

Alternative F

Extensive Habitat Restoration with Storage

Overview

This alternative will restore extensive amounts of habitat in order to increase fish populations and thus improve the reliability of water supplies that are currently constrained by measures to protect fish. The purchase or development of San Joaquin basin water and new in-Delta water storage will improve water quality and fish transport through the Delta while increasing the quality and reliability of water supplies for other beneficial uses.

Habitat increases fish populations, improves water supply reliability

Currently, limitations on fish entrainment (take limits) are set to avoid jeopardizing fish populations. When these limits are approached, diversions are curtailed or stopped, creating a high degree of uncertainty for water users. Fish populations are affected by many factors including diversion effects, flow, and other habitat conditions. As habitat is improved, leading to greater fish populations, the relative effect of diversions on population should be reduced. This should consequently lessen take limit constraints on diversions, providing improved water supply reliability.

Healthy fish populations will be less affected by entrainment

Restoration of upstream habitats and establishment of extensive meander belts in the Sacramento River system will improve spawning and survival success of fish. Restoration of channel features in the lower San Joaquin River will help lower water temperatures, provide habitat, and improve survival success of fish. In the Delta, restoration of shallow riverine and riparian habitat will provide spawning areas for native fish and increase forage areas and escape cover for juvenile salmon, Delta smelt, splittail, and other species. New habitat will be constructed along Delta channels and levees. Moderate areas of shallow tidal habitat will be developed in the Suisun Bay for wet-year spawning and rearing of Delta smelt and rearing of salmon. Fish screens on all priority diversions and barriers at critical locations will be installed to reduce entrainment and keep migrating fish in the main river channel.

Habitat improved throughout the Bay-Delta system

This alternative constructs a new water storage facility in the south Delta, storing 300,000 to 400,000 acre-feet for environmental purposes. The facility will be filled through screened diversions when water is available and when fish entrainment can be avoided using real-time monitoring. Water will be released from this facility to improve fish transport conditions in the Delta and to shift the timing of diversions to avoid entrainment effects. Water will be developed in the San Joaquin basin or purchased from willing water users and released to transport fish through the Delta and improve water quality in the San Joaquin River and south Delta. Ecosystem restoration actions will be guided by a strategy of adaptive management.

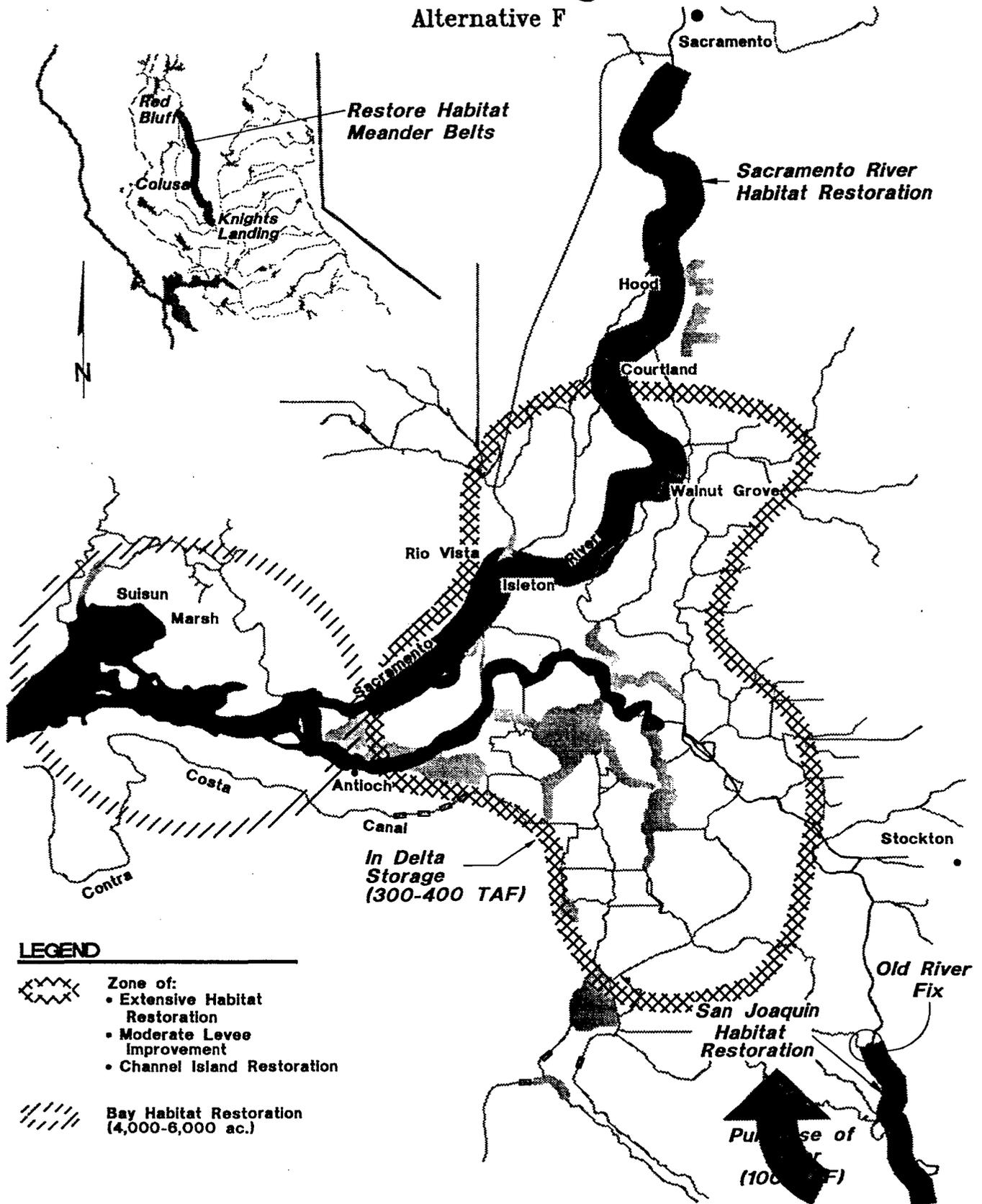
In-Delta storage and additional San Joaquin flows reduce entrainment

The vulnerability of the Bay-Delta system will be reduced through implementation of a comprehensive Delta Protection Plan. The plan will guide the stabilization or improvement of certain Delta levees to increase protection, the maintenance of

Comprehensive Delta Protection Plan

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LEGEND

-  Zone of:
 - Extensive Habitat Restoration
 - Moderate Levee Improvement
 - Channel Island Restoration
-  Bay Habitat Restoration (4,000-6,000 ac.)

levees, and implementation of an emergency response program to address levee failure. Under this alternative, stabilization of levees would receive moderate emphasis, while maintenance and emergency response would receive modest emphasis.

This alternative establishes a long-term drought water bank and provides incentives for additional land fallowing during drought years to improve supply reliability. Expanded conjunctive use and groundwater banking will improve operational flexibility and will help reduce fish entrainment by allowing some direct consumptive water use and upstream storage operation in all service areas dependent on Delta water supplies to be shifted away from the spring (February-June) period. Demand management including water conservation, water reclamation, and land retirement from willing sellers will be used to reduce water shortages for existing water users and provide some additional Delta outflow during drier years.

Water bank, improved demand management help balance supply and demand

Delta and tributary water quality will be improved through source control efforts to reduce and manage discharges from agricultural operations and urban areas throughout the Bay-Delta system. Enforcement of source control regulations will be expanded and implementation of Best Management Practices for salinity and pesticide residues will be recommended (e.g., retention of agricultural drainage). Retirement of marginally productive agricultural lands that contribute substantially to instream water quality problems in the San Joaquin River will be expanded. Measures to reduce the total salt load transported to the San Joaquin Valley will be implemented. Pollutants in San Joaquin River inflow will be diluted using water purchased or developed in the San Joaquin River basin.

Pollutant source control improves water quality

By linking extensive habitat restoration and levee improvements with additional storage dedicated for environmental purposes, this alternative increases fish populations while reducing system vulnerability. The conditions resulting from increased fish populations provide benefits to water supply reliability, predictability, and flexibility.

Extensive habitat restoration linked with extensive levee improvements

Potential Sequencing

Stage 1. Implementation would begin with the core actions.

Core actions

Stage 2. Actions implemented during Stage 2 of this alternative will include establishment of a permanent drought water bank, a moderate demand management program, groundwater banking and conjunctive use, high priority habitat restoration actions, and installation of high priority fish screens. Implementation of a comprehensive Delta protection plan will begin. Additional San Joaquin River water (100 TAF) will be developed or acquired for environmental uses. Stage 1 will include retirement of approximately 70,000 to 100,000 acres of marginally productive agricultural lands in the San Joaquin Valley.

Demand management and high priority habitat and levee improvements

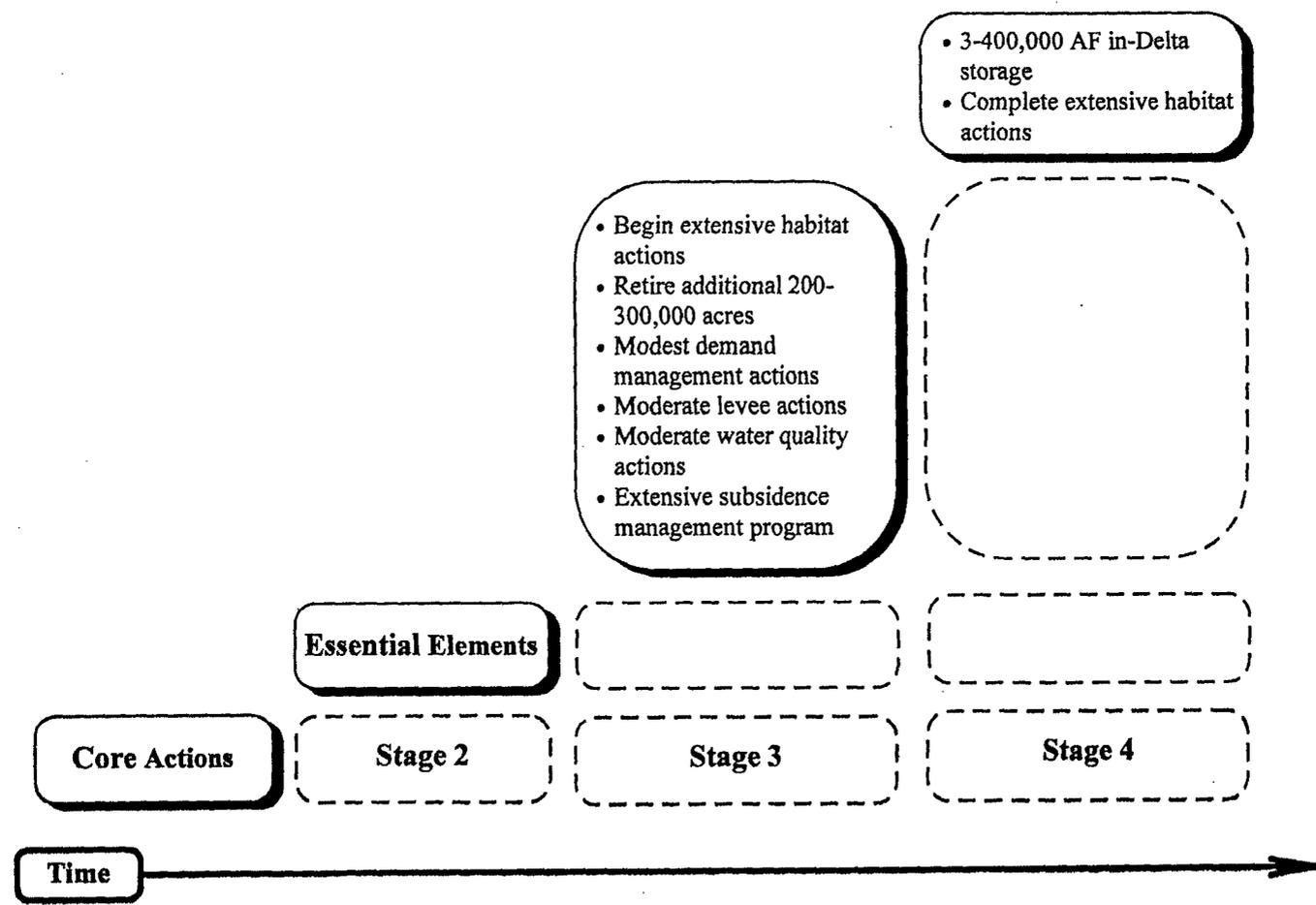
Stage 3. In stage 3, moderate habitat restoration actions and fish screen installations will be implemented. An additional 200,000 to 300,000 acres of marginally productive agricultural land in the San Joaquin Valley will be retired. Stabilization of levees would receive moderate emphasis, while maintenance and emergency response would receive modest emphasis. Additional source controls for water quality improvement will be implemented.

Habitat and levee improvements, land retirement

Stage 4. During stage 4, additional habitat restoration actions and fish screen installations will be completed at an extensive level of implementation. Meander belts on the upper Sacramento River, 300,000 to 400,000 AF of in-Delta storage for environmental water, and some increased flows to improve water quality complete this alternative.

Meander belts, Delta storage

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