

# South Bay Salt Ponds Restoration Project

## Alternatives Formulation and Evaluation Methodology

Stakeholder Forum

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## What are we looking for?

Reaction to and Input on:

- Alternative Formulation and Evaluation Approach
- Detailed Objectives
- Approach to Evaluation Display







## Overview

Challenge:

- Alternatives can be formulated at many distinct scales:
  - Landscape (region)
  - Pond complex
  - Individual ponds
- Infinite possibilities for creating and varying alternatives



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## Evaluation Methodology

Methodology should:

- Systematically identify, evaluate and contrast alternatives
- Ensure all “reasonable” alternatives are considered
- Provide defensible basis for selection of range of alternatives and preferred alternative


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## Evaluation Methodology

- Methodology builds upon the six Project Objectives (Stakeholder Forum on 2/18/04)
- Project Objectives will form the basis and guide for all decision-making at all scales
- Detailed Objectives needed under each Project Objective for rigorous application

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## Project Objectives

**Adopted by Stakeholder Forum on 2/18/04**

1. Create, restore, or enhance habitats of sufficient size, function and appropriate structure to:
  - A. Promote restoration of native special-status plants and animals that depend on South SF Bay habitat for all or part of their life cycles.
  - B. Maintain current migratory bird species that utilize salt ponds and associated structures such as levees.
  - C. Support increased abundance and diversity of native species in various South SF Bay aquatic and terrestrial ecosystem components, including plants, invertebrates, fish, mammals, birds, reptiles and amphibians.


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## Project Objectives – cont.

2. Maintain or improve existing levels of flood protection in the South Bay area.
3. Provide public access and recreational opportunities compatible with wildlife and habitat goals.
4. Protect or improve existing levels of water and sediment quality in the South Bay, and take into account ecological risks caused by restoration.


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## Project Objectives – cont.

5. Implement design and management measures to maintain or improve current levels of vector management, control predation on special status species, and manage the spread of non-native invasive species.
6. Protect the services provided by existing infrastructure (*e.g.*, power lines, railroads).


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## Additional Evaluation Factors

Two additional evaluation factors are needed:

- Cost Effectiveness
- Environmental Impact



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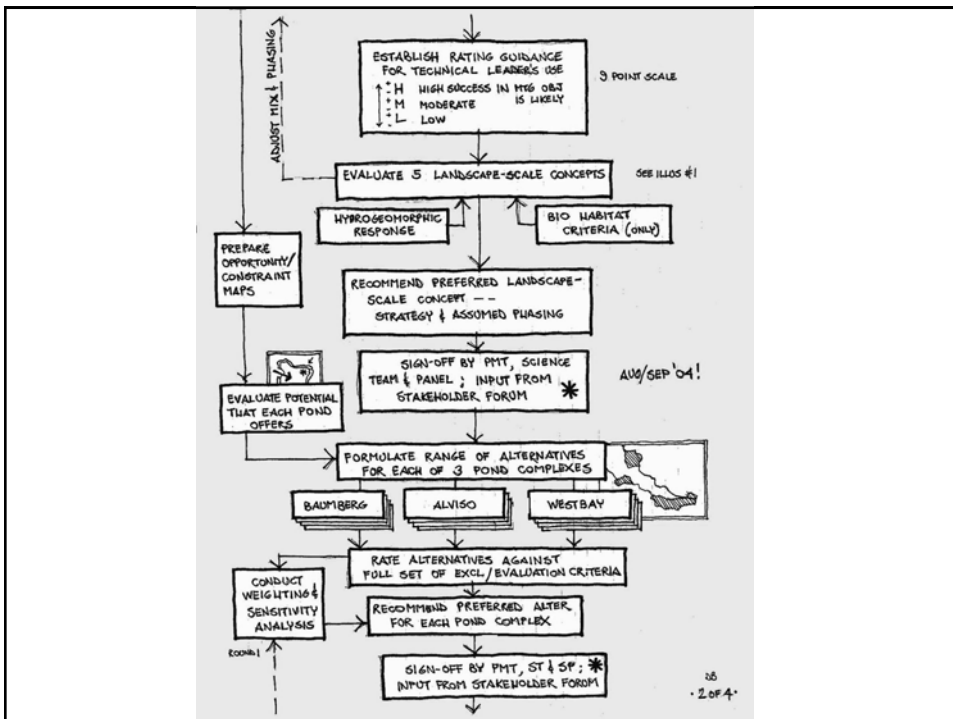
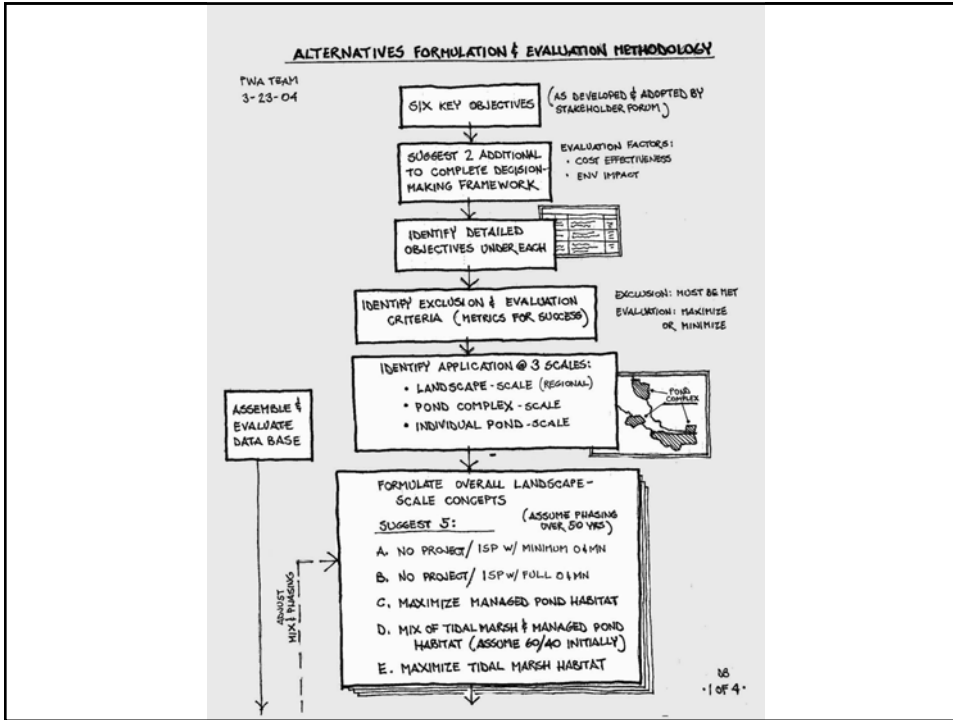


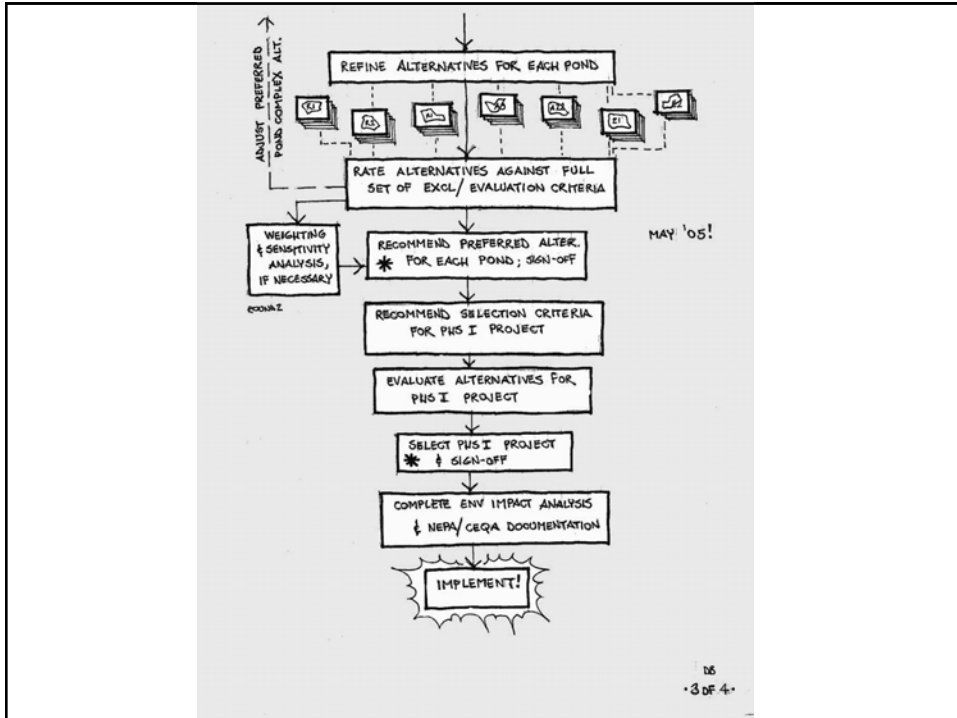
## Detailed Objectives and Evaluation Criteria

- Detailed Objectives developed for 6 Project Objectives and 2 Evaluation Factors
- For each Detailed Objective, we need:
  - Evaluation criteria (metric)
- Two types of criteria:
  - Evaluation Criteria: not a “fatal flaw”; a “relative” indicator
  - Exclusion Criteria: a “fatal flaw”; an “absolute indicator”

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Alternatives Formulation and Evaluation Methodology  
Presented at Stakeholder Forum (4-15-04)





 **South Bay Salt Pond Restoration Project**   

## Five Landscape Concepts

- A. No Project/Initial Stewardship Plan (ISP) with Minimal Operations and Maintenance
- B. No Project/ISP with Full Operations and Maintenance
- C. Maximize Managed Pond Habitat
- D. Mix of Tidal Marsh and Managed Pond Habitat (assume 60/40 initially)
- E. Maximize Tidal Marsh Habitat

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## Bio Habitat

Objective 1: Create, restore, or enhance habitats of sufficient size, function, and appropriate structure to:

<b>1A. Promote restoration of native special-status plants and animals that depend on South San Francisco Bay habitat for all or part of their life cycles</b>	
<b>Detailed Objectives</b>	<b>Evaluation Criteria</b>
Recover the south bay subspecies of the salt marsh harvest mouse	Area of complete salt marshes, with broad marshplain ( <i>i.e.</i> , pickleweed) habitat and broad upland/peripheral halophyte transitional zones, and interconnected restored marsh areas
Meet the South Bay portions of the recovery plan for the California Clapper Rail	Area of broad tidal marshes with extensive, dendritic channel systems and appropriate vegetation structure
Re-establish populations of <i>Cordylanthus maritimus</i> ssp. <i>palustris</i> and <i>Sueda californica</i>	Area of high marsh/upland transitional zones
Meet recovery goals for Snowy Plovers	Area of suitable breeding habitat

## Bio Habitat

### **1B. Maintain current migratory bird species that utilize existing salt ponds and associated structures such as levees**

<b>Detailed Objectives</b>	<b>Evaluation Criteria</b>
Maintain current populations of birds breeding at the salt ponds	Estimate of numbers of breeding birds
Maintain habitat for salt pond specialized birds ( <i>e.g.</i> , Wilson's Phalaropes)	Area of pond habitat with somewhat elevated salinities
Maintain current population levels for foraging shorebirds	Estimate of foraging habitat area



## Bio Habitat

**Objective 1C. Support increased abundance and diversity of native species in various South SF Bay aquatic and terrestrial ecosystem components, including plants, invertebrates, fish, mammals, birds, reptiles and amphibians**

Detailed Objectives	Evaluation Criteria
Maintain or enhance the populations of shorebirds currently using intertidal mudflat habitat	Area of mudflat habitat available in South Bay through the life of the project
Enhance South Bay fish populations	Area of tidal channel habitat within marshes
Enhance habitat for intertidal invertebrate populations by contributing to the detrital food web	Area of intertidal habitat
Enhance harbor seal habitat for foraging and isolated haul-out areas	Area of new, large tidal channels

## Flood Protection

**Objective 2. Maintain or improve existing levels of flood protection in the South Bay area**

Detailed Objectives	Evaluation Criteria
Maintain existing levels of flood protection in the South Bay area	Must not increase existing potential water inundation frequency, depth, and duration*
Improve existing levels of flood protection in the South Bay area	Decrease in potential water inundation frequency, depth, and duration

\* EXCLUSION CRITERION, *i.e.*, must be met by alternative to carry forward and receive further consideration

## Public Access and Recreation

<b>Objective 3. Provide public access and recreational opportunities compatible with wildlife and habitat goals</b>	
<b>Detailed Objectives</b>	<b>Evaluation Criteria</b>
Promote public use program consistent with DFG and USFWS missions	Number of compatible uses to relevant agency codes and criteria
Provide recreation that promotes wildlife-oriented public use	Number of opportunities for USFWS "priority uses"
Provide recreation for a variety of users	Number of user types accommodated
Create opportunities for linking the project areas to existing public open spaces and adjacent communities	Number of links provided
Enhance opportunity for visual experience	Number of viewing areas/viewpoints/scenic overlooks

## Water and Sediment Quality

<b>Objective 4. Protect or improve existing levels of water and sediment quality in the South Bay, and take into account ecological risks caused by restoration</b>	
<b>Detailed Objectives</b>	<b>Evaluation Criteria</b>
Maintain existing levels of water quality (surface and groundwater)	Within the range of background concentrations of key indicator constituents ( <i>e.g.</i> , mercury, metals, nutrients, algae)
Assess and manage ecological risk associated with mercury methylation and bioaccumulation	Targets or thresholds to be determined
Assess and manage mobilization of existing contaminants present in sediments	Higher concentration sediments stabilized and protected from erosion or transport

## Nuisance Species Management

**Objective 5. Implement design and management measures to maintain or improve current levels of vector management, control predation on special status species, and manage the spread of non-native invasive species**

Detailed Objectives	Evaluation Criteria
Maintain or improve the current levels of mosquito management	Area of potential mosquito habitat
Improve protection from predators and reduce need for predator management	Area of isolated tidal marshes
Minimize colonization of mudflats and marshplain by non-native <i>Spartina</i> and its hybrids	Area of potentially colonizable mudflat

## Infrastructure

**Objective 6. Protect the services provided by existing infrastructure (e.g., power lines, railroads)**

Detailed Objectives	Evaluation Criteria
Maintain the services provided by existing infrastructure	Must not increase risk of failure or service degradation due to physical changes (e.g., from scour or sedimentation, water inundation, increased environmental loads, reduced access, direct construction impacts, etc.)*

\* EXCLUSION CRITERION, i.e., must be met by alternative to carry forward and receive further consideration

## Cost Effectiveness

**Consider costs of implementation, management, and monitoring so that planned activities can be effectively executed with available funding.**

Detailed Objectives	Evaluation Criteria
Manage construction costs to achieve project goals and objectives with available funding	Dollars
Manage long-term operations and maintenance costs	Dollars, 50-year time frame
Manage monitoring costs to support project goals and objectives	Dollars, 10-year time frame
Institute a long-term viable funding strategy	Assessment of institutional complexity and achievability
Increase partnerships and alliances to institute the long-term funding strategy	Participation by multiple entities ( <i>e.g.</i> , Corps, SCVWD and others) in long-term funding
Achieve a favorable benefit/cost ratio	Calculation of b/c ratio, using Corps procedures
Limit costs of delay	Assessment of institutional and legal complexity/controversy

## Environmental Impact

**Promote environmental benefit and reduce impacts in areas other than biology**

Detailed Objectives	Evaluation Criteria
Preserve cultural resources, including important archaeological and historical sites	Number of cultural resource sites impacted Number of opportunities for interpretation and education
Provide public services to accommodate projected demand	Number of police patrols needed Response times for fire, police and ambulance services
Promote compatibility with surrounding land plans and uses	Level of land use compatibility
Provide safe, convenient access to the project area while managing congestion on nearby streets	Number of vehicle trips Number of parking spaces Number of bicycle lanes Level of service on nearby roads
Enhance air quality for proposed and surrounding uses	Air pollutant levels Potential for creation of objectionable odors
Manage noise levels for proposed and surrounding uses	Decibel levels Number of noise-generating activities Distance between noise-generating activities and nearby sensitive receptors

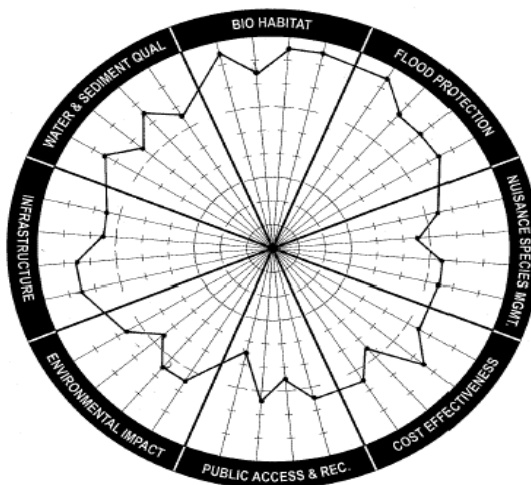
## Rating Alternatives Against the Detailed Objectives

- Nine-point rating scale from Low - to High +


Low +	Medium +	High +
Low	Medium	High
Low -	Medium -	High -

- Graphic display to facilitate comparison and see differences
- Initially treat all Detailed Objectives equally
- Then explore varying the relative importance of selected Detailed Objectives
- Multiple "Sensitivity Runs" likely to provide insight and understanding for informed decision-making

## Suggested Format for Displaying How an Alternative Responds to Each Detailed Objective



RATING SCALE ———— L ———— M ———— H ———— )




The banner features a landscape photo of a salt pond on the left. To its right, the text "South Bay Salt Pond Restoration Project" is displayed in a serif font. Further right are three logos: the California Department of Fish and Game, the Coastal Conservancy, and the U.S. Fish & Wildlife Service.

## How can you help the project?

Give us your constructive feedback on:

- Alternative Formulation and Evaluation Approach
- Detailed Objectives and Evaluation Criteria
- Approach to Evaluation Display



A small, dark silhouette of a bird, possibly a heron or egret, standing on a small patch of ground. It is positioned to the right of the list items.

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