	4.8	6.0	5.5
Dry	4.1	4.9	4.2
Critically Dry	2.9	3.1	2.7

BiOp = Biological Opinion
MAF = million acre-feet

**The change in water supplies in this column is primarily due to the inclusion of fall X2 and OMR adjusted criteria.*



For more information on the performance of different facility sizes against other important criteria, view the conveyance sizing fact sheet on the BDCP website.

Facility Type and Sizing

The BDCP is evaluating both surface and tunnel conveyance options for the dual conveyance strategy. The BDCP has evaluated design capacities of 3,000, 6,000, 9,000, 12,000 and 15,000 cfs relative to a variety of factors: flows in the Central Delta, in-Delta and export water quality, cost, water supply, and future conditions.

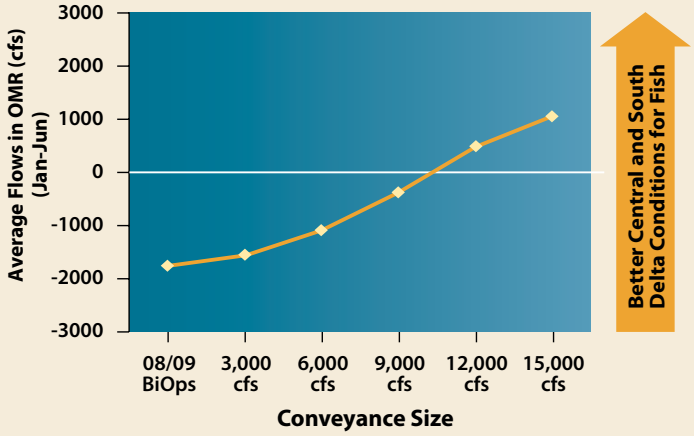
The figures below depict the performance of different facility sizes against two primary aspects of the Plan's co-equal goals:

1) Improvements to flow patterns for Delta fisheries in the South and Central Delta; and
2) Durability of facilities in providing water supplies in a future of changing Delta conditions.

The Natural Resources Agency has identified a tunnel as the likely conveyance facility for several reasons, including addressing Delta community concerns about the physical disruption of surface conveyance and the smaller footprint of a tunnel. A range of water conveyance alternatives will also be evaluated through the environmental review process under CEQA and NEPA . The environmental review studies will evaluate the impacts that the conveyance facilities will have on the human and biological environment. The public will have an opportunity to comment on the water conveyance alternatives presented in the draft EIR/EIS.

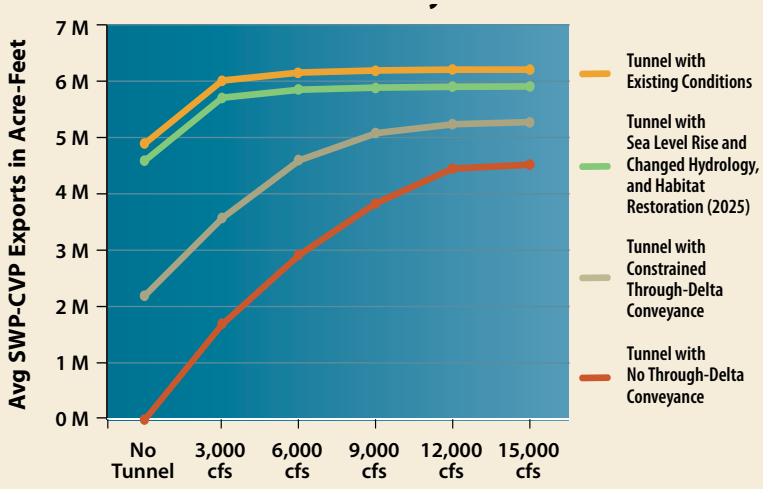
Flows in Central Delta

- The existing pumping facilities in the South Delta can create reverse flow conditions in the region that can conflict with fish rearing and migration patterns. A key benefit of moving the location of diversions and conveyance to the North Delta is the ability to restore more natural flow patterns in the Central and South Delta while providing more reliable water supplies.
- Reverse flow conditions improve incrementally with each increase in conveyance size.



Potential Future Water Supplies

- Conveyance sizes ranging between 3,000 and 15,000 cfs provide similar water supplies under existing conditions.
- Smaller conveyance sizes are not effective at providing water supplies in a future with more restricted through-Delta conveyance and can only provide similar supplies under status quo conditions and a continuation of reverse flow patterns in the southern Delta.
- Conveyance between 9,000 and 15,000 cfs provide greater water supplies than smaller sizes in a future where through-Delta conveyance is more constrained.
- Larger conveyance sizes better alleviate the water supply risk of a changing Delta.

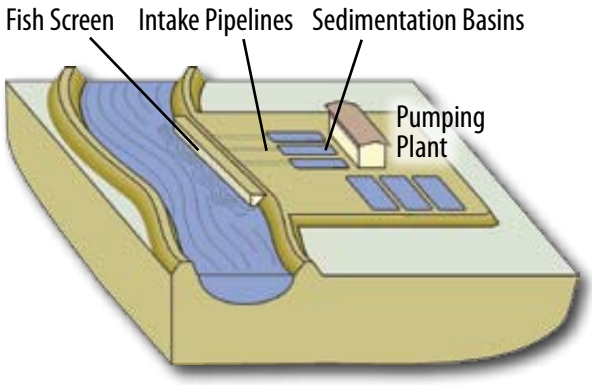


CM1 Water Facilities and Operation (Cont'd)

Pipeline/Tunnel Conveyance Facility

The Natural Resources Agency anticipates that a conveyance capacity ranging in size from 12,000 to 15,000 cfs would best accommodate the dual objectives of improving water supply and reliability and improving the ecological health of the Delta. A facility of this size will allow for delivery of water supplies in the face of potential seismic events, impacts associated with climate change and address potential future pumping restrictions in the South Delta. A facility in this range also allows for the greatest amount of flexibility in reducing system stressors including the current reverse flow phenomenon in the Delta, and provides the ability to move water when it is least harmful to Delta fisheries. The final size of the tunnel will depend on future analysis of costs versus benefits and further assessment of environmental effects. Further, the conditions on operations of new conveyance must recognize that the overall objectives of the BDCP process are aimed at restoring the ecological health of the Delta ecosystem and restoring water supply and reliability.

Intake Facilities



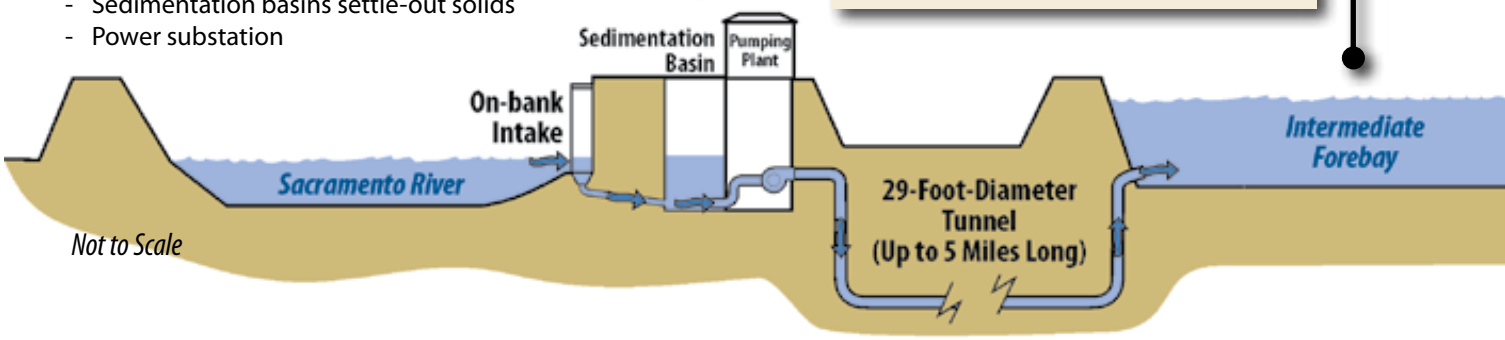
- **On-bank technology**
  - Initial engineering suggests that an on-bank intake design is preferred with regards to predation and engineering feasibility
- **5 Intakes from Freeport to Courtland**
  - 90-acre footprint
  - Up to 1,700-foot-long fish screen structures
  - 6 pumps in each pumping plant
  - Sedimentation basins settle-out solids
  - Power substation

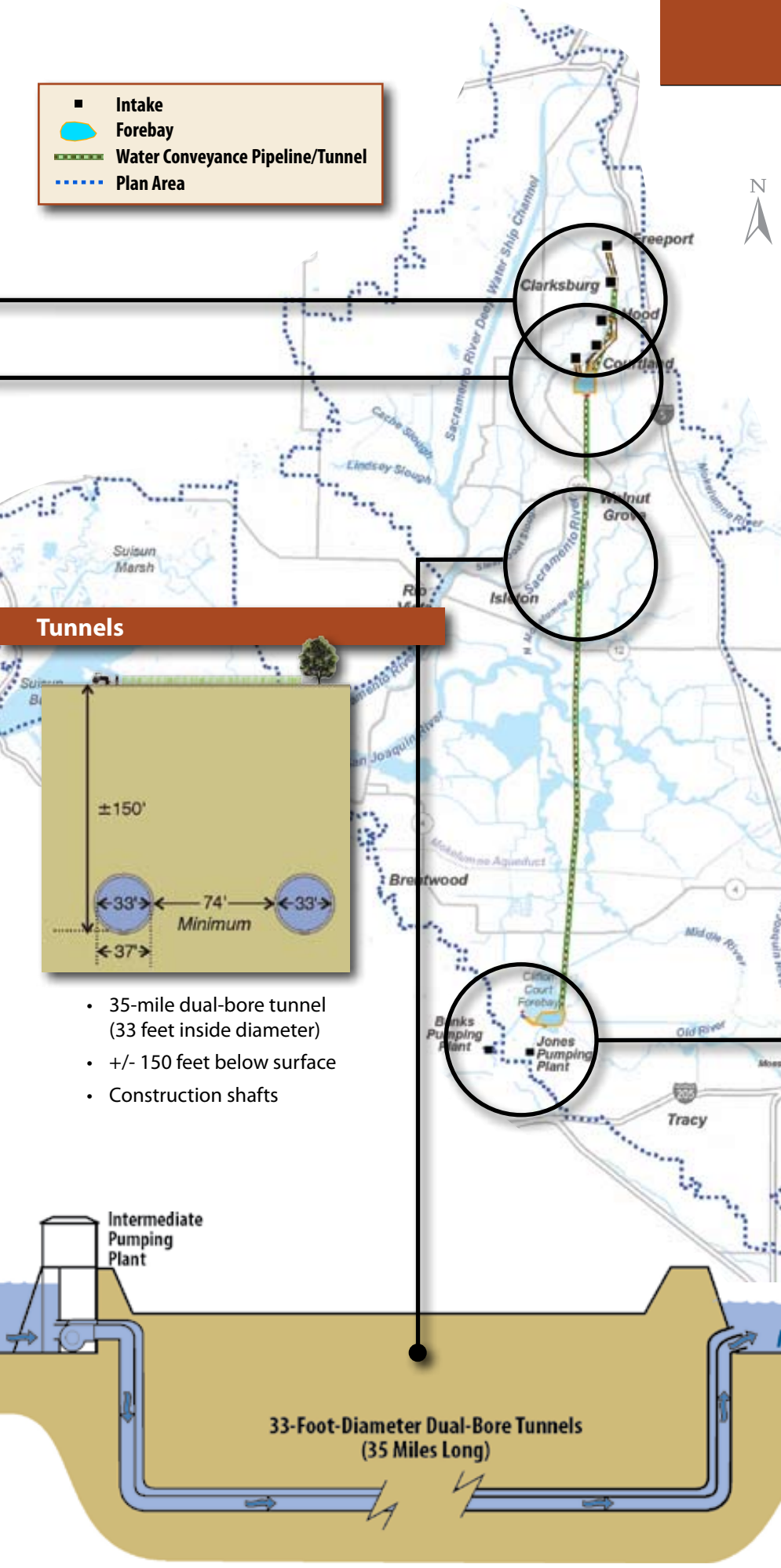
Intermediate Forebay

- Water surface area: Approximately 750 acres
- Intermediate pump station with 16 pumps
- Embankment height: Approximately 32 feet above sea level
- Active storage volume: Approximately 5,200 acre-feet.

Why do we need an Intermediate Forebay?

- Improved overall operational flexibility
- A hydraulic break between the intake pumping plants and main tunnel.
- Balance diversions from the river with efficient conveyance of flows at the Intermediate Pumping Plant.
- Energy Savings – By making use of water storage capacity, the Intermediate Pumping Plant can operate partially off-peak at lower energy rates.





Outstanding Issues and Analyses

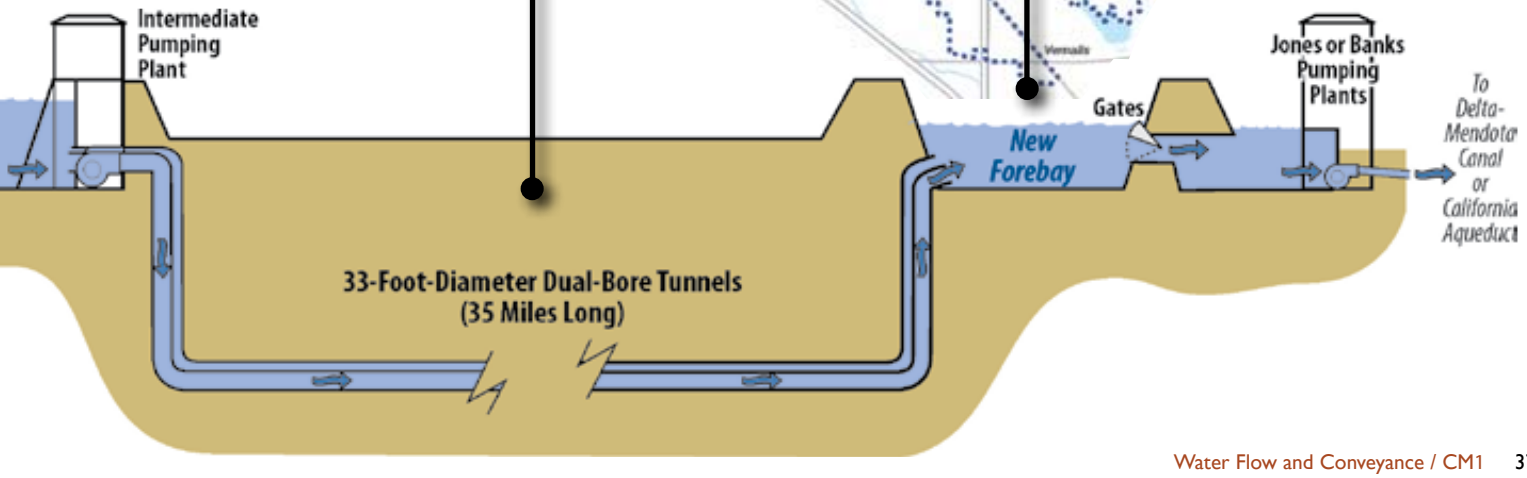
- NMFS has suggested a phased construction approach for the intake structures, with associated performance standards, such as screening criteria, predation control, and juvenile salmon survival.
- Description and evaluation of alternative approaches to construct five 3,000-cfs diversion facilities.
- Some BDCP participants believe that larger facility sizes will invite future pressure to maximize water supplies at the expense of the environment, despite permits that determine how it will be operated. Others believe that smaller facilities would be more economical.

Tunnels

- 35-mile dual-bore tunnel (33 feet inside diameter)
- +/- 150 feet below surface
- Construction shafts

New Forebay

- Located south of, and adjacent to, the existing Clifton Court Forebay
- Water surface area: Approximately 600 acres
- Active storage volume: Approximately 4,300 acre-feet

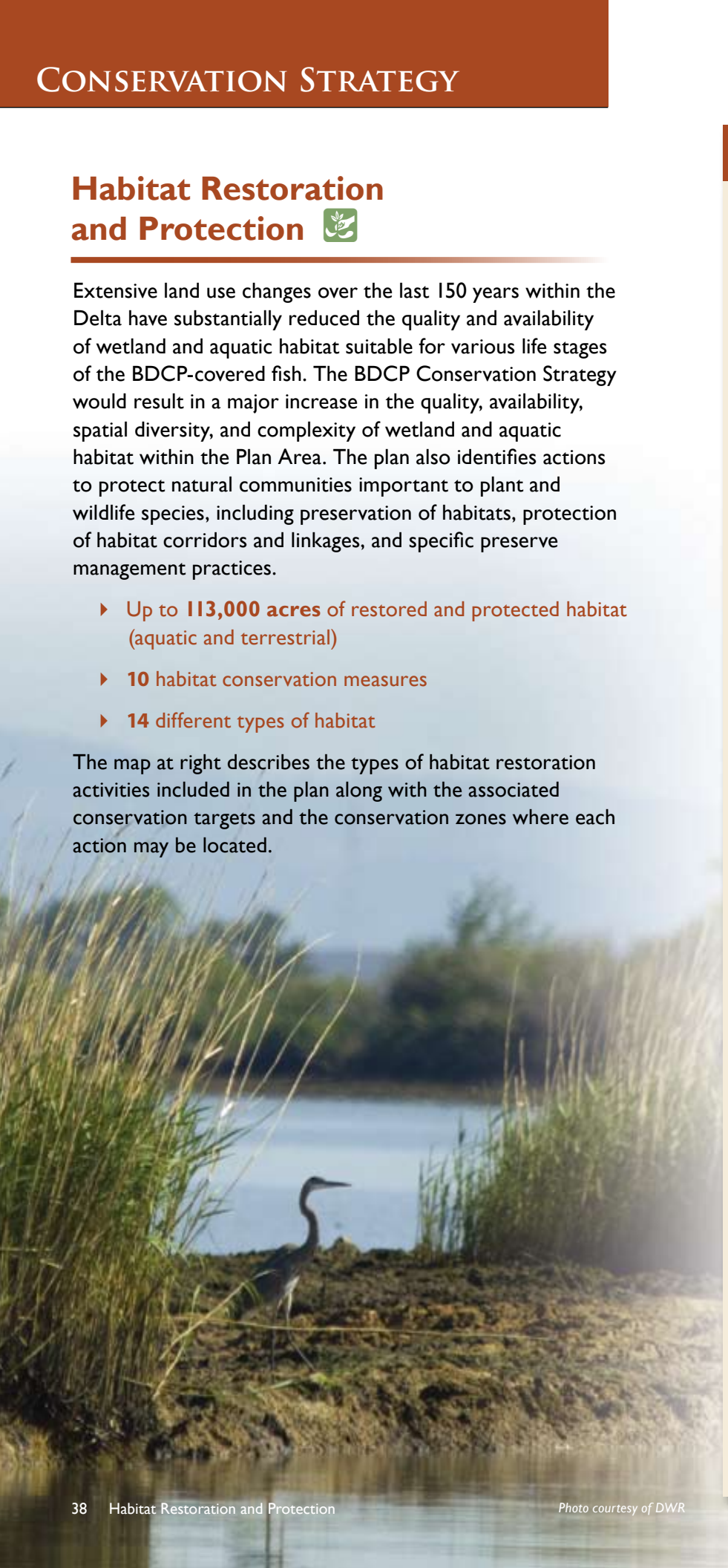


Habitat Restoration and Protection

Extensive land use changes over the last 150 years within the Delta have substantially reduced the quality and availability of wetland and aquatic habitat suitable for various life stages of the BDCP-covered fish. The BDCP Conservation Strategy would result in a major increase in the quality, availability, spatial diversity, and complexity of wetland and aquatic habitat within the Plan Area. The plan also identifies actions to protect natural communities important to plant and wildlife species, including preservation of habitats, protection of habitat corridors and linkages, and specific preserve management practices.

- Up to **113,000 acres** of restored and protected habitat (aquatic and terrestrial)
- **10** habitat conservation measures
- **14** different types of habitat

The map at right describes the types of habitat restoration activities included in the plan along with the associated conservation targets and the conservation zones where each action may be located.



Habitat Targets

New Floodplain - ***Up to 10,000 Acres***
Restore seasonally inundated floodplain by acquiring lands and taking action such as removing riprap, setting back levees, and grading restored floodplain surfaces.

Existing Floodplain
Seasonal modification of the Yolo Bypass to improve the timing, frequency, and duration of inundation.

Tidal Habitat – ***Up to 65,000 Acres***
Restore freshwater and brackish (saltier) tidal habitat through levee breaches.
- **Tidal Perennial Aquatic/ Tidal Brackish Emergent Wetland**
- **Tidal Perennial Aquatic/ Tidal Fresh Emergent Wetland**

Channel Margin – ***20 Levee Miles***
Modification of riverbank geometry to create improved fish and wildlife habitat. Actions include planting vegetation and woody material, as well as removal of existing riprap.

Riparian – ***Up to 5,000 Acres***
Restore areas where land and water meet through tidal and floodplain action by establishing riparian vegetation.

Grassland – ***Up to 8,000 Acres (Protected)/ Up to 2,000 Acres (Restored)***
Restore areas where vegetation was historically dominated by native grasses.

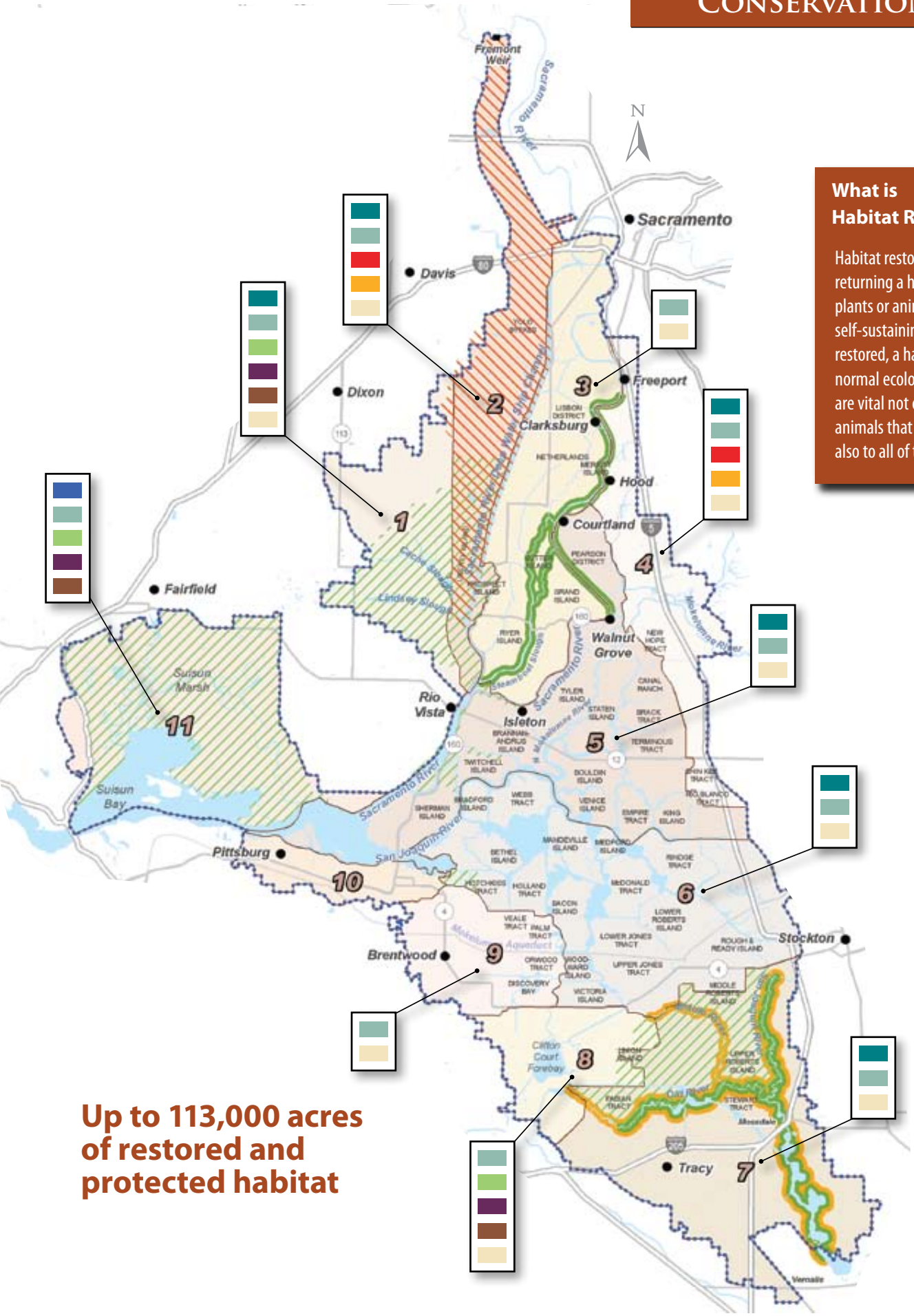
Vernal Pool Complex – ***Up to 300 Acres (Protected)/ Up to 200 Acres (Restored)***
Restore vernal pools (seasonal pools of water), also called vernal ponds. Usually devoid of fish, vernal pools allow the safe development of amphibian and invertebrate species.

Nontidal Marsh – ***Up to 400 Acres***
Restore marsh lands not exposed to tidal influence.
- **Nontidal Perennial Aquatic**
- **Nontidal Perennial Freshwater Emergent Wetland**

Agriculture – ***Up to 16,620 to 32,640 Acres***
Management of agricultural lands for optimal covered species habitat uses.

Alkali Seasonal Wetland Complex – ***Up to 400 Acres***
Protect and enhance remaining seasonal wetlands with alkali soils in conjunction with adjoining grassland and vernal pool habitats.

Photo courtesy of DWR



What is Habitat Restoration?

Habitat restoration is the process of returning a habitat (the place where plants or animals live) to a healthy, self-sustaining condition. Once restored, a habitat will resume its normal ecological functions. Habitats are vital not only to the plants and animals that depend on them, but also to all of the Delta.

Up to 113,000 acres of restored and protected habitat

Acquisition of Lands for Habitat Restoration and Protection

The general strategy for habitat restoration and preservation activities under the BDCP would be to (1) focus on opportunities at existing public lands, (2) work with other organizations managing lands dedicated to habitat restoration and conservation purposes, and (3) acquire easements or fee title as necessary to achieve program objectives.

How Will Lands for Habitat Restoration and Protection Be Identified?

The following is a partial list of site selection criteria that would be used, along with local input, to identify lands for habitat restoration, protection, and enhancement.

Feasibility

- Minimal effects on existing land uses
- Site availability
- Cost-effectiveness in implementing restoration
- Potential effects on mosquito vector control
- Payments-in-lieu of taxes to affected Delta counties must be secured

Biological Attributes

- Ability to achieve multiple biological objectives for multiple species
- Proximity to channel systems that could benefit from restoration (e.g., increased tidal habitat restoration may help reduce bi-directional flows in upstream channels, or support greater mixing in channels, both of which are beneficial for native fish)
- Capacity to contribute to more natural transitions between habitats in the Delta (seasonal wetland, riparian, grassland)
- Proximity to existing habitats so that new restoration adds to and develops habitat corridors for fish and wildlife
- Minimal effects of other stressors (such as nearby water diversions or discharges of low-quality water) that could offset intended fish and wildlife benefits

CM2 Yolo Bypass Fishery Enhancement

The historical floodplain in the Central Valley has been significantly modified over the last two centuries. The resulting loss of fish spawning and rearing habitat, fish migration corridors, and food web production have significantly affected the ability of threatened and endangered fish species to survive and thrive.

The Yolo Bypass, which currently experiences some flooding in 70 percent of years, still possesses many favorable characteristics of historical floodplain habitat.

Through this conservation measure, the BDCP proposes to plan and implement actions to enhance fish habitat by modifying Yolo Bypass hydrology to improve the timing, frequency, and duration of inundation to:

- Create more and better spawning and rearing habitat
- Improve upstream and downstream fish passage
- Increase food web production and availability
- Reduce fish stranding and illegal fish harvest
- Reduce exposure of fish to predators

There are important issues to address in developing and implementing fishery enhancement in the Yolo Bypass, including:

- Flood control
- Agriculture
- Terrestrial habitat resources
- Mosquito and vector control
- Recreational and educational activities

Photo courtesy of DWR

CM2 Yolo Bypass Fishery Enhancement (Cont'd)

Key Elements of the Measure*:

Moving Water into the Bypass

1-1 **Reduce Elevation of a Section of the Fremont Weir** – To increase the frequency and duration of seasonal inundation of floodplain habitat in the Yolo Bypass, construct a gated channel through the 1.8 mile-long Fremont Weir. The channel would be excavated to an elevation of 17.5 feet to connect with the existing low flow channel of the Bypass. The gates would control flows into the Bypass when the existing weir is not overtopping. Fremont Weir would continue to overtop when Sacramento River stage rises above its crest, and at flood flows water would enter the bypass at the same rate it currently would. The gates would be designed and operated to provide for upstream and downstream passage of salmon, steelhead, sturgeon, and lamprey between the Yolo Bypass and the Sacramento River.

1-2 **Westside Channels** – As part of the fishery enhancement planning process, evaluate the effectiveness of introducing and routing additional flows along the west side of the Bypass. Flow from the Colusa Basin Drain or the Sacramento could be introduced through Knights Landing Ridge Cut, or at western Fremont Weir. This concept has the potential to improve water distribution for agriculture and wetland management as well as the potential to provide fish benefits.

How and When Water Moves and Where it Goes

2-1 **Potential Yolo Bypass Modifications** – To optimize fishery benefits in the bypass and limit impacts to land uses, make additional localized modifications. Add or remove berms, levees, and water control structure and rework agricultural delivery channels and water control structures to improve distribution and hydrodynamic characteristics (e.g., residence times, flow ramping, and recession) of water moving through the Yolo Bypass. Modifications may also improve access to some lands or otherwise provide land users additional operating flexibility.

2-2 **Operational Criteria and Adaptive Limits** – Develop and operate criteria and adaptive limits to optimize benefits for covered fish while minimizing negative effects to existing uses. Criteria and adaptive limits would govern how water and fish passage facilities would be operated to manage the location, timing, frequency, and duration of inundation in the Yolo Bypass for 30 to 45 days during the period December 1 to March 31, and occasionally to May 15. Flows would be managed between 3,000 to 6,000 cfs. Once implemented, monitoring and evaluating the effectiveness of the range of operations would guide any recommended operational changes within the adaptive limits.

Fish Passage

3-1 **Deep Fish Passage Channel** – To enhance adult fish passage, a small section of the Fremont Weir would be removed and the soil excavated to a depth greater than the proposed notch to allow fish passage over a wider season. A gate would be operated to control flows.

3-2 **Fremont Weir Fish Ladder Replacement** – Replace the existing Denil design fish ladder with new experimental fish passage facilities designed for the effective passage of adult sturgeon, salmon, and steelhead from the Yolo Bypass past Fremont Weir and into the Sacramento River when the river is sufficiently high.

3-3 **Experimental Sturgeon Ramps** – Construct ramps at the Fremont Weir to encourage adult sturgeon and lamprey passage from the Yolo Bypass over the Fremont Weir and into the Sacramento River when there is enough depth of flow over the weir (approximately 3 feet).

3-4 **Stilling Basin Modification** – Modify the existing Fremont Weir stilling basin to ensure that the basin drains sufficiently toward the new facilities. Effective drainage of the stilling basing would prevent stranding of juvenile and adult fish as the floodplain drains.

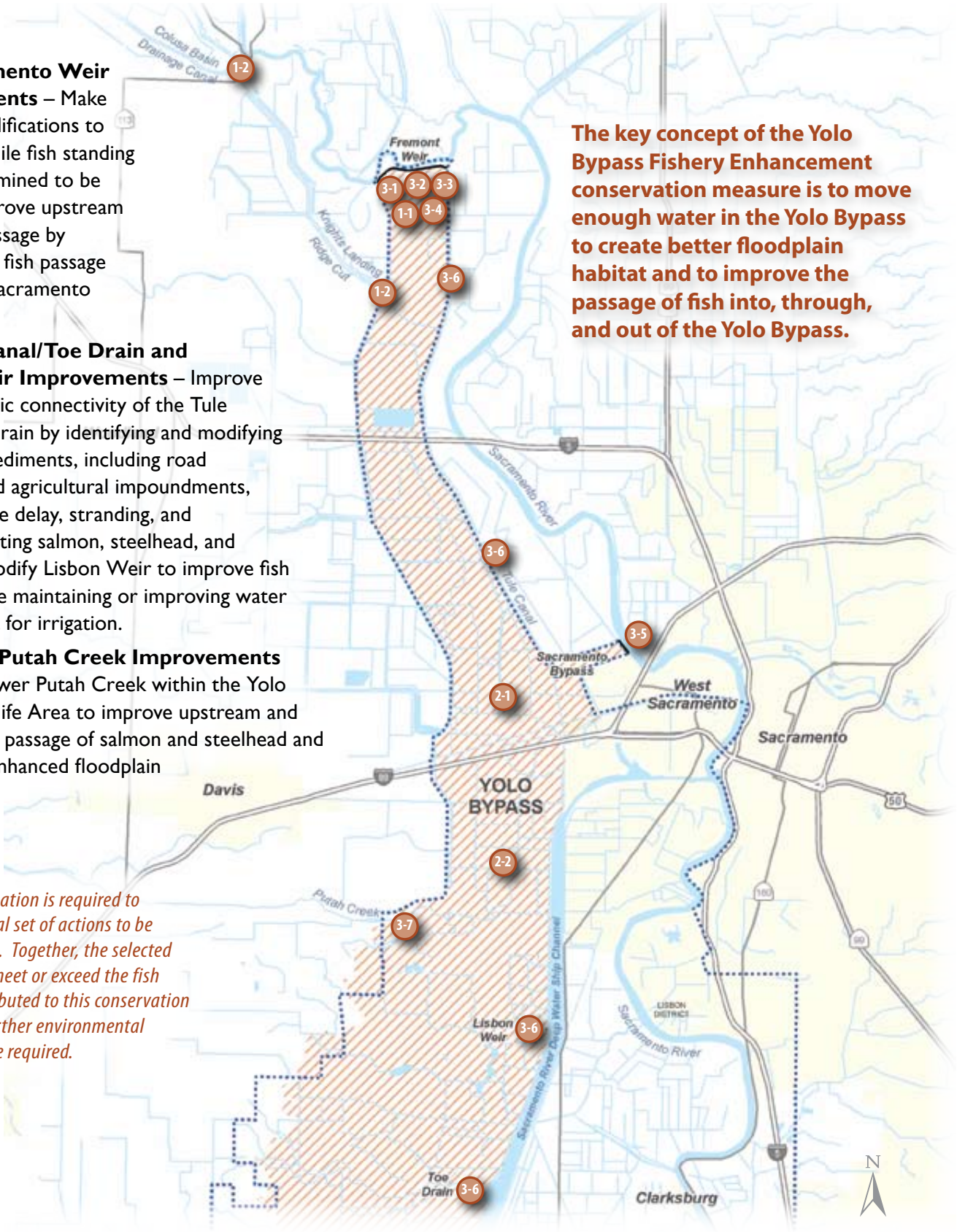
3-5 Sacramento Weir Improvements – Make physical modifications to reduce juvenile fish standing and, if determined to be needed, improve upstream adult fish passage by constructing fish passage facilities at Sacramento Weir.

3-6 Tule Canal/Toe Drain and Lisbon Weir Improvements – Improve the hydrologic connectivity of the Tule Canal/Toe Drain by identifying and modifying passage impediments, including road crossings and agricultural impoundments, to reduce the delay, stranding, and loss of migrating salmon, steelhead, and sturgeon. Modify Lisbon Weir to improve fish passage while maintaining or improving water management for irrigation.

3-7 Lower Putah Creek Improvements – Realign Lower Putah Creek within the Yolo Bypass Wildlife Area to improve upstream and downstream passage of salmon and steelhead and to provide enhanced floodplain habitat.

**Further evaluation is required to select the final set of actions to be implemented. Together, the selected actions will meet or exceed the fish benefits attributed to this conservation measure. Further environmental review will be required.*

The key concept of the Yolo Bypass Fishery Enhancement conservation measure is to move enough water in the Yolo Bypass to create better floodplain habitat and to improve the passage of fish into, through, and out of the Yolo Bypass.



CM3 Natural Communities Protection

Photo courtesy of DWR

This conservation measure provides the overarching mechanism to meet the goals for each natural community group and acreage targets as described in other conservation measures, including guidance for the acquisition of lands and establishment of a preserve system in the Plan Area. This preserve system would be built over the BDCP implementation period to:

- Protect and enhance areas of existing natural communities and covered species habitat
- Protect and maintain occurrences of selected plant species with very limited distributions
- Provide sites suitable for restoration of natural communities and covered species habitat
- Provide habitat connectivity among the various BDCP conservation land units in the preserve system

Coordination with Regional Conservation Planning

Where regional conservation plans overlap with or adjoin the Plan Area, the BDCP would collaborate and coordinate with the sponsors of those regional conservation plans on the acquisition and management of habitat lands to be preserved and/or restored within areas common to both plans. Where mutually beneficial, the BDCP would encourage joint acquisitions of land with local government plan sponsors to realize economies-of-scale and to secure large, contiguous blocks of habitat. The BDCP would explore opportunities to fund early conservation actions (i.e., habitat acquisition and/or restoration) that may benefit both the BDCP and other regional conservation plans.

CM4 Tidal Habitat Restoration

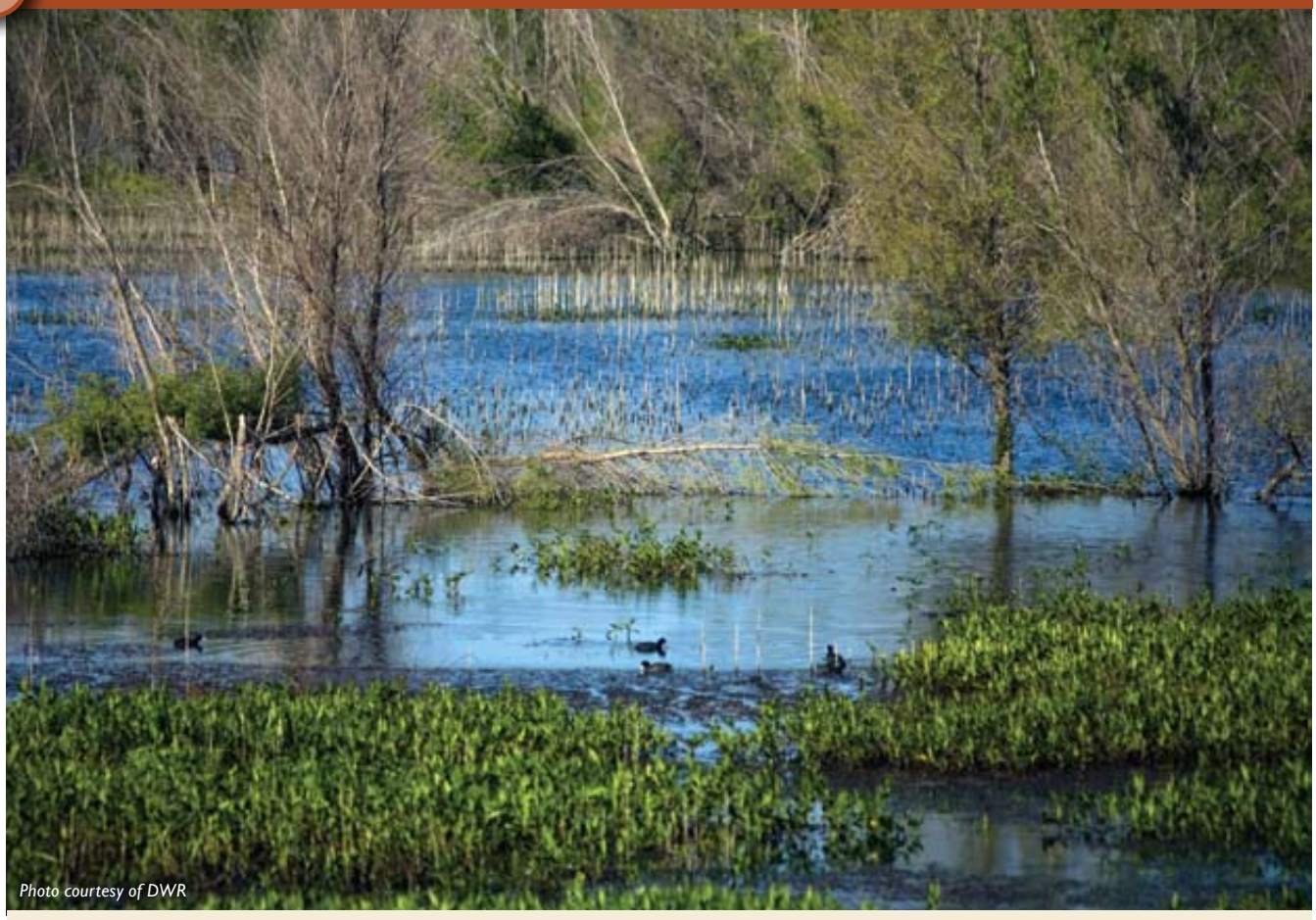


Photo courtesy of DWR

Restore up to 65,000 acres of freshwater and brackish tidal habitat, including:

- Shallow subtidal aquatic habitat
- Tidal mudflat habitat
- Tidal marsh plain habitat
- Adjoining transitional upland habitat

The tidal habitat restoration targets would be achieved on the following schedule:

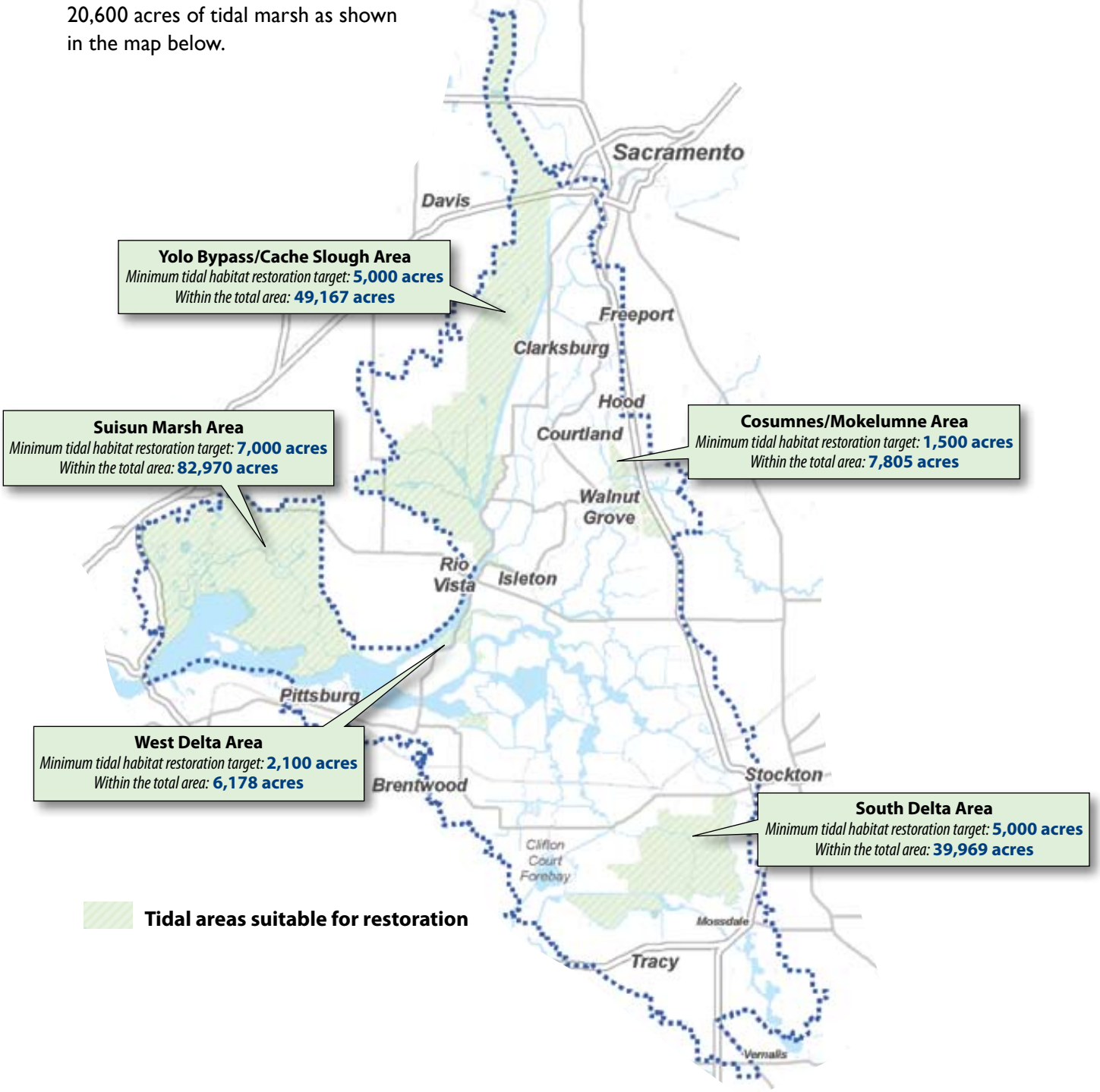
- Up to 14,000 acres developed within the first 10 years of Plan implementation
- Up to 25,000 acres (cumulative) developed by year 15 of Plan implementation
- Up to 65,000 acres (cumulative) developed by year 40 of Plan implementation

A variety of actions are anticipated to restore tidal habitat, depending on site-specific conditions, some of which include:

- Acquiring lands, in fee-title or through conservation easements
- Breaching and lowering levees and dikes
- Reconnecting disconnected remnant sloughs to Suisun Bay
- Constructing new or enhancing existing levees and dikes
- Restoring natural remnant meandering tidal channels
- Excavating channels
- Modifying ditches, cuts, and levees
- Restoring tributary stream functions

CM4 Tidal Habitat Restoration (Cont'd)

Of the total 65,000 acres, the Plan designates 20,600 acres to be distributed in specific areas. The remaining 44,400 acres would be distributed at the discretion of the BDCP Implementation Office based on land availability, biological value, and practicability. The Plan calls for distributing 20,600 acres of tidal marsh as shown in the map below.



CM5 Seasonally Inundated Floodplain Restoration

Photo courtesy of DWR

Restore up to 10,000 acres of seasonally inundated floodplain, on the following schedule:

- Up to 1,000 acres restored by year 15 of Plan implementation
- Up to 10,000 acres (cumulative) by year 40 of Plan implementation

The most promising opportunities will be based on benefits to covered fish species, practicability considerations, and compatibility with potential flood control projects. Actions to restore seasonally inundated floodplain habitats, as appropriate to site-specific conditions, include, but are not limited to:

- Acquiring lands, in fee-title or through conservation easements
- Setting back levees
- Removing existing riprap
- Grading restored floodplain surfaces
- Lowering restored floodplain elevation
- Allowing riparian vegetation to naturally establish on the floodplain
- Engaging in farming practices and crop types that provide high benefits for covered fish species

CM6 Channel Margin Habitat Enhancement

Enhance up to 20 levee miles of channel margin habitat by improving channel geometry and restoring riparian, marsh, and mudflat habitats along levees.

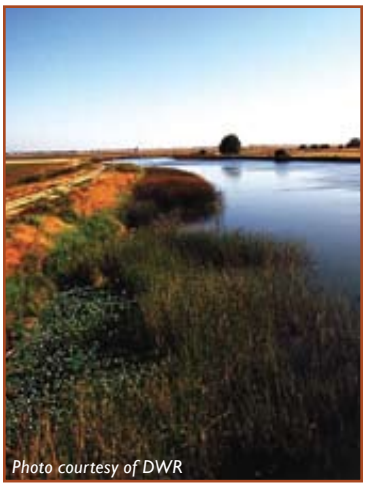


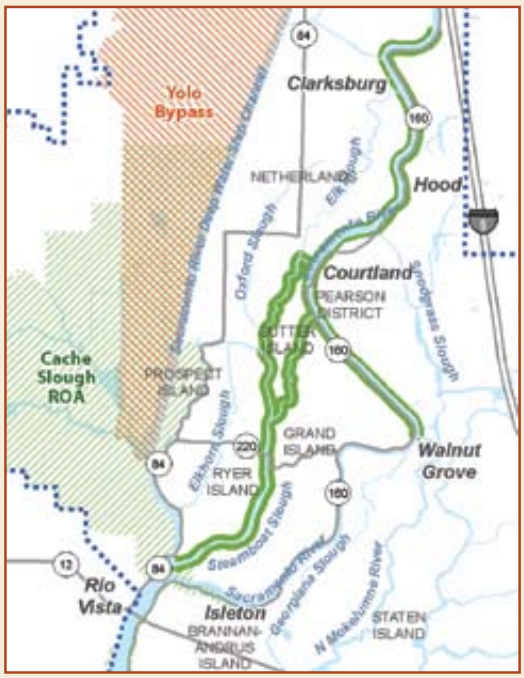
Photo courtesy of DWR

Actions to enhance channel margin habitats may include the following, depending on site conditions:

- Modifying levees or constructing setback levees to create low benches
- Planting riparian and emergent vegetation on created benches
- Installing large woody material (i.e., tree trunks and stumps)
- Removing riprap from channel margins

The channel margin habitat enhancement activities would be accomplished on the following schedule to reach a total of 20 enhanced miles:

- Up to 5 miles by year 10 of Plan implementation
- Up to 5 additional miles by year 20 of Plan implementation
- Up to 5 additional miles by year 25 of Plan implementation
- Up to 5 additional miles by year 30 of Plan implementation



Channel margin enhancement actions will be located along channels serving as primary rearing and outmigration habitat for juvenile salmonids.

- Up to 5 miles would be located along the Sacramento River
- Up to 5 miles would be located along the San Joaquin River
- The remaining 10 miles will be distributed among Steamboat and Sutter Sloughs, and the North and South Forks of the Mokelumne River.

CM7 Riparian Habitat Restoration

Restore up to 5,000 acres of riparian forest and scrub, in association with the restoration of seasonally inundated floodplain, tidal, and channel margin habitat, on the following schedule:

- Up to 400 acres (cumulative) by year 15 of Plan implementation
- Up to 5,000 acres (cumulative) by year 40 of Plan implementation

Photo courtesy of John Gerlach

Actions to restore riparian forest and scrub, as appropriate to site-specific conditions, including, but not limited to:

- Acquiring lands in fee-title or through conservation easements
- Discontinuation of farming within setback levees
- Planting of native riparian vegetation
- Irrigation and other maintenance of plantings
- Control of nonnative plants

Photo courtesy of John Gerlach

CM8 Grassland Communities Restoration

Restore up to 2,000 acres of grassland within Conservation Zones 1, 8, and/or 11. Design and locate restored grassland habitat to:

- Support habitat for associated covered species
- Improve connectivity among existing patches of grassland and other natural habitats
- Improve native wildlife habitat functions of transitional uplands adjacent to BDCP restored tidal habitats

The most strategically important areas are connections between Conservation Zones 1 and 11 in the Jepson Prairie area and connecting Conservation Zone 8 to other high-quality grassland habitat to the west and southwest of the Plan Area.

Photo courtesy of John Gerlach

CM9 Vernal Pool Complex Restoration

Photo courtesy of DWR

Restore up to 200 acres of vernal pool complex habitat within Conservation Zones 1, 8, and/or 11. Include a matrix of grassland or alkali seasonal wetland complex in which vernal pools, swales, and saturated alkaline soil areas are adjacent or interspersed. Design considerations for vernal pool complex habitat will include:

- Vernal Pool Complex Vegetation: Vegetate with hand-collected seed from appropriate areas within the same conservation zone as the planned restoration action. Monitor for invasive nonnative plants.
- Vernal Pool Complex Invertebrates: Introduce invertebrate species into vernal pools.
- Hydrological Conditions: Base designs on historical and/or existing patterns of vernal pools and swales present on the restoration site.

CM10 Restore Nontidal Marsh

Restore up to 400 acres of nontidal freshwater marsh within Conservation Zones 2 and 4. Restored habitat would be distributed in patches of at least 25 acres and associated with occupied giant garter snake habitat within the proposed 1,000-acre giant garter snake preserves. CM10 will also support other native wildlife functions including waterfowl foraging, resting, and brood habitat and shorebird foraging and roosting habitat.

Actions to restore nontidal freshwater marsh, as appropriate to site-specific conditions, include, but are not limited to:

- Acquiring lands, in fee-title or through conservation easements
- Securing sufficient annual water to sustain habitat function
- Allowing for the natural establishment of marsh vegetation
- Preparing site for planting of native marsh vegetation, and maintenance of plantings
- Controlling invasive nonnative plants

Photo courtesy of DWR

CM11 Natural Communities Enhancement and Management

Prepare and implement management plans for protected natural communities and covered species habitats found within those communities. The content of these plans would include, but would not be limited to:

- Biological goals and objectives to be achieved with the preservation and management of the parcels
- Base ecological conditions
- Vegetation management actions
- Fire management plan
- Infrastructure, hazards, and easements
- Existing land uses and management practices
- Applicable permit terms and conditions
- Terms and conditions of conservation easements when applicable
- Management actions and schedules
- Monitoring requirements and schedules
- Established data and report preservation, indexing, and repository protocols
- Established data acquisition and analysis protocols
- Adaptive management approach

Photo courtesy of John Gerlach

Other Stressor Reduction

Conservation Measures Promoting Species Recovery by Focusing on Other Stressors

An important third component of the BDCP Conservation Strategy consists of measures that seek to reduce the direct and indirect adverse effects of other stressors on the ecological functions of the Delta, covered species, and natural communities. A number of factors have been identified that adversely affect covered fish species through their impact on the species themselves, prey resources, or habitat conditions. Implementation of conservation measures addressing these other stressors is expected to reduce their adverse effects upon or improve productivity for covered species. The eight conservation measures that focus on actions to reduce other stressors are as follows:

CM12 Methylmercury Management

Minimize the potential for some of the BDCP habitat restoration actions to increase the bioaccumulation of methylmercury in covered and other native species. High concentrations of methylmercury in the Delta cause adverse effects to BDCP covered fish and wildlife species and humans. Tidal marsh sediments may have elevated methylmercury production relative to sediments in unvegetated open-water areas. Tidal marsh restoration may elevate the production of methylmercury in the Delta, mercury already being present from all the historical mining in the region.

CM13 Nonnative Aquatic Vegetation Control

Control the growth of Brazilian waterweed (*Egeria Densa*), water hyacinth (*Eichhornia crassipes*), and other nonnative submerged and floating aquatic vegetation. Apply existing methods used by the California Department of Boating and Waterways *Egeria Densa* and Water Hyacinth Control Programs. Examples include applying herbicides as specifically as possible to these species, conducting mechanical removal, and/or using other methods of removal as dictated by site-specific conditions. Application of herbicides will be timed to eliminate or minimize potential negative effects on covered species. Submerged and floating aquatic vegetation provides habitat for nonnative predatory fish and also reduces local flow rates which lowers turbidity. Higher turbidity is good for covered fish, such as the delta smelt, in that it provides more places for them to hide, makes it harder for nonnative predators to hunt them, and also improves their own foraging ability.

CM14 Stockton Deep Water Ship Channel Dissolved Oxygen Levels

Maintain dissolved oxygen concentrations above levels that impair covered fish species between Turner Cut and Stockton. As needed, modify the existing aeration facility and add aerators and associated infrastructure, dependent on the ongoing demonstration project being conducted by DWR. The BDCP would share in funding the long-term operation and maintenance costs associated with the aeration system.

The 7.5-mile low dissolved oxygen area of the Stockton Deep Water Ship Channel creates a barrier for upstream migration of adult fall-run Chinook salmon and Central Valley steelhead. Low dissolved oxygen levels can also cause physiological stress on and mortality of fish.

CM15 Predator Control

Reduce local effects of predators on covered fish species by conducting focused predator control in high predator density locations. Locations of high-density "hot spots" in which focused predator control would occur include:

- Old structures in or hanging over Delta waterways, such as pier pilings or other man-made structures
- Abandoned boats
- New intake structures related to North Delta diversions described in the Plan
- The deep hole just downstream of the Head of Old River in the San Joaquin River
- Specific locations in Georgiana Slough, and Sutter and Steamboat Sloughs, as identified by fishery agencies
- Release sites of salvaged fish from CVP/SWP facilities

Use a variety of methods to control predator populations in hot spots, including:

- Removal of predator hiding spots, targeted removal of predators, and/or other focused methods as dictated by site-specific conditions and intended outcome/goal. Preference for which hot spots to address will be given to areas of high overlap with covered fish species, such as major migratory routes or spawning and rearing habitats.

CM16 Non-Physical Fish Barriers

Improve the survival of outmigrating juvenile salmonids by using non-physical barriers to redirect fish away from channels in which survival is lower. Non-physical barrier placement locations would include the Head of Old River, the Delta Cross Channel, Georgiana Slough, and could possibly include Turner Cut, Columbia Cut, the Delta-Mendota Canal intake, and Clifton Court Forebay.

CM17 Hatchery and Genetic Management Plans

Minimize the potential for genetic and ecological impacts of hatchery-reared salmonids on wild salmonid stocks. This conservation measure will be carried out by supporting the accelerated development and implementation of Hatchery and Genetic Management Plans for all state-operated Chinook salmon and steelhead hatcheries in the Central Valley.

CM18 Illegal Harvest Reduction

Reduce illegal harvest of Chinook salmon, Central Valley steelhead, green sturgeon, and white sturgeon in the Delta, bays, and upstream waterways. Provide funding to the DFG to hire and equip 17 additional game wardens and 5 supervisory and administrative staff.

CM19 Conservation Hatcheries

Establish new and expand existing conservation propagation programs for delta and longfin smelt, including:

1. Development of a USFWS delta and longfin smelt conservation hatchery to house a delta smelt refugial population and provide a source of delta and longfin smelt for supplementation of reintroduction.
2. Expand the refugial population of delta smelt and establishment of a refugial population of longfin smelt at the University of California, Davis Fish Conservation and Culture Laboratory to serve as a population safeguard in case of a catastrophic event.

Potential Other Stressor Measures

The BDCP Conservation Strategy includes a number of conservation measures that address environmental stressors not related to water operations or physical habitat restoration, preservation, or management. Such measures, which are referred to as "other stressor" conservation measures, have the potential to improve the quality of the Delta's ecological conditions to the benefit of covered fish species (see CM12-CM19).

There are additional actions that address other stressors, referred to as "important related actions" (IRAs) that potentially could become conservation measures. Because of the potential for these actions to benefit ecological conditions in the Delta, the BDCP establishes the requirement that the BDCP Program Manager take the steps necessary, through the adaptive management process, to determine whether the actions listed below ultimately should be adopted as new conservation measures.

The following are potential conservation measures to address other stressors:

- Ammonia Load Reduction
- Endocrine Disrupting Compounds Load Reduction
- Agricultural Pesticides and Herbicides Runoff Reduction
- Stormwater and Urban Runoff Toxic Contaminants Reduction
- Nonnative Aquatic Organisms Introduction Risk Reduction
- Nonnative Species Introduction Detection and Response Improvement
- Nonnative Predatory Fish Harvest Increase
- Mark-Selective Fishery Implementation
- Non-Project Diversions Entrainment Reduction

As the BDCP Conservation Strategy is refined over the next several months, these potential conservation measures will be further evaluated to determine whether they should be included as conservation measures in the initial BDCP or remain as potential actions that may be adopted as future conservation measures.

Adaptive Management, Monitoring, and Metrics

The purpose of the BDCP Adaptive Management Program is to advance the biological goals and objectives of the Plan within established parameters and permit conditions by providing a mechanism to make adjustments to conservation measures based on new scientific information and insight gained from monitoring, targeted research, and other sources. The program is intended to address current gaps in knowledge (i.e., uncertainty) regarding Delta ecological processes and species biology, provide flexibility in implementation of the Conservation Strategy, and ensure that the BDCP becomes increasingly more effective and responsive to changing ecological conditions in the Delta.

The program will:

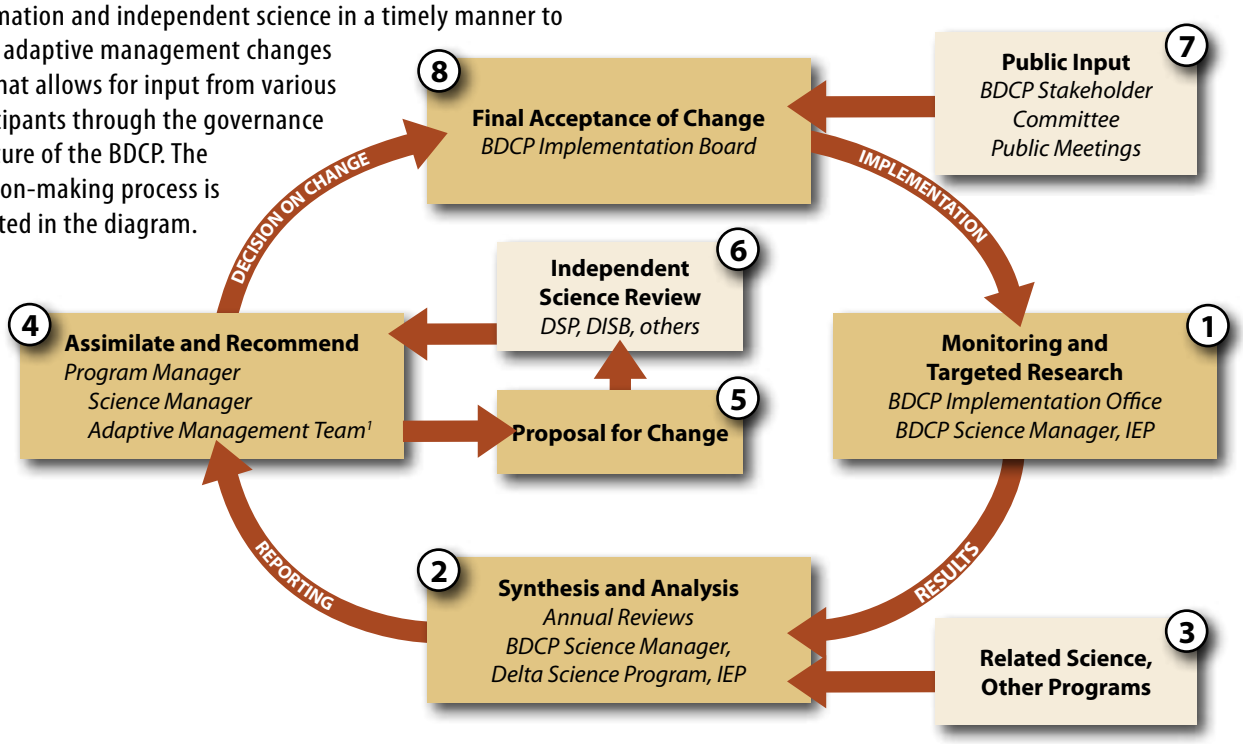
- Identify questions that need to be answered to improve our knowledge base and inform ongoing Plan implementation
- Use improved knowledge to identify alternative approaches to Plan implementation and determine which approaches to implement
- Adjust the monitoring and research program to produce information to evaluate the efficacy of new and existing approaches and address emerging questions resulting from changing environmental conditions that may affect Plan implementation
- Incorporate feedback loops that link implementation monitoring and targeted research to a decision-making process that allows for timely and responsive changes in implementation to achieve the goals and objectives of the Plan.

Adaptive Management Decision-Making Appeals Process

The Natural Resources Agency proposes that for changes to permitted water operations criteria as a result of the adaptive management process, the Directors of DWR, DFG, Reclamation, USFWS, and NMFS would jointly agree on final decisions. In the event that agreement cannot be reached, unresolved issues would be elevated to the Secretaries of Commerce and Interior and the Governor for joint resolution.

BDCP Adaptive Management – Decision-Making Process

Decision-Making – process that effectively uses new information and independent science in a timely manner to make adaptive management changes and that allows for input from various participants through the governance structure of the BDCP. The decision-making process is depicted in the diagram.



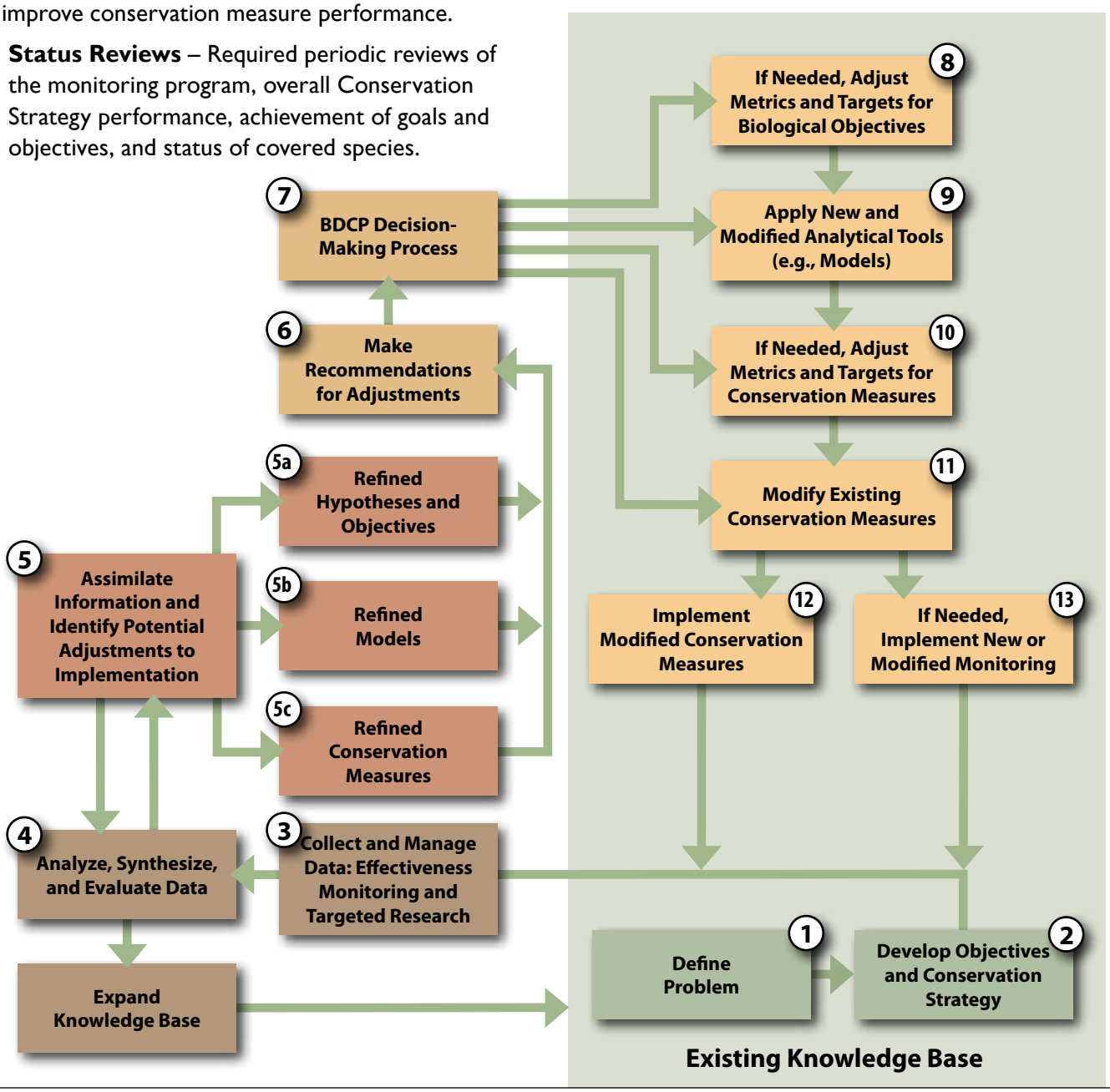
[1] *BDCP Science Manager, IEP Lead Scientist, and Scientists from IEP Agencies, SFCWA, and Stakeholder Groups*

IEP = Interagency Ecological Program
SFCWA = State and Federal Contractors Water Agency
DSP = Delta Science Program
DISB = Delta Independent Science Board

The following elements are included in the BDCP Adaptive Management Program:

- **Process Framework** – The process by which the BDCP adaptive management program will be implemented, including gathering data through monitoring and research, analyzing data, assimilating new knowledge, and making adjustments to the strategy.
- **Adaptive Ranges** – Specifically established upper and lower limits that govern the scope of changes that can be made to conservation measures, including water operations criteria, pursuant to the adaptive management program. These ranges would be reflected in the BDCP and its associated regulatory authorizations.
- **Targeted Research** – Experiments and pilot studies specifically designed to test uncertainties and the hypotheses underlying conservation measures, and to rapidly gain knowledge that could improve conservation measure performance.
- **Status Reviews** – Required periodic reviews of the monitoring program, overall Conservation Strategy performance, achievement of goals and objectives, and status of covered species.

Adaptive Management Process Framework



Implementation

Governance

The California Natural Resources Agency envisions the implementation of the BDCP as a collaboration with defined roles and responsibilities, as well as a clear process for addressing issues and conflicts as they arise.

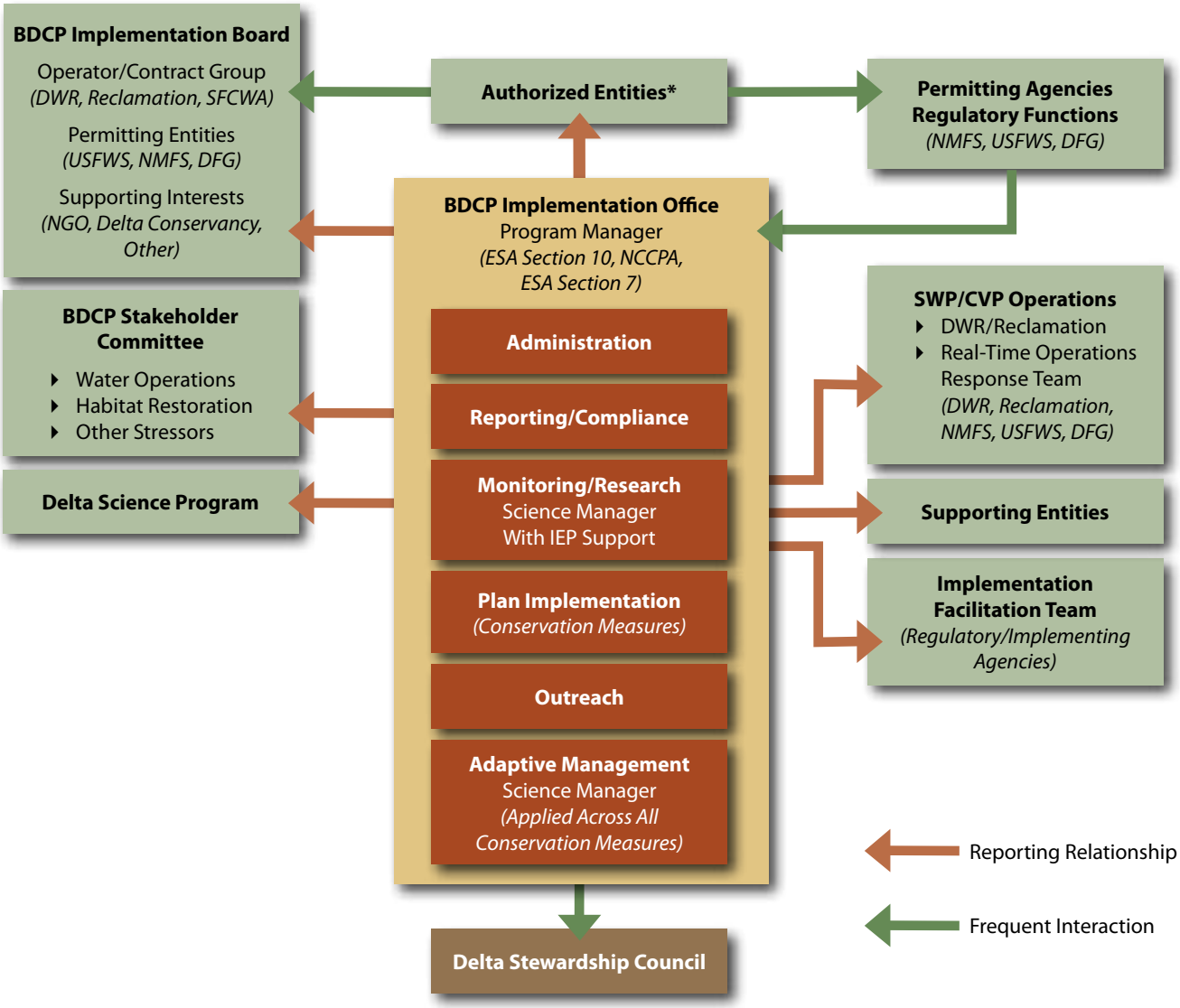
The primary responsibility for Plan implementation would lie with the BDCP Implementation Office, led by a BDCP Program Manager. This office would manage day-to-day implementation, including administration, reporting and compliance, implementation of conservation measures, monitoring and research, public outreach, and adaptive management.

Oversight of Plan implementation would be conducted by the BDCP Implementation Board, comprised of permitting agencies, permittees, and supporting organizations including non-governmental organizations and the Delta Conservancy, among others.

A BDCP Stakeholder Committee, with a larger membership than the Implementation Board, would be established to receive information and briefings on Plan implementation, and to provide input on implementation issues.

The Program Manager would be responsible for preparing a number of planning and reporting documents throughout the course of Plan implementation to provide stakeholders and the public with a means to assess the progress and performance of the BDCP. On an annual basis, the BDCP Implementation Office would prepare a work plan and budget. Additionally, a five-year comprehensive review and five-year implementation plan would be prepared at each five-year milestone.

BDCP-Proposed Governance Structure



DWR will be a permittee. The California Natural Resources Agency supports listing the state and federal water contractors as permittees. However, their status as permittees would not provide them with new authority over water project operational decisions or result in the delegation of authority from any state agency.

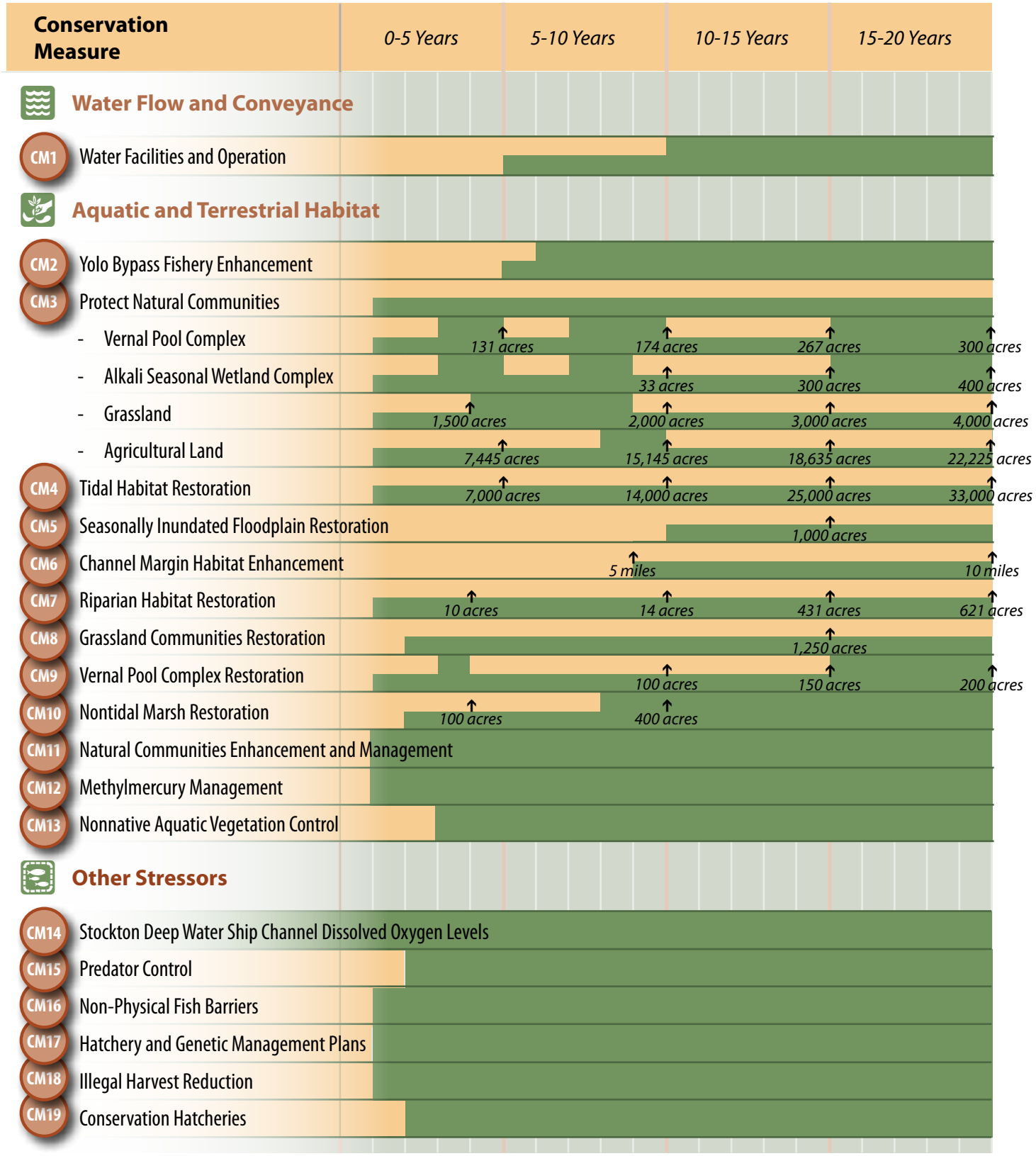
*The BDCP provides the basis for the issuance of regulatory authorizations under the federal ESA and the NCCPA for the incidental take of listed fish and wildlife species that result from Delta water operations and other covered activities. The entities that receive incidental take authorizations for activities covered under the BDCP are referred to collectively as the "authorized entities." Incidental take authorizations will be sought by federal and non-federal entities under the following authorities:

- Non-federal entities will seek regulatory coverage pursuant to ESA section 10(a)(1)(B), NCCPA section 2835, and potentially CESA section 2081 or 2080.1 (if applicable), and
- Federal agencies will seek regulatory coverage under ESA section 7(a)(2) for federally-listed species.

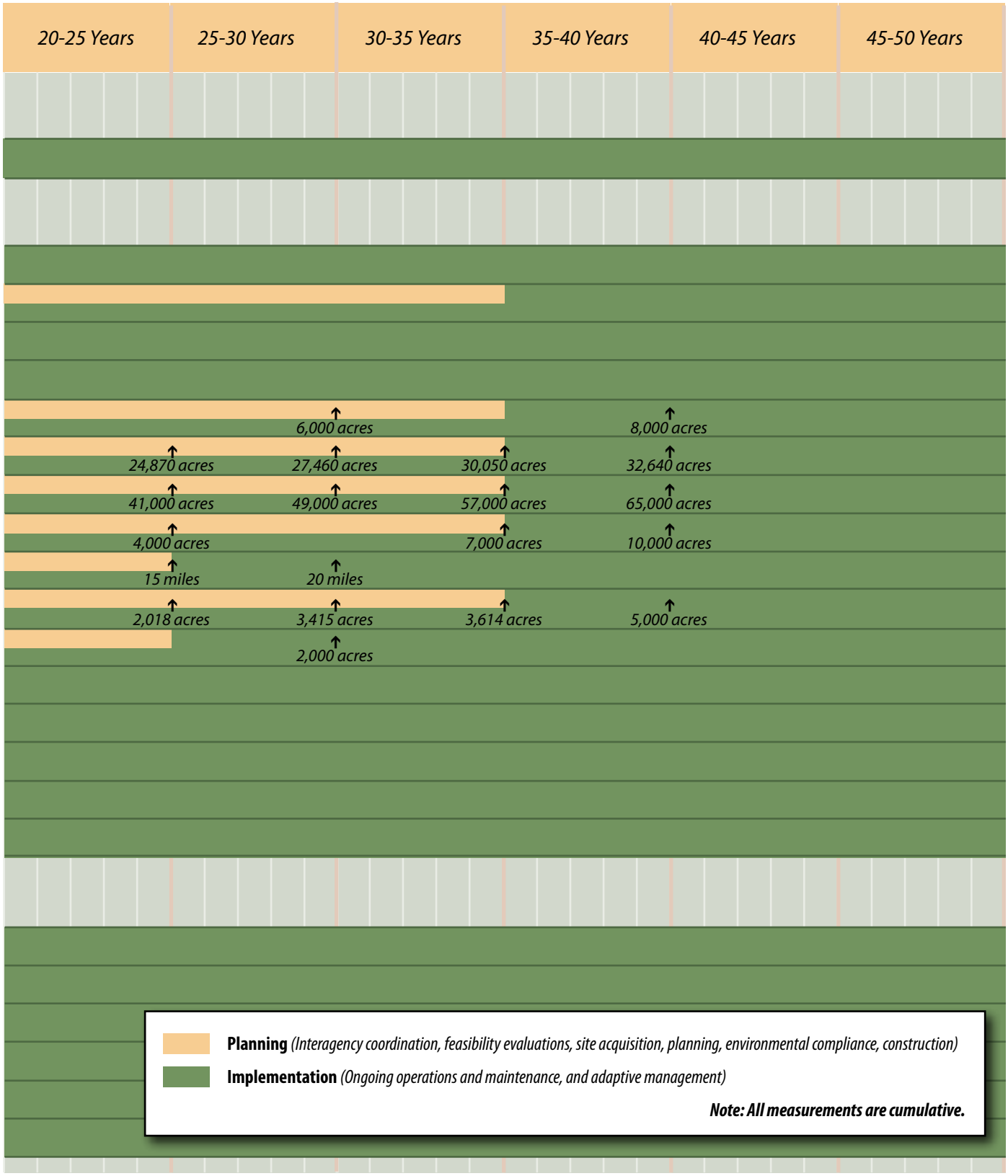
Schedule

Implementation Over Time

The following chart shows the proposed sequencing of the implementation of individual conservation measures throughout the 50-year permit duration. There is a significant amount of habitat restoration that would be implemented early in



the plan. As is generally required in conservation plans, the implementation schedule has been developed to ensure that conservation measures are implemented roughly proportional in time and extent to impacts on habitats and covered species.



Cost

How Much Will It Cost to Implement the BDCP?

A draft estimate of probable costs for the implementation of all BDCP conservation measures is described in detail as part of Chapter 8 (Implementation Costs & Funding Sources) in the November 18, 2010, Working Draft. The estimating process produced a low and high estimate of cost that when averaged, results in a mid-point estimate of cost. The mid-point estimate for the pipeline/tunnel conveyance option (based upon conceptual-level engineering) is approximately $12.7 billion. The mid-point average cost to implement ecosystem restoration and to address the effects of "other stressors reductions" is approximately $3.6 billion. In addition, annual cost to operate the proposed conveyance facilities is approximately $83.0 million per year. The annual cost to manage the implementation of restoration and other stressor reduction actions is estimated at $46.0 million per year over the Plan's 50-year implementation period.

Capital Cost:
(To Implement BDCP Projects Over 50 Years)

$16.3 Billion

Funding Responsibilities

The apportionment of costs between urban and agricultural water users from the San Francisco Bay Area, the Central Valley and Southern California, all of whom will benefit from improved water supply reliability from the state and federal water project pumps, is still under discussion. Water users would pay for and finance the construction and maintenance of any new and/or improved water conveyance facilities and associated habitat restoration (see Table A). Some portion of the habitat restoration and other actions, such as water quality improvement and invasive species removal, may be paid for and financed by other sources such as state and federal agencies (see Table B) subject to funding availability. It is common practice for public funds to be used for conservation plans. Economic impacts of the BDCP and the costs of alternative conveyance and/or habitat restoration options in the Delta will be analyzed as part of the environmental review process.

Table A:

Costs to be Paid for by State and Federal Water Contractors

Restoration Activity	*Initial (Capital)*
Conveyance Facilities	$12.7 B
Habitat Restoration/Changed Circumstances	$0.3 B
Total	**$13.0 B**

Table B:

Remaining Costs (Other State and Federal Sources)

Restoration Activity	*Initial (Capital)*
Conveyance Facilities	-
Other Stressors	$0.1 B
Habitat Restoration/Changed Circumstances	$3.2 B
Total	**$3.3 B**

Issues to Be Determined

At this time, the BDCP cost and funding sources are still preliminary and will remain a topic of ongoing discussions. Finalizing cost and funding is dependent upon the design and construction of individual actions, as well as the need for additional information on conservation measures not yet finalized. In addition, cost and funding are dependent upon the amount of funds to be committed by the various entities, beyond the funding provided by state and federal water contractors, involved in Plan development. Lastly, it is expected that public and other sources of funding and financing will contribute to the cost of implementing some elements of the Plan, the specifics of which are still to be determined.

How Does the 2012 Water Bond Fit In?

The 2012 water bond represents an overarching, statewide approach to solving many of California's water challenges. It would not authorize the construction of a water conveyance system in the Delta, nor provide funding for environmental mitigation of new Delta conveyance water facilities. The bond could include funding for a portion of the BDCP habitat restoration efforts that would contribute to the recovery of Delta fish and wildlife over time.

Expected Outcomes

Effects on Biological Resources

The Effects Analysis

A critical element of the Plan, the Effects Analysis, assesses the impacts of the proposed project on species covered by the Plan, and determines how these species would benefit from conservation actions. The effects analysis is built on and will reflect the extensive body of scientific investigation, study, and analysis of the Delta compiled over several decades.

More than 60 species, 14 natural communities, and a broad range of ecological stressors are analyzed in the BDCP effects analysis. The effects analysis considers the effects of the Plan on each species over the whole of its life span, not just during individual life stages.

The effects analysis uses a broad range of analytical tools including hydrologic and hydrodynamic models; temperature models; biological models for different life stages of covered fish species; statistical relationships between physical conditions and covered fish species; conceptual models for ecological conditions and individual fish species; and habitat models for fish, wildlife, and plants.

Once complete, the results of the effects analysis will provide information with which to:

- Revise conservation measures as the planning process continues
- Address scientific uncertainty through adaptive management and monitoring
- Aid compliance with NCCPA, ESA, CESA, CEQA, and NEPA

Status of the Effects Analysis

The effects analysis is a work in progress and is expected to be completed in 2011. The Effects Analysis chapter in the November 18, 2010, Working Draft is a summary of an initial draft and had not been read or reviewed by the Steering Committee prior to inclusion in that document. It is anticipated that an ongoing iteration process will take place in coming months that will help in:

- Describing the final Conservation Strategy and the initial long-term operating criteria
- Developing an adaptive range for the operational criteria
- Addressing and resolving technical comments about the methods used in the effects analysis
- Considering whether the results can support a conservation strategy that meets the biological goals and objectives of the BDCP

Water Supply Reliability

BDCP Regulatory Assurances Guiding Principles

The implementing regulations of the ESA and the statutory provisions of the NCCPA each specifically provide for regulatory and economic assurances to parties that are covered by approved conservation plans. Specifically, these assurances are intended to add durability and reliability to the agreements reflected in conservation plans, affording a degree of certainty to permittees regarding their overall financial and resource commitments. The mechanisms established through these regulatory provisions enable risk to be allocated and shared among regulated parties, state and federal governments, and society in general.

To accomplish the Plan's goals, BDCP Authorized Entities would commit to implementing a broad range of actions involving substantial alterations to water conveyance infrastructure and water management regimes in combination with extensive restoration of habitat and measures to reduce the impacts of various biological stressors. These actions are the subject of ongoing technical analysis and potential revision, which would inform a detailed description of regulatory assurances in Chapter 6 – Plan Implementation of the Public Review Draft BDCP.

To ensure that the regulatory assurances provided to the BDCP Authorized Entities are meaningful and reliable, the Natural Resources Agency believes the regulatory assurances should be consistent with and advance the following principles:

- Regulatory assurances provided under the federal " No Surprises" rule and the NCCPA will apply to permits issued to Authorized Entities pursuant to Section 10 of the ESA and Section 2835 of the NCCPA, respectively.
- The nature, degree, and duration of the regulatory assurances afforded under the BDCP should be uniform and consistent regardless of the mechanism used to provide regulatory coverage. The permittees will receive the highest level of assurances available to the extent allowed by law.
- Fish and wildlife agencies would work closely with third parties to identify actions that could impact a species covered by the BDCP and would attempt to bring those actions into compliance with state and federal endangered species regulatory requirements. In addition, fish and wildlife agencies agree to encourage other regulatory agencies to exercise authority to further reduce the impacts of various stressors on species.

BDCP Regulatory Assurances Guiding Principles (Cont'd)

- In the event that the status of a BDCP covered species unexpectedly declines due to an unforeseen circumstance, and the state and federal fish and wildlife agencies are unable to successfully remedy the decline, the agencies will engage in a process with the Authorized Entities to protect the ongoing viability of the BDCP authorizations if it appears that the continued existence of the species may be in jeopardy in the near future. Such a "last resort" process will be established in the BDCP and its Implementing Agreement, and will include the specific obligations of the parties that would be triggered by such an event. Any of the actions of last resort would be voluntary.
- The parties would use the last resort process to identify additional actions to prevent jeopardy to the covered species, focusing specifically on those actions that would not result in reductions to water supply, to the extent appropriate. Moreover, the parties agree that the most cost-effective actions would receive priority. The assurances will further reflect the principle of joint responsibility between the fish and wildlife agencies and the Authorized Entities for identifying and implementing actions to avert the suspension or revocations of the BDCP authorizations.
- The BDCP regulatory assurances will include a commitment from state and federal fish and wildlife agencies to make every effort to secure the funding outlined in Chapter 8 of the BDCP. A process and approach to address any shortfalls in the public funding component of the BDCP will be established in the Implementing Agreement. The process and approach will be devised to minimize risk to the Authorized Entities and water contractors that such shortfalls would trigger additional financial obligations or result in the suspension or revocation of authorizations and may specify alternative approaches that could be used to address such a shortfall (e.g., atypical sources of public funds or loans to bridge shortfalls). In the event public funding is not available on the expected timelines, the permitting agencies and the permittees will meet and confer. Regardless of any anticipated funding shortfall, as long as the BDCP conservation measures are being implemented in rough proportionality to impacts on covered habitats and species, the regulatory authorizations issued under the BDCP would remain in effect.

Next Steps

Completing the Public Draft

A Public Review Draft BDCP is anticipated to be available for public review and comment in fall 2011.

Since the inception of the planning process in 2006, various stages of working draft materials have been made available to the public. In November 2010, a working draft Plan was compiled and posted to the BDCP website, representing the culmination of four years of stakeholder input. The November 18, 2010, Working Draft describes key elements of the Plan and inter-related aspects of ongoing scientific and technical analysis, refinements to conservation actions, cost estimates, and other plan elements. **Additional work to be completed in advance of a Public Review Draft BDCP includes:**

- Technical and scientific analysis of the Plan's effects on biological resources.

  This effort will result in:

  ➡ Draft Chapter 5 – Effects Analysis

- Refinements to the Conservation Strategy as a result of ongoing analysis and technical work including:
  - Operational criteria and adaptive range for existing through-Delta conveyance
  - Operational criteria and adaptive range for new dual conveyance facilities
  - Continue to refine terrestrial community and species objectives and further develop conservation measures
  - Revised goals and objectives for fish species
  - Revised monitoring actions and metrics

  This effort will result in:

  ➡ Revised Draft Chapter 3 – Conservation Strategy

- Refinements to cost estimates based on revisions to conservation actions and funding allocation of habitat restoration and other stressor actions.

  This effort will result in:

  ➡ Revised Draft Chapter 8 – Implementation Costs and Funding Sources

- Description and evaluation of alternatives to take contemplated during the planning process.

  This effort will result in:

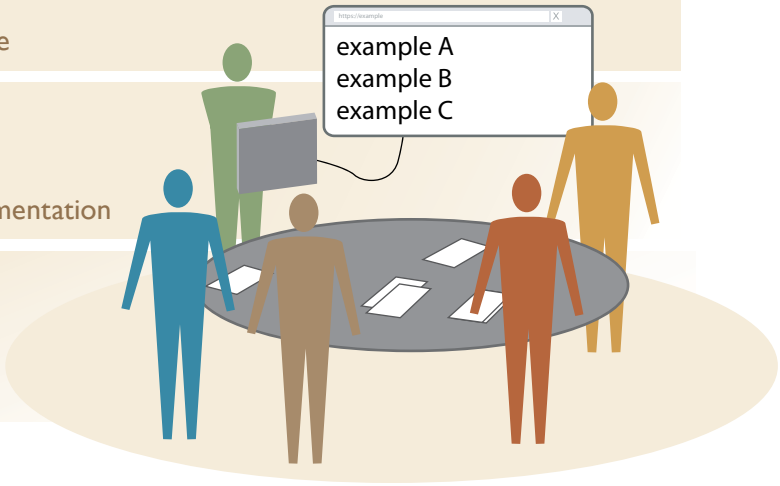
  ➡ Draft Chapter 9 – Alternatives to Take

- Description of regulatory assurances

  This effort will result in:

  ➡ Revised Draft Chapter 6 – Plan Implementation

- Other modifications to existing Chapters 1 through 12 to ensure consistency of concepts and language across Plan components.



Public Participation

Numerous stakeholders who participated on the Steering Committee, interested observers who attended Steering Committee meetings, and those who attended public workshops contributed to the development of the November 18, 2010, Working Draft. As Plan details are further refined in advance of a Public Review Draft BDCP, stakeholder input will remain important to crafting a durable Plan.

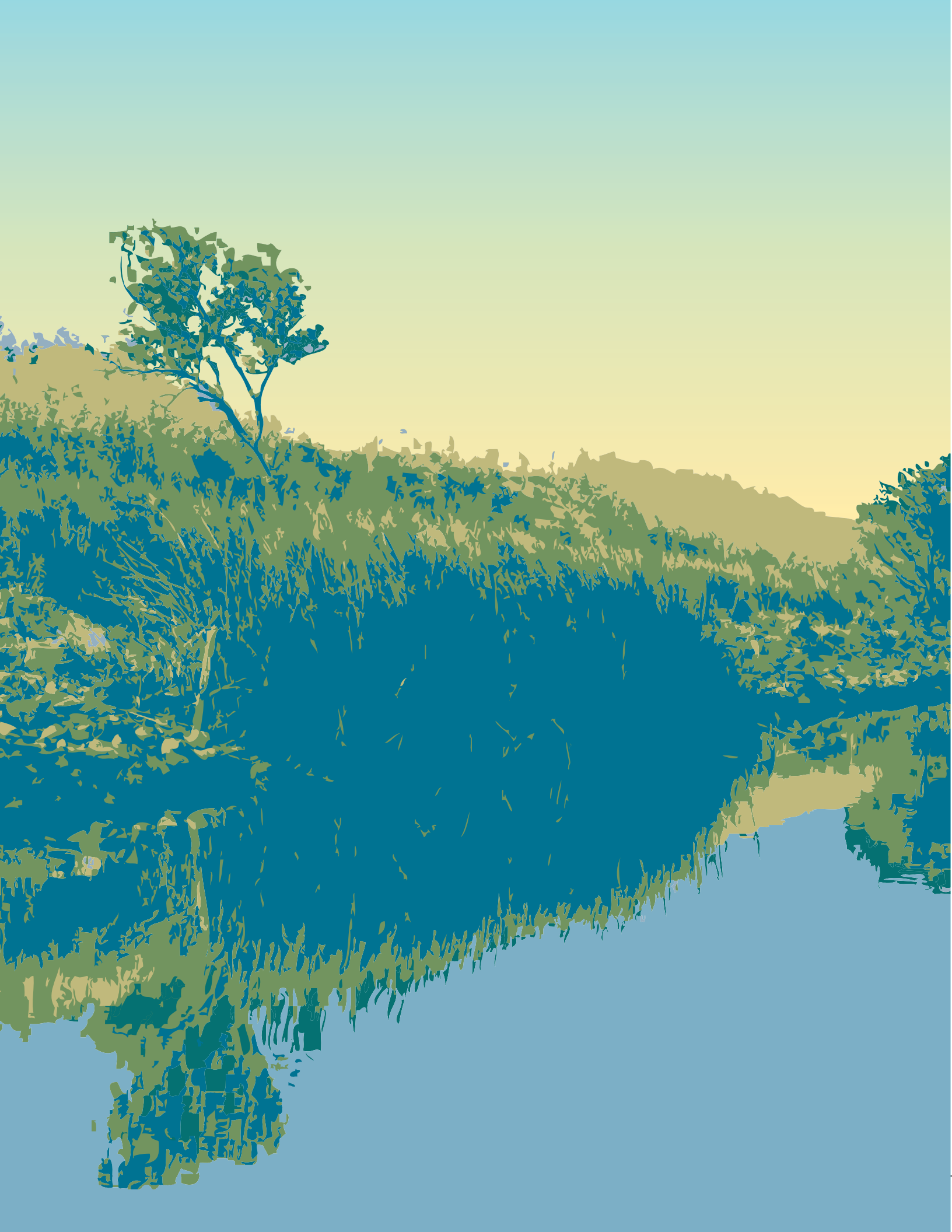
The stakeholder input process moving forward will be:

- Transparent
- Inclusive
- Targeted

Components of a BDCP stakeholder input process could include:

1) Ongoing, periodic engagement of the Steering Committee.

2) Targeted stakeholder review of specific plan elements through small workgroup meetings. This review could include ongoing technical analysis, refinements of individual conservation actions, and early habitat restoration implementation considerations.



Environmental Review

EIR/EIS Process

The EIR/EIS will evaluate the effects of the conservation plan on both the natural (biological) and the human environment. This evaluation will address impacts to, among others:

- Water Resources
- Air Quality
- Water Quality
- Climate Change
- Socioeconomic Conditions
- Land Use
- Agricultural Resources
- Cultural Resources
- Historical Resources
- Archaeological Resources
- Biological Resources
- Geology, Seismicity, Minerals, and Soils
- Transportation/Navigation
- Recreation
- Tourism
- Noise
- Visual Resources
- Hazardous materials
- Utilities and Public Services
- Environmental Justice

The Screening Process

The lead agencies preparing the environmental review document have been working towards identifying a range of reasonable alternatives to the pending proposed BDCP project. The alternatives chart (opposite) represents the current list of proposed alternatives that will be fully evaluated in the EIR/EIS. The alternatives were selected by the lead agencies using a multi-step screening selection process in addition to the consideration of the responsible and cooperating agencies' scoping comments. The Sacramento-San Joaquin Delta Reform Act criteria for defining "a reasonable range of alternatives" is also being considered in the review of the range of alternatives to be included in the EIR/EIS analyses.

First Screening Level

- Under NEPA, could the potential alternative concept meet the project's purpose and need as presented in the Notice of Intent?
- Under CEQA, could the potential alternative concept feasibly attain most of the basic objectives of the project, as presented in the Notice of Preparation?

Second Screening Level

- Under CEQA would the potential alternative avoid or substantially lessen any of the expected significant environmental effects of the proposed project?
- Under NEPA would the potential alternative address one or more significant issues related to the proposed action?

Third Screening Level

- Could the potential alternative concept be "potentially feasible" under CEQA?
  - Capable of being accomplished in a reasonable time period, taking into account economic, legal, social, and technological factors?
- Could the potential alternative concept be "reasonable" under NEPA?
  - Practical or feasible from technical or economic standpoint?

Alternatives Proposed for Full Evaluation

The EIR/EIS analysis must include a reasonable range of alternatives as required by NEPA and CEQA. The alternatives that have currently been identified by the lead agencies for full evaluation are described below. Additionally, the lead agencies will continue evaluation of options that include a 3,000 cfs capacity pipeline/tunnel as well as options to restore up to 100,000 acres of tidal habitat. These options should be carried forward unless they do not meet the screening criteria. Likewise, the screening process will be used to evaluate other alternative concepts that may be proposed as part of the BDCP EIR/EIS process.

Alternatives for the BDCP EIR/EIS*

Alternative	Conveyance	North Delta Diversion Capacity (cfs)	Conveyance Alignment	Operational Criteria	Restoration Concepts
Alternative 1 – Dual Conveyance with Intakes #1-5	Focus on dual conveyance, meaning the combined use of a new isolated facility and existing through-Delta conveyance	15,000	Pipeline/ Tunnel East Unlined East Lined West Unlined West Lined	Under development[1]	Per BDCP Steering Committee - 3/25/10 BDCP Steering Committee handout
Alternative 2 – Dual Conveyance with Intakes #1-2	Similar to Alternative 1, but with a smaller design capacity	6,000	Pipeline/ Tunnel	Under development[1]	Per BDCP - 3/25/10 BDCP Steering Committee handout
Alternative 3 – Isolated Conveyance with Intakes #1-5	Use of a new isolated conveyance facility without dual conveyance. Includes operational requirements to manage salinity during the fall months.	15,000	Pipeline/ Tunnel East Unlined East Lined West Unlined West Lined	Under development[1]	Per BDCP - 3/25/10 BDCP Steering Committee handout
Alternative 4 – Enhanced Aquatic Conservation – Dual Conveyance with Intakes #2, 3, 5	Similar to Alternative 1 with a smaller design capacity and more aquatic habitat	9,000	Pipeline/ Tunnel	Modified operations to promote enhanced aquatic conditions	Similar to the 3/25/10 BDCP Steering Committee handout with additional 20 miles of channel margin habitat and 10,000 acres of seasonally inundated floodplain in Yolo Bypass
Alternative 5 – Separate Corridors with Screened Intakes at Delta Cross Channel and Georgiana Slough	Focused only on modifications to existing through-Delta system without any new conveyance	15,000	Through-Delta Channel Modifications	Modified operations from existing conditions	Similar to the 3/25/10 BDCP Steering Committee handout with changes in South Delta
Alternative 6 – No Action Alternative	Represents the through-Delta system as it exists today.	Existing	Through-Delta without any Modifications	Based on Biological Opinions	Based on biological opinions with no terrestrial habitat restoration, 8,000 acres of intertidal restoration, and 17,000 to 20,000 acres of floodplain restoration.

[1] *Pending completion of the effects analysis*

* *Additionally, the lead agencies will consider public comments and continue evaluation of options that include a 3,000-cfs capacity pipeline/tunnel, as well as options to restore up to 100,000 acres of tidal habitat. These options should be carried forward unless they are screened out by screening criteria.*

EIR/EIS Schedule and Next Steps

The BDCP draft EIR/EIS is expected to be released in 2011. Once released, there will be a public review period during which the public is encouraged to review the BDCP, associated EIR/EIS, attend public meetings, and provide feedback. Information about the public meetings and how to provide comments will be posted at www.baydeltaconservationplan.com. Comments will be considered and responses provided. A final EIR/EIS is scheduled for completion in late 2012.

Next Steps for the EIR/EIS

- Finalize the array of alternatives, including modifying existing preliminary alternatives and the potential to develop additional alternatives
- Incorporate potential changes to the proposed BDCP project as the BDCP continues to be developed (for example, incorporating refined operating criteria based on the effects analysis)
- Consider information developed from BDCP separate analyses and important related actions in the review of alternatives
- Begin to identify potential adverse impacts and related mitigation measures through impact assessments, and modify alternatives as warranted

Permitting

The BDCP will require a number of approvals, authorizations and permits to implement the proposed project. The BDCP is designed to comply with the requirements of local, state, and federal laws and regulations and will work with numerous regulatory agencies through the implementation process.

References to the Plan

Topic of Interest	BDCP Chapter/Section Reference
Adaptive Management Process Framework	3.7.1
Adaptive Management	3.2.1.1, 3.7, 7.3.5
Alternatives	9
Aquatic Habitat Restoration	3.2.3
Avoidance and Minimization Measures	3.4.5
Background	1.1
Biological Goals and Objectives	3.1.1, 3.3
California Endangered Species Act (CESA)	1.3.4
Channel Margin Restoration	3.4.3.3, 6.1.2.3, 8.3.6
Climate Change	2.3.2.1.5, 2.3.3.2
Conservation Strategy	3
Conservation Measures	3.1.2, 3.4
Conservation Targets	3.2.4.1
Conservation Zones	3.2.2; Figure 3-1
Cost of Implementation	8
Cost (Mitigation Costs)	8.8
Covered Activities	1.4.4, 4.2
Covered Species	1.4.3, 2.3.5, 3.3.2.3, 3.3.2.4, 5.4; Tables 1-2, 2-20, 3-8
Delta Cross Channel	3.2.3.3, 3.4.2.1, 4.3.1.1
Dissolved Oxygen	2.3.2.1, 3.4.4.3, 6.1.3.1, 8.3.14; Tables 8-35, 8-36
DRERIP	1.5.3.2, 10.3.5
Effects Analysis	5
EIR/EIS	1.3.5, 1.3.6, 7.2.13, 7.4.2, 8.8
Federal Endangered Species Act (ESA)	1.3.2
Floodplain Restoration	3.4.3.2, 6.1.2.2, 8.3.5; Figure 6-1
Funding	8.11
Governance	7
Grassland Communities Restoration	3.4.3.5, 6.1.2.5, 8.3.8
Hatcheries (Hatchery and Genetic Management Plan)	3.4.4.6, 6.1.3.4, 8.3.17
Hatcheries (Conservation Hatcheries)	3.4.4.8, 6.1.3.6, 8.3.19
Historical Conditions	2.2
Illegal Harvest	3.4.4.7, 6.1.3.5, 8.3.18; Table 3-3;
Implementation	6, 7.3
Important Related Actions	3.5.3
Independent Science Reviews	10.3
Land Acquisition	3.4.2.3, 7.3.1, 8.2.6
Methylmercury	3.4.4.1, 6.1.2.9, 8.3.12; Table 3-3

Topic of Interest	BDCP Chapter/Section Reference
Modeling	5.3.2.1
Monitoring and Research	3.6
Natural Communities Descriptions	2.3.4
Natural Communities Enhancement and Management	3.4.3.8, 6.1.2.8, 8.3.11
Natural Communities Protection	3.4.2.3, 6.1.1.3, 8.3.3
Natural Community Conservation Planning Act (NCCPA)	1.3.3
Nonnative Aquatic Vegetation	3.4.4.2, 6.1.2.10, 8.3.13
Non-Physical Barriers	3.4.4.5, 4.2.6, 6.1.3.3, 8.3.16; Figure 3-60, 3-61
Nontidal Marsh Restoration	3.4.3.7, 6.1.2.7, 8.3.10
Organization of the BDCP	1.6
Other Stressors Conservation Measures	3.4.4, 3.5, 6.1.3
Outflows	2.3.2.1.1, 3.4.2.1
Planning Agreement	1.1.1
Plan Area	1.4.1; Figure 1-1
Permitting	1.4.5, 6.4
Physical Environment	2.3.3
Potential Other Stressors	3.5.3
Predator Control	3.4.4.4, 6.1.3.2, 8.3.15
Public Outreach Involvement	1.5.2, 7.5
Regulatory Context	1.3, 6.3
Restoration Opportunity Areas	3.2.2; Figures 3-1, 3-2
Riparian Habitat Restoration	3.4.3.4, 6.1.2.4, 8.3.7
Independent Science Reviews	10.3
Scope of the BDCP	1.4
Stockton Deep Water Ship Channel	3.4.4.3, 6.1.3.1, 8.3.14; Tables 8-35, 8-36
Steering Committee	1.5.1
SWP and CVP	4.1.1, 7.1.4
Terrestrial Habitat Restoration	3.2.4
Tidal Habitat Restoration	3.4.3.1, 6.1.2.1, 8.3.4
Tunnel/Pipeline Facility Physical Characteristics	Table 4-1
Steering Committee Members	Table 1-1
Yolo Bypass Fishery Enhancement	3.4.2.2, 4.2.2.2, 6.1.1.2, 8.3.2
Vernal Pool Complex Restoration	3.4.3.6, 6.1.2.6, 8.3.9
Water Facilities and Operations	3.2.3.3, 3.4.2.1, 6.1.1.1, 8.3.1
Water Flows	2.3.2.1, 3.4.2.1, 5
Water Quality	2.3.2.1, 3.4.2.1, 5
X2	2.3.2.1, 3.4.2.1, 5.2

Acronyms and Definitions

Acronyms and Definitions

BDCP	Bay Delta Conservation Plan
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
cfs	cubic feet per second
CM	conservation measure
CVIFMS	Central Valley Integrated Flood Management Study
CVP	Central Valley Project
CZ	conservation zone
Delta	Sacramento-San Joaquin River Delta
DISB	Delta Independent Science Board
DRERIP	Delta Regional Ecosystem Restoration Implementation Plan
DSC	Delta Stewardship Council
DSP	Delta Science Program
DWR	Department of Water Resources
EIR	environmental impact report
EIS	environmental impact statement
ESA	Endangered Species Act
HCP	Habitat Conservation Plan
IEP	Interagency Ecological Program
IRA	important related action
MAF	million acre-feet
NCCP	Natural Community Conservation Plan
NCCPA	Natural Community Conservation Planning Act
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
OMR	Old and Middle River
ppt	parts per trillion
PRE	Potential Regulated Entities
Reclamation	Bureau of Reclamation
ROA	Restoration Opportunity Area
SFCWA	State and Federal Contractors Water Agency
SWP	State Water Project
USFWS	U.S. Fish and Wildlife Service

Adaptive Range – The parameters within which a conservation measure may be adjusted to improve its effectiveness or respond to changing biological conditions.

Bay Delta Conservation Plan (BDCP) – A conservation plan prepared for the Sacramento-San Joaquin River Delta region to meet ESA, and NCCPA requirements.

Biological Opinion – Document that states a proposed opinion of a federal agency as to whether or not the federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.

California Environmental Quality Act (CEQA) – A California law enacted in 1970 intended to require decision-makers to document and consider the environmental consequences of their actions and to provide a vehicle for public input into governmental actions that have environmental consequences. CEQA requires the preparation of an environmental impact report (EIR) for any project that may have significant environmental effects. CEQA applies to any project that requires approval by a state or local government body.

California Endangered Species Act (CESA) – State law declaring it a policy of California to conserve, protect, restore, and enhance endangered and threatened species and their habitat, and allowing the Department to authorize the take of state listed threatened, endangered, or candidate species if certain conditions are met.

Channel Margin Restoration – Habitat restoration aimed at returning suitable sites along the waterside of levees to a more natural condition for increased food production, rearing habitat, improved water temperature conditions, and movement corridors for fish.

Covered Activities – Activities to be undertaken by non-federal entities and proposed for coverage under take authorizations that are expected to be issued by the state and/or federal fish and wildlife agencies on the basis of the BDCP. Covered activities are related primarily to water supply and power generation, including water conveyance (pipes, canals, and pumps), facility maintenance and improvements, but also include conservation measures.

Central Valley Project (CVP) – A federal water project operated by the Bureau of Reclamation that irrigates more than 3 million acres of farmland and provides drinking water to nearly 2 million consumers.

Delta – The Sacramento-San Joaquin River Delta is an expansive inland inverted river delta and estuary, the largest on the west coast and one of only a few worldwide. The Delta is formed at the western edge of the Central Valley by the confluence of the Sacramento and San Joaquin Rivers which empty into Suisun Bay, an upper arm of San Francisco Bay.

Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) – One of four regional plans intended to guide the implementation of the CALFED Ecosystem Restoration Program element. The DRERIP will refine the planning foundation specific to the Delta, refine existing and develop new Delta-specific restoration actions and provide Delta-specific implementation guidance, program tracking, performance evaluation, and adaptive management feedback.

Delta Stewardship Council (DSC) – Created by the legislature in 2009, the Delta Stewardship Council is composed of members who represent different parts of the state and offer diverse expertise in fields such as agriculture, science, the environment, and public service. The Delta Stewardship Council is charged with protecting the Delta and the critical role it serves in the water supply for millions of Californians and its unique ecosystem and way of life.

Ecosystem – All of the living organisms of a natural community together with their surrounding physical environment (e.g., soil, climate, water, light) all functioning as a unit. All the living organisms of an ecosystem are linked together and with the physical environment by physical, chemical, and biological processes.

Environmental Impact Report (EIR) – A detailed statement prepared under CEQA describing and analyzing the significant environmental effects of a project and discussing ways to mitigate or avoid the effects.

Environmental Impact Statement (EIS) – An environmental impact document prepared pursuant to the National Environmental Policy Act (NEPA) for any federal action that will significantly affect the quality of the human environment.

Environmental Justice (EJ) – The fair treatment and meaningful involvement of all people regardless of race, color, national origin, educational level, or income with respect to the development, implementation, and enforcement of environmental laws. EJ seeks to ensure that minority and low-income communities have access to public information relating to human health and environmental planning, regulations, and enforcement. EJ ensures that no population, especially the elderly and children, are forced to shoulder a disproportionate burden of the negative human health and environmental impacts of pollution or other environmental hazard.

Early Long-Term – BDCP conservation measures that will be implemented in years 11 through 15.

Endangered – Any species which is in danger of extinction throughout all or a significant portion of its range.

Entrainment – The loss of fish and other organisms as a direct result of water diversion operations.

Endangered Species Act (ESA) – Enacted in 1973, this law protects plants and animals that are listed by the federal government as endangered or threatened. ESA makes it unlawful for anyone to "take" a listed animal, including significantly modifying its habitat.

Fishery Agencies – California Department of Fish and Game (CDFG), United States Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS)

FloodSAFE – A sustainable integrated flood management and emergency response system throughout California that improves public safety by reducing the probability of destructive floods, promoting beneficial floodplain processes, and minimizing flood-related damages.

Flow – The rate, direction, and volume of water movement through Delta channels.

Habitat – An ecological or environmental area inhabited by a particular species of animal, plant, or other type of organism. Habitat is the natural environment in which an organism lives, or the physical environment that surrounds a species population.

Habitat Conservation Plan (HCP) – A plan prepared under the ESA by non-federal parties wishing to obtain permits for incidental takings of threatened and endangered species.

Implementing Agreement – An agreement that defines the terms for implementing the BDCP.

Incidental Take Permit – A permit that allows for the take of listed species incidental to, and not the purpose of, an otherwise lawful activity.

Independent Science Advisors – The BDCP sought input and advice from independent science advisors to ensure that the Plan has access to the best available science.

Late Long-Term – BDCP conservation measures that will be implemented in years 16 through 50.

Listed Species – Species designated as candidate, threatened, or endangered pursuant to CESA and/or listed as threatened or endangered under ESA.

Natural Community – Distinct, identifiable, and recurring assemblage of plants and animals that are ecologically interrelated.

Natural Community Conservation Plan (NCCP) – A Plan prepared pursuant to a planning agreement entered into in accordance with DFG Code Section 2810 and that identifies and provides for the measures necessary to conserve and manage biological diversity within the Plan Area while allowing compatible and appropriate economic development, growth and other human uses.

Natural Community Conservation Planning Act (NCCPA) – A California law authorizing the Natural Community Conservation Plan program to use an ecosystem approach to conserve natural communities at the ecosystem scale while accommodating compatible land use. NCCPA authorizes the CDFG to enter into a planning agreement with any person or public agency to prepare a natural community conservation plan in cooperation with a local agency that has land use permit authority over the activities proposed to be addressed in the plan, to provide comprehensive management and conservation of multiple wildlife species.

National Environmental Policy Act (NEPA) – A federal law adopted by Congress in 1969 intended to address the need for a comprehensive approach to environmental management aimed at anticipating and, if feasible, avoiding environmentally damaging activities rather than merely reacting to environmental problems after they occurred. NEPA also introduced processes aimed at providing opportunities for meaningful public participation in the federal decision-making process. NEPA requirements must be fulfilled whenever a federal agency proposes an action, grants a permit, considers funding, or otherwise authorizes any entity to undertake an action that could have an environmental effect.

Plan Area – The statutory Delta and all other areas where conservation measures are expected to be implemented in order to advance the goals and objectives of the Plan. For example, the Suisun Marsh is located outside the statutory Delta, but it is part of the Plan Area and will be the focus of extensive tidal restoration during the implementation of the BDCP.

Potential Regulated Entities – Those entities that may seek take authorizations, including federal and non-federal entities that export, divert, or utilize water from the Delta and/or its tributaries within the Plan Area for water supply or power generation.

Rearing Habitat – Areas in Delta channels where juvenile fish find food and shelter to live and grow.

Riparian – The green, vegetated areas on each side of streams and rivers. They serve many important functions, including purifying water by removing sediments and other contaminants; reducing the risk of flooding and associated damage; reducing stream channel and stream bank erosion; increasing available water and stream flow duration by holding water in stream banks and aquifers; supporting a diversity of plant and wildlife species; maintaining or enhancing habitat conditions for healthy fish populations in adjacent stream or river reaches; providing water, forage, and shade for wildlife and livestock; and creating opportunities for recreationists to fish, camp, picnic, and enjoy other activities.

Restoration Opportunity Areas (ROAs) – Areas identified by the BDCP as the most appropriate, most promising locations for the restoration of tidal habitat and associated upland natural communities. Five ROAs have been identified. They are different from, but overlap with, the conservation zones of the Plan Area.

Riprap – Rock or other material used to line and stabilize shorelines. Riprap is an unnatural structure that reduces habitat quality by preventing the establishment and growth of vegetation.

Spawning Habitat – Aquatic habitat suitable for fish reproduction (e.g., egg laying and incubation).

Steering Committee – The principal forum within which key policy and strategy issues related to the BDCP are discussed and considered. Members of the Steering Committee include representatives of state, federal, and local water agencies; state and federal fish agencies; environmental organizations; and other interested parties.

State Water Project (SWP) – A water project operated and maintained by the Department of Water Resources that provides water supplies for 25 million Californians and 755,000 acres of irrigated farmland.

Take – Defined in the federal and state ESAs as to harass, harm, hunt, shoot, wound, kill, trap, capture, or collect a threatened or endangered species.

Threatened Species – Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Vernal Pools – Isolated, seasonal bodies of standing water that typically form in the spring. Vernal pools are devoid of fish and provide important breeding habitat for many terrestrial or semiaquatic species such as frogs, salamanders, and turtles.

Wanger I & II – There have been two important rulings by Judge Oliver W. Wanger regarding pumping restrictions in the Delta. Judge Wanger of the U.S. District Court in Fresno ruled in 2007 that pumping from the Delta violated the ESA and needed to decrease significantly to protect endangered and threatened species. In 2010, Judge Wanger ruled that the revised biological opinions did not take into consideration the impact of decreased water supplies on humans and the economy.

X2 – X2 is the distance in kilometers (km) from the Golden Gate Bridge to the 2 parts per trillion (ppt) salinity line (also referred to as the mixing zone) and is a measure of western Delta salinity. Upstream of X2 water becomes progressively fresher and downstream of X2 water becomes more and more brackish (saltier) until reaching the ocean. The location of X2 is largely controlled by the amount of water flowing out of the Delta (Delta outflow). The higher the volume of water flowing out of the Delta, the shorter the distance from the Golden Gate Bridge to the 2 ppt salinity line.

12-15-10

For more information visit
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