

BDCP

BAY DELTA CONSERVATION PLAN

Public Meeting

November 16, 2011

California Natural Resources Agency

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BAY DELTA CONSERVATION PLAN

Plan Structure and Planning Process Update

November 16, 2011

*David Zippin, Ph.D.
ICF International*

Presentation Purpose

- Explain plan structure and key elements
- Provide update on planning process and efforts to resolve outstanding issues

Conservation Strategy

- The Conservation Strategy is the conservation and management actions to improve habitat conditions in the Delta
 - Based on the best available science on species ecology, important stressors
 - Actions that BDCP can control
- 3 categories:
 - Water Flow and Conveyance
 - Aquatic and Terrestrial Habitat
 - Other Stressors Reduction

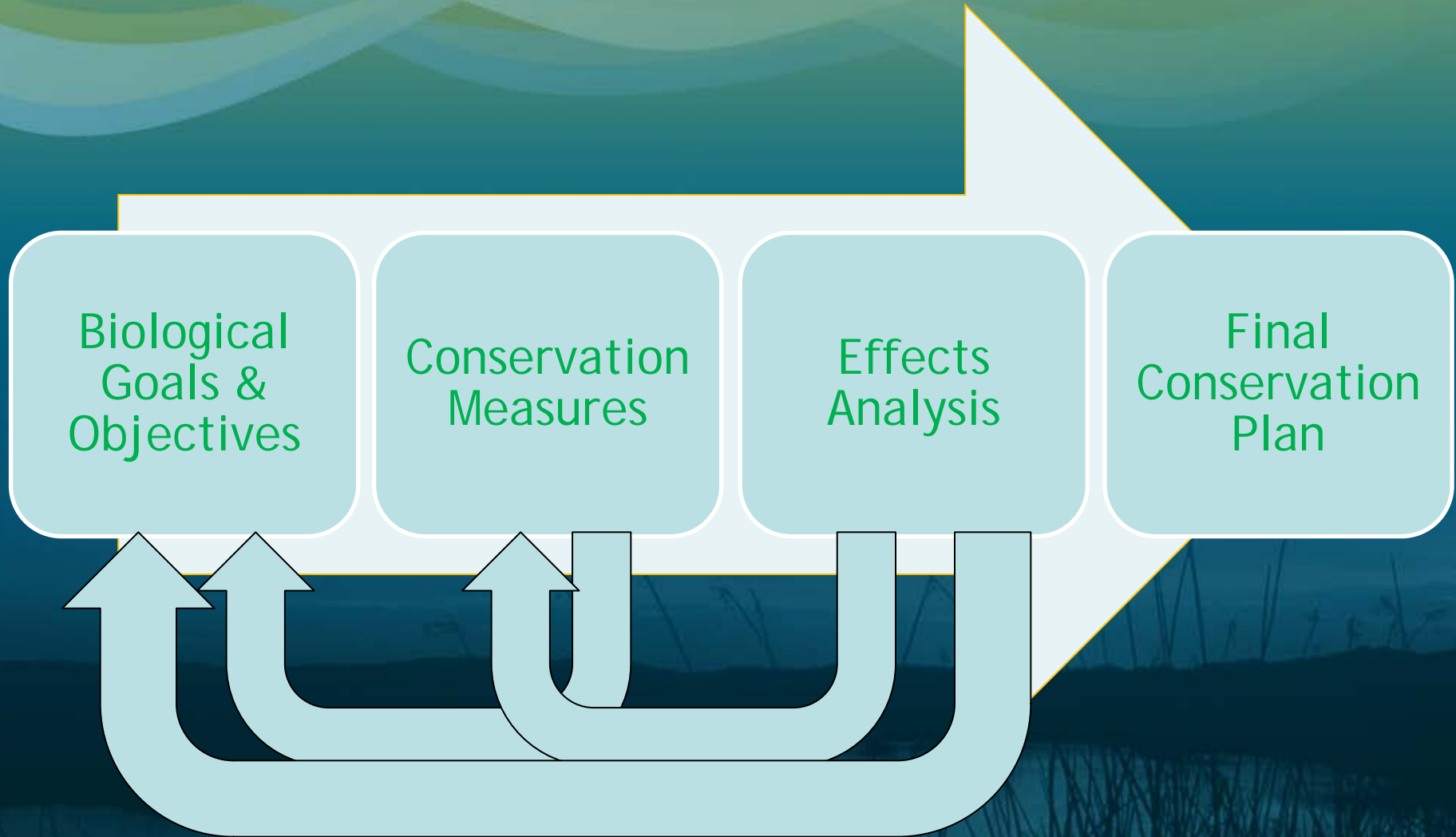
Conservation Strategy Updates

- Revising and updating all conservation measures collaboratively with fish and wildlife agencies
- Providing more detail where available
 - Yolo Bypass Working Group
 - South Delta Working Group
- Considering new conservation measures to improve conservation of covered fish
- Biological goals and objectives

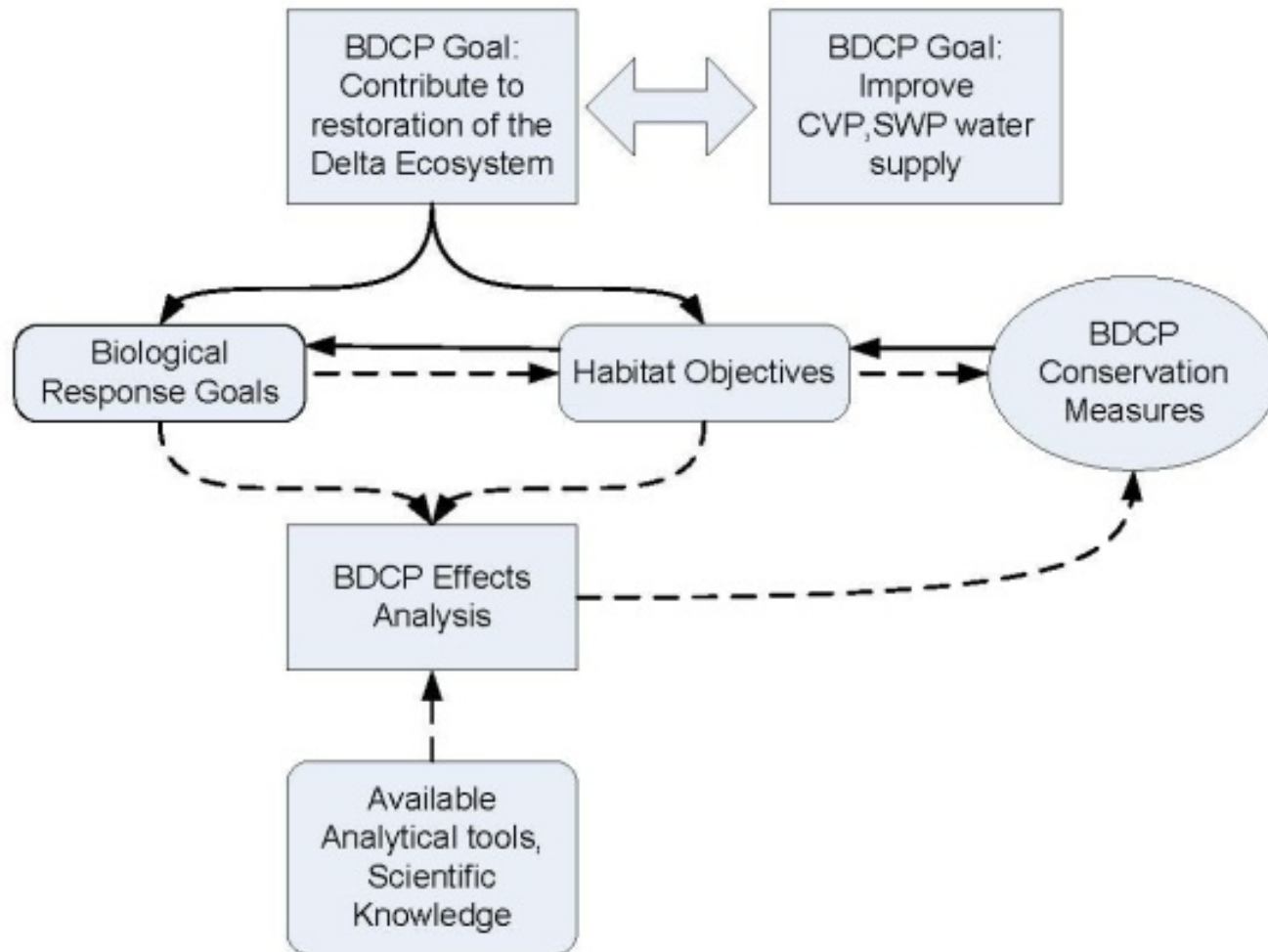
Biological Goals & Objectives

- Helps fulfill goals and objectives of existing recovery plans and other regional plans
- 3 functions in Conservation Strategy:
 - Articulate desired biological outcomes of the conservation strategy
 - Describe how outcomes contribute to long-term conservation of covered species
 - Provide metrics to measure progress in achieving desired biological outcomes

EA, G&Os, Conservation Measures



EA, G&Os, Conservation Measures



Dashed lines indicate BDCP planning and preparation while solid lines indicate implementation of conservation measures.

Figure A-1. Conceptual Model of Relationship between BDCP Conservation Measures and Biological Goals and Objectives

EA, G&Os, Conservation Measures

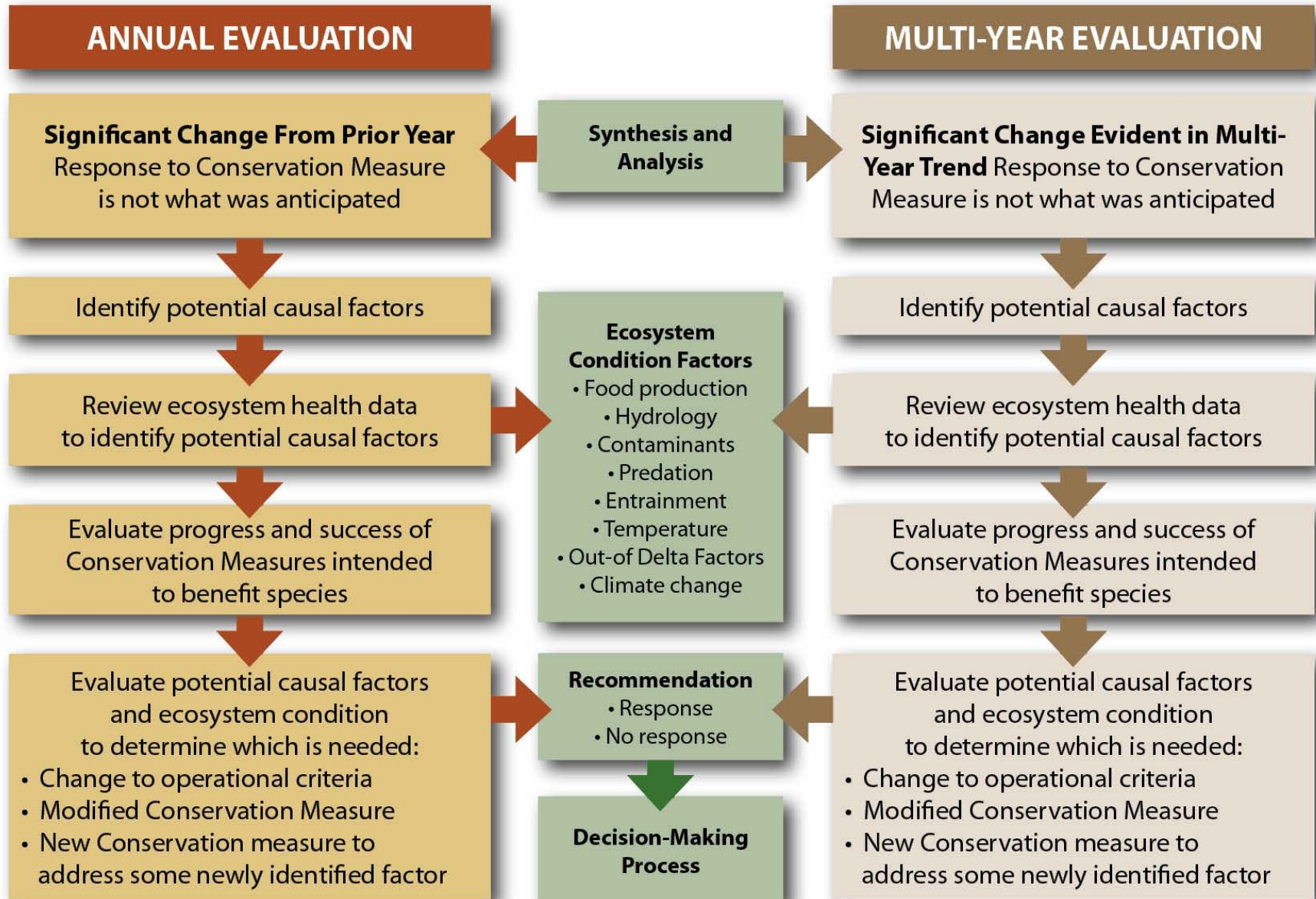
- **Effects Analysis ↔ Conservation Measures**
 - ICF team is integrated: Staff developing EA is also revising G&Os, conservation measures, and adaptive management and monitoring program
 - Existing measures: action-oriented, clarify species benefits
 - New conservation measures considered

Adaptive Management, Monitoring and Metrics

The Adaptive Management and Monitoring Program will provide a mechanism to make adjustments to conservation strategies based on new scientific information. 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 changes in or alternative approaches to plan implementation
- Adjust the monitoring and research program to evaluate new approaches and address emerging questions
- Incorporate feedback loops that link implementation monitoring and targeted research to a decision making process

Adaptive Management Process



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BDCP Effects Analysis Appendix A: Conceptual Foundation and Analytical Framework

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Conceptual Foundation Articulates the Scientific and Social Underpinnings of BDCP

- The Conceptual Foundation provides
 - A vision for BDCP—what is it intended to accomplish?
 - A strategy for BDCP—how do the parties intend to accomplish the vision?
 - Goals and Objectives—how do we define progress and end points?
 - Ecological condition
 - A Conceptual Model for BDCP—what is our scientific understanding regarding how BDCP will affect the delta?
- Ecological Principles
 - BDCP Science Advisors

BDCP Vision Statement:

What is it trying to accomplish?

- BDCP envisions that the delta can be managed to meet the needs of native fish and wildlife species while supplying water to agriculture and, domestic and industrial use (i.e., to achieve to equal goals):
 - Provide for the conservation and management of aquatic and terrestrial species, including the restoration and enhancement of ecological functions in the Delta
 - Improve current water supplies and the reliability of delivery of water supplies conveyed through the State Water Project (SWP) and the Central Valley Project (CVP)

How will it achieve the vision?

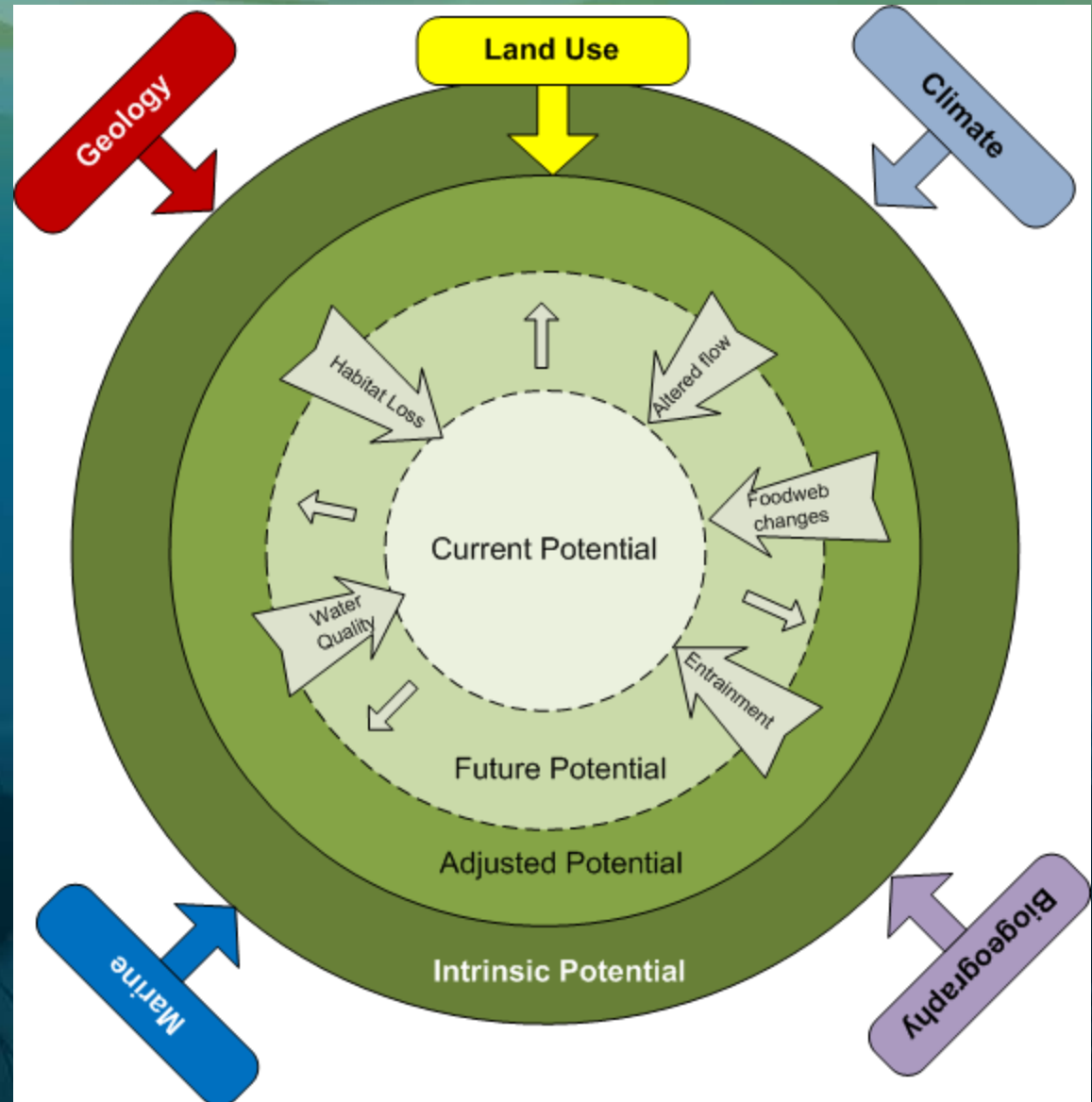
- 19 Conservation Measures in three major categories of actions
 1. Construction of a new water intake on the Sacramento River connected to the CVP and SWP pumping facilities in the south Delta (dual conveyance)
 2. Restore up to 133,940 acres of aquatic and terrestrial habitat, including 65,000 acres of tidal marsh in the Delta, and improve floodplain environments on the Sacramento River
 3. Other measures
 - SAV control
 - Predator control
 - Conservation hatchery

Ecological Context for BDCP

- BDCP Study Area: Delta + Sacramento River & San Joaquin River
- BDCP Plan Area: Delta
 - Nexus of freshwater, marine and terrestrial environments
 - Natural-Cultural system
- Invasive species
- Climate Change
 - Temperature increase
 - Sea level rise
 - Precipitation change (volume and pattern)

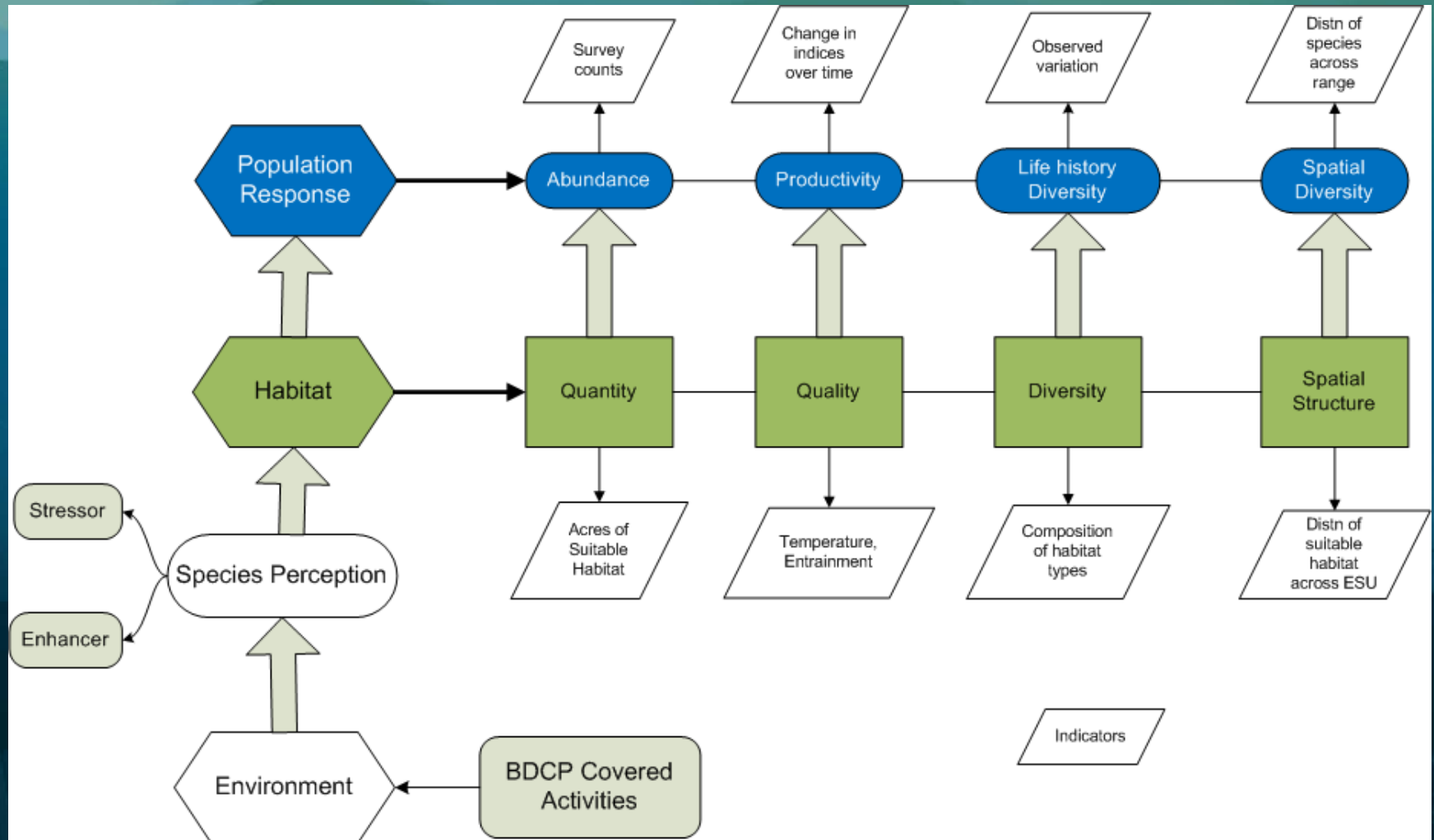
Conceptual Model for BDCP

- Intrinsic Biological Potential of delta constrained by large-scale drivers
- Land use is a driver adjusting intrinsic potential
- Current and future potential acts within these constraints
- Stressors and enhancers constrain performance over BDCP period



Conceptual Model: Species Perception Defines Habitat & BDCP Effects

Habitat defines population response



- Describe for each covered species
 - Life history
 - Life stages
 - Spatial and temporal distribution of life stages
 - Key habitats for each life stage
 - Stressor ranking by species
- Species models guide effects evaluation

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Analytical Framework



Analytical Framework Provides Structure and Global Assumptions for the Effects Analysis

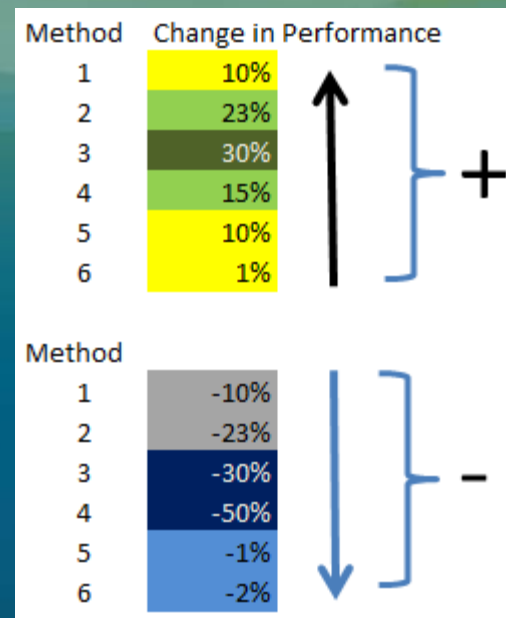
- The Analytical Framework describes
 - Models used in effects analysis
 - Analytical comparisons—base case assumptions
 - Climate Change assumptions
 - Weight of Evidence—how to resolve different analytical methods
 - Roll-up—How to form final conclusions
- Details of individual methods are found in appendices

Models Used in the Effects Analysis

- Conceptual models
 - Capture ideas, organize analysis, describe assumptions
 - DRERIP, IEP, BDCP specific
- Environmental models
 - Evaluate environmental change
 - CALSIM II, DSM2
- Biological models
 - Evaluate environmental change in terms of species performance
 - Based on Environmental Models
- Habitat Suitability models
 - Evaluate habitat restoration
 - Weight restored habitat for species perception
- Population and life history models
 - Integrate flow/entrainment analyses

Reconciling Results from Multiple Analyses

- Weight of Evidence
 - Direction of change
- Evaluate
 - Reliability of methods
 - Direction of conclusions
 - Value of the metrics

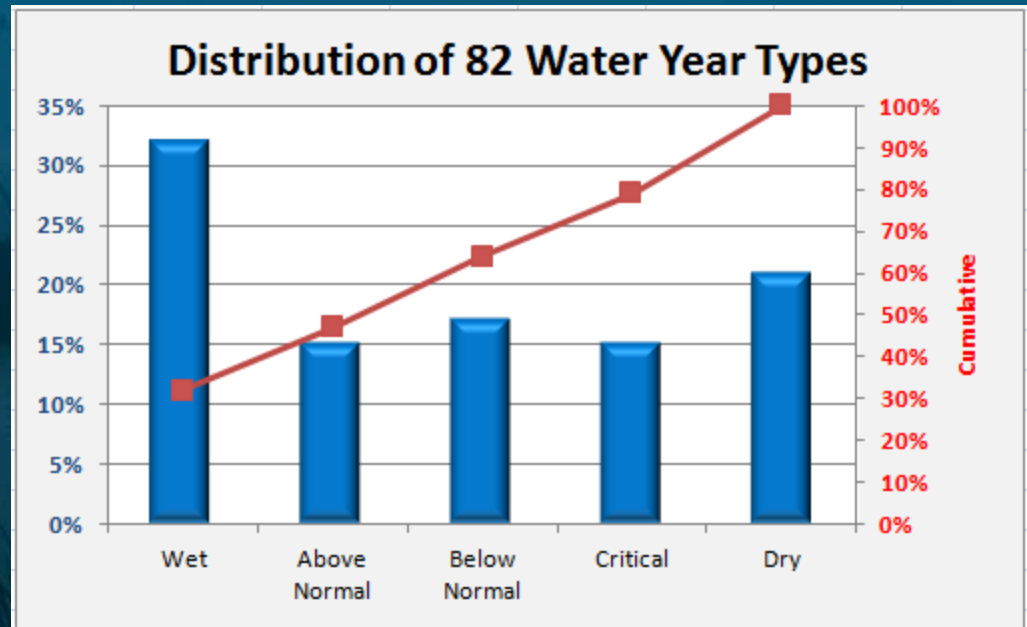


Factor	More Weight	Less Weight
Scientific credibility	Peer-reviewed in published literature	Unpublished with limited documentation
Usage	Widely used in the Delta or other systems (utility independently verified)	New and untested model (unverified)
Strength of conclusion	Highly statistically significant result or technically robust	Weak statistical significance or based on limited theory and data
Variability of results	Highly consistent results with different inputs (low uncertainty)	Highly variable results depending on inputs (high uncertainty)

BDCP Analytical Structure

Baseline Scenario	Regulatory Basis	Description
EBC1	CEQA	2008 USFWS BO and 2009 NMFS BO, but without Fall X2
EBC2	ESA Section 7 and NEPA	2008 USFWS BO and 2009 NMFS BO
PP	BDCP	BDCP Preliminary Project Description (19 Conservation Measures)

Description	Time Period
Early Long Term (ELT)	2025
Late Long Term LLT	2060



Chapter 5 Effects Analysis

Analytical Framework

Particle Tracking

Salvage Density

Proportional Entrainment

DSM2

CALSIM II

Qualitative

HSI

Life Cycle Models

HSI

Appendix B
Entrainment

Appendix C
Flow, salinity

Appendix D
Toxics

Appendix E
Habitat
Restoration

Appendix F
Ecological
Impacts

Appendix G
Fish
Populations

Appendix H
Terrestrial
Species

Conceptual Foundation

- Conservation measures and biological goals and objectives are being improved
- Effects analysis influencing revision
- Conceptual Foundation and Analytical Framework inform effects analysis
- Adaptive management and monitoring program will integrate all components in implementation

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