ENVIRONMENTAL WATER ACCOUNT

Record of Decision

March 2004

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Record of Decision

Environmental Water Account

Final Environmental Impact Statement

U.S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Region
Fish and Wildlife Service
California-Nevada Operations Office

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
Southwest Region

March 2004

Approved:

for Kirk C. Rodgers, Regional Director MP Region
Bureau of Reclamation

3/31/04
Date

Rodney R. McInnis, Acting Regional Administrator
NOAA Fisheries

Date

for Steve Thompson, Manager
California/Nevada Operations Office
U.S. Fish and Wildlife Service

3/25/04
Date

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Rodney R McInnis — 9-13-04

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Steve Thompson, Manager — Date
California/Nevada Operations Office
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I. Introduction

Background

The Bureau of Reclamation (Reclamation), California Department of Water Resources (DWR), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NOAA Fisheries), and California Department of Fish and Game (CDFG) (the EWA agencies) jointly prepared the Environmental Water Account (EWA) Final Environmental Impact Statement/Environmental Impact Report (Final EIS/EIR) dated January 2004. The Final EIS/EIR evaluates impacts of the Fixed Purchase Alternative, Flexible Purchase Alternative, and No Action/No Project Alternative. This Record of Decision (ROD) documents the decision to implement the provisions of the preferred alternative termed the Flexible Purchase Alternative.

This decision document complies with NEPA requirements. NEPA commits Federal agencies to full consideration of their projects' environmental effects. Moreover, this ROD incorporates requirements of the State and Federal endangered species laws that resulted in a programmatic biological opinion and Natural Community Conservation Plan (NCCP) determination. Required consultations pursuant to the Endangered Species Act addressing the proposed action were completed. Mitigation and monitoring measures developed for use with the Flexible Purchase Alternative are delineated in sufficient detail in this document to constitute an enforceable commitment that complies with appropriate regulations.

Project Purpose and Need

The conflicts between competing beneficial uses of Bay-Delta water have created an ongoing water supply reliability issue that requires an immediate solution. The preferred alternative is a water acquisition and management strategy that uses existing facilities and water management options based on those described in the CALFED ROD.

The purpose and need for the proposed action is to: 1) provide a highly flexible, immediately implementable, water management strategy that protects the at-risk native Delta-dependent fish species affected by SWP/CVP operations and facilities, 2) contribute to the recovery of these fish species, 3) allow timely water management responses to changing environmental conditions and changing fish protection needs, 4) improve water supply reliability for water users downstream from the Delta, and 5) not result in uncompensated water cost to the Projects' water users. This water management strategy must also be consistent with the preferred program alternative selected by the CALFED agencies in the CALFED ROD.

II. Decision

The EWA agencies will implement the Flexible Purchase Alternative described in the Final EIS/EIR through September 30, 2004. This section describes this proposed action, summarizes the alternatives considered before reaching this decision, and describes the basis of this decision.

Through a separate written agreement, the EWA agencies may decide to extend the EWA program beyond September 30, 2004, as provided in the CALFED Programmatic EIS/EIR ROD. Because there is a possibility for extension, the EIS/EIR analyzed EWA actions that will start at the time of the signing of this ROD through 2007.

Proposed Action

The proposed action is the Flexible Purchase Alternative described in the EWA Final EIS/EIR. The proposed action uses a flexible interpretation of the CALFED ROD and EWA Operating Principles Agreement, incorporating functionally equivalent purchases and actions within the framework of the CALFED ROD. The EWA agencies will make water purchases to provide fish protection and recovery that responds to differing hydrologic conditions and takes advantage of water acquisition/storage possibilities throughout the CVP/SWP service areas.

Allowing flexibility to acquire and manage EWA assets differently each year will increase the EWA agencies' capability for responding to varying hydrologic conditions. During dry years when greater export pump capacity is available, the agencies could acquire quantities up to that capacity (potentially up to 600,000 acre-feet) upstream from the Delta. The EWA agencies can respond to changes in existing operations and allow for additional upstream fish actions, such as instream flow enhancements.

The Project Agencies (Reclamation and DWR) will acquire water via changes in Delta operations or transfers from stored reservoir water, groundwater substitution, groundwater purchase, or crop idling in a manner and in amounts that will not affect the environment or water supplies adversely. The Management Agencies (USFWS, NOAA Fisheries, and CDFG) use the EWA to protect and restore fish. The EWA agencies will employ environmental and conservation measures,[1] and mitigation measures to minimize effects of this alternative.

[1] Environmental measures are incorporated into the project description, which serve to reduce or avoid adverse effects that may have otherwise occurred without the measures. Conservation measures are actions that benefit or promote the recovery of listed species. Conservation measures, also incorporated into the project description, serve to avoid or minimize potential project effects on the species under review.

Actions to Protect Fish and Benefit the Environment

The SWP and CVP export Project water through the Delta pumping plants. This pumping can change flow patterns within the Delta, and the pumps can entrain and kill fish at the intakes to the SWP and CVP pumping facilities when fish are moving through the Delta. The EWA agencies will take actions to protect and restore Delta-dependent at-risk native fish species and provide additional upstream benefits.

The EWA will provide for fish protection actions that are supplemental to a baseline level of protection established by an existing set of regulatory programs. The baseline level of protection consists of the February 12, 1993 Winter-run Biological Opinion by NOAA Fisheries, March 6, 1995 Delta Smelt Biological Opinion by USFWS, 1995 Water Quality Control Plan, State Water Resources Control Board Decision 1641, and full use of 800,000 acre-feet of water pursuant to the May 2003 decision on CVPIA Section 3406(b)(2). The regulatory baseline also assumes that other environmental protections contained in statutes remain in place, such as Level 2 refuge water supplies.

Biologists use real-time data on fish abundance, flow, and fish salvage at the Delta pump intakes to develop recommendations for fish protection. EWA actions in the Delta to protect fish will include temporary pumping reductions at the Delta pumping plants or closure of the Delta Cross Channel gates beyond the regulatory baseline. Closing the gates at the Delta Cross Channel, a channel constructed to increase Sacramento River flow into the central Delta, improves the survival of anadromous fish migrating through the Sacramento River because it helps fish migrate out to the Bay instead of traveling into the central Delta. Actions to provide secondary benefits include increasing instream flows in rivers upstream from the Delta and augmenting Delta outflows.

Asset Acquisition and Management

The proposed action allows the EWA agencies to purchase up to 600,000 acre-feet of water to use for fish actions. The proposed action does not limit acquisition amounts from the Upstream from the Delta Region or the Export Service Area. In most years, the EWA agencies will only need to acquire 200,000 to 300,000 acre-feet, but the agencies could acquire more water during some years in which more water is necessary to conduct fish-protective actions. The EWA agencies will apply the concept of functional equivalency by combining acquisition methods, water sources, and operational flexibilities to effectively respond to annual changes in hydrology and fish behavior in the Delta.

The proposed action includes the following acquisition and management methods:

- **Delta Operations**: altering Delta Project operations, when environmental conditions allow, to export additional water (also called variable assets);
- **Water Purchases**: purchasing water from willing sellers both upstream from the Delta and within the Export Service Area;

- **Water Storage:** purchasing stored water from the Export Service Area sources to be used as collateral for borrowing (released only when all other assets have been expended), and to function as long-term storage space after the water has been released;

- **Source Shifting**: delaying delivery of water to a Project contractor, who would use water from an alternative source until the water is paid back; and

- **Exchanges**: The Project Agencies may exchange EWA assets for assets of character, such as location, seasonality, or year-type, more suitable to EWA purposes.

The proposed action includes specific asset acquisition and management actions listed in Table II-1. Table II-1 lists agencies that may be willing to sell water to the EWA, along with a general range of potentially available water volumes. The EWA agencies could only purchase water if the seller is willing to participate.

Table II-1 does not contain an exhaustive list of potential EWA sellers; additional agencies may decide at any time that they wish to sell water to the EWA. An analysis of the potential environmental effects of transferring water, however, requires information on the transfer sources. EWA water transfers that meet and implement the environmental and conservation measures incorporated into the project and mitigation measures developed in this document for the specific areas identified should not need additional environmental documentation. Prior to implementation, each program and action will be evaluated by the Project Agencies to determine if additional environmental analysis is necessary. Depending on that evaluation, either additional documentation will be prepared, or a finding made that no significant changes in actions or circumstances has occurred or substantial new information has been obtained since the Final EIS/EIR.

Table II-1
Potential Asset Acquisition and Management for the Proposed Action (Upper Limits)

	Range of Possible Acquisitions (TAF)				Management	
Water Agency	***Stored Reservoir Water***	***Groundwater Substitution***	***Crop Idling/ Subst.*** [2]	***Stored Groundwater Purchase***	***Ground-water Storage Services***	***Source Shifting/ Pre-Delivery***
Upstream from the Delta Region						
Sacramento River Area of Analysis						
Glenn-Colusa ID		20-60	100			
Reclamation District 108		5	45			
Anderson Cottonwood ID		10-40				
Natomas Central MWC		15				
Feather River Area of Analysis						
Oroville Wyandotte ID	10-15					
Western Canal WD		10-35	70			
Joint Water Districts		20-60	65			
Garden Highway MWC		15				
Yuba River Area of Analysis						
Yuba County WA	100	85				
American River Area of Analysis						
Placer County WA	20		10			
Sacramento GW Authority				10		
Merced/San Joaquin River Area of Analysis						
Merced Irrigation District		10-25				
Export Service Area						
San Joaquin Valley						
Kern County WA			115	50-165	X	X
Semi-Tropic WSD[1]					X	
Arvin-Edison WSD[1]					X	
Westlands WD			195			
Tulare Lake Basin WSD			110			
Santa Clara Valley						
Santa Clara Valley WD						X
Southern California						
Metropolitan WD						X

Abbreviations:
GW: Groundwater
ID: Irrigation District
MWC: Mutual Water Company
WA: Water Agency
WD: Water District
WSD: Water Storage District

Footnote 1: Semi-Tropic WSD and Arvin-Edison WSD are within Kern County Water Agency. Their groundwater storage facilities are separate from the Agency, but they may participate in other programs that the agency helps administer, such as crop idling.
Footnote 2: In the highly unlikely event that the EWA agencies will need more than 100,000 acre-feet of water from crop idling, the situation will be adaptively managed through discussion with the EWA agencies followed by reinitiation of consultation to provide for further crop idling.

Environmental and Conservation Measures Incorporated into the Proposed Action

The proposed action includes environmental and conservation measures incorporated into the project in the following resource areas: surface water supply and management, water quality, fisheries and aquatic ecosystems, vegetation and wildlife, regional and agricultural economics, agricultural social issues, cultural resources, and Indian Trust Assets. Table II-2 includes the environmental/conservation measures

and the objective of each measure; the table does not however, include mitigation measures. (See Section III of the ROD for a description of the mitigation measures for the proposed action.)

Table II-2
Environmental/Conservation Measures Incorporated into the Proposed Action

Measure	*Objective*
Water Supply	
Refill Criteria – Sellers must refill storage at a time when downstream users would not have otherwise captured the water.	Prevent EWA agency stored reservoir purchases from affecting downstream users.
Water Quality	
Use carriage water as needed to maintain compliance with water quality standards in the Delta. Carriage water is the additional water needed for Delta outflow to assure compliance with water quality requirements of the SWP and CVP when exports are increased because of transfers.	Maintain compliance with water quality standards for constituents in the Delta at without-EWA levels.
Only purchase water if it meets all of the required provisions of DWR's acceptance criteria governing conveyance of non-Project water through the California Aqueduct.	Groundwater quality must fall within historical constituent levels measured at the O'Neill Forebay Outlet.
Fisheries and Aquatic Ecosystems	
All species	
Coordinate EWA water acquisition and transfer actions that could affect management of evaluated species with Federal, State, and other CALFED agencies, and regional programs.	Avoid conflicts among management objectives.
General Fish Species	
Avoid acquisition and transfer of water that would reduce flows essential to maintaining populations of native aquatic species in the source river.	Maintain the essential flows of fish habitat for spawning, rearing, and migration
Acquisitions and transfers will not increase exports during times of the year when anadromous and estuarine fish are most vulnerable to damage or loss at project facilities or when their habitat may be adversely affected.	Protect at risk fish species in vicinity of Delta pumps (reduce take at pumps)
Avoid acquisition and transfer of stored reservoir water quantities that would impair compliance with flow requirements and maintenance of suitable habitat conditions in the source river in subsequent years.	Comply with minimum flow requirements downstream in the post transfer period to provide for fish habitat related to spawning, rearing, and/or migration
Delta Smelt	
Adhere to the terms and conditions in all applicable CESA and FESA biological opinions and permits for CVP and SWP operations.	Protect and facilitate recovery of Delta smelt
The EWA agencies may pattern EWA water exports in July to assist CVP and SWP efforts to minimize incidental take of Delta smelt under the current biological opinion for operations of the projects.	
Salmonids	
Adhere to the terms and conditions in all applicable CESA and FESA biological opinions and permits for CVP and SWP operations.	Protect and facilitate recovery of at risk salmonid species
Minimize flow fluctuations resulting from the release of EWA assets from Project reservoirs to reduce or avoid stranding juveniles.	Maintain the essential flows of streams for adequate fish habitat to reduce or avoid the stranding of juveniles
Central Valley Steelhead	
In May, evaluate Folsom Reservoir coldwater pool availability to benefit over summering juvenile steelhead prior to releasing EWA assets.	Optimally manage CVP facilities to maintain essential spawning habitat for salmonids

Table II-2 ***Environmental/Conservation Measures Incorporated into the Proposed Action***	
Measure	***Objective***
Central Valley Fall/Late-Fall Run Chinook Salmon	
In May, evaluate Folsom Reservoir coldwater pool availability to benefit returning adult fall-run Chinook salmon prior to releasing EWA assets.	Optimally manage CVP facilities to maintain essential spawning habitat for salmonids
Consult with the Multi-agency Team regarding ramping considerations before and after EWA transfers to avoid non-volitional steelhead downstream movement.	Prevent or control non-volitional movement of juvenile fish
Vegetation and Wildlife	
All species	
Coordinate EWA water acquisition and transfer actions that could affect management of evaluated species with Federal, State, and other CALFED agencies and regional programs.	Avoid conflicts among management objectives.
Giant Garter Snake	
Adhere to programmatic biological opinion for giant garter snake (GGS).	Protect the GGS, which is highly dependent on rice fields and associated irrigation ditches.
Water actions could cumulatively idle up to 20% of flooded rice fields in each county.	
Ensure parcels from which water is to be acquired are outside of mapped proscribed areas.	
Ensure that at depth of at least 2 feet of water is maintained in major irrigation and drainage canals (but never more than existing conditions) to provide movement corridors.	
Ensure block size of idled rice parcels will be limited to 160 acres.	
Ensure mowing along irrigation and drainage canals will be minimized and mowers will be elevated to at least 6 inches above ground level.	
Ensure that, if canal maintenance such as dredging is required, it shall be restricted to one side of the canal in any one year.	
Maximize geographic dispersal of idled fields.	
Avoid purchasing water from the same field for more than two consecutive years or from a rice field that was idled for another program in the previous two consecutive years.	
Giant Garter Snake	
The EWA agencies will recommend that sellers replace culverts already planned for repair or replacement with oversized culverts to facilitate better wildlife dispersal.	Protect the GGS, which is highly dependent on rice fields and associated irrigation ditches.
The EWA agencies will recommend that sellers replace water control structures with those requiring less maintenance and less frequent replacement in order to minimize maintenance impacts (steel or wooden control boxes with pre-poured concrete boxes).	
Water agencies may fund research or surveys.	
Greater Sandhill Crane	
Avoid or minimize actions near known wintering areas in the Butte Sink (from Chico in the north to the Sutter Buttes and from Sacramento River in the west to Highway 99) that could adversely affect foraging and roosting habitat.	Limit reduction in the amount of over-winter forage for migratory birds.

Table II-2 ***Environmental/Conservation Measures Incorporated into the Proposed Action***	
Measure	***Objective***
Black Tern	
Avoid EWA crop idling actions that could result in the substantial loss or degradation of suitable habitat in areas that support core populations of evaluated species that are essential to maintaining the viability and distribution of evaluated species.	Limit reduction in the amount of nesting and forage habitat during the summer rearing season.
Maintain quantities of water in agriculture return flow ditches that maintain existing wetland habitat.	
Western Pond Turtle	
Maintain water levels in irrigation and drainage canals to within 6 inches of non-program conditions and do not completely dry out canals.	Ensure effects of crop idling actions on western pond turtle habitat are avoided or minimized.
Non-tidal Freshwater Permanent Emergent, Natural Seasonal Wetland, and Valley/Foothill Riparian Communities	
Well adequacy review. (See Groundwater mitigation measures in Table III-1.)	
Monitoring program. (See Groundwater mitigation measures in Table III-1.)	
Valley/Foothill Riparian and Montane Riparian Communities	
Monitoring program (In cooperation with other programs.)	Ensure long-term effects on these communities are minimized or avoided.
Managed Season Wetlands	
Maintain drainage systems at a water level that would maintain existing wetlands providing habitat to covered species.	Maintain flow for landowners of managed seasonal wetlands who depend upon agricultural return flows for part or all of their water supply.
Seasonally Flooded Agriculture Lands	
See measures for Giant Garter Snake	
Regional and Agricultural Economics	
Limit purchase of water via crop idling if more than 20 percent of recent harvested rice or cotton acreage in the county would be idled through EWA water acquisitions. (The EWA agencies would idle less than 20 percent if other reasonable foreseeable transfers under other programs were idling land.)	Minimize socioeconomic effects from crop idling on local areas.
Acquire less water by crop idling when the level of land idling is already larger than historically normal.	
Agricultural Social Issues	
See measures for Regional and Agricultural Economics	Minimize social effects from crop idling on local areas.
Cultural Resources	
For stored reservoir purchases or source shifting, determine whether a decrease in reservoir levels would exceed normal historic operating range.	Reduce the EWA program's potential effect on historic properties and cultural resources.
For stored reservoir purchases or source shifting, agree to conduct cultural resources inventory and evaluation.	
Indian Trust Assets	
For groundwater substitution transfers, perform tribal consultation (if potential effect to ITAs is identified).	Reduce the EWA program's potential effect on ITAs

Alternatives Considered

The EWA Agencies initially considered a wide range of alternatives. Several alternatives were not carried forward in the EIS/EIR because they did not fully meet the screening criteria of being immediately implementable, flexible, and reliable. The EIS/EIR carried forward and analyzed two alternatives, the Flexible Purchase

Alternative (chosen as the proposed action) and the Fixed Purchase Alternative, in addition to the No Action/No Project Alternative. The sections below describe these alternatives that were carried forward and compare them to the proposed action.

Fixed Purchase Alternative

The CALFED ROD established the types of EWA acquisition and management actions and included targets for the quantity of assets that the EWA agencies could acquire in each region (Table II-3). The Fixed Purchase Alternative is based upon a strict interpretation of the CALFED ROD. Under this alternative, the Project Agencies would acquire 185,000 acre-feet of EWA assets annually. The Fixed Purchase Alternative includes a target of 35,000 acre-feet for total upstream from the Delta purchases and 150,000 acre-feet for total purchases in the Export Service Area. These targets provide for the maximum level of asset acquisitions and resulting types of actions that the Project and Management Agencies can take.

Table II-3 lists the ROD-specified asset quantities around which the Fixed Purchase Alternative was developed. As the table shows, this alternative also allows for other actions, including source shifting and the acquisition of storage.

Table II-3
Fixed Purchase Alternative -
EWA Tier 2 Assets in Accordance with CALFED ROD[(1)]

Action Description	*Water Available Annually (Average)*
SWP Pumping of (b)(2)/ ERP Upstream Releases	40,000 acre-feet
Export/Inflow Ratio Flexibility	30,000 acre-feet
Purchases – Export Service Area	150,000 acre-feet
Purchases – Upstream from the Delta	35,000 acre-feet
Storage acquisition	200,000 acre-feet of storage
Source Shifting Agreement[(2)]	100,000 acre-feet

(1) The water amounts in the ROD were targets for the first year; higher amounts were anticipated for subsequent years.

(2) The source shift value reflects the quantity of water that is borrowed and must be returned.

In the region upstream from the Delta under the Fixed Purchase Alternative, the Project Agencies would probably seek first to acquire stored reservoir water, which represents the least expensive asset. The 35,000 acre-feet would likely comprise a number of potential surface water sources available for purchases. The Project Agencies would be less likely to acquire water upstream from the Delta via groundwater substitution, stored groundwater purchase, and crop idling. Stored groundwater purchase and crop idling would be the Project Agencies' likely acquisition sources in the Export Service Area.

Because the Fixed Purchase Alternative sets the maximum amounts for the quantity of water that could be acquired, EWA actions to protect fish and the environment would be limited by asset availability. Assets could be from carryover assets from

prior years, assets available from Delta flexibility (variable assets), purchases of 185,000 acre-feet, source shifting, and the capacity to borrow water from the projects based on the availability of groundwater storage. The Fixed Purchase Alternative would provide some water management flexibility over the No Action/No Project Alternative and would address at least a portion of the water reliability concerns caused by export pump reductions.

No Action/No Project Alternative

The No Action/No Project Alternative describes the reasonably foreseeable future without the EWA (if the EWA were not approved) based on legal and regulatory constraints. If the EWA were not implemented, actions to protect fish that are mandated by existing regulatory requirements would continue. For example, compliance with the biological opinions developed by USFWS and NOAA Fisheries under the Endangered Species Act would require pumping reductions, resulting in reduced deliveries. DWR and Reclamation would continue to reoperate the SWP and CVP, respectively, to avoid decreased deliveries to export users, but would not acquire and manage EWA assets that could be used to repay lost deliveries.

In response to decreased water supply reliability, some agricultural water contractors would either accept the shortage, idle or retire some crop land, substitute crops that use less water, increase the use of local water supplies through groundwater pumping, local transfers, recycling, desalination, or implement additional water use efficiency or conservation. Local entities could also pursue independent water transfers, pursue other non-local sources (e.g., the Colorado River), or turn to litigation and/or political pressure to change rules that result in the reduction of the water supply. Of these potential responses, groundwater pumping is the most likely and the most problematic. Some portions of the San Joaquin Valley groundwater basins are in overdraft, and groundwater in some areas is of lower quality than the surface water supply. Uncompensated Delta pump reductions raise concerns for diminished groundwater supplies and conditions for the San Joaquin Valley.

Urban water contractors could respond to reduced water supply by increasing their emphasis on local water conservation or by relying more heavily on local groundwater and surface water supplies, if they are available. The reduced water supply reliability caused by the pump reductions would make local planning efforts more difficult for the urban water agencies, especially in areas where local supplies are limited.

Alternatives Comparison

Table II-4 highlights the similarities and differences of fish actions, asset acquisition, and asset management activities under the No Action/No Project, Fixed Purchase Alternative, and proposed action.

Basis of Decision

The Flexible Purchase Alternative is the proposed action because it is the Environmentally Preferred Alternative and best meets the Purpose and Need.

Table II-4
Comparison of EWA Alternatives

EWA Water Acquisition	*No Action/No Project*	*Flexible Purchase Alternative*	*Fixed Purchase Alternative*
Fish Actions			
Pumping Reductions	Reductions because of ESA[1] Biological Opinions and implementation of CVPIA Section 3406(b)(2); limited ability to repay water not delivered due to pump curtailments	Ability to provide fish protection actions at Delta pumps beyond ESA, but limited to the total volume of water acquired, variable assets, and debt without interrupting water supply. Availability of 600 TAF[2] of water increases opportunity for fish actions and ability to repay Projects for water not delivered during pump curtailments.	Ability to provide fish protection actions at Delta pumps beyond ESA, but limited to total volume of water acquired, variable assets, and debt without interrupting water supply. Availability of 185 TAF of water increases opportunity for fish actions and ability to repay Projects for water not delivered during pump curtailments.
Upstream Flow Enhancements for Fish Recovery/Enhancements	No potential for upstream flow enhancements beyond existing programs	The magnitude of potential benefits would vary between rivers but would be limited by the volume of upstream purchases moved during the transfer window, which could be up to 600,000 acre-feet.	The magnitude of potential benefits would vary between rivers but would be limited by the volume of upstream purchases moved during the transfer window, which could be up to 35,000 acre-feet.
Asset Acquisition			
Stored Reservoir Purchase	No purchases beyond any existing programs	Purchases of up to 135 TAF in dry years; wet year purchases would be limited to the Delta[3] pump capacity available to EWA of approximately 50-60 TAF	Limited to 35 TAF Upstream from the Delta
Groundwater Substitution (Upstream from the Delta)	No purchases beyond any existing programs	Purchases of up to 340 TAF in dry years, but only approximately 50-60 TAF in wet years; groundwater substitution would most likely be exercised in dry years but not in wet years due to pump capacity	Limited to 35 TAF Upstream from the Delta; probably would not be exercised in most years because 35 TAF can be obtained from stored water sources
Groundwater Purchase (Upstream from the Delta)	No purchases beyond any existing programs	Purchases of up to 10 TAF in dry and wet years.	Limited to 10 TAF Upstream from the Delta; probably would not be exercised in most years because 35 TAF can be obtained from stored water sources
Groundwater Purchase (Export Service Area)	No purchases beyond any existing programs	150 TAF maximum; stored groundwater purchase would not be available each year	Purchase of up to 150 TAF maximum; stored groundwater purchase would not be available each year
Crop Idling (rice Upstream from the Delta);	No purchases beyond any existing programs	Purchases of up to 290 TAF in dry years and approximately 50-60 TAF in wet years. Crop idling would probably not be exercised in wet years.	Limited to 35 TAF Upstream from the Delta; probably would not be exercised in most years because 35 TAF can be obtained from stored water sources
Crop Idling (cotton within Export Service Area)	No purchases beyond any existing programs	Purchases of up to 420 TAF; higher amounts would be expected for wet years when EWA has less pump capacity to export water from Delta	Purchase of up to 150 TAF maximum within Export Service Area
Variable Assets	Projects can access water from Joint Point of Diversion; Relaxation of the Section 10 Constraint; and Relaxation of the Export/ Inflow Ratio	Variable amounts of water available to EWA each year through changes in Delta operations.	Same as Flexible Purchase Alternative
Asset Management Activities			
Groundwater Storage (banking)	No storage	Up to 200 TAF	200 TAF addressing CALFED ROD first year EWA requirement
Source Shifting	Available to water users	Source shifting to protect San Luis is available	Source shifting to protect San Luis is available
Project Water Borrowing	No project borrowing to repay water not delivered due to pump curtailments	Potential for borrowing water for later repayment of up to 100 TAF	Potential for borrowing water for later repayment of up to 100 TAF

(1) Federal Endangered Species Act
(2) TAF = thousand acre feet
(3) Hydrologic modeling of Delta pump capacity indicates that there would be 50-60 TAF of excess capacity available to EWA during wet years and up to 600 TAF in dry years. The capacity in wet years is available because of the variable asset that provides 500 cfs of additional pumping during the summer. This increased capacity translates into an average of about 50-60 TAF per year, but could be up to 90 TAF in some years. Delta pump capacity is a limiting factor on the quantity of water EWA agencies can purchase and export to the CVP/SWP service areas.

Environmentally Preferred Alternative

The environmentally preferred alternative is determined by consideration of adverse effects of water acquisition as well as beneficial effects. The No Action/No Project, Fixed Purchase, and Flexible Purchase Alternatives have no significant unavoidable impacts; therefore, the primary delineator is the magnitude of beneficial effects of each alternative.

Table II-5 compares the beneficial effects to water supply, fisheries and aquatic ecosystems, regional and agricultural socioeconomics, and flood control resulting from each alternative. The Flexible Purchase and Fixed Purchase Alternatives have greater environmental benefits than the No Action/No Project in all four resource areas. The Flexible Purchase Alterative has equal beneficial impacts for flood control and regional and agricultural socioeconomics compared with the Fixed Purchase Alternative. The Fixed Purchase Alternative however, provides fewer benefits for water supply and fisheries than the Flexible Purchase Alternative. Therefore, the Flexible Purchase Alternative is the environmentally preferred alternative.

Table II-5
Summary of Beneficial Effects of the EWA Alternatives

Resources	*No Action/No Project Alternative*	*Flexible Purchase Alternative*	*Fixed Purchase Alternative*
Water Supply and Management	No change from existing conditions. ESA would trigger pump reductions to protect fish, and these actions would reduce water supply reliability to Project users.	Water supply replaced due to pump reductions up to 600 TAF. Fish actions would be taken prior to reaching incidental take thresholds. The volume of replacement water would reduce the probability of needing Tier 3, which could include uncompensated fish actions.	Water supply replaced due to pump reductions up to 185 TAF and any carry-over storage. Fish actions would be taken prior to reaching incidental take thresholds. If fish actions are not enough to avoid jeopardy, Tier 3 would trigger additional fish actions where contractors may not be compensated
Fisheries and Aquatic Ecosystems	Fishery protection regulatory standards required in NOAA Fisheries and USFWS Biological Opinions, the 1995 Delta WQCP, VAMP, and CVPIA would be implemented	Benefits the recovery of at-risk fish species by making available up to 600 TAF of EWA assets for fish actions. Fish actions could include closing DCC gates, increasing instream flows, and augmenting Delta outflows to improve spawning and rearing habitat and migration.	Contributes to the recovery of at-risk fish species by making available up to 185 TAF of EWA assets for fish actions. The same fish actions are available as in the Flexible Purchase Alternative. Fish actions taken would be limited by available assets; therefore, EWA agencies would need to prioritize fish actions. In most years, total assets available would be used for pumping reduction and repayments.
Fisheries and Aquatic Ecosystems	No effect	Delta outflows benefit migratory and Delta fish	Delta outflows during spring limited to 185 TAF upstream purchase
Regional and Agricultural Economics	No effect	Sale of water to EWA would increase net revenues to farmers/landowners	Sale of water to EWA would increase net revenues to farmers/landowners
Flood Control	No effect	Additional space made available from release of stored water would provide space for flood control	Additional space made available from release of stored water would provide space for flood control
	No effect	Metropolitan WD use of local storage during source shifting would provide additional storage space for inflow that could be captured during a flood event	Metropolitan WD use of local storage during source shifting would provide additional storage space for inflow that could be captured during a flood event

Relationship of the Proposed Action to the Purpose and Need

The EWA has been established to provide water for the protection and recovery of fish beyond water available through existing regulatory actions related to project operations. The EWA is a cooperative management program whose purpose is to provide protection to the fish of the Bay-Delta estuary through environmentally beneficial changes in SWP/CVP operations at no uncompensated water cost to the Projects' water users. Section I of this ROD defines the Purpose and Need of this project. The Flexible Purchase and Fixed Purchase Alternatives both meet the purpose and need. However, the Flexible Purchase Alternative would have a greater potential to achieve fish protection and recovery goals while addressing water supply commitments of the CVP and SWP, as compared to the Fixed Purchase Alternative, as it would include higher levels of asset acquisition. Because it would limit acquisition, the Fixed Purchase Alternative would limit the EWA agencies to smaller, less frequent actions that address export reductions only.

The behavior of fish at the Delta pumps—the timing of their arrival (typically winter and spring; December through June) and the length of their stay—varies year-to-year and cannot be predicted in advance. Years in which the fish arrive late and leave early may require fewer pump reductions than other years and the Fixed Purchase Alternative may have adequate assets to cover those reductions as well as providing water for upstream fish enhancements.

However, as noted in the EIS/EIR, some of the tools described in the CALFED ROD either never materialized or failed to function as envisioned, and some flexibility in protection was reduced. In years in which the fish arrive early and leave later, pump reductions may occur more often, resulting in the potential for insufficient assets to address Project water commitments under the Fixed Purchase Alternative. In such years, the Flexible Purchase Alternative would have a greater potential for meeting both the Project water commitments and the fish enhancement benefits intended for the EWA under the CALFED ROD.

III. Implementing the Decision and Environmental Commitments

The EWA Project and Management Agencies collaboratively and comprehensively considered the environmental effects of EWA asset acquisition and management actions, as documented in the Final EIS/EIR. The EWA agencies incorporated measures into the Flexible Purchase Alternative to avoid environmental effects. The EWA agencies will only participate in water transfers that comply with the monitoring and mitigation program.

Table III-1 lists mitigation measures (environmental commitments) associated with the Flexible Purchase Alternative, as well as the monitoring/reporting action associated with each commitment. The commitments listed in Table III-1 are in addition to the environmental/conservation measures incorporated into the project (Table II-2 of the ROD). While the EWA agencies retain overall responsibility for assuring that mitigation processes are implemented, willing sellers will have a contractual responsibility for some mitigation and monitoring activities related to non-project facilities used for EWA asset acquisition and management actions. The EWA agencies will not engage in water acquisition contracts in which the willing seller will not agree to these commitments.

Volume IV, Chapter 6 of the Final EIS/EIR describes EWA mitigation monitoring and reporting details and agency responsibilities that can reduce or prevent the effects of EWA water acquisition and management actions. This ROD adopts Chapter 6 as the EWA Mitigation Monitoring and Reporting Program. Appendix A of this ROD includes Chapter 6 in its entirety.

The EWA agencies will, upon request and consistent with CEQ regulations addressing implementation of NEPA, inform cooperating and commenting agencies and the public of the results of mitigation implementation and monitoring.

Adaptive Management

The EWA agencies will incorporate scientific principles and practices into all facets of the EWA program by working cooperatively with the California Bay Delta Authority Science Program, and by participating fully in technical reviews. The Science program evaluates CALFED agency activities on two levels of independent review: 1) through an Independent Science board for the entire CALFED Program and 2) a variety of Science Panels focused on specific programs.

The CALFED Science Program convenes an EWA Review Panel, comprised of an interdisciplinary group of biological, physical, and social scientists with local expertise and relevant knowledge, for evaluation of the EWA program at the end of every water year. Recommendations submitted by the EWA Review Panel are useful in planning EWA actions for the following year. The review team considers the overall concept of the EWA program, EWA agencies' actions (uses of water and actions to protect fish), and the technical basis for actions that took place during the year.

Adaptive management is a key component of the Science and EWA Programs. Adaptive management treats actions as partnerships between scientists and managers by first designing actions as experiments with a level of risk commensurate with the status of those species involved, and bringing science to bear in evaluating the feasibility of the experiments. New information and scientific interpretations are developed through the adaptive management process and are used to confirm or

Table III-1 ***Mitigation and Monitoring Program Requirements and Responsibilities***	
Commitment	***Monitoring/Reporting Action***
Water Supply	
If EWA program pumping decreases south Delta water levels, the EWA agencies commit to paying their share for additional actions needed to increase south Delta water levels to the Baseline Condition.	Document diverter complaints and EWA agency contributions to the resolutions.
EWA agencies commit to contractually require willing sellers engaged in crop idling and groundwater substitution to maintain sufficient water levels in drainage systems.	Monitoring of water level in district conveyance facilities.
Groundwater	
EWA agencies commit to a careful review and approval of Well Review documentation submitted by willing sellers before transfers occur.	Well-specific data including: location of production and monitoring wells, driller's log giving geology and well construction details, and additional information that characterizes the hydrogeologic environment near the well.
EWA agencies commit to cooperating in the development of Pre-Purchase Groundwater Evaluation and Monitoring Program documentation from willing sellers before transfers occur.	If groundwater levels are high compared to historical fluctuations, regional groundwater level data must be submitted. If groundwater levels are within an intermediate or lower range of historical fluctuations, a pre-purchase evaluation must be submitted and include the following: 1) groundwater level fluctuations for existing monitoring wells; 2) surface water imports and applied water recharge; 3) recent and historical hydrology; 4) expected groundwater extraction activities; and 5) areas of special concern. If selling agency overlies an overdrafted subbasin, groundwater management strategies must be in place to manage the groundwater resources. A formal determination that transfer would not contribute to long-term overdraft is required; this may include the pre-purchase evaluation described above.
EWA agencies commit to cooperating in the development of a monitoring plan and reviewing groundwater level monitoring data collected by cooperating agencies and from willing sellers.	Monitoring plan must include the following components: 1) a network of monitoring wells to characterize groundwater levels before, during, and after transfer; 2) periodic flow meter readings at the extraction pumps; 3) periodic measurements of groundwater levels; 4) groundwater quality testing; 5) means to detect land subsidence or a credible analysis demonstrating that subsidence is unlikely to occur; and 6) a coordinated means to collect data and cooperate with other monitoring efforts in the area.

Table III-1 ***Mitigation and Monitoring Program Requirements and Responsibilities***	
Commitment	***Monitoring/Reporting Action***
EWA agencies commit to cooperating in the development of a Groundwater Mitigation Program, including the preparation of a Groundwater Mitigation Plan. EWA agencies commit to contractually requiring the willing seller to mitigate any significant environmental impact; EWA agencies to determine the effectiveness of the mitigation measure.	Mitigation plan must include the following components: 1) procedure for the seller to receive reports of potential impacts and to report that information to the Review Team; 2) procedure for investigating reported effect; 3) development of mitigation options, in cooperation with the affected party; 4) assurances that adequate financial resources are available to cover reasonably anticipated mitigation needs; and 5) commitment to avoid or mitigate such effects during future transfers to the EWA.
Geology and Soils	
EWA agencies commit to cooperating with the willing sellers in the development of a dust suppression plan, containing reasonable and appropriate mitigation measures that maintain opacity at less than 20 percent. The plan will be submitted to the San Joaquin Valley Air Pollution Control District prior to transfers.	Dust suppression plan must include a combination of measures that would reduce opacity to less than 20 percent. Such measures could include crop shifting, increasing surface roughness, planting windbreaks, leaving crop residue on the fields from previous year's harvest, restricting motorized vehicles on the idled land, or watering the fields.
Air Quality	
EWA agencies commit to cooperating with the willing sellers in the development of a dust suppression plan, containing reasonable and appropriate mitigation measures that maintain opacity at less than 20 percent. The plan will be submitted to the San Joaquin Valley Air Pollution Control District prior to transfers.	Dust suppression plan must include a combination of measures that would reduce opacity to less than 20 percent. Such measures could include crop shifting, increasing surface roughness, planting windbreaks, leaving crop residue on the fields from previous year's harvest, restricting motorized vehicles on the idled land, or watering the fields.
EWA agencies commit to requiring willing sellers to submit an emissions reduction and/or offset plan to the EWA agencies and the APCD that demonstrates no increased emissions because of groundwater pumping.	Data submitted must include: types of pumps to be used for transfer, total emissions anticipated from groundwater substitution, and plan for measures to reduce/offset the emissions.
Agricultural Land Use	
EWA agencies commit to contractually requiring willing sellers to supply data on recent idling of specific parcels prior to approval of transfer. EWA agencies commit to idle a parcel only if such idling would not result in a lower classification of land as defined under FMMP and Williamson Act.	Data submitted must include: land classifications of cropland and recent idling history of specific parcels.
Power	
EWA agencies commit to covering additional costs for EWA-related decreases in the value of power, as outlined in the CALFED ROD.	A financial plan shall address: 1) increased Project operating costs, both power and ancillary costs; 2) crediting the EWA for reduced operating costs; 3) crediting the EWA for power benefits; and 4) revenues realized from the sale of EWA assets. Additionally, the EWA agencies will develop alternatives for funding power and other incidental costs, if such costs interfere with the successful operation of the EWA.

Table III-1 ***Mitigation and Monitoring Program Requirements and Responsibilities***	
Commitment	***Monitoring/Reporting Action***
Recreation	
EWA agencies commit to, in coordination with reservoir operators, identifying an agreed upon drawdown level that will not impact recreation.	Forecast end of season reservoir levels.
Cultural Resources	
Reclamation commits to producing a determination of effect and eligibility document that identifies cultural resources and determines whether to apply mitigation measures.	Determination of eligibility and effect document
Reclamation commits to consulting, through a programmatic agreement, with the State Historic Preservation Officer, the U.S. Forest Service, and other appropriate Federal and non-Federal agencies and landowners on potential effects and appropriate mitigation measures for cultural resources.	Programmatic agreement
Reclamation commits to implementing appropriate measures that could include research of historic records, previous cultural resource reports and data, and detailed recording and/or excavation for data recovery.	Research historical records, previous cultural resources reports and data, and the detailed recording and/or excavation for data recovery.
Reclamation commits to complying with U.S. Forest Service's California Native American policy and, when appropriate, to notifying potentially affected Native Americans and issuing follow-up letters that identify potential impacts and appropriate cultural resource mitigation measures.	Notification and follow-up letters identifying appropriate mitigation measures.

modify problem definitions, conceptual models, research, and implementation actions. Adaptive management provides a process that allows for incorporation of scientific advances into asset management and acquisition.

Threatened and Endangered Species

The EWA agencies have completed required Endangered Species Act consultations on the proposed action as described in this ROD. Reclamation initiated these consultations as a lead Federal agency on behalf of the five EWA agencies. NOAA Fisheries, through informal consultation, concurred with the EWA agencies' determination that the proposed action may affect, but is not likely to adversely affect any listed species under their jurisdiction. USFWS provided a biological opinion that found no jeopardy with the action in a typical EWA water purchase year. In the highly unlikely event that EWA will need more than 100,000 acre-feet of water from crop idling, the situation will be adaptively managed through discussion with the EWA agencies followed by subsequent reinitiation of consultation. Additionally, should any unforeseen effects on listed species arise during implementation of the proposed action, any of the EWA agencies will request reinitiation of consultation.

IV. Public Involvement

Public comments on the EWA proposal and alternatives were obtained during EWA scoping and the public review phase for the Draft and Final EIS/EIRs.

Public Participation Opportunities

EWA agencies solicited public input throughout production of the Draft EIS/EIR. Reclamation hosted public scoping sessions in six cities across the state of California: Sacramento, Chico, Oakland, Tracy, Bakersfield, and Los Angeles. Key issues identified during these meetings helped Reclamation and DWR select alternatives, focus environmental assessment, and develop the Draft EIS/EIR. EWA agencies again requested public input upon completion of the Draft EIS/EIR by hosting public workshops, hearings, and focused outreach sessions. Meeting notices were posted in appropriate newspapers to let communities know where to find the Draft EIS/EIR and when and where to discuss it. Reclamation and DWR offered presentations that were tailored to audiences' needs and requested both formal and informal comment.

Public Comments

Public meetings provided opportunities for stakeholders to submit both verbal and written comment. Additionally, stakeholders submitted written comments to the EWA agencies. The numbers and types of comments received are summarized below.

Comment Summary on July 2003 Draft EIS/EIR

In the Final EIS/EIR EWA agencies addressed a variety of comments on the alternatives described in the July 2003 Draft EIS/EIR. The comments addressed were compiled from:

- 33 letters from organizations;
- Oral comments recorded from approximately 10 organization representatives provided at one or more of the public meetings held throughout the state; and
- 11 form letters from agencies.

Based on the letters and oral presentations, a total of 609 individual comments were compiled from these sources; the Final EIS/EIR includes responses to these comments. The Final EIS/EIR also includes discussion on four recurring topics, including: (1) the relationship between the current EWA EIS/EIR and future programs, (2) Delta water quality, (3) the water transfer market, and (4) the benefits to fish resulting from implementation of EWA water management actions.

Comment Summary on January 2004 Final EIS/EIR

The EWA agencies received comments on the Final EIS/EIR from the California Farm Bureau Federation (Farm Bureau) and the U.S. Environmental Protection Agency (USEPA). The Farm Bureau's comments were intended to reiterate and supplement their earlier comments. These comments were addressed in the Final EIS/EIR.

The Farm Bureau's primary concerns include:

- *Direct, indirect, and cumulative impacts to agricultural water supply* **-** The Farm Bureau is concerned that impacts to water as an agricultural resource were not considered in the EWA EIS/EIR.
- *The project's impacts on food supplies* **-** The Farm Bureau states that the food supply impact analysis is skewed and does not consider worldwide supply and demand for rice or whether or not California will be able to obtain a sufficient supply of rice in the future.
- *Cumulative impacts of other agricultural resource conversion programs* **-** The Farm Bureau is concerned that the EWA EIS/EIR cumulative impact analysis does not consider all necessary cumulative actions, particularly those involving conversion of agricultural resources, either temporarily or permanently.
- *Mitigation for potentially significant impacts* **-** The Farm Bureau considers mitigation listed in the Final EIS/EIR to be inadequate for reducing impacts to less-than-significant levels for agricultural resources.
- *Inclusion of detailed analyses on the South Delta Improvement Program and other changes in project operations from the Napa Proposition* – The Farm Bureau states that the EWA

agencies have improperly deferred analyzing impacts of projects related to an expanded EWA.

- *Other instances of insufficient information* – The Farm Bureau is concerned with insufficiencies such as an inadequately described No Action alternative, the lack of impact analysis related to pumping curtailments and the No Action alternative, the exclusion of portions of the study *Farmland Conversion: Perceptions and Realities*, and an improper reference in the air quality section.

The USEPA comment letter reiterates several concerns raised on the Draft EIS/EIR including:

- The need for a stronger scientific basis for EWA actions;
- Incorporation of upcoming proposed facilities and operations; and
- More detail on water quality impacts, monitoring and protection of drinking water and other uses.

The USEPA recommends that these issues be addressed in an EIS/EIR for a long-term EWA program.

APPENDIX A

Volume IV, Final Environmental Impact Statement/Environmental Impact Report

Chapter 6
Mitigation Monitoring and Reporting Program

Chapter 6
Mitigation Monitoring and Reporting Program

6.1 Introduction

CEQA (PRC § 21081.6) requires that a public agency adopt a mitigation monitoring and reporting program for any project approved based on an EIR or a mitigated negative declaration. This program must ensure compliance with mitigation measures during project implementation. Agencies must adopt a program if they adopt findings, including mitigation measures, as a part of the project approval. The approving agency then has the discretion to decide whether it implements a reporting program, monitoring program, or some combination of both. A reporting program consists of written compliance review and guarantees that the approving agency is informed of compliance. A monitoring program consists of a project oversight process and guarantees that compliance is checked regularly.

Although not expressly required by NEPA, the President's Council on Environmental Quality directs all Federal agencies to include in an EIS the appropriate means to mitigate any adverse environmental impacts (40 CFR 1502.14(f), 1502.16(h)). The final Record of Decision (ROD) must state whether all practicable means to avoid or minimize environmental harm were adopted and include a monitoring and enforcement plan for any proposed mitigation (40 CFR 1505.2(c)). An EWAT Monitoring Subteam will be responsible for implementation of the Monitoring Plan.

6.2 EWA Mitigation and Monitoring Overview

EWA agencies acquire and manage assets to maximize benefits to at-risk native fish species, but asset management can change river flows and Delta outflows and also change the amount of seasonal wetlands within agricultural areas. The manner in which EWA agencies apply, acquire, and manage assets will be monitored to ensure that EWA fish benefit objectives are being met while adverse effects to other species and their habitats because of EWA actions are being minimized or avoided. The monitoring program will include both compliance and effectiveness monitoring. Data collected and reviewed under EWA monitoring efforts will be used to support adaptive management decisions that could change how some assets are managed should the overall goals of the EWA program related to fish species, habitats, and terrestrial species not be met. Prior to implementation of either action alternative, EWA agencies will document compliance with ESA, CESA, and NCCPA in the BO's and NCCP Approval.

The EWA agencies are responsible for the development and implementation of a combined monitoring and reporting program. The responsibilities of each agency may include data collection, analysis, interpretation, findings, and recommendations for changing EWA water asset acquisition and management strategies. Water

agencies and/or willing sellers may participate in monitoring related to asset management actions involving their facilities or land within their districts. For more information on agency development of the Monitoring Plan, see Section 7.1.2 of the ASIP. The Monitoring Subteam will review and assess monitoring data as necessary, to evaluate EWA action effects and will submit the data to peer review through the CALFED Science Program.

Tables 6-1 and 6-2 provide some early guidance for developing the mitigation monitoring and reporting program. Table 6-1 includes environmental measures incorporated into the project description and conservation measures associated with the project. This table lists the EWA action, the measures incorporated into the project/conservation measures, objective of that measure, monitoring/reporting action, responsible party, and timing.

Table 6-2 includes mitigation measures to reduce impacts to less-than-significant levels and lists the action, potential effect, mitigation measure, monitoring/reporting action, responsible party, effectiveness criteria, and timing. Table ES-4 in the Final EIR provides a summary of effects of the EWA that led to the development of the mitigation measures listed in Table 6-2. In both Tables 6-1 and 6-2, the willing seller is identified for some measures as the responsible agency. The EWA agencies will include provisions in the purchase contracts to require the willing seller to complete these measures.

In addition to the tables, the sections below discuss the general monitoring process for fisheries and vegetation/wildlife actions.

6.2.1 EWA Fish Monitoring Process

The EWA agencies initiate fish actions based on a range of data collected in the Delta and upstream rivers. The EWA agencies would use the same data to monitor the effectiveness of EWA actions and to implement conservation measures incorporated into the EWA project. Table 6-1 summarizes these conservation measures and EWA monitoring actions concerning fish species in the Delta and upstream rivers. This section further details the EWA agencies' process for monitoring and reporting fish abundance and distribution.

Delta Smelt

Delta smelt are vulnerable to entrainment at the CVP and SWP export facilities. The EWA agencies initiate pumping reductions after recommendations from the Data Assessment Team (DAT),[1] which uses data from various fish surveying methods and distribution indicators such as year-type hydrology, rate of export pumping , salvage estimates, location of X2, water quality, water flows and temperature, to assess

[1] The DAT is an open forum of people representing multiple government agencies (EWA agencies, U.S. Environmental Protection Agency, Western Area Power Administration), water districts (Contra Costa Water District, Westlands Water District, and Santa Clara Valley Water District), and environmental interest groups (Environmental Defense, The Bay Institute). It reviews information on the distribution and abundance of fish, CVP and SWP operations, and Delta water quality.

population and distribution. These multiple data sources are used because salvage estimates alone are a less effective sampling method for larval and early juvenile fish (Poage 2003). The EWA agencies would also use these data to determine the effectiveness of EWA actions taken to protect delta smelt.

The EWA agencies have also incorporated measures into the EWA program to protect and facilitate the recovery of delta smelt. EWA agencies will avoid increased exports when delta smelt are vulnerable by monitoring fish proximity to the Delta pumps. The EWA agencies will specifically monitor salvage numbers during July before the export of any EWA water. Monitoring data from several surveying methods will be used to estimate population of various life-stages of delta smelt. For adult fish, these tools include the fall and spring mid-water trawls, beach seining, the Chipps Island trawl, and estimation of gonadal development. For larval delta smelt, these methods will include light trapping and 20-mm surveys. For juvenile fish, these methods will include the 20-mm and summer tow-net surveys (Poage 2003). The EWA agencies will utilize data collected from these surveys to monitor delta smelt recovery after EWA measures have been implemented.

Salmonids

The EWA agencies use many data sources to decide when and how to take fish actions to protect salmon and steelhead in the Delta and upstream rivers. Salmon biologists collect data on fish passage through the Delta from the catch of juvenile salmon, and various monitoring stations measure environmental parameters, such as flow, water temperature, precipitation, and turbidity. The EWA agencies use this information to trigger closures of the Delta Cross Channel gates and alter export pumping patterns. This information will also be used to monitor the effectiveness of EWA actions.

The EWA agencies have incorporated measures into the EWA for protection of salmon and steelhead in the Delta and upstream rivers. Many programs monitor the presence of adult and juvenile salmonids in the Sacramento and San Joaquin River basins and the Delta (CALFED 2003a). The EWA agencies would utilize data collected from these surveys to monitor abundance, escapement, spawning distributions, and juvenile stranding. The EWA agencies would use salvage estimates at the Delta export facilities to adhere to biological opinions and permits for Project operations.

The EWA agencies have also agreed to evaluate the Folsom Reservoir coldwater pool availability prior to releasing EWA assets. Before taking fish actions, the EWA agencies meet with the American River Operation Group (AROG) to discuss the management of reservoir releases at Folsom for temperature requirements on the American River. On the basis of water temperature and coldwater pool availability, the AROG make recommendations to the EWA agencies on when to take fish actions. The EWA agencies would use the data collected by the AROG to monitor the effectiveness of EWA actions to maintain spawning habitat for salmonids.

6.2.2 Vegetation and Wildlife Monitoring

The conservation measures identified to protect vegetation and wildlife resources are included in the EIS/EIR, USFWS's biological opinion, and the NCCP approval. The willing seller is responsible for completing many of these conservation measures. The biological opinion will require the EWA agencies to comply with these conservation measures; the EWA agencies in turn will contractually require the willing sellers to perform these measures. EWA actions affecting vegetation and wildlife will be confined to river corridors, canals, and Delta waterways that convey water to idled lands and rice and cotton cropland offered for crop idling programs within the EWA action area. (See Section 3.2 of Volume 1 for more information.) Monitoring will only be done during those times and in those places where EWA actions are taken.

Table 6-1
Environmental Measures Incorporated into the Project/Conservation Measures

EWA Asset Acquisition/ Management Action	*Environmental Measures Incorporated into the Project/ Conservation Measures*	*Objective*	*Monitoring/Reporting Action*	*Responsible Party*	*Timing*
Water Supply					
Stored reservoir water	Refill Criteria	Prevent EWA purchases from affecting downstream users.	Use of Impact Account (amount of water that would have flowed downstream in absence of the water transfer, but which did not because of reservoir refilling during periods when the Delta is in balanced conditions). The amount of Impact Account water will be computed daily during the refill period. On days of excess conditions, the daily impact equals zero. On days of balanced conditions, the daily impact equals the daily refill volume. The Impact Account balance is the sum of the daily impact amounts.	Willing seller is responsible for the action and to coordinate with Reclamation and DWR operations about when the Delta is in balanced or excess conditions	After transfer
Water Quality					
Stored reservoir water, groundwater substitution, crop idling, stored groundwater purchase	Carriage Water	Maintain water quality within the Delta at without-EWA constituent levels.	Use of DSM2 to estimate the amount of carriage water needed to prevent an EWA-related increase in chloride concentration in the Delta	Reclamation/DWR	During transfer
Stored groundwater purchase	California Aqueduct Pump-in Quality	Maintains that groundwater quality falls within historical constituent levels measured at the O'Neill Forebay Outlet.	Analyze and monitor groundwater quality in compliance with DWR's interim policy on groundwater pump-in to the California Aqueduct.	Willing seller/DWR	During transfer
Fisheries and Aquatic Ecosystems					
All species					
Stored reservoir water, groundwater substitution, crop idling, stored groundwater purchase	Coordinate EWA water acquisition and transfer actions that could affect management of evaluated species with Federal, State, and other CALFED agencies, and regional programs.	Avoid conflicts among management objectives.	Actions are incorporated in the following measures for fisheries and aquatic ecosystems.	EWA agencies	Ongoing
General Fish Species					
Stored reservoir water, groundwater substitution, crop idling, stored groundwater purchase	Avoid acquisition and transfer of water that would reduce flows essential to maintaining populations of native aquatic species in the source river.	Maintain the essential flows of fish habitat for spawning, rearing, and migration	Willing sellers to develop water transfer schedules that protect fish habitat in cooperation with EWA agencies. Management agencies are to check necessary flows for each river based on historical releases and flows harmful to fish. Project Agencies to report the status of transfers (predicted changes in flow) and Management Agencies to report needs of aquatic species.	EWA agencies/willing sellers	Prior to and during transfers.
Stored reservoir water, groundwater substitution, crop idling, stored groundwater purchase	Acquisitions and transfers will not increase exports during times of the year when anadromous and estuarine fish are most vulnerable to damage or loss at project facilities or when their habitat may be adversely affected.	Protect at risk fish species in vicinity of Delta pumps (reduce take at pumps)	EWA agencies to monitor fish distribution in the Delta and salvage data at the CVP/SWP export facilities. The DAT will assess vulnerability of fish to current and forecasted export pumping regimes, report their analysis to the WOMT, and make recommendations for project operational changes to the Project Agencies.	EWA agencies	During export pumping of transferred water.
Stored reservoir water	Avoid acquisition and transfer of stored reservoir water quantities that would impair compliance with flow requirements and maintenance of suitable habitat conditions in the source river in subsequent years.	Comply with minimum flow requirements downstream in the post transfer period to provide for fish habitat related to spawning, rearing, and/or migration	EWA agencies will work with willing sellers to ensure that basic flows are maintained during refill. Monitoring of reservoir releases related to stream gage data.	Willing sellers with oversight by EWA agencies	During refill (winter/spring)
Delta Smelt					
Stored reservoir water, groundwater substitution, crop idling, stored groundwater purchase	Adhere to the terms and conditions in all applicable CESA and FESA biological opinions and permits for CVP and SWP operations.	Protect and facilitate recovery of Delta smelt	Management agencies to monitor salvage numbers at Delta pumps	EWA agencies	During transfer
Stored reservoir water, groundwater substitution, crop idling, stored groundwater purchase	Avoid initiation of EWA water exports in July until delta smelt will not be harmed.	Protect and facilitate recovery of Delta smelt	EWA agencies to monitor salvage numbers at Delta pumps	EWA agencies	July

Table 6-1
Environmental Measures Incorporated into the Project/Conservation Measures

EWA Asset Acquisition/ Management Action	*Environmental Measures Incorporated into the Project/ Conservation Measures*	*Objective*	*Monitoring/Reporting Action*	*Responsible Party*	*Timing*
Salmonids					
Stored reservoir water, groundwater substitution, crop idling, stored groundwater purchase	Adhere to the terms and conditions in all applicable CESA and FESA biological opinions and permits for CVP and SWP operations.	Protect and facilitate recovery of at risk salmonid species	EWA agencies to monitor salvage numbers at Delta pumps	EWA agencies	During transfer
Stored reservoir water, groundwater substitution, crop idling, stored groundwater purchase	Minimize flow fluctuations resulting from the release of EWA assets from Project reservoirs to reduce or avoid stranding juveniles.	Maintain the essential flows of streams for adequate fish habitat to reduce or avoid the stranding of juveniles	EWA agencies will evaluate when juveniles are present in subject streams, monitor flow data, and compare flow data with known ranges to work with Project operators in planning how to ramp down/up reservoir releases	EWA agencies	Before and during water releases
Central Valley Steelhead					
Stored reservoir water	In May, evaluate Folsom Reservoir coldwater pool availability to benefit returning adult fall-run Chinook salmon prior to releasing EWA assets.	Optimally manage CVP facilities to maintain essential spawning habitat for salmonids	Reclamation to evaluate coldwater pool in relation to release schedules based on water demand, water quality, and fish needs. MAs to read temperatures at gages along the river; temperature profile in reservoir	Reclamation to manage water; MAs to request water at times when it will benefit fish.	May to December
Central Valley Fall/Late-Fall Run Chinook Salmon					
Stored reservoir water	In May, evaluate Folsom Reservoir coldwater pool availability to benefit over-summering juvenile steelhead prior to releasing EWA assets.	Optimally manage CVP facilities to maintain essential spawning habitat for salmonids	Reclamation to evaluate coldwater pool in relation to release schedules based on water demand, water quality, and fish needs. MAs to read temperatures at gages along the river.	Reclamation to manage water; MAs to request water at times when it will benefit fish	May to December
Stored reservoir water release	Consult with the Multi-agency Team regarding ramping considerations before and after EWA transfers to avoid non-volitional steelhead downstream movement.	Prevent or control non-volitional movement of juvenile fish	Stream flows and fish monitoring to be performed by Yuba County Water Agency.	EWA agencies/YCWA	Prior to and after transfer.
Vegetation and Wildlife					
All species					
Stored reservoir water, groundwater substitution, crop idling, stored groundwater purchase	Coordinate EWA water acquisition and transfer actions that could affect management of evaluated species with Federal, State, and other CALFED agencies and regional programs.	Avoid conflicts among management objectives.	Actions are incorporated in the following measures for vegetation and wildlife.	Reclamation/DWR	Prior to transfer.
Giant Garter Snake					
Crop idling	Adhere to programmatic biological opinion for giant garter snake (GGS).	Protect the GGS, which is highly dependent on rice fields and associated irrigation ditches.	Submit package including maps and description of where the crops will be idled and proposed minimization measures.	Willing seller prepares the package and the EWA agencies review it	Prior to transfer.
Crop idling	Ensure parcels from which water is to be acquired are outside of mapped proscribed areas.	Protect the GGS, which is highly dependent on rice fields and associated irrigation ditches.	Compare idled fields to maps provided in ASIP (Volume III).	Willing seller, with review by EWA agencies	During transfer.
Crop idling	Ensure water is maintained in irrigation and drainage canals to provide movement corridors.	Protect the GGS, which is highly dependent on rice fields and associated irrigation ditches.	Field verify for adequate return ditch flows.	Willing seller to maintain water levels, EWA agencies to assess compliance	During transfer
Crop idling	Ensure block size of idled rice parcels will be limited to 160 acres.	Protect the GGS, which is highly dependent on rice fields and associated irrigation ditches.	Verify through field visits or aerial photography.	Reclamation and DWR with willing seller	Prior to and during transfer
Crop idling	Ensure mowing along irrigation and drainage canals will be minimized and mowers will be elevated to at least 6 inches above ground level.	Protect the GGS, which is highly dependent on rice fields and associated irrigation ditches.	Field verify.	Willing seller to maintain vegetation, EWA agencies to assess compliance	During transfer
Crop idling	Ensure that, if canal maintenance such as dredging is required, vegetation will be maintained on at least one side.	Protect the GGS, which is highly dependent on rice fields and associated irrigation ditches.	Field verify for maintenance of irrigation ditch habitat.	Willing seller, with review by the EWA agencies	During transfer

Table 6-1
Environmental Measures Incorporated into the Project/Conservation Measures

EWA Asset Acquisition/ Management Action	*Environmental Measures Incorporated into the Project/ Conservation Measures*	*Objective*	*Monitoring/Reporting Action*	*Responsible Party*	*Timing*
Crop idling	Maximize geographic dispersal of idled fields.	Protect the GGS, which is highly dependent on rice fields and associated irrigation ditches.	Compare idled fields to maps.	Reclamation and DWR with willing seller	Prior to transfer
Crop idling	Avoid purchasing water from the same field for more than two consecutive years or from a rice field that was idled for another program in the previous two consecutive years.	Protect the GGS, which is highly dependent on rice fields and associated irrigation ditches.	Verify through field visits or aerial photography.	Reclamation and DWR with willing seller	Prior to transfer
Greater Sandhill Crane					
Crop idling	Avoid or minimize actions near known wintering areas in the Butte Sink (from Chico in the north to the Sutter Buttes and from Sacramento River in the west to Highway 99) that could adversely affect foraging and roosting habitat.	Limit reduction in the amount of over-winter forage for migratory birds.	Compare idled fields to wintering areas on ASIP maps.	Reclamation and DWR with willing seller	Prior to transfer
Black Tern					
Crop idling	Avoid EWA crop idling actions that could result in the substantial loss or degradation of suitable habitat in areas that support core populations of evaluated species that are essential to maintaining the viability and distribution of evaluated species.	Limit reduction in the amount of nesting and forage habitat during the summer rearing season.	GGS actions on rice fields will also benefit the black tern; therefore, the actions identified above for GGS will address this measure.	Reclamation and DWR with willing seller	Prior to transfer.
Crop idling	Maintain quantities of water in agriculture return flow ditches that maintain existing wetland habitat.	Limit reduction in the amount of nesting and forage habitat during the summer rearing season.	Field verify for adequate return ditch flows.	Willing seller	During transfer.
Western Pond Turtle					
Crop idling	Maintain water levels in irrigation and drainage canals to within 6 inches of non-program conditions and do not completely dry out canals.	Ensure effects of crop idling actions on western pond turtle habitat are avoided or minimized.	Field verify for maintenance of irrigation ditch habitat.	Willing seller	During transfer.
Non-tidal Freshwater Permanent Emergent, Natural Seasonal Wetland, and Valley/Foothill Riparian Communities					
Crop idling, groundwater substitution	Well adequacy review. (See Groundwater mitigation measures in Table 6-2.)				
Crop idling, groundwater substitution	Monitoring program. (See Groundwater mitigation measures in Table 6-2.)				
Valley/Foothill Riparian and Montane Riparian Communities					
Stored reservoir water, groundwater substitution, crop idling, stored groundwater purchase	Monitoring program (In cooperation with other programs.)	Ensure long-term effects on these communities are minimized or avoided.	Observe habitat changes as flows in waterways change because of the EWA.	CDFG	Ongoing.
Managed Seasonal Wetlands					
Crop idling	Maintain drainage systems at a water level that would maintain existing wetlands providing habitat to covered species.	Maintain flow for landowners of managed seasonal wetlands who depend upon agricultural return flows for part or all of their water supply.	Field verify for maintenance of irrigation ditch habitat.	Willing seller	During transfer.
Seasonally Flooded Agricultural Lands					
Crop idling	See measures for GGS.				

Table 6-1
Environmental Measures Incorporated into the Project/Conservation Measures

EWA Asset Acquisition/ Management Action	*Environmental Measures Incorporated into the Project/ Conservation Measures*	*Objective*	*Monitoring/Reporting Action*	*Responsible Party*	*Timing*
Regional and Agricultural Economics					
Crop idling	Limit purchase of water via crop idling if more than 20 percent of recent harvested rice or cotton acreage in the county would be idled through EWA water acquisitions. (The EWA would idle less than 20 percent if other reasonable foreseeable transfers under other programs were idling land.) Acquire less water by crop idling when the level of land idling is already larger than historically normal.	Minimize socioeconomic effects on local areas.	Gather data regarding the amount of crop acreage previously harvested and idled in participating counties. Confirm crop idling data by the local Farm Bureau, local UCCE offices, Agricultural Commissioners Office, or other crop-specific authorities.	Reclamation/DWR	Prior to transfer.
Agricultural Social Issues					
Crop idling	See measures for Regional and Agricultural Economics				
Cultural Resources					
Stored reservoir water, source shifting	Determine whether reservoir levels would exceed normal historic operating range.	Reduce the EWA's potential effect on historic properties and unique archeological resources.	Forecast end-of-season reservoir levels.	Reclamation	Prior to transfer.
	Reach agreement to conduct cultural resources inventory and evaluation.	Reduce the EWA's potential effect on historic properties and unique archeological resources.	Sign agreement between Reclamation, State Historic Preservation Office, and willing seller.	Reclamation	After transfer
Indian Trust Assets					
Groundwater substitution	Consult with tribes if potential effect to ITAs is identified).	Reduce the EWA's potential effect on ITAs.	Identify nature of the effect and appropriate mitigation measures.	Reclamation	Prior to transfer.

Table 6-2
Mitigation and Monitoring Requirements

Action	*Potential Effect*	*Mitigation Measure*	*Monitoring/Reporting Action*	*Responsible Party*	*Effectiveness Criteria*	*Timing*
Water Supply						
Crop idling, groundwater substitution, stored reservoir water, stored groundwater purchase	Change in the rate and timing of Delta inflows and the amount and timing of diversions at the SWP and CVP pumps lowering South Delta water levels.	Actions, such as installation of temporary pumps or dredging, would reduce effects to South Delta water users. The EWA agencies will pay their share for additional actions needed to increase South Delta water levels to the Baseline Condition.	Document diverter complaints and EWA agency contributions to the resolutions.	Reclamation/DWR	Feedback from Diverters in the South Delta indicating that they are not experiencing water levels of concern.	During export pumping of transferred water (typically July through September).
Crop idling, groundwater substitution	Decreases in return flows to agricultural drainages used by others, thereby reducing water quantity to agriculture and other water users.	Willing sellers will be required to maintain water levels in drainage systems that do not reduce supplies to downstream users.	Monitoring of water level in district conveyance facilities.	Willing seller	No documented complaints by downstream diverters.	Irrigation season.
Groundwater						
Groundwater substitution	Decrease in water levels in neighboring surface water channels.	Well Review to avoid potential effect.	Well-specific data including location of production and monitoring wells, driller's log giving geology and well construction details, and additional information that characterizes the hydrogeologic environment near the well.	Willing seller to submit well review information; Review Team (Reclamation/DWR hydrologists) to approve well for transfer.	Willing seller provides sufficient information for the Review Team to minimize the risk of substantial changes in surface water flow.	No less than 1 month prior to transfer.
Groundwater substitution	Reduction in groundwater levels in excess of seasonal variations.	Pre-Purchase Groundwater Evaluation to avoid potential effect.	If groundwater levels are high compared to historical fluctuations, regional groundwater level data must be submitted. If groundwater levels are within an intermediate or lower range of historical fluctuations, a pre-purchase evaluation must be submitted and include the following: (1) groundwater level fluctuations for existing monitoring wells; (2) surface water imports and applied water recharge; (3) recent and historical hydrology; (4) expected groundwater extraction activities; and (5) areas of special concern. If selling agency overlies an overdrafted subbasin, groundwater management strategies must be in place to manage the groundwater resources. A formal determination that transfer would not contribute to long-term overdraft is required; this may include the pre-purchase evaluation described above.	Willing seller to develop pre-purchase groundwater evaluation in cooperation with Review Team (Reclamation/DWR hydrologists).	Willing seller provides sufficient information to Review Team to demonstrate transfer would not cause a regional impact.	No less than 1 month prior to transfer.
Groundwater substitution	Reduction in groundwater levels in excess of seasonal variations.	Monitoring Program	Monitoring plan must include the following components: (1) a network of monitoring wells to characterize groundwater levels before, during, and after transfer; (2) periodic flow meter readings at the extraction pumps; (3) periodic measurements of groundwater levels; (4) groundwater quality testing; (5) means to detect land subsidence or a credible analysis demonstrating that subsidence is unlikely; and (6) a coordinated means to collect data and cooperate with other monitoring efforts in the area.	Willing seller to develop monitoring program in cooperation with Review Team (Reclamation/DWR hydrologists). During the transfer, Review Team to verify that willing seller is following monitoring program.	Monitoring is done on proposed schedule; able to produce monitoring records to Review Team during audit.	Submittal of monitoring plans no less than 1 month prior to transfer, monitoring continues throughout transfer, and submittal of monitoring records to Review Team on completion of monitoring program.

Table 6-2
Mitigation and Monitoring Requirements (cont'd)

Action	*Potential Effect*	*Mitigation Measure*	*Monitoring/Reporting Action*	*Responsible Agency*	*Effectiveness Criteria*	*Timing*
Groundwater (cont'd)						
Groundwater substitution	Reduction in groundwater levels in excess of seasonal variations.	Mitigation Program	Mitigation plan must include the following components: (1) procedure for the seller to receive reports of potential impacts and to report that information to the Review Team; (2) procedure for investigating reported effect; (3) development of mitigation options, in cooperation with the affected party; (4) assurances that adequate financial resources are available to cover reasonably anticipated mitigation needs; and (5) commitment to avoid or mitigate such effects during future transfers to the EWA.	Willing seller to develop mitigation plan in cooperation with Review Team (Reclamation/DWR hydrologists). Willing seller to mitigate any significant environmental impact; Reclamation/DWR to determine that mitigation is appropriate and effective.	No substantiated claims of an unmitigated environmental impact.	Submittal of mitigation plans no less than 1 month prior to transfer; mitigation conducted in response to verified impact.
Geology and Soils						
Crop idling	Increase in soil erosion from idled fields.	Dust Suppression Plan	Dust suppression plan must include a combination of measures that would reduce opacity to less than 20 percent. Such measures could include crop shifting, increasing surface roughness, planting wind breaks, leaving crop residue on the fields from previous year's harvest, or restricting motorized vehicles on the idled land.	Willing seller in coordination with Reclamation/DWR	Approval by the San Joaquin Valley Air Pollution Control District (APCD); no public complaints during transfer to the APCD.	Prior to transfer
Air Quality						
Crop idling	Increase of fugitive dust and PM_{10} emissions from idled fields.	Dust Suppression Plan	Dust suppression plan must include a combination of measures that would reduce opacity to less than 20 percent. Such measures could include crop shifting, increasing surface roughness, planting wind breaks, leaving crop residue on the fields from previous year's harvest, or restricting motorized vehicles on the idled land.	Willing seller in coordination with Reclamation/DWR	Approval by the San Joaquin Valley Air Pollution Control District (APCD); no public complaints during transfer to the APCD.	Prior to transfer
Groundwater substitution	Increase of emissions from use of groundwater pumps.	The use of alternative power including electrical pumps or the requirement that the willing seller to seek offsets for project-related emissions.	Data submitted must include types of pumps to be used for transfer, total emissions anticipated from groundwater substitution, and plan for measures to reduce/offset the emissions.	Willing seller to provide pump and emissions data, as well as plan for mitigation; Reclamation/ DWR to approve.	Mitigation plan reduces project-related emissions to a negligible amount.	Prior to transfer
Agricultural Land Use						
Crop idling	Temporary decrease in the amount of land categorized as prime, statewide importance, or unique farmland.	Not idling a particular parcel of land if such idling would result in a lower classification of land as defined under the FMMP and Williamson Act.	Data submitted must include land classifications of cropland and recent idling history of specific parcels.	Reclamation and DWR to gather data regarding land classifications; willing seller to supply data on recent idling history.	No lowering of classification if land is idled for transfer.	Prior to transfer.

Table 6-2
Mitigation and Monitoring Requirements (cont'd)

Action	*Potential Effect*	*Mitigation Measure*	*Monitoring/Reporting Action*	*Responsible Agency*	*Effectiveness Criteria*	*Timing*
Power						
Crop idling, groundwater substitution, stored reservoir water, stored groundwater purchase, predelivery, source shifting	Shift in pumping times to periods of higher electricity costs.	During times when acquisition of water for EWA would result in the value of power generated later in the summer being less than under the Baseline Condition, the EWA Program is responsible for covering those additional costs, as outlined in the CALFED ROD.	A financial plan shall address: (1) increased Project operating costs, both power and ancillary costs; (2) crediting the EWA for reduced operating costs; (3) crediting the EWA for power benefits; and (4) revenues realized from the sale of EWA assets. Additionally, the EWA agencies will develop alternatives for funding power and other incidental costs, if such costs interfere with the successful operation of the EWA.	Reclamation/DWR	Projects have no additional pumping costs because of EWA transfers.	Financial plan outlined prior to transfer; repayment (if necessary) during and after transfer.
Cultural Resources						
Stored reservoir water, source shifting	Change in water surface elevation exposing cultural resources to increased cycles of inundation, drawdown, and erosion.	Consult with the Forest Service and State Historic Preservation Officer on potential effects and appropriate mitigation measures.	Programmatic agreement.	Reclamation	Concurrence with U.S. Forest Service and SHPO.	After transfer
		Inventory and evaluation identifying cultural resources.	Determination of eligibility and effect.	Willing seller	Concurrence with U.S. Forest Service and SHPO.	After transfer
		Historic property treatment.	Research historical records, previous cultural resources reports and data, and the detailed recording and/or excavation for data recovery.	Reclamation and/or willing seller	Cultural resource preservation.	After transfer
		Mitigation for impacts to resources covered under U.S. Forest Service's California Native American policy (if required).	Notify potentially affected Federally recognized Indian tribes and issue follow up letters identifying potential impacts and appropriate mitigation measures.	Reclamation	Confirmation by U.S. Forest Service.	After transfer
Recreation Resources						
Source shifting	Change in reservoir water surface elevation affecting fishing and recreational opportunities.	For Lake Perris, EWA agencies with input from officials at Lake Perris will set a limitation on the amount of drawdown. For Castaic Lake, input from recreation officials will be considered.	Forecast end of season reservoir levels.	DWR and recreation officials.	Agreed upon amount of drawdown does not cause an impact on recreation as defined in Chapter 14.	Prior to transfer.