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Description from p. 92

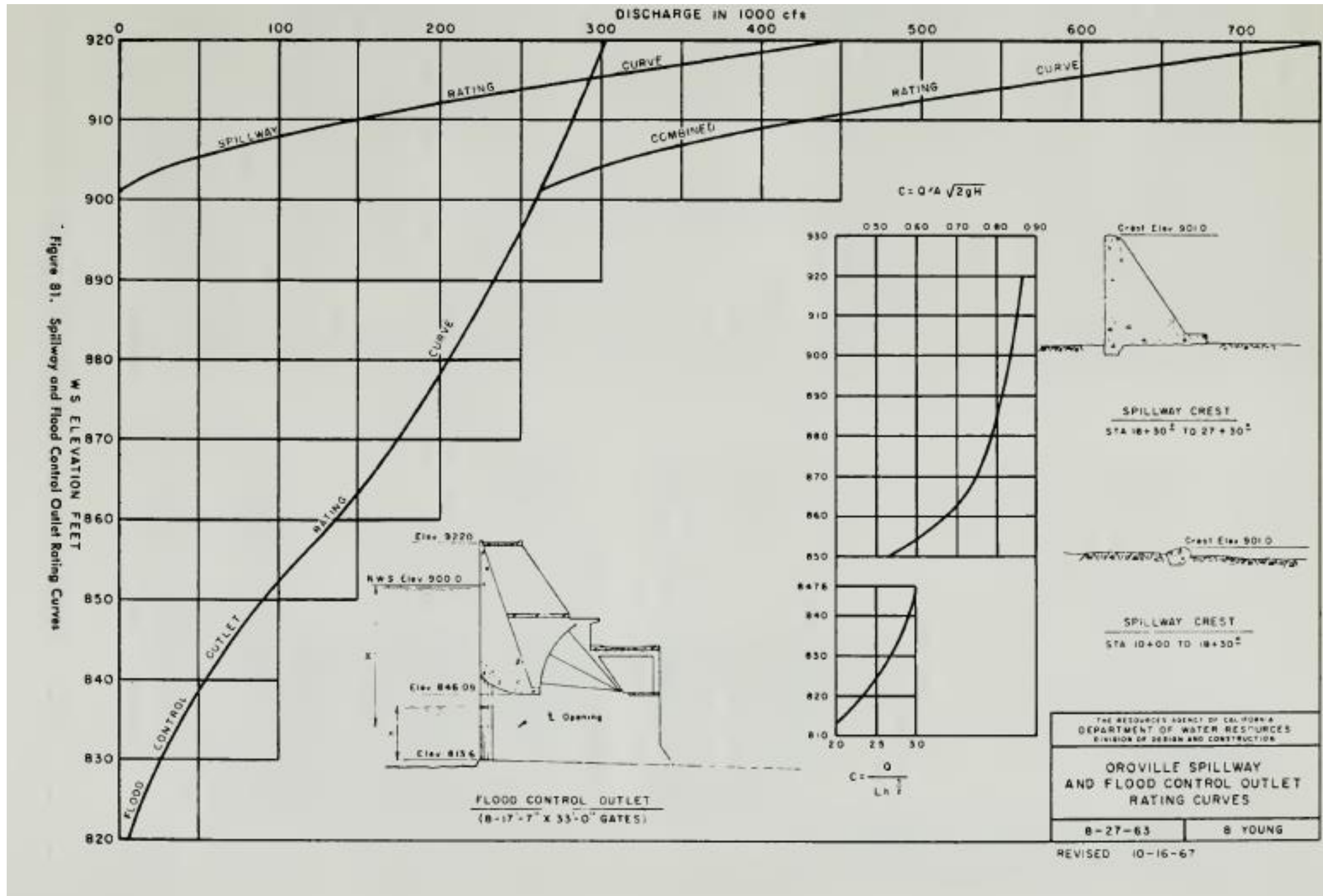
The flood control outlet was sized on the basis of limiting Feather River flow to leveed channel capacity of 180,000 cfs during occurrence of the standard project flood (peak inflow 440,000 cfs). This limitation applies at the confluence of the Feather and Yuba Rivers approximately 35 miles downstream of the Dam. It was estimated that a runoff of 30,000 cfs could be expected within this 35-mile reach of the Feather River during the standard project flood. Therefore, the flood control outlet was designed for a controlled release of 150,000 cfs. The normal reservoir water surface previously had been set at elevation 900 feet. To meet these criteria, a flood control reservation of 750,000 acre-feet was needed. The criteria also governed the size and location of the flood control outlet gates. The outlet must release 150,000 cfs at water surface elevation 865 feet to control the flood shown on Figure 80.

The standard project flood has a probability recurrence interval of approximately 450 years. If data received indicate a flood is developing greater than the standard project flood, release through the flood control outlet may be increased above 150,000 cfs but may not exceed 90% of the inflow. When the reservoir fills above elevation 901 feet, flow occurs over the emergency spillway. The emergency spillway, in conjunction with the flood control outlet, has the capacity to pass the maximum probable flood release of 624,000 cfs for the drainage area (peak inflow 720,000 cfs) while maintaining a freeboard of 5 feet on the embankment. The maximum probable flood has a probability recurrence interval in excess of 10,000 years.

Hydrologic and hydraulic data are shown on Figure 80.

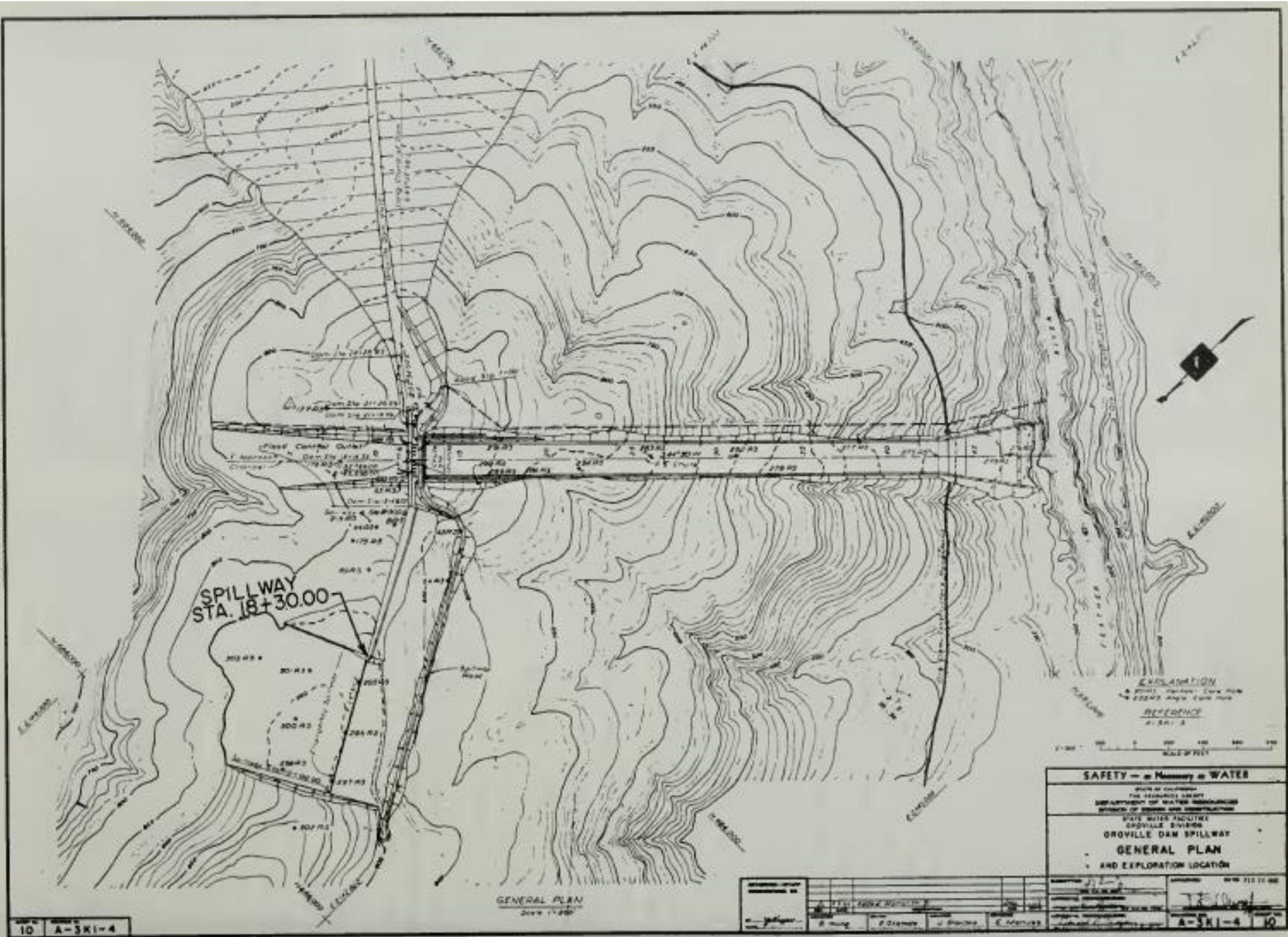
Various types of spillways were studied and modeled to arrive at the final structure. The original design consisted of a control structure with radial gates to pass the total spillway design flood. A short concrete apron was to extend downstream from the control structure, and then the flows were to be turned loose down the hillside in an excavated pilot channel. As the spillway would operate on the average of every other year, this plan was determined to be unacceptable based on the large quantities of debris that would be washed into the Feather River and could ultimately affect power operations. Adding a converging concrete-lined channel and chute to the original headworks structure created major standing-wave problems throughout the system. These problems were resolved by separating the flood control structure from the spillway structure as shown on Figure 76. The rating curve for the flood control outlet (Figure 81) is based on these hydraulic studies.

Spillway Rating Curve

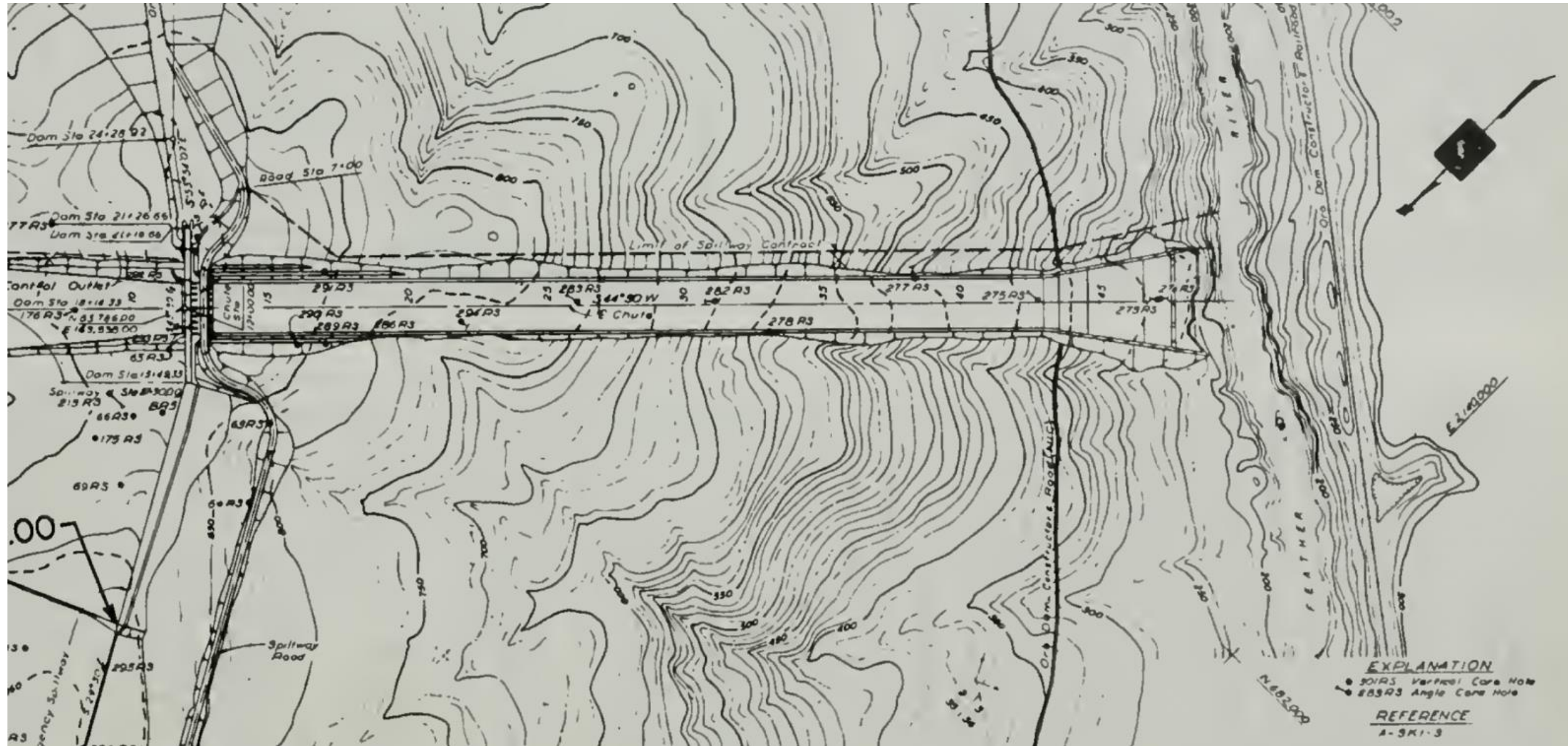


General Plan of spillway

Figure 76. General Plan of Spillway



Closeup of main spillway – note outline stating "Limit of Spillway Contract." EXPLANATION in the bottom right shows the symbols for the core samples.



Closeup of hillside below emergency spillway weir – note lack of boreholes

