

Lower Tuolumne River Description and Maps - Introduction

This document and the associated maps (Figures 1 through 20) provide an overview of the Lower Tuolumne River from below the La Grange Diversion Dam (RM 52.1) to the confluence with the San Joaquin River (RM 0.0). The lower river is broken into seven sub-reaches as described in McBain and Trush (2000).

The associated figures are also broken out by sub-reach and include information such as observed salmon redds (in 2012), temperature logger monitoring locations (by CDFW and TID/MID), streamflow gage locations, TID and MID canal locations and the location of water diversions and return flows. The aerial photographs were taken on April 6, 2012, when the average flow measured at the La Grange gage was 319 cfs.

In addition, the figures also include representative photographs of the features described above when available from either aerial video or on the ground. Specific locations and descriptions of each photograph are provided in Tables 1 through 7 below. The aerial video was shot moving upstream from the confluence with the San Joaquin River (RM 0.0) on May 18, 2012 when flows at the La Grange gage averaged 280 cfs.

Reach 1 (RM 0.0 – 10.5) – Lower Sand-Bedded Reach

Reach 1 of the Lower Tuolumne River is known as the Lower Sand-bedded Reach and encompasses the river from approximately RM 0.0 to RM 10.5 (Figures 1 through 3). The reach begins at the confluence with the San Joaquin River and ends just before the river enters the outer limits of Modesto, California. The reach is characterized by sand bed and banks with little to no confinement by bluffs. The reach runs through predominantly agricultural areas (McBain and Trush 2000).

Points of note in this reach include the confluence with the San Joaquin River (RM 0.0), public access at Shiloh Bridge (RM 3.6) and numerous water diversions. CDFW and TID/MID monitor water temperature at RM 3.6. A seasonally operated rotary screw trap (RST) is located at RM 5.4 to monitor salmonid outmigration. In 2014, staff observed heavy water hyacinth (*Eichhornia crassipes*) growth in this reach and upstream, especially from RM 9 to 12. This included an approximately 0.5 mile stretch around RM 9.5 where the river was completely blocked by this non-native invasive species during the late summer. Representative photos are described in Table 1 below.

Table 1. Representative photographs with associated figure number and river mile location in Reach 1, Lower Sand-Bedded Reach.

Figure Number	River Mile (RM)	Description
1	0.0	Confluence with San joaquin River
1	1.45	Typical water diversion structure (left bank)
1	2.1	Typical water diversion structure (right bank)
1	3.2	Typical water diversion structure (right bank)
1	3.6	Shiloh Bridge and public access area
2	5.4	Seasonally operational rotary screw trap (left bank)
2	5.8	Big Bend restoration area
2	6.7	Typical river channel and surrounding land
2	7.0	Typical split channel with riparian banks
3	8.4	Typical water diversion structure (left bank)
3	9.2	River channel at RM 9.2
3	9.2	Water hyacinth growth during summer of 2013

Reach 2 (RM 10.5 – 19.3) – Urban Sand-Bedded Reach

Reach 2 of the Lower Tuolumne River is known as the Urban Sand-bedded Reach and encompasses the river from approximately RM 10.5 to RM 19.3 (Figures 4 through 6). The reach is characterized by sand bed and banks with moderate confinement by bluffs in portions of the reach. The reach runs through both urban and agricultural areas (McBain and Trush 2000).

Points of note in this reach include the steel sheet pile remnants of an old dam at RM 16.1 that has been notched and the confluence with Dry Creek at RM 16.4. Dry Creek is the only major tributary to the Lower Tuolumne River and has a drainage area of approximately 204 square miles measured at the USGS gage. In addition, various bridges cross the Tuolumne in this area. CDFW has maintained two water temperature recorders in this reach at RM 12.8 and 16.1. There is a USGS flow gage also located near RM 16.0, below the confluence with Dry Creek. There is one water diversion at RM 16.5 and one flow return at RM 18.1. Public access in this reach is available at Riverdale Park (RM 12.4) and at Legion Park (RM 17.5). Representative photos are described in Table 2 below.

Table 2. Representative photographs with associated figure number and river mile location in Reach 2, Urban Sand-Bedded Reach.

Figure Number	River Mile (RM)	Description
4	12.4	Riverdale Park public access (right bank)
4	12.75	Typical river channel with urban encroachment (right bank)
4	12.9	Carpenter Road Bridge
4	13.5	Typical river channel with urban encroachment (right bank)
5	14.2	Typical river channel with riparian banks
5	14.75	River channel with broader overview of surrounding lands
5	15.7	Typical river channel near Modesto, CA
5	16.1	Sheetpile remnants of old dam
5	16.4	Confluence with Dry Creek (left bank)
6	16.7	River channel with some urban encroachment (right bank)
6	18.2	River channel with riparian corridor
6	19.2	Mitchell Road Bridge with some public access

Reach 3 (RM 19.3 – 24.0) – Upper Sand-Bedded Reach

Reach 3 of the Lower Tuolumne River is known as the Upper Sand-bedded Reach and encompasses the river from approximately RM 19.3 to RM 24.0 (Figures 7 and 8). The reach is characterized by sand bed and banks with little confinement by bluffs. The reach runs through mostly agricultural areas with some rural encroachment (McBain and Trush 2000).

Points of interest in this reach include one water diversion and two flow return points and a few bridge crossings. There is little public access at this site. CDFW maintains two water temperature loggers at RM 19.3 and 21.6. In 2014, staff visually identified heavy water hyacinth growth including two complete blockages of the river at RM 21.5 and 23.3. In general, the river meanders with some sand bar and generally heavy riparian vegetation. Representative photographs are described in Table 3 below.

Table 3. Representative photographs with associated figure number and river mile location in Reach 3, Upper Sand-Bedded Reach.

Figure Number	River Mile (RM)	Description
7	19.8	Off-channel water feature (right bank)
7	20.3	Typical flow return (right bank)
7	21.5	Santa Fe Bridge and public access
7	21.55	Water hyacinth at Santa Fe Bridge in 2013 (looking downstream)
8	23.25	Water hyacinth blockage in 2013
8	23.4	Typical river channel
8	23.5	River channel and nearby Hughson WWTP (right bank)
8	24.1	Typical river bend with depositional sand bar

Reach 4 (RM 24.0 – 34.2) – In-Channel Gravel Mining Reach

Reach 4 of the Lower Tuolumne River is known as the In-Channel Gravel Mining Reach and encompasses the river from approximately RM 24.0 to 34.2 (Figures 9 through 12). The reach is characterized by gravel bed and banks with little confinement by bluffs. The reach runs through areas of off-channel aggregate extraction and some agriculture, mostly orchards. There is a history of in-channel aggregate mining in this reach (McBain and Trush 2000).

Points of interest in this reach include the seasonally operational fish weir at RM 24.4, multiple water diversions and returns and five special run pools. CDFW maintains four water temperature loggers at RM 26.0, 31.5, 32.2 and 33.1. In addition, there are many historical salmon spawning areas in this reach identified during previous redd surveys. Representative photos are described in Table 4 below.

Table 4. Representative photographs with associated figure number and river mile location in Reach 4, In-Channel Gravel Mining Reach.

Figure Number	River Mile (RM)	Description
9	24.3	Typical diversion structure (right bank)
9	24.4	Seasonally operation fish weir
9	25.2	Special Run Pool 10
9	25.9	Special Run Pool 9 and bridge
9	26.9	Special Run Pool 8
10	27.2	Special Run Pool Large in-channel pool
10	28.3	Special Run Pool 7 and nearby orchard (right bank)
10	29.5	Typical river channel and surrounding lands
10	29.7	Seasonal operational rotary screw trap
11	30.0	Large off-channel pond (right bank)
11	30.6	Upstream portion of Special Run Pool 6 and off-channel pond
11	31.1	River channel with off-channel ponds
11	31.5	Typical pool-riffle habitat and Hickman Bridge
11	31.8	Typical river channel w/ IFIM transect tape strung
12	32.7	River channel at tailout of Special Run Pool 5
12	33.9	Backwater area (right bank) and large deposition

Reach 5 (RM 34.2 – 40.3) –Gravel Mining Reach

Reach 5 of the Lower Tuolumne River is known as the Gravel Mining Reach and encompasses the river from approximately RM 34.2 to 40.3 (Figures 13 through 15). The reach is characterized by gravel bed and banks with some confinement by bluffs. The reach runs through areas of off-channel aggregate extraction and some agricultural, either orchards or row crops (McBain and Trush 2000).

Points of interest in this reach include two water diversions and one special run pool (RM 36.3). Public access in this reach is limited with no major parks and a road crossing at Roberts Ferry Bridge (RM 39.4). CDFW maintains one water temperature logger at RM 34.8. Representative photos are described in Table 5 below.

Table 5. Representative photographs with associated figure number and river mile location in Reach 5, Gravel Mining Reach.

Figure Number	River Mile (RM)	Description
13	35.1	Typical split river channel
13	36.1	Large in-channel pool
13	36.3	Tailout of Special Run Pool 11 and gravel conveyor
14	36.6	Typical river channel and bridge crossing
14	37.2	Typical river split channel
14	37.4	Typical river channel and off-channel pond (right bank)
14	37.8	Wide angle of river channel and riparian area with bridge
15	38.3	River channel with levee road and off-channel pond
15	39.4	Roberts Ferry Bridge and public access
15	40.3	Typical split river channel

Reach 6 (RM 40.3 – 46.6) – Dredger Tailing Reach

Reach 6 of the Lower Tuolumne River is known as the Dredger Tailing Reach and encompasses the river from approximately RM 40.3 to 46.6 (Figures 16 through 18). The reach is characterized by gravel bed and banks with very little confinement by bluffs. The reach runs through areas agricultural, mostly livestock grazing, as well as remnant dredger tailings from historic gold mining (McBain and Trush 2000).

Points of interest in this reach include one water diversion and various off channel mining operations. Water temperature is monitored at three locations by CDFW; RM 41.8, 43.1 and 45.6. Salmon spawning typically occurs in this reach as reported by historical redd surveys. Representative photos are described in Table 6 below.

Table 6. Representative photographs with associated figure number and river mile location in Reach 6, Dredger Tailing Reach.

Figure Number	River Mile (RM)	Description
16	40.3	Typical split river channel
16	42.4	Typical river channel with riparian corridor
17	43.15	Typical river channel
17	43.6	River channel with high bluffs (right bank)
17	44.3	Typical river channel
18	45.1	Typical split river channel with vegetated in-channel bar
18	45.5	Split river channel, salmon redds observed in 2012
18	46.1	Wide angle view of river channel and surroundings

Reach 7 (RM 46.6 – 52.1) – Dominant Spawning Reach

Reach 7 of the Lower Tuolumne River is known as the Dominant Spawning Reach and encompasses the river from approximately RM 46.6 to 52.1 (Figures 18 through 20). The upstream boundary of this reach is the La Grange Diversion Dam. The reach is characterized by gravel bed and banks with very little confinement by bluffs. The reach runs through areas agricultural, mostly livestock grazing and orchards, as well as some off-channel aggregate extraction (McBain and Trush 2000).

Points of interest in this reach include various road crossings and public access points, such as the two Basso bridges, a USGS stream gage and the La Grange Diversion Dam. Water temperature is monitored by CDFW at three locations; RM 47.8, 50.7 and 52.0. Salmon spawning occurs in this reach. Representative photos are described in Table 7 below.

Table 7. Representative photographs with associated figure number and river mile location in Reach 7, Dominant Spawning Reach.

Figure Number	River Mile (RM)	Description
19	47.3	Old and New Basso bridges
19	47.6	Wide angle of river channel and surroundings
20	49.3	Typical river channel and surroundings
20	49.9	Highway 59 Bridge
20	50.6	Old La Grange Bridge
20	50.8	Typical riffle habitat, salmon redds observed in 2012
20	51.8	Wide angle of La Grange Diversion and associated structures
20	52.0	La Grange Diversion Dam and reservoir