



## Yolo Bypass And Its Sources




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### SUTTER BASIN AND SUTTER BYPASS

The Sutter Basin is a natural overflow area incorporated into the flood control project as a bypass. Water enters the Basin through overbank flow along the east bank of the upper Sacramento River, and through two fixed weirs, Moulton Weir and Colusa Weir. The Sutter Basin empties into the Sutter Bypass, a wide flood channel that carries excess Sacramento River flood water parallel to the River down to the confluence of the Feather and Sacramento Rivers

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### YOLO BYPASS

The **Yolo Bypass** is one of two primary bypass systems constructed in the Sacramento Valley -- the other is **Sutter bypass**.

**Fremont Weir**, near the confluence of the Sacramento and Feather rivers, is the gateway to the Yolo Bypass. It inputs water to Yolo Bypass from the **Sutter Bypass** to the north and the Sacramento and Feather rivers. Downstream, water can enter Yolo Bypass from the east via the **Sacramento Weir**, adding additional flows to the Bypass from the American and Sacramento rivers.



The weir is located on Old River Road along the west levee (right bank) of the Sacramento River. From Interstate 80 take the Reed Avenue exit eastbound, and then turn left on Harbor Boulevard, which becomes Old River Road. The weir is about one mile upriver (generally north) from that point. Limited parking is available at the south levee turnout. From downtown Sacramento: Go west on I Street Bridge and turn right on Harbor Boulevard, which becomes Old River Road. Proceed to weir. From Interstate 5 in Sacramento: Take Richards Boulevard exit and go west to the I Street Bridge. Turn right on I Street Bridge. Turn right on Harbor Boulevard, which becomes Old River Road. Proceed to weir.

DWR operates the Sacramento Weir to keep floodwaters within the Sacramento River channel's design capacity through the Sacramento/West Sacramento area and downstream. **The Sacramento Weir is just north of Interstate 80 on the west bank of the Sacramento River near the confluence of the Sacramento and American rivers.** It is four miles upstream of Sacramento's Tower Bridge, and two miles upstream of the mouth of the American River. A 1,920-foot long concrete flood overflow structure in the west levee of the Sacramento River, the Sacramento Weir is opened after the Sacramento River at Sacramento's I Street Bridge hits the 27.5-foot stage and is rising. The Sacramento Weir diverts Sacramento River water into the Yolo Bypass when it backs up from American River flows.

Sacramento Weir was built by the City of Sacramento in 1916 and is operated manually.

**The Sacramento Weir is the furthest downstream of five overflow waterways along the Sacramento River between Butte City and**

**Sacramento, which are used to divert runoff into the Sutter and Yolo Bypasses.**

**The 48-gate Sacramento Weir is the only operable weir along the Sacramento River. When opened, its gates send water west down the mile-long Sacramento Bypass into the Yolo Bypass. Four other, "passive" weirs farther north - Moulton, Colusa, Tisdale, and Fremont -- have a fixed crest elevation that allows excessive floodwaters to flow from river channels into the natural Butte Basin, Sutter Bypass and Yolo Bypass.**

**The Yolo Bypass is part of the Sacramento River Flood Control Project, a flood management system built in the 1930s by the Corps of Engineers. The Yolo Bypass protects river cities such as Sacramento from winter and spring floods.**

**The 3-mile-wide, 40-mile-long Yolo Bypass extends from the confluence of the Feather and Sacramento rivers to a point above the City of Rio Vista, where it safely returns excess flows to the Sacramento River.**

**In more than half of all water years (from October 1 to September 30), the Yolo Bypass is inundated. When completely flooded, the Yolo Bypass covers an area equal to about one-third the size of San Francisco and San Pablo bays. Water depths range from 10 feet in a heavy year to around 6 feet in a normal year.**

**The Reclamation Board, along with DWR, is responsible for maintaining the flood-carrying capacity of the basin. The labor of keeping the Yolo Bypass -- as well as the Sutter Bypass and Tisdale, Colusa and Moulton weirs to the north -- clear falls to DWR's Sacramento and Sutter Maintenance yards.**

**The Reclamation Board owns easements that allow the Yolo Bypass to be flooded.**

**The levee and bypass system along the Sacramento River system carries a maximum of 600,000 cubic feet per second (cfs), many times the normal flow of the Sacramento River. Only a sixth of that flow -- 110,000 cfs is carried in the river itself. Nearly 500,000 cfs is channeled into the Yolo Bypass.**

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## **WEIRS OF THE SACRAMENTO RIVER FLOOD CONTROL PROJECT**

### ***Moulton Weir***

**Moulton Weir is located along the easterly side of the Sacramento River approximately eight miles north of the town of Colusa, and about 100 miles north of Sacramento. Its primary function is to release overflow waters of**

the Sacramento River into the Butte Basin. The project design capacity of the weir is 25,000 cfs.

### ***Colusa Weir and Bypass***

The Colusa Weir is located along the easterly side of the Sacramento River one mile north of the town of Colusa. Its primary function is to release overflow waters of the Sacramento River into the Butte Basin. The project design capacity of the weir is 70,000 cfs.

### ***Tisdale Weir and Bypass***

The Tisdale Weir is located along the east levee (left bank) of the Sacramento River about 10 miles southeast of the town of Meridian and about 56 miles north of Sacramento. Its primary purpose is to release overflow waters of the Sacramento River into the Sutter Bypass. The project design capacity of the weir is 38,000 cfs.

### ***Fremont Weir***

The Fremont Weir's two-mile overall length marks the beginning of the Yolo Bypass. It is located about 15 miles northwest of Sacramento and eight miles northeast of Woodland. South of this latitude the Yolo Bypass conveys 80 percent of the system's floodwaters through Yolo and Solano Counties until it rejoins the Sacramento River a few miles upstream of Rio Vista. The weir's primary purpose is to release overflow waters of the Sacramento River, Sutter Bypass, and the Feather River into the Yolo Bypass. The project design capacity of the weir is 343,000 cfs.

### ***Sacramento Weir and Bypass***

The Sacramento Weir was completed in 1916. It is the only weir "opened" or "closed." All other weirs overflow by gravity on their own. It is located along the west levee (right bank) of the Sacramento River approximately 4 miles upstream of the Tower Bridge, and about 2 miles upstream from the mouth of the American River. Its primary purpose is to protect the City of Sacramento from excessive flood stages in the Sacramento River channel downstream of the American River. The weir limits flood stages (water surface elevations) in the Sacramento River to project design levels through the Sacramento/West Sacramento area. The project design capacity of the weir is 112,000 cfs.

The Sacramento Weir is 1,920 feet long and consists of 48 gates that divert Sacramento and American River floodwaters to the west down the mile-long Sacramento Bypass to the Yolo Bypass.

The Department of Water Resources operates the weir according to regulations established by the U.S. Army Corps of Engineers. The opening and closing criteria have been optimized to balance two goals: (1) minimize sediment deposition due to decreased flow velocities in the river channel downstream from the weir to the mouth of the American River; and (2) to limit the flooding of agricultural lands in the Yolo Bypass only until after they have been inundated by floodwaters of Fremont Weir.

The Sacramento Weir gates are not opened until the river reaches 27.5 feet at the I Street gage with a forecast to continue rising. The number of gates to be opened is determined by the National Weather Service/DWR river forecasting team.

**Driving instructions from Resources Building in Sacramento to the Sacramento Weir:**

Go across I street bridge, turn right on Harbor Boulevard. Harbor Boulevard becomes Old River Road. Proceed to Weir. From out of town, take Richards Boulevard exit on I-5 and go west to I Street Bridge. Turn right on I Street Bridge.

### ***Cache Creek Settling Basin and Weir***

The Cache Creek Weir is located in Yolo County about two miles east of the City of Woodland. It's primary purpose is to preserve the floodway capacity of the Yolo Bypass by entrapping the heavy sediment load carried by Cache Creek. The basin is bound by levees on all sides and covers approximately 3,600 acres. The concrete weir controls discharge to the bypass. The project design capacity of the weir is 30,000 cfs, which is also the maximum capacity of the upstream Cache Creek channel system.

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### **Driving Directions to Tisdale Weir**

**Take Interstate 5 north to Woodland**

**Take State Highway 113 north past Knights Landing (crossing the Sacramento River)**

**Turn Left on Reclamation Road (north-northwest)**

**Before crossing the Tisdale Bypass bridge, take the first road to the right**

**Go under the bridge to the west. The road will take you to the east levee of the Sacramento River**

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**A single-lane bridge crosses the Tisdale Bypass directly on top of the Tisdale Weir**

**Water flows from the Sacramento River over the Tisdale Weir into the Tisdale Bypass. The Bypass is just over 4 miles in length, and carries water eastward to the Sutter Bypass. From there water flows to the south again.**

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## **SACRAMENTO, SAN JOAQUIN AND OTHER RIVER SYSTEMS**

**The Sacramento River flood control system is the largest in Northern California, about 10 times the size of the San Joaquin.**

**Winter rainfall is the usual cause of high water on the Sacramento. Spring snowmelt is the typical cause of high flows in the San Joaquin system.**

**Rivers in the Bay Area (such as the Napa and the Russian) rise swiftly during periods of heavy rain, and decline fairly quickly.**

**The Sacramento River flood management system features two very large storage (and flood control) reservoirs---Shasta (Federal CVP), 4.5 million acre feet capacity, on the upper Sacramento River, and Oroville (State SWP) 3.5 million acre-feet capacity, on the Feather River, a tributary of the Sacramento.**

**While much of the Upper Sacramento River ---down to about Chico--- flows through agricultural country and temporary minor flooding sometimes occurs, it's rarely a threat to life or populations there.**

**Along the more urbanized lower Sacramento River, the valley's cities are protected by extensive and major levee systems (including the Sacramento metropolitan area), where the American River joins the Sacramento.**

**Sacramento River system's bypasses (especially the Yolo Bypass), provide a great "safety valve" in taking huge quantities of water out of the river channel and allowing it to flow slowly and safely out to the Delta.**

**By contrast, the smaller San Joaquin system lacks major systemic bypass relief. Reservoir storage capacity is also smaller. So that system faces challenges when a thick snowpack melts quickly or heavy, prolonged rain occurs.**

Heavy rain often causes high flows in the North Coast rivers that run unchecked by dams to the ocean----including the Smith, Eel, Mad and Van Duzen. Dams are not allowed on these free-flowing rivers under “wild and scenic rivers” legal status, dating back to the 1970s. Residents of these predominantly forest and farm regions just get themselves, property and livestock out of the way and let the rivers roll.

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*From CDEC*

#### **flood stage**

1. The Stage at which overbank flows are of sufficient magnitude to cause considerable inundation of land and roads and/or threat of significant hazard to life and property.
2. The Stage at which the flow in a flood control project is at maximum design capacity (U.S. Corps of Engineers "Project Flood Plane"). At this level there is a minimum freeboard of 3 feet to the top of levees.

#### **monitor stage**

1. The Stage at which initial action must be taken by concerned interests (livestock warning, removal of equipment from lowest overflow areas, or simply general surveillance of the situation). This level may produce overbank flows sufficient to cause minor flooding of low-lying lands and local roads.
2. The Stage at which patrol of flood control project levees becomes mandatory, or the Stage at which flow occurs into bypass areas from project overflow weirs.

#### **river stage**

1. The height of a water surface above an established "zero" plane, or datum.