

5 MILE AND LINDO CHANNEL DIVERSION STUDY (SWRP PROJECT 44)

General Project Information

The project will identify the ideal gate settings and weir elevations to provide the maximize flood protection for Big Chico Creek, Lindo Channel, Sycamore Creek, and Mud Creek System (Creek System).

- **Flooding:** The Sycamore/Mud Creek Flood Diversion System was completed by the US Army Corps of Engineers (Corps) in 1966, and has helped protect the City of Chico from flooding from Big Chico Creek for over 50 years. The Sycamore/Mud Creek Flood Diversion System consists of a set of four box culverts with slide gates at the upstream end of the Lindo Channel (see Photograph 1). These slide gates control the split of flow between Big Chico Creek, Lindo Channel, and the Sycamore Diversion Channel. The flow to the Diversion channel goes over a weir (Photograph 2) and then into the Sycamore Diversion Channel. The Diversion Channel flows to Sycamore Creek, which in turn flows into Mud Creek. At the time the project was constructed, the design flow was 16,000 cubic feet per second (cfs). This flow was intended to be split with 1,500 cfs to Big Chico Creek, 6,000 cfs to Lindo Channel, and 8,500 cfs to the Diversion Channel/Sycamore Creek/Mud Creek. Visual observations of the water levels during the Winter 2017 storm events indicate that there was unused capacity in Sycamore and Mud Creeks when the water levels in Big Chico Creek and Lindo Channel were causing localized flooding. Also, flow has been observed in the Sycamore Creek Diversion Channel, while flows in Big Chico Creek are lower than originally intended. Thus, over time, conditions have changed, and the original flow split may no longer be correct to optimize the flood control benefits for Big Chico Creek, Lindo Channel, Sycamore Creek, and Mud Creek.



Photograph 1: Lindo Channel Gates



Photograph 2: Sycamore Weir

A hydrologic and hydraulic computer model of the Creek System will be prepared to identify the ideal gate settings and weir elevations to maximize flood protection for the creek system. The slide gate settings were established by the Corps, and therefore any changes to operation of this system will need to be coordinated with and approved by California Department of Water Resources and the Corps. Changes to the gate settings cannot result in increasing the flood risk for one area to reduce the risk of another area. Additionally, the study will help assess scour, erosion, and sediment/gravel transport and deposition. It will also evaluate head cutting in Sycamore Cannel and identify solutions to reduce head cutting and erosion. During large storms, logs and other debris are conveyed to the slide gates and weir. The logs and debris can impede the standard operation and damage these systems. Consequently, this study would also evaluate debris control structures.

- **Watershed and Location:** The diversion structure on Lindo Channel, north of Hooker Oak Park (see image on page 2), is located in the Big Chico Creek watershed.

Benefits Resulting from this Project

This project includes the preparation of the 5 Mile and Lindo Channel Diversion Study. When the Diversion Study is fully implemented, the following benefits are expected to occur:

- **Water Quality:** Water Quality is expected to be improved because reducing scour will reduce the levels of erosion and suspended sediment in downstream waters.
- **Water Supply:** Water supply is not expected to change.
- **Flood Management:** Flood Management is expected to be improved because flows will be balanced between Big Chico Creek, Lindo Channel, the Sycamore Diversion Channel, and Sycamore/Mud Creeks.
- **Environmental:** The environment is expected to be improved because reducing scour and improving gravel management will reduce negative impacts on habitat and will protect the creek bed and banks.
- **Community:** The community is not expected to be changed significantly.

Project Costs

- **Estimated Plan Preparation Cost:** The estimated cost of preparing this plan is \$TBD. This cost does not include the costs of designing and constructing the improvements that will be identified in the plan. However, revising the control gate settings would have a very low cost and modifying the weir elevation would have a relatively low cost.

Sketch of Project Components

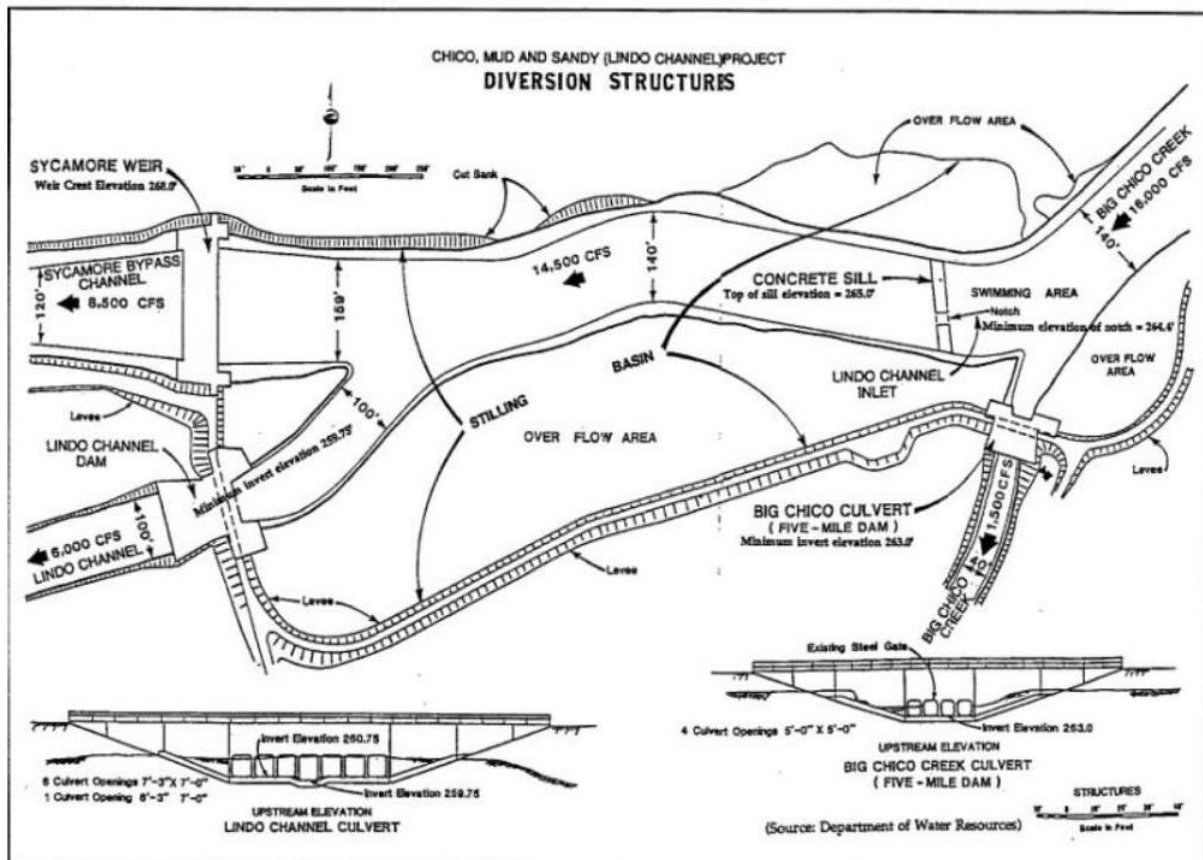


Figure 1-3 from the Sandy Gulch Resources Inventory, sourced from DWR.

Photos



**An eroded section of Sycamore Creek, photo by Robert Woodward,
<http://www.chicoer.com/article/NA/20160203/NEWS/160209933>**

Initial Projects Included

No other initial projects were included in this plan.