

3. AFFECTED ENVIRONMENT

This chapter presents a general description of the physical environment of the project area and vicinity. The existing condition of resources sets the baseline against which the proposed action and alternative to the proposed action are evaluated subsequently in Chapter 4 to determine environmental effects.

3.1 GENERAL DESCRIPTION OF PROJECT AREA AND WILLING SELLERS

As described in Section 2.1.2, Alternatives Including Proposed Action, the immediate project area is comprised of portions of the Stanislaus, Tuolumne, and Merced rivers and the San Joaquin River from the Mendota Pool to Vernalis. These are the primary rivers that would be affected by the additional water. The points of release occur primarily at three reservoirs: New Melones Reservoir on the Stanislaus River, New Don Pedro Reservoir on the Tuolumne River, and Lake McClure on the Merced River. Additional releases would occur on the San Joaquin River, almost entirely near Los Banos from surface water conveyance facilities into Mud or Salt sloughs (which discharge into the San Joaquin River), or into Orestimba Creek, but also possibly upstream at the Mendota Pool.

3.1.1 Project Area and Vicinity

Inflows from the Merced, Tuolumne, and Stanislaus rivers historically contribute more than 60 percent of the flows in the San Joaquin River, as measured at Vernalis. The San Joaquin River enters the Delta at Vernalis which is widely used as a monitoring point for Delta inflows and standards. The U. S. Geological Survey (USGS) has operated a gaging station on the San Joaquin River near the community of Vernalis (Station 11303500) since 1922 (CALFED 1998).

The project area rivers are highly managed due to extensive water supply, hydroelectric, and flood control projects. As a result, the aquatic resources have undergone significant changes. Of concern is the protection and enhancement of economically important species such as chinook salmon and the adjacent riparian habitat which supports numerous plants and animals including some rare, threatened, and endangered species. Fall-run chinook salmon inhabit the three tributaries to the San Joaquin River during spawning and development stages of their life cycle. The ecological health of the project area rivers in the San Joaquin River Basin is important to the health of the Bay/Delta Estuary.

Land uses within the project area are primarily open space, agriculture, and recreation. Agricultural lands are often adjacent to the river corridors. There are three reservoirs in the project area that are used for a variety of purposes: water supply, regulation of river flows including flood control, hydroelectric power generation, and recreation. Recreation activities at project area reservoirs and rivers include boating, fishing, swimming, picnicking, camping, hunting, and wildlife observation.

The sections in this chapter on affected environment cover not only the immediate area of direct project impact but also the project area vicinity and adjacent areas that could potentially experience

3. Affected Environment

indirect impacts such as the larger San Joaquin River Basin and the Bay/Delta Estuary. Definition of the larger area, such as the San Joaquin River Region, varies depending on the source of information. Groundwater in the basin is used for municipal, industrial, and agricultural purposes. Cultural resources in the San Joaquin River Region have been documented from the excavation of reservoirs and other sites to reveal numerous prehistoric resource locations. Agriculture and mining activities characterize historic resources.

The water supply for Vernalis Adaptive Management Plan (VAMP) and related flows is to be provided by the San Joaquin River Group Authority as identified in the San Joaquin River Agreement and reported in Section 2.1.1. Members of the Authority who have agreed to sell water for release to the San Joaquin River system are the following: South San Joaquin Irrigation District (SSJID), Oakdale Irrigation District (OID), Modesto Irrigation District (MID), Turlock Irrigation District (TID), Merced Irrigation District (Merced ID), and the San Joaquin River Exchange Contractors Water Authority (Exchange Contractors). The Exchange Contractors have four members: San Luis Canal Company, Central California Irrigation District, Firebaugh Canal Water District, Columbia Canal Company. The service areas of these districts and agencies are shown on Figure 3.1-1. Annual surface water and groundwater use by the San Joaquin River Group's willing sellers is shown in Table 3.1-1. Each willing seller is introduced in the following sections.

3.1.2 Willing Sellers on the San Joaquin River

3.1.2.1 San Joaquin River Exchange Contractors Water Authority

The Exchange Contractors include four separate entities located in the San Joaquin Valley (three on the west side of the San Joaquin River and one on the east): the Central California Irrigation District (CCID), San Luis Canal Company (SLCC), Firebaugh Canal Water District (FCWD), and Columbia Canal Company (CCC). The service area of 240,000 acres covers parts of Fresno, Madera, Merced, and Stanislaus Counties. The primary economy in this area is agriculture or agriculturally related businesses (NEA 1997).

Annual crops comprise 92 percent of the 225,562 acres of cropland in the Exchange Contractors service area. Cotton is the largest single crop grown in the area. Other annual crops grown include tomatoes, garlic, melons, and alfalfa hay (NEA 1997). Permanent crops grown in the area include walnuts and almonds.

The Exchange Contractors hold Miller and Lux water rights dating back to the 1880s. Because of this early water usage, the water rights of the Exchange Contractors are based on their riparian and pre-1914 diversions. The Exchange Contractors have an agreement with the Bureau of Reclamation (Reclamation) in which they agree not to exercise their San Joaquin River water rights in exchange for guaranteed deliveries of substitute Central Valley Project (CVP) water from the Delta-Mendota Canal.

3. Affected Environment

Table 3.1-1: SURFACE AND GROUNDWATER USE BY WILLING SELLERS (AF/Yr)

	Exchange Contractors	OID	SSJID	MID	TID	Merced ID
Surface Water:						
Maximum Available (AF)	840,000	300,000	300,000	See Note 1	See Note 1	Not Available ¹
Average Annual Diversion	840,000	300,000	242,000 ²	320,000	541,000 ³	Not Available
Avg Annual Use for Irrigation	840,000	300,000	242,000	193,000	498,000 ³	522,000
Groundwater⁴:						
Total Average Annual Use	144,000	9,668 ⁵	11,200 ⁶	23,500	120,000 ³	25,000-30,000 ⁷
Avg Annual Use for Irrigation	144,000	8,130	7,800	15,000	110,000 ³	25,000-30,000

¹The operations of TID, MID and Merced ID are supported by a variety of water rights which include pre-1914 appropriations and riparian rights in addition to post-1914 licenses which have been issued by the SWRCB. Absent an adjudication, it is not possible to identify the maximum amount of water available. However, The MID/TID water diversion varies between 900,000 and 1,100,000 acre feet per year(AF/Yr).

²This figure represents a 15-year average. SSJID's historical use has ranged much higher and has exceeded 300,000 AF/Yr in some years. However, primarily as a result of conservation efforts, the district has diverted an average of approximately 242,000 AF/Yr over the last 15 years. The district sold to Interior 40,000 AF in 1997 and 25,000 AF in 1998. The district has contractual commitments to deliver up to 15,000 AF/Yr to the Stockton East Waster District beginning in October 1998 and 32,000 AF/Yr to a domestic water plant, beginning in approximately 2002.

³TID usage based on 25 year average (1973-1997).

⁴Groundwater use is by District

⁵Over last 15 years. Source: OID/SSJID, *Draft Initial Study and Proposed Negative Declaration for the OID/SSJID Water Transfer Project*, 1997.

⁶Based on the Groundwater Management Database Development report, Montgomery Watson, September 1993. This includes approximately 3,400 AF/Yr of shallow groundwater pumped and discharged by SSJID to lower saline groundwater from the crop root zone. This does not include other private pumping within the SSJID service area for agricultural use.

⁷Range of water pumped is 10,000 AF – 167,000 AF. Most of this water is pumped in dry and critical years, and the 167,000 AF was pumped in 1977. Approximately 10,000 AF is pumped in all years.

3. Affected Environment

3.1.3 Willing Sellers on the Stanislaus River

3.1.3.1 South San Joaquin Irrigation District

Organized in 1909, SSJID is located on the east side of the San Joaquin Valley. The District encompasses approximately 72,000 acres of land that are predominantly agricultural with almonds and grapes as the primary crops. Total acres of irrigated agriculture are estimated at 62,000 acres since urban areas cover about 10,000 acres of the total area, including the cities of Manteca, Escalon, and Ripon, which provide water service separately from SSJID. Over the past 15 years, SSJID has experienced substantial urban development. By 2025, urban areas are projected to increase to over 35 percent of the land area. (MW 1993)

SSJID has a firm supply of surface water, based on its senior water rights in the Stanislaus River and its 1988 Agreement and Stipulation with Reclamation for up to 300,000 acre-feet of Stanislaus River water annually. This surface water supply has been used historically to meet agricultural water demands (MW 1993). SSJID is part-owner (with OID) of the Goodwin Dam and the SSJID/OID Joint Main Canal which is used to divert water to SSJID and OID (USBR 1997f).

3.1.3.2 Oakdale Irrigation District

Organized in 1909, OID is located in the eastern San Joaquin Valley and encompasses parts of San Joaquin and Stanislaus Counties. The District encompasses approximately 72,000 gross acres of land with cropping patterns that include irrigated pasture (clover), oats-corn, rice, fruit and nuts, and miscellaneous crops, such as berries, melons, onions, and home gardens and yards (OID 1995). OID has a firm supply of surface water, based on its senior water rights in the Stanislaus River and its 1988 Agreement and Stipulation with Reclamation for up to 300,000 acre-feet of Stanislaus River water annually. The District's distribution system which is co-owned in large part with SSJID, includes the Tulloch Dam and Reservoir and the Goodwin Diversion Dam on the Stanislaus River below New Melones Dam. Water is diverted into the SSJID/OID Joint Main Canal and OID's South canals (OID 1998). In addition, the District owns and operates deep well water reclamation pumps and two downstream river diversions. OID and SSJID jointly own and operate the Tri-Dam Project, an irrigation and hydroelectric project in the Stanislaus River that consists of three dams and associated appurtenant structures. OID's service area is approximately 73,000 acres (USBR GIS 1998), and the city of Oakdale is the principal community.

3. Affected Environment

3.1.4 Willing Sellers on the Tuolumne River

3.1.4.1 Modesto Irrigation District

Organized in 1887, MID is located in Stanislaus County on the east side of the San Joaquin Valley. The District encompasses a 108,000-acre service area and supplies surface water, groundwater, and electrical service to agricultural (64,000 irrigated acres) and municipal users including the cities of Waterford, Empire, Modesto, and Salida. The primary economy in the District is agriculture or agriculturally related businesses, and the primary crops are trees (primarily almond), vines, grain, row, and pasture. The average farm size is 20 acres, and there are approximately 3,200 farms within MID (MID 1996). MID has pre-1914 and post-1914 water rights.

3.1.4.2 Turlock Irrigation District

Organized in 1887, TID is located on the east side of the San Joaquin Valley, and it encompasses portions of Stanislaus and Merced Counties. The District's service area covers 272,000 acres and includes the cities of Turlock, Ceres, Hughson, part of Modesto, and the unincorporated communities of Keyes, Denair, Hickman, Delhi, and Hilmar (Goldman, Sachs & Company 1998). Over the past 25 years, TID has provided on average 608,000 acre-feet of water to irrigators for 149,000 acres (TID 1998, personal communication). The primary agricultural crops grown in the District include almonds, tomatoes, walnuts, peaches, grapes, and melons (Stanislaus County General Plan 1994). The District also generates hydroelectricity within its service area. TID has a firm supply of developed surface water and operates surface diversions from the Tuolumne River. TID jointly operates the New Don Pedro Reservoir with Modesto ID. Surface water accounts for about 81 percent of the total delivery for irrigation (TID 1997, 1998, personal communication).

3.1.5 Willing Sellers on the Merced River

3.1.5.1 Merced Irrigation District

Organized in 1919, the Merced ID is located on the east side of the San Joaquin Valley in Merced County. Merced has a firm supply of developed surface water and operates surface diversions from the Merced River. More than 140,000 acres are located within Merced ID's boundaries, of which approximately 70 percent are irrigated with Merced ID water (Merced ID 1998). Merced ID uses surface and groundwater to supply approximately 552,000 acre-feet per year to irrigation customers. Surface water accounts for about 95 percent of the total delivery (MBK 1998, personal communication). Agricultural crops grown within the Merced ID service area include almonds (nearly 12,000 acres), corn (nearly 10,000 acres), alfalfa and cotton (nearly 8,000 acres each) (Merced ID 1998).

3. Affected Environment

3. AFFECTED ENVIRONMENT 1

3.1 ... GENERAL DESCRIPTION OF PROJECT AREA AND WILLING SELLERS 1

3.1.1 **Project Area and Vicinity** 1

3.1.2 **Willing Sellers on the San Joaquin River** 2

3.1.2.1 San Joaquin River Exchange Contractors Water Authority 2

3.1.3 Willing Sellers on the Stanislaus River

3.1.3.1 South San Joaquin Irrigation District Organized in 1909, SSJID is located on the east side of the San Joaquin Valley. The District encompasses approximately 72,000 acres of land that are predominantly agricultural with almonds and grapes as the primary crops. Total acres of irrigated agriculture are estimated at 62,000 acres since urban areas cover about 10,000 acres of the total area, including the cities of Manteca, Escalon, and Ripon, which provide water service separately from SSJID. Over the past 15 years, SSJID has experienced substantial urban development. By 2025, urban areas are projected to increase to over 35 percent of the land area. (MW 1993) SSJID has a firm supply of surface water, based on its senior water rights in the Stanislaus River and its 1988 Agreement and Stipulation with Reclamation for up to 300,000 acre-feet of Stanislaus River water annually. This surface water supply has been used historically to meet agricultural water demands (MW 1993). SSJID is part-owner (with OID) of the Goodwin Dam and the SSJID/OID Joint Main Canal which is used to divert water to SSJID and OID (USBR 1997f).

3.1.3.2 Oakdale Irrigation District Organized in 1909, OID is located in the eastern San Joaquin Valley and encompasses parts of San Joaquin and Stanislaus Counties. The District encompasses approximately 72,000 gross acres of land with cropping patterns that include irrigated pasture (clover), oats-corn, rice, fruit and nuts, and miscellaneous crops, such as berries, melons, onions, and home gardens and yards (OID 1995). OID has a firm supply of surface water, based on its senior water rights in the Stanislaus River and its 1988 Agreement and Stipulation with Reclamation for up to 300,000 acre-feet of Stanislaus River water annually. The District’s distribution system which is co-owned in large part with SSJID, includes the Tulloch Dam and Reservoir and the Goodwin Diversion Dam on the Stanislaus River below New Melones Dam. Water is diverted into the SSJID/OID Joint Main Canal and OID’s South canals (OID 1998). In addition, the District owns and operates deep well water reclamation pumps and two downstream river diversions. OID

3. Affected Environment

and SSJID jointly own and operate the Tri-Dam Project, an irrigation and hydroelectric project in the Stanislaus River that consists of three dams and associated appurtenant structures. OID’s service area is approximately 73,000 acres (USBR GIS 1998), and the city of Oakdale is the principal community.

3.1.4 Willing Sellers on the Tuolumne River 5
3.1.4.1 Modesto Irrigation District 5
3.1.4.2 Turlock Irrigation District 5
3.1.5 Willing Sellers on the Merced River 5
3.1.5.1 Merced Irrigation District 5