ENVIRONMENTAL WATER ACCOUNT

FINAL ENVIRONMENTAL IMPACT STATEMENT/
ENVRIONMENTAL IMPACT REPORT

APPENDIX B

U.S. Fish and Wildlife Service
Programmatic Biological Opinion

The January 15, 2004 Biological Opinion (reference #1-1-03-F-0321) prepared by the U.S. Fish and Wildlife Service was issued to the Bureau of Reclamation (Reclamation) as the lead consulting agency. However, as noted in the opinion, Reclamation requested formal consultation on behalf of all 5 EWA agencies, including California Department of Water Resources, U.S. Fish and Wildlife Service, NOAA Fisheries, and California Department of Fish and Game. Therefore, the opinion and the requirements therein relate to the EWA Program as a whole and not just one implementing agency. In other words, the EWA Program, through the 5 EWA agencies, will be responsible for the implementation of the EWA consistent with the biological opinion.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In Reply Refer To
1-1-03-F-0321

JAN 15 2004

Memorandum

To: Regional Environmental Officer, Mid-Pacific Regional Office, Bureau of Reclamation, Sacramento, California

From: Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California

Subject: Programmatic Biological Opinion on the Proposed Environmental Water Account Program, Mid-Pacific Regional Office

This is in response to your request for formal consultation with the U.S. Fish and Wildlife Service (Service) on the Environmental Water Account Program (EWA), as established under the CalFed Bay-Delta Program Record of Decision (ROD). This consultation is pursuant to section 7(a) of the Endangered Species Act of 1973, as amended (Act). The U.S. Fish and Wildlife Service (Service) received your memorandum on September 4, 2003. The purpose of the EWA Program is to provide a cooperative management to protect at-risk fish of the Bay-Delta estuary through environmentally beneficial changes in Central Valley Project/State Water Project (CVP/SWP) operations at no uncompensated water cost to the CVP/SWP water users. The U.S. Bureau of Reclamation (Reclamation) is requesting this consultation on behalf of all EWA agencies including the Service, National Marine Fisheries Service, California Department of Fish and Game (CDFG), Reclamation, and California Department of Water Resources (DWR).

The Service concurs that the proposed project is not likely to adversely affect the federally threatened delta smelt (*Hypomesus transpacificus*) (smelt) or its critical habitat. The Service removed the Sacramento splittail (*Pogonichthys macrolepidotus*) (splittail) from the list of threatened species on September 22, 2003. Therefore, project effects to splittail do not need to be analyzed in this consultation with the Service.

As stated in your September 4, 2003, letter, the proposed project may affect the threatened giant garter snake (*Thamnophis gigas*)(snake). Because the snake is found within the proposed project's action area, temporary removal of rice field habitat by the proposed project may result in the take of snakes. Because the amount of snake habitat (and, consequently, the number of snakes) affected in any given year will fluctuate, you have requested that the Service develop a programmatic biological opinion that may be appended as each year's crop idling/substitution activities are determined. We agree that this approach is necessary in order to adequately analyze the potential effects of the proposed project on the snake. Therefore, the objective of this formal consultation will be to develop a programmatic consultation for the effects of the proposed project on the snake, if the EWA Program is determined to not jeopardize the survival or recovery of the species.

Consultation History

August 28, 2000. The Service issues a programmatic biological opinion on the CALFED Bay-Delta Program. This biological opinion on the EWA Program tiers from, and is consistent with, the CALFED Bay-Delta Program programmatic biological opinion.

September 4, 2003. The Service receives a request for formal consultation from Reclamation on behalf of the 5 EWA agencies.

October 2, 2003. Memo issued by the Service to Reclamation requesting additional information.

November 13, 2003. On behalf of the 5 EWA agencies, Reclamation provided the additional information requested by the Service.

BIOLOGICAL OPINION

Description of the Proposed Action

The purpose of the EWA is to provide protection to at-risk native fish species of the Bay-Delta estuary through environmentally beneficial changes in CVP/SWP operations at no uncompensated water cost to the Project's water users. This involves changing Project operations to benefit fish and the acquisition of alternative sources of project water supply, called "EWA assets", which the EWA agencies would use to replace the regular project water supply lost by pumping reductions. The project description which follows is for the implementation of the EWA through December 30, 2007.

The Proposed Action would allow the EWA agencies (Service, National Oceanic and Atmospheric Agency (NOAA) Fisheries, California Department of Fish and Game, Reclamation, and California Department of Water Resources (DWR)) to use water for a broad range of fish actions. These actions would include reduction of Delta export pumping, closing the Delta cross

channel, augmenting Delta outflow, or increasing instream flows. The Proposed Action would allow the EWA agencies to respond to changes over and above the regulatory base condition of CVP/SWP operations, and at the same time provide for anticipated levels of fish actions. The EWA agencies would determine the amount of assets to acquire based on available funding and asset prices, but would also be governed by the projected need, as reflected by factors such as the amount of debt or of assets carried forward and system hydrology. There will be flexibility to respond to changing fish and hydrologic conditions through the year.

The Proposed Action would allow the EWA agencies to vary water asset purchases from those defined in the CALFED Record of Decision (ROD) to meet water needs in a specific year. The CALFED ROD identified a minimum of 185,000 acre-feet of water purchases per year, with at least 35,000 acre-feet coming from areas that are upstream from the Delta and 150,000 acre-feet from the export service areas. The Proposed Action would allow the EWA Project Agencies to purchase up to 600,000 acre-feet of water, although the EWA agencies would typically acquire 200,000 to 300,000 acre-feet except in wet years or years with high fish needs.

The EWA agencies have established operating tools that allow them to protect fish. These operational tools include (1) reducing export pumping, (2) closing the Delta Cross Channel (DCC) gates, (3) increasing instream flows, and (4) augmenting Delta outflow. These actions would take place throughout the year, under various conditions. The EWA agencies would use their acquired assets, in addition to actions specified in the regulatory baseline level of fishery protection, to meet protection objectives for at-risk fish species within the Sacramento and San Joaquin Rivers and their tributaries and the Delta.

Actions to Protect Fish

Export Pumping Reductions Reducing export pumping can protect fish in the vicinity of the Project export pumps, and also can provide secondary benefits to fish throughout the Delta. The Management Agencies (Service, NOAA Fisheries, and California Department of Fish and Game) would consider pump reductions from December to July, but vary them each year depending on the behavior of the fish and hydrologic conditions and water quality. The EWA agencies would use the assets to take fish actions when they deem most appropriate. Export curtailments during the December through June period may be targeted to benefit out-migrating juvenile salmonids. Curtailments during January and February may be targeted to benefit spawning and pre-spawning delta smelt, and curtailments in late April through July may be targeted to benefit larval and post-larval delta smelt.

Delta Cross Channel Gates Closure Closing the DCC gates would increase the likelihood that juvenile spring-run and winter-run Chinook salmon and steelhead smolts remain in the mainstem Sacramento River, which would improve their survival and likelihood of successful out-migration through the western Delta and San Francisco Bay. Should DCC gates be closed outside the regulatory baseline, EWA assets would be used to compensate water users for water supply losses from these reductions. Additional gate closures would typically occur in November, December, January, or June.

Increasing Instream Flows Increasing instream flows would improve habitat conditions for anadromous and resident fish. The Proposed Action would include flow increases beyond those in the baseline level of fisheries protection. Supplemental flows would provide additional water that primarily benefits salmon and steelhead adult immigration, spawning, egg incubation, rearing, and emigration of juveniles through the regulation of pulse flows, water temperature, water quality, and the maintenance of attraction and flushing flows. Instream flows may also aid white and green sturgeon emigration, spawning, egg incubation, and rearing and American shad spawning, incubation, and rearing.

The EWA instream flow actions could only occur on the waterways where the EWA purchases assets, which include but are not limited to the Sacramento, Feather, Yuba, American, Merced, and San Joaquin Rivers. The EWA actions to increase instream flows would use the Anadromous Fish Restoration Program (AFRP) as a guide to identify the times and locations that supplemental flows are needed. The CALFED Environmental Water Program (EWP) and the CVPIA (b)(2) water both help to meet the above objectives. CVPIA (b)(2) water can currently be used to augment instream flows, and the EWP may be able to take these actions in the future.

Augmenting Delta Outflows Fresh water from the Delta flows to the San Francisco Bay, which is more saline that the Delta estuary. The fresh water mixes with salt water in the Suisun Bay area, and the mixing zone location varies depending on the Delta outflow. Higher amounts of Delta outflow push the saltwater mixing zone farther out to the Bay, and lower flows allow the saltwater zone to move farther into the Delta. Augmenting Delta outflows could move the saltwater mixing zone farther into the Bay, improving the water quality within the Delta. The Proposed Action could include actions to augment Delta outflow in addition to outflows required by the State Water Resources Control Board's (SWRBC) Decision 1641 and the existing baseline of fishery protection. Augmenting Delta outflow would also help to restore a more natural flow pattern through the Delta, which would help outmigrating fish.

In addition to taking direct actions to augment Delta outflows other actions within the Proposed Action would have the secondary benefit of increasing Delta outflows. When the EWA agencies reduce Delta export pumping, the water that would have been pumped becomes Delta outflow. Delta outflow may also increase during the summer months when EWA assets are moved through the Delta if the transfers must include carriage water to maintain water quality.

Decision-Making Process The EWA is implemented by the EWA Team (EWAT), a group of managers and technical staff from the five EWA implementing agencies responsible for carrying out the acquisition and management of EWA assets. The Data Assessment Team (DAT), which in addition to agency staff includes technical representatives from the stakeholder community, recommends when fish actions should be taken, using a consensus process based on biological indicators for the species considered to be at immediate risk. The Water Operations Management Team (WOMT), made up of management-level representatives of the five EWA implementing agencies, then considers the technical input of the DAT when deciding when fish actions should be taken. When the EWAT or the DAT identify policy or other issues upon which they cannot reach consensus, those issues are elevated to the WOMT for resolution.

Decisions are reported to the CALFED Operations Group and, when appropriate, to the SWRCB, involving agency and stakeholder representatives.

In November and December, the EWA agencies begin the process of identifying placeholders (best available estimate of the water assets that the fish would need, by month, during the upcoming water year) for the next year in coordination with the (b)(2) interagency team. These placeholders are determined based upon biological objectives and hydrology (which includes the latest forecast/allocation study for both the CVP and SWP). The placeholders are re-evaluated monthly to determine whether they are still applicable for the current month or for the following months (up until June). The expenditure of the EWA placeholders (assets) in a particular month is based upon the biological decision trees for salmon and delta smelt and real-time monitoring of incidental take, fish distribution and Delta conditions. If not used in a particular month the placeholders could be reassigned and used in another month. The purposes in identifying these placeholders are to assist the Project Agencies in acquiring contracts for water purchases and to inform the EWA agencies of upcoming EWA actions.

Asset Acquisition and Management

The EWA Project Agencies would use any of the acquisition methods described below to purchase water. Flexibility to purchase from any of these sources is critical to helping the EWA run efficiently because it would allow the Project Agencies to purchase the least expensive water available in any given year. Table 1 lists agencies that may be willing to sell water to the EWA or have sold water to the EWA in past years, along with a general range of potentially available water volumes. The EWA Project Agencies could only make purchases if a seller is willing to participate. 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. The Proposed Action includes effects associated with the potential transfers in Table 1. Other future waters may require additional environmental documentation.

Upstream of the Delta The Sacramento and San Joaquin Rivers and their tributaries are defined as upstream of the Delta. Potential asset acquisition in this region include stored reservoir water, groundwater substitution, crop idling/substitution, and stored groundwater purchase. The EWA actions are intended to protect fish in the South Delta by reducing pumping when it would help at-risk fish species, then transferring EWA assets across the Delta at other times to repay CVP and SWP users for water lost during pump reductions.

Both the CVP and SWP have pumping plants in the southern portion of the Delta – the Tracy Pumping Plant and the Harvey O. Banks Delta Pumping Plant, respectively. The Project Agencies use these pumping plants to pump water to users in the Export Service Area. Cross-Delta transfer capacity would be generally available to the EWA when the Delta is in balanced conditions, the SWP pumps are operating below their maximum permitted capacity to deliver water to contractors, and there is no reduction for fish purposes. Typically, the CVP pumps are operating at full capacity for most of the year (except in dry years), so the EWA would primarily use the SWP pumps.

Table 1:
Potential Asset Acquisitions and Management for the Proposed Action (Upper Limits)

Water Agency	Range of Possible Acquisitions (TAF)				Management	
	Stored Reservoir Water	Groundwater Substitution	Crop Idling/ Subst.	Stored Groundwater Purchase	Groundwater 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		30-40				
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	50-185	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 cropidling.
Table 1 does not contain an exhaustive list of potential EWA sellers. Table 1 lists agencies that may be willing to sell water to the EWA or have sold water to the EWA in past years along with a general range of potentially available water volumes. None of the purchases in Table 1 are guaranteed. The EWA Project Agencies could only make purchases if the sellers is willing to participate.

Shifting pumping to times that are less sensitive to fish would increase pumping during times when fish are absent, which sometimes requires carriage water to comply with water quality regulation in the Delta. Below are brief descriptions of methods to acquire water. More detailed descriptions can be found in the ASIP.

- *Stored Reservoir Water*. The EWA Project Agencies could acquire water by purchasing surface water stored in reservoirs owned by non-Project entities (those that are not part of the CVP or SWP). To ensure that purchasing this water would not affect downstream users, EWA agencies would limit assets to water that would not have otherwise been released downstream. In most cases, the stored reservoir water sellers could demonstrate that they would have maintained water in storage without the transfer.

When the EWA purchases stored reservoir water, these reservoirs would be drawn down to lower levels than without the EWA. To refill the reservoir, a seller must prevent some flow from going downstream. Sellers must refill the storage at a time when downstream users would not have otherwise captured the water, either in downstream project reservoirs or with project pumps in the Delta. In these cases, instream flow caused by refill would decrease during the wet season, but would not decrease below minimum flow requirements. Stored reservoir water is released in addition to reservoir water that would be released without the EWA, thereby increasing flows in downstream waterways.

The EWA Project Agencies may purchase stored reservoir water from Oroville-Wyandotte Irrigation District (Sly Creek and Little Grass Valley Reservoirs) along the Feather River, Yuba County Water Agency (New Bullards Bar Reservoir) along the Yuba River, and Placer County Water Agency (French Meadows and Hell Hole Reservoirs) along the American River.

- *Groundwater Substitution.* Groundwater substitution transfers occur when users forego their surface water supplies and pump an equivalent amount of groundwater as an alternative supply. Because the EWA's potential groundwater substitution transfers are from agricultural users, the water from this acquisition method would be available during the irrigation season of April through October. Typically, surface water made available through groundwater substitution is stored upstream until the Delta pumps have the capacity available for EWA assets (except on the Sacramento River, as described later).

  Groundwater substitution transfers would withdraw additional water from the groundwater basin below the participating users, so this option could only be used in basins that are not in a state of groundwater overdraft, or in areas where the water supplier determines that the water transfer would not contribute to the groundwater overdraft.

  EWA water acquired through groundwater substitution would be released later in the irrigation season, typically mid-June through September, at times when through-Delta conveyance capacity is available. The change in reservoir elevations as the water is released would depend on the Delta conveyance capacity available. If the conveyance capacity were available constantly throughout the period of mid-June through September, then the reservoir elevations would slowly return to the without-EWA levels. If more conveyance capacity were available in July than later in the summer, then the EWA could borrow water from the storage facility and release additional water at those times that the conveyance capacity is available.

  The EWA Project Agencies may engage in groundwater substitution transfers with Glenn-Colusa Irrigation District, Reclamation District 108, Natomas Central Mutual Water Company, and Anderson Cottonwood Irrigation District on the Sacramento River; Western Canal Water District, Joint Water District, and Garden Highway Mutual Water Company along the Feather River; Yuba County Water Agency on the Yuba River; and Merced Irrigation District on the Merced River.

- *Crop Idling or Crop Substitution.* Crop idling transfers consist of water that would otherwise have been used for agricultural production. For crop idling acquisitions, the EWA agencies would pay farmers to idle land that they would otherwise have placed in production. Crop idling acquisition assets would be retained in reservoirs upstream from the selling water agencies until they could be transferred through the Delta and pumped south. Payment by the EWA agencies for water transferred would be computed based on pre-agreed consumptive use values, which may be refined as the science for generating these values improves. The EWA agencies are considering purchasing water from idled rice crops only in the Upstream of Delta Region for several reasons:

    - Rice provides the largest amount of water per acre idled (approximately 3.3 acre-feet per acre);
    - Rice crops are less labor-intensive than other potential crops, requiring approximately 2.7 full-time labor equivalents per 1000 acres;
    - Rice farmers have expressed interest and have participated in idling programs in the past; and
    - Like other small grain crops, rice is not a permanent crop and brings in less revenue than permanent, horticultural crops (e.g., fruits and nuts), so farmers would likely be more willing to fallow.

  The potential also exists for the EWA agencies to purchase water through crop substitution, in which water users substitute a crop with lower water needs than the crop that they would have otherwise planted. The associated decrease in water use could be transferred to the EWA. Crop substitution would have similar but lesser effects than crop idling, so it is considered to be part of the crop idling discussion for the remainder of the project description.

  To minimize socioeconomic effects on local areas, the EWA agencies would not purchase water via crop idling if more than 20 percent of recent harvested rice acreage in the county would be idled through EWA or other program water acquisitions. The EWA agencies chose this figure because of historical precedents and Water Code Section 1745.05 (b).

  The EWA Project agencies may purchase water through crop idling transfers from Glenn-Colusa Irrigation District and Reclamation District 108 on the Sacramento River and Western Canal Water District and the Joint Water District on the Feather River. The transferred water would be held in reservoirs during months when it could not be pumped through the Delta export pumps, then released during the months when capacity at the Delta pumps is available to the EWA.

- *Stored Groundwater Purchase.* The EWA Project Agencies could obtain water by purchasing groundwater assets that were previously stored by the selling agency with the intent to sell a portion of those assets at a later date. This option differs from groundwater substitution in that groundwater substitution transfers would not come from water that had been previously stored. In the Upstream of Delta Region, the EWA Project Agencies may purchase previously stored groundwater from the Sacramento Groundwater Authority.

Delta Area The EWA Operating Principles specify methods for gaining assets in addition to those described above. These additional methods do not involve active acquisition; assets obtained by those other methods are termed "variable assets." The EWA agencies could obtain variable assets (water or pumping capacity) through changes in Delta operations.

The CALFED ROD lists the quantities of each of these assets that are expected to be available. These quantities were determined by gaming exercises that simulated project operations. During the past 2 years of EWA operation, the Project Agencies have found that some of these assets are not available on the same pattern as indicated by the CALFED ROD modeling efforts. The first variable asset involves acquiring CVPIA (b)(2) water that has been released to meet instream flow objectives, but is diverted by the SWP because of limitations of the CVP's pumping capacity. Such flows may occur less often than the CALFED ROD predicted and less than in past years because of changes in (b)(2) water accounting imposed as a result of legal decisions.

- *Sharing of CVPIA (b)(2) and Ecosystem Restoration Program (ERP) Water.* The SWP and the EWA would share, on a 50-50 basis, water pumped by the SWP that meets the following requirements:

    - Water released from storage or made available for upstream purposes under either CVPIA (b)(2) or the ERP that arrives in the Delta with no further (b)(2) or ERP purposes to serve, and exceeds the export capacity of the CVP Tracy pumping plant;
    - Water that the SWP and/or EWA have demand for south of the Delta; and
    - Water the SWP has capacity to pump.

    This type of variable asset would result in additional water for the EWA.

- *Joint Point of Diversion.* The SWP can use excess capacity at its Harvey O. Banks Pumping Plant to pump water for both the CVP and the EWA, to be shared on a 50-50 basis, if the Projects meet the conditions in D-1641. The CVP water could be from either storage or the CVP's Delta water rights (to divert excess water). The EWA water could be from either non-Project water acquired Upstream from the Delta or stored or unstored water pumped under CVP or SWP water rights. If either the CVP or EWA were demand-limited, the other's use of the Joint Point of Diversion would not count against its 50 percent share.

- *Relaxation of the Section 10 Constraint.* The US Army Corps of Engineers has granted permission to the SWP to relax the Section 10 constraint (of the Rivers and Harbors Act) and increase the base diversion rate by the equivalent of 500 cfs to an average of 7,180 cfs for the months of July through September. The 500 cfs is dedicated to pumping for the EWA, but the EWA agencies must provide the assets to be pumped. During wet years, this conveyance capacity would likely be the only capacity available to the EWA. The conveyance capacity would yield approximately 50,000 to 60,000 acre-feet per year, depending on operational restrictions.

- *Relaxation of the Export/Inflow Ratio.* Under the State Water Resources Control Board's D-1641 and Orders 2000-10 and 2001-5, Project exports are limited at certain times of the year to a percentage of Delta inflow, usually 35 or 65 percent. This limitation is called the Export/Inflow, or E/I, ratio. Both D-1641 and the 1995 Water Quality Control Plan, consistent with the 1994 Principles for Agreement (Bay-Delta Accord), allow for this standard to be relaxed when certain requirements are met. The EWA agencies would allow relaxation of the E/I ratio as appropriate to create EWA assets in the export service areas. By relaxing the E/I ratio, it was estimated that the EWA could export an annual average of 30,000 acre-feet, but amounts are expected to vary annually.

Export Service Area The export service areas include the areas served by the CVP and SWP Delta pumping facilities, encompassing agricultural and urban areas in the Central Valley and central and southern coasts.

The EWA Project Agencies could acquire assets from sources within the export service areas. The EWA agencies would not need to arrange to move these assets through the Delta. This advantage is especially important during wet years, when Delta pumping capacity for the EWA is limited because the export pumps are fully utilized to move Project water. Assets purchased in the export service areas, however, are often more expensive than other assets because potential sources in the export service areas are more limited; water agencies usually are paying for facilities needed to capture and convey the limited supplies. The EWA Project Agencies have two potential methods for acquiring water in the export service areas, crop idling and stored groundwater purchase, as described below.

- *Crop Idling or Crop Substitution.* Crop idling transfers in the export service areas also involve agricultural water users leaving their fields idle and selling their surface water allotment to the EWA. Sellers in this area normally receive CVP and SWP water that is stored in San Luis Reservoir or pumped directly out of the Delta. The EWA agencies would most likely purchase water from idled cotton fields for several reasons:

    - Cotton Farmers have shown a willingness to sell water to the EWA;
    - Cotton is less labor-intensive than other potential crops, requiring approximately 6.6 full-time labor equivalents per 1,000 acres;
    - Unlike cotton, most other crops in the region are permanent crops; and
    - Most other farmers in the region raise crops that produce more profit than cotton per acre and therefore would be less willing to sell to the EWA than cotton farmers because the profit from selling water would not be attractive enough to idle land.

  To minimize socioeconomic effects on local areas, the EWA agencies would not purchase water via crop idling if more than 20 percent of recent harvested cotton acreage in the county would be idled through EWA or other program water acquisitions. The EWA agencies chose this figure because of historical precedents and Water Code Section 1745.05 (b).

Policy and regulatory barriers restrict crop idling in certain areas, including those areas that receive water from the SWP. The Monterey Amendment to the SWP long-term water supply contracts allow interested SWP contractors to sell some of their allocated Table A amounts to a "turn-back pool" for purchase by other interested SWP contractors or DWR (or by non-contractors if DWR does not want the water). The SWP contracts do not allow contractors to sell water for use outside their service area except through the turn-back pool.

The EWA Project Agencies may purchase water through crop idling transfers from Kern County Water Agency, if these regulatory and policy barriers are removed. The EWA agencies also could purchase water through crop idling transfers from Westlands Water District and Tulare Lake Basin Water Storage District. Any of these areas could also participate in crop substitution transfers which are included as part of crop idling transfers because they would produce similar but lesser effects.

- *Stored Groundwater Purchase.* Stored Groundwater Purchases in the export service areas would function in the same way as the upstream stored groundwater purchases, in which entities would sell water to the EWA that they had previously stored in the ground. The EWA agencies could receive this water through two mechanisms:

    - The selling agency could exchange its surface water allocation with the EWA and pump stored groundwater to satisfy local needs; or
    - The selling agency could pump water out of its aquifer directly into a conveyance system for transfer to the EWA.

  Stored groundwater is available to the EWA year-round, although the delivery would generally be during the irrigation season, usually April through September, if the water were delivered through surface water exchange.

  The EWA Project Agencies may purchase stored groundwater from projects within Kern County. Several agencies have stored excess surface water in projects in the Kern County groundwater aquifer. Several projects in Kern County have stored groundwater that could be sold to the EWA.

  In addition, Semitropic Water Storage District and Arvin-Edison Water Storage District operate water storage facilities. These districts do not store their own water, but instead engage in agreements with outside parties. These external groups provide surface water for storage underground and pay a fee to the districts to store the water. The EWA Project Agencies could purchase water from the parties that store water in Semitropic or Arvin-Edison. Santa Clara Valley Water District has water in storage in Semitropic that could sell to the EWA, and Metropolitan Water District of Southern California has water in Semitropic and Arvin-Edison.

- *Asset Management* The EWA requires facilities and operational arrangements in order to make its assets available when needed for accomplishing EWA objectives. The CALFED ROD defined several tools to manage assets, including the ability to borrow project water if

needed and store it for use at a time other than when the asset was acquired. Project facilities and agencies assist the EWA by conveying, storing, and loaning water when possible. The following list of management tools is described fully in the ASIP:

- Borrowed Project Water
- Groundwater Storage
- Source Shifting
- Pre-Delivery
- Exchanges

Typical Year EWA Operations In a typical year, the EWA would purchase 200,000-300,000 acre-feet for its annual operations. In the driest years, and when assets were carried over from the prior year, the total acquisitions could be closer to 200,000 acre-feet. In near average water years, the acquisition target would be closer to 300,000 acre-feet or even higher.

In the wetter years when operational curtailments would be expected to cost more water because the base Delta pumping rate would be higher or when the EWA ends the prior year with substantial debt, water needs for fish may be in the 400,000-600,000 acre-foot range. Initial acquisition targets may be lower in those years, and water acquisitions likely would reach the higher end of the range only if Tier 3 assets were called upon to complete the acquisition of the needed water. Tier 3 assets could be made available when Tier 2 assets were exhausted and the Management Agencies determine that jeopardy would occur due to Project operations unless additional measures were undertaken.

Table 2 provides an analysis of possible operational ranges of the EWA under different year types as defined by the Sacramento River Index. The table is based on EWA asset acquisition priorities identified by the EWA agencies and upper limits for each source category defined in Table 1 of this document.

The following text describes how the EWA agencies would pursue water acquisitions as the year type unfolds. In all years, the EWA agencies would begin negotiating with willing sellers in the prior summer and fall, well in advance of knowing hydrologic conditions. In some cases, multi-year agreements, most involving options, would be in place.

The EWA agencies would negotiate options both upstream from the Delta and within the export service area to be able to maximize use of cross-Delta transfer capacity in the SWP's Banks Pumping Plant, which would be minimal in wet years, but would become more available in dry years when SWP allocations to contractors would be relatively low. Cross-Delta transfer capacity also would be influenced by the amount of water transfers originating upstream from the Delta arranged by Project contractors, DWR, and the CVP. Holding option contracts would allow the agencies to maximize the purchase of less costly Upstream-from-the-Delta water when

Table 2
Estimated EWA Acquisition Patterns Keyed to SWP Allocation, Cross-Delta Capacity, and Acquisition Priorities
(Values in Thousand Acre-Feet)

Year Type	SWP Allocation	Purchase Target	Upstream from the Delta Sources				Export Service Area Sources	
			Reservoir Storage	Groundwater Substitution	Crop Idling	Groundwater Purchase	Groundwater Purchase	Crop Idling
Critical	20-40%	200-240	75-175	25-125	0-100	0-10	0-50	0-50
Dry	35-60%	210-270	75-175	25-125	0-100	0-10	0-150	50-100
Below Normal	50-80%	230-300	75-150	25-125	0-50	0-10	50-165	50-290
Above Normal	70-90%	250-300[1]	75-150	25-50	0	0	50-165	180-340
Wet	80-100%	250-300[2]	75-150	25-50	0	0	50-165	230-490

[1] In wetter years, purchases above 330 TAF may be required, depending on fish actions. Tier 3 assets may be required.
[2] In the wettest years, purchases above 300 TAF and as high as 800 TAF may be required, depending on fish actions. Tier 3 assets may be required.

transfer capacity was available and would allow purchase of sufficient water from the export service area in wet years with limited transfer capacity.

The EWA would lose an estimated 20 percent of the water obtained from the Sacramento River and its tributaries to carriage losses in the Delta. Water obtained from the San Joaquin River basin is subject to a 10 percent conveyance loss. Each year the carriage water loss amount would be reevaluated. However, the net cost of the water from the Upstream from the Delta water after losses would be less than assets from the export service area.

- *Critical Year.* In the driest years, the SWP would have a low water supply allocation to its contractors, probably in the range of 20 to 40 percent of requesting amounts. The EWA would have significant cross-Delta transfer capacity available and would primarily seek upstream water. Stored reservoir water would be the first priority water source, followed in sequence by groundwater substitution, stored groundwater, and crop idling (rice). The priorities among source categories would remain the same in all year types.

  In sequential dry and critical years, reservoir levels may be drawn down to the point that transfers of stored reservoir water to the EWA become unlikely or highly restricted. In such times, the EWA agencies would need to increase the emphasis on transfers involving groundwater substitution, groundwater purchase, and crop idling. The EWA agencies would be less likely to pursue crop idling transfers unless reservoir levels were lower than usual early in the winter.

  As shown in Table 2, the maximum purchase target would be greatest for stored reservoir water, then groundwater substitution, groundwater purchase, and lastly crop idling, still in potentially significant amounts if reservoir water appeared limited. Stored groundwater purchase quantities would be minimal, largely due to limited availability north of the Delta.

The total purchase quantity would be relatively low in critical years, as Delta pumping would be low and operational curtailments would be less costly in terms of the pumping foregone that must be replaced by the EWA. EWA variable asset tools, however, would likely produce less water for the EWA in drier years.

- *Dry Year.* In a dry year, SWP allocations would likely be in the 35 to 60 percent range. Cross-Delta transfer capacity available to the EWA may begin to be constrained at the upper range of these allocations, depending on runoff timing, competing transfers, and other operational factors. The EWA purchase target would be somewhat greater than in a critical year because operational curtailments would represent a larger reduction in Delta export pumping. The EWA agencies would pursue a strategy very similar to the critical year strategy, with most assets coming from the upstream form the Delta region. At higher SWP allocations, cross-Delta transfer capacity may become a constraint on the ability to move water form upstream when needed, and the EWA agencies may need to acquire water from the export service area as well.

  As noted above, in sequential dry and critical years, reservoir levels may be drawn down to the point that transfers of stored reservoir water to the EWA would be unlikely or highly restricted. In such times, the EWA agencies would need to increase the emphasis on transfers involving groundwater substitution, groundwater purchase, and crop idling. Crop idling transfers would be less likely to be pursued unless reservoir levels were lower than usual early in the winter.

  Acquisition target ranges would be about the same upstream from the Delta as for a critical year.

- *Below Normal Year.* In a below normal year, the SWP allocation could range between approximately 50 to 80 percent. In this range, the ability of the EWA to move water across the Delta would become more constrained, and at the higher allocations may become limited to the 500 cfs capacity dedicated to the EWA, or about 60,000 acre-feet, depending on runoff timing, competing transfers, and other operational factors. Purchase options play a key role in adjusting the locations where water would be purchased to match the cross-Delta transfer capacity as the SWP allocation would be established in the spring.

  Because the water cost of operational curtailments would increase as SWP allocations and Delta pumping increase, the EWA's acquisition target would increase. Acquisitions can involve significant purchases from the upstream from the Delta region in the lower range of below normal year allocations, but at higher allocations the purchases would shift to the Export Service Area, where stored groundwater and crop idling play a major role. As previously stored groundwater is depleted by EWA purchases, the crop idling (cotton) source would become more important.

- Above Normal Year In an above normal year, the SWP allocation could range from approximately 70 to 90 percent. In this range, the ability of the EWA agencies to move water across the Delta may become limited to the 500 cfs of dedicated capacity, or about

60,000 acre-feet, depending on runoff timing and other operational factors. The EWA agencies would seek at least 75,000 acre-feet of stored reservoir water north of the Delta, exporting 60,000 acre-feet and providing an estimated 15,000 acre-feet (20 percent) for carriage water. If additional transfer capacity were available in that year, the EWA would seek additional water from stored reservoir supplies and groundwater substitution sources to fill the available capacity.

Water costs in some above normal years could exceed 300,000 acre-feet, possibly requiring Tier 3 purchases.

The water needed to cover operational curtailments at the Delta pumps would increase further in an above normal year, and the EWA's acquisition target would increase. The balance of needed assets would be obtained from banked groundwater and crop idling south of the Delta.

- *Wet Year* In the wet years, the SWP allocation would likely be at least 80 percent and in some years 100 percent. The cost of operational curtailments could become greater, especially if the wet hydrology brings fish into the vicinity of the pumps more often. Water costs in the wet years, possibly including Tier 3 purchases, could reach the upper limit selected for the Proposed Action, 600,000 acre-feet.

  In the wet years, the ability of the EWA agencies to move water across the Delta may become limited to its 500 cfs dedicated capacity, or about 60,000 acre-feet. The EWA agencies would seek at least 75,000 acre-feet of stored reservoir water from the upstream from the Delta region, exporting 60,000 acre-feet and providing an estimated 15,000 acre-feet (20%) for carriage water. If additional transfer capacity were available in that year, the EWA would seek additional water from stored reservoir supplies and groundwater substitution sources to fill the available capacity.

  The balance of needed water would have to be sought from the export service area, through a substantial amount of crop idling and some stored groundwater. Some of the crop idling may have to be arranged after initial planting, when the consequences of the wet hydrology and fish behavior become more completely known. Only when it is necessary to purchase Tier 3 assets would the EWA agencies actually acquire the maximum quantity of water identified as part of the Proposed Action.

Acquisition Strategy The EWA agencies would acquire water using an acquisition strategy that meets multiple goals and objectives when acquiring water. These goals include:

- Acquire water at a unit cost that is most effective considering the benefits achieved;
- Protect Assets by creating arrangements to carry over water between years;
- Continue coordination with other water purchase programs;

- Maximize the existing and future funding opportunities; and

- Improve flexibility by:
  - Expanding the types of purchases and the number of potential sellers; and
  - Developing actions that continue for more than 1 year.

The sections below describe several components of the strategy that are relevant to assessing the environmental effects of the Proposed Action.

- *Tie Water Purchases to Hydrologic Conditions to Minimize Costs.* Water from areas upstream of the Delta is less expensive and purchases from this area will be maximized to the extent that it can convey water across the Delta. The highest priority would be stored reservoir purchase, followed by groundwater substitution and stored groundwater purchase. The lowest priority would be crop idling transfers because of their increased environmental effects and decreased flexibility. For purchases from the export service area, the EWA Project Agencies would prioritize stored groundwater purchase if available followed by crop idling.

- *Continued Coordination with other Acquisition Programs.* Coordination with other programs acquiring water, especially to achieve similar goals, would be critical to help maximize environmental benefits of these programs and avoid cumulative effects.

- *Set Water Purchase Targets.* With a high upper limit on the purchases for the Proposed Action, the EWA would try to set water purchase targets based on Management Agencies' predictions of fish needs for different year types. Setting these purchase targets before the EWA Project Agencies negotiate acquisitions would help in purchasing enough assets to meet fish needs.

- *Aggressively Use Purchase Options.* DWR could negotiate purchase options, in which they secure a contractual ability to call upon water to be transferred at a future date. This would provide the EWA agencies flexibility to deal with changing hydrologic conditions. The EWA would seek option call dates as late into the year as possible, consistent with the needs of the sellers.

- *Increase Use of Multi-Year Transfers.* The EWA Project Agencies could negotiate longer-term contracts with willing sellers to acquire water form the same source in multiple years. Multi-year agreements would likely decrease the cost of the water and improve flexibility by having a source that is available without additional negotiations.

EWA Action Effects Monitoring and Adaptive Management The EWA agencies would implement a multifaceted monitoring program to assess the benefits and effects of EWA asset acquisition and management actions. Portions of the monitoring program would draw from findings of ongoing fish monitoring efforts, development of new monitoring efforts for locations where monitoring is currently not occurring, and the CALFED science review evaluation of

efforts related to fish population recovery in the CALFED focus area. The data collected and reviewed would be used in an adaptive management process to suggest changes in relation to the acquisition and management of EWA assets.

As part of the water acquisition and implementation strategy, the Project and Management Agencies would monitor the rice farmland idling patterns via satellite imagery with regular field checking to confirm the imagery, in relation to core wildlife areas and ensure that the conservation measures are adhered to by the willing sellers.

Ecosystem Restoration Program Under the Multi-species Conservation Strategy (MSCS) the Service can make determinations under the ESA for linked actions based on their overall beneficial and detrimental impacts to the evaluated species. The Service can consider together the beneficial effects of the ERP actions and the potential adverse effects on fish and wildlife of the non-ERP action with its conservation measures in determining whether the linked actions will jeopardize the continued existence or modify critical habitat of any listed species.

The ERP will develop a conservation strategy for the giant garter snake consistent with the Stage 1 expectation for the giant garter snake which is:

> "Existing natural habitats that have available water all year will have been maintained, and key habitats in agricultural area identified for special management. Sites for freshwater marsh restoration will have been identified and a restoration program established."

The conservation strategy will identify specific research objectives including population surveys and experimental analyses of population responses to varying cropping patterns. It will include the identification of priority areas for habitat protection, enhancement and restoration, consistent with the Stage 1 expectations for the species. The strategy will also include "wildlife friendly" agricultural and water management practices to reduce giant garter snake population stressors. From this strategy, proposals will be developed and will conform to all of the standards established by CALFED for the proposal review and selection process.

Steps in the implementation of the ERP giant garter snake strategy will include: 1) selecting sites for monitoring and adaptive management of restoration designs and agricultural treatments, and developing habitat mapping to identify sites for survey efforts: 2) establishing baseline conditions of sites, designing restorations and / or agricultural treatments, and beginning distributional and status surveys based on habitat mapping results; 3) build restoration and implement agricultural treatments and start monitoring efforts, and continue surveys; and 4) continue monitoring giant garter snake responses and habitat conditions.

The Service will assess rice idling proposals within the context of progress being made toward implementing the giant garter snake conservation strategy and under certain circumstances may require additional conservation measures.

Conservation Measures

1. Water actions could cumulatively idle up to 20% of flooded rice fields in each county.

2. The EWA agencies will ensure parcels from which water is to be acquired are outside of mapped proscribed areas, which include:

   Refuges – Land adjacent and within 1 mile of Sacramento, Delevan, Colusa, Sutter, and Butte Sink National Wildlife Refuge (NWR), and the Llano Seco Unit of the Sacramento River NWR, Gray Lodge Wildlife Area (WA), Upper Butte Basin WA, Yolo Bypass WA, and Gilsizer Slough CE;

   Corridors Between Refuges – Lands adjacent to Hunters and Logan Creeks between Sacramento River NWR and Delevan NWR; Colusa Basin Drainage Canal between Delevan NWR and Colusa NWR; Little Butte Creek between Llano Seco units of Sacramento River NWR and Upper Butte Basin WA, and Howards Slough Unit of the Upper Butte Basin WA, Butte Creek Upper Butte Basin WA, and Gray Lodge WA;

   Waterways Serving as Corridors – Land adjacent to Butte Creek, Colusa Basin Drainage Canal, Gilsizer Slough, land side toe drain along east side of the Sutter Bypass, Willow Slough and Willow Slough Bypass in Yolo County, North Drainage Canal and East Drainage Canal in Natomas Basin; and

   Other Core Areas – East of State Route 99 and between Sutter-Sacramento County line and Elverta Road in Natomas Basin, Yolo County east of Highway 113.

3. The water seller will ensure that at depth of at least 2 feet of water is maintained in major irrigation and drainage canals (but never more than existing condition) to provide movement corridors.

4. The water agency will ensure that the block size of idled rice parcels will be limited to 160 acres (includes rice fields shifted to another crop).

5. Mowing along irrigation and drainage canals will be minimized and mowers will be elevated to at least 6 inches above the ground level.

6. If canal maintenance such as dredging is required, it shall be restricted to one side of the canal in any one year.

7. Geographic dispersal of idled lands will be maximized.

8. Purchasing water from the same field for more than two consecutive years or from a field fallowed by another program the previous year will not occur.

9. The EWA agencies will recommend that sellers replace culverts already planned for repair or replacement with oversized culverts to facilitate better wildlife dispersal.

10. 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).

11. The water agencies may fund research or surveys.

Criteria for Inclusion Under this Programmatic Consultation

Upon request, the Service may append rice idled or substitution due to water transfers to the EWA under this programmatic consultation. Projects implemented under this programmatic consultation will be consistent with the project descriptions given above. EWA water acquisitions upstream from the Delta region that idle rice may be appended to this biological opinion as the Service deems appropriate. This programmatic opinion is in effect for the period of four years. Authorization of rice idled under this programmatic opinion will be generally dependent upon the following criteria:

1. The block size of idled rice parcels will be limited to 160 acres (includes rice fields shifted to another crop) and will not exceed typical year water acquisitions (Table 2) for rice idling with no more than 20% of rice fields idled cumulatively in each county.

2. The EWA agencies will ensure parcels from which water is to be acquired are outside of mapped proscribed areas, which include:

   Refuges – Land adjacent and within 1 mile of Sacramento, Delevan, Colusa, Sutter, and Butte Sink National Wildlife Refuge (NWR), and the Llano Seco Unit of the Sacramento River NWR, Gray Lodge Wildlife Area (WA), Upper Butte Basin WA, Yolo Bypass WA, and Gilsizer Slough CE;

   Corridors Between Refuges - Lands adjacent to Hunters and Logan Creeks between Sacramento River NWR and Delevan NWR; Colusa Basin Drainage Canal between Delevan NWR and Colusa NWR; Little Butte Creek between Llano Seco units of Sacramento River NWR and Upper Butte Basin WA, and Howards Slough Unit of the Upper Butte Basin WA, Butte Creek Upper Butte Basin WA, and Gray Lodge WA;

   Waterways Serving as Corridors – Land adjacent to Butte Creek, Colusa Basin Drainage Canal, Gilsizer Slough, land side toe drain along east side of the Sutter Bypass, Willow Slough and Willow Slough Bypass in Yolo County, North Drainage Canal and East Drainage Canal in Natomas Basin; and

Other Core Areas – East of State Route 99 and between Sutter-Sacramento County line and Elverta Road in Natomas Basin, Yolo County east of Highway 113.

3. Mowing along irrigation and drainage canals will be minimized and mowers will be elevated to at least 6 inches above the ground level.

4. If canal maintenance such as dredging is required, shall be restricted to one side of the canal in any one year.

5. Geographic dispersal of idled lands will be maximized.

6. Purchasing water from the same field for more than two consecutive years or from a field fallowed by another program the previous year will not occur.

Should the EWA Agencies propose to exceed the criteria listed above separate section 7 consultation would be required.

Implementing Procedure

The following process will be used when implementing projects under this programmatic biological opinion:

1. Reclamation on behalf of the EWA agencies will submit a letter requesting that the proposed rice idling be appended to this programmatic biological opinion, and provide the Service with the following:

    a. A written description of the location and number of acres of rice that would be idled broken down by county and water district. In addition a discussion of rice idling that has occurred in the past year both through the EWA program and under other idling programs.

    b. A location map showing the location in the Sacramento Valley where the idled rice fields occur and locality maps to a scale which allows distances between blocks to be measured.

    c. A description of the conservation measures which will be followed.

    d. A description of activities that the ERP has accomplished for the giant garter snake since the last time rice was idled under EWA. This should include number of acres restored, monitoring, research, and/or surveys accomplished, dollars spent on projects, where the activities occurred, and any other pertinent information.

2. The Service will review new information that may reveal effects not considered previously and review the information provided to determine whether the activity meets the criteria for being appended to this biological opinion including: whether a separate biological opinion is necessary; if minimization measures proposed are sufficient; and if additional compensatory habitat is required.

3. Reclamation should begin informal consultation with the Service prior to the end of December. Request for appendage to this programmatic should be initiated no later than the end of December and if all information is available and the Service determines that the activity is appropriate for inclusion under this opinion, the Service will provide a letter appending the activity to this opinion no later than mid-February.

Status of the Species and Environmental Baseline

The Service published a proposal to list the giant garter snake as an endangered species on December 27, 1991 (56 **FR** 67046). The Service reevaluated the satus of the snake before issuing the final rule. The snake was listed as a threatened species on October 20, 1993 (58 **FR** 54053).

Description. The giant garter snake is one of the largest garter snakes and may reach a total length of at least 64 inches (160 centimeters). Females tend to be slightly longer and proportionately heavier than males. The weight of adult female snakes is typically 1.1 to 1.5 pounds (500-700 grams). Dorsal background coloration varies from brownish to olive with a checkered pattern of black spots, separated by a yellow dorsal stripe and two light colored lateral stripes. Background coloration and prominence of a black checkered pattern and the three yellow stripes are geographically and individually variable (Hansen 1980). The ventral surface is cream to olive or brown and sometimes infused with orange, especially in northern populations.

Historical and Current Range. This species formerly occurred throughout the wetlands that were extensive and widely distributed in the Central Valley. Fitch (1940) described the historical range of the snake as extending from the vicinity of Sacramento and Contra Costa Counties southward to Buena Vista Lake, near Bakersfield, in Kern County. Prior to 1970, the snake was recorded historically from 17 localities (Hansen and Brode 1980). Five of these localities were clustered in and around Los Banos, Merced County. The paucity of information makes it difficult to determine precisely the species' former range. Nonetheless, these records coincide with the historical distribution of large flood basins, fresh water marshes, and tributary streams. Destruction of wetlands for agriculture and other purposes apparently extirpated the species from the southern one-third of its range by the 1940s -1950s, including the former Buena Vista Lake and Kern Lake in Kern County, and the historic Tulare Lake and other wetlands in Kings and Tulare Counties (Hansen and Brode 1980, Hansen 1980). Surveys over the last two decades have found the snake as far north as the Butte Basin in the Sacramento Valley. As recently as the 1970s, the range of the snake extended from near Burrell, Fresno County (Hansen and Brode 1980), northward to the vicinity of Chico, Butte County (Rossman and Stewart 1987).

Essential Habitat Components. Endemic to wetlands in the Sacramento and San Joaquin valleys, the snake inhabits marshes, sloughs, ponds, small lakes, low gradient streams, and other waterways and agricultural wetlands, such as irrigation and drainage canals and rice fields, and the adjacent uplands. The snake feeds on small fishes, tadpoles, and frogs (Fitch 1941, Hansen 1980, Hansen 1988). Essential habitat components consist of: (1) wetlands with adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) upland habitat with grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for escape cover (vegetation, burrows) and underground refugia (crevices and small mammal burrows) (Hansen 1980).

Reproductive Ecology. The breeding season extends through March and April, and females give birth to live young from late July through early September (Hansen and Hansen 1990). Brood size is variable, ranging from 10 to 46 young, with a mean of 23 (Hansen and Hansen 1990). At birth young average about 20.6 cm snout-vent length and 3 to 5 grams. Young immediately scatter into dense cover and absorb their yolk sacs, after which they begin feeding on their own. Although growth rates are variable, young typically more than double in size by one year of age, and sexual maturity averages three years in mates and five years for females (58 **FR** 54053).

Movements and Habitat Use. The snake typically inhabits small mammal burrows and other soil crevices throughout its winter dormancy period (November to mid-March). The snake also uses burrows as refuge from extreme heat during their active period. While the snakes usually remain in close proximity to wetland habitats, the BRD has documented snakes using burrows as much as 165 feet (50 meters) away from the marsh edge to escape extreme heat (Wylie *et al.* 1997). Overwintering snakes have been documented to use burrows as far as 820 feet (250 meters) from the edge of marsh habitat. Snakes typically select south- and west-facing burrows as hibernaculae (58 **FR** 54053).

Radiotelemetry studies conducted by U.S. Geological Survey's Biological Resources Division (USGS-BRD) have examined giant garter snake habitat use in several areas in the Sacramento Valley. In areas where marsh habitat was available, giant garter snake used rice about 19-20 percent of the time, marsh about 20-23 percent of the time, and canal and waterway habitat about 50-56 percent of observations (USFWS 1999). USGS-BRD also examined a study site in the Natomas Basin where only rice and canal habitat was available. Once vegetation was emergent in the rice fields, giant garter snakes used rice fields 39-60 percent of the time and canals 40-61 percent of the time (Wylie and Casazza 2000). Thus both rice fields and canals are important habitats for the snake. Telemetry studies have also shown that active snakes use uplands extensively–more than 31 percent of observations were in uplands (Wylie 1999). Almost all snakes observed in uplands during the active season were near vegetative cover, where cover exceeded 50 percent in the area within 0.5 m (1.6 ft) of the snake; less than 1 percent of observations were of snakes in uplands with less than 50 percent cover nearby (Wylie 1999).

In studies of marked snakes in the Natomas Basin, snakes moved about 0.25 to 0.5 mile per day (Hansen and Brode 1993). However, total activity varies widely between individuals, and

individual snakes have been documented moving up to 5 miles (8 kilometers) over the period of a few days in response to dewatering of habitat (Wylie *et al.* 1997).

USGS-BRD has also estimated home range sizes for giant garter snakes and determined median home ranges that are generally less than 100 acres in size, demonstrating that giant garter snakes typically use relatively small areas, even though they are capable of moving longer distances (up to five miles in a few days). Home range sizes for giant garter snakes at the Gilsizer Slough study site varied from approximately 5 acres to 212 acres with a median of 39.5 acres. In the Natomas Basin, home range sizes varied from 32 acres to 214 acres with a median of 86 acres. USGS-BRD has also studied giant garter snakes at the Colusa National Wildlife Refuge. Home range sizes at Colusa NWR have been highly variable. Home range sizes estimated for year 2000 ranged from 2.5 to 81.5 acres with a median of 42 acres and for 2001 from 7.4 to 427.5 acres with a median of 59.3 acres. These home ranges are about half the size of those estimated for the study period 1996-97 (home ranges varied from 3.2 acres to 2792 acres with a median of 103.8 acres). USGS-BRD concluded that home range sizes decreased as more summer water became available to the snake on the refuge in the later study period. Restored areas that provided summer water were more effective in meeting the habitat needs of the snake in the 2000-2001 study period; therefore, snakes did not have to venture as far as in previous years to find aquatic habitat during their active period. USGS-BRD also concluded that reduced movements indicated that giant garter snakes were less exposed to mortality factors such as predators and vehicles. (USFWS 1999, Wylie and Casazza 2000, Wylie *et al.* 2002).

Reasons for Decline and Threats to Survival. The current distribution and abundance of the snake is much reduced from former times. Loss of habitat due to agricultural activities and flood control have extirpated the snake from the southern one third of its range in former wetlands associated with the historic Buena Vista, Tulare, and Kern lakebeds. These lakebeds once supported vast expanses of ideal snake habitat, consisting of cattail and bulrush dominated marshes. Vast expanses of bulrush and cattail floodplain habitat also typified much of the Sacramento Valley historically (Hinds 1952). Prior to reclamation activities beginning in the mid to late 1800s, about 60 percent of the Sacramento Valley was subject to seasonal overflow flooding in broad, shallow flood basins that provided expansive areas of snake habitat (Hinds 1952). Valley floor wetlands are subject to the cumulative effects of upstream watershed modifications, water storage and diversion projects, as well as urban and agricultural development; all natural habitats have been lost and an unquantifiable but small percentage of semi-natural wetlands remain extant. Only a small percentage of extant wetlands currently provide habitat suitable for the snake.

Ongoing maintenance of aquatic habitats for flood control and agricultural purposes eliminate or prevent the establishment of habitat characteristics required by snakes and can fragment and isolate available habitat, prevent dispersal of snakes among habitat units, and adversely affect the availability of the garter snake's food items (Hansen 1988, Brode and Hansen 1992). In many areas, the restriction of suitable habitat to water canals bordered by roadways and levee tops renders snakes vulnerable to vehicular mortality. Fluctuation in rice and agricultural production affects stability and availability of habitat. Recreational activities, such as fishing, may disturb snakes and disrupt basking and foraging activities. Nonnative predators, including introduced

predatory gamefish, bullfrogs, and domestic cats also threaten snake populations. While large areas of seemingly suitable snake habitat exist in the form of duck clubs and waterfowl management areas, water management of these areas typically does not provide the summer water needed by snakes. Although snakes on national wildlife refuges are relatively protected from many of the threats to the species, degraded water quality continues to be a threat to the species both on and off refuges. A number of land use practices and other human activities currently threaten the survival of the snake throughout the remainder of its range. Although some snake populations have persisted at low levels in artificial wetlands associated with agricultural and flood control activities, many of these altered wetlands are now threatened with urban development.

Status with Respect to Recovery and Environmental Baseline. The draft recovery plan for the snake subdivided its historic range into four recovery units (USFWS 1999). These are: (1) the Sacramento Valley unit, extending from the vicinity of Red Bluff south to the confluence of the Sacramento and Feather Rivers; (2) the Mid-Valley unit, extending from the American and Yolo Basins south to Duck Creek near the City of Stockton; (3) the San Joaquin Valley unit, extending south from Duck Creek to the Kings River; and (4) the South Valley unit, extending south of the Kings River to the Kern River Basin. Portions of all recovery units are within the action area.

The Sacramento Valley Recovery Unit at the northern end of the species' range is known to support relatively large, stable populations of the snake. This unit contains three populations (Butte Basin, Colusa Basin, and Sutter Basin) and a large amount of suitable habitat, in protected areas on state refuges and refuges of the Sacramento NWR Complex in the Colusa and Sutter Basins, and along waterways associated with rice farming (USFWS 1999).

The Mid-Valley Recovery Unit, directly to the south of the Sacramento Valley Recovery Unit, includes seven populations: American Basin, Yolo Basin–Willow Slough, Yolo Basin–Liberty Farms, Sacramento Area, Badger Creek/Willow Creek, Caldoni Marsh, and East Stockton. The status of the seven snake populations in the Mid-Valley Recovery Unit is very uncertain. The East Stockton population may be extirpated, and is not considered recoverable as a result of urban encroachment into habitat (USFWS 1999). Five of the remaining six populations within the recovery unit are very small, highly fragmented and isolated and, except for the Badger Creek/Willow Slough population, are also threatened by urbanization. This latter population is within a small isolated area. Within the Mid-Valley unit, only the American Basin population supports a sizeable snake population which is dependent largely upon rice lands. The American Basin population, although threatened by urban development, receives protection from the Natomas Basin Habitat Conservation Plan (HCP), which has a goal of maintaining a viable snake population in the basin.

The remaining two recovery units are located to the south in the San Joaquin Valley, where the best available data indicate that the snake's status is precarious. The San Joaquin Valley Recovery Unit contains three historic snake populations: North and South Grasslands; Mendota Area; and Burrel/Lanare Area (USFWS 1999). This recovery unit formerly supported large snake populations, but numbers have declined severely in recent decades, and recent survey efforts indicate numbers are very low compared to Sacramento Valley populations.

No surviving snake populations are known from the fourth recovery unit, the South Valley Recovery Unit, at the southern end of the snake's historic range; this unit includes only extirpated populations, including the historic but lost Tulare and Buena Visa lakes.

The draft recovery criteria require multiple, stable populations within each of the four recovery units, with subpopulations well connected by corridors of suitable habitat. Currently, only the Sacramento Valley Recovery Unit, at the northern end of the species' range, is known to support relatively large, stable populations. Habitat corridors connecting populations or subpopulations, even for the Sacramento Valley Recovery Unit, are not present and/or protected.

Surveys over the last two decades have located the giant garter snake as far north as the Butte Basin in the Sacramento Valley. Currently, the Service recognizes 13 separate populations of giant garter snake, with each population representing a cluster of discrete locality records (USFWS 1993). The 13 extant population clusters largely coincide with historical riverine flood basins and tributary streams throughout the Central Valley (Hansen 1980, Brode and Hansen 1992): (1) Butte Basin, (2) Colusa Basin, (3) Sutter Basin, (4) American Basin, (5) Yolo Basin-Willow Slough, (6) Yolo Basin-Liberty Farms, (7) Sacramento Basin, (8) Badger Creek-Willow Creek, (9) Caldoni Marsh, (10) East Stockton-Diverting Canal and Duck Creek, (11) North and South Grasslands, (12) Mendota, and (13) Burrell-Lanare. These populations span the Central Valley from just southwest of Fresno (Burrell-Lanare) north to Chico (Hamilton Slough). The 11 counties where the giant garter snake is still presumed to occur are: Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo.

In 1994, the USGS-BRD (then the National Biological Survey) began a study of the life history and habitat requirements of the snake in response to an interagency request from the Service. Since April of 1995, the USGS-BRD has further documented occurrences of snakes within some of the known populations. The USGS-BRD has studied snake subpopulations at the Sacramento and Colusa NWRs within the Colusa Basin, at Gilsizer Slough within the Sutter Basin, the Badger Creek area of the Cosumnes River Preserve within the Badger Creek-Willow Creek area, and the Natomas area within the American Basin (Wylie *et al.* 1997, Wylie 1999). These subpopulations represent the largest known extant subpopulations. With the exception of the American Basin, these subpopulations are largely protected from many of the threats to the species. Outside of these protected areas, snakes in these populations are still subject to all the threats identified in the final listing rule. The remaining nine populations identified in the final rule are distributed discontinuously in small isolated patches and are vulnerable to extirpation by stochastic environmental, demographic, and genetic processes. The 13 extant populations are largely isolated from each other, with any dispersal corridors between them limited and not protected. When small populations are extirpated, the recolonization is unlikely in most cases, given the isolation from larger populations and the lack of dispersal corridors between them.

Since April of 1995, the USGS-BRD has further documented occurrences of giant garter snakes within some of the 13 populations identified in the final rule. The USGS-BRD has studied populations of giant garter snakes at the Sacramento and Colusa National Wildlife Refuges within the Colusa Basin, at Gilsizer Slough within the Sutter Basin, at the Badger Creek area of

the Consumnes River Preserve within the Badger Creek-Willow Creek area, and in the Natomas Basin within the American Basin. These populations of giant garter snakes represent the largest extant populations. With the exception of the American Basin, these populations are largely protected from many of the threats to the species. Outside of protected areas, giant garter snakes in these population clusters are still subject to all threats identified in the final rule. The remaining nine population clusters identified in the final rule are distributed discontinuously in small isolated patches and are vulnerable to extirpation by stochastic environmental, demographic, and genetic processes. Recent surveys conducted by California Department of Fish and Game in cooperation with BRD in the Grasslands Area in the San Joaquin Valley have detected giant garter snakes, but in numbers much lower than those found in the Sacramento Valley populations. Giant garter snakes were observed in 2001 on Mendota Wildlife Area. All 13 population clusters are isolated from each other with no protected dispersal corridors. Opportunities for recolonization of small populations which may become extirpated is unlikely given the isolation from larger populations and lack of dispersal corridors between them.

Factors Affecting the Snake within the Action Area. Agricultural and flood control activities have extirpated the giant garter snake from the southern one third of its range in former wetlands associated with the historic Buena Vista, Tulare, and Kern lakebeds. These lakebeds once supported vast expanses of ideal giant garter snake habitat, consisting of cattail and bulrush dominated marshes. Vast expanses of bulrush and cattail floodplain habitat also typified much of the Sacramento Valley historically (Hinds 1952). Prior to reclamation activities beginning in the mid to late 1800's, about 60 percent of the Sacramento Valley was subject to seasonal overflow flooding in broad, shallow flood basins that provided expansive areas of giant garter snake habitat (ibid.). All natural habitats have been lost and an unquantifiable small percentage of semi-natural wetlands remain extant. Only a small percentage of these wetlands currently provide habitat suitable for the giant garter snake. Valley floor wetlands are subject to the cumulative effects of upstream watershed modifications, water storage and diversion projects, as well as urban and agricultural development. Although some giant garter snake populations have persisted at low levels in artificial wetlands associated with agricultural and flood control activities, many of these altered wetlands are now threatened with urban development. Cities within the current range of the giant garter snake that are rapidly expanding include: (1) Chico, (2) Yuba City/Marysville, (3) Sacramento, (4) Galt, (5) Stockton, (6) Gustine, and (7) Los Banos.

A number of land use practices and other human activities currently threaten the survival of the giant garter snake throughout the remainder of its range. Ongoing maintenance of aquatic habitats for flood control and agricultural purposes eliminate or prevent the establishment of habitat characteristics required by giant garter snakes and can fragment and isolate available habitat, prevent dispersal of giant garter snakes among habitat units, and adversely affect the availability of the garter snake's food items (Hansen 1988; Brode and Hansen 1992). Livestock grazing along the edges of water sources degrades habitat quality in a number of ways: (1) eating and trampling aquatic and riparian vegetation needed for cover from predators, (2) changes in plant species composition, (3) trampling of giant garter snakes, (4) water pollution, (5) and reducing or eliminating fish and amphibian prey populations. Overall, grazing

has contributed to the elimination and reduction of the quality of available habitat at four known locations (Hansen 1982, 1986).

In many areas, the restriction of suitable habitat to water canals bordered by roadways and levee tops renders giant garter snakes vulnerable to vehicular mortality. Fluctuation in rice and agricultural production affects stability and availability of habitat. Recreational activities, such as fishing, may disturb giant garter snakes and disrupt basking and foraging activities. Non-native predators, including introduced predatory gamefish, bullfrogs, large crayfish, and domestic cats also threaten giant garter snake populations. Since 1993-1994, near the town of Folsom, southern water snakes (*Nerodia fasciata*) have been documented in giant garter snake habitat. While no data exist to confirm that this exotic species introduced to California is displacing native snake species, the ratio of *Nerodia fasciata* to *Thamnophis* sp. was estimated at greater than 30:1 (California Department of Fish and Game Internal Report). Historic evidence of the impacts of introduced exotic species to native species is well documented. Introduced snakes may contribute to the decline of giant garter snakes.

A number of State, local, private, and unrelated Federal actions have occurred within the action area and adjacent region affecting the environmental baseline of the species. Some of these projects have been subject to prior section 7 consultation. These actions have resulted in both direct and indirect impacts to snake habitat within the region. In addition to projects already discussed, projects affecting the environment in the action area include communication projects (e.g., installation of cable systems) and transportation projects with Federal, county or local involvement. The Corps has consulted the Service on the issuance of wetland fill permits for several bridge replacement projects within both the Sacramento Valley and San Joaquin Valley that affected snake habitats. The direct effect of these projects is often small and localized, but transportation projects which improve access can indirectly affect snakes by facilitating development of habitat, and by increasing traffic mortality, and these effects are not quantifiable.

Effects of Proposed Action

The effects analysis below is based on EWA typical year water acquisitions.

San Joaquin Valley The Proposed Action has the potential to idle some agricultural (cotton) land in the San Joaquin Valley. While giant garter snakes have not been known to utilize cotton fields, they are very reliant on canals. It would still be necessary to supply water through all canals to provide sufficient irrigation for agricultural lands not fallowed in the San Joaquin Valley. As long as water is provided to irrigation and drainage canals sufficient for giant garter snake aquatic habitat, there would not be an adverse effect to the giant garter snake in the San Joaquin Valley.

Sacramento Valley Most of the effects of this project to giant garter snake will occur in the Sacramento Valley since this is the area where substantial rice idling would occur. Because the snake is often found in rice fields, ditches, and canals, idling of these areas could have an incremental effect on the population of the species. Rice idling will affect the amount of available giant garter snake habitat.

Fallowing of rice fields reduces the amount and availability of habitat, including summer water, for the snake. Fallowing will also result in reduced prey availability by reducing the amount of flooded rice fields which act as seasonal marshes to produce high numbers of tadpoles, frogs and mosquitofish. Effects associated with reduced available summer water and rice field habitat also include displacement of individual giant garter snakes from familiar habitat areas and result in giant garter snakes foraging over a wider area. Giant garter snakes may move to other areas of suitable habitat, but will encounter increased mortality from vehicles, exposure to temperature extremes, predation, and human disturbance while migrating to new areas. Giant garter snakes that successfully migrate to new locations may not be familiar with foraging areas, basking sites, or retreat sites and may suffer from increased predation and difficulty in thermoregulating if retreat and basking sites are not learned quickly. Foraging success may also be reduced due to lack of familiarity with the area, increased foraging effort because of more widely dispersed prey resources, increased competition with resident snakes or other displaced snakes, and reduced prey resources. Migrating snakes or snakes using a larger foraging area may displace resident snakes or compete for food and shelter resources with resident snakes, resulting in reduced survivorship and fecundity of both resident and immigrant snakes. Adverse effects may be greatest for gravid females, juveniles, and neonate snakes. Gravid females spend significant time basking in mid to late summer while incubating young, and thus may have reduced survivorship or fecundity if displaced from familiar retreats and basking sites (giant garter snakes are live bearers and contribute significant resources to brooding offspring). Abundant food resources are also essential for females to both recover body mass after giving birth and to survive the overwintering period when the snakes do not forage. Abundant food resources are also essential to the survival of juveniles and neonates. Giant garter snakes typically double their weight in the first year, with rapid growth likely necessary to reach a size class no longer susceptible to predation by non-native predatory fish and bullfrogs. Juveniles and neonates also rely on developing sufficient body mass prior to overwintering in order to survive long periods without foraging. Fallowing of rice fields will not only temporarily remove habitat, but will also have adverse effects on reproduction, recruitment, and survival of the snake that will continue to affect giant garter snake populations well beyond the project time frame.

All canals and waterways will remain wetted, thus not significantly affecting about 50% of giant garter snake's aquatic habitat use. Because giant garter snakes utilize rice for approximately 20% of their aquatic habitat needs in areas where marsh habitat is available, these areas would not experience a significant reduction of aquatic habitat. However in areas where only canal and rice habitat is available for their aquatic component, snakes use rice fields for between 39% and 60% of the time. The loss of rice fields can be expected to adversely affect giant garter snakes within these areas through reduction in habitat and summer water available and increased competition for resources. Reduction in habitat in turn will decrease prey populations and reduce foraging success. Effects of decreased foraging success include reduced survival, reproduction, and recruitment. The reduced habitat available and more widely dispersed prey and habitat resources will cause snakes to either be displaced or move over a much wider area to meet their habitat needs (as evidenced by the Colusa NWR monitoring that indicates giant garter snakes must travel over wider areas when habitat conditions are less favorable), resulting in

increased mortality from predation and roadkills and increased competition with other giant garter snakes for limited resources.

Conservation measures proposed by the EWA agencies will lessen the effects of idling rice fields covered under this programmatic biological opinion. Because the area in the project description encompasses all of one recovery unit, including the Butte, Colusa, and Sutter Basins, and part of the Mid-Valley recovery area, part of the American Basin, spreading the rice land that is idled across the valley would not place all of the effects on any one basin but rather cause smaller effect for each basin. In addition, because the field size is limited to 160 acres and the snake has been found to travel between 0.25 and 0.50 mile per day it is expected that the snake will travel to another area for foraging.

EWA agencies have also proposed to avoid refuges, corridors between refuges, large waterways serving as corridors, and other lands recognized by the Service as important for the snake. This will avoid areas known and managed for snakes and lessen the likelihood of effects to snakes. In order to allow snake movement within rice lands where idling is occurring the EWA agencies have proposed to insure water is maintained in canals, minimize mowing along irrigation and drainage canals and, if canal maintenance is required, leave vegetation along one side of the canal.

While this programmatic biological opinion addresses effects typical year water acquisitions, actual acres of rice idled each is expected to be significantly lower. This is dependent upon both the type of water year and the number of landowners willing to idle their fields. In addition, the project description describes crop idling transfers as being the lowest priority of the types of water acquisition because it is less flexible and has increased environmental effects and unlikely to occur every year.

The ERP, Strategic Plan for Ecosystem Restoration, and the MSCS outline the conservation strategy of the CALFED program with regards to species and natural communities. The MSCS goal for the giant garter snake is to contribute to its recovery, whereby CALFED is expected to undertake some of the actions under its control and within its scope that are necessary to recover the species. The ERP includes targets and programmatic actions to maintain, enhance or restore aquatic, wetland, riparian, and upland habitats in the ERP Focus Area in order to help in the recovery of the giant garter snake by increasing habitat quality and area.

A giant garter snake conservation strategy will be developed under CALFED. The conservation strategy will identify specific research objectives including population surveys and experimental analyses of population responses to varying cropping patterns. It will include the identification of priority areas for habitat protection, enhancement, and restoration. The strategy will also include "wildlife friendly" agricultural and water management practices to reduce giant garter snake population stressors. Implementation of this strategy will begin with the submission of proposals to implement the highest priority actions at the earliest possible opportunity.

Because there are no specific actions proposed under the giant garter snake conservation strategy, the Service will have to review progress made on the giant garter snake conservation

strategy and items implemented as the EWA agencies requests site specific consultation under this programmatic.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Because the snake inhabits wetlands and adjacent uplands in highly modified portions of the Central Valley, the Service anticipates that a wide range of activities that are reasonably certain to occur will affect this species. An undetermined number of future land use conversions and routine agricultural practices are not subject to Federal permitting processes and may convert or otherwise alter habitat or disturb, kill, or injure snakes. These cumulative effects include (1) fluctuations in acres of aquatic habitat due to water management or acres of riceland in production; (2) diversion of water; (3) levee repairs; (4) riprapping or lining of canals and stream banks; (5) dredging, clearing, and spraying to remove vegetation from irrigation canals; (6) discing, mowing, clearing and spraying vegetation adjacent to canals and streams; (7) use of burrow fumigants on levees and other potential upland refugia; (8) release of contaminated runoff from agriculture and urbanization; (9) use of plastic erosion control netting (Stuart *et al.* 2001); (10) use of herbicides and pesticides in ricelands and other agricultural lands that provide snake habitat, or which are adjacent to and/or drain into snake habitat; (11) increased vehicular traffic on roads and levees; (12) human intrusion into habitat; and (13) predation by feral animals and pets.

Non-Federal flood control and maintenance activities which can result in snake mortality and degradation of habitat include levee construction, stream channelization, and stream- and canal-bank protection efforts with riprap and other methods. Seasonal draining of wetlands also poses a serious long-term threat to certain giant garter snake subpopulations.

Conclusion

After reviewing the current status of the snake, the environmental baseline for the action area, the effects of the Proposed Action, and the cumulative effects, it is the Service's biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of the snake. No critical habitat has been designated for the giant garter snake, therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act

or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary and shall be implemented in a manner so as to become binding conditions of the proposed action in order for the exemption in section 7(o)(2) to apply. Reclamation has a continuing duty to regulate the activity covered by this incidental take statement. If Reclamation (1) fails to require the water agency(s) to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the agreement document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The Service anticipates incidental take of snakes will be difficult to detect. Snakes are secretive and notoriously sensitive to human activities. However, take of this species is anticipated due to a reduction in foraging habitat and resultant migration to other suitable habitat. This migration will result in mortality from predation, collision, or other sources. The Service considers the number of animals subject to harm. Conservation measures proposed by the proponents and described above in the Description of the Proposed Action will substantially reduce, but do not eliminate, the potential for incidental taking of these species during the project. The Service anticipates that up to 2 snakes will be taken due to rice idling activities associated with the Proposed Action every year for 4 years. Upon implementation of the following reasonable and prudent measures, incidental take associated with the EWA Program on the snake in the form of harm from habitat loss will become exempt from the prohibitions described under section 9 of the Act.

Effect of the Take

The Service has determined that this level of anticipated take in this opinion is not likely to result in jeopardy to the listed snake. No critical habitat has been designated. Therefore, the proposed project is not likely result in destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the effect of the proposed EWA Program on the incidental take of the giant garter snake.

1. The effects of the proposed project on the snake shall be minimized.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of Act, EWA agencies must comply with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

1 The following terms and conditions implement reasonable and prudent measure number one (1):

a. The EWA agencies shall comply with the conservation measures on pages 18 and 19 of this document.

b. The EWA agencies shall provide data on projects which have been accomplished under the CALFED ERP giant garter snake strategy.

EWA agencies shall ensure compliance with the reporting requirements.

Reporting Requirements

A report of areas where rice idling occurred should be reported to the Service including, actual location of blocks, block sizes, acreage of rice taken out of production through idling or crop shifting, and amount and types of maintenance carried out along canals adjacent to fallowed lands.

The Service shall be notified immediately by facsimile or telephone and in writing within three (3) working days of any unanticipated take of the snake, and of the take or suspected take of listed wildlife species not authorized in this opinion. Notification must include the date, time, and location of the incident of the incident or of the finding of a dead or injured animal, and any other pertinent information. The Service contact person is the Chief of the Endangered Species Division (Central Valley), at (916) 414-6600. Any dead or injured snakes or other listed species must be relinquished to the California Department of Fish and Game (CDFG), Wildlife Investigations Lab, for care or analysis. The CDFG telephone number at the Sacramento Valley-Central Sierra Region office is (916) 358-2900; for immediate assistance, call the State Dispatch office at (916) 445-0045. Any killed snakes that have been taken shall be properly preserved in accordance with Natural History Museum of Los Angeles County policy of accessioning (10 percent formalin in quart jar or freezing). Preserved specimens shall be delivered to the Service's Division of Law Enforcement at 2800 Cottage Way, Room W-2928, Sacramento, California 95825-1846, phone (916) 414-6660.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of ESA directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be

implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

1. EWA agencies should assist the Service in implementing the draft, and, when completed, the final recovery plan for the giant garter snake.

REINITIATION--CLOSING STATEMENT

This concludes formal consultation on the Environmental Water Account Program. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions or concerns about this consultation or the consultation process in general, please contact Jennifer Bain or Elizabeth Warne of my staff at the letterhead address or at (916) 414-6645.

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Also, provide copies to Ryan Olah, Victoria Poage, and Mark Littlefield in our office.