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## 1. Introduction

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### 1.0 INTRODUCTION

The U.S. Department of the Interior (Interior), through the Bureau of Reclamation (Reclamation) and the U.S. Fish and Wildlife Service (FWS), proposes to purchase temporary water supplies from Semitropic Water Storage District (SWSD) during the water supply years: 2000 to 2003. Reclamation will pay SWSD to provide water to the Kern National Wildlife Refuge (KNWR). This water will be used to provide critical wetland habitats at KNWR. Acquisition of this water is mandated by Section 3406(d)(2) of the Central Valley Project Improvement Act<sup>1</sup> (CVPIA).

Reclamation's *Report on Refuge Water Supply Investigations* (1989) describes water needs and delivery requirements for National Wildlife Refuges, State Wildlife Management Areas and the Grassland Resource Conservation District in the Central Valley of California, including KNWR. In this report the average annual historical supplies were termed "Level 2", and the supplies needed for optimum habitat management were termed "Level 4". Section 3406(d)(1) of the CVPIA requires the Secretary of the Interior, immediately upon enactment, to provide firm delivery of Level 2 water supplies to each wildlife refuge in the Central Valley of California. Section 3406(d)(2) of the CVPIA further directs the Secretary to provide additional water supplies to meet Level 4 requirements by 2002 through the acquisition of water from willing providers. CVPIA requires that 80 percent of the full Level 4 water requirements be provided in 2000/2001, 90 percent of the full Level 4 water requirements in 2001/2002, and 100 percent of the Level 4 water requirements in 2002/2003 and 2003/2004. The proposed acquisitions represent the required incremental, successive increases over the previous years water requirements, and is consistent with previous environmental documentation relating to supplying water to the KNWR.

Reclamation, as the lead Federal agency, has prepared this Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA), as amended. The overall general impacts of implementing the CVPIA, including providing Level 4 water supplies is addressed in a Final Programmatic Environmental Impact Statement (PEIS) (Interior 1999). A Record of Decision is expected for the PEIS in the fall of 2000. Because the Final PEIS is a programmatic document, it presents a system-wide analysis rather than a detailed analysis of Level 4 water deliveries. Also, a draft Environmental Assessment/Initial Study (EA/IS) was prepared for the conveyance of water to the KNWR (Interior et al, 1997); this document will be finalized when the Record of Decision is enacted for the PEIS. An additional EA is in process that describes long-term agreements for supplying Level 2 and 4 water supplies to the KNWR (Reclamation,

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<sup>1</sup>The Central Valley Project Improvement Act (CVPIA) was signed into law on October 30, 1992, as Title XXXIV of Public Law 102-575. The CVPIA mandated changes in Central Valley Project (CVP) management particularly to protect, restore, and enhance fish and wildlife. The CVPIA includes some 103 programs and activities, and requires close coordination among the implementation teams assigned to the various programs.

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## 1. Introduction

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2000). Since these documents described the conveyance and on-refuge use of the water supply are in draft form at the time of this report, this EA has been prepared to address the source, conveyance and on-refuge use impacts of the proposed temporary acquisition of up to 17,500 acre-feet of water from SWSD to meet Level 4 water delivery requirements for the water service years (2000/2001, 2001/2002, 2002/2003, and 2003/2004). Previous Level 4 water acquisitions from SWSD for KNWR occurred in 1996/1997, 1997/1998, and 1999/2000 (1996 - 2000); EAs were also prepared for each of these acquisitions. The cited documents follow:

1. *Supplemental Environmental Assessment, Temporary Water Acquisition for San Joaquin Valley Wetland Habitat Areas -- 1996/1997* (Reclamation, 1997); this document includes analysis of environmental impacts resulting from the acquisition of 8,503 acre-feet of Level 4 water from SWSD for use at KNWR in 1996 and 1997/1998.

2. *Environmental Assessment and Finding of No Significant Impact, The Temporary Acquisition of Water from Semitropic Water Storage District for San Joaquin Valley Wetland Habitat Areas, Final, November 1999* (Reclamation, 1999); this document includes analysis of environmental impacts resulting from the acquisition of 10,228 acre-feet of Level 4 water from the SWSD for use at KNWR in 1999/2000.

### 1.1 PURPOSE AND NEED

There is a need to purchase water during the 2000 to 2003 water supply years to meet KNWR Level 4 requirements to provide critical wetland habitats for the benefit of migratory waterfowl, other migratory birds, and wetland-dependent wildlife. Pursuant to Section 3406(d)(2) of the CVPIA, the Bureau of Reclamation (Reclamation) must provide to KNWR 80 percent of Level 4 increment water supplies in the 2000/2001 water supply year, 90 percent in 2001/2002, and 100 percent in 2002/2003 and 2003/2004 (refer to Table 1-1). To meet CVPIA requirements, a firm water supply is needed from a willing seller(s). The Proposed Action to purchase up to 17,500 acre-feet of water per water year would provide up to 15,050 acre-feet to KNWR after conveyance losses (which are assumed to be 14 percent of the purchased amount).

As described in the *Report on Refuge Water Supply Investigations* (Reclamation, 1989), total available acres of wetlands within the Central Valley of California have declined from about 4 million acres in 1850, to about 300,000 acres in the 1980's. Federal National Wildlife Refuges and State Wildlife Management Areas comprise approximately one third of this acreage. The refuges in the Central Valley are a critical component of the Pacific Flyway. Maintenance of the Pacific Flyway for waterfowl depends on maintaining critical wintering habitats in the Central Valley. Waterfowl migration to the Central Valley begins in August with the arrival of the first birds from the north. The numbers of wintering waterfowl rapidly increase over the late summer and fall and by late December as many as 10-12 million waterfowl migrate to or through

## 1. Introduction

the Central Valley for their winter sojourn. In addition to providing critical bird habitats, the wetlands also provide groundwater recharge, recreation and educational opportunities, and flood and erosion control.

Level 4 water is needed to optimally manage Central Valley wetland habitat areas as identified in the 1989 Refuge Water Supply Study (Reclamation, 1989). The difference between water supplies for optimum management (Level 4) and average annual deliveries (Level 2) are related to management for habitat diversity, which includes timing and duration of fall and late winter flooding, summer water for food production, and permanent wetland habitat maintenance.

<b>TABLE 1-1 WATER SUPPLIES UNDER THE PROPOSED ACTION AND AS REQUIRED BY CVPIA TO MEET LEVEL 4 REQUIREMENTS FOR KERN NATIONAL WILDLIFE REFUGE<sup>1</sup> (IN ACRE-FEET)</b>						
Water Year (March 1 through February 28)	Level 2	Level 4	Total Level 4 Increment	Water Year Requirement (percentage of Level 4 increment)	Water Year Acquisition Goal (total level 4 increment x water year requirement )	Proposed Action <sup>2</sup> (water year acquisition goal plus 14% conveyance losses)
2000/2001	9,950	25,000	15,050	80	12,040	14,000
2001/2002	9,950	25,000	15,050	90	13,545	15,750
2002/2003	9,950	25,000	15,050	100	15,050	17,500
2003/2004	9,950	25,000	15,050	100	15,050	17,500

1. Level 2 and Level 4 increments based on information in Reclamation's *Report on Refuge Water Supply Investigations* (1989).
2. Water available to meet Level 4 increment based on projected conveyance losses of 14% of the purchase amount, (e.g., Proposed Action = Water Year Acquisition Goal/(1 - conveyance losses).

## 2. Alternatives

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### 2.0 ALTERNATIVES

The Proposed Action meets the identified need and purpose. A number of alternatives, as described below, were considered and eliminated from further analysis because they could not reasonably meet the identified need and purpose. A No-Action Alternative has been analyzed to address impacts associated with not meeting the identified need; however, because the implementation of the CVPIA is required by statute, selection of the No-Action Alternative is inconsistent with the Administrative Record and could require legislative change.

#### 2.1 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, water deliveries to KNWR would consist of any existing firm supplies to satisfy Level 2 quantities. Management objectives for KNWR associated with Level 4 water supplies would not be met during any of the water years from 2000/2001 through 2003/2004. The refuge would be operated as it was prior to enactment of CVPIA (October 1992). Absent this water purchase, water currently available for acquisition from SWSD would be stored or would be marketed to other willing buyers.

#### 2.2 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

During the development of the proposed project, the following alternatives considered for evaluation were eliminated from further study and analysis because they did not meet the need for a firm water supply during the water years (2000 - 2003) to meet Level 4 requirements for the KNWR.

Poso Creek. Obtaining water from Poso Creek to meet Level 4 supplies for the KNWR is not considered a viable option since no water is available for appropriation from June 15 until the fall rains. Also, securing an appropriative right on Poso Creek would not give the KNWR a firm water supply because Poso Creek is an intermittent stream which spills flood waters onto the KNWR only during wet years.

Kern River. The Kern River channel, located 1.5 miles west of the KNWR, is considered a critical stream by the State Water Resources Control Board (SWRCB), and Decision 1196 by the SWRCB determines that no water is available for appropriation from Kern River at any time (Interior, 1978). Therefore, Kern River has been eliminated as an option for meeting Level 4 supplies for the KNWR.

Groundwater. There is very limited groundwater available in the area. The KNWR, located in the lake deposits of the Tulare Lake Basin, had nine groundwater wells operating in the early 1970's. At that time, three of the wells were abandoned due to a receding water table coupled with escalating energy costs. The six remaining wells are located along the southern boundary of the KNWR and along the Goose Lake Canal (Figure 2-1). These wells are currently not operable; the wells require various degrees of repair in

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## 2. Alternatives

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order to be used on an as-needed basis in conjunction with surface water. Reclamation has previously estimated the safe yield of the groundwater wells, if operable, at KNWR as 5,500 acre-feet. At the time of this report, groundwater is not considered a viable option for providing Level 4 supplies to the KNWR because of the costs to repair the wells to become operational, groundwater overdraft impacts, energy costs, and the limited supplies available. However, rising costs of water may warrant the restoring of the wells at KNWR at some time in the future, although this option is not viable for this EA.

### 2.3 PROPOSED ACTION

The proposed action is for the Interior to purchase up to 17,500 acre-feet of water from SWSD to meet KNWR Level 4 water supply requirements for the 2000 - 2003 water years as required by the CVPIA. Three options exist for the source of the water supply being offered by SWSD.

#### 2.3.1 Kern County Water Agency Pooled Water Supply

SWSD may purchase surplus water, if available, through their participation in the Kern County Water Agency (KCWA)'s pooled water supply. The water available to the pool in this case is State Water Project (SWP) allocated water supply. KCWA, as a state water contractor, can provide SWP water to SWSD and KNWR since they are within the Agency's service area and the SWP place of use. The KNWR is predominantly located within the SWSD district boundaries and can accept water from the SWSD (Figure 2-2). The acquired water would be conveyed to KNWR through canals owned and operated by Buena Vista Water Storage District (BVWSD) from the California Aqueduct. Delivery through the BVWSD is the most direct route to the KNWR thus minimizing conveyance losses.

#### 2.3.2 State Water Project Interruptible Supply

Another source of water is the SWP interruptible supplies. Interruptible water is SWP water that is available, as determined by the State, in excess of the amount needed to meet the SWP contractors' annual entitlement deliveries and SWP operational requirements including storage goals. These supplies may be delivered for use within the service area of the requesting contractor, for the same reasonable and beneficial uses as entitlement water. On that basis, SWSD as a KCWA member entity, has access to the SWP interruptible supplies which can be made available for delivery to KNWR as incremental Level 4 water supply. The interruptible nature of the water source means that the timing and duration of its availability are uncertain. Historically, this water supply has been available when San Luis Reservoir is full or filling is imminent. The interruptible water supply, if available, will be acquired in the event that the excess pooled water is not available.

## 2. Alternatives

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### 2.3.3 Kern County Water Bank Stored Water

A possible third source of water is the Kern County Water Bank Authority, of which SWSD is a member district. SWSD water would be made available for purchase by exchanging a portion of their SWP water allocation, which they would leave in San Luis Reservoir, for the SWP water stored in the Kern County Water Bank. The acquired water would then be made available for delivery to the KNWR from the California Aqueduct through the BVWSD canals.



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### 3. Affected Environment and Environmental Consequences

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#### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section discusses the affected environment and the potential impact on these resources of the No-Action Alternative and implementation of the Proposed Action. This analysis is consistent with previous examinations regarding delivery and use of Level 4 water to KNWR. Pertinent documents cited in this section refer to previous reports that have been published regarding water needs and acquisitions of the KNWR.

This EA provides information on the following resources:

Surface Water (including Water Quality, and Central Valley Project (CVP) and SWP Operations)  
Groundwater  
Land Use  
Vegetation and Wildlife (including listed species)  
Fishery Resources  
Recreation  
Energy Requirements  
Cultural Resources  
Indian Trusts  
Environmental Justice

#### 3.1 SURFACE WATER

The majority of water used by KNWR, prior to the enactment of the CVPIA as well as recent Level 4 acquisitions, has been surplus SWP water purchased from the Kern County Water Agency (KCWA). Poso Creek, an intermittent stream that spills flood waters onto the KNWR during wet years, has been a source of unregulated water used by the KNWR in the past. Kern River, to the west of the KNWR, is considered a critical stream and no water is available for appropriation at any time. (Reclamation, 1989)

##### 3.1.1 Affected Environment

As stated in the Supplemental EA for Temporary Water Acquisitions (Reclamation, 1997) surface water in SWSD is related to local surface water supplies and water supplies under its contract with the KCWA for an SWP entitlement. The SWP water is pumped from the Delta and conveyed through the California Aqueduct. The SWP water can be stored in San Luis Reservoir for subsequent conveyance in the California Aqueduct to SWSD.

The water being made available for the Proposed Action is from the SWP allocated water supply. The water to be acquired will be conveyed through the California Aqueduct to BVWSD (downstream of the

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### 3. Affected Environment and Environmental Consequences

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SWSD diversion) for conveyance to KNWR.

Return flows from KNWR are conveyed to adjacent agricultural lands. None of the return flows return to natural streams. The increased water supplies on the refuge would result in a seasonal increase in the availability of water in the conveyance channels off the refuge.

#### 3.1.2 Environmental Consequences

Water supplied to KNWR is used for management of wetland habitat areas within the refuge. Unless Level 4 water supplies are acquired, adequate water supplies will not be available to enhance and maintain quality habitat for waterfowl. Therefore, the refuge would not be able to perform adequately the following: manage for waterfowl food supplies, maintain riparian habitat areas, and provide recreational opportunities for visiting public.

**3.1.2.1 No-Action Alternative.** Under the No-Action Alternative, water would not be purchased for use as Level 4 water at KNWR. Level 2 supplies would be provided by the CVP via regular deliveries from San Luis Reservoir. Existing surface water conditions would remain unchanged from pre-CVPIA conditions. Surface water management at the KNWR would not be improved under the No-Action Alternative.

**3.1.2.2 Proposed Action.** SWSD has made water available for acquisition in the past (1996 - 2000) from SWP entitlement, unregulated surface water, and interruptible water supplies. Reclamation purchases these Level 4 water supplies for use by the KNWR. During past purchases, no changes in Delta operations occurred as compared to the No-Action Alternative. Likewise, no changes in the Delta operations will result from implementation of the Proposed Action.

Return flows from the KNWR, under the No-Action Alternative and the Proposed Action, would be minimized because of absorption by the plants, evaporation to the air, and percolation to the ground occurring. The Proposed Action may change the volume of return flows within KNWR and beneficially affect riparian vegetation and associated wildlife in the conveyance channels through the refuge. The increase in water may result in an increase in the return flows to the surrounding agricultural lands, but not significantly. Because the source of water is not changing, water quality would not be impacted under the Proposed Action as compared to the No-Action Alternative.

The additional surface water available to KNWR improved wetland habitats after the 1996 - 2000 purchases. Accordingly, the Proposed Action would enhance refuge communities by increasing waterfowl food sources and wetland habitat conditions, including increased vegetative cover and open water. No reduction or change in CVP deliveries to agricultural, municipal, and industrial contractors would occur from implementation of the Proposed Action.

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### 3. Affected Environment and Environmental Consequences

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#### 3.2 GROUNDWATER

KNWR is located in the lake deposits of the Tulare Lake Basin. There are six groundwater wells located on the southern boundary and along the Goose Lake Canal that are capable of pumping water from the underlying aquifer if they were repaired. Groundwater could be used on an as-needed basis in conjunction with surface water within the KNWR. (Reclamation, 1989)

##### 3.2.1 Affected Environment

The Supplemental EA for Temporary Water Acquisitions (March 1997) indicated that groundwater is used by SWSD in conjunction with SWP surface water. Groundwater is partially recharged through deep percolation of a portion of the applied water. SWSD has constructed a groundwater bank to facilitate conjunctive use within and outside of the district. Space in the groundwater bank is offered to other water users throughout California for off-stream storage of surface water in order to improve reliability of surface water supplies south of the Sacramento-San Joaquin River Delta.

##### 3.2.2 Environmental Consequences

**3.2.2.1 No-Action Alternative.** Groundwater conditions will not change if the Proposed Action were not implemented. If no surface water supplies were available, groundwater would only become available to partially meet Level 4 requirements if the existing wells were repaired and made operational and the groundwater is of suitable quality. There is no plans at the time of this report to repair the groundwater wells within the KNWR boundaries.

**3.2.2.2 Proposed Action.** As was the case in the 1996 - 2000 purchases, and as analyzed in the Supplemental EA for Temporary Water Acquisitions (March 1997), the water proposed for purchase in the Proposed Action is being made available due to excess SWP water entitlement available in the current water year. Therefore, irrigation demands or applied water would not be affected by this action. Because the Proposed Action would not impact SWP or CVP contractors, or other users of the water system, there would not be an impact to groundwater or groundwater quality since there would be no additional groundwater extraction or a need for changes to existing water use practices. Percolation of applied water to groundwater is limited at KNWR; therefore, increased surface water deliveries to the refuges would not significantly impact groundwater resources. SWSD water users historically have relied on groundwater for their needs. One of the District's primary objectives is to reduce overdrafts; therefore, the use of surface water is encouraged in order to minimize groundwater pumping.

#### 3.3 LAND USE

Lands at the KNWR can be classified as seasonal marsh, moist soil impoundments, summer water, riparian,

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### 3. Affected Environment and Environmental Consequences

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croplands, and uplands (Reclamation, 2000). The refuge includes natural valley grasslands and developed marsh. These areas are managed primarily for migratory waterfowl, marsh and other water birds. Additionally, upland acreage has been set aside as a natural research area for desert plants and to provide critical habitats for the blunt-nosed leopard lizard, San Joaquin kit fox, and other listed species.

#### 3.3.1 Affected Environment

Land uses in SWSD are primarily agricultural, consisting primarily of field and grain crops, hay, alfalfa, and pasture. Rural residences associated with agricultural land uses are found throughout the area (Reclamation, October 1995). Level 4 water supplies provided to the refuge will be actively managed to support the marsh, moist soil impoundments, and summer water. Level 4 water will also benefit the riparian areas via return flows. The upland habitat will not be managed with Level 4 water supplies. (Reclamation, 2000)

#### 3.3.2 Environmental Consequences

**3.3.2.1 No-Action Alternative.** Land-use practices in the SWSD would not change under the No-Action Alternative. Improvements in habitat quality and quantity at KNWR would not occur and conditions at the refuge that existed prior to the CVPIA would be maintained.

**3.3.2.2 Proposed Action.** Land-use practices in the SWSD would not change as a result of the Proposed Action. The water proposed for purchase is considered water that is in excess of SWSD's needs. Thus, no reduction in irrigated acreage would occur and the land use would not change. Additionally, this water's availability did not result from any changes in cropping patterns and would not change future/planned agricultural practices. Land-use changes on the KNWR would consist of improved management of existing wetlands, an increase in the viability of marsh habitat acreage, and an increase in the water available to riparian areas.

### 3.4 VEGETATION AND WILDLIFE

#### 3.4.1 Affected Environment

Habitats within the SWSD are predominately agricultural, whereas, the habitats present at KNWR are natural valley grasslands and developed marsh. The KNWR is managed primarily for migratory waterfowl, shorebirds, marsh and water birds and their associated habitat types as well as for listed species.

The FWS, pursuant to the provisions of Section 7 of the Endangered Species Act of 1973, identified endangered and threatened species that may occur within the KNWR. The identified species include six Federally-listed endangered and threatened species, one State-listed threatened species, one proposed-for-

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### 3. Affected Environment and Environmental Consequences

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listing species, and one candidate-for-listing species. Also included are 15 Federal species of concern, four State sensitive species, and one delisted species. The following is a list of threatened (T), endangered (E), proposed threatened (PT), and candidate (C) species that may occur within the KNWR. No critical habitats are listed for the KNWR.

Species	Scientific Name	Status
Bald eagle	<i>Haliaeetus leucocephalus</i>	T
Blunt-nosed leopard lizard	<i>Gambelia (=Crotaphytus) sila</i>	E
Buena Vista Lake shrew	<i>Sorex ornatus relictus</i>	C
Giant kangaroo rat	<i>Dipodomys ingens</i>	E
Golden eagle	<i>Aquila chrysaetos</i>	T (CA)
Kern mallow	<i>Eremalche kernensis</i>	E
Mountain plover	<i>Charadrius montanus</i>	PT
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E
Tipton kangaroo rat	<i>Dipodomys nitratooides nitratooides</i>	E

Several sensitive species and species of concern may occur in the KNWR. The listed mammals are as follows: American badger, great western mastiff-bat, San Joaquin antelope squirrel, San Joaquin pocket mouse, and southern grasshopper mouse. The listed birds are as follows: ferruginous hawk, greater sandhill crane, little willow flycatcher, loggerhead shrike, tricolored blackbird, western burrowing owl, and white-faced ibis. The listed reptiles are as follows: California horned lizard, northwestern pond turtle, San Joaquin coachwhip, and southwestern pond turtle. The listed amphibian is the western spadefoot toad. The listed plants are as follows: Lost Hills saltbush, recurved larkspur, and slough thistle. Three Biological Assessment has been completed for the KNWR. Two are relative to the Refuge Master Plan and subsequent CVPIA Water Conveyance Program, and just recently a concurrence of not likely to adversely affect for other long-term water supplies for the refuge.

#### 3.4.2 Environmental Consequences

**3.4.2.1 No-Action Alternative.** Under the No-Action Alternative, land uses in SWSD, would remain unchanged. Existing conditions affecting vegetation and wildlife within the District would continue. Habitat improvements at KNWR could not be maintained under the No-Action Alternative. Pre-CVPIA existing conditions would continue and benefits to migratory waterfowl would remain unchanged. Benefits

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### 3. Affected Environment and Environmental Consequences

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to the listed species occurring in the managed upland habitats would not be effected by the No-Action Alternative.

**3.4.2.2 Proposed Action.** Land use outside of the KNWR but within the SWSD did not change when water was purchased in 1996 - 2000 from SWSD for use at KNWR. Likewise, this Proposed Action would not result in new lands being irrigated or withdrawn from irrigation as compared to the No-Action Alternative. The previous analysis in the *Interim Water Acquisition Program Environmental Assessment* (Reclamation, October 1995) determined that the increase in water supply would result in beneficial changes in habitats at the KNWR. The additional water would improve year-round management of wildlife. Specifically, the increased water supplies would permit refuge managers to retain more summer water in existing ponded areas, and to irrigate waterfowl food crops. The increased water deliveries would improve water quality and habitat value, which could result in an increased diversity of the species at KNWR. Because all management actions are intended to benefit vegetation and wildlife on the wetland habitat areas, habitat values are expected to continue to increase under the proposed action. Therefore, the vegetation and wildlife resources that utilize the wetland habitat areas would be beneficially impacted. Upland areas are expected to remain unchanged. These improved habitat values for migratory waterfowl would not likely to adversely affect any listed or sensitive species that utilize the upland habitat areas of the refuge (e.g., giant and kangaroo rats and San Joaquin kit fox); and would benefit species that use the wetland habitat for cover, foraging, or prey (e.g. mountain plover, bald and golden eagles). The FWS concurred with Reclamation's finding of not likely to adversely affect listed species in a letter dated September 21, 2000 (Appendix C).

## 3.5 FISHERY RESOURCES

The streams of the KNWR are not managed specifically for fishery resources. However, these streams do support warm water fish which occur in surrounding irrigation canals, including pike minnow (formerly squaw fish), sucker, speckled dace, prickly sculpin, green sunfish, largemouth bass, smallmouth bass, bluegill, white and channel catfish, crappie, Sacramento blackfish, carp, threadfin shad, hardhead, and mosquitofish. (Reclamation, October 1995)

### 3.5.1 Affected Environment

Water is delivered to SWSD, BVWSD, and the KNWR through the California Aqueduct. The California Aqueduct is not managed for fishery resources. Water would be conveyed between the aqueduct and the KNWR in irrigation canals which also do not include managed fish resources. Fishery resources at the KNWR have not been evaluated in detail. Because adequate water is not available for full management of the wetland habitat areas, fishery resources may not be fully managed or developed.

### 3.5.2 Environmental Consequences

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### 3. Affected Environment and Environmental Consequences

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**3.5.2.1 No-Action Alternative.** Existing fishery conditions in the absence of Level 4 water supplies would prevail under the No-Action Alternative.

**3.5.2.2 Proposed Action.** Fishery resources in the canals and streams would not be adversely impacted due to the Proposed Action because the action does not represent a significant deviation from historical hydrological condition in these waterways. Conveyance of the purchased water to KNWR would be through the California Aqueduct and the BVWSD canals. These conveyance systems are not managed for fisheries. The acquired water will provide a beneficial impact to aquatic biota and fishery resources at KNWR by increasing available water supplies. Use of Level 4 water supplies would not impact temperature in critical summer months, fish passage and habitat, or Delta outflows (Interior, 1999).

## 3.6 RECREATION

### 3.6.1 Affected Environment

There are no recreational activities supported by or associated with the SWSD. The recreational facilities at the KNWR are primarily designed to enhance wildlife observation opportunities. Most recreational opportunities are associated with waterfowl, and include nonconsumptive uses (wildlife observation, study, and photography) during September through May, and consumptive uses (waterfowl hunting) during October through January.

### 3.6.2 Environmental Consequences

**3.6.2.1 No-Action Alternative.** No changes to existing recreational opportunities would occur under the No-Action Alternative.

**3.6.2.2 Proposed Action.** The additional water to be provided under the Proposed Action would be managed to improve waterfowl and wildlife habitats within the KNWR. The improvement of the habitats is expected to result in a slight to moderate increases in recreational opportunities thus increasing recreation trip-related expenditures as was also reported in the EAs for the 1996 - 2000 Level 4 water acquisitions.

## 3.7 ENERGY

### 3.7.1 Affected Environment

Energy is used for conveying SWP and CVP water to and within the SWSD. Depending on economic efficiency, either CVP power or another provider is used to convey Level 2 water supplies to KNWR. For Level 4 water deliveries to the KNWR, the most cost-efficient provider is used to meet the power

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### 3. Affected Environment and Environmental Consequences

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requirements of transporting the water to the refuge border. Pacific Gas and Electric Company serves the KNWR under the PA-1 rate schedule for agricultural users (Reclamation, 1989).

#### 3.7.2 Environmental Consequences

**3.7.2.1 No-Action Alternative.** Energy usage would remain unchanged under the No-Action Alternative

**3.7.2.2 Proposed Action.** Under the Proposed Action, energy would be used to convey purchased water supplies through the California Aqueduct to the San Luis Reservoir, and from the San Luis Reservoir to the BVWSD and then within the KNWR. The amount of energy required would not be significantly greater than that needed under the No-Action Alternative.

### 3.8 CULTURAL RESOURCES

#### 3.8.1 Affected Environment

Cultural resources exist at several sites within the SWSD, including the McKittrick Brea Pit. Cultural resources may also exist near sloughs and wetland areas within the KNWR.

#### 3.8.2 Environmental Consequences

**3.8.2.1 No-Action Alternative.** Existing conditions related to cultural resources at KNWR and SWSD would remain unchanged with the No-Action Alternative.

**3.8.2.2 Proposed Action.** Cultural resources will not be impacted because land use would not be changed, existing conveyance facilities will be used, and there would be no new construction within SWSD or KNWR as a result of the Proposed Action. Prolonged flooding at wetland areas would be within areas historically inundated for waterfowl management purposes. However, increased water supplies would increase visitor use and the risk of vandalism. Use of Level 4 water supplies also could increase erosion potential for cultural resources.

### 3.9 INDIAN TRUST ASSETS

Indian Trust Assets are legal interests in property or rights held in trust by the United States for Indian Tribes or individuals. Trust status originates from rights imparted by treaties, statutes, or executive orders. These rights are reserved for or granted to tribes. A defining characteristic of an Indian Trust Asset is that such assets cannot be sold, leased, or otherwise alienated without Federal approval.



### **3. Affected Environment and Environmental Consequences**

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Indian reservations, rancherias, and allotments are common Indian Trust Assets. Allotments can occur both within and outside of reservation boundaries and are parcels of land where title is held in trust for specific individuals. Additionally, Indian Trust Assets include the right to access certain traditional use areas and perform certain traditional activities. (Reclamation, October 1995)

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### **3. Affected Environment and Environmental Consequences**

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#### **3.9.1 Affected Environment**

It is Reclamation policy to protect Indian Trust Assets from adverse impacts of its programs and activities whenever possible. Types of actions that could affect Indian Trust Assets include an interference with the exercise of a reserved water right, degradation of water quality where there is a water right, impacts on fish and wildlife where there is a hunting or fishing right, or noise near a land asset where it adversely affects uses of the reserved land (Reclamation, March 1997). No Indian Trust Assets occur within the SWSD, or KNWR.

#### **3.9.2 Environmental Consequences**

Due to the absence of Indian Trust Assets within the SWSD and KNWR, no impacts would occur as a result of the No-Action Alternative or the Proposed Action.

#### **3.10 ENVIRONMENTAL JUSTICE**

Executive Order 12898 requires each Federal agency to achieve environmental justice as part of its mission, by identifying and addressing disproportionately high adverse human health or environmental effects, including social and economical effects, of its programs and activities on minority populations and low-income populations of the United States.

No changes in agricultural communities or practices would result from this acquisition. Accordingly the Proposed Action will not have any significant or disproportionate negative impact on low-income or minority individuals within the SWSD.

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## 4. Cumulative Impacts

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### 4.0 CUMULATIVE IMPACTS

According to the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA, cumulative impact is defined as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The Proposed Action is for the Interior to purchase up to 17,500 acre-feet of water from SWSD to meet KNWR Level 4 water supply requirements for the 2000 - 2003 water years to enhance wetland habitats. This Proposed Action is being implemented pursuant to the requirements of the CVPIA which requires water acquisition to increase water supplies for wildlife refuges and wildlife management areas in the Central Valley. The overall impacts of implementing the CVPIA are evaluated in the PEIS (Interior, 1999) that was prepared pursuant to NEPA requirements. A Record of Decision for the Proposed Action to implement CVPIA has not been issued as of this writing.

The PEIS includes analysis of Level 4 water acquisitions for wildlife refuges and wildlife management areas in the Central Valley (i.e., acquisition of 160,000 acre-feet per year above firm Level 2 water supplies), in addition to other programs mandated by CVPIA. These other programs include, but are not limited to:

- Water contract renewals
- Water transfers
- Tiered water pricing
- CVP operations
- Fish and wildlife water acquisition
- Fish and wildlife habitat restoration
- Land retirement
- Facility modifications

The PEIS addresses the region-wide and cumulative impacts of CVPIA; the following is a summary of the preferred alternative. The PEIS identifies overall beneficial impacts pertaining to fish, wildlife and special-status species and recreation opportunities through CVPIA programs that include habitat acquisition, riparian restoration, and water acquisition for wildlife refuges. Under CVPIA it is anticipated that average annual CVP deliveries will be less and average annual Delta outflows will increase. Water deliveries to water rights contractors and exchange contractors are not expected to change. Also under CVPIA there is expected to be an increase in the depth to groundwater in the Sacramento region (1%), San Joaquin region (3%) and the north Tulare region (5%) due to changes in surface and groundwater use, crop mix, irrigation techniques, and stream flows. CVPIA was found to result in a reduction of irrigated agricultural

#### 4. Cumulative Impacts

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acreage and gross revenues for agricultural products due to water management for fish and wildlife, water acquired for stream flows and refuges, water pricing, restoration payments, water conservation, land retirement, and water transfers. CVPIA programs may affect cultural resources, although the impacts can not be quantified at the programmatic level. CVPIA was not found to have disproportionate impacts to minorities and low income populations, or to adversely affect Indian Trust Assets.

The potential for adverse cumulative effects associated with water acquisition primarily pertains to water management within the Central Valley and allocation of existing water supplies. In addition to CVPIA, other Federal and State activities include CALFED and on-going CVP and SWP operations. These are all highly adaptable programs that must meet Endangered Species Act and Delta pumping requirements and are therefore subject to great change as hydrologic and environmental conditions change. Consequently, any analysis of cumulative impacts with regards to affect on water allocations must be necessarily speculative and general.

Since 1992 there have been numerous temporary and short-term acquisitions of water in the San Joaquin Valley to implement the objectives of CVPIA. These acquisitions are provided in Appendix A.

Environmental documents have been prepared to address the site-specific impacts of the executed water acquisitions described in Appendix A. Pursuant to NEPA, each of these environmental documents includes a cumulative analysis addressing the incremental impact of the proposed water acquisition when added to other past, present, and reasonably foreseeable future actions. These environmental documents, consistent with the subject document, have identified overall beneficial impacts associated with the water acquisitions.

The following summarizes cumulative impacts associated with the current Proposed Action:

**Surface Water** - The Proposed Action would not result in a cumulatively significant adverse impact when added to other past, present, and reasonably foreseeable future actions given the relatively small amount of water involved (maximum of 17,500 acre-feet per year), and the short-term and temporary nature of the water acquisition. Also, because the water to be purchased from SWSD would have been exported for delivery to other users or placed in storage under the No-Action Alternative, no changes to Delta pumping operations would occur with implementation of the Proposed Action.

**Groundwater** - Under the Proposed Action, purchased surface water from the SWP would be provided to the KNWR which overlays a groundwater basin. However, percolation of applied water at KNWR to the groundwater is limited. Thus, the Proposed Action would neither result in a significant incremental increase to groundwater impacts, nor a cumulatively significant adverse impact on local groundwater when added to other past, present, and reasonably foreseeable future actions

**Land Use** - The purchased water would result in changes to future/planned management practices at

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#### 4. Cumulative Impacts

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KNWR. However, the Proposed Action would not contribute to a cumulatively significant adverse impact on land use when added to other past, present, and reasonably foreseeable future actions.

**Vegetation and Wildlife** - The acquired water will be used to improve waterfowl and other wetland dependent wildlife habitat at KNWR. The additional water would also improve year-round management of wildlife; the increased water supplies would permit refuge managers to retain summer water in existing ponded areas, and to irrigate waterfowl food crops. Cumulatively, the increase in water deliveries would improve water quality and habitat value which would potentially allow for an increased diversity of the species at KNWR. Thus, the Proposed Action would contribute to a beneficial cumulative impact on vegetation and wildlife when added to other past, present, and reasonably foreseeable future actions.

**Fishery Resources** - The acquired water will provide a minor benefit to aquatic biota and fishery resources by increasing available water supplies. Thus, Proposed Action would not contribute significantly to a beneficial cumulative impact on fishery resources when added to other past, present, and reasonably foreseeable future actions.

**Recreation** - The additional water to be provided under the Proposed Action would be managed to improve waterfowl and wildlife habitats within the KNWR. The improvement of the habitats is expected to result in a slight to moderate increase in recreational opportunities as was also demonstrated by the water acquisitions in 1996 - 2000. Thus, the Proposed Action would contribute to a beneficial cumulative impact on recreation resources when added to other past, present, and reasonably foreseeable future actions.

**Energy** - Because the water to be purchased from SWSD would have been exported for delivery to willing sellers or placed in storage under the No-Action Alternative, the amount of energy required to deliver the water under the Proposed Action would not be substantially greater than needed under the No-Action Alternative. Thus, the Proposed Action would not contribute to any cumulatively significant adverse impact on energy use when added to other past, present, and reasonably foreseeable future actions.

**Cultural Resources** - Increased water supplies and increased recreational visitors at KNWR may result in a cumulative impact to cultural resources if present in areas of visitor access and seasonal flooding.

**Indian Trust Assets** - Since there are no Indian Land Assets within SWSD or KNWR that could be affected by the Proposed Action, no cumulatively significant adverse impact to Indian Land Assets when added to other past, present, and reasonably foreseeable future actions is anticipated.

**Environmental Justice** - Since no changes in agricultural communities or practices would occur under the Proposed Action, no cumulatively significant adverse impact on low-income or minority individuals when added to other past, present, and reasonably foreseeable future actions is anticipated.

## 4. Cumulative Impacts

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## 5. Consultation/Coordination

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### 5.0 CONSULTATION/COORDINATION

#### 5.1 CONSULTATION AND COORDINATION

This EA has been prepared in accordance with the requirements of NEPA as amended, 42 U.S.C. 4321, et a seq., and CEQA. Reclamation is also complying with other applicable laws including the Clean Water Act of 1977, Clean Air Act of 1970, Endangered Species Act, Fish and Wildlife Coordination Act, NEPA, National Historic Preservation Act of 1966, Executive Order 11988 - Flood Plain Management, Executive Order 11990 - Protection of Wetlands, the Council of Environmental Quality Memorandum - Analysis of Prime or Unique Farmlands, and the Wild and Scenic Rivers Act.

**Clean Air Act of 1972, as amended, 42 U.S.C. 7401, et a seq.** Section 176c of this act prohibits Federal action or support of activities which do not conform to a State Implementation Plan. The Proposed Action is not expected to violate any standard, increase violations in the project area, exceed the Environmental Protection Agency's (EPA) general conformity de minimis threshold, or hinder the attainment of air quality objectives in the local air basin.

**Clean Water Act of 1972, as amended, 33 U.S.C.1251, et a seq.** The Proposed Action is in compliance with Section 401 of the Clean Water Act. The Proposed Action will not result in placement of fill material into waters of the United States or their associated wetlands.

**Endangered Species Act of 1973, as amended, 16 U.S.C. 1531, et a seq.** Endangered Species are not likely to be adversely affected as a result of the Proposed Action. Reclamation requested concurrence from the FWS that the Proposed Action is not likely to adversely impact threatened and endangered species pursuant to Section 7 of the Endangered Species Act. Reclamation received concurrence of this finding from the FWS in a letter dated September 21, 2000 (Appendix C).

**Fish and Wildlife Coordination Act of 1958, as amended, 16 U.S.C. 661, et a seq.** The Fish and Wildlife Service is a partner in implementing the Water Acquisition Program. As a partner, the Fish and Wildlife Service has been involved in defining the Purpose and Need for the Proposed Action. Continuing and close coordination with the FWS during implementation of the Water Acquisition Program meets applicable requirements of the Fish and Wildlife Coordination Act.

**National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321,et seq.** This EA and associated documents are in compliance with this act.

**National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470.** It has been determined that the Proposed Action will not have an effect on historic properties. If it is discovered that historic properties are affected as the result of the Proposed Action, in compliance with Section 106 of the National Historic

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## 5. Consultation/Coordination

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Preservation Act, Reclamation will consult with the State Historic Preservation Office and the Advisory Council on Historic Preservation.

**CEQ Memorandum dated August 11, 1980, “Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing the National Environmental Policy Act and the Farmlands Protection Policy Act,” Public Law 97-98, dated December 22, 1981.** The Proposed Action will not impact Prime or Unique Agricultural Lands.

**Executive Order 11988, Floodplain Management, 1977; and Executive Order 11990, Protection of Wetlands, 1977.** The Proposed Action will preserve and enhance the natural and beneficial values of the flood plains and wetlands present within the KNWR.

**Wild and Scenic Rivers Act of 1968 (PL. 90-542).** The Proposed Action will not impact wild and scenic rivers.

### 5.2 LIST OF PREPARERS

Principal Preparers:

Reclamation

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Review and assistance were also provided by the following:

Reclamation

Laura Allen (Deputy, Environmental Affairs)  
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Mary Johannis (Program Management Branch Manager)  
Pat Welch (Cultural Resources and Indian Trust Assets)

FWS

Joel Miller, Refuge Program Specialist

SWSD

Will Boschman, District Manager  
Paul Oshel, District Engineer



## 5. Consultation/Coordination

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### 5.3 Public Involvement and Scoping

The draft EA was circulated to interested parties for a 30-day public review period from August 7 to September 7, 2000. No comments were received on the draft EA. The distribution list for the final EA is provided in Appendix B.

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## 6. Impact Conclusions and Environmental Commitments

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### 6.0 IMPACT CONCLUSIONS AND ENVIRONMENTAL COMMITMENTS

The Proposed Action is for Interior to purchase up to 17,500 acre-feet of water from SWSD to meet KNWR Level 4 water supply requirements for the 2000 - 2003 water years as required by the CVPIA. This section summarizes the impact conclusions developed in Section 3, and describes environmental commitments that Reclamation will follow in the acquisition of Level 4 water for the KNWR.

As described in Section 3, the acquisition of water for delivery of Level 4 incremental water supplies to the KNWR will not have significant adverse impacts to CVP, SWP, and other water supplies. Water will be acquired from SWSD, a willing provider of the Level 4 water supply located south of the Delta. No changes in Delta pumping will occur from implementation of the Proposed Action. No reduction or change in CVP deliveries to agricultural, and municipal and industrial contractors would occur from implementation of the Proposed Action. Groundwater will not be impacted by the Proposed Action. No changes in land use will occur as a result of the Proposed Action.

The delivery of Level 4 incremental water supplies to KNWR will have a beneficial impact to biological conditions at the refuge. The additional water will allow greater flexibility in the management of wetlands, and will provide the opportunity to maintain flooded conditions for an extended period of time and improve water quality, as compared to the No-Action alternative (i.e. continuation of existing operations). The increased water supplies would permit refuge managers to irrigate waterfowl food crops thus having a beneficial impact on food supplies. The acquired water will also provide a beneficial impact to aquatic biota and fishery resources at KNWR by increasing available water supplies. The Proposed Action is not likely to adversely affect Federal or State-listed species. The improvement of the habitats is also expected to result in a slight to moderate increase in recreational opportunities.

The use of energy for conveyance of the water to the KNWR is not considered to be an adverse impact. Existing conveyance facilities will be used thus precluding impact to any cultural resources. The absence of Indian Trust Assets within the SWSD and the KNWR also precludes any impact. No adverse human health or environmental effects, including social and economical effects, on minority populations and low-income populations is expected as a result of the Proposed Action.

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## 7. References

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### 7.0 REFERENCES

Interior, 1978. *Concept Plan for Waterfowl Wintering Habitat Preservation, Central Valley, California*. United States Department of the Interior, Fish and Wildlife Service. 1978

Interior et al, 1989. *San Joaquin Basin Action Plan/Kesterson Mitigation Plan, Merced County, California*. December 1989. United States Department of the Interior, Bureau of Reclamation, Fish and Wildlife Service; State of California, The Resources Agency, Department of Fish and Game.

Interior et al, 1997. *Conveyance of Refuge Water Supply Draft Environmental Assessment and Initial Study, South San Joaquin Valley Study Area*. U.S. Department of the Interior - Bureau of Reclamation, and California Department of Fish and Game. April 4, 1997.

Interior, 1995. *Environmental Action Memorandum, Temporary Water Acquisition for San Joaquin Valley Wetland Habitat Areas. Supplement to the Environmental Assessment for the Interim Water Acquisition Program*. November 8, 1995. United States Department of the Interior

Interior, 1999. *Central Valley Improvement Act, Final Programmatic Environmental Impact Statement*. October 1999. United States Department of the Interior, Bureau of Reclamation, U.S. Fish and Wildlife Service, Sacramento, CA.

Reclamation, 1989. *Report on Refuge Water Supply Investigations. Central Valley Hydrological Basin, California, March 1989*. United States Department of the Interior, Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA.

\_\_\_\_\_, 1990. *National Environmental Policy Handbook*. Denver, CO.

\_\_\_\_\_, 1995. *Interim Water Acquisition Program, Environmental Assessment and Finding of No Significant Impact, Final, October 1995*. United States Department of the Interior, Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA, October 29, 1995.

\_\_\_\_\_, 1997. *Supplemental Environmental Assessment Temporary Water Acquisition for San Joaquin Valley Wetland Habitat Areas - 1996/1997. Supplement to the Environmental Assessment for the Department of the Interior Interim Water Acquisition Program*. Mid-Pacific Region, Sacramento, CA, March 4, 1997.

## 7. References

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\_\_\_\_\_. 1999. *The Temporary Acquisition of Water from Semitropic Water Storage District for San Joaquin Valley Wetland Habitat Areas, Environmental Assessment and Finding of Not Significant Impact, Final*. November 1999. United States Department of the Interior, Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA.

\_\_\_\_\_. 2000. *Central Valley Improvement Act Long-Term Refuge Water Supply Water Service Agreement for the Kern National Wildlife Refuge Complex, Draft Biological Assessment, April 2000*. U.S. Bureau of Reclamation.