

3.3.1 Chowchilla and Eastside Bypasses Watershed

The bypass system for the San Joaquin River begins at the river about 5 miles east of the town of Mendota. The bypass is designed to carry all flood flows from the San Joaquin River at that location if Kings River floodwater (up to 4,750 cfs) is entering downstream through the North Fork and James Bypass. The bypass system discharges water back to the San Joaquin River at two locations, about 42 miles and 50 miles downstream from the upstream end of the bypass.

This section describes SPFC facilities along the bypass system and on tributary streams to the bypass system. Portions of levees already in place along canal banks were rehabilitated, and new reaches of levees were built as part of the project. The bypass system includes about 193 miles of levees. Levees along tributary streams were designed with 3 feet of freeboard. The Lower San Joaquin Levee District is the maintaining agency.

Figure 3-13 shows SPFC facilities in the Chowchilla and Eastside bypasses watershed.

Chowchilla Canal Bypass Control Structure

The Chowchilla Canal Bypass Control Structure is an SPFC facility. Water enters the bypass system from the San Joaquin River through the Chowchilla Canal Bypass Structure (see O&M Manual SJR601B). The structure has four gated bays, each 20 feet wide, with a total design capacity of 5,500 cfs. At times, higher discharges can be diverted into the bypass, depending on sediment movement. While not described in the O&M manual, flows up to 12,000 cfs have been diverted to the bypass. Although the gates were designed for automatic operation, the gates are currently operated manually. Approach embankments connect the structure with the levee system. The Chowchilla Canal Bypass Control Structure operates in conjunction with a nearby identical structure across the San Joaquin River, described in Section 3.3.2.



The Chowchilla Canal Bypass Control Structure is an SPFC facility

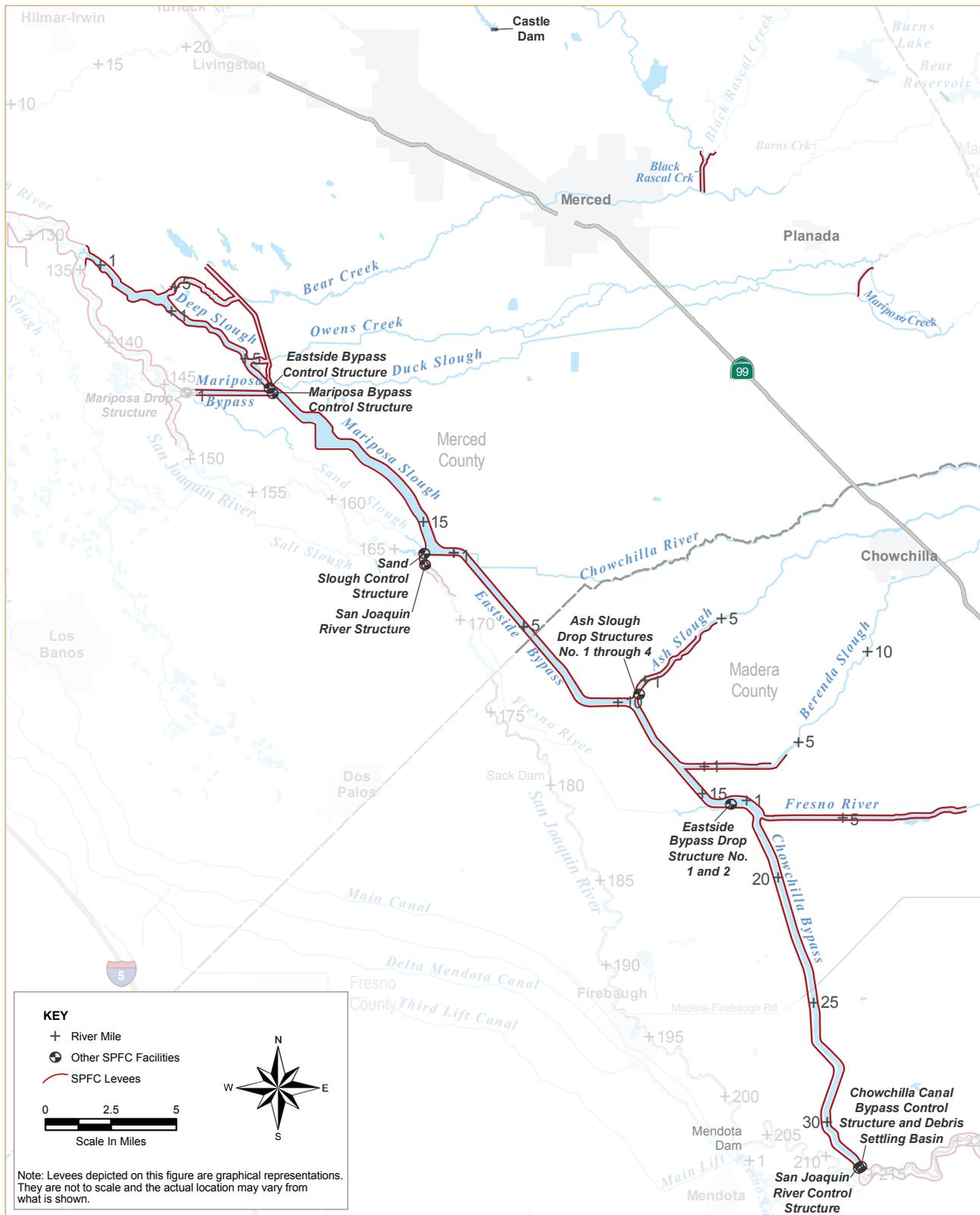


Figure 3-13. Chowchilla and Eastside Bypasses – State Plan of Flood Control Facilities Along the Chowchilla and Eastside Bypasses and Tributaries

Chowchilla Bypass from Control Structure to Fresno River

SPFC facilities along this reach of the bypass include levees on both banks and a debris settling basin. The design capacity of the reach is 5,500 cfs. The levees (see O&M Manual SJR601) in this reach are each about 14.6 miles long. The debris settling basin, with 200,000 cubic yards of storage capacity, is located just downstream from the control structure. This reach of the bypass includes a pilot reach of habitat planting between Avenue 14 and the Madera-Firebaugh Road. The facilities are maintained by the Lower San Joaquin Levee District.



Levees line the channel downstream from the Chowchilla Canal Bypass Control Structure

Fresno River

The Fresno River enters the bypass system at the downstream end of the Chowchilla Bypass. SPFC facilities (see O&M Manual SJR606) include an excavated trapezoidal channel with levees on both banks for a realigned Fresno River and a diversion weir. Based on the O&M manual, the channel has a design capacity of 5,000 cfs and the levees are each about 18.3 miles long. The average levee height is about 7 feet and the maximum height is about 9 feet. The diversion weir provides for release of flows for riparian water users along the right and left banks. The facilities are intended to reduce flood risk to adjacent agricultural land and the City of Madera, and are maintained by the Madera County Flood Control and Water Conservation District.

Eastside Bypass from Fresno River to Berenda Slough

The Eastside Bypass begins at the confluence of the Chowchilla Bypass and Fresno River. SPFC facilities (see O&M Manual SJR601) include levees on both banks of the channel and drop structures. Based on the O&M manual, the design capacity of the channel is 10,000 cfs, and the length of the channel and levees is about 4 miles. Two drop structures help control the channel grade. The facilities are maintained by the Lower San Joaquin Levee District.

Berenda Slough

Berenda Slough is a distributary channel of the Chowchilla River that enters the bypass system. SPFC facilities (see O&M Manuals SJR601 and SJR605) include channel enlargements, levees on both channel banks, and diversion structures. The design capacity of Berenda Slough at its confluence with the Eastside Bypass is 2,000 cfs, based on the O&M manuals. The right-bank levee is about 1.9 miles long and the left-bank levee is about 2.7 miles long. A diversion dam on Berenda Slough sends excess flows through a diversion channel to Ash Slough. Several other flow diversions move water between streams. The facilities are intended to reduce flood risk to adjacent agricultural land and the City of Chowchilla, and are maintained by Madera County.

Eastside Bypass from Berenda Slough to Ash Slough

SPFC facilities (see O&M Manual SJR601) along this reach of bypass include levees on both banks of the channel and drop structures. Based on the O&M manual, the channel has a design capacity of 12,000 cfs and the levees are about 3.1 miles long. Two drop structures help control the channel grade. Ash Slough enters the bypass at the downstream end of the reach. The levees are maintained by the Lower San Joaquin Levee District.

Ash Slough

Ash Slough is a distributary channel of the Chowchilla River that enters the bypass system. SPFC facilities (see O&M Manuals SJR601 and SJR605) include channel enlargements, levees on both banks of the channel, diversion structures, and drop structures. The design capacity of Ash Slough at its

confluence with the Eastside Bypass is 5,000 cfs, based on the O&M manuals. The right-bank levee is about 2.7 miles long and the left-bank levee is about 2.3 miles long. Four drop structures help control the channel grade. The facilities are intended to reduce flood risk to the City of Chowchilla and adjacent agricultural land, and are maintained by the Lower San Joaquin Levee District.

Eastside Bypass from Ash Slough to Sand Slough

SPFC facilities (see O&M Manual SJR601) along this reach of bypass include levees on both banks of the channel. Based on the O&M manual, the channel has a design capacity of 17,000 cfs, and the levees are about 10.5 miles long. Water from the San Joaquin River enters the bypass through the Sand Slough Control Structure (see description under Section 3.3.2, San Joaquin River Watershed) at the downstream end of the reach. Design inflow from the San Joaquin River is about 4,500 cfs. The levees are maintained by the Lower San Joaquin Levee District.

Eastside Bypass from Sand Slough to Mariposa Bypass

SPFC facilities (see O&M Manual SJR601) along this reach of bypass include levees on both banks of the channel. Based on the O&M manual, the channel has a design capacity of 16,500 cfs and the levees are about 8.7 miles long. At the downstream end of this reach, the flow branches – up to 13,500 cfs continue down the Eastside Bypass and up to 8,500 cfs flow into the Mariposa Bypass. Flow in both bypasses is regulated by control structures just downstream from the flow branch. The levees are maintained by the Lower San Joaquin Levee District.

Mariposa Bypass

SPFC facilities for the Mariposa Bypass (see O&M Manual SJR601) include levees along both banks, a control structure at its upstream end, and a drop structure near its downstream end. Based on the O&M manual, the channel has a design capacity of 8,500 cfs, and the levees are about 3.4 miles long. The Mariposa Bypass Control Structure (see O&M Manual SJR601A) consists of fourteen 20-foot-wide bays – eight gated and six ungated. Although the



The drop structure on the Mariposa Bypass helps control the channel grade near its downstream end

gates were designed for automatic operation, the gates are currently operated manually. The facilities are maintained by the Lower San Joaquin Levee District.

Eastside Bypass from Mariposa Bypass to Bear Creek

SPFC facilities (see O&M Manual SJR601) along this reach of bypass include levees on both banks of the channel and the Eastside Bypass Control Structure. Based on the O&M manual, the channel has a design capacity of 13,500 cfs, and the levees are about 6 miles long. The Eastside Bypass Control Structure (see O&M Manual SJR601A), located about 1,100 feet downstream from the junction with the Mariposa Bypass, consists of six 20-foot-wide bays. Although the gates were designed for automatic operation, the gates are currently operated manually. Owens Creek, with a design capacity of 2,000 cfs, enters the bypass on the left bank. Levees on Owens Creek extend about 0.8 miles upstream from the bypass. Bear Creek, with a design capacity of 7,000 cfs, enters the bypass at the downstream end of the reach. Right- and left-bank levees on Bear Creek (see O&M Manual SJR601) extend about 3.5 miles upstream from the bypass. The East Side Canal and its left-bank levee extend from the Eastside Bypass to a point approximately 1.7 miles north of Bear Creek. The facilities are maintained by the Lower San Joaquin Levee District.

Merced County Stream Group Project

The Merced County Stream Group project (see O&M Manual SJR607) includes two diversion channels with levees and channel clearing, a dam, and channel enlargements intended to reduce flood risk for the City of Merced and adjacent agricultural land. SPFC facilities include a diversion channel from Black Rascal Creek to Bear Creek. The design capacity of the channel is 3,000 cfs based on the O&M manual. The right-bank levee along the channel is about 1.6 miles long and the left-bank levee is about 1.9 miles long. SPFC facilities also include a diversion channel from Owens Creek to Mariposa Creek. The design capacity of the channel is 400 cfs. The right- and left-bank levees along the diversion channel are each about 1.5 miles long. Channel improvements are included along Black Rascal Creek, Bear Creek, Burns Creek, Miles Creek, Owens Creek, and Mariposa Creek. The facilities are maintained by Merced County.

Castle Dam (see O&M Manual SJR607A) is located on Canal Creek, a tributary of Black Rascal Creek. Castle Dam (completed in 1992) is located on Canal Creek about 6 miles northeast of Merced. Castle Reservoir has 6,400 acre-feet of flood storage. Castle Dam is owned by DWR and Merced County, and is operated and maintained by the Merced Irrigation District (USACE, 1999).

Eastside Bypass from Bear Creek to San Joaquin River

SPFC facilities (see O&M Manual SJR601) along this reach of bypass include levees on both banks of the channel. Based on the O&M manual the channel has a design capacity of 18,500 cfs, and the levees are about 3.6 miles long. The Eastside Bypass ends at its confluence with the San Joaquin River. The facilities are maintained by the Lower San Joaquin Levee District.



Eastside Bypass levees are maintained by Lower San Joaquin Levee District

3.3.2 San Joaquin River Watershed

Unlike the Sacramento River, where SPFC levees are continuous over about 180 miles from beginning to end, SPFC levees on the San Joaquin River are intermittent. About 45 miles of San Joaquin River from the beginning of the bypass system downstream to near the Sand Slough Control Structure have no SPFC levees or other facilities.

Flow in the San Joaquin River upstream from the control structures for diverting water to the bypass system normally varies from 0 to 8,000 cfs, with infrequent snowmelt flows of up to 12,000 cfs and rain flood flows of up to 50,000 cfs when the capacity of the upstream Millerton Lake behind Friant Dam is exceeded. With a total flow of 8,000 cfs in the river, normal operations would divert 5,500 cfs into the bypass and a maximum of 2,500 cfs down the San Joaquin River. If flows exceed 8,000 cfs at the control structures, or 10,000 cfs at the latitude of Mendota, the Lower San Joaquin Levee District operates the facilities at its own discretion with the objective of minimizing damage to the flood system and to the adjacent area. At times, flows exceeding 5,500 cfs are diverted to the bypass.

Figures 3-14, 3-15, and 3-16 show SPFC facilities along the San Joaquin River.

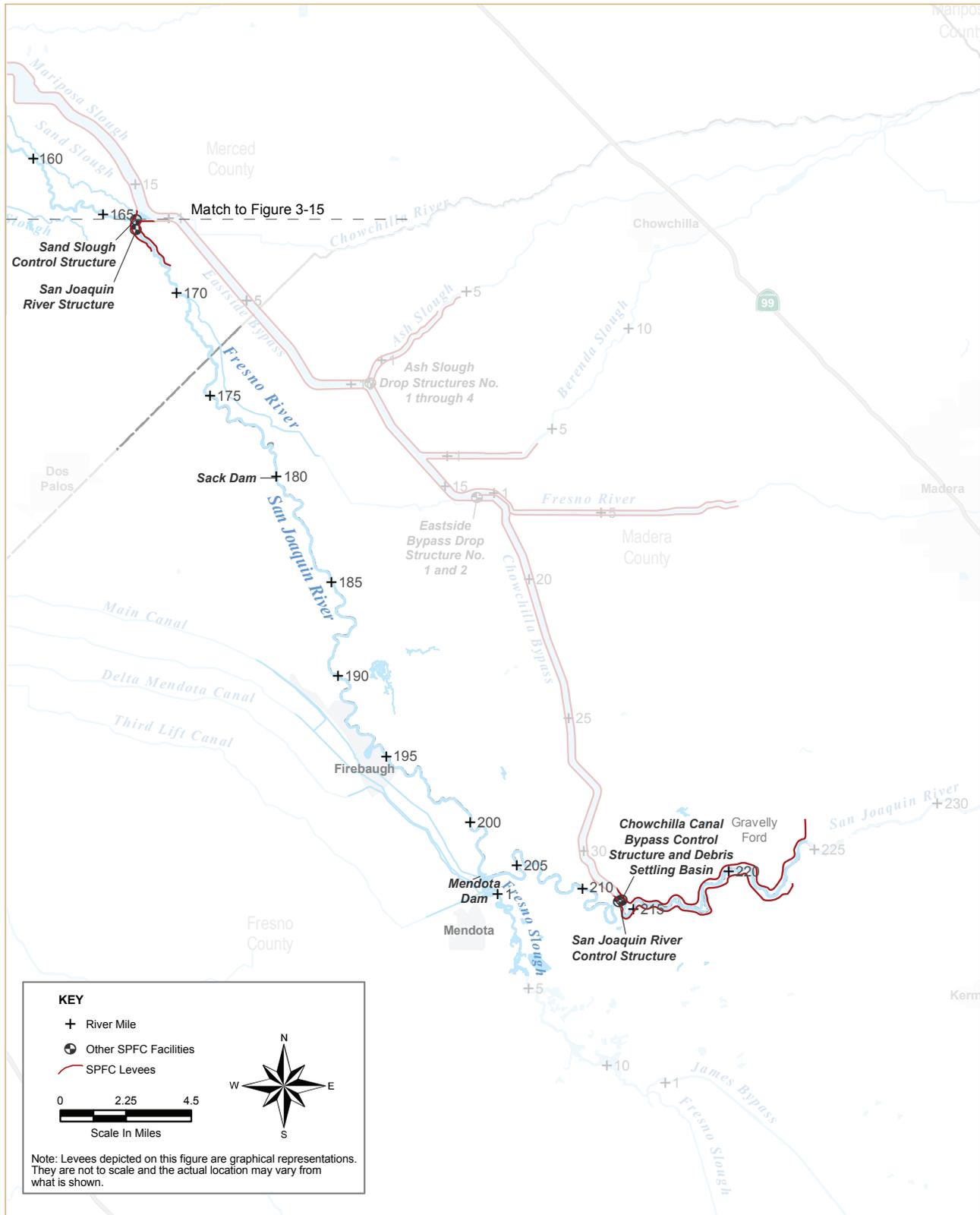


Figure 3-14. San Joaquin River Watershed – State Plan of Flood Control Facilities Along the San Joaquin River from Gravelly Ford to the Sand Slough Control Structure

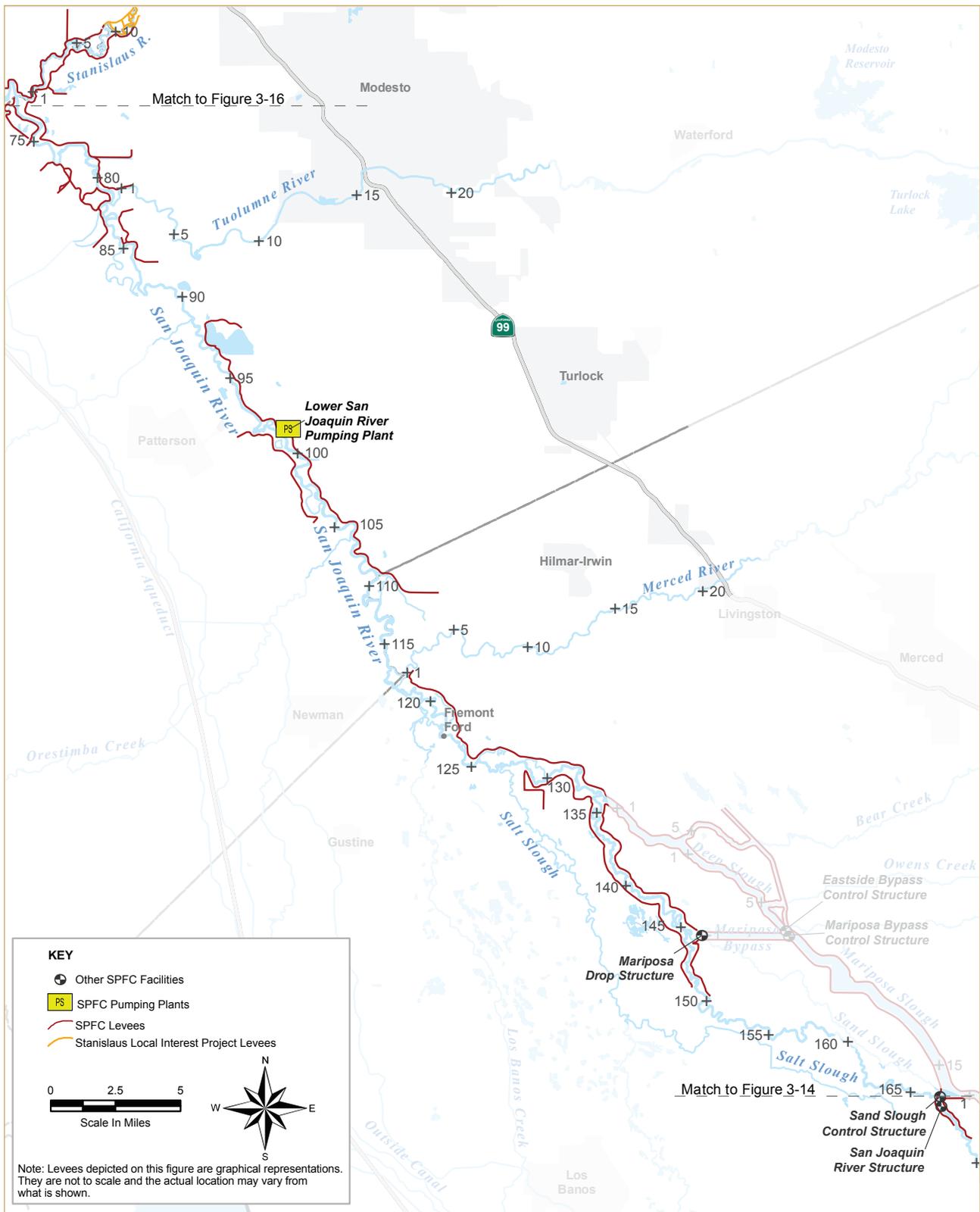


Figure 3-15. San Joaquin River Watershed – State Plan of Flood Control Facilities Along the San Joaquin River from the Sand Slough Control Structure to Stanislaus River

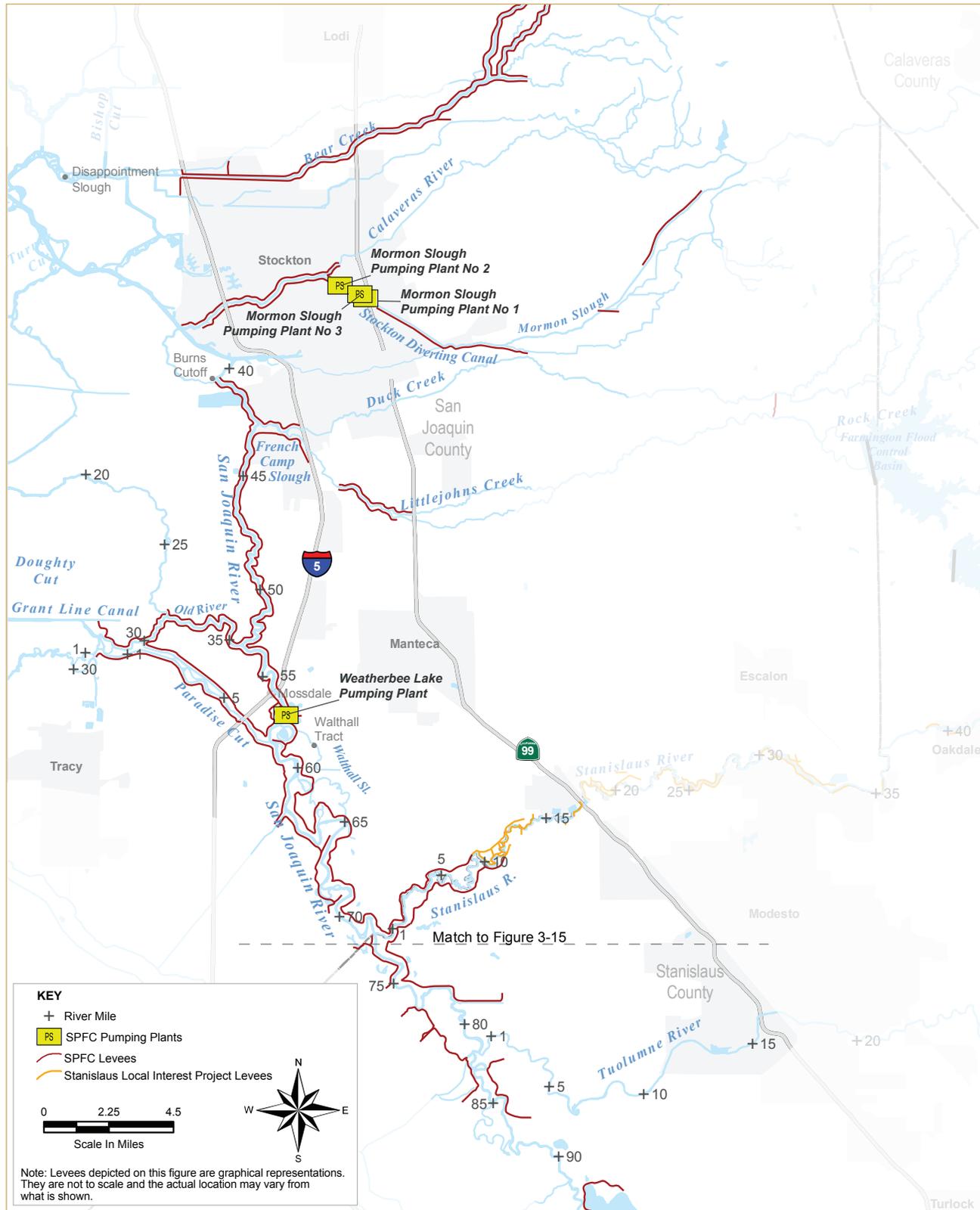


Figure 3-16. San Joaquin River Watershed – State Plan of Flood Control Facilities Along the San Joaquin River and Major Tributaries and Distributaries from Stanislaus River to Disappointment Slough