Section 3 Affected Environment and Environmental Consequences

3.1 Surface Water Resources

3.1.1 Affected Environment

The ten-year average allocation of SOD CVP water supplies delivered to SLWD and WWD between 2000 and 2009 are described in Table 1. The table lists maximum delivery percentages of CVP water on a yearly basis for agriculture purposes from 2000 to 2009. The ten-year average is 61.4 percent of contract amounts for agriculture. The annual contract entitlement for SLWD is 125,080 AF, thus the average CVP supply is 76,799 AF. With a 2009 allocation of 10 percent (12,508 AF) SLWD is 64,291 AF below the 10-year average supply levels. The annual contract entitlement for WWD is 1,168,648 AF, thus the average CVP supply is 717,550 AF. With a 2009 allocation of 10 percent (116,865 AF) WWD is 600,685 AF below the 10-year average supply levels.

Table 1. Average CVP SOD Agricultural Allocation (as Percentage of Contract Amounts).

Year	Allocation (%)
2009 – 2010	10
2008 – 2009	40
2007 – 2008	50
2006 – 2007	100
2005 – 2006	85
2004 – 2005	70
2003 – 2004	75
2002 – 2003	70
2001 – 2002	49
2000 – 2001	65
Average	**61.4%**

Similarly, the ten-year average allocation of CVP-Friant Division water supplies delivered to the water contractors is described in Table 2. It also lists maximum deliveries of CVP water on a yearly basis for agriculture purposes from 2000 to 2009. The ten-year average is 96.5 percent of Class 1 and 8.6 percent of Class 2 contract amounts. The annual contract entitlement for FID is 75,000 AF Class 2 (FID does not have a Class 1 contract), thus the average supply is 6,450 AF Class 2. FID's 2009 CVP-Friant Division allocated water supply is 3,750 AF which is 58 percent of the norm.

The annual contract entitlement for CoF is 60,000 AF Class 1, thus the average supply is 57,900 AF Class 1. CoF's 2009 CVP-Friant Division allocated water supply is 60,000 AF Class 1 which is slightly higher than the norm.

The annual contract entitlement for OCID is 39,200 AF Class 1, thus the average supply is 37,632 AF Class 1. OCID's 2009 Friant allocated water supply is 39,200 AF Class 1 which is slightly higher than the norm.

Table 2. CVP-Friant Division Allocations (as Percentage of Contract Amounts) for years from 2000-2001 to 2009-2010 and overall average.

	Allocation (%)	
Year	**Class 1**	**Class 2**
2009 – 2010	100 %	5 %[1]
2008 – 2009	100 %	5 %
2007 – 2008	65 %	0 %
2006 – 2007	100 %	10 %
2005 – 2006	100 %	10 %
2004 – 2005	100 %	18 %
2003 – 2004	100 %	8 %
2002 – 2003	100 %	8 %
2001 – 2002	100 %	5 %
2000 – 2001	100 %	17 %
Average	**96.5%**	**8.6%**

Refined allocation determinations are made throughout the contract year to align the allocation with the hydrologic conditions and pumping capabilities.

Fresno Irrigation District

FID is located entirely within Fresno County and has contracts for approximately 26 percent of the average runoff of the Kings River (its main supply), and in 2001 entered into a long-term renewable contract with Reclamation for 75,000 AF/y of Class 2 water. FID delivers the water to its customers through 800 miles of canals and pipelines.

[1] On May 22, 2009, an Uncontrolled season declaration was made by Reclamation. As a result, during the Uncontrolled season, 18% of the Class 2 contract supply was taken by the Friant Division Contractors. On August 14, 2009, Reclamation revised the Class 2 declaration to 5% which is the final allocation for the year.

In addition, FID has previously banked non-project water that it is willing to exchange with the CoF for a like amount of the CoF's CVP-Friant Division Class 1 water supply. The water that was banked (refer to Table 3) is composed primarily of storm runoff water, urban stormwater discharges, and Kings River Fisheries Management Flows.

Table 3. Summary of FID Banking Operations.

Fresno Irrigation District
Summary of Waldron Banking Project Operations

Year	Beginning of Year Storage (AF)	Gross Deliveries (AF)	Losses (10%) (AF)	Recharge (AF)	Recovery (AF)	End of Year Storage (AF)
2005	0	3,547	355	3,192	0	3,192
2006	3,192	1,580	158	1,422	0	4,614
2007	4,614	3,328	333	2,995	0	7,610
2008	7,610	14,324	1,432	12,892	2,443	18,058
Totals		22,779	2,278	20,501	2,443	

The City of Fresno

The CoF is a municipal & industrial (M&I) only contractor that utilizes their 60,000 AF Class 1 water supply to recharge the groundwater in and around the city allowing them to withdraw groundwater on demand to serve municipal needs.

Orange Cove Irrigation District

OCID has a water service contract for 39,200 AF/y of CVP-Friant Division Class 1 water supplies. OCID provides retail water service to agricultural users and operates a small hydroelectric facility at Friant Dam. OCID shares a limited portion of its irrigation facilities with the Tri-Valley Water District. The district obtains their CVP water supplies from 15 diversion points on the FKC between milepost (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. While OCID does not deliver water for M&I purposes, deliveries to parcels less than 5 acres are considered M&I and pay an M&I rate, and OCID has many of these types of customers.

San Luis Water District

On February 25, 1959, SLWD entered into a long-term water service contract with Reclamation and a subsequent amendatory contract on June 18, 1974, and has an annual allocation of CVP water of up to 125,080 AF/y. SLWD's water needs are 119,356 AF/y, based on Reclamations water needs assessments. SLWD does not currently maintain detailed records regarding irrigation methods; however, because of the area's hilly terrain and rolling topography, sprinkler irrigation continues to be used quite extensively. It is estimated that sprinklers may be used on

approximately 60 percent of the irrigated acreage. During the past ten years, a shift to both drip and micro irrigation systems has paralleled the conversion from row crops to permanent crops (i.e., orchards and vineyards). Drip or micro irrigation systems are currently used on approximately 23 percent of the irrigated acreage. Use of these systems is expected to increase in proportion to the shift to permanent crops.

Westlands Water District

WWD entered into a long-term contract with Reclamation in 1963 for 1,008,000 AF/y of CVP water. In a stipulated agreement in 1981, the contractual entitlement to CVP water was increased to 1,150,000 AF/y. In 1999 WWD entered into an assignment contract with Reclamation for 6,260 AF/y of water from Mercy Springs Water District. Subsequently, WWD entered into an assignment contract with Reclamation for an additional 4,198 AF/y of water from Mercy Springs Water District. WWD has also entered into assignments for 27,000 AF/y from Broadview Water District, 2,500 AF/y from Centinella Water District, and 2,990 AF/ year from Widren Water District.

On December 27, 2007 Reclamation entered into an interim renewal contract with WWD. This contract replace the 1963 long-term and 1981 stipulated agreement.

In addition to the CVP supply, approximately 200,000 AF of water is pumped from the underground aquifers during wet years. WWD owns some groundwater wells and supplies groundwater to some district farmers. Other wells in WWD are privately owned by water users in WWD. Additional water supply sources in WWD include flood flows from the Kings River, which are available periodically, and are diverted from the Mendota Pool.

3.1.2 Environmental Consequences

No Action

Under the No Action Alternative Reclamation would not approve either of the four proposed transfers. SLWD's current and projected surface water supply deficit of 107,492 AF (120,000 AF need – 12,508 AF CVP deliveries) and WWD's current and projected surface water supply deficit of 1,358,135 AF (1,475,000 AF need – 116,865 AF) would not be abated. SLWD and WWD would pump available groundwater and take actions to strategically reduce water demand in the district, which could include abandonment of crops in 2010.

FID and OCID would retain their CVP-Friant Division supplies. FID would not exchange previously banked water for CoF's CVP-Friant Division Class 1 water supplies and this supply would remain available to FID to be used in 2009. Additionally, FID would retain the 3,750 AF of its CVP-Friant Division Class 2 water supply and would either find another buyer, possibly within the CVP-Friant Division, or FID would use the water for internal district purposes. OCID

would retain the 5,000 AF and would either find another buyer, possibly within the CVP-Friant Division, or OCID would use the water for internal district purposes.

Proposed Action

It is anticipated that this water will be used to supplement 2010 supplies in SLWD and WWD. If 2010 allocations are similar to this year's levels, the transfers totaling up to 11,250 AF to SLWD would offset up to 10 percent of the surface water supply deficit in SLWD and transfers totaling up to 7,500 AF to WWD would offset less than 1 percent of the surface water supply deficit in WWD.

Water supplies in FID would continue to meet agricultural water demand despite the transfer. FID 2009 CVP-Friant Division supplies are 6,050 AF more than the ten-year average and FID has previously banked water and has other local water supplies to deliver if more surface water is needed to meet demands.

The remaining 2008 allocated water supplies have been used by OCID in 2009 (carry over) and have offset the demand for 2009 CVP-Friant Division supplies. Additionally 1,568 AF more than the ten-year average of CVP-Friant Division supplies are available in 2009. The additional water needed for the transfer is available as OCID will forgo planned 2009 carry over water supplies into 2010.

Under the Proposed Action both FID and OCID would have sufficient water supplies to meet their water demands. CVP and SWP facilities would not be impacted as the transferred water must be scheduled and approved by Reclamation and the California DWR. If a canal capacity prorate is required during the period this water is moving through the Friant-Kern Canal, the prorate priority shall be pursuant to the tiers defined in Sections VII-A and VII-B of the Operational Guidelines for Water Service, Friant Division, Central Valley Project dated March 18, 2005. Additionally, this transfer must be conducted in a manner that will not harm other Friant Division Long Term Contractors.

No natural streams or water courses would be affected since no additional pumping or diversion that would not have happened under the No Action Alternative would occur. There would be no impact to water resources due to the Proposed Action.

3.2 Ground Water Resources

3.2.1 Affected Environment

San Joaquin River Hydrologic Region

The San Joaquin River Hydrologic Region covers approximately 9.7 million acres (15,200 square miles) and includes all of Calaveras, Tuolumne, Mariposa, Madera, San Joaquin, and Stanislaus counties, most of Merced and Amador counties, and parts of Alpine, Fresno, Alameda, Contra Costa, Sacramento, El Dorado, and San Benito counties (DWR 2003). The region is heavily reliant on groundwater (DWR 2003)..

SLWD The SLWD is located in the Delta-Mendota Subbasin of the San Joaquin River Hydrologic Region of the San Joaquin Valley Groundwater Basin (DWR 2003). Groundwater in the Delta-Mendota subbasin occurs in three water-bearing Zones (DWR 2003). These include the lower zone, which contains confined fresh water in the lower section of the Tulare Formation, an upper zone which contains confined, semi-confined, and unconfined water in the upper section of the Tulare Formation and younger deposits, and a shallow zone which contains unconfined water within about 25 feet of the land surface (Davis 1959 ***in*** DWR 2003).

Changes in groundwater levels are evaluated on annual water level measurements by DWR and cooperators (DWR 2003). Water level changes were evaluated by quarter township and computed through a custom DWR computer program using geostatistics (kriging) (DWR 2003). On average, the subbasin water level has increased by 2.2 feet from 1970 through 2000 (DWR 2003). The period from 1970 through 1985 showed a general increase, topping out in 1985 at 7.5 feet above the 1970 water level (DWR 2003). The nine-year period from 1985 to 1994 saw general declines in groundwater levels, reaching back down to the 1970 groundwater level in 1994 (DWR 2003).

According to published accounts, the amount of stored groundwater in this subbasin as of 1961 is 51,000,000 AF, to a depth of < 1,000 feet (Williamson 1989 ***in*** DWR 2003). Groundwater levels rose in 1995 to about 2.2 feet above the 1970 groundwater level (DWR 2003). Water levels fluctuated around this value until 2000 (DWR 2003).

Tulare Lake Hydrologic Region

The Tulare Lake Hydrologic Region covers approximately 10.9 million acres (17,000 square miles) and includes all of Kings and Tulare counties and most of Fresno and Kern counties (DWR 2003). The extensive use of groundwater in the San Joaquin Valley has historically caused subsidence of the land surface primarily along the west side and south end of the valley (DWR 2003).

WWD The WWD is located in the Westside Subbasin of the Tulare Lake Hydrologic Region of the San Joaquin Valley Groundwater Basin (DWR 2003).

The aquifer system comprising the Westside Subbasin consists of unconsolidated continental deposits of Tertiary and Quaternary age (DWR 2003). These deposits form an unconfined to semi-confined upper aquifer and a confined lower aquifer (DWR 2003). These aquifers are separated by an aquitard named the Corcoran Clay (E-Clay) member of the Tulare Formation (DWR 2003).

The USGS estimated the water in storage in 1961 was 52,000,000 AF (Williamson 1989 in DWR 2003). This estimate was to a depth of less than or equal to 1,000 feet (DWR 2003). Groundwater levels were generally at their lowest levels in the late 1960s, prior to importation of surface water (DWR 2003). The Central Valley Project began delivering surface water to the San Luis Unit in 1967-68 (DWR 2003). Water levels gradually increased to a maximum in about 1987-88, falling briefly during the 1976-77 drought (DWR 2003). Water levels began dropping again during the 1987-92 drought with water levels showing the effects until 1994 (DWR 2003). Through a series of wet years, after the drought, 1998 water levels recovered nearly to 1987-88 levels (DWR 2003).

FID and OCID Both FID and OCID are located in the Kings Subbasin of the Tulare Lake Hydrologic Region of the San Joaquin Valley Groundwater Basin (DWR 2003).
The Kings Subbasin groundwater aquifer system consists of unconsolidated continental deposits (DWR 2003). These deposits are an older series of Tertiary and Quaternary age overlain by a younger series of deposits of Quaternary age (DWR 2003). The Quaternary age deposits are divided into older alluvium, lacustrine and marsh deposits, younger alluvium, and flood-basin deposits (DWR 2003).

Groundwater flow is generally to the southwest (DWR 2003). Two notable groundwater depressions exist (DWR 2003). One is centered in Fresno-Clovis urban area and the other is centered approximately 20 miles southwest of Fresno (DWR 2000) in the Raisin City Water District (DWR 2003).

Williamson (1989 in DWR 2003) indicates that the Subbasin groundwater in storage was 93,000,000 AF in 1961 (DWR 2003). This estimate was to a depth of 1,000 feet or less (DWR 2003). Most well water levels indicated a response to the 1976-77 drought (DWR 2003). After the 1987-92 drought, wells in the northeast showed water levels from 10 to 40 feet below pre-1976-77 drought water levels (DWR 2003). Water levels in the western subbasin experienced declines of 10 to 50 feet during the 1987-92 drought and are in various stages of recovery to mid-

1980s levels (DWR 2003). Water levels in the southeast have, generally, recovered to mid-1980s levels (DWR 2003).

3.2.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not approve either of the four proposed transfers and no additional water would accrete to groundwater supplies in SLWD or WWD. Under the no action, groundwater resources would not be affected.

Proposed Action

It is anticipated that this water will be used to supplement 2010 supplies in SLWD and WWD. If 2010 allocations are similar to this year's levels, the transfers totaling up to 11,250 AF to SLWD would offset up to 10 percent of the surface water supply deficit in SLWD and transfers totaling up to 7,500 AF to WWD would offset less than 1 percent of the surface water supply deficit in WWD. The small percentage change in the supply would not accrete measurable groundwater in either of the two subbasins, especially in view of the fact that most of the water would be efficiently applied and used by crops and minimal amounts leaching below the root zone and into groundwater.

If the proposed action is approved, less water would accrete to the Kings subbasin, although for reasons described above, this amount would be minimal.

3.3 Land Use

3.3.1 Affected Environment

FID is located entirely within Fresno County and includes the rapidly growing Fresno-Clovis metropolitan area (Figure 1). FID was formed in 1920 and is comprised of 245,000 acres, of which 150,000 are irrigable. The main crops in FID are grapes, almonds, oranges and tangerines, alfalfa, and miscellaneous vegetables. FID delivers the water to its customers through 800 miles of canals and pipelines.

OCID encompasses approximately 28,000 acres (44 square miles) in southeastern Fresno County and northwestern Tulare County (Figure 1). That portion within Fresno County extends from the Tulare County line on the south to State Route 180 (Kings Canyon Road) on the north and from Alta Canal on the west to the Sierra Nevada foothills on the east. OCID's boundary and Sphere of Influence are nearly coterminous. OCID shares a common boundary with Hills Valley Irrigation District on the northeast. OCID is about 30 miles southeast of Fresno and 20 miles north of Visalia. The district is 14 miles long and 3 miles wide and has 28,000 acres, of which approximately 26,788 are irrigated. The main crops in OCID are citrus, including oranges,

tangerines, lemons and limes, table grapes, prunes and plums, and olives—these crops comprise 86% of the irrigable acres in OCID.

SLWD is located on the western side of the San Joaquin Valley near the City of Los Banos, in both Merced and Fresno Counties. Construction of the Delta-Mendota Canal in the 1950s sparked major development of farmland in the San Joaquin Valley that led to the formation of the SLWD in January 1951. The district's current size is approximately 66,218 acres.

SLWD's current distribution system consists of 52 miles of pipelines, 10 miles of lined canals, and 7.5 miles of unlined canals. About 20,000 acres within the district, referred to as the Direct Service Area (DSA), receive water from 39 turnouts on the Delta-Mendota Canal and 23 turnouts on the San Luis Canal (SLC). The DSA is located almost primarily in Merced County. In addition to the DSA, three improvement districts are also served through distribution systems branching off the SLC. Both Improvement Districts 1 and 2 are primarily located within Fresno County; Improvement District 3 is located primarily in Merced County. The current population within SLWD is approximately 700 people.

WWD covers almost 950 square miles of farmland between the California Coast Range and the trough of the SJV in western Fresno and Kings Counties. It averages 15 miles in width and stretches 70 miles in length from Mendota on the north to Kettleman City on the south. Interstate 5 is located near WWD's western boundary. Nearly all land within the current WWD service area was at one time farmed using groundwater.

Currently, WWD's district boundaries encompass 604,000 acres with an irrigable acreage of 570,000 acres. WWD provides water via gravity water service and pumping from the SLC depending on location. More than 60 different crops are grown commercially in WWD. The main crops in WWD are tomatoes, almonds, wheat, safflower, and cotton. The cropping patterns have changed over the years depending upon water availability, water quality, the agricultural economy and market factors. There is a trend toward planting increased acreage of vegetable and permanent crops, while acreage planted to cotton and grain have decreased.

The current population within the WWD is approximately 50,000 people. The most populous community entirely within WWD is Huron. Three Rocks and Five Points are smaller communities within WWD. The communities of Firebaugh, Mendota, Kerman, Tranquillity, San Joaquin, Lemoore, and Stratford lie just outside WWD's eastern edge.

CVP water in WWD is used for both agricultural and M&I uses. The majority of CVP supply is used in agriculture, and of the almost 800 water users in the district, approximately 600 are agricultural users and approximately 180 are M&I users. Unlike many other key growing areas

of California, urbanization is not a direct threat to land conversion. WWD's M&I deliveries include cities and governmental agencies; however, none of this water is treated by WWD before its distribution. Current M&I deliveries are estimated to be approximately 2,000 AF/y and account for only a small percentage of WWD's CVP supplies.

WWD's permanent distribution system includes 1,034 miles of closed, buried pipeline that conveys CVP water from the SLC and Coalinga Canals and 7.4 miles of unlined canal that conveys CVP water from the Mendota Pool. The closed, buried pipeline virtually eliminates seepage and evaporation losses in the distribution system. The area served by the system encompasses approximately 88 percent of the irrigable land in WWD, including all land lying east of the SLC. All water is metered at the point of delivery through more than 3,300 metered field turnouts.

3.3.2 Environmental Consequences

No Action

Under the No Action Alternative, continued land fallowing and deficit irrigation of permanent crops during the 2010 growing season is highly probable. A large portion of SLWD's and WWD's surface water supplies have been reduced due to the drought and deliveries in 2010 are anticipated to be reduced as well. With insufficient water to continue with current agricultural practices, row crops would likely go unplanted, additional ground fallowed, and more permanent plantings being removed taken out of production. Some cropland fallowed in 2009 would likely be put in production in 2010 and vice-versa. Water would most likely be diverted to permanent crops.

Proposed Action

Under the Proposed Action, up to 13,750 AF of additional water would be delivered to SLWD to supplement the 2010 supplies. In addition, up to 5,000 AF of additional water would be delivered to WWD to supplement the 2010 supplies.

There would be no land use changes in FID or OCID as their water supplies would not be reduced below demands. Water supplies in KCWA would remain unchanged.

There would be a slightly positive impact on agricultural land use in SLWD and WWD compared with the no action due to the ability of some established row crops to remain in production and the enhanced survival of orchards.

3.4 Biological Resources

3.4.1 Affected Environment

The following list was obtained on September 21, 2009, by accessing the FWS Database: http://www.fws.gov/pacific/sacramento/es/spp_lists/auto_list.cfm for the following United States Geological Survey 7.5 minute quadrangles. Academy, Avenal, Bioloa, Broadview Farms, Burrel, Calflax, Cantua Creek, Caruthers, Chaney Ranch, Charleston School, Chounet Ranch, Clovis, Coalinga, Coit Ranch, Conejo, Domengine Ranch, Dos Palos, Firebaugh, Five Points, Fresno North, Fresno South, Friant, Gosford, Guijarral Hills, Hammonds Ranch, Harris Ranch, Helm, Herndon, Huron, Jamesan, Kearney Park, Kettleman City, Knob Hill, La Cima, Laguna Seca Ranch, Lamont, Lanes Bridge, Lemoore, Levis, Lillis Ranch, Los Banos, Los Banos Valley, Malaga, Monocline Ridge, North of Oildale, Orange Cove North, Orange Cove South, Ortigalita Peak NW, Piedra, Raisin, Rosedale, Round Mountain, San Joaquin, San Luis Dam, Sanger, Stevens, Stokes Mountain, Stratford, Tranquillity, Tres Pecos Farms, Tumey Hills, Vanguard, Volta, Wahtoke, Westhaven, Westside.

Table 4. Potential Federal Status Species in Quadrangles Covering SLWD &WWD, FID & OCID, and KCWA				
Common Name	***Species Name***	***Fed Status[1]***	***ESA[2]***	***Summary***
Conservancy fairy shrimp	*Branchinecta conservatio*	E	NE	No effects to wetland habitat for this species. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Longhorn fairy shrimp	*Branchinecta longiantenna*	E	NE	No effects to wetland habitat for this species. Not present in affected area. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Critical habitat, vernal pool fairy shrimp	*Branchinecta lynchi*	X	NE	No CH within area of effect. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Vernal pool fairy shrimp	*Branchinecta lynchi*	T	NE	No effects to wetland habitat for this species. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	T	NE	No effects to habitat for this species. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Critical habitat, vernal pool tadpole shrimp	*Lepidurus packardi*	X	NE	No CH within area of effect. No CH within affected area. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Vernal pool tadpole shrimp	*Lepidurus packardi*	E	NE	No effect to wetland habitat for this species. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Delta smelt	*Hypomesus transpacificus*	T	NE	No effect to habitat for this species, such as through water quality or flows in Delta. No conversation of habitat, and no new facilities.

Central Valley steelhead	*Oncorhynchus mykiss*	T	NE	No effects to habitat for this species. Species not in affected area. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
California tiger salamander, central population	*Ambystoma californiense*	T	NE	No effects to wetlands or other habitat for this species. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Critical habitat, CA tiger salamander, central population	*Ambystoma californiense*	X	NE	No CH within affected area. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
California red-legged frog	*Rana aurora draytonii*	T	NE	No effects to wetlands or other habitat for this species. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Blunt-nosed leopard lizard	*Gambelia sila*	E	NE	No effect to habitat for this species. Disturbed agricultural lands do not provide habitat. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Giant garter snake	*Thamnophis gigas*	T	NE	No effects to wetlands. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
California condor	*Gymnogyps californianus*	E	NE	No effect to habitat for this species. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Giant kangaroo rat	*Dipodomys ingens*	E	NE	No effect to habitat for this species. Disturbed agricultural lands do not provide habitat. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.

Critical habitat, Fresno kangaroo rat	*Dipodomys nitratoides exilis*	X	NE	No CH within area of effect. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Fresno kangaroo rat	*Dipodomys nitratoides exilis*	E	NE	Not present in affected area. Disturbed agricultural land does not provide habitat. No land use changes would occur as a result of this action. No conversation of habitat
Tipton kangaroo rat	*Dipodomys nitratoides nitratoides*	E	NE	Disturbed agricultural land does not provide habitat. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Buena Vista Lake shrew	*Buena Vista Lake shrew*	E	NE	No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
San Joaquin kit fox	*Vulpes macrotis mutica*	E	NE	No change to landscape that could provide habitat. No effect from action. No conversation of habitat, and no new facilities.
Critical habitat, Succulent (=fleshy) owl's-clover	*Castilleja campestris ssp. succulenta*	X	NE	No CH within affected area. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Succulent (=fleshy) Owl's-clover	*Castilleja campestris ssp. succulenta*	T	NE	No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Critical habitat, Hoover's spurge	*Chamaesyce hooveri*	X	NE	No CH within affected area. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Palmate-bracted bird's-beak	*Cordylanthus palmatus*	E	NE	No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
San Joaquin woolly-threads	*Monolopia congdonii (=Lembertia congdonii)*	E	NE	No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.

Bakersfield cactus	*Opuntia treleasei*	E	NE	No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Critical habitat, San Joaquin Valley Orcutt grass	*Orcuttia inaequalis*	X	NE	No CH within affected area. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
San Joaquin Valley Orcutt grass	*Orcuttia inaequalis*	T	NE	No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Critical habitat, hairy Orcutt grass	*Orcuttia pilosa*	X	NE	No CH within affected area. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Hairy Orcutt grass	*Orcuttia pilosa*	E	NE	No land use changes would occur as a result of this action. No conversation of habitat
Hartweg's golden sunburst	*Pseudobahia bahiifolia*	E	NE	No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
San Joaquin adobe sunburst	*Pseudobahia peirsonii*	T	NE	No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Critical habitat, Keck's checker-mallow	*Sidalcea keckii*	X	NE	No CH within affected area. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Keck's checker-mallow (=checkerbloom)	*Sidalcea keckii*	E	NE	No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.
Critical habitat, California red-legged frog	*Rana aurora draytonii*	X	NE	No CH within affected area. No land use changes would occur as a result of this action. No conversation of habitat, and no new facilities.

[1]Listed as Federally Endangered (E), Threatened (T) or Critical Habitat designated (X)
[2]No Effect Determination

3.4.2 Environmental Consequences

No Action

Under the No Action Alternative, it is anticipated that there would be continued, and in some cases, additional land fallowing in SLWD and WWD. The effects of continued fallowing on listed species are anticipated to be negligible, as most of the habitat types required by species protected by the Endangered Species Act (ESA) do not occur in the project area. Additionally, some cropland fallowed in 2009 would likely be put in production in 2010 and vice-versa.

Proposed Action

The affects are similar to the No Action Alternative. Most of the habitat types required by species protected by the Endangered Species Act (ESA) do not occur in the project area. The Proposed Action would not involve the conversion of any land fallowed and untilled for three or more years. While the Proposed Action would reduce the fallowed acreage, it would not significantly change the land use patterns of the cultivated or fallowed fields that may have some value to listed species or birds protected by the Migratory Bird Treaty Act (MBTA). Some cropland fallowed in 2009 would likely be put in production in 2010 and vice-versa. Since no natural stream courses or additional pumping would occur, there would be no effects on listed fish species. No critical habitat occurs within the area affected by the Proposed Action, so critical habitat would not be affected

The relatively small amounts of water associated with the Proposed Action (when compared to the amount of water supply deficit) and the requirement that no native lands be converted without consultation with FWS would preclude impacts to wildlife, including federally listed species. Habitat for listed species is mostly absent in the vast agricultural areas where small declines in fallowed ground may occur, and listed species would not be affected by these small short term changes in the vast agricultural area.

3.5 Cultural Resources

3.5.1 Affected Environment

Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (NRHP). Those resources that are on or eligible for inclusion in the National Register are referred to as historic properties.

The Section 106 process is outlined in the Federal regulations at 36 Code of Federal Regulations (CFR) Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking will have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking will have on historic properties, and consult with the State Historic Preservation Office (SHPO), to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

The San Joaquin Valley is rich in historical and prehistoric cultural resources. Cultural resources in this area are generally prehistoric in nature and include remnants of native human populations that existed before European settlement. Prior to the 18th Century, many Native American tribes inhabited the Central Valley. It is possible that many cultural resources lie undiscovered across the valley. The San Joaquin Valley supported extensive populations of Native Americans, principally the Northern Valley Yokuts, in the prehistoric period. Cultural studies in the San Joaquin Valley have been limited. The conversion of land and intensive farming practices over the last century has probably destroyed many Native American cultural sites.

Resource within the scope of this project include historic features of the built environment primarily those of the CVP and SWP. Components of the CVP have been determined eligible for inclusion in the National Register of Historic Places (National Register) and have been prepared for inclusion in the National Register through a multiple property nomination. The CVP multiple property nomination is currently being reviewed by the Keeper of the National Register for Inclusion on the National Register.

Friant Dam is located on the San Joaquin River, 25 miles northeast of Fresno, California. Completed in 1942, the dam is a concrete gravity structure, 319 feet high, with a crest length of 3,488 feet. The FKC carries water over 151.8 miles in a southerly direction from Millerton Lake to the Kern River, four miles west of Bakersfield. The water is used for supplemental and new irrigation supplies in Fresno, Tulare, and Kern Counties. Construction of the canal began in 1945 and was completed in 1951. Both Friant Dam and the FKC are considered contributing elements of the CVP multiple property listing and are considered eligible for inclusion in the National Register.

The San Luis Unit is joint Federal (CVP) and State of California (SWP) project. The Federal components of the San Luis Unit include O'Neil Pumping Plant and Intake Canal, Coalinga Canal, Pleasant Valley Pumping Plant, and the San Luis Drain. The features of the San Luis Unit are not considered contributing features of the CVP's National Register status. Additionally, the features of the San Luis Unit were all completed in the late 1960's and are not yet eligible for inclusion in the National Register.

3.5.2 Environmental Consequences

No Action

Under the No Action Alternative, there would be no Federal undertaking as described in the in the NHPA at Section 301(7). As a result, Reclamation would not be obligated to implement Section 106 of that NHPA and its implementing regulations at 36 CFR Part 800. Because there is no undertaking, impacts to cultural resources would not be evaluated through the Section 106 process. All operations would remain the same resulting in no impacts to cultural resources.

Proposed Action

Transferring water as described in the Proposed Action is an undertaking as described in Section 301(7) of the NHPA, initiating Section 106 of the NHPA and its implementing regulations at 36 CFR Part 800. All transfers would occur through existing facilities and water would be provided within existing service area boundaries to areas that currently use water. The action would not result in modification of any existing facilities, construction of new facilities, change in land use, or growth. This action is has no potential to cause effect to historic properties pursuant to the regulations at 36 CFR Part 800.3(a)(1). As a result, the proposed undertaking will result in no impacts to cultural resources.

3.6 Indian Trust Assets

3.6.1 Affected Environment

Indian trust assets (ITA's) are legal interests in assets that are held in trust by the U.S. Government for federally recognized Indian tribes or individual Indians. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the Interior is the trustee for the United States on behalf of federally recognized Indian tribes. "Assets" are anything owned that holds monetary value. "Legal interests" means there is a property interest for which there is a legal remedy, such a compensation or injunction, if there is improper interference. Assets can be real property, physical assets, or intangible property rights, such as a lease, or right to use something. ITA's cannot be sold, leased or otherwise alienated without United States' approval. ITA's may include lands, minerals, and natural resources, as well as hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, ITA's may be located off trust land.

Reclamation shares the Indian trust responsibility with all other agencies of the Executive Branch to protect and maintain ITA's reserved by Indian tribes, or individual Indians by treaty, statute, or Executive Order.

3.6.2 Environmental Consequences

No Action

Under the No Action Alternative there are no impacts to ITA's, since conditions would remain the same as exiting conditions.

Proposed Action

There are no tribes possessing legal property interests held in trust by the United States in the water involved with this action, nor is there such a property interest in the lands designated to receive the water proposed in this action.

There are no ITA's, Indian Reservations, or public domain allotments found within the water districts involved. The Proposed Action would not affect or interfere with the observation of religious or other ceremonies associated with ITA's.

3.7 Socioeconomic Resources

3.7.1 Affected Environment

The agricultural industry significantly contributes to the overall economic stability of the San Joaquin Valley. The CVP allocations each year allow farmers to plan for the types of crops to grow and to secure loans to purchase supplies. Depending upon the variable hydrological and economical conditions, water transfers and exchanges could be prompted. The economic variances may include fluctuating agricultural prices, insect infestation, changing hydrologic conditions, increased fuel and power costs.

3.7.2 Environmental Consequences

No Action

Under the No Action Alternative economic conditions in the vicinity of SLWD would worsen. As agricultural land continues to be taken out of production, there would be a decreasing need for farm labor, and farm equipment and supplies. The economic impacts of reduced agricultural production would adversely affect the central San Joaquin Valley's economy, at a time when it is already shaky.

Proposed Action

The Proposed Action would allow for water deliveries to be made to SLWD and WWD and these would help maintain the stability of the agricultural market and economical vitality for the

San Joaquin Valley to some degree. The proposed exchanges would not interfere with SWP or CVP priorities or operations.

The transfers are temporary actions and would not result in long-term increases in water supplies that would encourage urbanization, construction or other land disturbing activities.

3.8 Environmental Justice

3.8.1 Affected Environment

Executive Order 12898, dated February 11, 1994, requires Federal agencies to ensure that their actions do not disproportionately impact minority and disadvantaged populations.

The market for seasonal workers on local farms draws thousands of migrant workers, commonly of Hispanic origin from Mexico and Central America. The population of some small communities typically increases during late summer harvest, overwhelming local water and sewage facilities and causes public health problems.

3.8.2 Environmental Consequences

No Action

The No Action Alternative would result in harm to minority or disadvantaged populations within the vicinity of SLWD because lands would be temporarily or perennially taken out of agricultural production, resulting in reduced need for farm labor.

Proposed Action

The Proposed Action would reduce dislocation and promote continued employment. The Proposed Action would not disproportionately impact economically disadvantaged or minority populations. The unemployment rate in the vicinity of SLWD and WWD suggests that any actions that maintain seasonal jobs should be considered beneficial. Employment opportunities for low-income wage earners and minority population groups would be within historical conditions. Disadvantaged populations would not be subject to disproportionate impacts.

3.9 Global Climate Change

3.9.1 Affected Environment

Climate change refers to significant change in measures of climate that last for decades or longer. Burning of fossil fuels is considered a major contributor to perceived global climate change. Carbon dioxide, which is produced when fossil fuels are burned, is a greenhouse gas (GHG) that effectively traps heat in the lower atmosphere. Some carbon dioxide is liberated naturally, but this may be augmented greatly through human activities.

Anthropogenic input has substantially added to the amount of carbon dioxide in the atmosphere, primarily through burning of fossil fuels. This action enhances the natural greenhouse effect, and is likely contributing to an increase in global average temperature and related climate changes. The magnitude and significance of anthropogenic effects is being examined and debated and there is uncertainty associated with the science of climate change (EPA 2009).

Increases in air temperature may lead to changes in precipitation patterns, runoff timing and volume, sea level rise, and changes in the amount of irrigation water needed due to modified evapotranspiration rates. These changes may lead to impacts to California's water resources and project operations. While there is general consensus in their trend, the magnitudes and onset-timing of impacts are uncertain and are scenario-dependent
(Anderson et al. 2008).

3.9.2 Environmental Consequences

No Action

Implementation of the No Action Alternative would have no change on the composition of GHG in the atmosphere and therefore would have not affect climate change.

Proposed Action

GHG generated by a project is expected to be extremely small compared to sources contributing to potential climate change. The transfer of water would be mostly via gravity and little if any additional pumping would be required. The net balance of GHG resulting from the Proposed Action compared with the No Action Alternative is unknown but finite, and may not differ from the No Action Alternative. While any increase in GHG emissions would add to the global inventory of gases that would contribute to global climate change, the Proposed Action would result in potentially minimal increases in GHG emissions and a net increase in GHG emissions among the pool of GHG would not be detectable.

3.10 Cumulative Impacts

In order to meet irrigation demands, SLWD is pursuing other potential water transfers including those listed below. Due to the complexity of several necessary exchanges and Delta pumping constraints, some of these proposed transfers may not come to fruition.

1. Transfer of up to 6,600 acre-feet (AF) from the Exchange Contractor 5 year Transfer Program
2. Potential Transfer of up to 2,600 AF from the Department of Water Resources (DWR) Drought Water Bank, subject to adequate surplus pumping capacity at DWR's Banks pumping facility.
3. Potential Transfer of up to 2,500 AF from Yuba long term transfer program, subject to adequate surplus pumping capacity at DWR's Banks pumping facility.

4. Potential transfer of up to 5,300 AF of Cross Valley water supply subject to adequate surplus pumping capacity at DWR's Banks pumping facility.
5. Transfer and exchange of up to 6,000 AF of groundwater delivered via the Delta Mendota Canal and Warren Act Contract.
6. Transfer and exchange of up to 6,000 AF of groundwater from the Tranquility Irrigation District.

In addition to this transfer, WWD will obtain transfers up to 170,000 AF of water to supplement District supplies, including those listed below, and another 50,000 AF of common land owner transfers. The remaining water supply deficit will be made up with groundwater pumping by individual landowners.

1. Transfer of up to 41,000 AF from the Exchange Contractor 5-year Transfer Program.
2. Potential transfer of up to 22,000 AF from the DWR's Drought Water Bank, subject to adequate surplus pumping capacity at DWR's Banks pumping facility.
3. Potential transfer of up to 36,000 AF from Yuba long term transfer program, subject to adequate surplus pumping capacity at DWR's Banks pumping facility.
4. Potential transfer of up to 33,000 AF from San Joaquin River Tributary Group, subject to adequate surplus pumping capacity at the DWR's Banks pumping facility.
5. Potential transfer of up to 15,000 AF from Tehama Colusa Canal Authority, subject to adequate surplus pumping capacity at DWR's Banks pumping facility.
6. Potential transfer of up to 2,800 AF from Bella Vista Water District, subject to adequate surplus pumping capacity at DWR's Banks pumping facility.

It is reasonably foreseeable that SLWD may receive additional transfers totaling up to 29,000 AF from other sources (described above). This additional water, in conjunction with the up to 11,250 AF envisioned to be delivered under the Proposed Action would equate to just over 40,000 AF of water available to supplement SLWD's 2010 water supply. This total satisfies only 37 percent of the water supply deficit for the 10-year average. Since SLWD's water deficit is over 107,000 AF with most of the water needs in the summer months, the total additional transfers into the district would still have the same effects as have been analyzed within this document.

It is also reasonably foreseeable that WWD will receive additional transfers totaling up to 220,000 AF from other sources. This additional water, in conjunction with the up to 7,500 AF envisioned to be delivered under the Proposed Action ,would equate to less than 208,000 AF of surface water available to supplement WWD's 2010 water supply. This amount satisfies only 16 percent of the water supply deficit that could occur in 2010 if supplies are similar to the 10-year average. Since WWD's water deficit is over 1.3 million AF, with most of the water needs in the

summer months, the total additional water transferred into the District will be small and the effects of water shortage would remain as have been analyzed within this document.

The proposed transfers, when added to other actions, do not significantly affect existing environmental conditions. The Proposed Action was found to have no impact on surface water or groundwater resources, biological resources, cultural resources, ITA's and socioeconomics and therefore there is no contribution to cumulative impacts on these resources areas. Slight beneficial impacts to use of land for agricultural purpose and environmental justice are within the historical variations and would not contribute to cumulative impacts. Overall there would be no significant impacts from cumulative effects related to the Proposed Action.

Section 4 Consultation and Coordination

4.1 Fish and Wildlife Coordination Act (16 USC § 651 et seq.)

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. The implementation of the CVPIA, of which this action is a part, has been jointly analyzed by Reclamation and the FWS and is being jointly implemented. Since there would be no ground disturbance and water would move in existing facilities the FWCA does not apply to this proposed action.

4.2 Endangered Species Act (16 USC §1521 et seq.)

Section 7 of the Endangered Species Act (ESA) requires Federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

Listed species in the project area that are protected by the ESA are not expected to be affected by the action because habitats required by these species either are not present in the project area, or the action would have an effect on them. The landscape where transferred water could be applied is a vast expanse of cropped land, with small amounts of temporarily fallowed, but disturbed agricultural lands. This agricultural landscape is dynamic, with frequent disturbance and this condition is not supportive of listed species. Some fraction of the lands cycle into and out of fallowed or production status each year. The action would not affect this phenomenon or sufficiently change conditions on to have an on affect listed species. Additionally, the water to be transferred would move in existing facilities and no ground disturbance would be required to effect the transfer, thereby listed species would not be affected by the action.

Some agricultural lands could, however, be utilized by the San Joaquin kit fox. This mobile species can have a relatively large home range, and one that sometimes includes agricultural lands; this species could occur infrequently and at low density in the intense agricultural areas of San Luis Water District and Westlands Water District, but fewer records are present in these areas than natural lands in the region (USFWS 1998; CNDDB 2009). Any changes associated with the project are likely to be similar in nature to the background dynamic for the landscape (e.g. some lands fallowed in 2009 may be put into production in 2010 and vice-versa) and changes experienced by kit fox related to the action would be imperceptible from background changes because of the small scope of the action and would therefore not affect this species.

4.3 National Historic Preservation Act (15 USC § 470 et seq.)

Transferring water as described in the Proposed Action is an undertaking as described in Section 301(7) of the NHPA, initiating Section 106 of the NHPA and its implementing regulations at 36 CFR Part 800. All transfers would occur through existing facilities and water would be provided within existing service area boundaries to areas that currently use water. The action would not result in modification of any existing facilities, construction of new facilities, change in land use, or growth. This action is has no potential to cause effect to historic properties pursuant to the regulations at 36 CFR Part 800.3(a)(1). As a result, the proposed undertaking will result in no impacts to cultural resources.

4.4 Migratory Bird Treaty Act (16 USC § 703 et seq.)

The MBTA implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the MBTA provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the MBTA, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

The Proposed Action would not affect birds protected under the MBTA.

4.5 Executive Order 11988 – Floodplain Management and Executive Order 11990-Protection of Wetlands

Executive Order 11988 requires Federal agencies to prepare floodplain assessments for actions located within or affecting flood plains. Executive Order 11990 places similar requirements for actions in wetlands. The Proposed Action would not affect either concern.

Section 5 List of Preparers and Reviewers

Rena Ballew – Repayment Specialist
Patti Clinton – Natural Resource Specialist – reviewer
Ned Gruenhagen – Wildlife Biologist
Michael Inthavong – Natural Resource Specialist – reviewer
Michael Kinsey – Acting Supervisory Natural Resource Specialist - reviewer

Section 6 References

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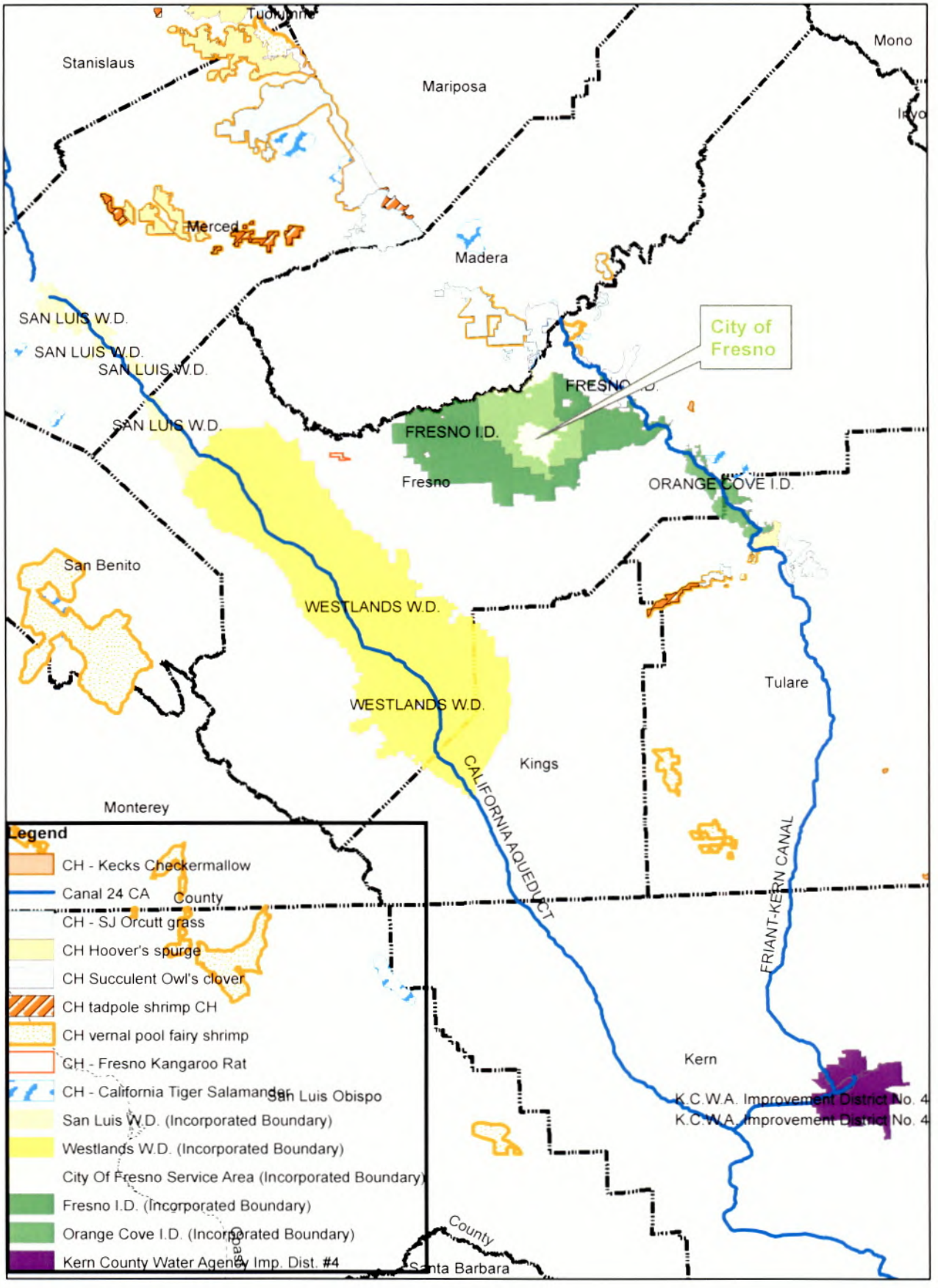
Boundaries for FID, CoF, OCID, KCWA, SLWD, WWD and Designated or Proposed Critical Habitat for Listed Species



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