Appendix B Article 5(a) Language

Article 5 Language

POINT OF DIVERSION AND RESPONSIBILITY FOR DISTRIBUTION OF WATER

5. (a) The Project Water to be furnished to the Contractor by the Contracting Officer pursuant to this interim renewal contract shall be made available to the Contractor at a point or points of delivery mutually agreed to in writing by the Contracting Officer, DWR and the Contractor either on Project and/or State Facilities or another location or locations. The parties acknowledge that Project Water to be furnished to the Contractor pursuant to this interim renewal contract shall be delivered to the Contractor by direct delivery via the Cross Valley Canal and/or by exchange arrangements involving Arvin-Edison Water Storage District or others. The parties further acknowledge that such exchange arrangements are not transfers subject to Section 3405(a) of CVPIA. Notwithstanding Article 9, such exchange arrangements, other than the previously approved exchange arrangements with Arvin-Edison Water Storage District, shall be submitted to the Contracting Officer for approval in accordance with the same criteria historically applied by the Contracting Officer or with the then existing Project-wide criteria. DWR shall have no obligation to make such exchange arrangements or be responsible for water transported in facilities that are not a part of the SWP.

(b) When Project Water is made available by the Contracting Officer at Clifton Court Forebay, DWR shall provide to the Contractor, subject to the availability of capacity as determined by DWR, conveyance from the Delta and storage in DWR's share of storage at San Luis Reservoir, if necessary, of such Project Water consistent with the following provisions and the Operations Manual;

(1) The United States shall deliver or cause to be delivered into the State's Clifton Court Forebay, Project Water in such quantities and of such quality as shall be sufficient to perform the United State's and DWR's obligation to furnish water to the Contractor as set forth in this interim renewal contract. Such deliveries into Clifton Court Forebay shall be made at such times and rates of flow as the Contracting Officer and DWR shall agree.

(2) DWR, in accordance with an approved Project Water delivery schedule, shall convey the amount of water delivered into DWR's Clifton Court Forebay by the Contracting Officer directly: (i) to the Cross Valley Canal turnout in Reach 12E of the California Aqueduct or to other points of diversion mutually agreed to in writing by DWR and the Contractor, or (ii) to DWR or federal share of storage in San Luis Reservoir for later release and delivery to the Contractor or (iii) to replace water delivered to the Contractor from DWR's share of San Luis Reservoir prior to DWR receiving Project Water from the United States, to the extent DWR determines that capacity (and water in the event of an exchange) is available for such conveyance, storage, or exchange (if any). Such deliveries of Project Water shall be required to be made in a manner which will not increase the cost of or adversely affect SWP operations and the quantity or quality of water deliveries to SWP Contractors.

(3) If DWR delivers water to the Contractor from DWR's share of storage in San Luis Reservoir prior to the United States providing Project Water at DWR's Clifton Court Forebay, the United States shall return a like amount of water to DWR pursuant to the procedures set forth in the Operations Manual.

(4) The total amount of Project Water delivered at Clifton Court Forebay to DWR by the United States shall include water to compensate DWR for water conveyance and storage losses incurred in the delivery of Project Water to the Contractor. The amount of such conveyance and storage losses will be determined pursuant to procedures set forth in the Operations Manual.

(5) Project Water received by DWR at Clifton Court Forebay for conveyance and/or storage for delivery to the Contractor will be commingled with waters of DWR which are pumped through facilities of the California Aqueduct and with other waters of both the United States and DWR in the joint use facilities of the San Luis Unit.

(6) Priorities for use of DWR's share of storage at San Luis Reservoir for storage of Project Water shall be subject to all DWR obligations to the SWP operations and SWP Contractors and to the criteria specified in the Operations Manual.

(7) Subject to the necessary arrangements, the United States shall transmit or cause to be transmitted, by exchange or otherwise, such quantities of power as shall be required by DWR to pump through its Delta Pumping Plant and its share of Dos Amigos Pumping Plant, the quantities of Project Water transported into Clifton Court Forebay pursuant to (1) of this subsection.

(8) DWR shall furnish the Contracting Officer with such information as the Contracting Officer and DWR agree is needed regarding the timing and quantities of power required by DWR to pump Project Water. Such information shall be exchanged between the United States and DWR in accordance with provisions set forth in the Operations Manual.

(9) The United States and DWR may, under terms and conditions satisfactory to both, and in accordance with applicable law, exchange water and/or power necessary for delivery of Project Water to the Contractor under terms of this interim renewal contract. Such exchange shall be in accordance with the provisions set forth in the Operations Manual.

(c) To the extent that Friant Division Project Water exceeds Contract demand and other Project purposes, as determined by the Contracting Officer, and if the Contractor so requests, the Contracting Officer, subject to Article 3(d), shall make Project Water provided for in Article 3 (a) of this interim renewal contract available from such Friant Division supplies.

(d) Project Water may be provided by the Contracting Officer to the Contractor, at the Contractor's request, through federal delta diversion and conveyance facilities and/or stored in the federal share of storage at San Luis Reservoir for reregulation for later delivery to the Contractor to the extent such diversion, conveyance and/or storage does not diminish the ability of the Project to deliver Project Water to users in the Delta Division, San Luis Unit and San Felipe Division service areas or to meet other legal obligations of the Project. The Contractor asserts that it has rights to utilize Project facilities, including, but not limited to, those constructed pursuant to the Act of June 3, 1960 (Public Law 86-488). The Contracting Officer disagrees with this assertion. The parties agree that this interim renewal contract preserves the rights and positions of the parties with respect to use of Project facilities arising pursuant to Contract No. 14-06-200-8292A, and the inclusion or omission of language in this interim renewal contract is not intended to be, nor shall it be interpreted as, a waiver of any such rights should they later be determined to exist by a court of competent jurisdiction or by mutual agreement of the parties.

(e) Irrigation Water furnished to the Contractor pursuant to this interim renewal contract shall be delivered by the Contractor in accordance with any applicable land classification provisions of Federal Reclamation law and the associated regulations. Project Water shall not be delivered to land outside the Contractor's boundaries or, if applicable, Subcontractor's boundaries unless approved in advance by the Contracting Officer.

(f) All Project Water delivered to the Contractor pursuant to this interim renewal contract shall be measured and recorded with equipment furnished, installed, operated and maintained by the United States or the responsible Operating Non-Federal Entity or DWR at the point or points of delivery established pursuant to subdivisions (a) and (b) of this Article. Upon the request of any party to this interim renewal contract, the Contracting Officer or DWR shall investigate the accuracy of such measurements and shall take any necessary steps to adjust any errors appearing therein. The Contractor shall advise the Contracting Officer on or before the tenth (10th) calendar day of each month of the quantity of M&I Water taken during the preceding month.

(g) Neither the United States nor any Operating Non-Federal Entity nor DWR shall be responsible for the control, carriage, handling, use, disposal, or distribution of Project Water made available to the Contractor pursuant to this interim renewal contract beyond the delivery points specified in subdivisions (a) and (b) of this Article. The Contractor shall indemnify the United States and DWR and their respective officers, employees, agents and assigns on account of damage or claim of damage of any nature whatsoever for which there is legal responsibility, including property damage, personal injury or death arising out of or connected with the control, carriage, handling, use, disposal, or distribution of such Project Water beyond such delivery points, except for any damage or claim arising out of (i) acts performed by the United States, DWR or any of their officers, employees, agents or assigns, including any responsible Operating Non-Federal Entity, with the intent of creating the situation resulting in any damage or claim, (ii) willful misconduct of the United States or DWR or any of their officers, employees, agents, or assigns, including any responsible Operating Non-Federal Entity, or (iii) negligence of the United States or DWR or any of their officers, employees, agents or assigns including any responsible Operating Non-Federal Entity. In the event any such claim or liability, referenced in this Article or otherwise arising from this Agreement, is made against DWR, its officers or its employees, the Contractor agrees to defend, indemnify and hold each of them harmless from such claim to the extent such claim does not arise from an error or omission of DWR related to the control, carriage, handling, use, disposal, or distribution of Project Water made available to the Contractor by the United States.

Appendix C Contractors and Exchange Partners

Table C-1 CVP Water Service Contracts South of the Delta

Friant Division CVP Contractors	M&I	Ag	CVP Division Unit	Contract Expiration Date
Arvin-Edison Water Storage District	●	●	Friant Div./Friant Dam & Reservoir/Friant-Kern Canal	Indefinite
Delano-Earlimart Irrigation District	●	●	Friant Div./Friant-Kern Canal	Indefinite
Exeter Irrigation District	●	●	Friant Div./Friant-Kern Canal	Indefinite
Fresno Irrigation District	●	●	Friant Div./Friant-Kern Canal	Indefinite
Garfield Water District		●	Friant Div./Friant-Kern Canal	Indefinite
Ivanhoe Irrigation District	●	●	Friant Div./Friant-Kern Canal	Indefinite
Kaweah Delta Water Conservation District	●	●	Friant Div./Friant-Kern Canal	Indefinite
Lewis Creek Water District		●	Friant Div./Friant-Kern Canal	Indefinite
Lindmore Irrigation District	●	●	Friant Div./Friant-Kern Canal	Indefinite
Lindsay-Strathmore Irrigation District	●	●	Friant Div./Friant-Kern Canal	Indefinite
Lower Tule River Irrigation District		●	Friant Div./Friant-Kern Canal	Indefinite
Orange Cove Irrigation District	●	●	Friant Div./Friant-Kern Canal	Indefinite
Porterville Irrigation District		●	Friant Div./Friant-Kern Canal	Indefinite
Saucelito Irrigation District		●	Friant Div./Friant-Kern Canal	Indefinite
Shafter-Wasco Irrigation District	●	●	Friant Div./Friant-Kern Canal	Indefinite
Southern San Joaquin Municipal Utility District	●	●	Friant Div./Friant-Kern Canal	Indefinite
Stone Corral Irrigation District		●	Friant Div./Friant-Kern Canal	Indefinite
Tea Pot Dome Water District		●	Friant Div./Friant-Kern Canal	Indefinite
Terra Bella Irrigation District	●	●	Friant Div./Friant-Kern Canal	Indefinite
Tulare Irrigation District	●	●	Friant Div./Friant-Kern Canal	Indefinite
CVC Division CVP Contractors				
Fresno, County of	●	●	Cross Valley Canal	2014
Hills Valley Irrigation District	●	●	Cross Valley Canal	2014
Kern-Tulare Water District	●	●	Cross Valley Canal	2014
Lower Tule River Irrigation District	●	●	Cross Valley Canal	2014
Pixley Irrigation District	●	●	Cross Valley Canal	2014
Tri-Valley Water District	●	●	Cross Valley Canal	2014
Tulare, County of	●	●	Cross Valley Canal	2014
San Felipe Division CVP Contractors				
San Benito County Water District	●	●	San Felipe Div.	2027
Santa Clara Valley Water District	●	●	San Felipe Div.	2027

Table C-1 CVP Water Service Contracts South of the Delta

West San Joaquin Division CVP Contractors				
Pacheco Water District	●	●	West San Joaquin Div./San Luis Unit	2024
Panoche Water District	●	●	West San Joaquin Div./San Luis Unit	2011
San Luis Water District	●	●	West San Joaquin Div./San Luis Unit	2011
Westlands Water District	●	●	West San Joaquin Div./San Luis Unit	2012
Delta Division CVP Contractors				
Central California Irrigation District		●	Delta Div.	Indefinite
Fresno Sough Water District			Delta Div./Mendota Pool	Indefinite
James Irrigation District			Delta Div./Mendota Pool	Indefinite
Tranquility Irrigation District			Delta Div./Mendota Pool	Indefinite

Table C-2 Other Potential Exchange Partners

Non-CVP Contractors	
Buena Vista Storage District	Kern Water Bank Authority
Cawelo Water District	Kings County Water District
Consolidated Irrigation District	Kings River Conservation District
Corcoran Irrigation District	Lakeside Irrigation Water District
Deer Creek & Tule River Authority	Liberty Water District
Kern County Water Agency	North Kern Water Storage District
Kern Delta Water District	Tulare Lake Basin Water Storage District

Cross Valley CVP Contractors

CV Contractors

There are seven (7) CV Contractors as previous stated (See Table 1). However, some CV contractors are comprised subcontractors. Altogether, there are sixteen (15) water suppliers within the group known as the CV contractors. The following description characterizes each water supplier:

County of Fresno
Pursuant to the County of Fresno's water service contract CVP water is delivered to Fresno County Service Area #34 that receives approximately 500 af/y.

County of Tulare
Tulare County is comprised of ten subcontractors. In certain years, only a portion or none of the CV water is pumped and conveyed, therefore, they purchase water on the open market to make up the deficits. The ten subcontractors are described below:

Alpaugh Irrigation District Alpaugh Irrigation District (AID) was formed in 1915 and is located in Tulare County approximately 15 miles south of Corcoran and 15 miles northwesterly of Delano, California. AID is comprised of approximately 10,500 acres, of which 5,400 are irrigated. Groundwater provides the primary water supply to AID. AID also operates 18 wells. Two of the deep wells, provide approximately 300 af/y of potable water supply to the Community of Alpaugh. The population in Alpaugh is approximately 1,150. AID maintains 60 miles of domestic water pipelines.

In 1975, AID entered into a contract with the County of Tulare as a subcontractor for CVP water. Historically, AID has entered into exchange arrangements with AEWSD under Article 5 of the water service contract. AID receives 100 af/y of CVP water through its contract with County of Tulare. Through the exchange arrangements, AEWSD takes delivery of this water and AID takes delivery of the CVP water that would have been delivered to AEWSD from the Friant facilities. AID receives its CVP water supplies via Deer Creek. Water from the FKC is diverted into Deer Creek and flows approximately 12 miles to the Deer Creek check structure located on the westerly side of Highway 43 at the northeasterly corner. AID has approximately 45 miles of unlined canals and approximately 25 miles of pipeline. AID has three regulating reservoirs. Reservoir No.1 is the primary regulatory reservoir is used year round to provide timing and flexibility in water deliveries. Reservoirs 2 and 3 are used to provide additional storage to meet the peak demand flows during the summer months. Collectively, the reservoirs cover approximately 800 acres and have a maximum capacity of 4,000 af.

AID does not have any other contracts or water rights to surface water supplies. However, during wet years AID has been able to utilize excess waters available in the Homeland Canal located on the westerly side, which if not used, would flow into the historic Tulare Lake. The main crops grown in AID are cotton, alfalfa, barley, and wheat.

Atwell Island Water District Atwell Island Water District (AIWD) was established in 1977 and is located in Kings and Tulare Counties approximately 1 ½ miles south of the Community of Alpaugh. AIWD is comprised of 7,136 acres, of which, 4,645 are irrigated. In 1978, AIWD entered into a long-term contract with Reclamation for 1,055 af/y of CVP water to be transported by DWR through SWP facilities to the CV and delivered to AEWSD. The CVP water from the Friant facilities that would have flowed to AEWSD are diverted at MP 102.67R via Deer Creek through Alpaugh Irrigation District's facilities to Atwell Island Water District. The contract for 1,055 af/y was terminated.

In 1993, AIWD and Hills Valley Irrigation District entered into a contract for CV Contractors CVP water with the County of Tulare. Both AIWD and Hills Valley Irrigation District receive 954 af/y of CVP water. In recent years, Hills Valley Irrigation District has obtained 904 af/y of AIWD's supply under this agreement resulting in a reduction to 50 af/y for AIWD.
AIWD also is a participant in the Mid-Valley Water Authority. This Authority was organized to develop the Mid-Valley Canal.

The distribution of AIWD's water is performed by Alpaugh Irrigation District through a wheeling agreement. Alpaugh Irrigation District owns and operates the approximately 36 miles of unlined canals and laterals. AIWD does not operate or maintain groundwater recharge or extraction facilities. Landowners must provide privately owned wells to sustain irrigation during periods when the AIWD does not have surface water available. AIWD serves only agricultural users. The main crops are cotton, alfalfa, barley, and wheat.

AIWD provides an in lieu conjunctive use program. In wet years, AIWD purchases supplies for use in lieu of pumping groundwater. AIWD uses primarily surface water supplies when it is available and relies on groundwater only when surface water is unavailable.

Hills Valley Irrigation District Hills Valley Irrigation District (HVID) is located in Fresno County about 20 miles east of Fresno and 5 miles north of Orange Cove. A small portion of the HVID is located in Tulare County. HVID does not maintain a central office or full time staff. The operations and maintenance of the facilities are conducted through a contractual agreement with a private contractor.

as a separate subcontractor. In 1995, the contract amount was amended to 3,346 af/y. HVID entered into a contract for Cross Valley CVP water through County of Tulare for 954 af/y and an additional 1,100 af/y. Subsequently HVID acquired 904 af/y from AIWD's subcontract with County of Tulare. The total amount of CVP water is 6,304 af/y.

Four intermittent streams flow into HVID. Wahtoke and Wooten Creeks flow through HVID. Hills Valley and Navelencia Creeks are both natural channels which have been destroyed by land leveling operations. An artificial channel has been constructed through the area that is adequate to prevent flooding from Hills Valley Creek, while no channel appears to be necessary to control any flooding from Navelencia Creek waters.

HVID is comprised of approximately 4,319 acres, of which, 3,602 are irrigated acres. HVID is divided into three areas. Improvement Districts Nos. 1 and 2 and the non-improved district. Improvement District No. 1 covers 1,276 acres, Improvement District No. 2 is 1,990 acres and the remaining 795 acres are outside any improvement district but are within HVID's boundaries. HVID's distribution system is comprised of approximately 11 miles of pipeline. HVID does not have any groundwater extraction facilities, therefore, landowners must provide their own wells to sustain irrigation during periods when surface water supplies are inadequate. HVID constructed a 15 af regulating reservoir within Improvement District No. 1 and two regulating reservoirs in Improvement District No. 2.

The low yielding wells within HVID are useful as a supplemental irrigation supply and in controlling the buildup of a perched water table in some areas. Therefore, HVID has limited conjunctive use capability. HVID is located near the foothills of the Sierra Nevada Mountains and has relatively low aquifer storage capacity, shallow depth of sediments prevail and in some locations restricted lateral drainage out of HVID occurs. Landowners located in isolated areas do not have wells. For those landowners who do have wells maintain a balance between recharge and withdrawal to prevent insufficient water supplies from occurring while avoiding waterlogging other areas. Typically, the landowners with wells extract groundwater in the spring when the groundwater levels are at their highest. The main crops are oranges, prunes/plums and grapes.

Saucelito Irrigation District See description elsewhere in this document. SID receives up to 100 af/y of CVP water under its contract with County of Tulare.

Fransinetto Farms Fransinetto Farms receives up to 255 af/y of CVP water under its contract with County of Tulare.

Stone Corral Irrigation District See description earlier in this document. SCID receives up to 950 af/y of CVP water under its contract with County of Tulare.

City of Lindsay Lindsay is located on the east side of the San Joaquin Valley in Tulare County near the base of the Sierra foothills and has falling grade from east to west. Lindsay is traversed by State Highway 65 running north and south along the west side of the City. Lindsay is located approximately 12 miles east of Tulare and State Highway 99, approximately 11 miles north of Porterville and 15 miles southeast of Visalia. The first census of Lindsay in 1910 indicated 1,814 residents. The latest population estimates in January 1999 showed 9,015 residents. During the 1990's, yearly population growth was at or less than 1% per year. This rate of growth is slower than the rate of Tulare County. The 2000 census indicates the population in Lindsay at 10,297. Lindsay is an agricultural service center. The agricultural industry is built around citrus (oranges), and twelve orange packing houses, providing the major component of the economic base.

The City of Lindsay entered into a long-term water service contract with Reclamation for 2,500 acre feet per year (af/y) of Class 1 Friant water under contract number 5-07-20-W0428. The City of Lindsay receives up to 50 af/y of CVP water under its contract with County of Tulare.

Lindsay obtains their CVP water from the Friant-Kern Canal at the Honolulu Street turnout. The water treatment plant is at the same location and provides filtration, chemical additions and chlorination.

Strathmore Public Utility District SPUD provides wastewater treatment for a population of approximately 1,900 in the city of Strathmore. SPUD receives up to 400 af/y of CVP water through its contract with the County of Tulare. The CVP water is diverted from SPUD's turnout on the FKC and injected into a well to be used for blending with the wastewater before it reaches the headworks of the wastewater treatment plant. SPUD coordinates its diversions in a manner to minimize impacts to agricultural users along the FKC. The CVP water is typically diverted by SPUD during times of wet seasons and high flows when water turbidity is increased allowing for less chemicals used to coagulate and treat the wastewater. The treated water is temporarily stored in an onsite storage facility and is distributed to M&I customers.

Styrotek, Inc. Styrotek, Inc. is located near the city of Delano and manufactures shipping containers. The company receives up to 45 af/y of CVP water under its contract with the County of Tulare. The CVP water is used in the cooling process after the container molds are heated and formed. A portion of the water evaporates or is reclaimed for use in boilers.

City of Visalia The city of Visalia is located in Tulare County and is approximately 28.58 square miles with a population of approximately 102,000. Visalia receives up to 400 af/y of CVP water under its contract with County of Tulare.

Visalia exchanges up to 400 af/y of CV Project water with HVID's Wutchumna Water rights from the Kaweah River. HVID takes physical possession of the CVP water. However, this water is considered non-Project water and is applied to ineligible lands. Visalia takes physical possession of the Kaweah (Wutchumna) River water which is characterized as Project water. This water is conveyed through the Persian Ditch Company facilities and is applied to golf courses.

Kern-Tulare and Rag Gulch Water Districts

The Kern-Tulare Water District and Rag Gulch Water District (KTRG) provide irrigation water to over 19,000 acres of high-value permanent crops in Kern and Tulare counties. The annual irrigation demand is approximately 54,000 acre-feet, of which (KTRG) currently provide approximately 40,000 acre-feet of imported water. The remaining 14,000 acre-feet per year are from groundwater pumped by water users.

KTRG are located on the eastern side of the San Joaquin Valley in Kern and Tulare counties, approximately 8 miles east of Delano and 27 miles north of Bakersfield. KTRG are approximately 4 miles in width generally located west of State Highway 65, and extend approximately 14 miles in length from Sherwood Avenue to Avenue 48.

The summer climate is hot and dry while winters are cooler with somewhat more rainfall than adjacent valley areas. KTRG are located within a thermal zone with favorable air movement where citrus, deciduous trees, and other frost sensitive crops are successfully grown. The average

length of the growing season in the area is from 250 to 300 days per year. Soils in both water districts are of excellent quality for irrigation.

KTRG currently comprise a gross area of approximately 24,000 acres, of which almost 19,000 acres are developed in irrigated agriculture. There are very few residences located within KTRG. At the present time, 99 percent of irrigated lands are permanent plantings. A summary of land use in 2000 is presented in the matrix below.

	Kern-Tulare	Rag Gulch	Total
Alfalfa	0	276	276
Almonds	480	100	580
Pistachios	1,111	0	1,111
Other Deciduous	355	15	370
Citrus	6,945	1,097	8,042
Subtropical	201	0	201
Grapes	4,301	3,815	8,116
Total Irrigated	13,393	5,303	18,696
Non-irrigated	4,792	650	5,442
Total	18,185	5,953	24,138

It is estimated that 1 percent of the cropped land in the Kern-Tulare Water District is irrigated by the sprinkler method, 8 percent is irrigated by the furrow method, and 91 percent is irrigated using the drip or micro-sprinkler irrigation method. This high percentage of low volume irrigation practices results in a very high irrigation efficiency.

Kern-Tulare Water District has a contract with the Bureau of Reclamation for 40,000 acre-feet of entitlement from the Central Valley Project (CVP) and Rag Gulch Water District has a CVP contract for 13,300 acre-feet. The California Department of Water Resources conveys water under this contract through the California Aqueduct to Tupman. Water is then conveyed through the Cross Valley Canal from Tupman to the Friant-Kern Canal, where it is either delivered directly to the KTRG or exchanged with Arvin-Edison for water available in the Friant-Kern Canal.

Kern-Tulare Water District has a contract with the City of Bakersfield for an average of 20,000 acre-feet per year of Kern River water and Rag Gulch Water District has a similar contract for an average of 3,000 acre-feet per year. Water under these contracts is delivered to Kern County Water Agency Improvement District No. 4 in exchange for State Water Project Water. The State Water Project water is conveyed through the Cross Valley Canal to the Friant-Kern Canal, where it is either delivered directly to the KTRG or exchanged with Arvin-Edison for water available in the Friant-Kern Canal. The Basic Term of these contracts is scheduled to expire December 31, 2011 followed immediately by the Extension Term which the parties are discussing. Additionally, the City of Bakersfield is obligated to provide Kern-Tulare Water District during the Extension Term approximately 70,000 acre-feet of Kern River supply purchased but not delivered previously.

KTRG share common distribution systems and staff. The distribution system of KTRG delivers water from the Friant-Kern Canal to lands within KTRG. The distribution system consists of 4 pumping plants located along the Friant-Kern Canal, 4 regulating reservoirs, 7 re-lift pumping plants, and approximately 70 miles of buried pipelines. In addition, KTRG operate 2 pumping plants located in Delano Earlimart Irrigation District (DEID) reservoirs and 1 pumping plant located in a Southern San Joaquin Municipal Water District (SSJMUD) reservoir.

The depth to groundwater varies from about 200 feet to over 600 feet throughout KTRG and averages approximately 450 feet. There are static groundwater levels taken in the spring and do not include the temporary drawdown of 50 to 100 feet caused by pumping. Wells drilled on the west side of KTRG tap into an unconfined aquifer that is classified as suitable for irrigation. Groundwater in this area contains between 250 and 400 parts per million (ppm) total dissolved solids and is of a calcium bicarbonate or sodium bicarbonate chemical type. Wells drilled on the east side of KTRG tap into confined aquifers that also contain useable groundwater. This groundwater is characterized as sodium chloride with total dissolved solids concentrations between 300 and 500 ppm and is classed as having medium to high salinity hazard and high to very high sodium hazard.

Lower Tule River Irrigation District

LTRID was formed in 1950. LTRID is currently comprised of 93,502 of agricultural lands, 7,671 of native or natural lands and approximately 1,917 acres of urban land uses. LTRID is located in Tulare County on the east side of the San Joaquin Valley. State Highway 99 bisects LTRID in a north-south direction, and the Tule River flows westerly through the entire length of the LTRID. The FKC is located five miles to the east of LTRID's northeast boundary and adjoins the southeast portion of LTRID between Avenues 136 and 128. The towns of Woodville, Popular and Tipton lie within LTRID's boundaries but are not serviced by LTRID. LTRID's entire distribution system is unlined earth canals. Collectively, LTRID owns or controls approximately 163 miles of canals and approximately 47 miles of river channel. LTRID maintains and operates 12 recharge and regulating basins, covering approximately 3,000 acres. In wetter years, LTRID uses these facilities to recharge the groundwater reservoir. LTRID does not own or control groundwater extraction facilities. Therefore, each landowner must provide privately owned wells to sustain irrigation during periods when LTRID does not have surface water available. The main crops in LTRID are alfalfa, grain/hay and cotton.

Currently, the water supplies in LTRID are groundwater, water rights on the Tule River, and CVP water under two separate contracts. The Tule River water supply is approximately 70,000 af/y. Tule River flows approximately 22 miles through the central part of the LTIRD. Porter Slough follows a parallel course north of the Tule River. In 1951, LTRID entered into a long-term contract with Reclamation for 61,200 af/y of Class 1 and 238,000 af/y of Class 2 Friant water. In 1975, LTRID entered into a three-way contract with Reclamation and the California Department of Water Resources (DWR) to provide an additional 31,102 af/y of CVP water supply. Under this three-way contract, the CVP water is diverted from the Delta, conveyed through State Water Project (SWP) facilities via the California Aqueduct to the Cross Valley Canal to AEWSD. Through the Cross Valley Canal Exchange Program, AEWSD and LTRID 'swap' CVP water supplies from the Delta and Friant facilities. Recently, the exchange

agreement between AEWSD and LTRID has been terminated. LTRID may enter into similar exchange arrangements with other water districts to obtain their CVP water supplies from the Delta. Currently, LTRID sells their CVP contract supplies from the Delta and uses the money to purchase other supplies.

Pixley Irrigation District

PXID is located in Tulare County and bisected by State Highway 99. The City of Pixley is located within the PXID's boundaries. However, PXID does not serve the City of Pixley. PXID was formed in 1958 and currently comprises 69,550 acres, of which 48,302 are irrigated. Deer Creek flows westerly through the entire length of PXID. The FKC is located between one to five miles east of PXID's boundary.

PXID's water supply is derived from the use of groundwater, diversions from Deer Creek and CVP water. PXID entered into a long-term contract with Reclamation in 1975 for 31,102 af/y. PXID operates a conjunctive use program by supplying a portion of the irrigated lands and a portion for direct groundwater recharge through Deer Creek, the existing canal system and sinking basins owned or leased by PXID. PXID obtains their CVP supplies through four turnouts on the FKC into Deer Creek to PXID diversions or Deer Creek. PXID has 45 miles of unlined canals that convey water and provide groundwater recharge. An estimated 30% of the CVP supplies are "lost" through the unlined canals. However, the recharge to the groundwater is considered a beneficial use of this water. PXID maintains and operated nine recharge and regulating basins covering approximately 330 acres.

PXID owns or has access to approximately 330 acres of sinking/re-regulating basins. These basins, along with the Deer Creek channel and the PXID's canals, are used for direct groundwater recharge when surface water supplies are available. It is estimated that a third of the water imported by PXID has been directly recharged into the underground reservoir by PXID operations since PXID's inception.

PXID does not own or operate and groundwater extraction facilities. However, groundwater is the primary water supply available to lands within PXID. Privately owned wells currently provide water to all irrigated lands within the PXID. Approximately 31,957 acres of lands rely totally on groundwater pumping for irrigation. In addition, PXID may enter into an agreement with the Pixley Wildlife Refuge to recharge the groundwater. The refuge is approximately 960 acres.

Tri-Valley Water District

TVWD is comprised of 4,481 acres, of which, 1,812 are irrigable acres. The nearest town is Orange Cove. TVWD only serves agricultural water to seven growers and approximately 880 acres. TVWD does not provide groundwater. However all landowners have wells. Due to the proximity of TVWD to the Sierra foothills, groundwater supplies are typically inadequate. Wells tend to produce groundwater early in the growing season but produce very little in mid and late summer. The water distribution system is comprised of approximately seven miles of pipeline which is shared with Orange Cove Irrigation District landowners and operated by Orange Cove Irrigation District personnel. TVWD does not own or operate any canals, recharge basins, or regulating reservoirs. The main crops are oranges, lemons and tangerines.

Friant Division CVP Contractors

Arvin-Edison Water Storage District
AEWSD was formed in 1942 to provide a reliable water supply for its landowners for agricultural purposes. In order to regulate a highly variable water supply, AEWSD developed and continues to develop water management programs based on the concept of delivering imported water in years of above average water supplies to 1) spreading ponds for groundwater recharge and/or 2) transfers/exchanges with other agencies and entities (such as MWD) that can in turn provide return water at times later in the same year (or in subsequent years) and typically during drought or low allocation years or periods. During below average or dry years or periods, AEWSD extracts (via wells) previously stored groundwater and/or accepts return of water from water transfers and exchanges to meet its agricultural demands when surface supplies are deficient.

AEWSD is a long term CVP-Contractor; its current facilities were primarily constructed in the 1960s and are based on the conjunctive use of surface water imported from the CVP, SWP, Kern River, including other supplies (i.e. flood flows) and groundwater resources that underlie AEWSD. AEWSD owns and operates spreading/percolation/recharge basins and groundwater extraction wells, which are used to supply previously banked groundwater to its landowners within its service area when surface water supplies are deficient. AEWSD facilities (recharge and extraction) are also made available to other water agencies for their utilization through water management programs/agreements on a second priority basis.

AEWSD has an annual contract entitlement with Reclamation for 40,000 AF of Class 1 and 311,675 AF of Class 2 Friant Division CVP supplies. The Class 2 supply comprises a large portion of their contract allocation; however, this supply is highly variable depending on availability and hydrology. AEWSD manages this supply by using an underlying groundwater reservoir to regulate water availability and to stabilize water reliability by percolating water through spreading basins in addition to water management programs (i.e. transfers/exchanges) with other water agencies outside its service area. AEWSD takes Friant CVP water from their Intake Canal located at the terminus of the FKC and serves landowners within its district through 45 miles of lined canals and 170 miles of pipeline.

AEWSD has historically made available a portion of its Friant Division CVP water supply to other CVP contractors located on the eastside of the San Joaquin Valley in exchange for alternate CVP supplies originating from the Sacramento-San Joaquin River Delta, diverted and wheeled through the Aqueduct for ultimate delivery to AEWSD. Due to a decrease in supply reliability, cost increases, and water quality concerns, several of these exchanges are no longer feasible to the extent they once were. As a result, it has been necessary for AEWSD to identify and implement additional programs to manage its highly variable CVP water supplies.

Delano-Earlimart Irrigation District
(DEID) is located in Tulare and Kern Counties on the eastern side of the San Joaquin Valley, approximately 10 miles from the Sierra foothills. DEID is comprised of 56,474 acres, of which 46,581 are irrigated. DEID serves agricultural water supplies only. In DEID entered into a long-term contact with Reclamation for 108,800 af/y of Class 1 and 574,500 af/y of Class 2 water.

The main crops in DEID are grapes, almonds, deciduous and subtropical orchards. DEID obtains its CVP water from its turnout on the FKC and delivers the water to its customers through 172 miles of pipeline.
DEID recharges the groundwater during surplus "wet" years through operations with the White River channel, as well as, a small 5 acre recharge basin. In 1993, the DEID purchased and developed an 80 acre parcel specifically for development into a groundwater recharge basin. This basin has five separate cells and dual methods for introducing water to each cell from either DEID's distribution system or from direct diversions out of White River. The FKC flows north-south through DEID and Lake Woollomes is located adjacent to DEID. Lake Woollomes is a feature of the FKC and CVP facilities. DEID does not obtain supplies or recreational opportunities from Lake Woollomes.

Exeter Irrigation District
(EID) is located in Tulare County on the east side of the San Joaquin Valley, nine miles east of the City of Visalia. EID was formed in 1937 and in 1950 entered into a long-term contract with Reclamation for 10,000 af/y of Class 1 and 19,000 af/y of Class 2 water. In 1953, the Class 1 water supply was increased to 11,500 by an amendment to the contract. EID is comprised of approximately 15,184 acres and 12,700 are irrigated. The City of Exeter is located within EID. However, EID serves only agricultural water. EID obtains it CVP water from seven turnouts on the FKC located between MP 74.6 and MP 81.4. EID's distribution system is comprised of approximately 60 miles of pipeline. EID maintains two small balancing or regulating reservoirs with a capacity of less than one af each. Yokohl Creek is an intermittent stream which traverses through the northern portion of EID in a northwesterly direction for approximately 2 miles. The main crops grown in EID are citrus, grapes, plums and olives.

Fresno Irrigation District
(FID) was formed in 1920 under the California Irrigation Districts Act, as the successor to the privately owned Fresno Canal and Land Company. FID purchased all of the rights and property of the company for the sum of $1,750,000. The assets of the company consisted of over 600 miles of canals and distribution works which were constructed between the years 1850 and 1880, as well as the extensive water rights on Kings River.

FID, which now comprises some 245,000 acres, lies entirely within Fresno County and includes the rapidly growing Fresno-Clovis metropolitan area. FID now operates approximately 800 miles of canals and pipelines. Total irrigated area exceeds 150,000 acres, although this number has been decreasing in recent years as a result of urban expansion. The main crops in FID are grapes, citrus, and cotton.

A significant improvement in the control and management of the waters of Kings River occurred with the completion of the Pine Flat Dam project by the USACOE in 1954. Although built primarily as a flood control project, Pine Flat Dam provides significant water conservation stemming from the storage and regulation of irrigation water to the 28 water right entities on Kings River including FID. FID is contracted for 11.9% of the 1,000,000 af capacity of Pine Flat Reservoir. While FID is entitled to approximately 26% of the average runoff of Kings River, much of its entitlement occurs at times when it can be used directly for irrigation of crops without the need for regulation at Pine Flat.

In a normal year, FID diverts approximately 500,000 af of water and delivers most of that to agricultural users, although an increasing share of FID's water supply is used for groundwater recharge in the urban area. Depending upon hydrological conditions and Kings River flows, FID diverts water and allocates a proportional share of the water to its customers including the City of Fresno and Clovis. In addition to its entitlement from Kings River, FID and the City of Fresno have signed contracts to purchase up to 135,000 af annually from the Friant Division of the CVP. Historically, excess water applied by the farmers has percolated beyond the root zone and recharged the extensive aquifer underlying FID. Between 85% and 90% of the groundwater supply can be attributed to water imported and distributed by FID.

However, the conversion of agricultural lands to high-density urban uses in the expanding Fresno-Clovis metropolitan area has reduced the capacity to utilize surface water because all municipal and industrial water is obtained by pumping groundwater. A local overdraft has developed in and around the urban area, and this situation has been exacerbated by the drought of the late 1980s and early 1990s.

FID has combined forces with the City of Fresno, the City of Clovis, the County of Fresno, and the Fresno Metropolitan Flood Control District in a cooperative effort to develop and implement a comprehensive surface and groundwater management program. The main goal of the program involves using flood control basins for recharge during the summer when the basins are not needed to control urban storm runoff. This program also contains elements designed to protect the quality of groundwater in the area.

Garfield Water District
(GWD) is located in Fresno County on the east side of the San Joaquin Valley near the foothills of the Sierra Mountains. GWD is comprised of 1,750 acres, of which, 1,300 are irrigated acres. The main crops are grapes, almonds, olives, stone fruit, citrus and pasture. The distribution system is approximately 8 miles of pipeline. GWD is a CVP contractor with 3,500 af/y of Class 1 Friant water. GWD has no other sources of surface water. GWD is near the foothills and groundwater supply is limited.

Ivanhoe Irrigation District
(IID) is located in Tulare County on the east side of the San Joaquin Valley approximately 50 miles southeast of Fresno and 8 miles northeast of Visalia. IID is generally located between the St. Johns River on the south and Cottonwood Creek on the north. As early as 1915 the lands began to be developed for agricultural uses. Irrigation was from groundwater pumping, precipitation and surface diversions from runoff on the Kaweah River. IID was formed in 1948 and has acquired private surface water rights through the Wutchumna Water Company. IID's owns 7.9 shares of Wutchumna Water stock equaling approximately 3,950 af of water. In 1949, IID entered into a long-term contact with Reclamation for 7,700 af/y of Class 1 and 7,900 af/y of Class 2 water. The non-CVP water supplies are diverted from the Kaweah River through the Wutchumna Ditch to IID's diversion facility and is co-mingled with the CVP supply. IID obtains its CVP water supplies through two turnouts on the FKC. IID's distribution system comprises approximately 48 miles of pipeline and three groundwater recharge areas. The three groundwater recharge areas cover approximately 15 acres and are used when surplus water is available.

Approximately three miles of a portion of Cottonwood Creek is also used for recharge purposes. IID does not own or operate groundwater extraction facilities. Therefore, landowners must provide their own wells to sustain irrigation during periods when IID does not have surface water supplies available. IID comprises of 11,202 acres, of which 10,648 are irrigated. The main crops in IID are grapes, citrus, deciduous fruits, and olives.

Lewis Creek Water District
(LCWD) is located on the east side of the San Joaquin Valley in Tulare County near the base of the Sierra foothills and has falling grade from east to west. LCWD is traversed by State Highway 65 running north and south along the west side of the City. LCWD is located approximately 12 miles east of Tulare and State Highway 99, approximately 11 miles north of Porterville and 15 miles southeast of Visalia. The first census of LCWD in 1910 indicated 1,814 residents. The latest population estimates in January 1999 showed 9,015 residents. During the 1990's, yearly population growth was at or less than 1% per year. This rate of growth is slower than the rate of Tulare County. The 2000 census indicates the population in LCWD at 10,297. LCWD is an agricultural service center. The agricultural industry is built around citrus (oranges), and twelve orange packing houses, providing the major component of the economic base. LCWD has a water service contract with Reclamation for 1,450 acre feet per year (af/y) of Class 1 Friant water.

LCWD obtains their CVP water from the Friant-Kern Canal at the Honolulu Street turnout. The water treatment plant is at the same location and provides filtration, chemical additions and chlorination.

Lindmore Irrigation District
(LID) is located in Tulare County at the base of the Sierra foothills. LID's northern boundary extends approximately 2 miles from Lindsay and extends approximately 1 ½ miles south of Strathmore. LID is approximately 9 miles long and 10 miles wide and comprises 27,255 acres, of which 25,700 are irrigated. LID was formed in 1937 and in 1948 entered into a long-term contract with Reclamation for 33,000 af/y of Class 1 and 22,000 af/y of Class 2 water. LID lies over the Kaweah Basin. The safe groundwater yield for LID was calculated in 1987 to be 21,000 af/y. LID operates a conjunctive use program to manage surface and groundwater supplies. LID uses groundwater at the beginning of the growing season to warm the CVP water while filling LID's pipeline system. This reduces maintenance costs and leaks in the concrete irrigation pipes due to contraction of cold water. The main crops grown in LID are oranges, olives, cotton, and alfalfa. LID obtains their CVP supplies from four turnouts on the FKC between MP 88.4 and 93.2. LID's conveyance system comprises of 123 miles of pipeline and five reservoirs. The Noel reservoir is 3 af, earthen-clay lined reservoir used for balancing (overflow). The Montgomery reservoir is 4.5 af, earthen-clay lined and is used for balancing (overflow). The Brewer reservoir is 6.5 af, earthen-clay lined and is used for balancing (overflow). The 93.2E N. reservoir is 5.5 af, concrete lined and is used for balancing (equalizing). The 93.2-0.1S S. reservoir is 2.5 af, concrete lined and is used for balancing (equalizing).

Lindsay-Strathmore Irrigation District
(LSID) was formed in 1915 and is located in Tulare County on the east side of the San Joaquin Valley. LSID comprises 15,700 acres, of which 12,700 acres are irrigated to permanent crops.

LSID's original imported water supply was from the Kaweah River through LSID's ownership of Wutchumna Water Company stock and 39 deep wells. The supplies from the Wutchumna Water Company range from 5,000 to 14,000 af/y. LSID enters into Warren Act Contracts with Reclamation to transport this water within LSID using CVP facilities. The groundwater supply is limited to 18,000 af/y. In 1948, LSID entered into a long-term contract with Reclamation for 3,900 af/y of Class 1 water. In 1985, the contract amount was amended to 27,500 af/y. The main crops in LSID are oranges and olives. LSID serves only agricultural water.

LSID obtains their CVP water supplies from its turnout at MP 85.56 of the FKC. LSID's distribution system is approximately 115 miles of pipeline and three balancing reservoirs. The Main reservoir is 80 af and concrete lined. The High-Level reservoir is 5 af and concrete lined and the El Mirado reservoir is a 200,000 gallon steel tank. LSID operates 5 groundwater wells with a normal production of 1,750 GPM. These wells are not utilized if surface water is available due to the high cost of pumping. No usable groundwater basin underlies LSID. LISD lies too far east against the foothills to be influenced by either the Kaweah or Tule Rivers. LSID does not operate recharge areas or a conjunctive use program. LSID contractually uses the conjunctive use capacity of the Tulare Irrigation District, a common stockholder in the Wutchumna Water Company, by delivering LSID's Kaweah River water through the Wutchumna Ditch to the Tulare Irrigation District turnout. Tulare Irrigation District either uses this water for irrigation (in lieu recharge) or direct sinking in their groundwater recharge basins. During "dry" years, Tulare Irrigation District's farmers utilize the groundwater delivered by LSID. Tulare Irrigation District returns surface water to LSID through either the FKC or through the Kaweah River system. LSID regularly transfers water to Lindmore Irrigation District, which borders LSID on the west. Approximately 2,500 af/y is transferred to Lindmore during normal water supply years.

Lower Tule River Irrigation District
See description under Cross Valley Contractors.

Orange Cove Irrigation District
(OCID) is located in Fresno and Tulare Counties and was formed in 1937. OCID is about 30 miles southeast of Fresno and 20 miles north of Visalia. OCID is 14 miles long and 3 miles wide and has 28,000 acres, of which approximately 26,788 are irrigated. In 1949, OCID entered into a long-term contract with Reclamation for 31,800 af and in 1989, the contract amount was amended to 39,200 af/y of Class 1 water. OCID obtains their CVP water supplies from fifteen diversion points on the FKC between MP 35.87 to 53.32. OCID's distribution system is 105 miles of pipeline and one regulating reservoir with a capacity of 8 af. OCID does not supply any M&I water. A groundwater basin is almost non-existing under OCID. The area immediately east of Smith Mountain and the area in the vicinity of Navelencia contain basin water. The majority of wells are located in this area. The safe yield does not exceed 28,000 af/y. OCID does not operate any groundwater wells or recharge facilities due to the existing groundwater conditions. OCID provides approximately 1.4 af per acre. Therefore, the balance of crop needs are made up from precipitation and groundwater pumping. The landowners in OCID manage the groundwater supplies through conjunctive use practices. OCID transfers unused water supplies out to other districts for storage and banking. OCID is pursuing partners for a long-term transfer program or groundwater banking program to balance water in wet and dry years. The main crops in OCID are citrus, grapes, deciduous and subtropical orchards, olives, and nuts.

Porterville Irrigation District
(PID) is located in Tulare County and is comprised of 17,400 acres, of which 13,061 are irrigated. PID was formed in 1949. PID entered into a long-term contract with Reclamation for 16,000 af/y of Class 1 and 30,000 af/y of Class 2 water. PID has an average annual entitlement of 12,900 af/y of water supply from the Tule River.

The FKC enters PID at the northeast corner and exists in the south central portion. The Tule River passes through PID in a northwesterly direction. PID owns the facilities of two improvement districts. Improvement District No. 1 consists of approximately four miles of pipeline and serves 854 acres. Improvement District No. 2 consists of 3.3 miles of open ditch and serves 1,266 acres. PID obtains their CVP supplies from six diversion points on the FKC. In addition to its owned facilities, PID has entered into agreements with Lower Tule River Irrigation District and other entities to utilize non-District owned facilities to convey PID's Water. Through an agreement between PID and Lower Tule River Irrigation District, CVP water deliveries are conveyed through facilities owned or operated by Lower Tule River Irrigation District within PID. These facilities consist of 13 miles of unlined canals.

PID also conveys both CVP supplies and Tule River water through facilities owned by the Porter Slough Ditch Company, the Hubbs-Miner Ditch Company, the Rhodes-Fine Ditch Company and the Gilliam-McGee Ditch Company. These facilities consist of approximately 13 miles of unlined ditch within PID. The facilities belonging to these companies are operated by PID under long-term agreements with the entities. PID operates two percolation basins. PID owns no storage facilities. It does, however, own a portion of the water conservation storage space within Success Reservoir. This storage space is used to store water rights water owned by ditch companies with which PID has operating agreements. PID serves agricultural water only. The main crops in PID are walnuts, cotton, grapes, alfalfa, prunes, corn and citrus.

Saucelito Irrigation District
SID was formed in 1941 and is located in Tulare County, approximately ten miles southwest of Porterville, two miles south of Poplar, eight miles east of Tipton and five miles west of Terra Bella. Deer Creek crosses SID, for about 5 miles , near its southerly boundary and runs during wet years. SID takes no diversions off Deer Creek. The FKC is located on the eastern boundary of SID.

SID entered into a long-term contract with Reclamation in 1959 for the construction of facilities. Water deliveries began in 1961for 21,200 af/y Class 1 and 32,800 af/y of Class 2 water. Currently, SID comprises of 19,453 acres, of which 19,057 are irrigated. SID has five individual water users that are Riparian Water rights holders totaling 9.5 shares at 55 acre feet per share from Mole Ditch. SID engages in exchanges with the Cross Valley Contractors.
SID obtains its CVP water supplies from 4 diversion points on the FKC between MP 11.64 and 107.35 and Deer Creek diversion at MP 102.69. SID's distribution system is 55 miles of pipeline with one recharge pond that covers approximately ½ acre. Deer Creek also provides groundwater recharge in wet years. The main crops in SID are milo, wheat, cotton, grapes and almonds.

Shafter-Wasco Irrigation District
(SWID) was formed in 1937 and is located in Kern County about 20 miles northwest of Bakersfield. Currently, SWID is comprised of 38,766 acres, of which 32,000 are irrigated. Included within its boundaries are the cities of Shafter and Wasco covering approximately 2,400 acres. SWID entered into a long-term contract with Reclamation in 1955 for 50,000 af/y of Class 1 and 39,600 af/y of Class 2 water. SWID does not have any other long-term surface water supplies. SWID provides water for agricultural use only.

SWID obtains its CVP water supplies from two turnouts on the FKC at MP 134.4 and 137.2. The distribution system is .3 miles of lined canals and 117 miles of pipeline. SWID does not own or operate any water storage facilities or groundwater extraction facilities. Landowners must provide wells to meet irrigation demands when SWID does not have adequate surface water supplies available. The main crops in SWID are almonds, cotton, alfalfa, nursery stock, grains, grapes, blackeye peas and carrots. SWID has a history of transferring small amounts of water to neighboring districts.

Southern San Joaquin Municipal Utility District
(SSJMUD) was formed in 1935 and is located in Kern County, approximately 75 miles southeast of Fresno and 30 miles northwest of Bakersfield. The Delano and McFarland are within its boundaries but are not serviced by SSJMUD. Currently, SSJMUD is comprised of approximately 61,000 acres, of which 47,000 are irrigated. SSJMUD entered into a long-term contract with Reclamation in 1945 for 97,000 af/y of Class 1 and 50,000 af/y of Class 2 water and does not have other long-term surface water supplies.

SSJMUD obtains its CVP water supplies from nine diversion points on the FKC between MP 119.6 and 130.4. The distribution system is 158 miles of pipeline. SSJMUD operates eleven regulating reservoirs that provide groundwater recharge. Poso Creek and other smaller foothill drainages provide recharge to the groundwater. SSJMUD does not own and operate groundwater production facilities. Landowners must provide well to irrigate during times when SSJMUD does not have surface water supplies available to meet irrigation demands. The main crops in SSJMUD are alfalfa, citrus, grapes, cotton, nuts and barley. SSJMUD does not typically transfer water in or out.

Stone Corral Irrigation District
(SCID) was formed in 1948. SCID is located in Tulare County, approximately 30 miles southeast of Fresno and 10 miles north-northeast of Visalia. SCID's longest portion, north to south, is 3 ¼ miles and its greatest width, east to west, is 3 miles. SCID is comprised of 6,488 acres, of which 5,470 acres are irrigated. SCID entered into a long-term contract with Reclamation for 7,700 af/y of Class 1 water in 1950. In 1991, the contract was amended to 10,000 af/y of Class 1 water. SCID receives a small amount of water through exchange arrangements with CVC Contractors. This amount is 950 af/y of CVP water. The safe yield for the groundwater supply in SCID is approximately 3,200 af.

The FKC runs approximately along the north and east boundaries. SCID obtains the CVP water from the FKC at MP 57.90, 59.33, 60.90 and 62.68. The conveyance system is 27 miles of pipeline. SCID serves only agricultural water. The main crops are citrus, cotton, deciduous and subtropical fruit.

Tea Pot Dome Water District
(TPDWD) was formed in 1954 and is located in southeastern Tulare County, approximately three miles south of Porterville. TPWD is comprised of 3,282 acres, and all are irrigated. TPDWD relies mostly on their CVP contract water supplies.

In 1958, TPDWD entered into a long-term contract with Reclamation for 7,500 af/y of Class 1 water. TPDWD does not have any other long-term surface water supplies. TPDWD does not own or operate groundwater recharge or extraction facilities. Landowners pump small amounts of groundwater. TPDWD receives its CVP water supplies from its turnout on the FKC. The distribution system is 20 miles of pipeline. The main crops are citrus and olives.

Terra Bella Irrigation District
(TBID) was formed in 1915 and is located in Tulare County about 75 miles southeast of Fresno and about eight miles south of Porterville. Deer Creek flows westerly and passes through the northern portion. Fountain Spring Gulch flows in a northwest direction, traversing a portion of TBID. TBID is comprised of 13,962 acres, of which, 11,165 are irrigated. The town of Terra Bella is located within TBID's boundaries with an estimated population of 3,870. TBID provides CVP and groundwater CVP for domestic purposes and to the town of Terra Bella. Approximately 850 af/y of CVP water is delivered for domestic, municipal and industrial uses within TBID.

TBID entered into a long-term contract with Reclamation in 1950 for 29,000 af/y of Class 1 water. TBID receives its CVP water supplies from the FKC at MP 103.64, MP 102.69 and Deer Creek to a percolation pond. The distribution system is 152 miles of pipeline. TBID does not have any other long-term surface water supplies.

TBID's deep well system is barely adequate to support small winter demands. Historically, there were a total of 83 wells drilled over the years in TBID. Currently, TBID owns and operates 10 wells. Recently, TBID has lost the use of three wells due to chemical contamination. TBID is losing its groundwater supply. There are no significant grower or landowner wells. TBID uses three regulating reservoirs during the irrigation season and are also used for storage in the winter. Station 1 has a capacity of 0.185 million gallons, Station 2 has 0.212 million gallons and Station 3 has a 1.880 million gallon capacity.

TBID has developed groundwater banking arrangements with other districts. Groundwater banking arrangements have enabled TBID, a groundwater deficient district, to produce crops during drought years. In years when surplus amounts of water are available, TBID transfers water to other districts for direct use, resale, or percolation through recharge basins. TBID and Lower Tule River Irrigation District have a long history of water exchanges. TBID transfers water to Lower Tule River Irrigation District and, in turn, transfers water to TBID in dry years.

TBID provides agricultural water, in addition to, municipal and industrial water for domestic use. The main crops are nuts, deciduous fruit orchards, and citrus.

Tulare Irrigation District
(TID) was formed in 1889 and is located in western Tulare County on the eastside of the San Joaquin Valley. TID currently comprises of 70,000 acres, of which, approximately 62,000 are irrigated. The city of Tulare lies on the eastern portion at the intersection of the Southern Pacific and Santa Fe Railroads and on U.S. Highway 99. TID provides only agricultural water supplies and does not service the city of Tulare. Water for Tulare is extracted from the ground and furnished through City owned facilities.

TID entered into a long-term contract with Reclamation in 1952 for 30,000 af/y of Class 1 and 141,000 af/y of Class 2 water. TID has pre-1914 water rights on the Kaweah River for approximately 50,000 af/y of water. TID's owned Kaweah River water rights are 1) Crocker Cut on the Lower Kaweah Branch, 2) St. Johns Canal (TID) on the St. Johns Branch and 3) Crossmore cut Packwood Creek) on the St. Johns Branch. Water is also made available through share holdings in the following Kaweah River agencies: 1) Tulare Irrigation Company on both the Lower Kaweah Branch and the St. Johns Branch, Wutchumna Water Company on the Kawaeah River, 4) Persian Ditch Company, and 5) Consolidated Peoples Ditch Company. Groundwater recharge occurs from percolation in the canals and natural channels, recharge basins, and treated municipal and industrial effluent. TID has 12 groundwater recharge areas covering a total of 1,110 acres. TID does not operate extraction wells.

TID obtains their CVP water supplies from its turnout which is located approximately 14 miles northeast of the District Service Area. The water is conveyed in TID's Main Canal. Diversions into this Main Canal include water from the Kaweah and St. Johns River Branch. The Packwood Creek diversion system begins at the terminus of the Lower Kaweah River approximately 10 miles northeast of TID. The distribution system includes 300 miles of unlined canals, ¼ mile of lined canal and 30 miles of pipeline. The main crops in TID are alfalfa, field corn, wheat and cotton.

Other CVP Contractors, SWP Contractors, and non-CVP Contractors

Buena Vista Water Storage District
Buena Vista Water Storage District (BVWSD) lies in the trough of the southern San Joaquin Valley in Kern County. The District lands are within a portion of the lower Kern River watershed, where historic runoff created the heavy clay soils from former swamp and overflow lands north of Buena Vista Lake. The area lies on the west side of the valley floor, about 16 miles west of the city of Bakersfield. The unincorporated town site of Buttonwillow (population 1,500) is situated in the geographical center, however BVWSD does not supply any M&I water. The water service area contains 48,443 acres of agricultural land. Approximately 45,500 acres have been built-out, and about 40,000 acres almost entirely field and row crops.

BVWSD service area is agricultural, with cotton, grain, sugar beets, and alfalfa as the principal crops. Cotton is the dominant crop, comprising about 85% of the annual cropping pattern. Total crop consumptive use peaked in the 1970s, averaging about 113,000 acre-feet. In the past 10 years consumptive use has declined to about 105,000 acre-feet.

In addition to Kern River water supplies BVWSD contracted with DWR via the Kern County Water Agency for an additional surface water supply in 1973. This contract provided for an annual firm supply of 21,300 af and surplus supply of 3,750 af. BVWSD has also been a historic user of surplus FKC flows to serve irrigation demands and for groundwater recharge programs. BVWSD is geographically located adjacent to the California Aqueduct and low in elevation on the Kern River Fan. BVWSD's Kern River supply is thus delivered by gravity from its origin in the Sierra-Nevada Mountains north east of Lake Isabella. BVWSD is a member unit under KCWA. Other members of KCWA in the Bakersfield area also have contracted for SWP water but must pump their supplies to their service areas upslope and to the east of the San Joaquin Valley via the CVC. These circumstances lend themselves to an exchange of BVWSD Kern River water for east side member units SWP water, thus avoiding or reducing energy use and resultant pumping costs. This process also frees up CVC capacity that would otherwise be necessary for transportation of east side member units of SWP water. In order to allow maximum benefit from these exchanges, BVWSD has increased its SWP capacity by construction of a three pipe siphon Aqueduct Turnout (BV-7) having a capacity of 300 cfs. BVWSD Aqueduct capacity can now provide approximately 85-90% of peak system demand with a total flow capacity from the California Aqueduct of approximately 800 cfs. Although the exchange programs have provided benefits to BVWSD, salt loading is an issue since SWP water supplies carry more salinity than Kern River water. This would influence the degree of exchange volume in particular years when salinity levels are greater.

BVWSD engages in water banking programs. These banking programs generally fall under two categories. The first category would be a program designed to return water to BVWSD during a dry year when supplies are restricted. The second category would be a program where BVWSD is providing a banking and extraction service for monetary payment or similar benefits. BVWSD wet year supplies have afforded it the ability to enter into both categories of banking programs which in turn allow BVWSD to stretch its wet year supplies into dry year payback deliveries and thus help to balance required groundwater pumping. These programs also allow BVWSD to make more efficient use of its Kern River water supplies over the long term which in turn minimizes the loss of water from the critically overdrafted groundwater basin. BVWSD also engages in direct groundwater recharge programs. BVWSD Kern River supply is dependent on the hydrologic cycles as they occur regardless of crops demands. During dry years, landowners must provide the difference between crop demands and BVWSD allocated surface deliveries via groundwater pumping from individual wells. During wet years BVWSD is able to satisfy maximum crop demands that eliminates the use of landowner wells. Excess wet years are stored to maximize surface carryover use and followed by direct recharge, to the maximum extent possible to replenish the groundwater supply. The efficiency of managing this difference between crop demands and available water supplies ensures that BVWSD, as a whole, is in positive balance with the groundwater basin. The main recharge areas used by BVWSD below the Enos Lane are the Kern River Bypass Area, the Kern River channel, the Main Canal, the Outlet Canal, the Tule Elk Reserve area near Tupman, and the upper reach of the Kern River Flood Channel. Recharge capacity has nearly doubled in the Kern River Bypass Area due to improvements in the West Kern/Buena Vista banking program, and in the Tule Elk Reserve area via additional distribution facilities in sloughs and other low lying areas. In addition, BVWSD is a recharge participant in the KCWA Pioneer Project and shares a first priority access to the total recharge capacity for overdraft correction.

Historically, BVWSD stored its spring runoff flows within Buena Vista Lake until the lake bottom lands were freed from the storage right in exchange for conservation storage space in Lake Isabella. This storage space was purchased by the Kern River Interests upon construction of Isabella Dam by the USACOE. BVWSD owns 31.6% of the conservation storage space within the reservoir with flood control being the only overriding purpose. This affords a maximum storage increment of 172,000 af of regulation space with a maximum winter carryover capability of 68,800 af. BVWSD also retained storage rights within the cells of Buena Vista Lake with a yield, after losses, of approximately 25,000 af. Pursuant to the Kern River Storage and Use of Water Agreement, BVWSD is afforded use of this facility for wet year storage of excess Kern River supplies. In addition, BVWSD, via agreement with Kern County maintains regulation storage use of 1,800 af of space within Buena Vista Aquatic Recreation Area Lakes. Therefore, BVWSD has approximately 96,000 af of surface storage space for regulation of its surface water supplies from one year to the next. These surface storage rights are very important to the efficient management of BVWSD's Kern River water rights since the April-July runoff period does not coincide with the crop irrigation requirement which occur in the January through March pre-irrigation and the June through September summer irrigation periods. The carryover capability with Isabella reservoir and BVWSD's SWP supply allow BVWSD to provide a surface water supply for the early pre-irrigation period even though BVWSD's Kern River supply normally does not begin until the Mar-August supply period. The reservoir also provides

peaking capability and facilities other management practices such as the previously mentioned exchange, banking, and recharge activities

The Buena Vista Aquatic Recreational Area lakes provide the BVWSD with a very useful tool in the operational storage for regulation of both Kern River and SWP flows to the BVWSD as well as some valuable surface storage. This facility receives the BVWSD's Kern River flow via the Alejandro Canal and SWP flow via turnout BV-3 while directing flows in the BVWSD's Outlet canal for use in the Buttonwillow service area. The lakes are also used to serve the Maples area and Henry Miller Water District per agreement with Kern County and upon arrangement with BVWSD.

During wet years the BVWSD authorizes the sale of surplus water to reduce or avoid groundwater pumping and generate revenue to offset BVWSD operating costs. Generally, surplus water is offered to landowners within the BVWSD (for use above surface allocation), to landowners adjacent to the BVWSD who rely primarily on groundwater supplies, and other non-adjacent parties. Such deliveries are beneficial since they correct overdraft, raise pumping levels, and generate revenues.

Historically there have been threatened and endangered species present within the bounds of BVWSD. The giant kangaroo rat (Dipodomys ingens) was known to exist in the southernmost portion of BVWSD, but has not been sighted in recent times. The giant garter snake (Thamnophis gigas) was located in BVWSD in a 1999 survey. The western yellow billed cuckoo (coccyzus americanus occidentalis) was last reported in BVWSD in 1973. Two accounts of the buena vista lake shrew (Sorex ornatus relictus) were made in BVWSD in 1991. The blunt-nosed leopard lizard (Gambelia sila) was last observed in BVWSD in 1987. The western snowy-plover (Charadrius alexandrinus nivosus) was last seen in BVWSD in 1978.

Cawelo Water District

Cawelo Water District (CWD) is located in the North-Central portion of Kern County and encompasses an area of nearly 45,000 acres. The CWD lies between State Highway 99 on the west and State Highway 65 on the east, the community of McFarland on the north and Oildale on the south. The city of Bakersfield is approximately six miles southeast of CWD.
As of 2000, the total area of CWD was 45,079 acres including a service area of 33,320 acres. Land use in 2000 in the service area consisted of 29,657 acres of irrigated agriculture, 3313 acres of fallow and 350 acres devoted to other uses including waterways, residential, commercial and agriculture-related businesses.

Approximately 85% of the irrigated lands served by CWD are planted to trees and vines (principally grapes, citrus, deciduous fruit, and nuts).

CWD surface water supply is obtained primarily under two long-term contracts: a contract with the Kern County Water Agency for SWP water and a contract with the city of Bakersfield for Kern River water. Water from these two sources has accounted for 90% of CWD’s surface water supplies. CWD also purchases water from many other sources under short-term agreements as available. The imported surface water serves as a supplemental supply for irrigation within CWD. Approximately 65% of the irrigation demands within CWD have been satisfied with

imported surface water deliveries. CWD does not serve M&I water. Individual landowner wells have contributed to the remainder of the water required to irrigate crops. CWD obtains surface water from other sources including diversions from Poso Creek when available, oil-field produced water, and CVP water through one-year temporary water service contracts when available.
Within the bounds of CWD, the only threatened or endangered species that has been sighted in recent times is the San Joaquin kit fox (*vulpes macrotis mutica*). This species was last observed in CWD in 1986.

St. Johns Water District
Encompasses in part or in total of the Kaweah River water rights of Jennings Ditch Company, Modoc Ditch Company, Goshen Ditch Company, and St. Johns Ditch Company.

Kaweah Delta Water Conservation District
The Kaweah Delta Water Conservation District (KDWCD) was formed in 1927, under the provisions of California state law known as the Water Conservation District Act of 1927, for the purpose of conserving and storing waters of the Kaweah River and for conserving and protecting the underground waters of the Kaweah Delta. Later the Water Conservation District Act, as well as the purpose of KDWCD, was expanded to include power generation.

KDWCD is located in the south central portion of the San Joaquin Valley and lies in both Tulare and Kings Counties. It fully encompasses the growing cities of Visalia, Farmersville and Tulare. The population of the KDWCD is currently estimated to be in excess of 150,000 people. The total area of KDWCD is about 337,000 acres with approximately 255,000 acres located in western portion of Tulare County and the balance, or about 82,000 acres, in the northeastern portion of Kings County. KDWCD is comprised of four districts that are entirely or partially within KDWCD boundary and are listed below:

Lakeside Irrigation Water District
Discussed elsewhere within the Appendices.

Kings County Water District
Discussed elsewhere within the Appendices.

Corcoran Irrigation District
Corcoran Irrigation District encompasses the area around the town of Corcoran, at the eastern edge of Kings County and receives CVP water via the Kings River where it is diverted out of the FKC. Corcoran Irrigation District diverts the CVP water out of the Kings River into the Lakeland/Highline Canal that enters at Kansas Avenue. In addition, water can enter the Kaweah/St. John River system and can be diverted into Cross Creek which will enter at Kansas Avenue. There are no recorded occurrences of threatened or endangered species in Corcoran Irrigation District.

Tulare Irrigation District
Discussed elsewhere in the Appendices.

Kaweah Delta Water Conservation Water District
KDWCWD lands are primarily agricultural, although the cities of Visalia and Tulare constitute significant areas of urbanization. Farmersville is the other incorporated area. Smaller unincorporated rural communities include Goshen, Ivanhoe, Waukena, and Guernsey.
A high degree of agricultural development exists in the KDWCD, with approximately 266,000 acres presently devoted to the production of a variety of irrigated crops, 3,200 acres idle or fallow (including roads and canals), 13,000 acres in farmsteads, 23,300 acres undeveloped and approximately 31,500 acres of urbanized land. The principal crops are cotton, miscellaneous field crops, deciduous fruit and nut trees and alfalfa.

KCWCD encompasses the alluvial fan of the Kaweah River, extending about 40 miles in a southwesterly direction from the foothills of the Sierra Nevada Mountains on the east to the center of the San Joaquin Valley in the vicinity of the Tulare Lake bed on the west. KDWCD is generally bounded on the north and west by the service area of the Kings River and on the south by the service area of the Tule River.

Numerous public and private entities within KDWCD's boundaries divert water from the Kaweah River and its distributaries. Nearly all of the lands served with Kaweah River water also use groundwater wells to supply irrigation water, primarily due to the erratic, relatively undependable, nature of flow on the Kaweah River. All municipal and industrial water uses within KDWCD are supplied from groundwater.

Terminus Dam and Lake Kaweah, located on the Kaweah River about 3.5 miles to the east of KDWCD, was completed in 1961 by the USACOE. This project was constructed for flood control purposes on the Kaweah River and to provide river control and water conservation for irrigation purposes. KDWCD has a contract with the United States for repayment for the project costs allocated to water conservation. The reservoir currently holds about 143,000 acre-feet, with construction underway to expand capacity to 183,300 acre-feet.

KDWCD and its sub-entities have historically received substantial quantities of water surplus to the needs of CVP Contractors. Over the past 50 years, an excess of 5 million acre-feet of CVP water has been imported into KDWCD. KDWCD and the Kaweah River groundwater basin have experienced long-term groundwater overdraft estimated in 1972 to b3 89,000 acre-feet per year. KDWCD is currently undergoing new studies of groundwater data to determine the extent and volume of groundwater overdraft within its boundaries. There are currently 40 recharge basins within KDWCD covering approximately 5,000 acres. While KDWCD owns and operates many of the groundwater recharge basins, it does not provide water-banking services for others. Conversion of land from agricultural uses to urban/commercial uses has occurred, is occurring and is expected to continue to occur in these communities consistent with the general plans and zoning for these communities as may be amended. While KDWCD owns and operates numerous groundwater recharge basins within its boundaries, it does not provide water banking for others.

Kern County Water Agency
Kern County Water Agency (KCWA) comprises all of Kern County in the Southern San Joaquin Valley. KCWA currently has approximately 861,000 irrigated acres. This is in contrast to its peak to the KCWA's peak irrigation acres, 973,000 acres in 1984 and its lowest recent level of

irrigation acres, 729,400 acres in 1991 due to a severe drought. There are about 110,000 to 120,000 acres per year that are idled for various reasons. In an extreme case, if all of this land was cropped in a single year, irrigated acreage could return to its peak without the conversion of any native lands. In 1991 there were about 266,200 acres of permanent crops and in 1998 permanent crops amounted to about 316,500 acres. This trend is expected to continue.
KCWA was created by a special act of the State Legislature in 1961. It holds the master contract with the State of California for delivery of a maximum yearly supply of 1,000,949 acre-feet of SWP water supplies to 21 subcontracting water agencies ("Member Units") within Kern County listed below:

Agency	Surface Water Rights/ Contract Rights	Irrigated Acreage	Percent in Permanent Plantings
Belridge Water Storage District	SWP	--	--
Berrenda Mesa WD	SWP	--	--
Buena Vista WSD	SWP, KR	38,411	1%
Cawelo WD	SWP, KR,	34,300	97%
MS, Oilfield waste			
Henry Miller WD	SWP, KR	18,100	0%
Kern County Water Agency Improvement District No. 4	SWP, KR	4,900	0%
Kern Delta WD	SWP, KR, MWD	93,100	7%
Lost Hills WD	SWP	57,600	29%
Rosedale-Rio Bravo WSD	SWP, KR	33,400	17%
Semitropic WSD	SWP, MS MWD	129,100	23%
Tehachapi-Cummings CWD	SWP, local streams	--	--
Tejon-Castaic WD	SWP, local streams	--	--
West Kern WD	SWP	--	--
Wheeler Ridge-Maricopa WSD	SWP, MS	93,600	37%
Arvin-Edison WSD (LTRC)	CVP, KR, MS	99,000	48%
Southern San Joaquin MUD (LTRC)	CVP	50,500	56%
Shafter-Wasco ID (LTRC)	CVP, MS	30,900	48%
Delano-Earlimart ID (LTRC)	CVP, MS	51,000	80%
Kern Tulare WD (LTRC)	CVP, KR	20,202	100%
Rag Gulch WD (LTRC)	CVP, KR	5138	100%

KCWA Member Unit SWP Supplies

Member Unit	Supply	Allocation (60%)	Water Shortage
Belridge WSD	121,508	72,905	48,603

Berrenda Mesa WD	108,600	65,160	43,440
Buena Vista WSD	21,300	12,780	8,520
Cawelo WD	45,000	22,920	15,280
Henry Miller WD	35,500	21,300	14,200
Improvement District No. 4	82,946	49,768	33,178
KCWA	8,000	4,800	3,200
Kern Delta WD	25,500	15,300	10,200
Lost Hills WD	119,110	71,466	47,644
Semitropic WSD	155,000	93,000	62,000
Rosedale Rio-Bravo WSD	29,900	17,940	11,960
Tehachapi-Cummings CWD	19,300	11,580	7,720
Tejon-Castac WD	5,278	3,167	2,111
West Kern WD	25,000	15,000	10,000
Wheeler Ridge-Maricopa WSD	197,088	118,253	78,835
Total	**998,730**	**559,238**	**339,492**

Arvin-Edison WSD, Southern San Joaquin MUD, Shafter-Wasco ID, Delano-Earlimart ID, Kern Tulare WD and Rag Gulch WD are LTRC CVP contractors and are within the focus of this EA. Belridge WSD, Berrenda Mesa WD, Tehachapi-Cummings CWD and Tejon-Castac WD are not within the Place of Use under Reclamation's water rights permits for this action, therefore are not included in this Environmental Assessment or Proposed Action. Henry Miller WD and West Kern WD have small portions within the CVP Place of Use. Approvals of exchanges with these two districts could occur only after considering the amounts and deliveries involved.

As stated earlier, each proposal would be reviewed individually for compliance with this EA, related biological assessments, applicable laws and policies including Reclamation's water rights permits prior to approval. KCWA Improvement District #4 supplies are M&I water and the remaining districts are agricultural. The KCWA was established to make water available for any beneficial use or uses of lands or inhabitants; provide flood control; drain and reclaim lands; acquire, appropriate, store, conserve and import water; prevent contamination of water; develop and sell at wholesale hydroelectric energy to aid in financing water projects.

KCWA is the largest agricultural water contractor on the SWP and the second largest overall with 1,000,949 acre-feet of annual supply. Kern County ranks in the top four California counties in agricultural production, behind Fresno, Tulare and Monterey Counties. For the year 2000, the last year for which statistics are available, Kern County agricultural production was valued at $2.2 billion. Grapes were the biggest crop with a value of $438 million, followed by citrus at $291 million and cotton at $226 million.

Kern County leads the state in production of several crops including almonds, pistachios, carrots, watermelons, sheep and wool. Agriculture has been Kern County's number one industry for many years. Approximately one out of every four jobs in Kern County is related to agriculture.

Kern County has a total population of 662,000 people. Bakersfield, the largest incorporated city in the county has a population of 247,000 people.

City	Population
McFarland	9,600
Delano	38,800
Shafter	12,700
Wasco	21,200

Buena Vista WSD, Cawelo WD, Kern Delta WD, North Kern WSD, Rosedale-Rio Brave WSD, and Semitropic may enter into exchange arrangements with the Cross Valley Contractors under separate agreements and are described elsewhere in this Section.

Improvement District No. 4

In the late 1960's KCWA formed it Improvement District No. 4 to import state project water to the urban Bakersfield area for municipal purposes. Today, more than 80,000 af/y of SWP water is reserved for importation into the area. Fifty-thousand af/y is set aside to replenish ground water basins, while 34,000 af is treated and distributed through KCWA's Henry C. Garnett Water Purification Plant. The treated water is delivered to four domestic water systems that serve parts of northern and eastern Metropolitan Bakersfield through the following entities:
Within the boundaries of the Kern County Water Agency ID #4 are San Joaquin woolythreads (Monolopia congdonii), Bakersfield cactus (Opuntia basilaris var. treleasei), San Joaquin kit fox (Vulpes macrotis mutica) and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). These species were last reported in 1992, 1995, 1986 and 1991 respectively.

Wheeler Ridge-Maricopa Water Storage District

Wheeler Ridge-Maricopa Water Storage District (WR-MWSD) is a public agency whose jurisdiction encompasses about 147,000 acres of land in Kern County at the extreme southern end of the San Joaquin Valley twenty miles south of Bakersfield. A large portion of the WR-MWSD is within the designated Places of Use as defined in Reclamation's Water Rights Permits. WR-MWSD provides irrigation water supplies to about 90,000 acres of farmland within its boundaries. A small percentage of the water is supplied on a temporary basis for industrial, groundwater recharge, and in-lieu of groundwater pumping purposes. WR-MWSD provides no water treatment or M&I service. Except for a few locations along Interstate 5, WR-MWSD is exclusively rural. There are no cities or towns within MR- MWSD boundaries. No significant new water distribution facilities have been constructed since 1986, and none are planned. WR-MWSD is a member unit of the KCWA and has contracted with KCWA for a water supply from the SWP. Water from the SWP is delivered to WR-MWSD through the California Aqueduct which transects WR-MWSD from west to east. Water from the SWP is the primary source of supplemental water utilized by WR-MWSD. Other sources have included banked water from the various banking programs in Kern County in which WR-MWSD participates including the Kern Water Bank, the Pioneer Project, and the Berrenda-Mesa Project. Direct delivery of water from the CVP is accomplished by releases from the terminus of the FKC into the Kern River channel. Water released to the Kern River can either be conveyed directly to the Kern Water Bank Canal or diverted into the River Canal and delivered downstream to the Kern Water Bank Canal. From the Kern Water Bank Canal the water is conveyed to the California

Aqueduct and thence into WR-MWSD turnout and pipeline facilities located along the California Aqueduct.

Most of the WR-MWSD water supply is distributed to 72,074 acres of farmlands within its Surface Water Service Area under the terms of recorded long-term agricultural water service contracts. Current facilities can also provide temporary water service to about 18,000 acres of farmlands. An additional 20,000 acres of farmlands and 10,000 acres of other developed lands rely primarily on groundwater supplies. Another 27,000 acres are undeveloped and used primarily for grazing. The primary use of the CVP water by WR-MWSD would be for delivery into the various banking programs for later recovery and use.

KCWA WATER SUPPLY

SWP - KCWA is the second largest participant in the SWP, a water storage and delivery system of reservoirs, aqueducts, power plants and pumping plants. The project, which extends for more than 600 miles (two-thirds the length of California), was planned, built, and is operated by the California Department of Water Resources. About $4 billion have been spent on project construction.

The project's main purpose is to store water during wet periods and distribute it to areas of need in Northern California, the San Francisco Bay area, the San Joaquin Valley, and Southern California. The State has contracts to supply up to 4.2 million acre-feet annually of SWP water to 29 public agencies. Other project functions include flood control, power generation, recreation, and fish and wildlife enhancement.

The first deliveries of water from the project to Kern County began in 1968. KCWA has contracted to receive a maximum yearly supply of 1,000,949 acre-feet of water. Of that amount, 134,000 acre-feet is allocated to municipal and industrial use, and 866,949 acre-feet is used for agricultural use. Water from the SWP reaches Kern County through the California Aqueduct which passes through the west side of Kern County before crossing the Tehachapi Mountains into Southern California. A portion of that water is brought to Bakersfield and other eastern portions of the San Joaquin Valley through a series of seven pumping stations in the 22-mile long Cross Valley Canal operated by the KCWA.

CVP - The FKC is an essential part of the Kern County agricultural water supply system. It delivers more than 400,000 acre-feet per year to DEID, SJMUD, SWID, AEWSD, KTWD and RGWD.

Kern River - The Kern River supplies water for agriculture, municipal use, industrial use and hydroelectric power. Flows average 700,000 acre-feet yearly or about 22% of the water for Kern County users. The Kern River originates in two forks near Mt. Whitney in the southern Sierra Nevada Mountains and flows south. A large dam has been constructed to form Lake Isabella. The Kern River is the largest local source of surface water in Kern County. Districts that have water rights include, KDWD, City of Bakersfield, BVWSD, Henry Miller Water District, Olcese Water District, and La Hacienda Inc. Kern River water is also delivered to Rosedale Rio-Bravo Water Storage District, Cawelo Water District, Kern-Tulare Water District, Rag Gulch Water District and the KCWA's Improvement District No. 4.

Agricultural Use

Kern County is the fourth most productive agricultural county in the nation. A semiarid region, it must rely on adequate imported water supply. A vast underground water basin supplies 43% of the water used for domestic and agricultural purposes. Other sources of supply include the Kern River (22%), the SWP (23%), and the FKC (11%). With years of flood and years of drought spaced among periods of normal supply, careful management practices have been developed and applied. Kern County farmers are among the most efficient water managers in the state. It is estimated that 75% of the water applied to local crops goes to satisfying actual crop requirements. Significant improvement in efficient irrigation has been made through the utilization of drip and low volume application methods, as well as careful management of row and border systems. Laser leveling helps achieve uniform distribution. Researchers have determined that irrigation practices in Kern County are among the most efficient in the nation. With national and worldwide demands for food and fiber increasing, the water and agricultural industries of Kern County will continue to develop efficient technologies to meet future irrigation requirements.

Groundwater

Sediments that comprise Kern County's main groundwater basin are unconsolidated deposits of Tertiary and Quaternary age, including alluvium, lacustrine, deltaic and flood basin deposits of sand and gravel. Thin lenses of silt and clay are scattered throughout the basin at various depths, but are most pronounced in the southwestern and northwestern portions of the Tulare Lake Basin. This basin is located within the Tulare Lake hydrologic region and is bounded on the north by the Kern County line, on the east by the Sierra Nevada foothills, on the south by the Tehachapi and San Emigdio Mountains and on the west by the coast ranges. The Kern River is the principal watershed drainage. The main groundwater basin in the San Joaquin Valley portion of Kern County covers about 963,000 acres. KCWA estimates total storage capacity of the top 500 feet is about 50 million acre-feet. Total groundwater in storage within this space is estimated at 40 million acre-feet, with about 10 million acre-feet of dewatered storage space.

The main San Joaquin Valley basin has two primary water bearing zones; an unconfined zone generally above the Corcoran Clay and a confined zone generally below the Corcoran Clay. There are multiple confined zones in some parts of the valley. The southeastern corner of the Valley contains the White Wolf basin, which is separated from the main Kern County basin by the White Wolf Fault. In the northeastern portion of the basin some groundwater production occurs in the Santa Margrarita and Olcese formations. These deep, confined aquifers are on the edge of the Valley with limited yields and marginal to poor groundwater quality.

Natural recharge of the groundwater basin is estimated to be about 180,000 acre-feet annually. Annual groundwater pumping exceeds the natural recharge of the basin. The conjunctive use of surface and groundwater supplies has increased the operational yield of the groundwater basin to about 2 million acre-feet annually. There are about 5,500 to 6,000 active groundwater wells in the Kern County groundwater basin. Basin yield varies across the valley. The lowest pump yields are in the northeastern portion of the valley, and the highest yields are typically in the Kern Fan area. Typical yields may vary from about 700 gallons per minute to over 3,000 gallons per minute (Management Plan, October 2001).

KCWA has an allocated Aqueduct capacity of 3,277 cfs. Along both sides of the Aqueduct within the Kern County portion of the DWR San Joaquin Field Division are a number on Member Unit turnouts used to convey water from the Aqueduct into each district delivery system. Following is a list of the Member Units and number of turnouts: Semitropic WSD - 2; Buena Vista WSD - 6; Cawelo - 11; Rosedale Rio-Bravo WSD - 12; Henry Miller WD- 23; Wheeler Ridge-Maricopa WSD - 17. The Aqueduct is used to convey water including the transfer and exchange water, to Kern Tulare Rag Gulch.

Recovered groundwater that is conveyed to the California Aqueduct, can be delivered to districts or exchanged with the DWR. Exchanges with the DWR can be simultaneous, or delayed exchanges. In a simultaneous exchange water delivered from the Aqueduct to an upstream district at the same time the recovered groundwater is transported to the Aqueduct. With a delayed exchange, water might be delivered by the DWR to the receiving district from storage before or after the recovered groundwater is received.

[1] Cawelo WD takes delivery of SWP water via the CVC.
[2] Rosedale-Rio Bravo WSD takes delivery of their SWP water via the CVC.
[3]Henry Miller WD takes their SWP water via Buena Vista turnouts.

Recovery

The CVC is also used to convey banked groundwater after it is recovered. Once in the CVC, recovered water can be delivered to CVC participants in exchange for water in the California Aqueduct. During periods when water is not available for exchange, the CVC can be operated in reverse flow. When operated in reverse flow, water flows from the CVC directly into the California Aqueduct. In 1991, water levels in the Aqueduct were low enough for the flow to be by gravity. When water levels in the California Aqueduct are too high for gravity flow, the water must be pumped into the Aqueduct. In 1992, the DWR constructed a temporary pump station to lift 80 cfs from the CVC into the California Aqueduct. A similar station may be reconstructed in the future if reverse flows into the California Aqueduct are needed when levels in the California Aqueduct are too high for gravity flow. In addition, raising the lining in the CVC reach adjacent to the California Aqueduct would allow reverse flow without a pump station.
It should be noted that depending on groundwater pumping operations, water in the Buena Vista Aquatic Lake may contain high concentrations of arsenic. These high concentrations are caused when groundwater from nearby wells is pumped into the Buena Vista Aquatic lakes for agricultural use and to make up evaporation losses.

Potential Sources of Exchange Water

The KCWA member units have access to the following potential sources of water that could be exchanged for CVP water supplies:

1. SWP water – Accessed from turnouts along the California Aqueduct and subsequently from public and privately owned canals and pipelines that transport the water for use within Kern County.

2. Kern River water – Accessed from existing turnouts and diversion points along the Kern River and related public and privately owned canals and pipelines that transport the water for use within Kern County, or through additional exchange to CVP surface water supplies.

3. Poso Creek, Caliente Creek or other minor streams within Kern County – Existing points of diversion are within Cawelo WD, Semitropic WSD, Kern Delta WD, Henry Miller WD, Arvin-Edison WSD and portions of Wheeler Ridge-Maricopa WSD.

4. Kaweah, Tule, St. Johns and Kings River water – Historically has been available to Kern County NLTC via diversion of flows at established points of diversion into the FKC and into the Kern River.

5. Groundwater – Exchanges involving groundwater could occur virtually anywhere within the Kern NLTC area, including groundwater recharge and recovery facilities, which have access directly or through additional exchange to CVP surface water supplies. Groundwater banking is not included in this analysis and separate NEPA review would be needed.

Potential Scope of Exchange Water Deliveries

The distribution systems in Kern County are heavily interconnected. The Cross Valley Canal interconnects the SWP, Kern River and Friant-Kern systems. The SWP is further interconnected with the Friant-Kern system via Arvin-Edison WSD's turn-in/out to the California Aqueduct. Also, most of the KCWA member units have distribution systems which are interconnected with the distribution systems of neighboring districts. As an example, Semitropic Water Storage District and Shafter Wasco Irrigation District have a pipeline interconnection which can move water directly from the California Aqueduct through Semitropic's distribution system and into Shafter-Wasco, a Friant long-term contracting district. In reverse, water from the FKC can be moved through Shafter-Wasco directly to Semitropic, a non-long-term CVP district and a SWP contractor.

Natural streams also provide conveyance capability to facilitate exchanges. As an example, Poso Creek, itself a source of potential exchange supplies, traverses a couple of districts (and the Kern National Wildlife Refuge) and has served as a conveyance vehicle of CVP supplies in the past. All of these interconnections can be used to directly or indirectly deliver exchange water. This illustrates the potential for exchanges between various entities within Kern County and those elsewhere within the CVP or the SWP. As an important aside, several facilities exist which can be used to deliver water to the Kern National Wildlife Refuge. While CVP supplies or purchased non-CVP supplies available to the KNWR are not typically available to water districts, exchanges have historically been done with the KNWR to provide water to the refuge on their preferred demand pattern. Additional exchanges have been offered and considered with the KNWR where refuge supplies could be delivered and stored in the groundwater of KCWA districts and subsequently returned from groundwater or other surface supplies back to the KNWR on its preferred demand schedule. There may be monetary or water resource gains associated with facilitating such exchanges. CVP water from the Friant Division cannot be used for wildlife habitat since the water rights permits do not include fish and wildlife or their habitat as a purpose of use. This EA does not cover exchanges to refuges and separate NEPA analysis would be required.

Kern Delta Water District

Kern Delta Water District (KDWD) is located in the southern portion of the CVP Service Area, directly south of City of Bakersfield, and west of Arvin-Edison. Two major highways, Interstate 5 on the west and State Highway 99 on the east, join at KDWD southern boundary. To the west, KDWD's border roughly follows the Buena Vista Canal, while its eastern border is located west of the City of Arvin (population approximately 13,000 in 2000). KDWD encompasses the historic Kern Lakebed. KDWD comprises of 129,000 acres which are primarily agricultural but also encompassing about 5,000 acres of residential and commercial land uses. Most urban areas are found in the north portion of Kern Delta, where the City of Bakersfield is slowly growing to the south. In addition, there is sparse urban development along the two major east-to-west roads (Panama Land and Taft Highway). Land use south of the City of Bakersfield is mainly agricultural (87%), but there are about 8,000 acres dedicated to petroleum extraction. Planned suburban and commercial development is generally focused on the areas immediately south of Bakersfield.

Major infrastructure in Kern Delta consists of two oil fields: the Ten-Section Oil Field on the west, south of Panama Lane, and a much smaller oil field just south of Panama Lane near the town Lamont at the eastern edge of Kern Delta. There are a number of oil and gas pipelines running through KDWD and several major power line easements. The Arvin-Edison Canal runs through portions of the northern end of Kern Delta, connecting to five existing irrigation canals that serve Kern Delta growers. From west to east, these existing earth-lined canals are the Buena Vista, Stine, Farmers, Kern Island Main, Kern Island Central, and Eastside Canals. All but the Kern Island Main and Eastside Canals generally follow the alignment of historic streams. Lands north of Bear Mountain Blvd, within KDWD, are covered in the Metropolitan Bakersfield Habitat Conservation Plan which has been completed. Kern County is currently developing a HCP which encompasses the remaining lands in KDWD.

Kern Water Bank Authority

The Kern Water Bank Authority (KWBA) located in the southwestern San Joaquin Valley, occupies approximately 30 square miles (20,000 acres) of land in Kern County.
The primary purpose of the KWBA is to recharge, store and recover water (water banking) in order to improve the water supply for its participants during periods of water shortages. It also conducts other activities that include farming and habitat management.

The KWBA is a Joint Powers Authority comprised of six subcontracting water agencies, as listed below**.** All members of the KWBA have a contract, either directly or indirectly, for water from the SWP. KWBA provides the mechanism to help mitigate the various reliability problems inherent in the SWP. The following are Kern Water Bank Authority Member Units:

Dudley Ridge Water District	Tejon-Castac Water District
Kern County Water Agency	Westside Mutual Water Company
Semitropic Water Storage District	Wheeler Ridge-Maricopa Water Storage District

The KWBA operates by recharging surplus water for direct groundwater recharge within recharge basins when it is plentiful. KWBA does not ownership of any of the water recharged

onto the property. All water is owned by the participants purchasing and recharging the water to maintain balance of water supplies. As such, KWBA does not use its banked water for growing crops, although its member districts do use the water for farming within their districts. The majority of KWBA land, 17,000 of the 20,000 acres were farmed intensively prior to 1991. Currently, the water conservation activities of the water bank are allowing re- establishment of intermittent wetland and upland habitat. The CVP water, if approved, would be delivered for recharge of the aquifer. KWBA receives FKC water via the CVC or the Kern River. Both the CVC and Kern River will then convey the water to the Kern Water Bank facilities for groundwater storage until needed by the Kern Water Bank participants. When the stored water is requested by the KWBA participants, the water can be pumped from the ground and delivered through the Kern Water Bank canal, CVC and the California Aqueduct directly or by exchange to the participant's service areas so long as they are within the Place of Use boundaries as defined in Reclamation's water rights permits.

Kings County Water District

The Kings County Water District (KCWD) was formed in 1954 under the County Water District Act to provide a legal entity for water management in the northeast portion of Kings County. The basic missions of KCWD are:

1) Protection, conservation, and stabilization of groundwater.
2) Negotiating and contracting for supplemental water.
3) Maintaining facilities for surface water distribution for irrigation and groundwater recharge.
4) Preserving the existing surface water rights held by mutual water companies through a program of water stock acquisition and retention.

KCWD encompasses the northeastern portion of Kings County, from the Kings River on the north to approximately six miles south of Hanford. To the east, KCWD extends to the County's east boundary, and to the west it extends approximately 5 miles west of Hanford to the eastern edge of the City of Lemoore. KCWD is located in the east central part of the Kings River service area, and is entirely within Kings County. The City of Hanford, with a population of 38,000, lies near the center of KCWD. The total area of KCWD is 143,000 acres, of which 51,150 acres are also with the boundaries of Division 5 of the Kings River Conservation District; 82,610 acres are also within the boundaries of Kaweah Delta Water Conservation District; and 9,240 acres are within the area where the two districts overlap. KCWD’s population excluding City of Hanford is 25,000. Although, KCWD boundaries encompass the Cities of Hanford and a portion of Lemoore, KCWD does not supply any M&I water.

KCWD includes portions of the service areas of three major mutual ditch companies. Peoples Ditch Company and Last Chance Water Ditch Company both possess water rights on the Kings River, and Lakeside ditch Company holds water rights on the Kaweah River. KCWD boundary completely encompasses the area of the Lakeside Irrigation Water District, a California water district formed to administer the water rights and distribution system of the Lakeside Ditch Company stockholders, and acquire additional surface water supplies. KCWD also operates and maintains the Riverside Ditch, a conveyance system used to distribute KCWD and People's Ditch Company water.

KCWD has recharge basins that are located near the conveyance systems of the ditch companies in which they own stock. KCWD also uses Old Slough and river channels, and has a continuing program of purchasing and leasing property for groundwater recharge. KCWD currently has over 1,100 acres of artificial recharge area and also uses some 230 miles of unlined canals owned by the ditch companies that contributes to incidental recharge. Maintenance of these recharge basins is performed by KCWD and consists mainly of weed control and efforts to maintain permeability.

The quantity of water used in the recharge program has only recently been totally measured. Critically dry years such as 1976-77 resulted in zero recharge while wet years such as 1982-83 can yield 125,000 af/y recharged in KCWD. The results of the program are monitored by semiannual measurements of the groundwater level in 230 wells through a cooperative effort. The average of the measurements are taken in these wells each autumn. These measurements depict an erratic decline in groundwater levels. Since KCWD formation in 1954, the average depth to groundwater has gone from 37 feet to 74 feet measured in the autumn of 1997. The average yearly decline in groundwater levels is .86 feet per year since 1954. This equates to an annual average overdraft of 12,300 af/y. To counteract this overdraft, KCWD has practiced a conjunctive use of both surface and groundwater, plus the planned artificial recharge of the groundwater by importing available surplus water and flood release water from reservoirs on the San Joaquin, Kings, and Kaweah Rivers and placing it in recharge basins. KCWD practices appear to be producing positive results because the rate of decline in groundwater levels is less after 1954 than in years preceding formation of KCWD. KCWD efforts are enhanced by the cooperation of Last Chance, Peoples, Settlers, and Lakeside Ditch Companies that provide the conveyance system to these basins and help regulate the rate of recharge. Furthermore, they help distribute surface water purchased by KCWD to local farmers who would otherwise pump groundwater. Approximately 135,000 acres (nearly 95 percent) in KCWD is irrigated agriculture. Surface water supplies for irrigation come from diversions of the Kings and Kaweah Rivers, and from exchanges and purchases of CVP and SWP water. The supply of surface water is inconsistent, and ranges from a low of 30,000 af in 1997 to a high of 327,000 af in 1983. The estimated average surface supply is 150,000 af. Due to inadequate surface water supplies, even in wet years, to meet the total demands for water within KCWD, groundwater is pumped through private wells owned by landowners to meet their individual needs. In addition, all the water requirements to meet M&I users is pumped. Approximately 282,500 af of groundwater is pumped annually resulting in overdraft. This condition is expected to worsen as the urban population grows.

KCWD 1996 Crop Map, showing land use information from DWR 1996 Land Use Survey, indicated that approximately one-half of KCWD's area is field crops, with high proportions of the remaining land used to grow grain and hay, deciduous fruits and nuts. There is a smaller amount of land planted in vineyards as well as citrus, plus truck, nursery and berry crops. The City of Hanford (population approximately 40,0000), the County seat of Kings County, is situated in the geographical center of the KCWD. The 1996 map indicated that approximately 25 percent of KCWD's area is semi-agricultural or non-agricultural. According to KCWD, there is a slow but steady development trend change in land uses from agriculture to urban as the City expands and small county acreages are converted to home sites. The lands that are served by KCWD have been in cultivation for several decades or longer, with some of the People's Ditch

Company ditches dating back to the 1870-1890 period. KCWD has purchased varying amounts of CVP water since 1956. Water purchases have ranged from a low of 1,639 af in 1997-98 to a high of 28,969 af in 1998-99.

Lakeside Irrigation Water District

Lakeside Irrigation Water District (LIWD) is located east of the city of Hanford and the northern portion is crossed by State Hwy 198. LWD is situated within Kings County Water District, Kaweah Delta Water Conservation District and a portion within Kings River Conservation District. LIWD is not represented by the above listed umbrella agencies. LIWD is a member of the Mid-Valley Water Authority; however, Mid Valley Water Authority is not included as a participant in this Proposed Action and environmental analysis LIWD has a total of 31,917 acres. In LIWD's 1998 Annual Report, approximately 27,155 acres were irrigated agricultural land, 1,817 acres were non-agricultural land and 2,945 acres were idle/fallow land that could be irrigated. LIWD has maintained a crop survey since its formation in 1962. In 2000 the four largest crops were cotton (9,879 ac), corn (7,697 ac), silage grains (6,521 ac), and alfalfa (5,133 ac). Portions of these crops were single or double cropped for a total of 33,643 acres planted. The balance of agricultural land was planted to various tree crops, grasses, vegetables and sugar beets.

There have been no sightings of Federally listed threatened or endangered species within the bounds of LIWD.

Liberty Water District

Liberty Water District (LWD) is located in Fresno County south of the city of Caruthers and northerly of the cities of Riverdale and Laton and is bisected by Hwy 41. LWD comprises 21,189 acres and all are irrigated agriculture. LWD has historically grown row crops, alfalfa, grains which have been planted to tree crops, and vines with little or no change in the annual crop water demand. LWD would utilize CVP water exclusively for agricultural use or recharge of groundwater and would not transfer the CVP water. LWD has no M&I use within LWD.

North Kern Water Storage District

The North Kern Water Storage District is situated in the San Joaquin Valley portion of Kern County and encompasses about 70,000 acres divided into two project areas. The 1950 North Kern Water Storage District project of about 60,000 acres (North Kern hereinafter) and the 1979 Rosedale Ranch Improvement District project of about 10,000 acres. Both are fully developed to irrigated agriculture, with almonds and grapes accounting for about 50% of the cropped area and stone fruit and other permanent and annual crops comprising the remaining amount. North Kern is comprised of approximately 64,813 irrigated acres and about 74% is planted to permanent crops. Water supplies include Kern River, Poso Creek, oilfield waste water, and other smaller creeks.

<u>1950 North Kern Project</u>

The historical surface water supplies of North Kern have ranged from 6,000 acre-feet in a dry year to nearly 394,000 acre-feet in a wet year. Owing to the highly variable Kern River supply, North Kern has been forced to regulate available surface water supplies from times of surplus

(wet years) to times of need (dry years). This regulation has been accomplished, to a large extent, through use of the underlying groundwater reservoir. During wet years on the Kern River, significant deliveries of surface water are made to irrigation and spreading (for groundwater recharge). For the purpose of groundwater recharge, North Kern makes use of about 1,500 acres of recharge basins (water spreading areas); the dry channel of Poso Creek and several other controlled-flow facilities. In wet years, more than 200,000 acre-feet of water have been directed into recharge basins for replenishment of the groundwater aquifer. During dry years, deliveries of surface water to irrigation are greatly reduced and groundwater pumping is significant. Extraction of groundwater by means of North Kern wells has ranged from zero to more than 80,000 acre-feet in one year. North Kern has successfully operated its conjunctive use project for 50 years. The underlying groundwater is part of the larger groundwater basin which underlies the southern San Joaquin Valley. While North Kern is in balance respecting water supplies and uses within its boundaries, groundwater levels are tied to the larger basin, which is in a condition of overdraft.

1979 Rosedale Ranch Improve District Project

After the above 1950 project was implemented lands were annexed to North Kern with the specific requirement that the newly annexed lands would not share in the water supplies of the original project. The lands thus developed a distinct and separate project with the purchase of water supplies during wet years from Kern River rights of the City of Bakersfield. The Rosedale Ranch project has approximately 14 miles of unlined canals for the direct delivery of water or irrigation. The focus of the project was groundwater recharge through a combination of in-lieu-pumping deliveries and canal losses which has totaled up to 31,000 af. North Kern does not supply M&I water service.

The FKC bisects North Kern with less than 50% uphill of the FKC. There is a turnout on the North side of Poso Creek on the FKC. North Kern has a weir across Poso Creek on the Calloway Canal approximately 1-1/2 miles below the FKC. NKWSD, in a program with Kern-Tulare and Rag Gulch Water districts recently constructed a turnout off 1 mile north of 7th Standard Road. In addition, North Kern has a pump station on the Calloway Canal at Kimberlina Road that is used to deliver water supplies to Shafter-Wasco Irrigation District (SWID) via SWID's North Pipeline. The pump station can also allow water to flow into the Calloway Canal at this location. NKWSD also has a gravity outlet on the Calloway Canal near the intersection of Cherry and Fresno Avenues that is used to deliver water supplies from the Shafter-Wasco Irrigation District South Pipeline into the Calloway Canal. Finally, water supplies delivered at the end of the FKC can be exchanged for Kern River supplies being delivered at lower elevations. The Kern River supplies intended for lower elevations are diverted into the District's higher elevation Beardsley Canal to be delivered to lands uphill of the FKC.

Rosedale-Rio Bravo Water Storage District

Rosedale-Rio Bravo Water Storage District (R-RBWSD) is located west of Bakersfield in Kern County. R-RBWSD has a gross area of approximately 43,000 acres with a net estimate of 33,400 irrigated agricultural acres. Approximately 3,900 acres are fallow lands, 2,500 acres undeveloped lands and 1,100 acres of canals and recharge basins. R-RBWSD is primarily planted to alfalfa hay, almonds, grain, cotton and corn. All water coming into R-RBWSD has been used for groundwater recharge and overdraft correction. R-RBWSD does not serve M&I water.

Water was historically supplied from landowner wells pumping from the groundwater basin, with a small amount (an average about 15,000 af/y) of irrigation diversions to lands adjacent to the R-RBWSD's groundwater recharge project. Prior to operation of its groundwater recharge project, pumping extractions exceeded the safe yield of the local groundwater supply, and a substantial overdraft in the range of 40,000 to 50,000 af/y occurred annually. As a result of this overdraft, groundwater levels were declining at a rate of 8 to 10 feet per year. In 1959, the R-RBWSD was formed to develop a groundwater recharge project to offset the overdraft. Construction of the recharge project was completed in 1962. The physical features of the project include facilities to divert waters from the Kern River and the joint use Cross Valley Canal into the Goose Lake Slough Channel, the channel itself and recharge basins. R-RBWSD has completed construction of additional recharge basins and now has a wetted area of approximately 840 acres available for groundwater recharge. R-RBWSD is also a recharge participant in the Pioneer Project, and as such, has first priority to 25% of the total recharge capacity. This provides an additional 50 cfs of recharge capacity. R-RBWSD acquires water for recharge purposes from the Kern River through a water service agreement with the city of Bakersfield, from the FKC of the CVP, as available, and from the SWP through a water supply contract with the KCWA. Water supplies from these three sources have averaged about 62,000 af/y for the years 1962 through 1999 or about 79% of the cumulative consumptive use during those years.

The SWP contract was originally to provide an average (firm and surplus) of about 29,900 af/y. However, R-RBWSD is now expected to receive only about 76% of its firm supply or about 22,700 af/y. R-RBWSD has also been unable to renew its short-term contract with Reclamation and is now only able to obtain CVP water through transfers or surplus (flood water) supplies.

Semitropic Water Storage District

Semitropic Water Storage District (SWSD) is located in north-central Kern County in the San Joaquin Valley, about 20 miles northwest of the City of Bakersfield. Semitropic was organized in 1958 to supply supplemental water within its boundaries. The total land area within Semitropic is approximately 221,000 acres (345 square miles), with about 143,000 acres (223 square miles) irrigated area. Geographically, SWDS is located at the South End of the San Joaquin Valley, which is generally hotter and drier than other parts of the Valley.

During the 1960's, Semitropic developed plans for main conveyance and distribution system facilities to extend from the Governor Edmund G. Brown California Aqueduct (California Aqueduct) to farm delivery locations. Prior to construction of the facilities, irrigated crops within Semitropic were totally dependent on groundwater pumping.

Semitropic initially contracted with the Kern County Water Agency (KCWA), for an annual firm supply of 158,000 acre-feet of State Water Project (SWP) water and 25,100 acre-feet per year of surplus water. Semitropic gave up 3,000 acre-feet of supply to buy into Kern Water Bank (KWB) and now has 155,000 acre-feet annual firm supply of SWP water. This is used to irrigate approximately 42,300 acres in its Contract Water Service Area (CWSA). Other water is available from the KCWA on an interruptible basis to deliver to other service areas totaling about 58,000 acres (consisting of a Conjunctive Surface Water/Groundwater Surface Area (CSWGSA) of

about 28,500 acres and an In-Lieu Service Area (ILSA) of about 29,500 acres). Farmers in all the service areas maintain wells to supplement Semitropic Supplies and protect against shortages. Nearly 42,700 acres rely exclusively on groundwater. Landowners within SWSD apply approximately 480,000 acre-feet of water of which, in a very good year 350,000 acre-feet can be imported surface water with the remaining 130,000 acre-feet applied in the groundwater service area. Approximately 72% of the land area in SWSD is included in the Buttonwillow and Pond Poso Improvement Districts leaving 28% in the "unorganized area". The "unorganized area" is a large, contiguous area in the northwest quarter of SWSD. This area is mostly not irrigated and does not benefit from the Proposed Action nor is it envisioned to be developed to irrigated agriculture.

SWSD provides water banking and owns a portion of the Kern Water Bank. It should be noted that water banking for later (beyond one-year) is not included in this analysis and review process. SWSD also provides banking for conjunctive use for in-lieu storage to alleviate groundwater pumping. The Proposed Action could result in providing CVP water to SWSD for the purpose of groundwater recharge or conjunctive use.

Tulare Lake Basin Water Storage District

Tulare Lake Basin Water Storage District (TLBWSD) has a service area of 185,800 acres and its boundaries include nearly the entire Tulare Lake Bed. TLBWSD is located southwest of the city of Corcoran in Kings County. TLBWSD was formed in 1926 at which time all the lands in TLBWSD were fully developed. All deliveries from TLBWSD are for agricultural purposes. TLBWSD manages Kings River South Fork water deliveries at Empire No. 2 Weir near Stratford (immediately below State Route 41) in Kings County. Empire No. 2 Weir diverts Kings River water into the Tulare Lake, Kings River-South Fork and Blakeley canals which serve the Tulare Lake Bed. TLBWSD is a SWP contractor and is connected to the California Aqueduct by Lateral A and B. Despite its state contract, the Tulare Lake Bed units rely most heavily on Kings River water for irrigation purposes.

CVP water is conveyed to TLBWSD via the California Aqueduct or released into the Kings River, Kaweah River or Tule River from the FKC. While TLBWSD has no formal water banking facilities, it does practice conjunctive use.

The area served by TLBWSD remain vulnerable to occasional flooding and drought-caused water supply shortages. The result, economically and physically, is that the Tulare Lake Bed is farmed in large tracts upon which annual field crops are produced. Small farmers cannot endure the financial burdens of Tulare Lake Bed agricultural operations. Main crops are cotton, seed alfalfa and grain.

Kings River Conservation District

The Kings River Conservation District (KCRD) is a water resources and energy management agency located in the central San Joaquin Valley. KRCD is a public agency created in 1951 through special legislation by the State of California. Its boundaries include the entire service area of the Kings River – an area of approximately 1,100,000 acres, plus an additional area of approximately 140,000 acres outside of the Kings River service area. KRCD's mission is to provide flood protection, achieve a balanced and high quality water supply, and develop power

resources within its boundaries. KRCD works with and coordinates the common interests of the following thirty-five (35) entities:

Alta Irrigation District	Tulare Lake Basin Water Storage District
Clark's Fork Reclamation District No. 2069	Tulare Lake Reclamation District No. 761
Consolidated Irrigation District	Burrel Ditch Company
Corcoran Irrigation District	Corcoran Irrigation Company
Empire West Side Irrigation District	Crescent Canal Company
Fresno Irrigation District	John Heinlen Mutual Water Company
James Irrigation District	Last Chance Water Ditch Company
Kings County Water District	Lemoore Canal and Irrigation Company
Kings River Water District	Liberty Canal Company
Laguna Irrigation District	Liberty Mill Race Company
Lakeside Irrigation Water District	Lovelace Water Corporation
Liberty Water District	Peoples Ditch Company
Mid-Valley Water District	Reed Ditch Company
Raisin City Water District	Southeast Lake Water Company
Riverdale Irrigation District	Stinson Canal and Irrigation Company
Salyer Water District	Tulare Lake Canal Company
Stratford Irrigation District	Upper San Jose Water Company
Tranquility Irrigation District	

Alta Irrigation District

Alta Irrigation District is located east and south of the Kings River and was California's first public irrigation district formed (in 1888) to actually deliver water to its users. The District's Alta Canal transports water into a system which serves the area from Reedley to an area west of Orange Cove in eastern Fresno County, and the Dinuba, Orosi, and Traver areas of northern Tulare County. The District's total area is 130,000 acres of which irrigated ag is 90,000 and M&I is 40,000 acres. Main crops are peaches, nectarines, plums, citrus, and grapes.

Clark's Fork Reclamation District No. 2069

Clark's Fork Reclamation District No. 2069 delivers a limited amount of water to the Kings County "island" formed by the Kings River's Clark's Fork and South Fork channels northwest of Lemoore. The District has no District owned distribution system. Diversions are all by pumping through 30 individual pumping facilities along the Clark's Fork and South Fork channels. The service area is 1,920 acres. Irrigated acres are 1,800 and 120 acres are fallow. Main crops are cotton, alfalfa and wheat.

Consolidated Irrigation District

Consolidated Irrigation District (CID) has a service area of 155,000 acres serving a large portion of southeastern Fresno County and smaller areas in northeastern Kings County. CID extends from northeast of Sanger to south of Kingsburg and west of Caruthers. Communities served by CID include Sanger, Del Rey, Parlier, Fowler, Selma, Kingsburg and Caruthers. CID was a pioneer in developing groundwater recharge basins, storing water in the underground reservoirs in wet years for use (by pumping) in dry years and by those lacking access to surface water supplies in the San Joaquin Valley. CID also administers the Lone Tree Channel, a separate water delivery system. Lone Tree rights are held by approximately 80,000 acres within CID's boundaries.

Corcoran Irrigation District
Corcoran Irrigation District is described earlier in this document.

Empire West Side Irrigation District
Empire West Side Irrigation District serves a narrow territory which stretches more than seven miles along the South Fork's right (west) bank from above Empire No. 1 Weir, an area running northwest to southwest of Stratford in Kings County. Empire West Side Irrigation District also is a SWP contractor with deliveries made through TLBWSD Lateral A, which leaves the California Aqueduct at Kettleman City. Empire West Side Irrigation District serves agricultural water to its service area comprising 6,400 acres.

Fresno Irrigation District
Fresno Irrigation District (FID) is a member of KRCD and is also a CVP Long-Term Contract. FID takes delivery of the City of Fresno's Class 1 water amounting to 60,000 af/y and 75,000 af/y of Class 2 water from the Friant Division. The FID supply under the complex Kings River water diversion schedules is the largest in KRCD. Surface water transported by FID to groundwater recharge basins sustains the groundwater which is presently the only source of municipal and industrial water for the metropolitan Fresno-Clovis area. Surface water used for agricultural irrigation is also a major groundwater recharge contributor. FID stretches from the base of the Sierra foothills to west and south of Kerman. FID's internal water distribution system is extensive and complex. FID provides water (through the Fresno supply) to the Freewater County Water District north of Sanger.

FID's territory encompasses much of the northern valley floor portion of Fresno County and embraces the cities of Fresno and Clovis. Other communities within FID's service area include Kerman and Biola. FID's service area is the largest of any member unit. The service area is 245,246 acres. Irrigated agriculture is 152,694 and M&I is 92,552 acres.
James Irrigation District
James Irrigation District (JID) formerly served its agricultural users with Kings River water diverted through the James Main and Beta Main canals. JID's mission is to deliver agricultural water and has a service area of 25,800 irrigated acres. Since 1963, its primary surface water supply (under water exchange agreements with both JID and Tranquillity Irrigation Districts (TRID) and the lower Kings River units) has been CVP water pumped from the Mendota Pool. JID diverts Kings River water only when flood release flows are available. Water enters JID by diversions of Kings River water at the James Weir; Diversions of CVP water pumped from Mendota Pool into the James Bypass; diversions of San Joaquin River water from Mendota Pool

through the James Bypass; delivery from a well field through lined canals and pipelines along Lassen Avenue and McMullin Grade Road; and spill from Fresno Irrigation District into a lined canal along McMullin Grade Road (not a supply). No water leaves JID.

JID and TRID are the two most northwesterly units and have an exchange agreement resulting in water being imported into the Kings River service area on a regular basis. JID and TRID are also CVP Contractors. The two Districts leased their average annual Kings River supply to other lower Kings River units at a price equal to that paid by JID and TRID to purchase a like amount of CVP water delivered at Mendota Pool through the Delta-Mendota Canal under their CVP Long-Term contracts. Up to 26,600 acre feet of JID and TRID supply in any one year is credited by the lower Kings River units to help facilitate minimum Pine Flat releases for fish and wildlife, channel conveyance losses and other administrative purposes. JID and TRID benefit by avoiding enormous Kings River channel losses in exchange for 100% water deliveries from Mendota Pool while assisting other Kings River units in resolving their own channel loss problems.

Kings County Water District
Kings County Water District is described earlier in this Section as a separate individual entity.

Kings River Water District
Kings River Water District (KRWD) serves much of the Centerville Bottoms area northeast, east and southeast of Sanger. The Centerville Bottoms is a rich and beautiful delta containing many wooded areas and complex, secluded sloughs which, supplied by the Kings River, ultimately flow back into the main stream. KRWD's senior water rights and small delivery system capacity combine to enable KRWD to deliver water much of the year. KRWD's service area is 25,800 acres of which 10,000 acres are irrigated agriculture. KRWD does not provide M&I water. Water enters by diversions from the Kings River. No water leaves KRWD.

Laguna Irrigation District
Laguna Irrigation District (LGID) serves an area of southern Fresno County and northern Kings County west of Laton and south, southeast and southwest of Riverdale. The total service area is 35,000 acres with a substantial portion that includes the historic Rancho Laguna de Tache grant. This grant was a 48,800 acre Mexican land grant which included a 26 mile stretch along the original Kings River channel's right bank (below the modern site of Kingsburg. LGID southerly boundary is generally along the Kings River. The grant was complex but played a pivotal role in the eventual settlement of Kings River water rights and supplies through its 1892 purchase by the Fresno Canal and Irrigation Company, and gained control of the grant's riparian water claims. In 1897, the manager of the Fresno canal system and the Laguna ranch owner negotiated the first partial Kings River water supply schedules. This ultimately led to later agreements that resolved all Kings River water rights and supply issues. LGID has a total area of 35,000 acres of which 20,700 are agricultural. LGID does not provide M&I water.

Lakeside Irrigation Water District
Lakeside Irrigation Water District is discussed earlier in this section.

Liberty Water District
Liberty Water District is discussed earlier in this section.

Mid Valley Water District
Mid Valley Water District is comprised of 13,406 agricultural acres. Water is delivered by pumping from the James Bypass. Mid Valley Water District does not provide M&I water.

Raisin City Water District
Raisin City Water District (RCWD) has a total of 53,500 acres, of which, 43,500 are agricultural, 5,000 are M&I and 5,000 are fallow. RCWD does not provide M&I water.

Riverdale Irrigation District
Riverdale Irrigation District (RID) serves rural portions of the Riverdale community between Murphy Slough and the King River's North Fork. RID's Kings River supply is combined with the Reed Ditch Company and Liberty Mill Race Company under the Murphy Slough Association. RID's total area is 15,000 acres, of which, 14,000 acres are ag, 700 are M&I and 300 are fallow. Water is diverted from the Kings River near the town of Laton. No water is returned to the river.

Salyer Water District
Salyer Water District still exists but is no longer functioning and will not be a participant or receiving CVP water.

Stratford Irrigation District
Stratford Irrigation District service area is 9,750 agricultural acres and serves the left (east) bank of the South Fork, below Empire No. 1 Pool. Stratford Irrigation District serves the Stratford area of Kings County and does not provide M&I water. Water is diverted from the Kings River at Lemoore Weir into the Lemoore Canal, or from the Kings River at Empire Weir No. 1 or Empire Weir No. 2.

Tranquillity Irrigation District
Tranquillity Irrigation District (TRID) is a CVP Contractor and has already undergone extensive environmental review and is not the focus of this EA. TRID has a service area of 10,700 agricultural acres and is a CVP Long-Term contractor. TRID is the northwesterly unit in KRCD. TRID's surface water supply (under the Tranquillity exchange agreement) is pumped from the Mendota Pool. TRID's former Kings River diversion facilities, the Lone Willow Channel and Beta Main Canal, were last used in 1958 and are abandoned.

Tulare Lake Basin Water Storage District
Tulare Lake Basin Water Storage District is described elsewhere in this section
Tulare Lake Reclamation No. 761
Tulare Lake Reclamation District No. 761 receives most of its water supplies through the Blakeley Canal, originating at Empire Weir No. 2, and Lateral A from the SWP. Tulare Lake Reclamation No. 761 delivers water to lands on the western and southwestern sides of the Tulare Lake Bed in Kings County. Its service area is 37,000 acres, of which, 16,000 acres are agricultural and none are M&I. The remaining acres are fallow/idle and portions serve as wetlands. Main crops are wheat and alfalfa.

Burrel Ditch Company

Burrel Ditch Company has a service area of 4,500 agricultural acres and is a mutual water company. The company delivers water from Murphy Slough into the company's small service area in the Burrel area, east of Fresno Slough. Main crops are wine grapes, almonds, alfalfa and silage corn.

Corcoran Irrigation Company

Corcoran Irrigation Company has no designated service area and is a mutual water company serving the Corcoran area of eastern Kings County with water transported 25 miles through the Lakelands Canal system from People's Wier, south of Kingsburg. The Peoples Weir is the largest of all such Kings River structures and spans the main channel a mile south of the Fresno County of Kingsburg just inside the northeastern corner of Kings County. It creates a large pool from which water may be diverted into the Lakelands Canal, which flows from the left bank 25 miles to the Corcoran area, or into the People's Ditch. Those privately owned canals deliver water to users in a substantial portion of eastern Kings County, all the way south to the Tulare Lake Bed.

Crescent Canal Company

Crescent Canal Company has a service area of 13,100 agricultural acres and is a mutual water company serving an area west of the Kings River North Fork and Fresno Slough, several miles of west of Riverdale. Deliveries are through the company's Crescent Canal. The Crescent Weir is located a few miles southwest of Riverdale and four miles below State Route 41 where North Fork flood release quantities are typically measure and confirmed. Beginning here is the Crescent Canal Company's ditch. Main crops are cotton, seed alfalfa and safflower.

John Heinlen Mutual Water Company

John Heinlen Mutual Water Company has a service area of 13,100 agricultural acres and serves stockholders in a Kings County area north and northwest of Lemoore. Main crops are cotton and alfalfa.

Last Chance Water Ditch Company

Last Chance Water Ditch Company is a mutual water company which serves stockholders within a large portion of Kings County, southwest of Laton and north and west of Hanford, as well as, portions of the Tulare Lake Bed. The company has a service area of 39,000 agricultural acres. Main crops are stone fruit and walnuts.

Lemoore Canal and Irrigation Company

Lemoore Canal and Irrigation Company is a mutual water company serving stockholders in the Lemoore area of Kings County. The company's large service area has one of the most substantial lower river water supplies. The company's service area is 52,300 agricultural acres. Main crops are cotton, wheat and safflower.

Liberty Canal Company

Liberty Canal Company is a mutual water company and delivers water through the Liberty Canal which flows northwesterly from Laton to the company's service area of 5,300 irrigated acres north of Riverdale. Main crops are orchards, vines and row crops.

Liberty Mill Race Company

Liberty Mill Race Company is a mutual water company receiving water through Murphy Slough and serves an area, approximately 8,100 irrigated acres, north and northwest of Riverdale and near Burrel.

Lovelace Water Corporation
Lovelace Water Corporation, a private water company, serves the northern portion of the Tulare Lake Bed with deliveries make through the Kings River South Fork Canal and the Tulare Lake Canal. Lovelace Water Corporation has no designated service area.

People's Ditch Company
People's Ditch Company is a mutual water company providing water service over an extensive portion of northeastern Kings County (including the Hanford area), as well as, making deliveries to stockholders in the Tulare Lake Bed. The company operates People's Weir which was discussed in this section under Corcoran Irrigation Company. In wet years, surplus water deliveries through the People's Ditch is ponded in the Kings County Water District's extensive system of groundwater recharge basins and channels. The People's Ditch Company has no designated service area.

Reed Ditch Company
Reed Ditch Company is a mutual water company serving a small area northwest of Riverdale with water delivered through Murphy Slough. The company's service area is 3,500 irrigated agricultural acres. Main crops are trees, row crops and vines.

Southeast Lake Water Company
Southeast Lake Water Company is a mutual water company with no designated service area. The company delivers water to stockholders in portions of the Tulare Lake Bed.

Stinson Canal and Irrigation Company
Stinson Canal and Irrigation Company is a mutual water company and has a service area of 15,500 irrigated agricultural acres serving an area west of the left bank of the North Fork and Fresno Slough, west and northwest of Burrel. Deliveries are through the company's Stinson Canal. Main crops are row crops.

Tulare Lake Canal Company
Tulare Lake Canal Company is a mutual water company and has no designated service area. The company provides water to stockholders in portions of the Tulare Lake Bed.

Upper San Jose Water Company
Upper San Jose Water Company serves a narrow area about seven miles along the western sides of the South Fork, Clark's Fork and the Crescent Bypass, just east of Lemoore Naval Air Station in Kings County. The company has no designated service area.

Ditch companies are entities that do not have specific geographic boundaries. However, they own canals and ditches that provide the mechanism to deliver water to the stock holders.

Besides groundwater potential water supplies are Kings River and streams tributary thereto, such as Mill Creek, Sand Creek, Wahtoke Creek and other minor streams flowing into KRCD, Kaweah, St. Johns and Tule Rivers, SWP, and CVP (Friant Division or Cross Valley Canal Divisions supplies).

Appendix D Potential Imbalanced Exchange Scenarios and Exchange Mechanisms

Potential Imbalanced Exchange Scenarios and Exchange Mechanisms

SCENARIOS WHEREBY IMBALANCES COULD OCCUR

Scenario 1 – Evaporation and Conveyance Losses
In some cases the exchange parties are miles apart or the exchange water is temporarily stored resulting in losses of water due to evaporation and/or seepage. Consequently, one (or more) recipient does not receive the entire amount of water. The parties would enter into mutually agreeable terms to compensate for such losses.

Scenario 2 – Differing Hydrological Conditions
The hydrological conditions in the State of California are sporadic. Northern California could receive higher precipitation and snow-pack to fill reservoirs compared to Southern California. Annual allocations are based on snowmelt and runoff for the Friant and Delta CVP contractors. These varying conditions could result in less water available to complete the exchanges. The exchange arrangements between the parties typically include mutually agreeable terms for compensation if such conditions occur.

Scenario 3 – Timing of Water Deliveries
As stated in the Background Section above, the CV's CVP water is delivered to SWP facilities when an opportunity exists for DWR to convey this water. This opportunity is often outside of the growing season when the water is not needed for crops in the CV's districts. In these cases, the CVs could enter into agreements with an exchangee that is able to take this water at the time it is available. Later during the growing season, an amount of water would be returned to the CV. The amount returned to the CV would be less than the amount delivered to the exchangee to compensate the exchangee for the service of providing this water to the CVC at a time it is needed.

Scenario 4 – Differing Values of Water During the Year
Scenario 4 is similar to Scenario 3. However the imbalanced exchange is due to other timing issues other than restrictions by DWR to convey the CV Contractor's water. The value of water is typically much higher between June and September. Exchange agreements could include an imbalanced exchange of water based on unpredictable timing constraints to offset the difference in the value of the water when it is delivered.

Potential Cross Valley Contractors Exchange Mechanisms

1. Historical exchanges with AEWSD
    - Reclamation provides CVP water to CV contractor from the Delta
    - Delivery from CV contractor to AEWSD
        i. If capacity is available at Jones Pumping Plant

- The San Luis and Delta-Mendota Water Authority (SLDMWA) conveys CV contractor water in CVP facilities
    a. Point-of-delivery from SLDMWA to CV contractor is O'Neill Forebay
    b. Reclamation provides Federal power at Jones Pumping Plant
- DWR wheels CV contractor water in SWP facilities from O'Neill Forebay
    a. Point-of-delivery is AEWSD turnouts off of the Aqueduct or the CVC turnout off of the Aqueduct
    b. If CVC is used, then the Kern County Water Agency (KCWA) conveys CV contractor water in the CVC to AEWSD's turnout off of the CVC
    c. Reclamation provides Federal power at Dos Amigo Pumping Plant

ii. If capacity is available at Banks Pumping Plant
- DWR conveys CV contractor water in SWP facilities
    a. Point-of-delivery is AEWSD's turnouts off of the Aqueduct or the CVC turnout off of the Aqueduct
    b. If the CVC is used, then KCWA conveys CV contractor water in the CVC to AEWSD's turnout off of the CVC
    c. Reclamation provides Federal power at Banks and Dos Amigo Pumping Plants

- Return from AEWSD to CV contractor
    i. Point-of-delivery to CV contractor is CV contractor turnouts off of the FKC
    ii. Source of water is Friant Division CVP water
- Exchange may be unbalanced (up to 2:1 average exchange ratio over a 10-year period)

2. Exchange with Friant Division CVP contractor
- Reclamation provides CVP water to CV contractor from the Delta
- Delivery from CV contractor to Friant Division CVP contractor

i. If capacity is available at Jones Pumping Plant
- SLDMWA conveys CV contractor water in CVP facilities
    a. Point-of-delivery from SLDMWA to CV contractor is O'Neill Forebay
    b. Reclamation provides Federal power at Jones Pumping Plant
- DWR conveys CV contractor CVP water in SWP facilities from O'Neill Forebay
    a. Point-of-delivery is the CVC turnout off of the Aqueduct
    b. Reclamation provides Federal power at Dos Amigo Pumping Plant
- KCWA conveys CV contractor water in CVC through the CVC/FKC Intertie into FKC
- CV contractor water enters FKC as "Project Water" subject to Reclamation Law with no requirement for a Warren Act contract
- FWA delivers water to Friant Division contractor

ii. If capacity is available at Banks Pumping Plant

- DWR wheels CV contractor CVP water in SWP facilities
    a. Point-of-delivery is the CVC turnout off of the Aqueduct
    b. Reclamation provides Federal power at Banks and Dos Amigo Pumping Plants
- KCWA conveys CV contractor CVP water in CVC through the CVC/FKC Intertie into FKC
- Water enters FKC as "Project Water" subject to Reclamation Law with no requirement for a Warren Act contract
- The Friant Water Authority (FWA) delivers water to Friant Division CVP contractor

- Return from Friant Division CVP contractor to CV contractor
    i. Point-of-delivery to CV contractor is CV contractor turnouts off of the FKC
    ii. Source of water is Friant Division CVP water
- Exchange may be unbalanced (up to 2:1 average exchange ratio over a 10-year period)

3. Exchange with SWP contractor
    - Reclamation provides CVP water to CV contractor from the Delta
    - Delivery from CV contractor to SWP contractor
        i. Point-of-delivery of CV contractor water to SWP contractor is in the Delta
        ii. SWP contractor conveys CV contractor water under Article 55 of its SWP contract for delivery to SWP contractor
        iii. Reclamation provides Federal power at Banks and Dos Amigo Pumping Plants
    - SWP contractor returns water to CV contractor
        i. If source of delivery to CV contractor is SWP contract supplies
            - SWP contractor wheels CV contractor water in SWP facilities to the CVC turnout off of the Aqueduct
            - KCWA wheels water in CVC through the CVC/FKC Intertie into FKC
            - Water enters FKC as "Project Water" subject to Reclamation Law with no requirement for a Warren Act contract
            - FWA delivers water to CV contractor
        ii. If source of delivery to CV contractor is from previously banked CVP, SWP, Kern River, 215, or abandoned water
            - SWP contractor delivers recovered groundwater to CVC
            - KCWA wheels water in CVC through the CVC/FKC Intertie into FKC
            - Water enters FKC as "Project Water" subject to Reclamation Law with no requirement for a Warren Act contract
            - FWA delivers water to CV contractor
    - Exchange may be unbalanced (up to 2:1 average exchange ratio over a 10-year period)
4. Exchange with Tulare Lake Basin Water Storage District (TLBWSD)
    - Reclamation provides CVP water to CV contractor from the Delta
    - Delivery from CV contractor to TLBWSD
        i. Point-of-delivery to SWP contractor is in the Delta

    ii. SWP contractor conveys CV contractor CVP water supplies under Article 55 of its SWP contract for delivery to SWP contractor
    iii. Reclamation provides Federal power at Banks and Dos Amigo Pumping Plants
- Exchange for Friant Division CVP Water Supplies
    i. TLBWSD delivers CV contractor water to TLBWSD points-of-diversion off the Aqueduct
    ii. TLBWSD delivers non-project water from Pine Flat, Kaweah or Success Reservoirs to Friant Division CVP contractors on the same local system
    iii. Friant Division CVP contractors deliver CVP water via the FKC to the CV contractors
    iv. Water is delivered to the CV contractor as" Project Water" subject to Reclamation law with no requirement for a Warren Act contract
    v. Water is delivered to the TLBWSD as non-project water not subject to Reclamation law with no requirement for a Warren Act contract
- Exchange may be unbalanced (up to 2:1 average exchange ratio over a 10-year period)

Appendix E ITA and Cultural Resources Documentation

Lawrence, Benjamin <blawrence@usbr.gov>

KRISTI THIS IS ADMIN --Re: Request for Determinations, SCCAO EA 12-048: Cross Valley Contractors Interim Renewal Contracts

RIVERA, PATRICIA <privera@usbr.gov> Tue, Mar 12, 2013 at 8:06 AM
To: "Lawrence, Benjamin" <blawrence@usbr.gov>
Cc: Kristi Seabrook <kseabrook@usbr.gov>, Mary Williams <marywilliams@usbr.gov>

Ben,

I reviewed the proposed action to renew Interim Renewal Contracts for the seven Cross-Valley Contractors shown in the attached graphics. This would allow for continued water service and conveyance for the Contractors while long-term agreements are being analyzed. Note that under the requirements of the Central Valley Project Improvement Act (CVPIA), renewal of the contracts by Reclamation is not discretionary. Because of geographic and capacity limitations, exchanges are often necessary to deliver water to the contractors. The exchanges, between individually identified contractors, would also be approved as part of this action.

The proposed action does not have a potential to affect Indian Trust Assets.

Patricia Rivera
Native American Affairs Program Manager
Mid-Pacific Region
Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825
(916) 978-5194

United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, California 95825-1898

IN REPLY
REFER TO:
MP-153
ENV-3.00

VIA ELECTRONIC MAIL ONLY

March 12, 2013
MEMORANDUM

To: Benjamin Lawrence
SCAO

From: Scott Williams
Archaeologist – Division of Environmental Affairs

Subject: Cross-Valley Interim Renewal Contracts (13-SCAO-115)

Ben

The proposed undertaking for Reclamation to provide approval for Cross-Valley (CV) Interim Renewal Contracts (IRC) is in essence an administrative action and has no potential to cause effects to historic properties pursuant to the Section 106 implementing regulations at 36 CFR Part 800.3(a)(1).

The Cross Valley Contractors and San Luis Unit long-term contract renewal has not been completed as ESA consultation for the Central Valley Project (CVP)/State Water Project (SWP) Coordinated Operations is on-going. The existing IRC for the CV contractors are set to expire on February 28, 2014 and need to be renewed until long-term water service contracts can be executed. Due to geographic differences between the CV contractors' water supplies and their respective service areas, the Article 5 exchange arrangements are needed in order for the CV contractors to ultimately receive their water supplies.

The purpose of the IRC, as directed by the Central Valley Project Improvement Act, is to continue providing water service to the CV contractors who provide water service to their customers, which helps to sustain the regional economy, and in particular the agricultural sector of the economy. The purpose of the Article 5 exchanges is to continue providing a streamlined approval process and mechanism for water delivery to the CV contractors on a demand schedule such that the contractors have the ability to take delivery of their supplies in large quantities and during short periods of time.

No changes to any contractor's service area are part of the Proposed Action, nor will there be any ground disturbance resulting from the proposed action. Any request by a CV contractor to change its existing service area would be a separate action. Separate appropriate environmental compliance and documentation would be completed before Reclamation approves a land inclusion or exclusion to any CV contractor's service area.

This Memo is intended to convey the conclusion of the Section 106 process for this undertaking. Please retain a copy of this memo with the EA file. Thank you for providing the opportunity to comment on this action.

Appendix F Conveyance Facilities and Waterways

Conveyance Facilities and Waterways

Jones Pumping Plant and Banks Pumping Plant

Located in the Sacramento-San Joaquin Delta, Banks lifts water 244 feet from the Clifton Court Forebay into the beginning of the Aqueduct. DWR has a priority system for pumping SWP and CVP water supplies at Banks. CVP water supplies have a lower priority compared to SWP uses. Prior to pumping CVP supplies at Banks (Joint Point of Diversion {JPOD}) there are environmental and water quality plans that must be submitted and approved and criteria that must be met. Under certain conditions, DWR does not have an opportunity to pump and convey the annual allocation of water supplies to the CV contractors or pumping and conveyance may occur at a time that is outside of the growing season.

Jones consists of an inlet channel, pumping plant, and discharge pipes. Water in the Delta is lifted 197 feet into the DMC. Each of the six pumps at Tracy is powered by a 22,500 horsepower motor and is capable of pumping 767 cfs. Power to run the huge pumps is supplied by CVP powerplants. The water is pumped through three 15-foot-diameter discharge pipes and carried about 1 mile up to the DMC. The intake canal includes the Jones Fish Screen, which was built to intercept downstream migrant fish so they may be returned to the main channel to resume their journey to the ocean. Although CV contractor supplies are predominantly pumped at Banks, infrequently, if pumping capacity exists after all other CVP needs have been met (typically in the spring), CV contractor water supplies have been pumped at Jones and moved over the SWP at O'Neill Forebay for conveyance to the CVC.

Delta-Mendota Canal

The DMC carries water southeasterly from the Jones along the west side of the SJV for irrigation supply, for use in the San Luis Unit, and to replace San Joaquin River water stored at Friant Dam and used in the Friant-Kern and Madera systems. The canal is about 117 miles long and terminates at the Mendota Pool, about 30 miles west of Fresno. The initial diversion capacity is 4,600 cfs, which is gradually decreased to 3,211 cfs at the terminus. It also connects with O'Neill Forebay near San Luis Reservoir where water can be pumped from the DMC into either San Luis Joint Use Facilities a part of which is a shared canal named the San Luis Canal for the CVP and the Aqueduct for the SWP.

O'Neill Forebay

These joint Federal/State facilities are located on San Luis Creek, 2.5 miles downstream from San Luis Dam. O'Neill Dam, completed in 1967, is a zoned earthfill structure with a height of 87 feet and a crest length of 14,300 feet. The forebay, with a capacity of 56,400 AF, is used as a hydraulic junction point for Federal and State waters. The top 20,000 AF acts to re-regulate storage necessary to permit off-peak pumping and on-peak generation by the main San Luis Pumping-Generating Plant. The O'Neill Forebay Inlet Channel extends 2,200 feet from the DMC to deliver water to the O'Neill Forebay. Six pumping units of the O'Neill Pumping-Generating Plant lift water 45 to 53 feet into the forebay.

Friant-Kern Canal

The FKC carries water over 151.8 miles in a southerly direction from Friant Dam to its terminus at the Kern River, four miles west of Bakersfield. The FKC has an initial capacity of 5,000 cfs that gradually decreases to 2,000 cfs at its terminus in the Kern River (Reclamation, 2009). The water conveyed in the FKC is from the San Joaquin River and is considered to be of good quality because it originates from snow melt from the Sierra Nevada. The water is used for municipal and industrial, and agricultural purposes in Fresno, Tulare, and Kern Counties. The FKC is a part of the CVP, which annually delivers about seven million AF of water for agricultural, urban, and wildlife use.

California Aqueduct

The State of California constructed the Aqueduct as part of the SWP. Waters from the Aqueduct flow out of the Delta near the City of Tracy to San Bernadino and Riverside into Lake Perris. SWP contractors take delivery from the CVC and/or direct diversion from the Aqueduct. The SWP typically delivers approximately 1.36 million AF to the SJV per year. Contracts executed in the early 1960s established the maximum annual water amount (supply) that each SWP long-term contractor may request from the SWP.

Recovered groundwater that is discharged into the Aqueduct, can be delivered to water districts or exchanged with the DWR. Exchanges with the DWR can be simultaneous, or delayed exchanges. In a simultaneous exchange water delivered from the Aqueduct to an upstream district at the same time the recovered groundwater is transported to the Aqueduct. With a delayed exchange, water might be delivered by the DWR to the receiving district from storage before or after the recovered groundwater is received.

Joint-Use Facility – San Luis Canal/California Aqueduct

The SLC is the Federally-built and operated section of the California Aqueduct and extends 102.5 miles from O'Neill Forebay, near Los Banos, in a southeasterly direction to a point west of Kettlemen City. The SLC is a part of the CVP, while the California Aqueduct is a part of the State Water Project (operated by the DWR). The principle purpose of the CVP portion of the facility is to furnish approximately 1.25 million AF of water as a supplemental irrigation supply to roughly 600,000 acres located in the western portion of Fresno, Kings, and Merced counties. Beyond Kettleman City, the State Water Project delivers water to southern California mainly for M&I purposes. This is almost half of the water supply for the Los Angeles region. The SLC/California Aqueduct is a concrete-lined canal with a capacity ranging from 8,350 to 13,100 cfs.

Cross Valley Canal

The CVC is a locally-financed facility completed in 1975 and operated by the Kern County Water Agency (KCWA). The canal extends from the California Aqueduct near Tupman to Bakersfield. It consists of 6 pumping lifts, with a capacity of 1,400 cubic-feet per second (cfs) from the Aqueduct to Arvin-Edison Water Storage District's Intake Canal (also near the FKC terminus and Kern River). The CVC "extension", an unlined canal, continues past the AEWSD Intake Canal, which is rated 342 cfs and has an additional 2 pumping lifts. The CVC is a joint-use facility owned by various participants, including Cross Valley Contractors and AEWSD. The CVC can convey water from the Aqueduct to the Kern Water Bank, the City of Bakersfield groundwater recharge facility, the Berrenda Mesa Property, the Pioneer Banking Project, the

Kern River channel, to AEWSD's Intake Canal, or to various member units of KCWA and other districts who have access to the CVC. When needed, the CVC is also capable of conveying 500 cfs, in reverse flow-gravity mode, to the Aqueduct. In 2008, as part of the CVC expansion project, an additional 500 cfs turnout was constructed from the FKC that can deliver water by gravity into either the AEWSD Intake Canal or the CVC.

Kern River/Alejandro/Outlet Canals

Water from the FKC, the CVC, or from the Kern River can be conveyed in the Kern River channel or in the Kern River Canal to the Pioneer Banking project or other recharge areas. Conveyance of water in the Kern River Canal requires an agreement with the City of Bakersfield. Conveyance of water in the Alejandro Canal requires an agreement with the Buena Vista Water Storage District. It should be noted that depending on groundwater pumping operations, water in the Buena Vista Aquatic Lake may contain high concentrations of arsenic. These high concentrations are caused when groundwater from nearby wells is pumped into the Buena Vista Aquatic lakes for agricultural use and to make up evaporation losses.

The Kern River is about 165 miles long and is the southernmost river in the San Joaquin Valley. The river originates from the Sierra Nevada mountains on the eastern side of Tulare County and terminates on the west side of Kern County where it is mainly diverted for local water supplies. When the Kern River enters Kern County, it deposits into Lake Isabella created as a result of Isabella Dam. Below the dam, the river is highly diverted through a series of canals to irrigate farms in the southern San Joaquin Valley and provide municipal water supplies to the City of Bakersfield and surrounding areas. The Kern River is one of the few rivers in the Central Valley which does not contribute water to the CVP; however, the FKC joins the river approximately four miles west of downtown Bakersfield. Kern River water quality is generally similar to that in the FKC since its origin is also from snow melt in the Sierra Nevada. The Kern River Canal can also be used to convey water from the Kern River to the California Aqueduct directly via the Alejandro Canal, the Buena Vista Aquatic Lakes and Outlet Canal and a pumping plant, or indirectly via an exchange.

Kern Water Bank Canal

The Kern Water Bank Canal is a bi-directional canal constructed by the Kern Water Bank Authority. The canal has a single pumping plant for delivering water for recharge. The forward flow capacity is 950 cfs. Reverse flow capacity is approximately 650 cfs. The canal is used to convey SWP water and other waters from the Aqueduct to the local banking projects for groundwater recharge. The canal is also used to convey pumped groundwater during a surface water short year, back to the Aqueduct, either directly or by exchange, to water districts for a supplemental water supply.

Kings River

The Corps is the operator of Pine Flat Dam and releases water for flood control. During the irrigation season, (normally June through August) water is released from behind Pine Flat Dam and the Kings River is controlled by the Kings River Water Association. In wet years the Kings River may flow to the Tulare Lake Basin. Only in very wet seasons does the Kings River flow north into Fresno Slough and into the San Joaquin River. The average annual runoff for the Kings River is approximately 1.7 million AF. The Kings River is managed similarly to a canal

system providing water for irrigation and to meet flow requirements for fish and wildlife purposes.

Kaweah and St. Johns Rivers

The Corps also operates Terminus Dam on the Kaweah River for flood control and water supply. Downstream of Terminus Dam, the St. Johns River and Lower Kaweah River divides from the Kaweah River at McKay Point. The St. Johns River becomes Cross Creek north of Goshen. A few tributaries such as Dry Creek and Yokohl Creek, flow into the Kaweah and St. Johns Rivers. The Kaweah River ceases to be an identifiable stream south of Highway 245, and the river branches into Mill Creek and other major and minor streams creating a delta. During the irrigation season (June through August) the Kaweah Delta Water Conservation District manages the Kaweah River irrigation flows similarly to a canal facility to meet demands and on behalf of the watermaster for the Kaweah and St. Johns Rivers Association. The average annual runoff of the Kaweah River is 430,000 AF, and does not include various smaller creeks. The St. Johns Rivers was permanently established during the fresher of 1861-62 and branches off the Kaweah River. The Lower Kaweah River, St. Johns River and smaller creeks are used for conveyance of irrigation water to ditch companies and water districts.

Tule River

The Tule River watershed above Success Dam is a fan shaped area containing 245,000 acres, ranging in elevation of 550 feet at Success Dam to a maximum of 10,000 feet, with less than 10 percent of the watershed above elevation 7,500 feet. The Tule River above Success Reservoir is composed of three channels, the North Fork and the Middle Fork that join just above the community of Springville, and the South Fork that passes through the Tule River Indian Reservation before entering Success Reservoir at State Route 190. The main channel of the Tule River below Success Dam traverses about 50 miles to the pocket of the Tulare Lake Basin where the river joins the terminus of the South Fork of the Kings River. The Tule River bifurcates at Road 192 and a South Fork channel traverses 12 miles along with a third Middle Fork channel of 3 miles, all northerly of the community of Woodville.

Success Dam, a Corps project currently has a storage capacity of 82,300 AF, of which 75,000 AF is reserved for flood control and irrigation water storage. The remaining storage, 7,300 AF, was set aside for a silt and recreation pool. The Tule River runoff at Success Reservoir is extremely variable subject to precipitation in the watershed. Records of the Tule River runoff for the past 101 years are available from water year 1904 through water year 2004. The average annual runoff of the Tule River is 141,630 AF. Of the past 101 years, 1977 was the driest year with a runoff of 15,810 AF, and 1983 was the wettest year with 615,090 AF.

The Tule River Association, made up of all water rights holders at and below Success Reservoir, administers the water and storage rights at and below Success Dam. The Corps controls storage in Success Reservoir through a Flood Control Diagram that limits irrigation storage during the period November 15th to May 1st of the following year. Irrigation water storage operations during the remainder of the year are controlled by the Tule River Association Watermaster.

The Tule River gross service area below Success Dam covers about 320,000 acres, of which 140,000 acres are within Tulare County, and 180,000 acres are within the Tulare Lake Basin of

Kings County. Of the gross service area, approximately 240,000 acres are developed in irrigated agriculture with the remainder in urban and non-agriculture uses.

Dos Amigos Pumping Plant

This joint Federal/State facility, 17 miles south of O'Neill Forebay, is a relift plant in the San Luis Canal. The plant contains six pumping units, each capable of delivering 2,200 cfs at 125 feet of head.

Appendix G Biological Consultation

United States Department of the Interior

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

In Reply Refer To:
08ESMF00-2014-I-0040

FEB 12 2014

Memorandum

To: David Hyatt, Supervisory Biologist, Resources Management Division, Bureau of Reclamation, South-Central California Area Office, Fresno, California

From: Thomas Leeman, Chief, San Joaquin Valley Division, Endangered Species Program, Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California

Subject: Informal Consultation on Central Valley Project Cross Valley Contractors Interim Renewal Contracts and Article 5 Exchanges, 2014-2016

This memorandum transmits the U.S. Fish and Wildlife Service's (Service) concurrence with the U.S. Bureau of Reclamation's (Reclamation) October 30, 2013 determination that the proposed 2-year interim renewal water contracts (IRCs) for Cross Valley Canal Unit (CVC) contractors of the Central Valley Project (CVP) and Article 5 Exchanges for the contract period March 1, 2014 through February 29, 2016, may affect, but are not likely to adversely affect (NLAA) the federally-listed as endangered Buena Vista Lake shrew *(Sorex ornatus relictus),* San Joaquin kit fox *(Vulpes macrotis mutica),* Tipton kangaroo rat *(Dipodomys nitratoides nitratoides),* blunt-nosed leopard lizard *(Gambelia sila)* Kern mallow *(Eremalche kernensis),* and San Joaquin woolly-threads *(Monolopia congdonii)* or critical habitat designated for these species. This response is provided pursuant to section 7(a)(2) of the Endangered Species Act of 1973 (Act) (16 U.S.C. 1531 *et seq.),* and in accordance with the regulations governing interagency consultations (50 CPR §402). We received your October 30, 2013 request for reinitiation of consultation under the Act and Biological Evaluation (BE) for the Proposed Action on November 1, 2013. Reclamation made a Draft Environmental Assessment (DEA) for the Proposed Action available for public comment on September 4, 2013.

This consultation is based on information provided in your October 30, 2013 request for consultation, the September 2013 DEA for CVC IRCs, the October 2013 BE, information provided by Reclamation's South Central California Area Office for the 2000, 2002, 2004, 2006, 2008, 2010, and 2012 consultations involving CVC IRCs, and other information in our files. The consultation history for this action includes comments, questions, clarifications, and additional information with respect to species effect determinations and project maps. A complete administrative record of this consultation is on file in the Service's Sacramento Fish and Wildlife Office.

Reclamation has determined that the proposed action will have "no affect" on the federally-listed species or critical habitats identified in Appendix A and is not requesting concurrence with those determinations. Prior to the next CVC IRCs, Reclamation should verify the assumption behind the no affect determinations, as described in further detail below.

The information provided for this consultation, as well as the short duration of this project, provides the basis for the Service to concur with Reclamation's determination that the CVC IRCs and associated Article 5 Exchanges are NLAA any of the species listed above. Our concurrence however, is for this 2-year IRC term only. Prior to the next CVC IRCs or long term contract renewals, whichever comes first, Reclamation will need to revise and update the Central Valley Project Improvement Act (CVPIA) Comprehensive Mapping Program to validate the key commitment in the Biological Evaluation for this project that districts that receive CVC IRC water or associated Article 5 Exchanges will not use this water to convert native lands to other uses, and to validate Reclamation's conclusion that CVC IRC deliveries or Article 5 Exchanges have not and will not result in land use changes that would adversely affect federal-listed species or critical habitat. As denoted in the BE for CVC IRCs, there is critical habitat for federally-listed species within some of the CVC IRC and Article 5 Exchange districts. Appendix B identifies which of these water districts include critical habitat units.

CVPIA Comprehensive Mapping Program

In the CVPIA Programmatic biological opinion (CVPIA BiOp) dated November 2000 (Service File No. 98-F-0124), Reclamation and the Service committed to develop a Comprehensive Mapping Program (as described on pages 2-62 and 2-63 of the CVPIA BiOp), to identify remaining natural habitats and cropping patterns within the State permitted CVP Place of Use (POU), and identify any changes within those habitats that have occurred from 1993 to 1999, and then every 5 years thereafter. The Service is unaware of any recent habitat/crop mapping efforts for the CVP POU completed by Reclamation since 2005. Habitat maps provided by Reclamation in the BE for this consultation for Article 5 Exchange contractors date back to 2003. The land use data in those maps was not classified the same as previous datasets for the Comprehensive Mapping Program, and varies by County with regard to the date. Additional habitat maps for the CVC contractors provided by Reclamation via e-mail on December 18, 2013, came from various data sources from 2008 and 2010, and the land use classifications are also not the same as previous datasets for the Comprehensive Mapping Program. Without consistent land use classification, loss of habitat cannot be reliably tracked. No information was provided by Reclamation on habitat trends for listed species (e.g., comparing current extent of listed species habitats with prior datasets).

We refer Reclamation to the language regarding the Comprehensive Mapping Program on page 2-64 of the CVPIA BiOp: "*Reclamation and the Service will use the best scientific and commercial information available, in conjunction with data from aerial photograph analysis to monitor trends in the environmental baseline for listed species. It is the ultimate goal of Interior to assure that listed species are being recovered. For any species affected by the CVP that are continuing to decline, the Service and Reclamation will immediately assess critical needs for the species and determine whether it is appropriate to expand the Conservation Program or implement other conservation measures. Any native habitat converted to agricultural or municipal/industrial use within the water service area without prior biological surveys, as required by Reclamation prior to the delivery of Reclamation water, will be evaluated to determine what mitigation measures will be required.*"

CVPIA BiOp Commitment on Water Assignments

The CVPIA BiOp included a commitment regarding coordination with the Service on CVP Water Assignments. As is noted on page 2-40 of the CVPIA BiOp, "*Reclamation will provide information related to proposed new water assignments of Project water to the Service's SFWO Endangered Species Division prior to execution of the assignment.*" And further on page 2-70, item I. 8., stipulating that Reclamation will establish a process that will provide necessary information to the Service's SFWO Endangered Species Division in situations where a determination of "no affect" has been made, sufficiently in advance, to enable the Service's review.

Since the last round of CVC IRCs, Reclamation has executed CVP contract assignments for Tri-Valley Water District (WD), Kern Tulare WD, and Hills Valley Irrigation District (ID) from Friant Division contractors. The Service was notified by Reclamation regarding the Kern Tulare WD contract assignment and the Service provided comments to Reclamation on the Draft EA for that water assignment on October 11, 2011. The Friant BiOp identified over 3,000 acres of land within Kern-Tulare Water District with moderate to high habitat value to listed species. The Service commented that it would be helpful to know what the current disposition of those land use types are in the district, and whether this water would be used on any of these lands that were not in cultivation at the time the Friant BiOp was completed. No mapping data was provided to the Service for the Kern Tulare WD water assignment.

The Service has no record of being notified for the remaining 3 water assignments involving Tri-Valley WD and Hills Valley ID.

1. An assignment of 400 acre-feet of Exeter ID's CVP Friant Division Class 1 water to Tri-Valley WD.
2. An assignment of 250 acre-feet of Lewis Creek WD's CVP Friant Division Class 1 water to Hills Valley ID.
3. An assignment of 1,000 acre-feet of Porterville ID's CVP Friant Division Class 1 water to Hills Valley ID.

We ask that for future CVP water assignments, including those involving CVC contractors, Reclamation provide information on these assignments to the Service prior to execution of the assignment per the commitment made in the CVPIA BiOp. Further, in those situations where Reclamation makes a determination of "no affect" on a water assignment, Reclamation will provide the necessary information to the Service sufficiently in advance to enable the Service's review.

Transfers and Exchanges of CVP Water from Friant and CVC Contractors to non-CVP Contractors

As is noted in the CVC IRCs BE, the Service completed a consultation in 2007 on the execution of temporary Section 215 Water Service Contracts with the Non-CVP Contractors for Section 215 water from the Friant Division, the conditional pre-approval of up to 150,000 acre-feet/year of Friant CVP Water Transfers from Friant or Cross-Valley CVP Contractors to the Non-CVP Contractors, and the conditional pre-approval of Friant CVP Water Exchanges between Friant or Cross Valley CVP Contractors and the Non-CVP Contractors (Service File No. 05-I-3008). From the language in the BE it could be construed that the Service's consultation was for a long-term transfer program. We would like to clarify for the record that our consultation on that

program provided concurrence for the water year 2006-2007 only, and highlighted next steps for a long term program as provided below:

"*We will initiate consultation with Reclamation on the long-term effects of annual transfers and exchanges of CVP Water from Friant and Cross Valley contractors to non-CVP contractors and the execution of temporary (one-year) contracts for Section 215 water upon receipt of a request for consultation and information evaluating the effects on protected species and designated critical habitats in the action area. We believe we can continue our present momentum by building on existing information provided by Reclamation for this effort to date. To that end, we recommend Reclamation coordinate with us on the following steps to ensure water application criteria are being met. The following steps have been proposed and discussed with Reclamation's SCCAO:*

1. *Develop a compliance and reporting program to determine the disposition of 100% of the water conveyed under this type of proposed action. This program will serve to streamline the consultation process by providing information about past contractor's actions in a timely and organized format.*
2. *Incorporate language into each water service contract ensuring that contractors are informed that additional water supplies may be applied to lands to be converted from wildland habitat or fallowed lands only after: (a) a site-specific survey for threatened and endangered species has been completed and submitted to the Service, and (b) a section 7 consultation on the effect of cultivating the area has been completed, or there is a Habitat Conservation Plan (HCP) in place that addresses impacts to the area receiving the water, or there is a Service-approved programmatic land management opinion in place providing protection to listed and proposed species and the local baseline for those species.*
3. *Using the Guidelines for Land Conversion (Contingency Plans) described in the 2001 Friant Biological Opinion as a model, develop a contingency plan for the water service action described above. This contingency plan may focus on incentives to farmers for conservation and Reclamation pro-active conservation actions [sic], rather than punitive measures for non-compliance of water application criteria.*

We also request that Reclamation continue to help us accomplish species recovery in the San Joaquin Valley by: (a) reviewing applicable recovery unit criteria prior to approving contracts delivery water to, or from, recovery units, (b) incorporating recovery actions as appropriate; (c) meeting in-basin fish and wildlife needs (e.g., Level 4 refuge water supplies, CVPIA b(2) water, VAMP flows, etc.) as required by applicable laws prior to delivering water outside of the existing CVP service areas; and (d) undertaking recovery actions listed in the Recovery Plan for Upland Species of the San Joaquin Valley."

Project Description

This informal consultation is a reinitiation and amendment of previous consultations on IRCs that involved these CVC contracts, and those consultations are included here by reference (Service File Nos., 00-F-0056, 02-F-0070, 04-F-0360, 06-F-0070, 08-F-0944-1 and -2, and 12-I-0255). This informal consultation for CVC IRCs, as established pursuant to Section 3404(c) of the CVPIA, addresses the effects of the proposed renewal of the CVC contracts for a two-year period from March 1, 2014 to February 29, 2016 as denoted in Table 1.

Table 1. Cross Valley Contractors' Contract Quantities and Expiration Dates

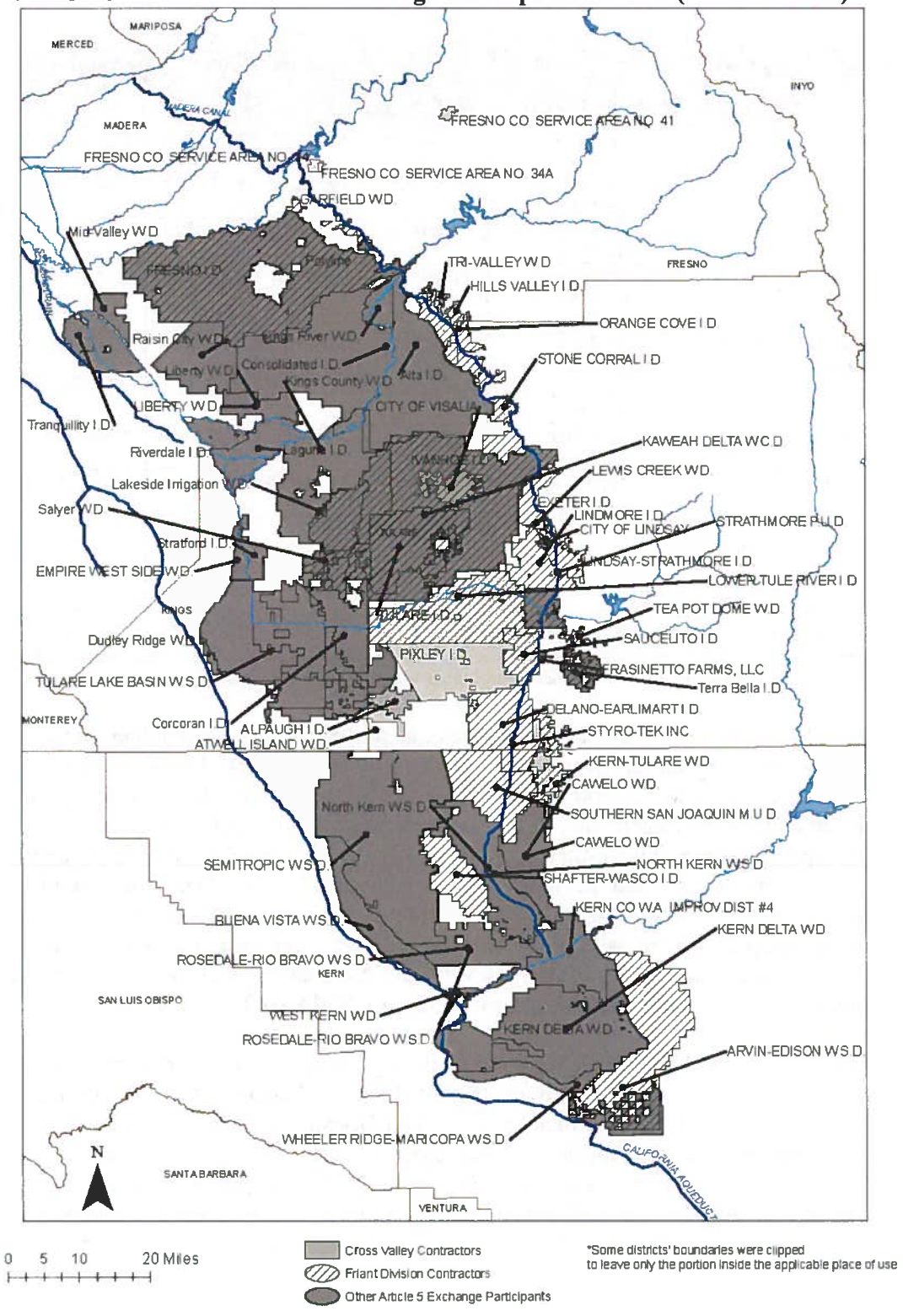
Contractor	Contract Quantity	Purpose of Use	Water Shortage Reliability	Existing IRC #	Expiration Date
Fresno, County of	3,000	Agriculture and M&I	Agriculture	14-06-200-8292A-IR14	2/28/2014
Hills Valley Irrigation District	3,346	Agriculture and M&I	Agriculture	14-06-200-8466A-IR14	2/28/2014
Kern-Tulare Water District (KTWD)*	40,000	Agriculture and M&I	Agriculture	14-06-200-8601A-IR14	2/28/2014
Kern-Tulare Water District (Rag Gulch Water District)*	13,300	Agriculture and M&I	Agriculture	14-06-200-8367A-IR14	2/28/2014
Lower Tule River Irrigation District	31,102	Agriculture and M&I	Agriculture	14-06-200-8237A-IR14	2/28/2014
Pixley Irrigation District	31,102	Agriculture and M&I	Agriculture	14-06-200-8238A-IR14	2/28/2014
Tri-Valley Water District	1,142	Agriculture and M&I	Agriculture	14-06-200-8565A-IR14	2/28/2014
Tulare, County of	5,308	Agriculture and M&I	Agriculture	14-06-200-8293A-IR14	2/28/2014
Total	**128,300**				

*KTWD and Rag Gulch Water District have consolidated their two districts into one district, under KTWD's name through a contract assignment of Rag Gulch Water District's assigned IRC (for 13,300 AF). As part of that assignment, KTWD has committed to maintain the effective separation of the two districts in terms of how much water is delivered and applied where, until the long-term water service contracts are negotiated and appropriate environmental complance is completed.

Some of the CVC contractors are composed of several subcontractors. Altogether, there are fifteen water suppliers within the group known as the CVC contractors. Under the IRCs, CVC contractors can receive up to 128,300 acre-feet/year of CVP water. The CVC contract service areas are located along the eastern side of the southern San Joaquin Valley. Reclamation provided a map to the Service via e-mail on January 13, 2014 of the CVC contractors and Article 5 Exchange recipient districts and this map is shown in Figure 1 below. The water supplied through these contracts will be used within the contract service areas shown in Figure 1 for agricultural, municipal, and industrial purposes, and will not exceed water allocations determined by existing CVP operations criteria. Interim CVP water contract renewals are consistent with the tiered implementation of the CVPIA, as described in the CVPIA BiOp.

The Sacramento Fish and Wildlife Office issued a biological opinion on long-term renewal of the Friant and CVC CVP water service contracts (Friant BiOp) on January 19, 2001 (Service File No. 01-F-0027). As part of that consultation, the Friant Division and Cross Valley Unit contractors sought and received Applicant status under the Act. Reclamation, however, has not yet executed the long term contracts for the CVC contracts. For the purposes of this consultation, and as outlined in the BE for this action, all conservation measures and Applicant commitments described in the Friant BiOp apply to CVC IRCs for the period of March 1, 2014 through February 29, 2016, or until long-term contracts for the CVC contractors are executed, whichever comes first. These measures are summarized in Appendix C.

Figure 1. CVC IRC and Article 5 Exchange Participant Districts (source: USBR)



The Proposed Action will continue existing IRCs for the CVC contractors, with only minor administrative changes to the contract provisions to update the previous IRCs for the new contract period. No changes to CVC contract service areas or water deliveries are part of the Proposed Action. Central Valley Project water deliveries under the CVC IRCs can only be used within each designated contract service areas. The water delivered for these interim contracts will be used for agricultural, municipal, and industrial purposes, and will not exceed water allocations determined by existing CVP operations criteria established in applicable Biological Opinions from the National Oceanographic and Atmospheric Administration Fisheries Service (NMFS) and the Service for the effects of the continued long-term operation of the CVP and State Water Project (SWP) (OCAP).

Article 5 Exchange Arrangements

In addition to the CVC interim contracts, the Proposed Action includes Reclamation's approval of the CVC contractors' exchange arrangements with individually proposed exchange partners for the 2014 and 2015 contract years (March 1, 2014 through February 29, 2016) for up to the full CVC IRC quantity of 128,300 AF/Y. A full description of these exchanges is found in the BE and DEA for this project.

CVP water is tracked from its origin to its final disposition (end use) and does not lose its Federal characteristics under the California water rights permits. Water supplies would be used in compliance with the applicable water rights permits and conform to the applicable purpose and place-of-use of the associated water rights permit. In addition, the following commitments are part of the Proposed Action:

- The exchanged water may be applied only to lands located within the appropriate Place of Use boundaries[1];
- The water may be used for either Agricultural or M&I purposes;
- No native or untilled land (fallow for three consecutive years or more) may be cultivated with this water;
- No new construction or modification of existing facilities is to occur in order to complete the Proposed Action;
- No changes in the point of diversion or places-of-use without prior approvals from the State Water Resources Control Board, Reclamation, and/or DWR as applicable;
- No unmitigable impacts can be caused to a third party without discussion between the parties involved;
- Exchanges must not alter the quality of water, or the hydrological regime of natural waterways or natural watercourses such as rivers, streams, creeks, lakes, ponds, pools, or wetlands, etc., in a way that may have a detrimental effect on fish or wildlife or their habitats;
- All exchanges must comply with all applicable Federal, state and local laws, regulations, permits and policies; and

[1] There are three relevant Places of Use: the Consolidated Place of Use, the Friant, Ag only Place of Use, and the Friant Ag & M&I Place of Use. The Cross Valley Contractors would get some Friant water and thus the Friant Places of Use would apply to them. However, the exchangees would receive delta water, and thus the Consolidated Place of Use would apply for those districts.

- Reclamation would review each exchange proposal for compliance with the above conditions prior to approval and execution of the action, and determination that the action is consistent with the criteria described within the DEA for this action.

Any exchange involving a district/entity other than Arvin-Edison Water Storage District would require an approval letter from the Contracting Officer, that would include all environmental commitments and which would be signed by an authorized official for the exchangor and exchange.

Effects

As a result of the environmental commitments referenced in the BE for this Action and summarized in Appendix C of this memo, CVC IRCs and Article 5 Exchanges are expected to NLAA the Buena Vista Lake shrew and designated critical habitat, San Joaquin kit fox, Tipton kangaroo rat, blunt-nosed leopard lizard, Kern mallow, and San Joaquin woolly-threads. The BE for the CVC IRCs concludes that Districts (CVC contractors and Article 5 Exchange participants) receiving this water will not be able to expand their service areas, bring native or fallowed lands (fallowed and untilled for three years or more) into cultivation, or alter current environmental conditions without further environmental review and approval. It is further assumed in the BE that these commitments will protect native lands, including those within two miles of the contractors' service areas. These native lands are not expected to experience any additional risk of land conversion that has not already been addressed in previous consultations. These native lands include critical habitat for the Buena Vista Lake shrew, California condor, California tiger salamander, fleshy owl's-clover, Hoover's spurge, San Joaquin Valley Orcutt grass, vernal pool fairy shrimp, and the vernal pool tadpole shrimp. These environmental commitments include the continuation of the CVPIA Comprehensive Mapping Program, an important means to validate Reclamation's conclusion that CVC IRC deliveries or Article 5 Exchanges has not and will not result in land use changes that would adversely affect federally listed species or critical habitat.

Reclamation is requesting concurrence with NLAA for those species that could occupy or colonize on lands that are fallowed for less than three years. The species listed in Appendix A (that Reclamation made a determination of no affect) were assumed in the BE to be not adapted to highly disturbed conditions and are poor colonizers. The no affect determination is predicated on the conclusion that these species would not become established on land that had been fallowed for less than three years and would not occur on land that is being cultivated or is highly disturbed.

Needs for Future CVC Interim or Long Term Contract Renewals

In order to facilitate future consultations on CVC IRCs or long term contract renewals (whichever comes first) the Service asks that the following be included with Reclamation's materials provided for initiation of those consultations under the Act:

<u>Applicant Status or Change to Contract Language</u>

Article 3(e) of the IRC contracts for the CVC IRCs includes the following language with respect to consultation under the Act:

"The Contractor shall comply with requirements applicable to the Contractor in biological opinion(s) prepared as a result of a consultation regarding the execution of this Contract undertaken pursuant to Section 7 of the Endangered Species Act of 1973 (ESA), as amended,

that are within the Contractor's legal authority to implement." Because the contract includes language relevant to the Contractors' compliance with the Act in their use of the CVP water authorized by these IRCs, the Service recommends that prior to the next IRC or Long Term Contract Renewal, Reclamation will complete one of the following:

- ensure Applicant status from the Contractors involved, or,
- amend the language in Article 3(e) of the CVP contract to include, "the Contractor shall notify the Service prior to delivery of Project Water to undeveloped land to verify compliance with the Endangered Species Act."

Comprehensive Mapping Commitment from CVPIA BiOp

Prior to the next IRC or long term contract renewal, whichever comes first, the comprehensive mapping effort from the CVPIA BiOp should be updated in coordination with the Service, using current imagery and compared with the previous habitat mapping efforts of the CVP POU completed by Reclamation. This mapping effort is necessary to update the environmental baseline and to verify assumptions by Reclamation that these IRCs do not result in land use changes that would affect federally-listed species or critical habitat. As denoted on page 2-64 of the CVPIA BiOp, for any species affected by the CVP that are continuing to decline (i.e., additional habitat loss is identified), the Service and Reclamation will immediately assess critical needs for the species and determine whether it is appropriate to expand the Conservation Program or implement other conservation measures.

Water Supply Deliveries and Sources and Off-Site Conjunctive Use of CVP Water

As part of the baseline information provided by Reclamation, the Service asks that Reclamation provide recent data on the following:

- Summary of recent water deliveries and Article 5 Exchanges for the contractors under consideration in this consultation.
- Summary of off-site conjunctive use projects used to store CVP water supply (e.g., the amount of water stored, location and information on where the water was stored, used etc.).

Conclusion

As a result of the Environmental Commitments included in the Proposed Action, including those from the Friant BiOp and CVPIA BiOp, and the short-term nature of the action, the Service concurs with Reclamation's effects determination that the Proposed Action is NLAA the Buena Vista Lake shrew, San Joaquin kit fox, Tipton kangaroo rat, blunt-nosed leopard lizard, Kern mallow, and San Joaquin woolly-threads or critical habitat designated for these species. The CVC IRCs remain subject to the conservation measures, Applicant commitments, and non-discretionary terms and conditions, as applicable, in the CVPIA BiOp, the Friant BiOp. The CVC IRCs also remain subject to conservation measures, Applicant commitments, and non-discretionary terms and conditions from the formal consultation on the Millerton new Town Tract 4870 Change in Service Area for the Water Service Contract for the County of Fresno, Service Area No. 34 (Millerton New Town BiOp; Service File No., 08-F-1248), as County of Fresno is one of the CVC contractors included in this consultation. The CVC IRCs will be subject to any modifications associated with the reinitiation of the Millerton New Town BiOp for Tract 4870, as requested by Reclamation via memorandum on November 1, 2013.

Our concurrence with the NLAA determination concludes consultation for this action.

Therefore, unless new information reveals effects of the proposed action that may affect listed species in a manner or to an extent not considered, no further action pursuant to the Act is necessary. If you have questions or concerns regarding this action, please contact Daniel Russell or Thomas Leeman at the letterhead address or at (916) 414-6600.

Appendix A. Federally threatened and endangered species and/or critical habitat potentially within the Action Area that Reclamation has determined would not be affected by the proposed action.

Common Name	Scientific Name	Federal Status	Critical Habitat
Bakersfield cactus	*Opuntia treleasei* (= *Opuntia basilaris treleasei*)	Endangered	None
blunt-nosed leopard lizard	*Gambelia sila*	Endangered	None
Buena Vista Lake shrew	*Sorex ornatus relictus*	Endangered	Designated
California condor	*Gymnogyps californianus*	Endangered	Designated
California jewelflower	*Caulanthus californicus*	Endangered	None
California red-legged frog	*Rana draytonii*	Threatened	Designated
California tiger salamander	*Ambystoma californiense*	Threatened	Designated
Central Valley spring-run chinook salmon (National Marine Fisheries Service)	*Oncorhynchus tshawytscha*	Threatened	Designated
Central Valley steelhead (National Marine Fisheries Service)	*Oncorhynchus mykiss*	Threatened	Designated
Conservancy fairy shrimp	*Branchinecta conservatio*	Endangered	Designated
delta smelt	*Hypomesus transpacificus*	Threatened	Designated
fisher	*Martes pennanti*	Candidate	N/A
Fresno kangaroo rat	*Dipodomys nitratoides exilis*	Endangered	Designated
giant garter snake	*Thamnophis gigas*	Threatened	None
giant kangaroo rat	*Dipodomys ingens*	Endangered	None
Greene's tuctoria	*Tuctoria greenei*	Endangered	Designated
hairy Orcutt grass	*Orcuttia pilosa*	Endangered	Designated
Hartweg's golden sunburst	*Pseudobahia bahiifolia*	Endangered	None
Hoover's spurge	*Chamaesyce hooveri*	Threatened	Designated
Keck's checker-mallow (=checkerbloom)	*Sidalcea keckii*	Endangered	Designated
Kern mallow	*Eremalche kernensis*	Endangered	None
Kern primrose sphinx moth	*Euproserpinus euterpe*	Threatened	None

Common Name	Scientific Name	Federal Status	Critical Habitat
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	Threatened	None
least Bell's vireo	*Vireo belli pusillus*	Endangered	Designated
Little Kern golden trout	*Oncorhynchus mykiss* (=*aguabonita*) *whitei*	Threatened	Designated
longhorn fairy shrimp	*Branchinecta longiantenna*	Endangered	Designated
Mariposa pussy-paws	*Calyptridium pulchellum*	Threatened	None
mountain yellow-legged frog	*Rana muscosa*	Proposed	Proposed
North American green sturgeon (National Marine Fisheries Service)	*Acipenser medirostris*	Threatened	Designated
Owens tui chub	*Gila bicolor snyderi*	Endangered	Designated
Paiute cutthroat trout	*Oncorhynchus clarki seleniris*	Threatened	None
palmate-bracted bird's-beak	*Cordylanthus palmatus*	Endangered	None
Ramshaw sand-verbena	*Abronia alpine*	Candidate	None
riparian brush rabbit	*Sylvilagus bachmani riparius*	Endangered	None
riparian woodrat (San Joaquin Valley woodrat)	*Neotoma fuscipes riparia*	Endangered	None
Sacramento River winter-run chinook salmon	*Oncorhynchus tshawytscha*	Endangered	Designated
San Benito evening-primrose	*Camissonia benitensis*	Threatened	None
San Joaquin adobe sunburst	*Pseudobahia peirsonii*	Threatened	None
San Joaquin kit fox	*Vulpes macrotis mutica*	Endangered	None
San Joaquin Valley Orcutt grass	*Orcuttia inaequalis*	Endangered	Designated
San Joaquin woolly-threads	*Monolopia congdonii*	Endangered	None
Sierra Nevada bighorn sheep	*Ovis canadensis californiana*	Endangered	Designated
southwestern willow flycatcher	*Empidonax trailli extimus*	Endangered	Designated

Common Name	Scientific Name	Federal Status	Critical Habitat
Springville clarkia	*Clarkia springvillensis*	Threatened	None
succulent owl's-clover	*Castilleja campestris* ssp. *succulenta*	Threatened	Designated
Tipton kangaroo rat	*Dipodomys nitratoides nitratoides*	Endangered	None
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	Threatened	Designated
vernal pool fairy shrimp	*Branchinecta lynchi*	Threatened	Designated
vernal pool tadpole shrimp	*Lepidurus packardi*	Endangered	Designated
western snowy plover	*Charadrius alexandrinus nivosus*	Threatened	Designated
western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	Proposed	None
Yosemite toad	*Bufo canorus*	Proposed	Proposed

Appendix B. Critical habitat within the CVC IRC and associated Article 5 Exchange water districts.

	Kern Water Bank	North Kern Water Storage District	Kern County Water Agency	Kern Delta Water District	Semitropic Water Storage District	Lindsay-Strathmore Irrigation District	Tri-Valley Water District	Hills Valley Irrigation District	Kings River Conservation District	Alta Irrigation District	Kings County Water District	Kaweah Delta Water Conservation District	Stone Corral Irrigation District	Deer Creek & Tule River Authority	Fresno Irrigation District	Angiola Water District	Pixley Irrigation District	Alpaugh Irrigation District
Buena Vista Lake shrew	Kern Fan Recharge unit, Coles Levee unit	Kern Fan Recharge unit, Coles Levee unit	Kern National Wildlife Refuge unit, Goose Lake unit, Kern Fan Recharge unit, Coles Levee unit, Kern Lake unit	Kern Lake unit	Kern National Wildlife Refuge unit, Goose Lake unit, Semitropic Unit													
California condor	Tejon Ranch unit					Tulare County Rangelands unit												
California tiger salamander							ssj_3A	ssj_3A, ssj_3B	ssj_5A	ssj_5A	ssj_5A	ssj_5A						
Hoover's spurge									HOOVR 7B, 7E, 7F, 7G	HOOVR 7B, 7E, 7F, 7G		HOOVR 7E	HOOVR 7A, 7C	HOOVR 7A, 7C				
San Joaquin Valley Orcutt grass									SJVAL 6A, 6B, 6C	SJVAL 6A, 6B		SJVAL 6A	SJVAL 6C	SJVAL 6C				
succulent owl's-clover															SUCCL 5A, 5B			
vernal pool fairy shrimp									VERFS 26B, 26C, 26D, 26E, 27B	VERFS 26A, 26B, 26C, 26D, 26E	VERFS 26A	VERFS 26A				VERFS 27A	VERFS 27A, 27B	VERFS 27B
vernal pool tadpole shrimp										VERTS 18A, 18B, 18C, 18D, 18E	VERTS 18A	VERTS 18A						

Appendix C.

Summarized Environmental Commitments from the 2001 Friant- Cross Valley Biological Opinion (01-F-0027) and the CVPIA Biological Opinion (98-F-0124) that are Relevant to the CVC IRCs and associated Article 5 Exchanges [Note: numbering is preserved from the source documents]

2001 Friant/Cross Valley BiOp

5. Identify and map endangered species habitat in CVP contractor service areas and provide to contractors.
   Phase I - A 1993 landcover database or basemap will be developed using the best available existing landcover data and satellite imagery.
   Phase II - will determine areas of habitat change by comparing 1993 image data to year 2000 image data. Based on available GIS datasets and spectral change analysis, a preliminary change map will be created to guide sampling and remapping efforts in phase III.
   Phase III - will create an updated landcover database representative of landcover and habitat conditions for year 2000. This process may include:
   - Field sampling to determine the cause of change and identification of habitat types in change areas.
   - Acquisition of large scale, orthorectified digital aerial photography for verification and remapping purposes.
   - Additional mapping efforts in areas where existing datasets from 1993 are not adequate to meet the needs of this project.
   - GIS analysis for habitat change monitoring.

   Additionally, Reclamation and the Service commit to revisit and update the land cover database for year 2000 every 5 years for monitoring and trends analysis purposes.
6. Monitor land use change and ongoing activities within Districts receiving CVP water.
   a. Monitor land use changes and ongoing activities in the Districts to ensure that project water is not used in a manner that adversely affects listed, proposed, and candidate species.
7. Landowners obtain Service/Reclamation approval prior to taking actions on endangered species habitat with no Federal involvement.
8. Ensure section 7 consultation on future actions impacting endangered species where there is Federal involvement. The Friant Division and Cross Valley Unit CVP water contractors, whose contracts are currently up for renewal, have also made "Applicant Commitments" that they will not deliver CVPIA Project Water for the purpose of converting any native lands to agricultural or M&I uses unless and until appropriate ESA compliance has determined that such conversion will not likely affect protected species or appropriate mitigation has been provided.
18. Identify and analyze impacts of all water assignments executed since 1991 for Friant and 1995 for Interim contractors, and coordination on future assignments to ensure ESA compliance.
19. Reclamation will apply applicable criteria to all water transfers.

22. Curtail deliveries associated with discovery of conversion of native lands without consideration of ESA[1].
24. Reclamation shall consult with the Service on any deliveries of water using Friant facilities beyond that addressed in this biological opinion.

2000 CVPIA BiOp

B. Commitments Associated with Long-term Renewal[2] of CVP Water Service Contracts

1. Long-term contracts will be renewed, and Reclamation will complete tiered site specific consultations with the Service. No CVP water will be delivered or applied outside current contract service areas until either formal or informal consultation, as appropriate, is complete. Once formal site specific consultation has occurred that is in compliance with this opinion, it is assumed that changes in land-use practices, and impacts to listed and proposed species, in the districts have been addressed.
4. Reclamation and the Service will write a joint letter to the water districts, any member agencies, Planning Departments of cities or counties within the districts using CVP water, and other responsible parties regarding requirements under the ESA. The letter will include: (1) a discussion of Reclamation's need to ensure that CVP water is not used in a manner which could jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated *critical habitat*, and (2) an explanation of the prohibitions described under Section 9 of the ESA in regard to *take*. The letter will discuss the appropriate protection measures as described here and in subsequent contract renewal consultation and will be completed within 60 days of execution of long-term contracts.[3]
5. Conservation strategies will be in place for the districts or areas receiving CVP water. The types of strategies that could be accepted are: *Habitat Conservation Planning* as described in section 10(a) of the ESA; programmatic land management actions that include protection of listed and proposed species; requirements resulting from site specific Section 7 consultation; or an expansion of the existing CVP Conservation Program that adequately compensates for the direct and indirect effects of increased water delivery to an area.[4]
6. Reclamation will, subsequent to a determination of *may affect* to listed species and/or adverse modification to designated *critical habitat* in consultation with the Service's SFWO Endangered Species Division, consult on all Federal actions that result in changes in purpose of use for CVP water contracts, including changes from Agriculture to Agriculture/Municipal and Industrial purposes.
7. The Service and Reclamation will work together to convey information to the water districts, and individual water users (as appropriate), on listed species needs. Reclamation will establish an outreach and education program, in collaboration with the Service, to help water users integrate implementation of the CVPIA and requirements of the contract renewal process as it relates to the ESA [Act].[5]

---

[1] Reclamation and the Service have in practice been using this definition of "native lands": lands never tilled or lands fallowed and untilled for three or more years.

[2] These apply to interim contract renewals as well.

[3] Letters were already sent to CVCs and Friant Contractors, but an Environmental Commitment Program form would be used for the interim contract renewal that would inform districts of the required commitments.

[4] This would take the form of "requirements resulting from site specific Section 7 consultation" in this case.

[5] Addressed by the Environmental Commitment Program form.

8. Interior will work closely with the water users, providing them maps of listed species habitats within their service-areas and guiding them through the consultation process to address site specific effects. Reclamation may encourage CVP contractors to complete HCPs encompassing the affected areas.
10. Reclamation and CVP contractors will comply with all applicable opinions related to the CVP. Flow standards that form the environmental baseline of the 1995 OCAP biological opinion will be met, and Reclamation will take no discretionary actions (e.g. new contracts, contract amendments, facility construction) that would incrementally increase diversions and alter hydrologic and environmental conditions in the Delta until any required consultation is reinitiated and completed.
11. Contractors are required to conform with any applicable provisions of any biological opinions addressing contract renewal so as to prohibit the use of CVP water that results in unauthorized *take* or conversion of wildland habitat determined to have the potential to be occupied by listed species, or violation of any terms of the contracts pertaining to the conservation of listed species. All contracts (or related biological opinions) will also stipulate Reclamation will not undertake any discretionary action allowing the delivery of CVP water to native habitat for listed species depicted on the maps attached to the 18-month notices unless clearance pursuant to the ESA has been obtained from the Service.
13. Reclamation will make certain that applicable measures to ensure ESA compliance for the renewal of CVP water service contracts are provided within the text of new and/or amended long-term water contracts and related actions.
14. Reclamation will provide information related to proposed new water assignments of Project water to the Service's SFWO Endangered Species Division prior to execution of the assignment.

F. Commitments Associated with Conservation Programs

Comprehensive Mapping and *Land Use Monitoring and Reporting Program*

- Monitoring will be used to assess the condition and impacts of Reclamation actions on listed species. Reclamation and the Service are actively developing a monitoring strategy based on the comprehensive mapping program. The land cover database for year 2000, described in Phase III, will be revisited every 5 years for monitoring purposes.
- The Comprehensive Mapping Program will be implemented immediately to test and track, for the purpose of validating over the life of the project, the assumptions made in this biological opinion that the baselines of the species in Appendix B are stable or increasing.
- For any species affected by the CVP that are continuing to decline, the Service and Reclamation will immediately assess critical needs for the species and determine whether it is appropriate to expand the Conservation Program or implement other *conservation measures*. Any native habitat converted to agricultural or municipal/industrial use within the water service area without prior biological surveys, as required by Reclamation prior to the delivery of Reclamation water, will be evaluated to determine what mitigation measures will be required.

I. Service and Reclamation Strategy Statement to Ensure Compliance with the Endangered Species Act

7. CVP or CVPIA actions or parts of actions, which *may affect* listed species or for which there is not enough information available to estimate *take* or make a *not likely to adversely affect* determination, will receive future tiered analysis and consultation. Reclamation or the Service will provide to the Service's SFWO Endangered Species Division, dependent on lead agency status, clear descriptions of proposed CVP or CVPIA actions, specific areas that may be affected directly or indirectly by these actions, the manner in which the actions *may affect* any listed species or designated *critical habitat*, and other relevant reports and information. Reclamation and the Service will also identify any and all interrelated and interdependent actions and measures related to the proposed CVP or CVPIA action. In those situations where the lead agency, or the Service's SFWO Endangered Species Division, determines that an action *may affect* listed species or may adversely modify designated *critical habitat*, Reclamation and/or the Service will initiate informal or formal consultation as appropriate.

8. Reclamation and the Service will work together to develop means to more effectively facilitate ESA compliance through the coordination of activities and commitments discussed in this Project Description. This coordination will include establishment of a process within 3 months of this biological opinion that will provide necessary information to the Service's SFWO Endangered Species Division in situations where a determination of *no affect* has been made, sufficiently in advance, to enable the Service's review.

13. Reclamation will establish a tracking program to assure conditions necessary for compliance with ESA are met within areas affected by the delivery of CVP water. Where Reclamation and/or the Service believe there are *adverse affects* on listed species, a conservation strategy will be required to be in place for the district or area to receive the contract water . The types of strategies that could be accepted are: *Habitat Conservation Planning*, as described in Section 10(a) of the ESA; requirements resulting from a Section 7 consultation, programmatic land management actions that include protection of listed and proposed species, implementation of site specific *conservation measures*, or an expansion of the existing CVP Conservation Program that adequately compensates for the direct and indirect effects of increased water delivery to an area. Other actions that include components of the above strategies could also be accepted.