APPENDIX 7-6a

Initial Study and Addendum to Monterey Agreement EIR of the Kern Water Bank Authority, Kern Water Bank HCP/NCCP (1997)

INITIAL STUDY AND

ADDENDUM TO MONTEREY AGREEMENT EIR

OF THE

KERN WATER BANK AUTHORITY

KERN WATER BANK HABITAT CONSERVATION PLAN/NATURAL COMMUNITY CONSERVATION PLAN

June 3, 1997

I. INTRODUCTION

A. Evaluation of Activities Previously Evaluated in a Program EIR.

This Initial Study and Addendum analyzes potential environmental impacts associated with the implementation of the Kern Water Bank Habitat Conservation Plan/Natural Community Conservation Plan (the "Project"). The Project includes the construction, operation and maintenance of the Kern Water Bank (KWB), a water recharge and recovery, farming and conservation bank project and related habitat conservation activities proposed for 19,900 acres of land in Kern County, California. The Kern Water Bank is owned and will be operated by the Kern Water Bank Authority (KWBA), a California joint powers authority.

The effects of the Project were previously evaluated in a Program Environmental Impact Report entitled Final Program Environmental Impact Report, Implementation of the Monterey Agreement Statement of Principles by the State Water Contractors and the State of California, Department of Water Resources for Potential Amendments to the State Water Supply Contracts (the "Monterey Agreement EIR"). (State Clearinghouse No. 95023035.)

Environmental review under the California Environmental Quality Act (CEQA) is required for any project undertaken directly by a public agency. (Public Resources Code, section 21065, subdivision (a).) The CEQA Guidelines provide that "subsequent activities in the program must be examined in the light of the program EIR to determine whether an additional environmental document must be prepared." (CEQA Guidelines, § 15158.) The Guidelines indicate that, prior to the approval of activities within the program, the agency should evaluate whether a subsequent EIR is required as provided in Guidelines Section 15162. Section 15162, in turn, **prohibits** agencies from requiring a subsequent EIR unless the agency determines:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require **major** revisions of the previous EIR; or

3. New information of substantial importance which was not known and could not have been known shows (i) that the project will have one or more significant effects not discussed in the prior EIR, (ii) significant effects previously examined will be substantially more severe, (iii) mitigation or alternatives previously determined to be not feasible and found to be feasible, or (iv) mitigation measures or alternatives which are

considerably different would substantially reduce the significant effects of the project **and** the project proponent declines to adopt the mitigation measure.

The Project incorporates mitigation and compensation for impacts to wildlife habitat and other natural resources resulting from implementation of the Project. Approximately 10,349 acres, or over 52% percent, of the Project area will be set aside and limited to uses that are compatible with the habitat values of the property. These lands will be protected and managed for their wildlife habitat values throughout the life of the Project. Certain lands will be protected from development in perpetuity upon the approval of the Project. Other lands will be protected in perpetuity upon the use of conservation credits established by the Project.

As part of the Project, KWBA has applied for two permits pursuant to the federal Endangered Species Act from the United States Fish and Wildlife Service (USFWS) to take endangered and threatened species incidental to the operation of the Project. KWBA has also applied for two management authorizations from the California Department of Fish and Game (CDFG) pursuant to the California Endangered Species Act and the Natural Community Conservation Planning Act to allow the management and operation of the Project in accordance with the incidental take of endangered, threatened and certain other species (listed species). One permit and one management authorization (the Project Permit/Authorization) relates to the Project. The other permit and management authorization (the Master Permit/Authorization), relating to the conservation bank, will allow the incidental take of listed species by qualified third parties for activities that take place within Kern County, the Allensworth area of Tulare County, and the Kettleman Hills area of Kings County. Both Permits and both Master Authorizations are for a period of 75 years. A habitat conservation plan / natural community conservation plan ("HCP/NCCP"), an implementation agreement ("IA"), and a federal environmental assessment ("EA") have been prepared as part of the permit/authorization process. These documents are hereby incorporated by reference. These documents are summarized herein. Copies of these documents are available from KWBA at the following address:

Kern Water Bank Authority
P.O. Box 80607
Bakersfield, CA 93380-0607
Tel: (805) 399-8735
Fax: (805) 399-9751

B. *Monterey Principles and Evaluation of Project in Monterey Agreement EIR.*

On December 1, 1994, the water contractors of the State of California and others entered into the Monterey Principles, a mediated agreement to change a number of provisions of the contracts governing the administration of the State of California water project (SWP). Pursuant to the Monterey Principles, DWR transferred KWB to Kern County Water Agency (KCWA) on August 9, 1996 in exchange for 45,000 acre feet of SWP entitlement. KCWA subsequently transferred KWB to KWBA.

The environmental effects of the Monterey Principles were analyzed in the Monterey Agreement EIR. The Monterey Agreement EIR analyzes the environmental effects of the Project. Where appropriate and applicable, this Initial Study and Addendum will refer to and incorporate by reference the Monterey Agreement EIR.

The Monterey Agreement EIR described the Kern Water Bank in considerable detail. The Monterey Agreement EIR identified three alternative scenarios for the development of the KWB (in addition to the No Project Alternative) and evaluated the environmental effects of the three scenarios for the Kern Water Bank. The table below describes the components of the scenarios evaluated in the Monterey Agreement EIR and compares them to the proposed Project.

	Scenario A	**Scenario B**	**Scenario C**	**Project**
Recharge Facilities	3,258	5,258	7,758	5,900
Irrigated Farmland	0	0	0	3,170
Native/Dist Veget.	2,000	4,500	7,100	10,349[1/]
Prev. Irrigated/Undesig	14,798	10,298	5,198	0
Other	490	490	490	481

The various land use categories of the proposed Project are well within the land use components of the three scenarios evaluated in the Monterey Agreement EIR. The proposed Project will have less impacts and more environmental benefits than Scenario C. The land uses proposed for the Project are similar to those evaluated for Scenario B, but provide more environmental benefits than Scenario B.

While Scenario B assumed that 4,500 acres would remain as open space and not devoted to ponds or other recharge facilities, the proposed Project would set aside

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1/ Includes 5,592 acres of Compatible Habitat, 960 acres of Sensitive Habitat, 530 acres of DWR Mitigation Land, and 3,267 acres of Conservation Bank lands.

10,349 acres for various habitat conservation purposes. In summary, the proposed Project is consistent with the KWB project as described in the Monterey Agreement EIR. It would not require major revisions to the Monterey Agreement EIR or otherwise require the preparation of a subsequent EIR under the standards set forth in Section 15162 of the CEQA Guidelines.

The sections below (1) describe the Project in greater detail, (2) describe the environmental setting, (3) evaluate the environmental effects of the Project, and (4) compare those effects to the effects of the Project evaluated in the Monterey Agreement EIR.

II. PROJECT DESCRIPTION

A. Location

The Project is located on 19,900 acres of property located in Kern County, California about 20 miles west of Bakersfield and 10 miles south of Buttonwillow (see Maps 1 and 2). Interstate 5 bisects the Project, as does the Kern River.

B. Background

Prior to agricultural development of the KWB, much of the land was flooded periodically by high flows on the Kern River. The area is unique in the State in its ability to absorb water at an extremely high rate and to retain it in aquifers. Prior to agricultural development the intermittent wetland supported a variety of plants and wildlife.

In the 1880's, earthen canals and levees were constructed to aid the spreading of water, the resulting feed being used for cattle grazing. Land on the west side of the property was developed for farming during the late 1930's through the early 1950's. During this same period much of the property was explored for oil and gas resulting in a number of wells being drilled and pipelines constructed. From about 1960 to the early 1970's most of the remainder of the property was developed for agriculture. Throughout this time the land was still flooded in wet years to recharge water into the underground aquifer. This was done in a free form manner with the water being herded by bulldozers. In 1988 the land was purchased by the Department of Water Resources (DWR). DWR ceased most of the farming by 1991 in order to preserve water during a severe drought.

In 1995, the Kern County Water Agency (KCWA) received permits/authorizations from the USFWS and CDFG to initiate an interim water banking project as a result of the high availability of water from a heavy snow pack in the Sierras. The interim project was carried out in two stages:

Stage 1 resulted in the rehabilitation of disused canals and inundation of approximately 1518 acres of former agricultural land. Preconstruction surveys of the Stage 1 area revealed poor habitat values throughout the area and no suitable habitat for the listed species. Therefore, Stage 1 activities were expected not to result in a take of listed species. Stage 2 resulted in inundation of an estimated 1516 acres of grassland and fallow agricultural land. Based on planned Stage 2 flooding, there was a potential for the take of listed species. Therefore, biological surveys for listed species were conducted in all areas proposed to be disturbed by construction of facilities (levees, roads, boxes) or flooded.

The recharge basins were constructed by building low earth berms, approximately three feet in height, along natural contours of the land using soil adjacent to the berms. The bottom of the basins were left in a natural condition thus allowing vegetation to continue to grow. Vegetation on the basin bottoms is believed to enhance the basins' ability to recharge water.

In 1995, maintenance of the Project area included repairs to levees and the removal of tumbleweed from roads, canals and basins. For more information refer to the Interim Water Recharge Project Biological Monitoring Report for the Period April 1995-March 31, 1996 which is incorporated herein by reference. A copy of the Biological Monitoring Report is available at the offices of KWBA listed above.

KCWA received two extensions on the interim permits/authorizations for 1996 and is authorized to carry out the Stage 1 and 2 banking activities that may result in incidental take of listed species through July 31,1997. In 1996 the basins constructed the previous year were utilized for water recharge.

C. Land Use

Of the 19,900 acres that constitute the KWB property, 5,900 acres are proposed for routine recharge and 481 acres will be used for permanent water banking facilities. Between the basins will be areas that will never be purposely flooded. Some of these areas have existing populations of listed plants. These plants will be preserved in special areas totaling 960 acres. Other areas between basins totaling 5,592 acres will revert to habitat. Additionally, 530 acres will be preserved and managed for mitigation of DWR projects. Of the remaining land, 3,170 acres will be used for farming and 3,267 acres will be used as a conservation bank (to be used as potential mitigation for activities by third parties within designated areas of the Southern San Joaquin Valley). Of the 3,267 acres in the conservation bank, KWBA may use up to 490 acres for commercial development.

TABLE 1 - LAND USE SUMMARY

LAND USE SUMMARY	AREA IN ACRES
Recharge Basins	5,900*
Other Water Banking Facilities	481
Compatible Habitat	5,592*
Sensitive Habitat	960
DWR Mitigation Land	530
Farming	3,170
Conservation Bank	3,267**
TOTAL	19,900

* KWBA Mitigation Land - 146 acres of Recharge Basins and 489 acres of Compatible Habitat totaling 635 acres will be covered by a conservation easement.

** KWBA may sell up to 490 acres out of the conservation bank for commercial development purposes. The 490 acres is indicated on Map 2 as the Commercial Development Zone.

a) Water Recharge Facilities. Permanent operation of the banking facilities will include the flooding of basins, construction of facilities for recovery of the water from underground aquifers, and maintenance of all project facilities. In all, about 6,381 acres of land comprising the recharge basins, surrounding levees and other banking facilities will be developed as part of the permanent recharge project.

b) Water Recovery and Other Banking Facilities. Recovery of the water recharged will be through a system of water wells, pipelines and canals. This system, when built-out, may include up to 132 wells and would be spread over the entire property to allow flexibility in the recovery of water. There are 66 existing agricultural wells on the property which could be utilized for water recovery. DWR, through the "Ground Water Extraction Operations at the Kern Fan Element" rehabilitated 28 of these wells and constructed pipelines and canals. The remaining 38 existing wells may be rehabilitated. Approximately 66 additional wells may be drilled and conveyance pipelines and small canals may be constructed for water recovery.

c) Supply/Recovery Canal Project. A supply/recovery canal or canals located within the Supply/Recovery Canal Zone as shown on Map 2 (Permitted Area) may be constructed to facilitate water delivery to and from the California Aqueduct. The canal or canals would be lined with concrete and would utilize pump stations to lift the water as required. Turnouts may be constructed to deliver water to the recharge areas. Recovery pipelines and small canals from the water wells may be connected to the canals.

d) Kern River Reverse Flow Canal Project. The Kern River channel may be utilized to deliver water from the California Aqueduct to the project. By constructing earth berms and pump stations, water could be lifted up the river channel for conveyance to the recharge areas. If KWBA decides to implement the Reverse Flow Canal project, KWBA will engage in the necessary environmental analysis and obtain such permits as may be required pursuant to state and federal environmental laws.

e) Compatible Habitat. A total of 5,592 acres of compatible habitat will be preserved and managed around the banking facilities. Much of this area is higher ground between the basins and will provide upland habitat for the San Joaquin kit fox and other upland species.

f) KWBA Mitigation Land. To compensate for the 481 acres that may be permanently impacted by the Project, the KWBA will grant a conservation easement to CDFG on a 515 acre parcel comprised of 369 acres of Compatible Habitat and 146 acres of Recharge Basins surrounding the DWR Mitigation land. The KWBA will manage this land as compatible habitat in perpetuity.

g) Sensitive Habitat. Three areas containing remnant native saltbush and valley sink scrub habitat have been identified on the KWB. These areas, comprising 960 acres, have been designated as sensitive habitat and will be protected throughout the life of the Project Permit/Authorization. Populations of listed plant species occur in some of the sensitive habitat.

h) DWR Mitigation Land Conservation Easement. This 530-acre area is covered by a conservation easement which was recorded in mitigation of projects carried out by DWR. Management of this easement will be carried out by the KWBA in accordance with an existing management plan for the area (refer to the "Agreement regarding Assumption of Mitigation Responsibility and Consent to Transfer of Kern Water Bank Lands"). KWBA acknowledges that this mitigation obligation is a separate obligation and is not considered mitigation for the Project. Mitigation obligations which will be conducted on this parcel are contained in Exhibit B to the KWB HCP Implementation Agreement. The mitigation obligations will continue in perpetuity.

i) Farming. 3,170 acres of the project site may be farmed in a manner appropriate to the soil conditions found on site. Crops historically grown in the area include cotton, grapes, etc. This land may also be used for any other permitted activity covered in this HCP, including water recharge.

j) Conservation Bank. The remaining 3,267 acres on the Project site will be used as a conservation bank. Under the Master Permit/Authorization, qualified third parties may acquire conservation credits from KWBA in order to mitigate for impacts to Covered Species caused by the third parties on their projects. Each credit represents one acre of land in the conservation bank. The Conservation Credits created through the establishment of the Conservation Bank may be utilized to mitigate for impacts by third parties conducting low impact activities within the Master Permit Credit Area shown on Exhibit C to the Conservation Bank Agreement. The use of Conservation

Credits will be limited to activities that would qualify for a low effect habitat conservation plan under the Habitat Conservation Plan Handbook approved by the U.S. Fish and Wildlife Service. In addition, in order to further ensure that the Conservation Credits would not result in significant impacts, activities could only utilize Conservation Credits with the agreement of the Fish and Wildlife Service (with regard to impacts to federally listed species) and the California Department of Fish and Game (with regard to state-listed species). Prior to authorizing the use of the Conservation Credits, third parties would have to demonstrate to the satisfaction of FWS and /or DFG that the use of the Credits as mitigation is appropriate under the standards described in Section G below.

If the FWS and/or DFG approved the use of the Conservation Credits for third parties, on an annual basis, KWBA will convey a conservation easement to CDFG representing the number of credits sold in the conservation bank. KWBA will bear the obligation in perpetuity of maintaining the land in the conservation bank on which a conservation easement has been recorded.

D. Construction of KWB

To achieve its water management objectives, the KWBA constructed recharge basins, and will construct additional basins, water conveyance facilities and water wells. The existing basins were created by constructing low levees along contours. This approach created minimal disturbance of the ground surface compared to other alternatives. The basin bottoms were left, as much as possible, in their natural condition. Future basins will be constructed in a similar manner.

Existing and future recharge basins will be formed by creating approximately 55 miles of levees approximately 3 feet in height. 66 water wells currently exist on the property and more wells may be added before the project is complete. Several canals exist on and run along side the property to facilitate water conveyance and new canals are proposed that would provide linkage among the spreading areas, wells, Kern River Canal and the California Aqueduct. The existing and proposed construction is set forth below in the "Table 2 - Acreage Breakdown".

TABLE 2 - ACREAGE BREAKDOWN

	Unit	Quantity	Width feet	Area acre	Total acre
Recharge Facilities					
Existing Basins					3,034
Proposed Basins					2,866
Total					5,900
Permanent Water Banking Facilities (1)					
Recovery Facilities					
Wells - Existing Hooked Up	ea	28		0.5	14

Wells - Existing Not Hooked Up	ea	38		0.5	19
Wells - Proposed New	ea	66		0.5	33
Conveyance Facilities					
Proposed - Lined	mi	18	40		87
Existing - Unlined	mi	31	60		225
Supply/Recovery Canal	mi	6	100		73
Pump Stations	ea	4		3	12
Kern River Reverse Flow					
Earthwork	mi	1	30		4
Pump Stations					
River	ea	2		5	10
City 2800 Acres	ea	4		1	4
Total					481
Temporarily Disturbed Areas					
Canal Construction	mi	6	100		73
Pipelines - Proposed	mi	30	60		218
Total	mi	30	60		291

(1) Includes new roads where required

Recharge Basin Construction. The recharge basins will be built utilizing the natural topography by constructing low earth berms to serve as levees along contours of the land. The levee will be built utilizing soil adjacent to the levee inside the basin. Typical construction includes pad clearing, soil moving and soil compaction.

Recharge Conveyance Canal Construction. The conveyance canals will be sized as required to convey water from the turnout structures to the recharge areas. Canals will have associated turnouts, weirs, flow control, measurement structures and road crossings as required.

Existing Water Well Rehabilitation. Rehabilitating water wells consists of cleaning motors, pumps and electrical panels, and checking out equipment to evaluate if service is required.

Construction of New Wells. The following construction activities will be typical for installation of new wells: digging sumps for retention of water used for drilling and discharge of drill cuttings; setting up drilling rigs and drilling pipe trailers at well sites; and installation of casing, gravel, concrete seals, pumps, motors, concrete pads, electrical equipment and discharge piping.

Construction of Underground Recovery Pipelines. Lateral pipeline construction consists of clearing, trenching, pipe delivery, unloading, pipe installation, backfilling and final grading. The initial operation will include clearing of the proposed alignment of the pipeline. Trenching will be accomplished using either an excavator or trencher. Spoil piles will be located directly adjacent to the trench. Pipe will be delivered by trucks and unloaded using a crane or forklift along the trench in position for pipe laying activities. A crane will hoist and position the pipe in the trench. A loader will

move soil excavated from the trench to backfill the pipe. Compaction equipment will be utilized to achieve required compaction. After backfilling is complete the pipeline corridor will be final graded with the excess material being mounded over the pipe to allow for settlement.

Construction of Recovery Canals. Concrete lined recovery canals will connect recovery pipelines and recovery wells to off site conveyance facilities. The canals will be constructed similar to the recharge canals described above but will have a concrete lining.

Supply/Recovery Canal Construction. The supply/recovery canal will convey water to the recharge areas and from the recovery wells. It may be a single concrete-lined canal or it may be two parallel canals, an earthen canal for supply with a parallel smaller concrete-lined canal for recovery. The determination of the exact design will be made at a future date. Construction for the canal will be similar to the construction of the recovery canals. The supply/recovery canal will be located within the zone as shown on the Map 2 (Project Permit/Authorization Area).

Recovery Pump Stations. Where necessary, recovery pump stations will be constructed. Pump station sites will be cleared, grubbed and moisture conditioned. Excavation will be required to allow for construction of retaining walls, foundations, and concrete. Pumps, motors and electrical panels will be installed. This effort will require cranes, delivery trucks, water trucks, compactors, excavators and graders.

Kern River Reverse Flow. The Kern River channel will be utilized to convey water from the California Aqueduct to the recharge areas. At two or more locations along the existing river bed sand earth berms would be constructed utilizing scrapers, water trucks, bulldozers and graders. At these locations, pumps and bypass pipelines will be installed. Pile drivers will install piles for support of pump platforms. Piping, pumps and motors will be installed using cranes, delivery trucks and back hoes. Control structures will be constructed using similar equipment.

E. Management of Operations and Maintenance

Recharge Basins. The recharge basins will be managed to maximize the use of available water supplies and to minimize cost for conveyance and operation. The basins will be designed into several systems and will be located on the property to take advantage of the different sources of available water. A hierarchy of basin filling will be established so when water is recharged, specific basin systems will be utilized frequently, while others may only be filled on an occasional basis.

Within each system the water will flow from basin to basin through an interbasin structure which will control the water level in the proceeding basin and the flow rate to the next basin in the chain. To prevent impacts on nesting birds, the basins, to the extent possible for the period March through July, shall be kept at a

constant level, except for the basins at the end of a chain which will accommodate fluctuating flows.

If a basin has been idle for more than two years, subsequent filling shall be done slowly if possible, mimicking heavy rainfall, so that any listed species that may have inhabited the basin bottoms or sides may escape before drowning occurs.

Flooding Frequency. Flooding frequency of recharge basins is dependent upon seasonal precipitation rates. Although models have been prepared to predict water availability over a long period of time, final operations will depend on actual rain and snowfall totals each year. During normal rainfall years, annual flooding would take place. During above normal years the basins will be flooded to their full capacity. The frequency in which the basins will be used for recharge is projected to vary; infrequently (1 year in 10) 5,900 acres are estimated to be flooded; on a intermediate basis (2 years in 10) 4,830 acres are estimated to be flooded; and on a frequent basis (5 years in 10) 2,110 acres are expected to be flooded. The duration of flooding each year will vary depending on weather conditions (see Map 4, Recharge Frequency Plan).

Canal and Basin Bank Management. Seasonal release, conveyance and storage of water results in emerging wetland vegetation in canals and basins. Tall growth of this vegetation impairs water flow and recharge capability, reduces the ability to control mosquitoes, and therefore must be managed. Vegetation management methods under consideration for canals and basins bank vegetation include hand control, use of light weight equipment (weed eaters), grazing, mowing, and burning. Mowing is proposed to maintain seasonal wetland vegetation that inhabit the basin edges adjacent to roads. Riparian vegetation on promontories, peninsulas, and islands will be allowed to achieve full canopy cover. When basins are to remain dry for extended periods of up to five years, prescribed burning may be used for weed control. Silt removal from canals and recharge basins will be done using excavators, backhoes or loaders.

Canals for water recharge or recovery will be located according to the topography and location of existing facilities. The present network of internal access roads would be extended across a new canal to provide short, infrequently traveled bridges which would serve for connectivity for even small vertebrates during those periods when the canal was not dry. The bottom of recovery canals would be concrete lined to retard water loss and would not require management for Russian thistle as do earthen canals in the area. Canal side slopes would be shallow enough to allow animals to escape from the interior.

Roads and Levees. Maintenance work on roads and levees will be based on routine inspections during operating periods and periodically during non-operating periods. Typical work will include: clearing vegetation; grading roads and levees; mowing of vegetation; repair and replacement of weak sections of levees; removal of silt and repair of erosion.

F. Project Permit/Authorization

The Project may result in the take of listed species. However the Project will result in a substantial increase of habitat for the listed species compared to the conditions prior to the date the Kern Water Bank lands were acquired by DWR. KWBA will return some of the Kern Water Bank to its historic intermittent rangeland/wetland habitat. The Project Permit/Authorization will authorize incidental take of the following species (the listed species) and the species listed on Exhibit D hereto, incorporated herein by this reference. The species on Exhibit D are those species for which it is expected that the species may come to occupy the KWB and that the species may become listed due to its current known population and range.

TABLE 3 - COVERED SPECIES

		Status (1)		
Scientific Name (2)	**Common Name (3) and Plant Community Associations (6)**	**Federal**	**State**	**Other**
Federally Listed Species				
Plants				
Caulanthus californicus	California jewelflower (4) VSG	E	E	CNPS 1B
Eremalche parryi ssp. kernensis	Kern mallow (4) VSS, VSG, GVMS	E		CNPS 1B
Eriastrum hooveri	Hoover's eriastrum (5) VSS, VSG	T		CNPS 1B
Lembertia congdonii	San Joaquin woolly-threads (5) VSS, VSG, NNG	E		CNPS 1B
Opuntia basilaris var. *treleasei*	Bakersfield cactus (4) MFS, NNG	E	E	CNPS 1B
Birds				
Branta canadensis leucopareia	Aleutian Canada goose Wetlands	E		MBTA
Falco peregrinus anatum	American peregrine falcon (4) ALL	E	E	MBTA
Invertebrates				
Branchinecta conservatio	Conservancy fairy shrimp Wetlands	E		
Branchinecta lynchi	Vernal pool fairy shrimp Wetlands	T		
Branchinecta	Longhorn fairy shrimp	E		

longiantenna	Wetlands			
Lepidurus packardi	Vernal pool tadpole shrimp Wetlands	E		
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle (4) MFS, GVCRF	T		
Reptiles				
Gambelia sila	Blunt-nosed leopard lizard (5) VSS, VSG, GVMS	E	E	
Thamnophis gigas	Giant garter snake Wetlands	T	T	
Mammals				
Dipodomys ingens	Giant kangaroo rat (4) VSS, VSG, NNG, GVMS	E	E	
Dipodomys nitratoides nitratoides	Tipton kangaroo rat (5) VSS, VSG, NNG, GVMS	E	E	
Vulpes macrotis mutica	San Joaquin kit fox (5) ALL	E	T	
Species Listed Only by the State of California				
Plants				
Atriplex tularensis	Bakersfield saltbush (4) VSS, GVMS	C1	E	CNPS 1B
Birds				
Buteo swainsoni	Swainson's hawk (4) ALL		T	MBTA
Grus canadensis tubida	Greater sandhill crane Wetlands			MBTA
Mammals				
Ammospermophilus nelsoni	San Joaquin antelope squirrel (5) VSS, VSG, NNG	C1	T	
Other Species of Concern				
Plants				
Atriplex cordulata	Heart-leaved saltbush (4) VSS, GVMS			CNPS 11B
Atriplex miniscula	Lesser saltbush (4) VSS, GVMS			CNPS 11B
Atriplex vallicola	Lost Hills saltbush (4) VSS, GVMS			CNPS 1B
Cirsium crassicaule	Slough thistle (5) MFS, GVCRF			CNPS 2C
Cordylanthus mollis ssp. hispidus	Hispid bird's-beak (4) Saline Marshes and Flats			CNPS 1B
Delphinium recurvatum	Recurved larkspur (5)			CNPS 1B

	VSS, VSG, GVMS			
Hemizonia pallidus	Kern tarplant (4) VSS, VSG, NNG			CNPS 4
Layia leucopappa	Comanche Point layia (4) VSG			CNPS 1B
Calochortus striatus	Alkaki mariposa lily (4) VSG			
Amphibian				
Scaphiopus hammondi	Western spadefoot toad (5) VSS, VSG, NNG, MFS		SSC	
Reptiles				
Clemmys marmorata marmorata and/or C. m. pallida	Western pond turtle (4) Wetlands		SSC	
Birds				
Agelaius tricolor	Tricolored blackbird (4) Wetlands, NNG		SSC	MBTA
Athene cunicularia	Burrowing owl (5) VSG, NNG		SSC	MBTA
Buteo regalis	Ferruginous hawk (4) ALL		SSC	MBTA
Charadrius alexandrinus nivosus	Western snowy plover (4) Wetlands		SSC	MBTA
Charadrius montanus	Mountain plover (4) VSG, NNG		SA	MBTA
Lanius ludovicianus	Loggerhead shrike (5) GVCRF		SSC	MBTA
Plegadis chihi	White-faced ibis Wetlands		SSC	MBTA
Toxostoma lecontei	Le Conte's thrasher (4) Saltbush Scrub		SSC	
Mammals				
Eumops perotis californicus	Greater western mastiff bat (4) Cliffs, crevices, tunnels		SSC	
Plecotus townsendii	Pacific western big-eared bat (4) Cliffs, crevices, tunnels		SSC	
Sorex ornatus relictus	Buena Vista Lake shrew (4) Wetlands, MFS, GVCRF	C1	SSC	
Taxidea taxus	American badger (5) ALL		SSC	

Notes:

(1) Federal: E = endangered; T = threatened; C1 = taxa for which there is substantial information to propose listing, based on species vulnerability and threats.

State: E = endangered; T = threatened; SSC = species of special concern.
Other: CNPS = California Native Plant Society;
CNPS 1B = plants rare and endangered in California and elsewhere,
CNPS 2 = plants rare, threatened or endangered in California, but more common elsewhere;
CNPS 4 = not rare, but of limited distribution;
CNDDB SA = California Natural Diversity Data Base Special Animal;
MBTA = bird protected under the Federal Migratory Bird Treaty Act.

(2) Species are listed in alphabetical order by scientific name, within taxonomic groups.
(3) Plant common names follow CNPS nomenclature.
(4) Sensitive species that may move into the HCP area after implementation of the project.
(5) Sensitive species known to occur on Kern Water Bank land.
(6) Associated Plant Communities
VSS = Valley Saltbush Scrub
Wetlands = recharge basins and canals
VSG = Valley Sacaton Grassland
NNG = Non-native Grassland
MFS = Mule Fat Scrub
GVMS = Great Valley Mesquite Scrub
GVCRF = Great Valley Cottonwood Riparian Forest
ALL = Associated with all plant communities

Source: DWR 1993, Thomas Reid Associates 1996

Pursuant to section 10(a)(2) of the federal Endangered Species Act of 1973 (ESA), and sections 2081 and 2835 of the California Fish and Game Code, KWBA has submitted a Natural Communities Conservation Plan / Habitat Conservation Plan (HCP) with the Project Permit/Authorization applications to USFWS and CDFG. The HCP, a statutory requirement of the Project Permit/Authorization applications, estimates the level of incidental take expected to occur during the proposed activities and specifies how the impacts of the taking will be minimized and mitigated. In addition, KWBA has requested that the USFWS and CDFG enter into an Implementing Agreement (IA) that addresses any currently unlisted species, pursuant to KWBA's HCP, should they become listed under ESA and/or California ESA in the future.

The purpose for issuing the Project Permit/Authorization and implementing the associated HCP is to authorize incidental taking of the federally and state listed species listed above, during the construction, operation, and management of the Kern Water Bank as well as for third-party projects within the Master Permit Credit Area. Such authorization is necessary because activities associated with the proposed action may result in take of any of the federally and/or state listed species despite the comprehensive mitigation program proposed by KWBA in the HCP. The proposed Kern Water Bank Project may affect other species, and KWBA has requested that the IA between the USFWS, CDFG and it provide assurances that, should the currently unlisted species be subsequently listed, the HCP would be deemed adequate and no further mitigation would be required.

G. *Conservation Bank / Master Permit/Authorization*

The conservation bank can be used by third parties that require USFWS and/or CDFG take authorization or that require mitigation as a result of a Section 7 consultation with the USFWS (projects requiring federal permits). The conservation bank can also be used by a third party that already has take authorizations, such as the City of Bakersfield, and needs to provide mitigation land to meet the requirements of its HCP.

Third-party projects that lie within the Master Permit Credit Area are eligible to obtain take authorization protection under the Kern Water Bank if land lost, either temporarily or permanently, as a result of project implementation:

1) Contains habitat of comparable value to the replacement habitat found in the conservation bank,

2) Is occupied or has the potential to be occupied by San Joaquin kit fox, Tipton kangaroo rat, blunt-nosed leopard lizard, and/or San Joaquin antelope squirrel; and

3) The impacts of the activity would qualify for a low effect habitat conservation plan in accordance with the HCP Handbook.

Third parties seeking to use conservation bank lands for listed species whose presence is then undocumented on the conservation bank land, such as giant kangaroo rat, would have to provide proof that the species is found on the conservation bank lands.

Eligible projects would be those having minor or negligible effects on federally listed, proposed, or candidate species and their habitats, and minor or negligible effects on other environmental values or resources.

The USFWS and CDFG will require a Landowner/Applicant to provide a biological survey of the project area and discuss specific impacts of the proposed project. The USFWS and CDFG will ultimately make decisions on whether a project lying within the Master Permit Credit Area is eligible to be covered by the Master Permit/Authorization, and whether any additional environmental assessment is necessary.

The conservation bank comprises 3,267 acres. Using typical mitigation ratios of USFWS and CDFG for compensable habitat within the Master Permit Credit Area, use of the conservation bank could result in the following impacts:

For projects with temporary disturbance, such as oil and gas projects where disturbed vegetation is restored, the USFWS and CDFG typically require a 1.1:1 replacement ratio (habitat replaced to habitat lost). Thus, if all 3,267 acres of the conservation bank were purchased to mitigate projects with temporary disturbance,

then as much as 2,940 acres of temporary disturbance could occur within the Master Permit Credit Area.

For permanent mitigation of compensable habitat the USFWS and CDFG typically require a 3:1 replacement ratio. Thus the 3,267 acres could accommodate up to 1,089 acres of permanent disturbance in the Master Permit Credit Area. However, it is more likely that a combination of both permanent and temporary disturbance would take place, such that anywhere between 1,000 to 3,000 acres could be disturbed in the Master Permit Credit Area through the 75 year life of the Master Permit/Authorization.

Impacts on species will depend on the loss of habitat resulting from each eligible project and what measures, if any, are required to minimize on-site impacts (such as allowing animals to escape, or through trapping and relocation).

The Master Permit/Authorization will result in the loss of listed species in the Master Permit Credit Area through ground disturbance to construct buildings, roads, pipelines, and other facilities. For the Tipton kangaroo rat, San Joaquin kit fox, and San Joaquin antelope squirrel, ground disturbance could cause take through collapsing of burrows, crushing by grading equipment, and harassment.

The mitigation of impacts of activities of third parties through the conservation bank has a number of environmental benefits including the following:

1. The lands within the conservation bank will be managed, along with the other lands within the Kern Water Bank, in a coordinated fashion for the benefit of the Covered Species.

2. The conservation bank lands will be protected from development activities in advance of any impacts to Covered Species that occur as a result of third party activities.

3. Because the conservation bank lands are part of the 19,900 acres of the Kern Water Bank, the benefits to Covered Species will be greater than the mitigation of third party activity impacts through piecemeal, project-by-project mitigation that often results in isolated habitat reserves.

4. The KWB HCP/NCCP Area is close to other large natural areas that have been protected from development (i.e., the Coles Levee Ecosystem Preserve). The conservation bank lands are also in close proximity to the Elk Hills Naval Petroleum Reserve which has been managed by the Department of Energy in accordance with the terms of Section 7 consultations under the Federal ESA to provide substantial benefits to a number of the Covered Species. The KWB HCP/NCCP Area is also in close proximity to the areas proposed for substantial conservation in the Kern County Valley Floor Habitat Conservation Plan ("VFHCP"). The VFHCP has identified the areas in the Valley Floor area of Kern County that have the highest conservation values and that are appropriate for

long-term conservation (the "red zones" and "green zones"). Only limited development activities would be allowable under the VFHCP within the red and green zones. The VFHCP sets a limit on development of 10 percent of the lands in the red zones and 25 percent of the lands in the green zones. Collectively, the KWB HCP/NCCP, the VFHCP, and the Coles Levee Reserve will result in the long-term conservation of a large percentage of the remaining natural lands in western Kern County.

5. Through the establishment of the HCP/NCCP, one of the largest remaining natural areas in the Southern San Joaquin Valley will be protected from urban and other development activities.

6. Because the habitat found within the Master Permit Credit Area is expected to be of a lesser conservation value than the habitat found within the KWB HCP Area, it is anticipated that the conservation and restoration of the lands in the HCP/NCCP area will contribute to the survival and recovery of the Covered Species. This is particularly the case because the HCP/NCCP will result in the implementation of a key component of the conservation strategy developed by the Resource Agencies for the San Joaquin Valley.

H. Conclusion

The Project will have the following environmental benefits:

- The historic ground water recharge on the property will be continued.
- Diverse types of habitat including upland, riparian and intermittent wetland/rangeland will be preserved and restored on an ecosystem basis.
- In addition to preserving the two above mentioned types of habitat, special areas to protect sensitive native habitat are planned.
- Upland habitat suitable for the Tipton kangaroo rat, the blunt-nosed leopard lizard, and the San Joaquin kit fox will be preserved and enhanced by adaptive land management.
- Intermittent wetland/rangeland habitat which is scarce in the Southern San Joaquin Valley, and was lost with the introduction of intensive farming, will be restored on the property with benefits to a wide variety of waterfowl and other species.
- The preservation of Compatible Habitat, the natural design of the recharge basins and periodic flooding ensures terrestrial species have the opportunity to migrate thus facilitating genetic diversity.
- Areas adjacent to the Kern River habitat corridor will be preserved.
- Areas adjacent to the ARCO Coles Levee Ecosystem Preserve will be protected as upland habitat and be offered as habitat mitigation to third parties.

- Large areas of intensive agriculture on the KWB have been removed from production and will be set aside as Compatible Habitat.
- In addition to preserving two broad types of habitat, sensitive areas of native habitat are protected.

III. ENVIRONMENTAL SETTING

A. Vegetation

Prior to 1988 when DWR purchased the Kern Water Bank project area, approximately 17,068 acres of the property was utilized for intensive agriculture. The remainder of the property was leased for oil recovery facilities and contained 1,515 acres of isolated native plant communities (saltbush scrub, mesquite savanna, and valley sacaton grassland), and 1,317 acres of non-native grassland. Except for canals used to convey water for agriculture, no wetland habitat occurred on the KWB prior to the DWR purchase.

The Kern Water Bank recharge facilities were designed to avoid the majority of existing native plant communities. As a result, virtually all of the remnant saltbush scrub, mesquite savannah and valley sacaton grassland plant communities are primarily located in the sensitive habitat with the remaining occurrences found in portions of the compatible habitat and the conservation bank property. See Table 4 for a list of the location and land use status of the native plant communities in the Kern Water Bank. In addition, approximately 90% of the non-native grassland plant community is included in the conservation bank.

TABLE 4 - LOCATIONS OF COVERED PLANT COMMUNITIES

LOCATION		
T30S R25E		
Section 12 NE QS	Saltbush	Sensitive
Section 12 SE QS	Saltbush	Compatible
Section 13 NW QS	Mesquite and Saltbush	Compatible
Section 14 North Half	Mesquite and Saltbush	Sensitive
Section 15 NE QS	Mesquite and Saltbush	Compatible and Sensitive
Section 19 South Half	Mesquite and Saltbush	Compatible
Section 20 South Half	Mesquite, Saltbush, Grassland	Compatible
Section 23 NW QS	Saltbush	Compatible
Section 23 NE QS	Grassland	Compatible
Section 24 SW QS	Mesquite and Saltbush	Compatible
Section 25 SW QS	Mesquite	Sensitive
Section 25 SE QS	Mesquite	Conservation Bank
Section 27 NW QS	Saltbush	Compatible
Section 28 NE QS	Saltbush	Compatible/Recharge Basin
Section 36 NE QS	Mesquite and Saltbush	Sensitive
Section 36 NW QS	Mesquite and Saltbush	Compatible/Recharge Basin
T30S R26E		
Section 7 NW QS	Mesquite and Saltbush	Sensitive
Section 8 SW QS	Mesquite and Saltbush	Compatible
Section 28 South Half	Mesquite and Saltbush	Conservation Bank
Section 31 NW QS	Saltbush	Conservation Bank

QS = quarter section

Valley saltbush scrub is generally found in the southwestern San Joaquin Valley on dissected alluvial fans with flat to gently rolling relief. Soils are sandy and loamy soils without surface alkalinity. This community is dominated by gray-green or blue-green shrubs of the Goosefoot family (*Chenopodiaceae*) with a sparse understory of short, annual herbaceous vegetation. Stands of valley saltbush scrub range from open to more dense (10 to 40 percent shrub cover).

Characteristic perennial shrub species of valley saltbush scrub include valley saltbush (*Atriplex polycarpa*), spiny saltbush (*Atriplex spinifera*), alkali heath (*Frankenia grandifolia* var. *campestris*), and pale-leaf golden bush (*Haplopappus acradenius*

bracteosus). Except for saltbush, most of these perennials flower from May to September. Valley saltbush scrub understory typically consists of annual species such as common tarplant (*Hemizonia pungens*), birds-eye gilia (*Gilia tricolor*), goldfields (*Lasthenia* spp.), filaree (*Erodium* spp.), fescue (*Vulpia* spp.), and peppergrass (*Lipidium* spp.). These annuals flower from January to April.

Great valley mesquite scrub is an open or savanna dominated by mesquite *(Prosopis glandulosa torreyana)* and valley saltbush. In many ways, this community is very similar to valley saltbush scrub and non-native grassland with the addition of mesquite. Even where mesquite is present, it may occur in densities as low as two to three per acre. This community occurs on sandy loams of alluvial origin. Since mesquite is a deep-rooted plant dependent on groundwater rather than direct rainfall, it requires a high water table. Understories, grassy in years of adequate rainfall, are usually dominated by non-native annuals. The grassy understory is comparable to non-native grassland. Typical species of this community include mesquite, valley saltbush, red brome, and pale-leaf golden bush.

Valley sacaton grassland is a medium height (39 inches) native grassland dominated by the tussock-forming bunchgrass, alkali sacaton (*Sporobolus airoides*). Valley sacaton grassland and the more widespread non-native grassland both occur on fine-textured soils, but sites supporting valley sacaton grassland are poorly drained, and are usually characterized by alkaline soils. Most sites have seasonally high water tables or are overflowed during winter and spring flooding.

Typical species in this community include saltgrass (*Distichlis spicata*), alkali barley (*Hordeum depressum*), and alkali sacaton (*Sporobolus airoides*).

Non-native grassland is found throughout most of California, primarily below 3,000 feet in elevation on fine-textured, usually clay soils. Non-native grassland is dominated by introduced annual grasses in association with many species of showy-flowered native forbs ("wildflowers"), especially in years of abundant rainfall.

Characteristic non-native species typically present in this plant community are red brome, soft chess (*Bromus mollis*), ripgut brome *(Bromus diandrus*), hare barley (*Hordeum leporinum*), wild oats (*Avena* spp.), Italian ryegrass (*Lolium multiflorum*), Arabian schismus (*Schismus arabicus*), rat-tail fescue (*Vulpia myuros*), filaree, and bur-clover (*Medicago polymorpha*). Native plant species found in the non-native grassland include few-flowered fescue (*Vulpia microstachys*), fiddleneck (*Amsinckia* spp.), goldfields, peppergrass, various species of tarplant (*Hemizonia* spp.), lupine (*Lupinus* spp.), gilia (*Gilia* spp.), owl's clover, and phacelia.

These grasses and flowers germinate with the onset of late fall and winter rains. Growth, flowering, and seed-set occur from winter through spring. Most annuals in this community die by summer and persist as seeds until the winter rains return.

The isolated native plant communities support two federally listed plant species: the San Joaquin woolly-threads (*Lembertia congdonii*), and Hoover's eriastrum (or

woolly-star)(*Eriastrum hooveri*). Two others species have the potential to occur in the saltbush and mesquite plant communities, but have not been documented on the Kern Water bank: the Kern mallow *(Eremalche kernensis*), and California jewelflower (*Caulanthus californicus*), both federally listed as endangered.

San Joaquin Woolly-threads (*Lembertia congdonii*)

The San Joaquin woolly-threads is an annual herb belonging to the sunflower family (Asteraceae) which produces several, frequently-branching stems arising from the base and small yellow disk-flowers from March to April.

The USFWS report supporting federal endangered species status for *Lembertia congdonii* in the Federal Register 19 July 1990 states:

> Associated with the valley saltbush scrub, only 12 populations of [the San Joaquin woolly-threads] remain in the San Joaquin Valley and adjoining foothills from the vicinity of Panoche Pass (San Benito County) southeasterly to Caliente Creek, east of Bakersfield (Kern County) (Taylor 1987). Another seven populations occur to the southwest in the Cuyama Valley (San Luis Obispo and Santa Barbara Counties) and Carrizo Plain (San Luis Obispo County). Primarily as a result of ag-land conversion, 33 populations or 63% of the 52 historical populations of the species have been lost (Taylor 1987).

Known populations occur in the Kettleman and Panoche Hills, Lost Hills, and the Carrizo and Elkhorn Plains (Mitchell 1991). Within the Kern County Valley floor area, this species is known from at least eight widely scattered isolated populations: south of Blackwell's Corner; southeast of Lost Hills; between the Semitropic Preserve and Kern National Wildlife Refuge; west of Bakersfield near Highway 43 and Rosedale Highway; and southeast of Bakersfield at Sand Ridge in Caliente Creek area near its junction with Highway 58.

The plant is found in drifted sand or clayey, often alkaline soil in areas of annual grassland and saltbush scrub at elevations between 250 to 2500 feet. It is possible that it grows only in years of more than normal rainfall.

Within the Kern Water Bank, populations of the woolly-threads are known to occur in T30S, R26E, southwest quarter section of Section 8, and T30S, R25E northeast quarter of Section 12.

Hoover's Eriastrum (*Eriastrum hooveri*)

Hoover's woolly-star, an annual herb of the phlox family (Polemoniaceae), produces many wire-like branches and small white flowers from February to May (Abrams 1940). It is endemic to the southern San Joaquin Valley and adjoining South Coast Ranges, including the Elkhorn Plain, Carrizo Plain, Cuyama Valley from Kern to

Fresno County, and east to San Luis Obispo County. Historical distribution of the species is discontinuous, i.e. there are no documented occurrences of *E. hooveri* in Kings or Tulare Counties.

Hoover's woolly-star grows in the sandy soils of rolling plains of valley saltbush scrub and valley sink scrub below 500 feet. Northern populations (Fresno County) are located on more alkaline soils than southern populations (Kern County). Distribution on alkali sinks is patchy. Colonies are often located only within the patches of cryptogamic soils.

Twelve of the 39 historical and extant populations of the species have been extirpated due to habitat loss (Taylor and Davilla 1986). More recently conducted surveys have both confirmed the status of existing populations as well as previously unrecorded populations on the lands of Naval Petroleum Reserve #1 within the Elk Hills and adjacent lands including the Buena Vista Valley and Buena Vista Hills (EG&G 1988; Russ Lewis pers. comm. 9 September 1989 to USFWS). These two surveys brought the total of remaining populations of *Eriastrum hooveri* to 118. However, of these 118 known populations, 100 are currently threatened by oil and gas development, ag-land conversion, urbanization or reservoir construction. One population is within a preserve, the Nature Conservancy's Paul Paine/Semitropic Ridge Preserve.

Within the Kern Water Bank Hoover's eriastrum has been documented as occurring in T30S, R25E, northeast quarter of Section 12, in the north half of Section 14, in the southeast quarter of Section 25, in the northeast quarter and south half of Section 36, and in T30S, R26E in the southwest quarter of Section 8, and the southwest quarter of Section 28.

Kern Mallow (*Eremalche kernensis*)

Kern mallow is a small erect annual plant that is branched from the base with stems from 2 to 4 inches tall. The stems have scattered stellate hairs and support three-to five-lobed leaves that are 0.5 to 1.5 inches long and about as wide. Petioles may be as long as 1 inch. Bractlets are filiform and taper gradually to a slender tip. Flowers are white or lavender-pinkish and appear in early spring (March to April). Fruits resemble small segmented wheels of cheese.

The extant distribution of Kern mallow is restricted to the dry open clay flats between 600 and 900 feet above mean sea level that are found in the southwestern portion of the lower San Joaquin Valley. The habitat for Kern mallow consists of saltbush scrub vegetation, with an approximate saltbush shrub canopy cover of 20 percent. Shrub canopy cover is commonly provided by either Valley saltbush and/or spiny saltbush. Within this habitat, Kern mallow grows in areas where the annual grass cover is low, such as old tire tracks or small exposed "balds" with cryptogamic crusts. Soils tend to be silty loams and are classed somewhere between the heavily alkaline sinks and the non-saline soils now largely converted to agricultural uses on the floor of the San Joaquin Valley (Taylor and Davilla 1986).

The systematic position of this plant, as either a full species or subspecies of Parry's mallow (*E. parryi*) is not clear. Research suggests that two or more subspecies may be present in the San Joaquin Valley. In the strict sense, white-flowered plants in Kern County are called Kern mallow (Bates 1993).

California Jewelflower (*Caulanthus californicus*)

The California jewelflower is an annual herb of the mustard family (Brassicaceae), usually one foot tall, with several flower branches. The lower leaves of the jewelflower are dry, oblanceolate and lobed with wavy margins. The base of the lower leaves cling to the stem of the plant and are egg-shaped or oblong. The flowers are translucent white with purple tips that turn green at full bloom (Taylor and Davilla 1986). Thin, narrow seed pods up to one inch long are one of the factors which distinguish this plant from related species (USFWS 1989).

Historically, the California jewelflower was distributed in the general area bounded by the present-day cities or communities of Coalinga and Fresno in Fresno County, New Cuyama in Santa Barbara County and Bakersfield in Kern County (Taylor and Davilla 1986). The jewelflower was extirpated from most of its former range as a result of the expansion of agriculture and livestock grazing coupled with the conversion of San Joaquin Valley grasslands from native annual plants to European annual plants (Taylor and Davilla 1986).

Today, the California jewelflower is represented by approximately twenty populations at four locations along the western edge of its range. These locations include the foothills of southwestern Fresno County, two sites on the Carrizo Plain in San Luis Obispo County, and in the Cuyama Valley of Santa Barbara County. The latter locations supports the largest populations of this species, but is privately-owned (CDFG 1992, Skinner and Pavlik 1994).

The California jewelflower is thought to be extirpated from Kern County. A transplanted population is being maintained in alkali grassland at The Nature Conservancy's Semitropic Ridge Preserve in Kern County. The U.S. Forest Service is attempting to establish new populations of this species on public lands (CDFG 1992).

The introduced population grows, in wet years, on the alkali plains in The Nature Conservancy's Paul Paine/Semitropic Ridge Preserve. Historical records indicate the jewelflower was found on the floor of the San Joaquin Valley in sandy, grassland type habitat (Taylor and Davilla 1986) and on slopes under 3000 feet on the surrounding foothills (Munz 1973).

There are no documented occurrences of the California jewelflower on the Kern Water Bank.

Wetlands.

Although the baseline condition of the Kern Water Bank was dry land when DWR acquired it, activities carried out by the Kern Water Bank Authority have and will continue to convert some dry land to wetlands. The following types of wetlands may emerge.

Open water aquatic habitat is found where standing or slow moving water is at least 5 to 6 feet deep. Within the study area this may include sloughs, canals, and ditches that do not dry up in the summer as well as the large open water recharge basins. The vegetation supported in this habitat includes pondweeds (*Potamogeton sp.)*, duckweed (*Lemna sp.)*, *Elodea sp.*, mare's tail (*Hippuris vulgaris),* yellow water-weed (*Jussiaea repens),* water milfoil (*Myriophyllum sp.)*, and smartweed (*Polygonum amphibium, P. sp.)*.

This habitat provides cover, food and oxygen for the invertebrates (crayfish, clams, etc.), amphibian larvae and juvenile fish that become prey items for the higher trophic levels including giant garter snakes, larger game and non-game fish, and migratory waterfowl.

Emergent marsh is found in areas where the water depths do not exceed 6.5 feet. They are typically associated with the channels, ditches, sloughs and basins either as narrow bands along the edge or spreading out from sloping margins. The vegetation that dominates these permanently to semi-permanently submerged areas are cattails (*Typha latifolia)*, tules (*Scirpus acutus)* and rushes (*Juncus sp.)* toward the lower margins and river bulrush (*S. fluvialtilis*), sedges (*Carex sp., Cyperus sp.),* and vervain (*Verbena hastata)* in the upper margins. The tricolored blackbird (*Agelaius tricolor),* a federal species of concern, occurs in this habitat.

Emergent marshes are important to both resident and migratory species. These areas are used for nesting or spawning, foraging, and protection from predators. Birds sighted in these habitats include great egret, great blue heron, green-backed heron, night crowned heron, American coot, greater yellowlegs, pied-billed grebe, belted kingfisher, common yellowthroat and song sparrow.

Riparian scrub-shrub habitat is characterized by thickets of woody shrubs, seedlings and sapling trees growing along the upland margins of canals, sloughs, and ditches. Periodic disturbances such as mowing, discing, burning and spraying have prevented young trees of various species -- valley oak (*Quercus lobata)*, walnut (*Juglans californica var. hindsii),* cottonwood (*Populus fremonti),* maple (*Acer negundo*), and willow (*Salix gooddingii*) -- from maturing into a riparian woodland. The dominant shrubs of this habitat include button willow (*Cephalanthus occidentalis*), blackberry (*Rubus ursinus*), arroyo willow (*Salix lasiolepis),* sandbar willow (*Salix hindsiana*) poison oak (*Toxicodendron diversilobum),* wild rose (*Rosa californica*), and elderberry (*Sambucus mexicana*).

The disturbance regime normally found in riparian scrub-shrub also facilitates an aggressive herbaceous component typically found in ruderal fields and non-native grasslands. Red brome (*Bromus rubens*), wild oat (*Avena fatua*), bermuda grass (*Cynodon dactylon)*, ryegrass (*Lolium perenne*), wild mustard (*Brassica campestris*), star thistle (*Centaurea solstitialis*), horseweed (*Conyza canadensis*), fennel (*Foeniculum vulgare)*, dock (*Rumex sp.)*, knotweed (*Polygonum sp.)*, and chicory (*Cichorium intybus)* intergrade with the more mesic understory of the riparian scrub-shrub: smartweed (*Polygonum amphibium)*, sedge (*Carex barbarae, Carex sp.)*, nutsedge (*Cyperus egrostis)* mugwort (*Artemesia douglasiana)* and creeping spikerush (*Eleocharis palustris).*

Although not as structurally complex as the riparian forest, and therefore less biologically diverse, this habitat will support the valley elderberry longhorn beetle *(Desmocerus californicus dimorphus*), a federally listed threatened species.

The following table shows the disposition of land proposed by the project.

TABLE 5 - HABITAT STATUS

Pre-Project	acres	1991 DWR	acres	KWB HCP	acres
Upland Habitat		*Upland Habitat*		*Upland Habitat*	
Sensitive Plants (1)	1,515	Sensitive Plants (1)	1,515	Compatible Habitat	5,592
Non-native Grassland	1,317	Non-native Grassland	1,317	(Sensitive Plants - 240)	
		Fallow - Occupied	6,880	(Fallow - 5,352)	
				Sensitive Habitat (2)	960
				(Sensitive Plants - 960)	
				DWR Mitigation	530
				(Fallow - 530)	
				Conservation bank	2,777
				(Sensitive Plants - 315)	
				(Non-native grassland -1,177)	
				(Fallow - 1,285)	
				Intermittent Wetland Habitat (4)	
				Recharge Basins	5,900
				(Fallow - 5,900)	
Non-Habitat		***Non-Habitat***		*Non-Habitat*	
Farmland/Disturbed	17,068	Fallow - Not Occupied	10,188	Other Facilities	481
				(Fallow - 481)	
				Commercial Development (3)	490
				(Non-native grassland - 140)	
				(Fallow - 350)	
				Farming	3,170
				(Fallow - 3,170)	
Total	19,900		19,900		19,900

(1) Gross area that contains known populations of covered plant species.

(2) Contains all known populations of San Joaquin woolly-threads on the KWB.

(3) Assumes KWBA sells or develops 490 acres. Can also be sold as mitigation credits.

(4) Habitat potentially suitable for species such as western pond turtle, Buena Vista lake shrew.

B. *Wildlife*

Numerous species of wildlife are supported by habitat found on the Kern Water Bank. Three of the species are federally listed as threatened or endangered species; these are the blunt-nosed leopard lizard (*Gambelia silus*), Tipton kangaroo rat (*Dipodomys nitratiodes*), and San Joaquin kit fox (*Vulpes macrotis mutica*), and one is a state listed threatened species: the San Joaquin antelope squirrel (*Ammospermorphilus nelsoni*). The federally-listed giant kangaroo rat (*Dipodomys ingens*) is not documented on the Kern Water Bank, but there are known populations just to the south.

San Joaquin Kit Fox (*Vulpes macrotis mutica*)

The kit fox species, *Vulpes macrotis*, represents the smallest of the four species of foxes found in North America. Of the various subspecies of kit fox, San Joaquin kit fox (*Vulpes macrotis mutica*) is the largest in size (USFWS 1983). Adult kit fox are slender, weighing 1.4 to 2.7 kg (3 to 6 pounds). Head and body length is 38 to 51 cm (15 to 20 inches) with a 23 to 30 cm (9 to 12 inch) cylindrical, bushy, black-tipped tail. The inner side of their exceptionally large ears are covered with dense, stiff white hairs (USFWS 1983). Pelage color ranges from a pale grey with rust colors to a buffy yellow; the belly is whitish (Burt and Grossenheider 1976). The underfur is heavy and slightly harsh in texture while overhairs are scattered and meagerly developed (Grinnell et al. 1937).

Kit foxes are primarily nocturnal, emerging at sunset to hunt. Primary prey species are kangaroo rats (*Dipodomys ingens, Dipodomys nitratoides, Dipodomys heermanni*). Black-tailed jackrabbits (*Lepus californicus*), desert cottontails (*Sylvilagus auduboni)* and California ground squirrel (*Spermophilus beecheyi*) may be primary prey species in some areas and secondary prey species to the kangaroo rat in others (Zoellick et al. 1987; O'Farrell and Scrivner 1987).

Dens are usually found in areas of low to moderate relief in loose textured soils (O'Farrell and McCue 1981, O'Farrell et al. 1980, cited by USFWS 1983). Man-made structures such as culverts, well casings, irrigation pipes and man-made dens constructed specifically for the San Joaquin kit fox have been used by kit foxes for both transient and natal dens (Egoscue 1956, 1962 and Morrell 1972, cited by McGrew 1979; Knapp 1978; O'Farrell and Scrivner 1987).

Prior to the introduction of irrigated agriculture in the valley, the prime habitat for the San Joaquin kit fox is thought to have been in the valley saltbush scrub, alkali sink and lower Sonoran grassland ecological communities. Today, within Kern County, kit foxes still inhabit valley saltbush, valley scrub, non-native grassland and valley sink scrub communities. They have been found to disperse through various types of disturbed habitat including agriculture fields, oil fields, highways, aqueducts and canals (Kato 1982). In the Bakersfield area, railroad tracks and canals are used by kit fox to travel from one habitat area to another. Habitat suitable for the San Joaquin kit fox is found throughout the Kern Water Bank.

Historically, this fox occurred throughout the San Joaquin Valley and western portions of the Sacramento Valley from Contra Costa County south to southern Kern County, as well as the arid valleys, plains and lower foothills of the Inner Coast Range (Carizzo Plain, Salinas Valley, Temblor Range, Cholame Hills, Elkhorn Plain and Elk Hills). The original range was estimated to be approximately 5,570,000 acres (O'Farrell 1983). Today, Central Valley kit fox populations are highly fragmented and restricted to the remaining native vegetation associations of the Valley floor and surrounding foothills from near Los Banos, Merced County southward to southern Kern County (CDFG 1992).

The Kern County Valley floor area harbors some of the highest densities of kit fox. These areas occur along the west side of the Valley floor, from the Lokern Area southward to Maricopa. Elsewhere, occurrences are highly fragmented, with low to moderate densities south and east of the Kern National Wildlife Refuge and north and east of the City of Bakersfield. The latter populations are connected to the populations on the west side of the Valley by a series of small populations inhabiting the Kern River flood plain.

Preserves for the San Joaquin kit fox should be able to support an average of 1.4 animals per square mile (USFWS 1983), be composed of native communities or non-native grasslands, support prey populations, contain adequate denning sites, and have few human intrusions, particularly roads. Corridors should be wide enough to provide safety to migrating animals. The Recovery Plan calls for the protection and/or acquisition of 35,000 acres (55 square miles) of kit fox habitat in areas mapped as first priority for protection in order to meet interim plan objectives of halting the decline of the species and increase population size above 1981 levels. Meeting these interim objectives could result in the changing of the San Joaquin kit fox status from federally "endangered" to "threatened".

The DWR 91 data shows scattered occurrences of the San Joaquin kit fox (SJKF) on the Kern Water Bank throughout the idle agricultural lands.

Wildlife surveys conducted for the interim recharge project found 69 potential kit dens but monitoring of these sites showed no signs of activity and they were closed prior to 1995 construction.

Night spotlight wildlife surveys were conducted on a 55 mile route within the boundaries of the Kern Water Bank on June 18, 19, and 27, and July 3, 7, and 10, 1996. Also set up were twenty-five scent stations throughout the water bank during 7 days in August 1996. San Joaquin kit fox prints were noted at three of the scent stations (2 in the south half of Section 20 of T30S, R25E, and 1 in the south half of Section 19, T30S, R26E). The scent stations also revealed sign of 6 coyotes and 3 striped skunks. During the spotlighting, one SJKF was sighted in the southeast quarter section of Section 12, T30S, R25E. Other species sighted were: 67 barn owls, 18 burrowing owls, 9 coyotes, and 6 striped skunk.

Blunt-nosed Leopard Lizard (*Gambelia silus*)

The blunt-nosed leopard lizard (BNLL) is a relatively large and long-lived lizard. It is so-named because of its short, broad skull and blunt snout. The robust body and long tail display a prominent pattern of dark spots and pale cross-bars. Adult males range from 90 mm to 120 mm (3.5 to 4.8 inches) in the body (snout-to-vent length) and are slightly larger than adult females which average 85 to 107 mm SV (3.4 to 4.2 in) (USFWS 1985). If severed, the lizard's tail is able to regenerate itself.

The leopard lizard does not dig its own burrow for escape, cover, shelter, or as egg-laying sites. Instead, it uses existing small mammal burrows, made by kangaroo rats, ground squirrels, pocket gophers, pocket mice and other rodents. Leopard lizard may prefer burrows in pond loam and clay loam soils on sparsely vegetated slopes of less than 30%, canyon floors, low foothills, especially in large washes and arroyos (Montanucci 1965, Chesemore 1980 cited by Uptain et al. 1985; Uptain et al. 1985).

Prey of the leopard lizard includes insects, spiders and occasionally other lizards as well as other leopard lizards (Dick 1977). Due to its foraging habits, the lizard prefers areas of relatively sparse ground cover which is more prevalent during the dry seasons and in dry years. Chesemore (1980) suggests that 15 to 30% bare ground may be the optimum openness for the blunt-nosed leopard lizard, and a site with 50% or more open ground may not be suitable for the species. Conversely, dense vegetative cover appears to interfere with running and hunting ability, thermoregulatory behavior and visibility of potential mates during the breeding season (Snow 1972; Montanucci 1965; Stebbins 1966).

The leopard lizard's historic range extended from Stanislaus County south to the southern edge of Kern County and included San Joaquin Valley, Kettleman Plain, Carrizo Plain and Cuyama Valley (Montanucci 1965, Smith 1946, Tollestrup 1979, cited by USFWS 1985).

Populations of BNLL on the Valley floor have been dramatically reduced in size and area, due to loss of habitat. Extant Valley floor populations are severely fragmented. Within the Kern County Valley floor area, small, isolated populations are scattered north and northeast of Bakersfield and between Elk Hills, bordering the southwestern side of the Valley floor, between Maricopa and Highway 33. BNLL are also common in grazed grasslands between the Pleito Hills and Wheeler Ridge, and elsewhere in the southern and southwestern portions of the Kern County Valley floor (Van Denburgh 1922, The Planning Center 1991, Weintraub 1991).

Blunt-nosed leopard lizards are known to occur in valley and foothill grassland, saltbush (*Atriplex*) scrub land, iodine bush (*Allenrolfea*) grassland, *Sueda* flats. They are most numerous where large *Atriplex* and *Isomeris* bushes were numerous and widespread. Chesemore (1980) found a correlation between the presence of the blunt-nosed leopard lizard and *Schismus arabicus* (Arabian grass) which could not be reconfirmed in later studies (Uptain et al. 1985). Blunt-nosed leopard lizards were

observed in areas totaling approximately 720 acres of the Kern Water Bank (DWR, 1991).

The Blunt-nosed Leopard Lizard Revised Recovery Plan (USFWS 1985) recommends that populations should meet or exceed a level of one blunt-nosed leopard lizard per acre average density to maintain a viable population. While Tollestrup 1976 suggested that one square mile (640 acres) of good habitat might meet minimum area requirements for perpetuating a leopard lizard population, this estimate has not been substantiated by other studies. To disperse from one area to another, the leopard lizards require natural, undisturbed washes or dirt roads with shrub vegetation along the edges for cover. The Recovery Plan identifies a minimum of 30,000 acres of essential habitat be protected within five distinct areas of the blunt-nosed leopard lizard range before the species may be re-classified as threatened, rather than endangered.

The DWR 1991 study also showed very few documented occurrences of the blunt-nosed leopard lizard on the Kern Water Bank. Occurrences were restricted to areas of poor soil type associated with very sparse vegetation and areas of open ground. The DWR 1991 documented occurrences of BNLL are almost exclusively located in areas designated as either sensitive habitat (NW quarter of Section 7, T30S, R26E and SW quarter of Section 36, T30S, R25E), or compatible habitat (S half of Section 6, SW quarter of Section 5, NE quarter of Section 7, NW quarter of Section 8, SE quarter of Section 20, T30S, R25E, and NW quarter of Section 20, T30S, R26E).

Tipton Kangaroo Rat (*Dipodomys nitratoides*)

The Tipton kangaroo rat, whose head and body measure from 100 to 110 mm long (3.9 to 4.3 inches), is a subspecies of the smallest species of kangaroo rat, *Dipodomys nitratoides* (Williams 1985). Its tail is longer than its body length and ranges from 125 - 130 mm (4.9 to 5.1 inches). It weighs an average of 36.5 grams (1.3 ounces) (Grinnell 1920) and is slightly larger than *Dipodomys nitratoides exilis* but smaller than *D. n. brevinasus*.

Like all kangaroo rats, the Tipton is adapted for bipedal locomotion (jumping), having greatly enlarged hind limbs, a long thickened tail, a short neck and a large head. The ears and eyes are on the upper sides of the head. Fur-lined cheek pouches hold seeds and other food for transport to caches which the animal locates close to its burrow. The forelimbs of the Tipton Kangaroo Rat are short, with long, stout claws and four dexterous finger-like toes.

The Tipton kangaroo rat commonly digs burrows on elevated spots which are not subject to flooding. Sometimes, areas which are flooded in winter and spring are colonized during the dry seasons. Preferred habitat for Tipton burrows are within alluvial fans and flood plains and include highly alkaline fine sands and, to a lesser degree, alkaline sandy loams. The animal is most commonly associated with Alkali Sink Scrub and Valley Saltbush Scrub on the floor of the Tulare Basin. These communities provide a habitat of sparsely scattered shrubs and a scant-to-moderate groundcover of grasses and forbs.

Historic populations of the Tipton kangaroo rat are roughly estimated to have been 17,164,800 individuals (CDFG 1990). Habitat loss from agricultural conversion of lands after the completion of the Central Valley Project is the main cause of the decline of the species. Tipton kangaroo rats were formerly occupied a range that included the Tulare Lake Basin in parts of Fresno, Kings, Tulare and Kern counties. The former range of approximately 1,716,500 acres has been reduced to 63,400 acres or 3.7 percent of the original range (CDFG 1990).

Tipton kangaroo rats are associated with habitats on the floor of the Tulare Subbasin. Typically, this species occupies scrub and grassland communities in level or near-level terrain with alluvial fan-flood plain soils (alkaline fine sands and sandy loams) and sparse grasses and woody vegetation such as iodine bush, saltbush, sea blite, and mesquite. These areas generally have a high water table. In areas subjected to seasonal flooding, Tipton kangaroo rats construct burrows on elevated ground (Grinnell 1933, Williams 1985 & 1986, Williams and Kilburn 1992).

Within the Kern County Valley floor area, known occurrences of Tipton kangaroo rats are highly disjunct. Because of agricultural conversion of valley floor habitats, populations are now restricted to isolated parcels of native habitat, primarily east of the California Aqueduct (Williams 1985). Populations are concentrated east and south of the Kern National Wildlife Refuge, to Delano on the east and Maricopa on the south along the western edge of the Valley floor. The Kern River flood channel between Highway 99 southwest of the mouth at the site of historic Buena Vista Lake, north of Pixley National Wildlife Refuge, and within and west of the City of Bakersfield, were expected by Williams (1985) to support this subspecies. Approximately 200 acres of habitat supporting Tipton kangaroo rats still remained along the western border of Buena Vista Lake bed, and the site north of Pixley National Wildlife Refuge may have contained over 2,500 acres of habitat for the Tipton kangaroo rat.

The DWR 91 data shows scattered occurrences of the Tipton kangaroo rat throughout the idle agricultural lands of the Kern Water Bank.

San Joaquin Antelope Squirrel (*Ammospermophilus nelsoni*)

The San Joaquin antelope squirrel has a yellowish-brown pelage with a creamy white line on each side of the back extending from shoulder to hip and a tail with a white underside. The head and body are 152 to 165 mm (6 to 6.5 inches) long and tail length is 64 to 76 mm (2.5 to 3 inches) (Burt and Grossenheider 1976). It weighs from 84 to 154 grams (3 to 5.5 ounces).

The squirrel is omnivorous mainly feeding on grass and forb seeds as well as insects (CDFG 1990). It will co-occupy giant kangaroo rat precincts and digs burrows in road cuts and arroyos (Williams 1979; 1985). Williams (1979) states that the range of the antelope squirrel most nearly coincides with the range of the giant kangaroo rat, but its microhabitats are different.

The historic range of the San Joaquin antelope squirrel included the western and southern portions of the Tulare Basin, San Joaquin Valley and areas to the west including the Cuyama Valley, Carrizo Plain and Elkhorn Plain. The western half of the range extended north to western Merced County. San Joaquin antelope squirrel were found the San Joaquin valley floor in Kern County and along the Valley's eastern edge north to Tipton in Tulare County (CDFG 1990).

In Kern County the San Joaquin antelope squirrel was distributed throughout the valley floor (Williams and Kilburn 1992). The squirrel was apparently naturally unevenly distributed throughout this region, occurring in abundance at only a few localities (Williams 1980, Williams and Kilburn 1992, citing Grinnell and Dixon 1918). Populations are currently restricted to approximately 102,000 acres of marginal habitats in the foothills along the western edge of the Tulare Subbasin. The Elk Hills region, between Buttonwillow and Taft, contains the only substantial populations of the species remaining within the Kern County valley floor area. Elsewhere, viable populations are also found on the Carrizo and Elkhorn plains in San Luis Obispo County (Williams and Kilburn 1992).

The San Joaquin antelope squirrel is found in flat to sloping terrain with loam or sandy loam soils in the western and southern portions of the Tulare Basin. The antelope squirrel could be found in association with the Interior Coast Range saltbush scrub, upper Sonoran subshrub scrub, non-native grassland and valley sink scrub. The habitat normally consists of species such as salt bush (*Atriplex* spp.), ephreda (*Ephreda viridis*), bladder pod (*Isomeris arborea*), goldenbush (*Haplopappus* spp.) and snakeweed (*Gutierrezia californica*). Grinnell and Dixon (1918) and Hawbecker (1953) observed that it more rarely occurred in valley floor habitats with alkaline soils (i.e. ephemerally flooded with a high water table) dominated by iodine bush (*Allenrolfea occidentalis*) and spiny salt bush (*Atriplex spinifera*). It has been observed in the non-native grassland community (Hawbecker 1958).

The home range of the San Joaquin antelope squirrel is thought to be approximately 10 to 50 acres with an average of 35.5 acres (CDFG 1990). The squirrel has a high affinity with its home range and remains there from year to year. However, each animal covers up to half of its range per day (Hawbecker 1958).

The San Joaquin antelope squirrel has had only one documented occurrence at the Kern Water Bank, which was in an area designated as sensitive habitat (E half of Section 36, T30S, R25E). This area will be maintained as a habitat preserve throughout the life of the permit. If populations expand into recharge basin areas, loss of individuals may occur from levee and canal maintenance activity, flooding and project related traffic.

Giant Kangaroo Rat (*Dipodomys ingens*)

The giant kangaroo rat is the largest of the all the kangaroo rats and measures a total length of 311 to 348 mm (12.2 to 13.7 inches). Compared to other kangaroo rats, the ears and tail of the giant kangaroo rat are short in relation to its total body length. It is also the heaviest of the species weighing from 131 to 180 g (4.6 to 6.4 ounces) with males somewhat heavier than females. The fifth toe appears only on the hind foot and is diagnostic for the giant kangaroo rat. Other kangaroo rat within the range of the giant kangaroo have four toes on the hind foot and are smaller in weight as adults (CDFG 1988).

The giant kangaroo rat prefers to dig its burrows in open areas on flat to gently sloping terrain, usually less than 10 percent slopes. The soil in these areas is fine sandy loams with a covering of annual grasses and herbs. The giant kangaroo rat usually does not occur in areas of highly alkaline soils and seasonal flooding (Grinnell 1932, Williams 1981 cited by CDFG 1988).

Original habitat of the giant kangaroo rat may have been 1,303,700 acres from Merced County south to Kern County, west to eastern San Luis Obispo County and northern Santa Barbara County (Williams in prep, cited by CDFG 1988). Of this original habitat, an estimated 97-98% has been lost to agricultural conversion of natural lands (CDFG 1988).

The last relatively large blocks of suitable habitat are at the southern edge of the historic range of the species, in the upper Buena Vista Valley of western Cuyama Valley of northern Santa Barbara County. Most of the extant populations are small, ranging from fewer than 10 to several hundred individuals. Despite successful translocation efforts to protected lands in the Carrizo Plain, populations of this species are considered to be declining due primarily to continued habitat loss and the use of rodenticides to control California ground squirrels (CDFG 1992).

There are no documented occurrences of the giant kangaroo rat on the Kern Water Bank.

C. Climate

The San Joaquin Valley has a Mediterranean climate of cool, moist winters and hot, dry summers. Summer daytime high temperatures frequently exceed 100 degrees. Mean annual temperature is 65 degrees. With less than six inches of rainfall annually, much of the Valley is classified as desert. Precipitation normally occurs from September through April. A dense persistent, ground fog known as "Tule Fog" can develop during the winter months resulting in overcast, damp, cool weather (THC 1984).

D. Topography

The Project site is located in the southern San Joaquin Valley trough on the Kern River Fan. This trough, bounded by the Sierra Nevada to the east, the Tehachapi Mountains to the south, and the Coast Range to the west, follows a northwest to southeast course and forms the valley floor.

The Project location is characterized by a gently sloping land surface with a maximum relief of about 120 feet. Land surface elevations over the Project facilities range from 280 feet to 340 feet above sea level.

E. Hydrology

The western slopes of the Sierra Nevada Mountains are the source of the numerous rivers and streams that cross the San Joaquin Valley. The Valley is divided into two distinct sub-basins: the San Joaquin Sub-basin to the north and the Tulare Sub-basin to the south. Rivers of the San Joaquin Sub-basin join the San Joaquin River as it drains into the Sacramento River flowing into San Francisco Bay. The rivers of the Tulare Sub-basin have no natural perennial surface outlet and, in the past, formed large temporary, shallow inland lakes (Katibah 1984). The Tulare Sub-basin contains roughly 2.5 million acres of nearly flat valley floor (USFWS 1989).

The Kern River, which bisects the Project area, is the most southern of the major rivers draining into the Tulare Sub-basin. The river is now regulated by Lake Isabella, a reservoir created in 1954 to protect the City of Bakersfield and agricultural lands down stream from flooding. The waters from Lake Isabella are used primarily for irrigation, recreation and power generation.

F. Soils

Soils within the Project area range from highly permeable, course sandy soils to silty loam with very low permeability. Generally, most of the 19,900 acres can be characterized as having deep, well-drained sandy loam soils. These soils usually have moderate to rapid permeability with low water-holding capacity. A few pockets of clay loam soils also can be found on the far west side of the Project lands. These soils have low permeability and are often associated with saline-alkali conditions (DWR 1986).

The Project property east of I-5 are characterized by Cajon sandy loam soils. These soils have moderate permeability and low available water holding capacity. Kimberlina fine sandy loam soils also found in this area have characteristics similar to the Cajon soils but have slightly lower permeability. The dominant soil south of the Kern River is the Excelsior sandy loam. These deep, well-drained soil has moderate permeability and moderate available water holding capacity (DWR 1986).

North and south of State Highway 119 (Taft Highway), the saline-alkali, Kimberlina fine sandy loam is predominate. This soil is characterized by a moderately

low permeability and a low available water holding capacity. Isolated pockets of poorly drained Panoche clay loam with low permeability can be found in this area north of Taft Highway and south of Panama Lane (DWR 1986).

ENVIRONMENTAL IMPACTS CHECKLIST

(*Explanation for all "yes" and "maybe" responses are provided on attached sheets.* Beneficial impacts shown in parenthesis: (x))

Issue Area	Potential Impact? Yes	Maybe	No	Is it Significant? Yes	Maybe	No
1. **Geology, Soils, and Topography.** *Will the proposal result in:*						
a. Change in topography or ground surface relief features?	X					X
b. Disruptions, displacements, Compaction or overcovering of of soil?	X					X
c. Unstable earth conditions or in changes in geological substructures?			X			
d. The destruction, covering or modification of any unique geological, paleontological or physical features?		X				X
e. Any increase in wind or water erosion of soils, either on or off the site?		X				X
f. Exposure of people or property to geological hazards such as earthquakes, landslides, fault ruptures, high seismicity, subsidence, liquefaction, expansive soils, mudslides, ground failure, or similar hazards?			X			
g. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or bed of the ocean or any bay, inlet or lake?			X			
2. **Water Resources.** *Will the proposal result in:*						
a. Changes in currents, or the course of direction of water movements, in either marine or fresh waters?			X			

Issue Area	Potential Impact? Yes	Maybe	No	Is it Significant? Yes	Maybe	No
b. Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?	(X)	—	—	—	—	X
c. Alteration to the course or level of flood waters?	—	(X)	—	—	—	X
d. Exposure of people or property to water related hazards such as flooding or tidal waves?	—	—	X	—	—	—
e. Change in the amount of surface water in any water body?	—	—	X	—	—	—
f. Discharge into surface waters, or any alteration of surface water quality?	—	(X)	—	—	—	X
g. Change in the quantity of ground waters, through additions, withdrawals, change in recharge area, or through exposure of an aquifer by cuts or excavations?	(X)	—	—	—		X
h. Change in ground water quality?	—	X	—	—	—	X
i. Alteration of the direction or rate of the flow of ground waters?	X	—	—	—	—	X
j. Reduction in the amount of water otherwise available for public water supplies?	—	—	X	—	—	—
3. Air Quality. *Will the proposal result in:*						
a. Air emissions or deteriorations of ambient air quality?	X	—	—	—	—	X
b. The creation of objectionable odors?	—	X	—	—	—	X
c. Alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally?	—	X	—	—	—	X
4. Botanical Resources. *Will the proposal result in:*						
a. Change in the diversity of species, or number of any species of plants?	(X)	—	—	—	—	X
b. Reduction of the numbers of habitat of any rare, endangered, or otherwise sensitive species of plants?	—	X	—	—	—	X

Issue Area	Potential Impact? Yes	Maybe	No	Is it Significant? Yes	Maybe	No
c. Disturbance of any sensitive plant community or valuable tree specimens?	___	X	___	___	___	X
d. Introduction of new species of plants into an area, or an impediment to the normal reproductive and growth of existing species?	___	X	___	___	___	X
5. **Fish and Wildlife.** *Will the proposal result in:*						
a. Alteration or loss of fish or wildlife habitat?	(x)	___	___	___	___	X
b. Change in the diversity of species, or numbers of any species of animals (mammals, birds, amphibians, reptiles, fish, shellfish, benthic organisms or insects)?	(X)	___	___	___	___	X
c. Reduction of the numbers or habitat of any endangered or otherwise sensitive species?	X	___	___	___	___	X
d. Introduction of new species of fish or wildlife into an area, or result in a barrier to the migration or movement of species?	(X)	___	___	___	___	X
6. **Agriculture.** *Will the proposal result in:*						
a. Reduction in acreage or production of any agricultural crop?	___	___	X	___	___	___
b. Disruption of agricultural activities, including cropping and grazing?	___	___	X	___	___	___
c. Use of Williamson Act lands for non-agricultural uses?	___	___	X	___	___	___
7. **Natural Resources.** *Will the proposal result in:*						
a. Increase in the rate of extraction and use of any natural resources?	___	___	X	___	___	X
8. **Cultural Resources.** *Will the proposal result in:*						
a. Alteration or destruction of a prehistoric or historic archaeological site?	___	X	___	___	___	X

Issue Area	Potential Impact? Yes	Maybe	No	Is it Significant? Yes	Maybe	No	
b. Adverse physical or aesthetic effects to a prehistoric or historic building, structure, or object?	___	___	X	___	___	___	
c. A physical change which would affect unique ethnic cultural values?	___	___	X	___	___	___	
d. Restrict existing religious or sacred uses within the potential impact area?	___	___	X	___	___	___	
9. **Land Use and General Plan Consistency.** *Will the proposal result in:*							
a. Conflicts with existing land uses and community character?	___	___	X	___	___	___	
b. Conflicts with future planned land uses and community character?	___	___	X	___	___	___	X
c. Inconsistency with General Plan polices?	___	___	X	___	___	X	
10. **Recreation.** *Will the proposal result in:*							
a. Impact upon the quality or quantity of existing and future recreational opportunities?	___	(X)	___	___	___	X	
11. **Aesthetics.** *Will the proposal result in:*							
a. Obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?	___	___	X	___	___	___	
12. **Light and glare.** *Will the proposal result in:*							
a. New light or glare?	___	___	X	___	___	___	
13. **Noise.** *Will the proposal result in:*							
a. Increases in existing noise levels?	___	___	X	___	___	___	
b. Exposure of people to disturbing noise levels?	___	___	X	___	___	___	
14. **Population.** *Will the proposal result in:*							
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?	___	___	X	___	___	___	
15. **Housing.** *Will the proposal result in:*							
a. Affect existing housing, or create a demand for additional housing?	___	___	X	___	___	___	

Issue Area	Potential Impact? Yes	Maybe	No	Is it Significant? Yes	Maybe	No
16. **Transportation/Circulation.** *Will the proposal result in:*						
a. Generation of additional vehicular movement and traffic volume?	X					X
b. Impact upon existing automobile transportation systems and circulation patterns?			X			
c. Effects on existing parking facilities, or demand for new parking?			X			
d. Alteration to waterborne, rail or air traffic?			X			
e. Increase in traffic hazards to motor vehicles, bicycles or pedestrians?			X			
17. **Public Services.** *Will the proposal have an effect upon, or result in a need for new or altered government services in any of the following areas:*						
a. Fire protection?		X				X
b. Police protection?			X			
c. Schools?			X			
d. Parks or any other recreational facilities?			X			
e. Maintenance of public facilities, including roads?			X			
f. Other governmental services?	X					X
18. **Utilities.** *Will the proposal result in:*						
a. A need for new systems, or substantial alterations to public utilities?			X			
19. **Human Health.** *Will the proposal result in:*						
a. Creation of any health hazard or potential health hazard (excluding mental health)?		X				X
b. Exposure of people to potential health hazards?		X				X

Issue Area	Potential Impact? Yes	Maybe	No	Is it Significant? Yes	Maybe	No
20. **Risk of Upset.** *Will the proposal result in:*						
a. A risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals or radiation) in the event of an accident or upset condition?	—	—	X	—	—	—
21. **Energy.** *Will the proposal result in:*						
a. Use of substantial amounts of fuel or energy?	—	—	X	—	—	—
22. **Mandatory Findings of Significance.** *Will the proposal result in:*						
a. Potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	—	X	—	—	—	X
b. Potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment in one which occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future.)	—	—	X	—	—	—
c. Impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)	—	—	X	—	—	—
d. Environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	—	—	X	—	—	—

IV. ENVIRONMENTAL CONSEQUENCES

A. Geology, Soils, and Topography

The Project involves construction of recharge basins and levees. Construction of these facilities will require grading of local topography. However, the maximum extent of excavation and/or levee construction is expected to be less than three feet. In addition, basin levees will be constructed along existing contours to blend in with the landscape. Accordingly, the activity is not considered to change the topography or ground surface significantly. (Checklist, Item 1(a).)

Construction of the basins and levees will require only minor grading compaction of local surface soils at the location of the Project facilities. The Project will not uncover or expose any unstable earth conditions and/or unstable geologic substructures. (Checklist, Item 1(b).)

The Project site contains very deep alluvial materials and is not expected to contain significant paleontological resources in the upper soil where grading would occur. (Checklist, Item 1(d).)

No major faults are located at the site. However, potential seismic impacts could occur from strong ground motion of the deep unconsolidated sediments at the Project site, resulting in liquefaction and subsidence. This condition could be exacerbated by the increase in ground water storage and ground water elevation at the site. However, this action is not expected to be significantly different than other adjacent lands upon which ground water recharge projects or farming are carried out and therefore the Project is not considered likely to significantly degrade the environment.

The Project is located in a closed basin with no drainage to the ocean.

The Monterey Agreement EIR, at Section 4.1 relating to the Kern Fan Element, analyzed possible impacts to geology and soils of the KWB due to the Project. The Monterey Agreement EIR found no adverse impact and no mitigation measures would be required. This Initial Study incorporates by reference this analysis, set forth at pages 4-1 to 4-3 of the Monterey Agreement EIR. (Checklist, Item 1.)

B. Vegetation and Wildlife

While incidental take of some listed species and other unlisted species is expected to occur during construction, operation and maintenance, through collapsed burrows, being run over, crushed by grading equipment, harassment, habitat loss, drowning, etc., the Project will provide a net increase of habitat for the species compared to pre-DWR purchase conditions. The construction of proposed facilities will be phased. If all of the proposed facilities are built 481 total acres of habitat will be

disturbed for permanent facilities and 291 acres disturbed temporarily for construction of underground pipelines.

The operation of the recharge facilities will be cyclical. Depending of the availability of water and the basin flooding frequency, some basins may lie unused for periods of a few to several years. Based on historic hydrology and projected requirements (see Map 4, Recharge Frequency Plan) a prediction of recharge basin utilization shows that a large percentage of the time areas designated for recharge basins will be available for habitat. During the time these basins are idle, they may become colonized by the listed species resulting in recurring habitat change as well as potential take of individuals once flooding begins again.

The potential impact on these transient colonies and any individuals disturbed by construction will be mitigated by preservation and management of the adjacent compatible habitat as permanent refugium for source populations of listed species. To minimize loss of individuals from flooding, to the extent practical, the basins will be filled slowly, so that any animals using the idle basins can escape to higher ground.

The analysis in the Monterey Agreement EIR regarding impacts to biological resources on the Kern Fan Element due to the Project, set forth at section 4.4, pages 4-38 to 4-50 and 4-62 to 4-66, is incorporated herein by this reference.

The use of the Conservation Bank could also result in impacts to listed and un-listed species in the Master Permit Credit Area. The maximum loss of total habitat loss in the entire Master Permit Credit Area, consisting of Kern County, the Allensworth area of Tulare County and the Kettleman Hills area of Kings County, as a result of the operation of the Conservation Bank is likely to be 3,000 acres. This is considered to be a worst-case assessment for the following reasons:

1. Activities using conservation credits will be limited to areas with limited habitat value, and will qualify for the use of the credits only with the approval of the Resource Agencies.

2. The Resource Agencies have historically required 3:1 compensation for activities on undeveloped lands within the Valley Floor. At a 3:1 compensation ratio, the use of the bank would result in a loss of 1,089 acres of habitat. This loss is anticipated to be offset through the permanent protection and management of the lands in the conservation bank.

(Checklist, Items 4 & 5.)

Mitigation Measure B-1. Biological Monitor

A qualified biologist shall monitor all ground-disturbing activities during construction in the Sensitive Habit Sector and will oversee measures undertaken to reduce take of listed species.

Mitigation Measure B-2. Construction Practices

a. Delineation of Disturbance Areas

During construction, KWBA shall clearly delineate disturbance area boundaries by stakes, flagging, or by reference to terrain features, as directed by CDFG and USFWS, to minimize degradation or loss of adjacent wildlife habitats during operation.

b. Signage

During construction, KWBA shall post signs and/or place fencing around construction sites to restrict access of vehicles and equipment unrelated to site operations.

c. Resource Agency Notification

At least 20 working days prior to initiating ground disturbance for project facilities in designated salvage/relocation areas, KWBA shall notify the Fresno Field Office of CDFG and the Sacramento Field Office of USFWS of its intention to begin construction activities at a specific location and on a specific date. The Agencies will have 10 working days to notify the KWBA of their intention to salvage or relocate listed species in the construction area. If KWBA is notified, it will wait an additional five days to allow the salvage/relocation to take place.

d. Salvage and Relocation

KWBA will allow time and access to USFWS and/or CDFG, or their designees, to relocate listed species, at the Resource Agencies' expense, from construction areas prior to disturbance of areas that have been identified by the Resource Agencies as having known populations of the listed species they wish to salvage or relocate.

e. Construction Site Review

All construction pipes, culverts, or similar structures with a diameter of three inches or greater that are stored at a construction site on the Kern Water Bank for one or more overnight periods shall be thoroughly inspected for trapped kit foxes and other animals before the subject pipe is subsequently buried, capped, or otherwise used or moved in any way. Pipes laid in trenches overnight shall be capped. If during construction a kit fox or other animal is discovered inside a pipe, that section of pipe will not be moved or, if necessary, will be moved only once to remove it from the path of construction activity until the animal has escaped.

f. Employee Orientation

An employee orientation program for construction crews, and others who will work on-site during construction, shall be conducted and shall consist of a brief consultation in which persons knowledgeable in endangered species biology and legislative protection explain endangered species concerns. The education program

shall include a discussion of the biology of the listed species, the habitat needs of these species, their status under FESA and CESA, and measures being taken for the protection of these species and their habitats as a part of the project. The orientation program will be conducted on an as needed basis prior to any new employees commencing work on the Kern Water Bank. Every two years or at the beginning of construction for the Supply/Recovery canal, a refresher course will be conducted for employees previously trained. A fact sheet conveying this information shall also be prepared for distribution to all employees. Upon completion of the orientation, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be filed at KWBA's office and shall be accessible by CDFG and USFWS.

g. Standards for Construction of Canals

Concrete lined canals will have a side slope of 1.5 to 1 or less and the sides will have a concrete finish which will assist in the escape of animals. If canals are determined by CDFG or USFWS to be substantial impediments to kit fox movement, plank or pipe crossings will be provided across concrete canals in areas identified as having high kit fox activity.

Mitigation Measure B-3. On-Going Practices

a. Equipment Storage

All equipment storage and parking during site development and operation shall be confined to the construction site or to previously disturbed off-site areas that are not habitat for listed species.

b. Traffic Control

KWBA's project representative shall establish and issue traffic restraints and signs to minimize temporary disturbances. All construction related vehicle traffic shall be restricted to established roads, construction areas, storage areas, and staging and parking areas. Project related vehicles shall observe a 25 MPH speed limit in all project areas except on county roads and state and federal highways.

c. Food Control

All food-related trash items such as wrappers, cans, bottles, and food scraps generated both during construction and during subsequent facility operation shall be disposed of in closed containers and shall be regularly removed from the site. Food items may attract kit foxes onto a project site, consequently exposing such animals to increased risk of injury or mortality.

d. Dog Control

To prevent harassment or mortality of kit foxes or destruction of kit fox dens or predation on this species, no domestic dogs or cats, other than hunting dogs, shall be permitted on-site.

e. Pesticide Use

Use of rodenticides and herbicides on the site shall be permitted in accordance with the Vegetation Management Plan, which incorporates by reference the Interim Measures for Use of Rodenticides in Kern County, and which will incorporate by reference any other applicable laws, rules and regulations regarding the use of pesticides as they take effect.

Mitigation Measure B-4. Project Representatives

KWBA shall designate a specific individual as a contact representative between KWBA, USFWS, and CDFG to oversee compliance with protection measures detailed herein. KWBA shall provide written notification of the contact representative to CDFG and USFWS within 30 days of issuance of the Permits and the Management Authorizations. Written notification shall also be provided by KWBA to CDFG and USFWS in the event that the designee is changed.

Mitigation Measure B-5. Notification Regarding Dead, Injured or Entrapped Listed Animals

Any employee or agent of KWBA who kills or injures a San Joaquin kit fox, blunt-nosed leopard lizard, Tipton kangaroo rat, San Joaquin antelope squirrel, or other listed species listed as a threatened or endangered animal under FESA or CESA, or who finds any such animal either dead, injured, or entrapped on the Kern Water Bank shall report the incident immediately to KWBA's representative who shall, in turn, report the incident or finding to USFWS and CDFG. In the event that such observations are of entrapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape unimpeded. In the event that such observations are of injured or dead animals, KWBA shall immediately notify USFWS and CDFG by telephone or other expedient means. KWBA shall then provide formal notification to USFWS and CDFG, in writing, within three working days of the finding of any such animal(s). Written notification shall include the date, time, location, and circumstances of the incident.

The USFWS contact for this information shall be the Assistant Field Supervisor for Endangered Species, Sacramento Field Office. The CDFG contact shall be the Environmental Services Supervisor at the San Joaquin Valley-Southern Sierra Region Headquarters.

USFWS or CDFG will be notified if any other animal which is otherwise a listed species is found dead or injured.

Mitigation Measure B-6. Construction of Supply/Recovery Canal

Within sixty days prior to the construction of the supply/recovery canal within the zone marked within the Map of the Kern Water Bank, KWBA shall conduct a limited survey within the area of the Kern Water Bank which will be affected by that construction, with the sole goal of identifying potential San Joaquin kit fox dens. KWBA shall contact USFWS and CDFG pursuant to the salvage procedures set forth above if any kit fox dens are found.

Mitigation Measure B-7. Take Avoidance Protocol for Fully-Protected Species

Existing data on the blunt-nosed leopard lizard (BNLL) at the Kern Water Bank indicates that populations occur within habitat set asides (either sensitive, compatible, or conservation bank habitat). Thus the likelihood of take from project construction, operation, and maintenance is negligible. However, in the future adaptive management measures may expand to areas of suitable habitat.

Until such time that the KWBA obtains appropriate authorization for take of the State designated Fully Protected blunt-nosed leopard lizard by the Fish and Game Commission, the following take avoidance protocol shall apply in any areas that contain suitable habitat of the BNLL:

1) A qualified biologist shall survey any areas proposed for project related disturbance that contain suitable habitat for the blunt-nosed leopard lizard to determine the likelihood of presence. Suitable habitat consists of valley and foothill grasslands, saltbush scrub land, iodine bush grassland, and alkali flats.

2) If BNLLs are found to occur in areas proposed for project facilities construction or maintenance, consideration of avoidance should take place first. If avoidance is not practicable, then the BNLL will be trapped and relocated prior to disturbance at KWBA's expense in accordance with the applicable annual management plan. This work must be done by or under the direction of USFWS staff by persons with appropriate experience and with their own take for scientific purposes permits. This procedure will avoid any violation of state law.

Three other species which may be found on the Kern Water Bank are also State designated Fully Protected species: American peregrine falcon, Greater sandhill crane, and White-tailed kite. The likelihood of the take of any of these species from project construction, operation, and maintenance is negligible due to their mobility and preferred habitats. However, to avoid any take of these species, the same take avoidance protocol as set out for the BNLL shall apply to each of these three species.

C. *Water Resources*

1. Off-Site Impacts

a) State Water Project Water

Consistent with existing biological opinions, SWP entitlement and interruptible entitlement water will be available for recharge. During this Project, some member entities and others may have entitlement water excess to their immediate in-district demand. In the past, such water was sold to other districts through a KCWA pool or turned back to the State. The Project contemplates that to the extent compatible with the Project, such water could be recharged in the Project area.

b) Central Valley Project Water

In the past, the Kern Water Bank Authority ("Authority") and others have purchased Section 215 (Reclamation Reform Act of 1982) water from the Central Valley Project ("CVP") via the Friant-Kern Canal through temporary contracts with the United States Department of the Interior, Bureau of Reclamation. Such water may be available for this Project. This water is not subject to the ownership and acreage limitations of Federal Reclamation law and can be made available on short notice.

In addition, consistent with existing biological opinions, CVP water may be available for recharge by CVP contractors via the Friant-Kern Canal or the California Aqueduct either directly or by exchange or transfer according to contract provisions with the Bureau of Reclamation.

c) Kern River Water

The Kern River interests encourage every effort to maximize the recharge of Kern River water into the ground water basin. To prevent significant property and flood damage, flood waters are diverted to the Kern River and to the California Aqueduct Intertie facilities. Since 1978, over 1,000,000 acre-feet of Kern River water has flowed through the Kern River-California Aqueduct Intertie. During the same period an additional 430,000 acre-feet of Kern River water bypassed the Intertie via the Kern River flood channel. These generally represent flood waters which exceeded the available capacity of recharge facilities in Kern County since the Intertie was constructed in 1977. In the event of a very wet year during this Project, it is anticipated that significant quantities of flood waters that otherwise would be diverted into the Intertie will be available for recharge in the Project area. At other times other Kern River water may be available from Kern River water right holders, which rights are generally pre-1914 appropriative rights, for recharge in the Project area.

d) Local Stream Groups Interconnected to the Friant-Kern Canal

The flows of the Kaweah, Tule and Kings Rivers stream groups on the east side of the San Joaquin Valley can be diverted and conveyed via the Friant-Kern Canal to its terminus and enter either into the Kern River channel or by interconnection into the Cross Valley Canal and transported further west. Each of these stream groups, like the rest of the State, may experience significant above-normal precipitation and snowpack during this Project. Heavy snowmelt which if not diverted into the Friant-Kern Canal and conveyed south could cause significant property damage downstream. This potential exists and by diverting water into the Friant-Kern Canal for recharge onto the Project, flooding can be reduced and water supplies will be conserved.

2. On-Site Impacts

Historical ground water level measurement in the Project area have been collected and will continue to be utilized to monitor Project operations and to determine depths to ground water and how ground water levels change during wet years. Project water quality, ground water monitoring and ground water recharge losses will be addressed consistent with the Memorandum Of Understanding, dated October 26, 1995, between KWBA, its members, and certain adjoining entities regarding operation and monitoring of the KWB ground water banking program (the "KWBA MOU"), a copy of which is attached hereto as Exhibit A. (Checklist, Item 2(g).)

The quality of water to be used for recharge purposes is very good and is not expected to increase the total dissolved solids and organic constituent concentrations in the local ground water. However, the quality of water for recharge will vary and must be monitored in order to avoid degradation of local water quality and exacerbation of negative salt balance in the region. Areas of soil contamination from previous oil and agricultural operations occur at or near several proposed recharge areas. These areas will be avoided to prevent percolation through these soils which could adversely affect ground water quality. Hydrocarbon contamination has been detected as deep as 70 feet along the Wait-Midway Pipeline owned by Chevron Pipeline Company to the northeast of the Property. This same pipeline also traverses the Property. Although no new recharge basins will be located immediately over this pipeline, KWBA will hold Chevron accountable so that KWBA can utilize the KWB. Remediation of this contamination will be coordinated by the Regional Water Quality Control Board, which has assumed jurisdiction of this matter. Several other pipelines exist in the Project area in addition to the Chevron pipeline. These alignments have been investigated by boring holes with a hand auger along the alignments at 100 foot spacings without encountering hydrocarbon soil contamination. (Checklist, Item 2(h).)

The Project will cause an increase in the diversion of surface water from the Kern River channel to adjacent recharge basins under certain circumstances. The water will be diverted to new recharge basins outside the Kern River Channel when river flows are high. (Checklist, Item 2(f).)

During recharge periods, the Project will change the absorption rate and pattern at the project because water will be impounded to maximize conservation of water within the Project area. (Checklist, Item 2(b).)

The Project facilities will have a beneficial impact on flood levels in the area because flood waters will be diverted from the Kern River under high flow conditions. (Checklist, Item 2(c).)

The basins will not create flood hazards under Project conditions because there are no private structures, buildings, or properties near the basins that could be adversely affected.

The Project will have no impact on the water level or surface area of any existing pond, lake or reservoir.

Temporary erosion and sedimentation associated with construction activities may occur; however, this impact would be localized, incidental and short-term. (Checklist, Item 1(e).)

The Project will increase the amount of ground water at the Project site during recharge periods. The Project is designed and intended significantly to enhance local ground water supplies by conserving surplus surface water supplies.

The Project may cause local mounding of ground water during extended periods of recharge. This activity would result in lower cost of pumping and may result in changes in the direction and movement of ground water.

The Project will increase the amount and reliability of public water supplies provided by the Agency. Overall, the Project is considered to have a net beneficial impact on public water supplies.

The Monterey Agreement EIR found no substantial impact to either to surface water or to groundwater due to the Project. This Initial Study hereby incorporates that analysis by reference. See Monterey Agreement EIR section 4.2, at pp. 4-4, 4-8, and 4-31 - 4-32.

Mitigation Measure C-1. Implementation of MOU

The KWBA MOU requires all the parties thereto to operate their projects in a manner to maintain and, when possible, enhance groundwater quality. If significant adverse effects are detected due to the operation of the Kern Water Bank, KWBA will curtail and/or relocate the recharge and recovery operations as necessary to avoid the impacts, consistent with the KWBA MOU. The KWBA MOU establishes a monitoring committee which bears the responsibility of ensuring that the parties meet their obligations under the KWBA MOU.

Mitigation Measure C-2. Hydrocarbon Contamination Monitoring

KWBA will continue to monitor the remediation of the current and any future hydrocarbon contamination. The Regional Water Quality Control Board has assumed jurisdiction of the Wait-Midway Pipeline, owned by Chevron Pipeline Company..

D. Air Quality

Slight increases in wind generated fugitive dust may occur during initial grading; however, this impact can be minimized by the use of a watering truck. The Project site has very little relief and therefore, an increase in local water erosion from surface water runoff resulting in increased off-site sedimentation is not expected to occur.

The Project will result in increased air emissions from vehicles and equipment during the operation and construction period. However, the emissions will be short term and will be in compliance with all applicable standards. These emissions will be non-recurring and in any event would be approximately equal to the emissions normally associated with agricultural activities on similarly sized parcels. (Checklist, Item 3(a).)

The Project may result in the generation of objectionable odors, due to the decomposition of organic matter within the basins. This impact is not expected to be significant, however, because no sensitive receptors should be within range of any objectionable odor. (Checklist, Item 3(b).)

The Project has the potential to increase the levels of humidity at the Project site during periods of recharge due to the presence of extensive surface water. (Checklist, Item 3(c).)

The analysis in the Monterey Agreement EIR regarding impacts to air quality on the Kern Fan Element caused by the Project, set forth at section 4.3, pages 4-36 to 4-38, is incorporated herein by this reference.

Mitigation Measure E-1. A watering truck will be used to minimize fugitive dust generated during grading when conditions require, such as on dry, windy days.

E. Agriculture

The Kern Water Bank Project was purchased by DWR in 1988. Agricultural activities on the land have been phased out by DWR due to drought in 1990/1991, as such, the proposed water banking facilities will occur on lands no longer under production, and therefore will not cause a reduction in agricultural acreage. Some land fallowed by DWR will be returned to agriculture usage. The Project will increase the amount and reliability of agricultural water supplies, and contribute beneficially to agricultural production in the region.

None of the lands at the Project site are under a Williamson Act contract.

The analysis in the Monterey Agreement EIR regarding impacts to land use on the Kern Fan Element caused by the Project, set forth at section 4.6, pages 4-76 to 4-83, is incorporated herein by this reference.

F. Natural Resources

There are mineral interests over a significant portion of the Project site which are not owned by KWBA.

Mitigation Measure F-1. Location of Recharge and Recovery Facilities.

The location of the proposed basins and canals will be established to avoid conflicts with existing and future known mineral activities.

G. Cultural Resources

A number of prehistoric sites have been recorded at or near the Project site, several of which appear to be significant due to their potential to yield important information about prehistory and because some of the sites may contain burials. Preliminary field reconnaissance surveys indicate that other sites are present in areas of slightly higher elevation. Generally, areas of higher elevation are not suitable for recharge and will not be inundated.

No historic or prehistoric buildings or structures are present at the sites. Based on information developed to date, no unique ethnic resources are present at the sites. Based on information developed to date, the sites have not been used for religious purposes. KWBA has retained Three Girls & a Shovel (TG&S) to prepare an initial report and develop procedures for constructing KWB facilities so as to mitigate impacts on cultural resources. A copy of this report is incorporated herein as Exhibit B. (Checklist, Item 8(a).)

The analysis in the Monterey Agreement EIR regarding impacts to cultural resources on the Kern Fan Element caused by the Project, set forth at section 4.5, pages 4-66 to 4-76, is incorporated herein by this reference.

Mitigation Measure G-1. Implementation of Cultural Resources Report.

KWBA will comply with the mitigation procedures set forth in the Cultural Resources Assessment and Plan For the Kern Water Bank Authority Project Near Bakersfield, Kern County California, summarized below and incorporated by this reference, which are expected to reduce any impact to cultural resources within the KWB to a level of insignificance:

A. Prior to any ground-disturbing work on the KWB, anthropologists or other qualified individuals from TG&S shall engage in pedestrian surveys of the areas to be impacted, with the survey reconnaissance to be at 5- to 15-meter transects.

B. Any cultural resources found during the survey process will be recorded, mapped, evaluated and mitigated prior to the ground-disturbing activity, pursuant to Section 106 of the National Historic Preservation Act.

C. The eight recorded archeological sites on the KWB will be evaluated and mitigated pursuant to Section 106.

D. If any human remains are found at any time on the KWB, work will be halted in the area of the discovery, and the Kern County coroner will be notified.

H. Recreation

The KWB Project is located near the Buena Vista Aquatic Recreation Area and the Tule Elk Preserve. In addition, the Kern River traverses the Project. The upstream portions of the Kern River in the 2010 Planning Area are designated as recreational and open space areas in which land uses are regulated by the joint City of Bakersfield and the Kern County Kern River Plan. This plan includes the development of a future bikeway from Bakersfield to the Buena Vista Aquatic Recreational Area. Development of basins and canals will not impede these plans because the bikeways can be routed through the Project site in the long term. There is a potential for private hunting clubs on the Project site using portions of the new recharge basins. (Checklist, Item 10(a).)

The analysis in the Monterey Agreement EIR regarding impacts to recreation on the Kern Fan Element caused by the Project, set forth at section 4.7, pages 4-83 and 4-89, is incorporated herein by this reference.

The Project is expected to have a beneficial impact on recreation.

I. Aesthetics

The establishment of basins will enhance the visual setting of the project site, particularly from Highway 5. No obstruction of any scenic vista or view open to the public will occur.

J. Light and Glare

No nighttime lighting will be permanently installed as part of the proposed Project.

K. Noise

Construction of new facilities will temporarily increase local noise levels due to construction equipment. However, there are no noise-sensitive land uses in proximity to the proposed facilities that could be affected.

L. Population

The proposed Project will not displace any residents. Construction will be accomplished with existing local contractors and will not require the importation of workers. The Project recovers water during dry years and will regulate existing water supplies and not create new water supplies.

M. Transportation

During construction, there will be additional vehicular and truck traffic on local roads and highways, and on dirt roads within the Project site. However, the volume of this short-term traffic is expected to be very low and readily accommodated by available capacity on local public roads and highways. (Checklist, Item 16(a).)

The Project will not alter existing public road systems or circulation patterns because no public road will be closed or re-aligned as a result of the Project. Construction of the Project will increase the number and location of private access roads within the Project area.

All parking during construction of the Project will occur on site and will have no effect on public facilities.

Construction-related traffic will be routed along public roads according to state requirements and is not expected to increase the level of hazards along nearby public roads.

N. Public Services

The proposed Project will not:

- increase the level of fire hazard in the area,
- increase the need for patrols by the Sheriffs Department,
- result in greater population and need for schools,
- increase the need for public recreational facilities, or
- increase the need for maintenance of public facilities including roads.

(Checklist, Item 17.)

O. Utilities

Pumps to convey water to and from the site and, to a limited degree to move water on the site, could be powered by electricity and natural gas and provided by

Pacific Gas and Electric and by temporary, diesel powered pumps. Electrical power will be delivered within the site by a system of low-voltage wooden power poles.

P. Human Health

Ponding of water for recharge may result in potential mosquito concerns. However, this vector will be controlled by the local mosquito abatement district and no adverse human health hazard is expected. As a mitigation measure, the KWBA has submitted a written mosquito abatement plan to both West Kern Mosquito Vector District and the Kern Mosquito Vector District. A copy of the plan is attached hereto as Exhibit C and incorporated by this reference. (Checklist, Item 19.)

Construction and maintenance workers may be exposed to valley fever during earth moving activities by inhaling spores, if the fungus is present in the soils. No cases of valley fever were reported following construction of the first 3000 acres of basins. When appropriate, masks to avoid inhaling dust, as is customary in the industry.

The analysis in the Monterey Agreement EIR regarding impacts to human health on the Kern Fan Element caused by the Project, set forth at section 4.9, pages 4-103 to 4-104, is incorporated herein by this reference.

Mitigation Measure P-1. Implementation of Mosquito Abatement Plan.

In accordance with the Mosquito Abatement Plan, KWBA will engage in the following procedures which are expected to reduce any impact due to the breeding of mosquitoes in the recharge basins to insignificance:

A. KWBA will notify staff of the Mosquito Vector Districts of planned use of recharge basins.

B. KWBA will implement a water edge road construction pilot program to determine whether KWBA can successfully give Mosquito Vector District spray vehicles access to the recharge basins. If the pilot program is successful, KWBA will build further water edge roads as mutually agreed between KWBA and the Mosquito Vector District staff. If the program is unsuccessful, KWBA and Mosquito Vector District staff will develop an alternative program.

C. Ponding in certain sections will be phased out. In these sections, KWBA will cycle the spreading process to keep water moving.

D. KWBA will develop a mosquito fish breeding program in conjunction with Mosquito Vector District staff.

E. Roads on the KWB will be kept in a reasonable condition to allow the districts access to the KWB.

F. KWBA will include district staff in adaptive management planning to review the success of mosquito control techniques and to develop improved mosquito control techniques.

Mitigation Measure P-2. Avoidance of Valley Fever.

All construction workers at risk of inhaling dust shall wear masks with filters designed to trap spores of the size of valley fever fungus.

Q. Secondary Impacts

Any secondary impacts, such as growth-inducing impacts, from the Project should be minimal.

The Project is expected to have a maximum storage capacity of about 1.1 million acre feet of water, and a maximum recovery rate of about 300,000 acre feet of water per year. However, the amount of water that will be in the KWB at any time and therefore available for recovery is entirely speculative. Since the availability of water at any time in the future will be always be speculative, it is highly unlikely that any new growth, either urban or agricultural, will develop as a result of the Project.

One likely use of water from the Project is to increase the availability and therefore lower the price of SWP water during drought years. Since, according to the Monterey Agreement EIR, the cumulative annual entitlement of all SWP contractors exceeds 4 million acre feet annually, the availability of an additional 300,000 acre feet represents only another 7%. This small increase is not likely, of itself, to lead to any growth-inducing impacts.

R. Cumulative Impacts

The only cumulative impacts from the Project should be beneficial impacts. As discussed above in Section II.C, the KWB was transferred from DWR to KCWA and then to KWBA as part of the Monterey Principles. Implementation of the Monterey Principles, including the operation of the Project, should lead to fewer and smaller shortages of deliveries of water from the SWP to certain SWP contractors in drought years. Reducing the impact of droughts should result in beneficial impacts to the environment.

The possible beneficial and adverse impacts to the environment due to the implementation of the Monterey Principles was studied at length in the Monterey Agreement EIR. That analysis is incorporated herein by this reference.

Implementation of the conservation bank and sale of conservation credits to qualified third parties should have minimal cumulative impacts. Even under the worst-case analysis, use of the conservation bank could lead to habitat loss of 3,000 acres

within the Master Permit Credit Area. Moreover, activities using conservation credits will be limited to areas with limited habitat value, and will qualify for the use of conservation credits only with the approval of the Resource Agencies.

V. LAND USE AND GENERAL PLAN CONSISTENCY

The lands at the Kern Water Bank site were acquired by KWBA for the express purpose of recharge and recovery. Secondary land uses will include wildlife habitat and oil development in between recharge facilities. The proposed Project will be consistent with these land uses. The proposed uses are consistent with existing land uses on Project lands outside the Kern Water Bank.

The Kern County General Plan use designations at the Project site include Intensive Agriculture (8.1) and Mineral and Petroleum Development (8.5). Water storage is a compatible land use with Intensive Agriculture designation, but is not specifically identified as an allowable use in Mineral and Petroleum areas.

VI. NAMES OF PREPARERS

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