

UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

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LOWER COLORADO REGION

ADDENDUM TO
COMPREHENSIVE RIVER MANAGEMENT PLAN
LOWER COLORADO RIVER
PARKER DIVISION

Colorado River Front Work and Levee System
Arizona — California

Yuma Projects Office
Yuma, Arizona

\$82.00
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February 1973

HGT & S/H - add

ADDENDUM TO
COMPREHENSIVE RIVER MANAGEMENT PLAN
LOWER COLORADO RIVER

PARKER DIVISION

A. Introduction

This addendum presents the revised plan for stabilization of the Colorado River through Section II of the Parker Division.

The Comprehensive River Management Plan 1/ dated March 1969 presented the background and a plan for channel stabilization in the Parker Division. The division includes about 44 miles of river channel between Headgate Rock Dam and Palo Verde Diversion Dam. Stabilization of the upper portion, Section I, was essentially completed in 1967.

The approved plan presented in the March 1969 report provided for stabilization of Section II by about 21 miles of dredging.

A multidisciplinary task force was formed in 1971 to reevaluate the river management program being carried out under the Colorado River Front Work and Levee System Act of 1946 and other pertinent legislation. The task force realized the importance of the Colorado River to a broad spectrum of interests and their recommendations were published in a report 2/ dated July 1971. The basic recommendation of the task force was that river management work should reflect the multi-purpose demands on the river. In regards to the Parker Division of

1/ "Report on Comprehensive River Management Plan, Lower Colorado River, Parker Division", Department of Interior, Bureau of Reclamation, March 1969.

2/ "Report of Task Force, Review of the River Management Program, Colorado River Front Work and Levee System, Arizona, California, and Nevada", Department of Interior, Bureau of Reclamation, July 1971.

the Colorado River, the task force recommended that a combination of dredging and bankline structures be considered for stabilization of Section II.

Recently, several preliminary concepts for stabilization of Section II of the Parker Division have been presented to the Work Group of the Lower Colorado River Management Program Coordinating Committee. Resulting discussions of these concepts by representatives of the agencies involved have been useful in developing the revised plan presented in this report.

B. Objectives

The basic multi-purpose objectives of the Colorado River Management Program are sediment control, water salvage, flood control, salinity control, drainage improvement on adjacent agricultural lands, water scheduling, protection of the environment, fish and wildlife enhancement, recreational development, improvement of navigation, and economic enhancement of land values. The revised plan for Section II of the Parker Division is more responsive to these objectives than the approved plan.

The stabilization work necessary to satisfy the multi-purpose objectives in Section II of the Parker Division is dictated by the physical characteristics of the existing channel. As this section presently exists, the river is free to move laterally through most of the reach without restraint, thereby producing a large amount of sediment. Stabilization of the channel's lateral movement must be considered the major requirement

for this reach of the river. Bank stabilization and confining the major channel will accomplish or permit development to accomplish the multi-purpose objectives of the management program.

C. Plan Description

The plan will control the lower section of the Parker Division by utilizing as much of the existing river channel as possible and is shown on drawing 423-303-1845. Drawing 423-303-1846 shows the existing water surface and design water surface profile for the revised plan. The plan includes dredging to eliminate the sharp bend below Alligator Slough and the one immediately above the Hall-Horse Island area. Dredging is also included to preserve the channels around the two islands below Alligator Bend and deepen other shallow areas in the river channel. The only channel realignment will be in the area below Alligator Slough and above Hall-Horse Island. The remainder of the reach will be stabilized by a combination of placing riprap on existing banks and constructing training structures and jetties where required. Training structures will be used primarily in areas adjacent to dredging. Jetties will be utilized for a total of about $2\frac{1}{2}$ miles on the California side to narrow the river to design width downstream of the Hall-Horse Island area. The active river channel will be contained in a base width of about 450 feet. Actively eroding banks in areas where the existing channel is 450 feet wide will be protected with riprap as shown on drawing 423-303-1845. Riprap has been limited to the minimum amount required for lateral bankline stability.

A training structure was not included along the California side of the channel adjacent to Hall-Horse Island at the request of representatives

of the Colorado River Indian Tribes. This will allow flooding of a portion of the island during high flows to maintain wildlife habitat.

A concrete bridge is included 3 $\frac{1}{4}$ -mile north of Navajo Road to facilitate placement of riprap on the Arizona bank. The bridge will connect the Parker-Poston Highway (Mohave Road) on the Arizona side of the river with U. S. Highway 95 on the California side.

Five backwater areas are shown on drawing 423-303-1845. At the present time, representatives of the Bureau of Sport Fisheries and Wildlife are reviewing these areas for development. The Hall Island Channel, downstream of the backwater created by the cutoff above Hall-Horse Island, will be deepened by dragline excavation to make it navigable for small boats. A control structure at the upper end will probably be required to maintain an acceptable water surface elevation in the backwater development upstream.

Several swimming beach areas are shown on drawing 423-303-1845. Details for development of the swimming beaches will be coordinated with the Colorado River Indian Tribes.

A location near the intersection of Navajo Road and the existing levee on the Arizona side of the river will be developed for commercial purposes. It is anticipated that dredge spoil can be used to raise the area to the elevation of the adjacent levee providing a site for future development by the Colorado River Indian Tribes.

Further details of the work are shown on drawings 423-303-1847 through -1858.

D. Cost Estimate

Following is cost estimate for the stabilization work:

<u>Item</u>	<u>Estimated Cost</u>
Channel excavation	6,500,000 c.y. @ \$0.35 = \$2,275,000
Road construction	50 miles @ 5,400 = 270,000
Asphalt highway approaches	21 each @ 1,200 = 25,200
Training structure embankment	310,000 c.y. = 217,500
Hauled in	70,000 c.y. @ \$2.25 = \$157,500
Pushed up	240,000 c.y. @ \$0.25 = 60,000
Trench fill near R.M. 563	150,000 c.y. @ \$0.25 = 37,500
Bankline shaping	100,000 l.f. @ \$1.35 = 135,000
Rock riprap	400,000 c.y. @ \$4.00 = <u>1,600,000</u>
Subtotal	\$4,560,000
Contingencies @ 10%	<u>456,000</u>
Field Cost	5,016,000
Engineering and overhead @ 20%	1,004,000
Preliminary estimate of bridge including contingencies, engineering, and overhead (Lump Sum)	<u>500,000</u>
Total estimated cost	\$6,520,000

Cost for development and enhancement of the backwater areas are not included in the estimate. These costs will be determined in consultation with the Bureau of Sport Fisheries and Wildlife and Colorado River Indian Tribal Council.

E. Effects of the Revised Plan

The primary difference between the revised plan and the approved plan is the predominant use of the existing river channel under the revised plan

and a significant reduction in the amount of dredging. The approved plan included dredging throughout the reach and use of long-radius curves which created a different channel alignment. The revised plan includes elimination of two sharp bends, but the remainder of the reach will be stabilized in the existing channel.

Bank stabilization will materially reduce the amount of sediment being produced in this reach of the river. The reduction in sediment load will help prevent aggradation of the channel and backwater areas between Alligator Bend and Imperial Dam and will reduce the amount of sediment that has to be mechanically removed from the Laguna Settling Basin below Imperial Dam.

Water salvage under the revised plan for Section II will be realized by reducing the existing open water surface area and lowering the water table under adjacent lands. As this reach presently exists there are about 2,880 acres of open water. The revised plan will have about 2,230 acres of open water including the open water in the developed backwaters. The water salvage associated with a reduction of 650 acres of open water is estimated to be 2,600 acre-feet per year.

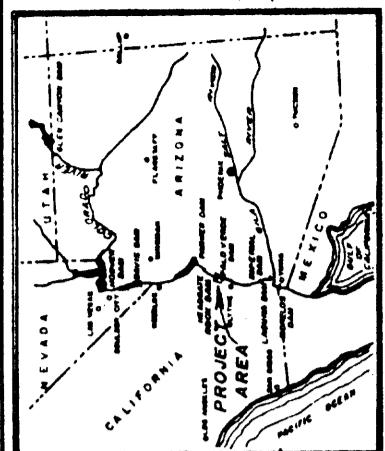
It is estimated that the water surface at design flow will be lowered an average of about 1.2 feet throughout the reach. This will cause the ground-water elevation under the adjoining flood plain to also be lowered about one foot resulting in an estimated water salvage of about 2,700 acre-feet per year. Additionally, the clearing associated with construction of bankline structures and dry cuts will reduce water losses

an estimated 2,000 acre-feet per year. The total water salvage is therefore about 7,300 acre-feet annually. The water salvage will improve downstream water quality and will provide some drainage benefits to adjoining agricultural lands.

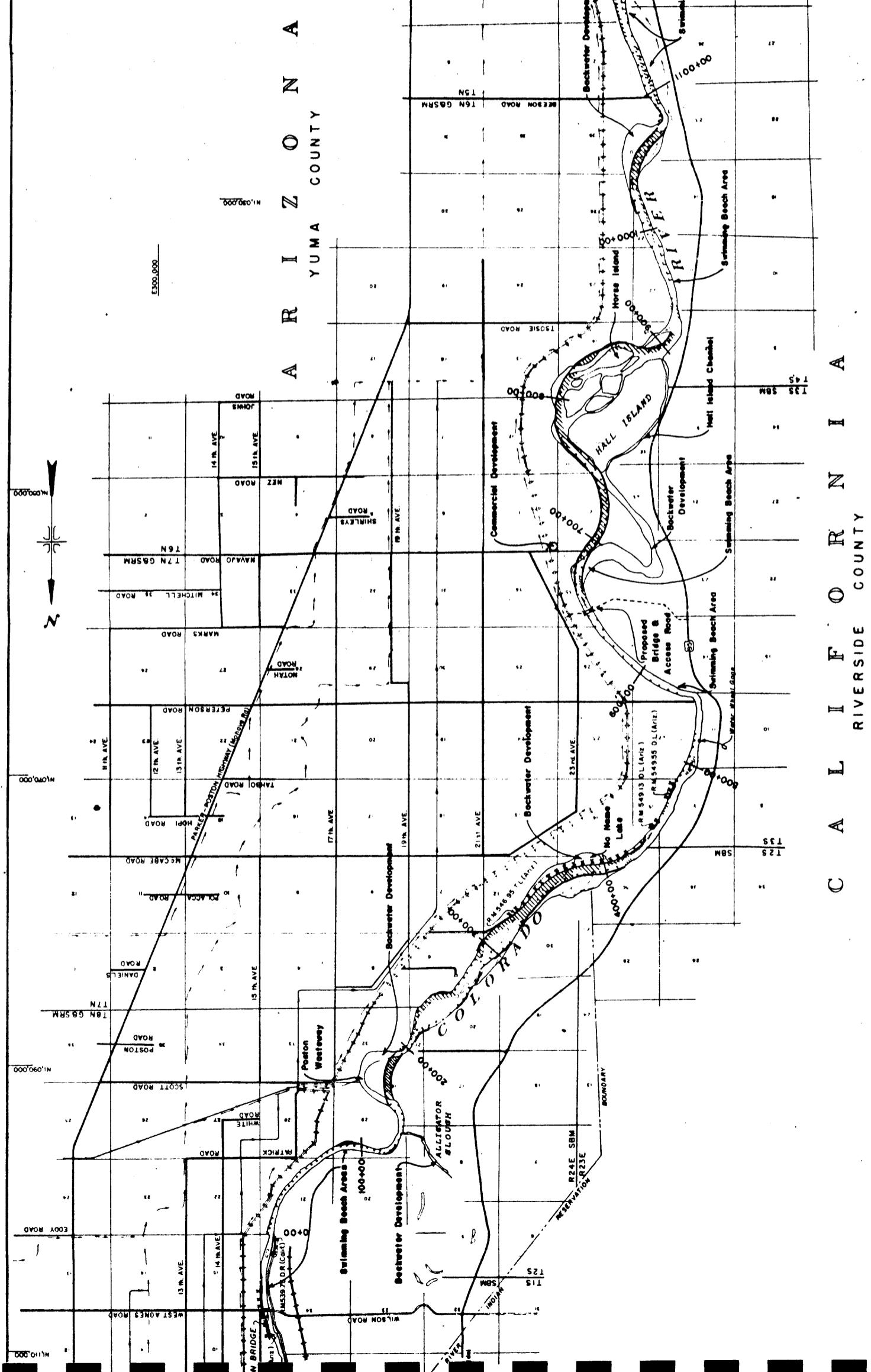
Development of backwater areas should provide fish and wildlife enhancement values to this reach of the river. Inlet and outlet features of these developments can be designed to provide a stable water surface elevation with circulation to maintain water quality. Including Section I of the Parker Division, there will be about 660 acres of major backwater areas remaining in the division, not counting the Hall-Horse Island area. Although detailed planning for development of the major backwater areas in Section II has not been completed, it is anticipated that about 340 acres in the division will remain as improved, deep water areas. The 270 acres in the Hall-Horse Island area that will remain undeveloped at this time, along with about 100 acres of minor backwater above Alligator Bend, will provide a total water surface of backwater areas of about 710 acres.

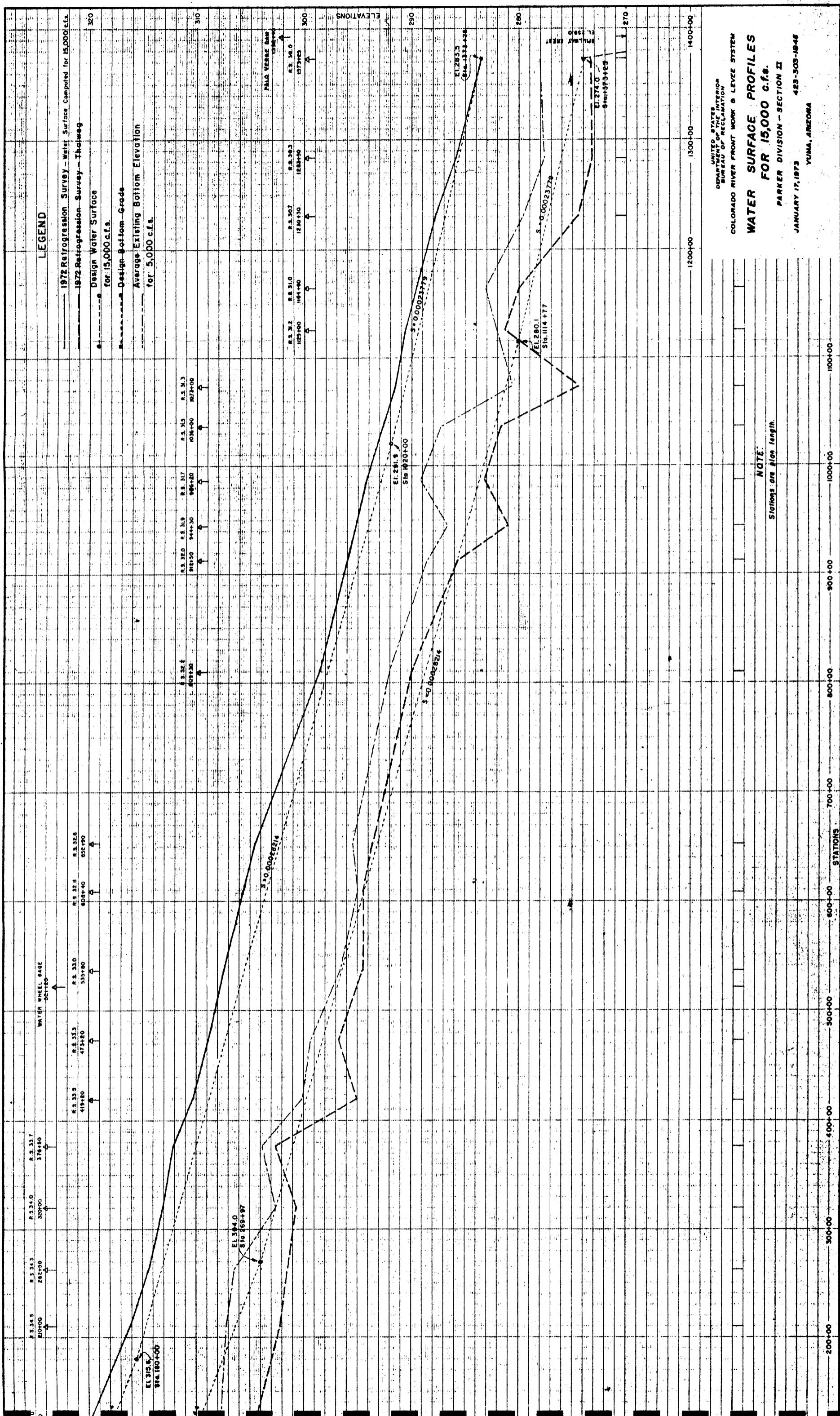
The plan provides for development of swimming beaches and a deeper channel to facilitate navigation. These features should enhance the recreation potential and provide a basis for further economic development of tribal lands.

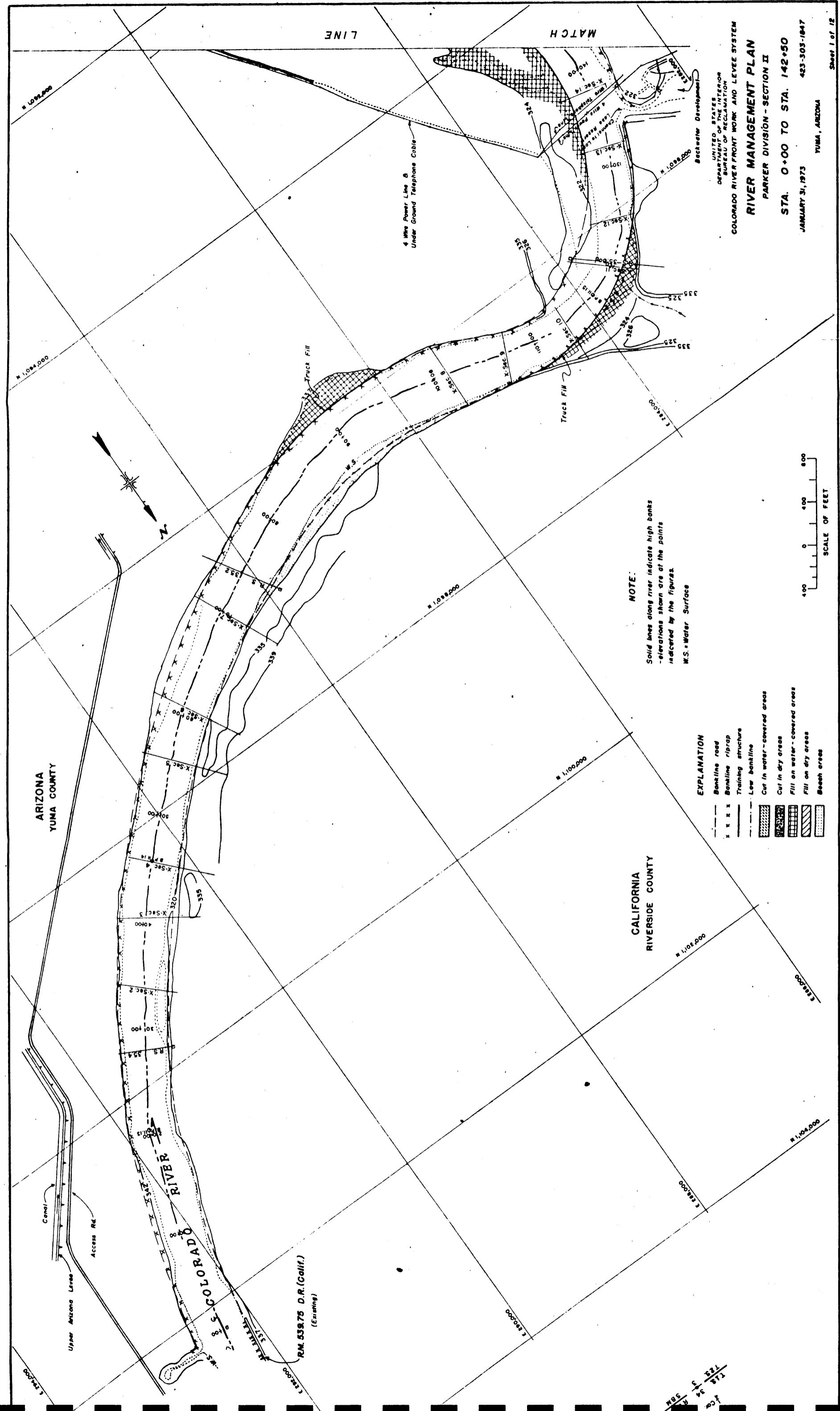
In summary, this plan includes the elements necessary to satisfy the multi-purpose objectives of the river management program. Further details of the work will be coordinated with the Colorado River Indian Tribal Council and interested Federal and State agencies.

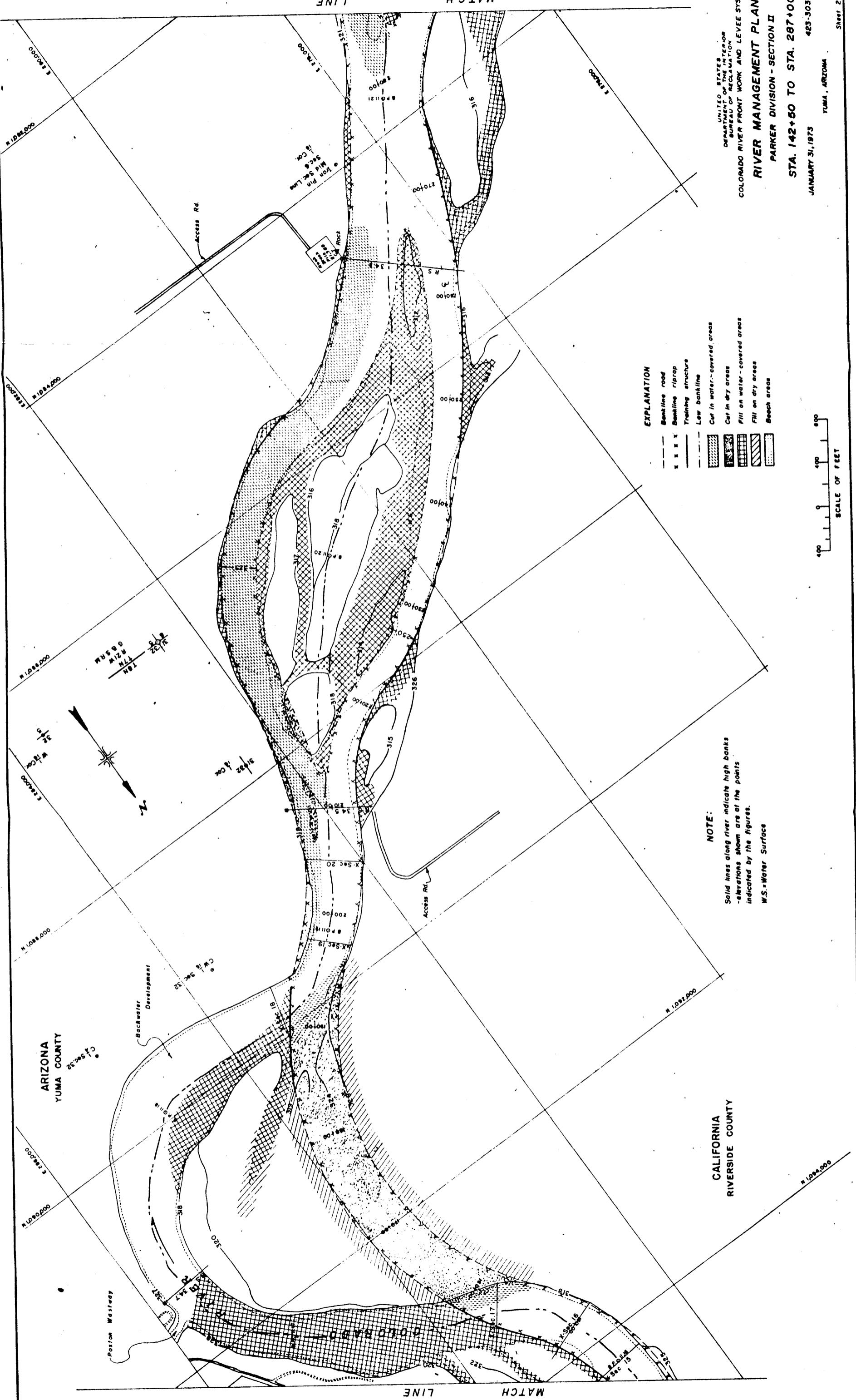


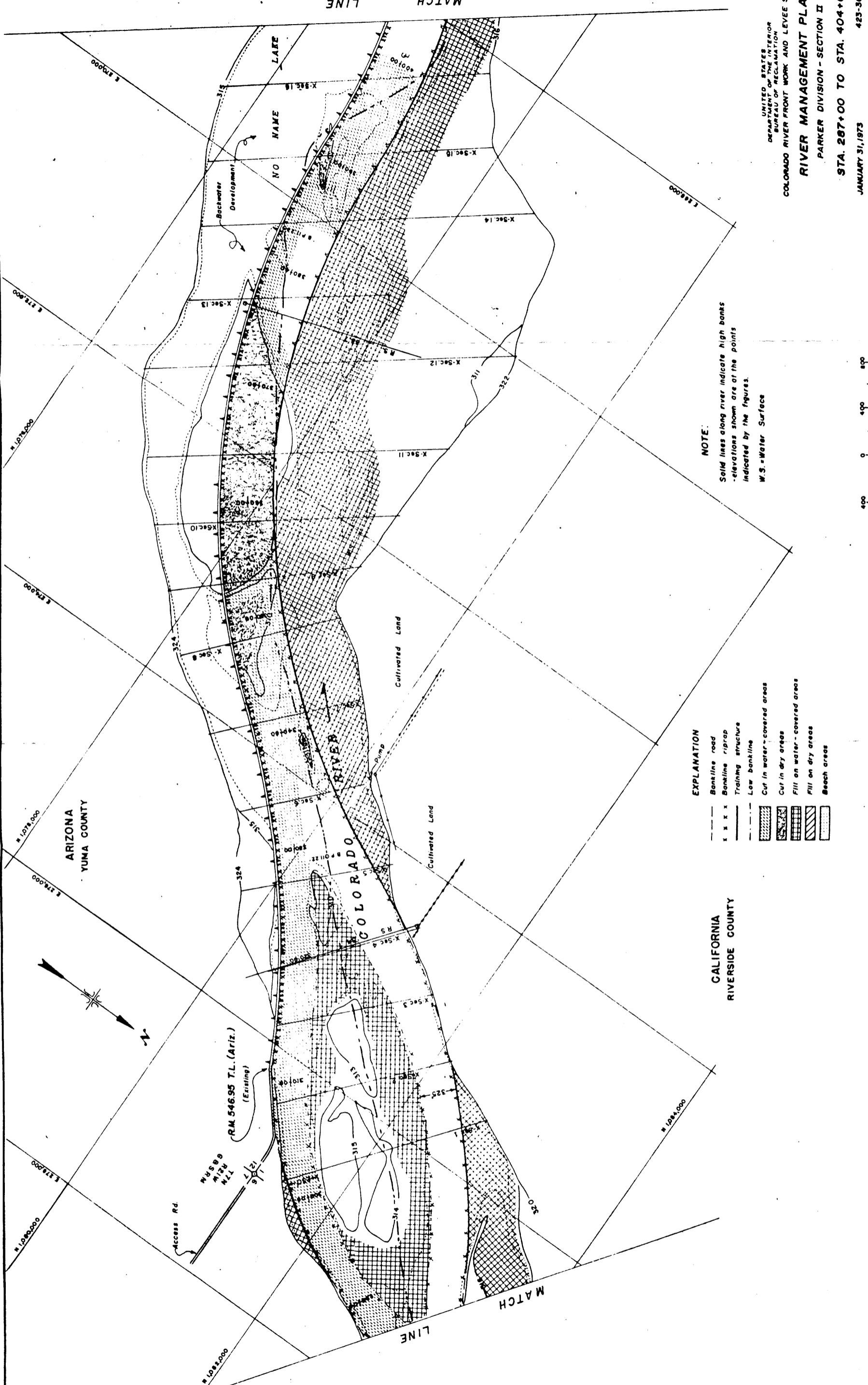
KEY MAP











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COLORADO RIVER FRONT WORK AND LEVEE SYSTEM

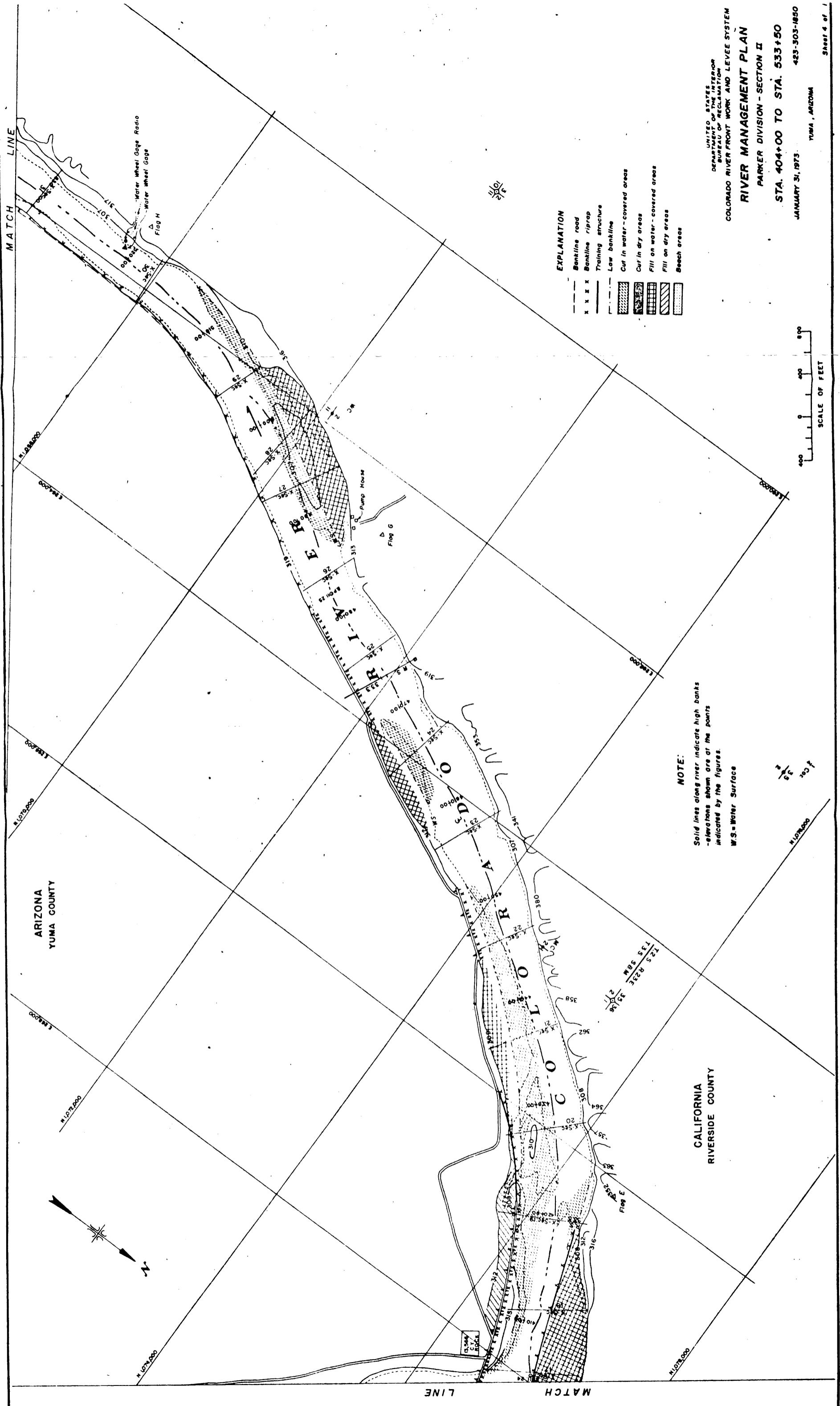
RIVER MANAGEMENT PLAN

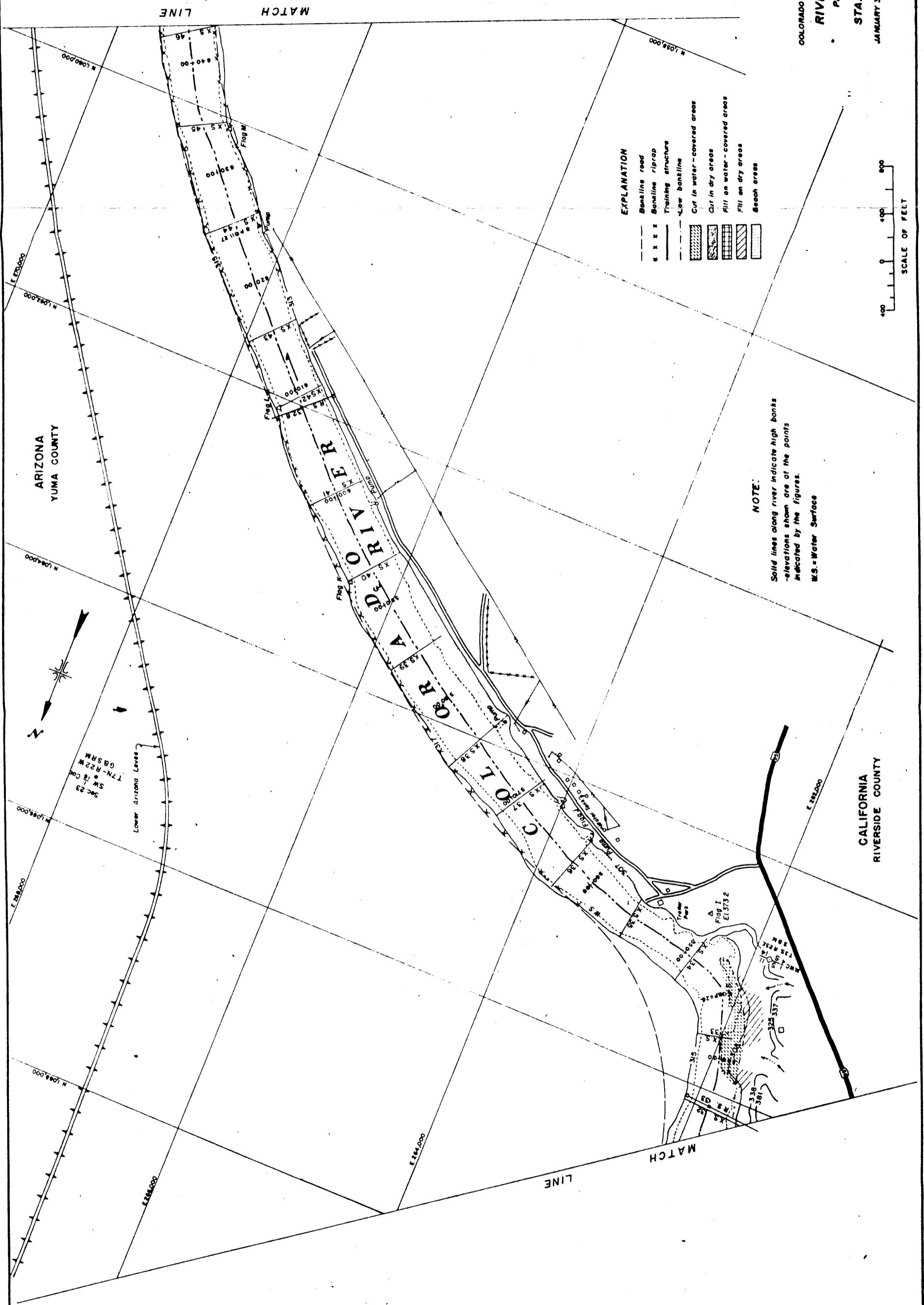
PARKER DIVISION - SECTION II

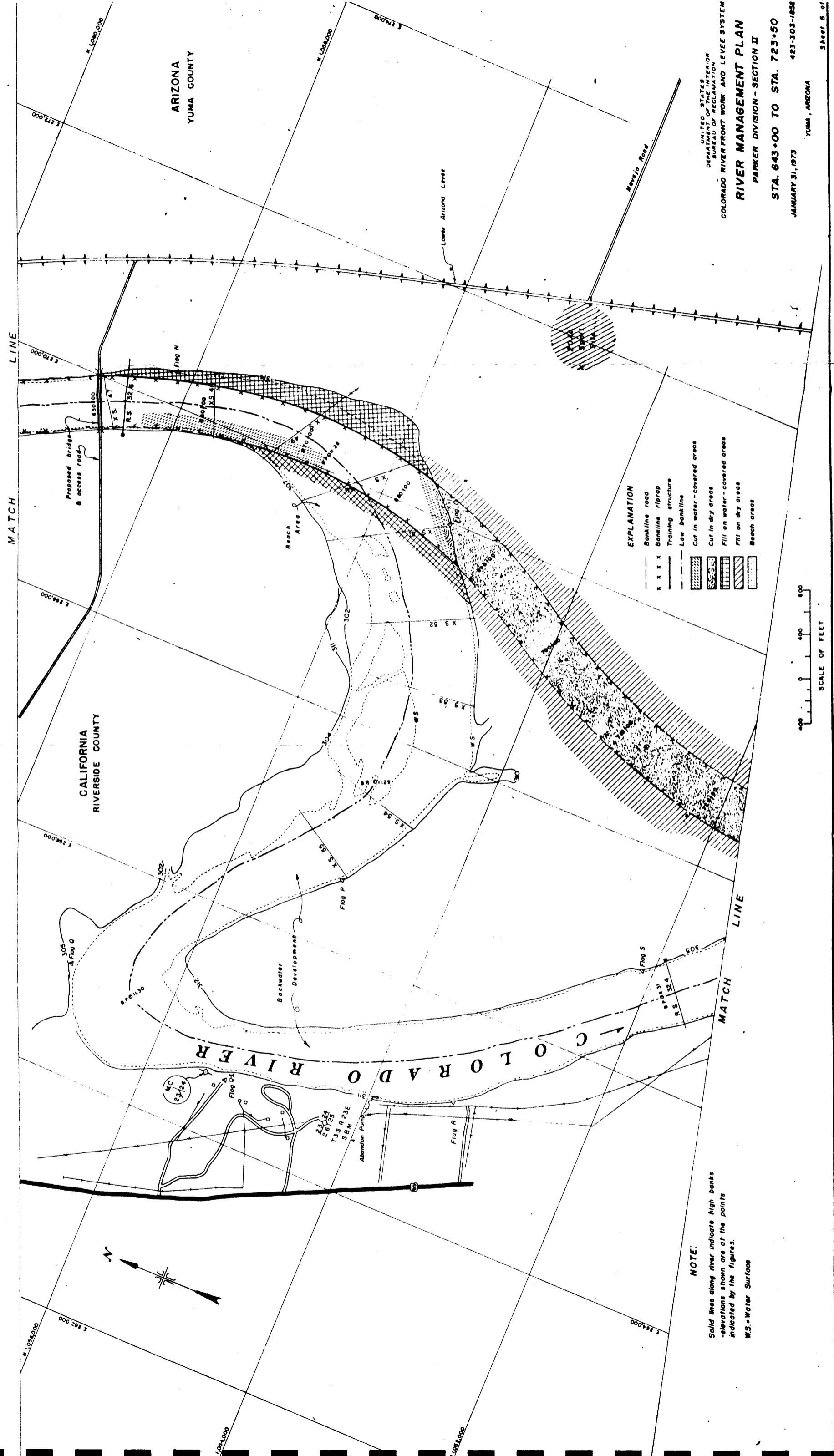
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ARIZONA
YUMA COUNTY

CALIFORNIA
RIVERSIDE COUNTY

NOTE:
Solid lines along river indicate high banks
elevations shown are at the points
indicated by the figures.
W.S. = Water Surface

SCALE OF FEET
400 400 000

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RIVER MANAGEMENT PLAN

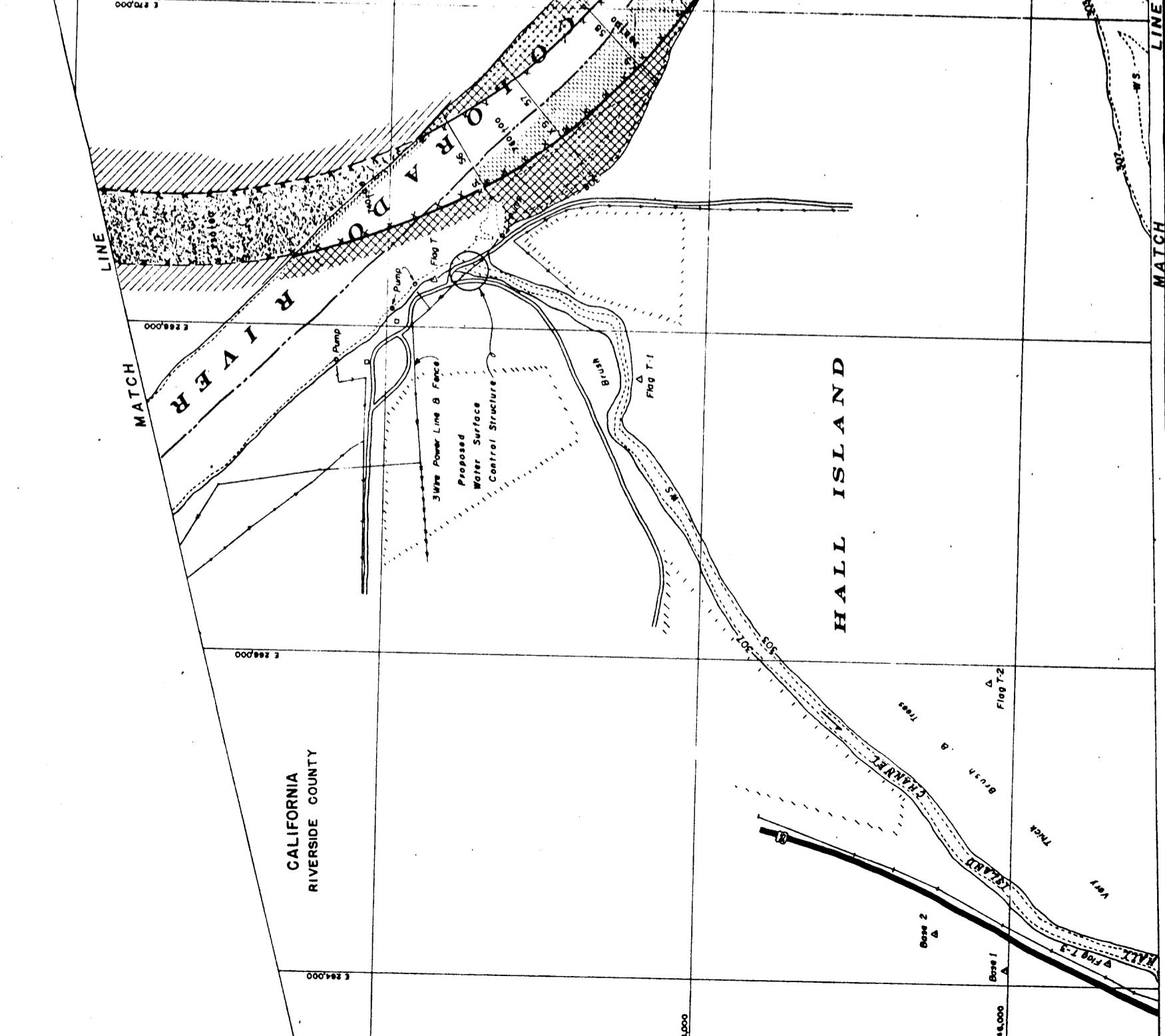
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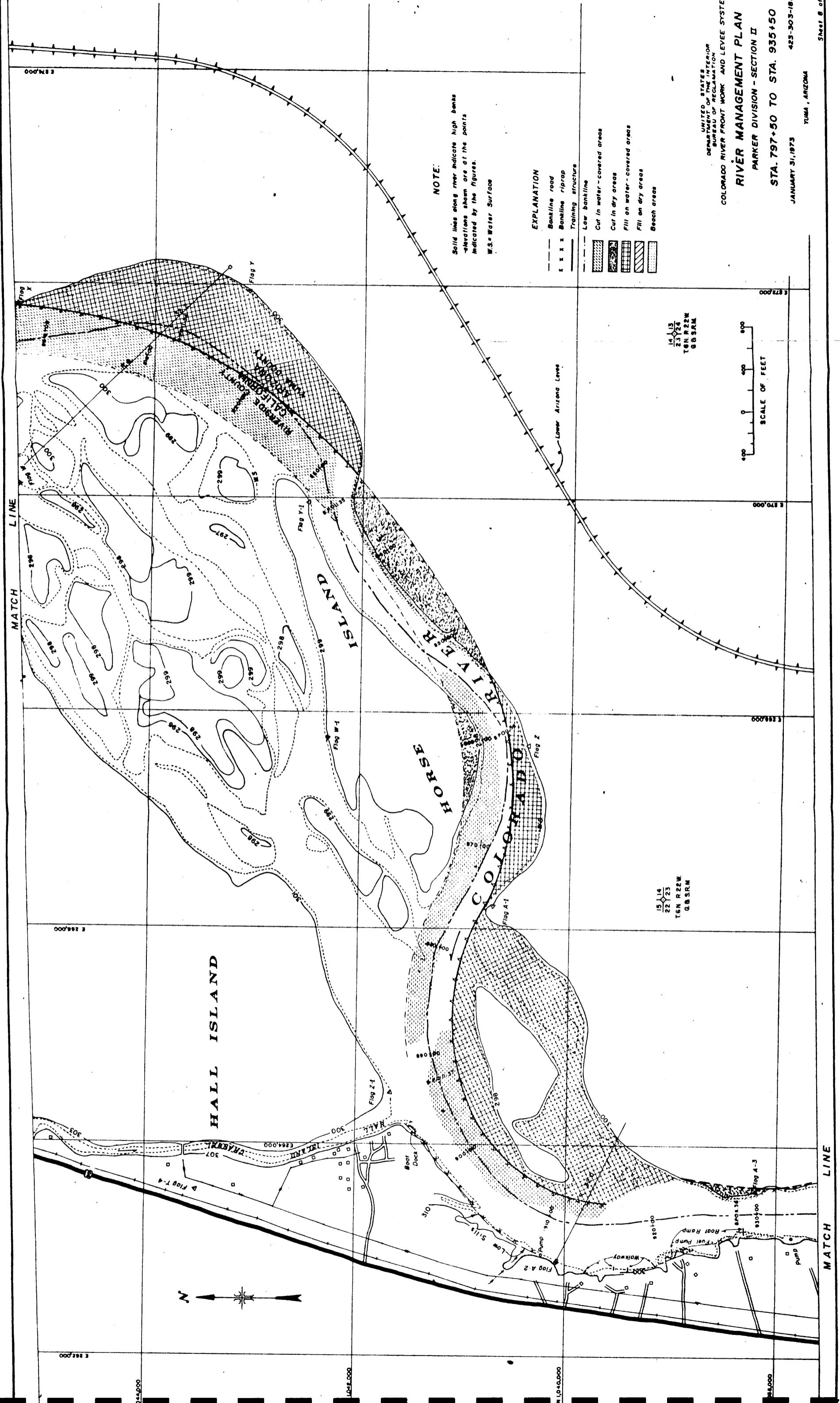
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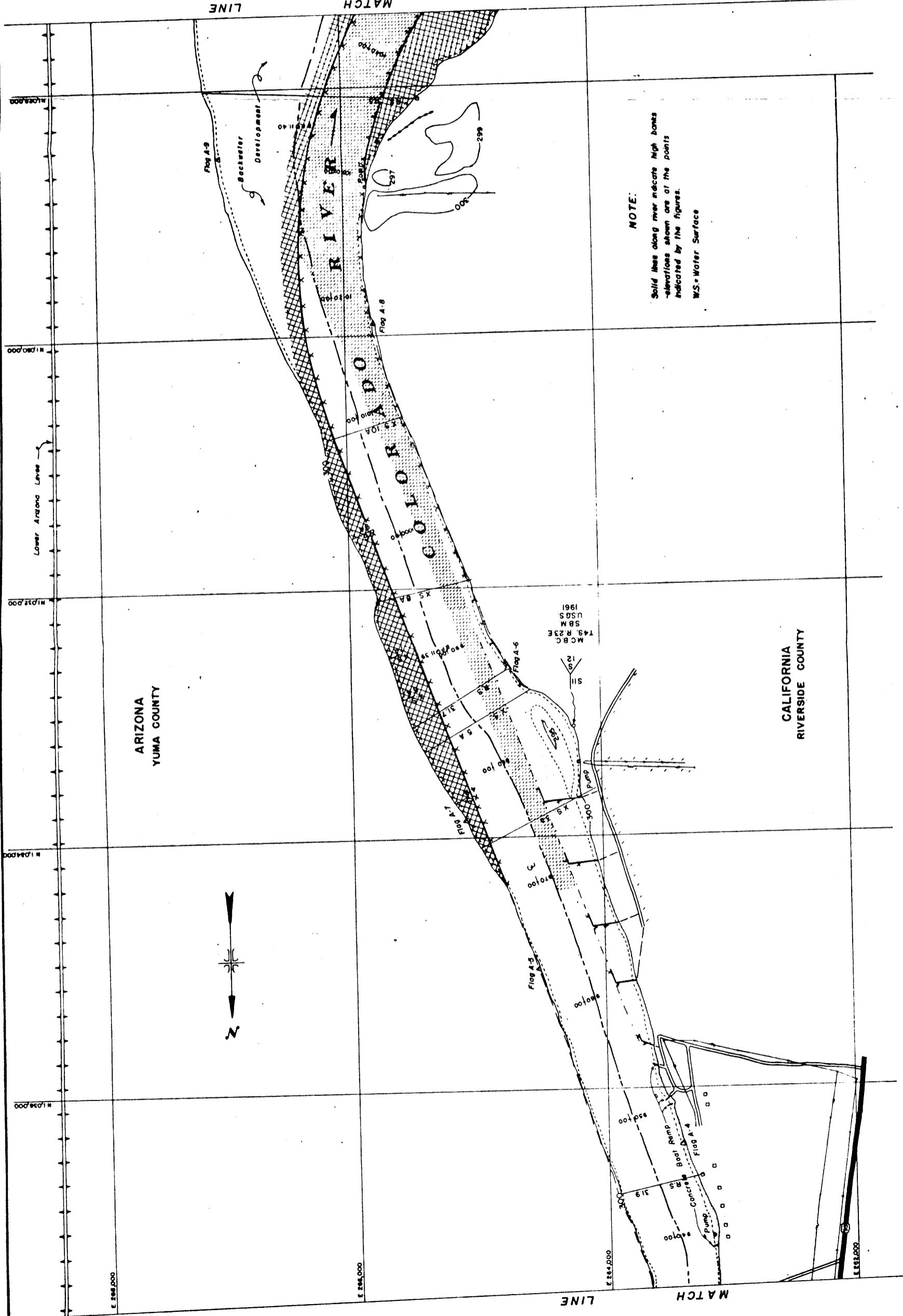
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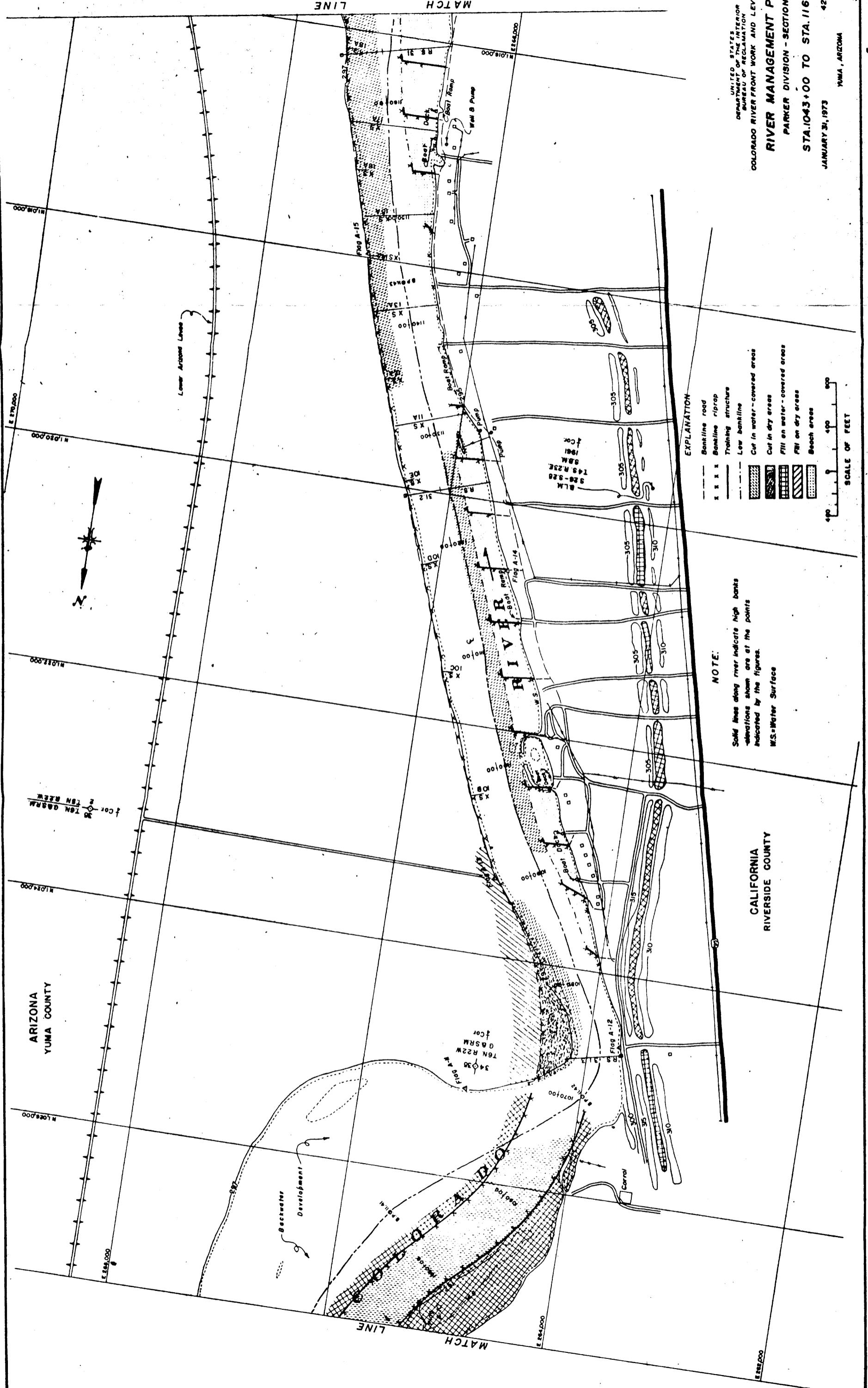
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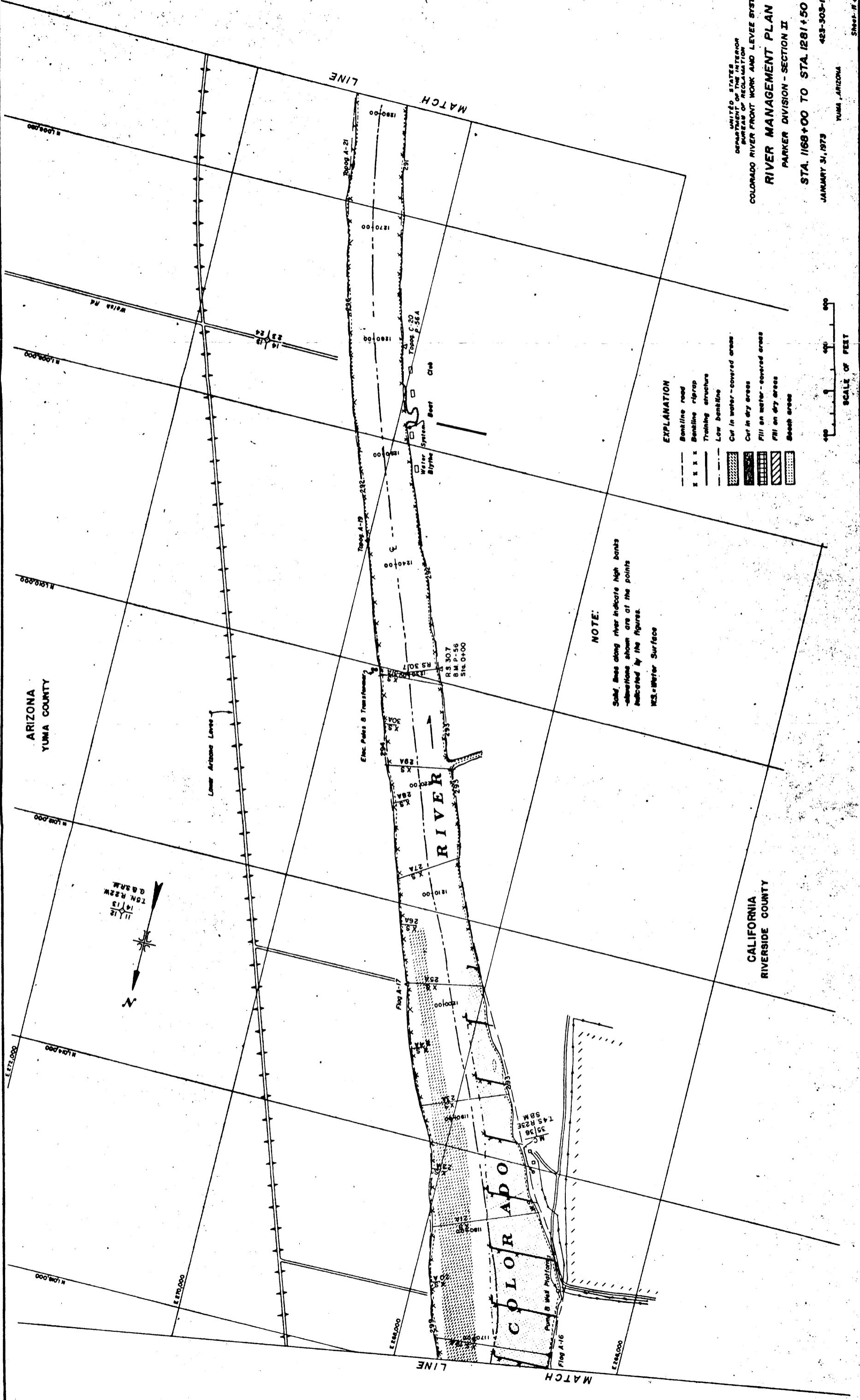
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