STATE OF CALIFORNIA

The Resources Agency

The Reclamation Board

NELSON BEND

MODIFICATION PROJECT

FEATHER RIVER — SUTTER COUNTY

OPERATION & MAINTENANCE MANUAL

Prepared By

Department of Water Resources

1972

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SECTION I

INTRODUCTION

1.01 Purpose: The purpose of this manual is to define the operation and maintenance procedures to be used for the Nelson Bend Modification Project. This manual supplements the Corps of Engineers' Standard Operation and Maintenance Manual.

1.02 Project Authority: The project works covered by this manual are a part of the Sacramento Flood Control Project funded by the State Budget, Fiscal Year 1969-1970.

The authority of The Reclamation Board to construct the project works is contained in the Water Code of the State of California, Div. 5, Part 4, Ch. 1, Art. 2, and Ch. 3, Art. 1, respectively.

1.03 Location: The project is located on the Feather River in Sutter County approximately two miles southwest of the town of Nicolaus. In the project area, the Feather River joins the Sutter Bypass and makes an abrupt change in alignment at Nelson Bend.

The Sutter Bypass lies west of and adjacent to the right bank of the Feather River from Nelson Bend to the confluence at the Sacramento River. No west bank levee exists along the Feather River. Inbank channel flows are contained in the Feather River by the natural right bank.

1.04 Description of Project:

I. The project improved and stabilized the west bank overflow area and the channel of the Feather River. The improvements provide protection against the formation of Feather River overflow channels into the Sutter Bypass and to retard the deposition of sediments in the Sutter Bypass. This reduces the possibility of a main channel shift in the Feather River.

II. a. A 900-foot spur levee from the Feather River right bank levee across Nelson Slough to the rock weir together with a 300-foot training levee. Two 48-inch pipes provide summer drainage for Nelson Slough.

b. A 2,200-foot long quarry rock weir.

c. A 300-foot training levee together with a 210-foot tie-in levee at the south end of the weir.

d. Filling of channels and grading immediately upstream and downstream from the weir.

e. Filling a break in the right bank of the Feather River at and downstream from Nelson Bend.

1.05 Construction Data and Contractor: The work required to complete the project works as described in this manual was accomplished by the State of California and the Corps of Engineers as follows:

I. State of California:

a. Clearing of the project area and relocation of fencing was accomplished under Contract E-173-68 by Robert L. Avery, Inc., and was completed August 12, 1969.

b. Construction of the weir, ramps, levees, grading and pipes was accomplished under Contract No. C-50001 by Robert L. Avery, Inc., and completed November 25, 1970.

II. Corps of Engineers:

c. Grading and rock revetment on the Feather River channel right bank was accomplished under Federal Contract No. DAC W05-71-C-0041, under authority of P.L. 99 by H. E. Parker, Inc., and was completed February 19, 1971. The Maintenance and Operation along with a description of the federal portion of the work is described under Unit 135 Supplement to Standard Manual.

SECTION II

OPERATION AND MAINTENANCE PROCEDURES OF THE PROJECT

2.01 Levees: The levee extends from Station 10+00 to Station 20+00, from Station B-0+00 to Station B-3+00, from Station C-0+00 to C-3+00, and from Station D-0+00 to D-2+02, as shown on Reclamation Board Plan No. 2-1027 dated March 31, 1970, and shall be subject to the operation and maintenance standards as outlined in the "Standard Operation and Maintenance Manual", Corps of Engineers. These levees have been constructed with side slopes of 1 on 3 and a crown width of 16 feet and a 12-foot wide gravel patrol road on the crown. The drainage pipes and ramps are included in this work.

2.02 Rock Weir: The rock weir extends from Station 20+50 to Station 49+45 and has a crest elevation of 36.5 USGS datum.

Maintenance procedures to follow are:

a. Rocks that are displaced during high water are to be replaced so as to perpetuate the design profile.

b. All items as listed under 2.03 that are applicable to the rock weir are to be complied with.

2.03 Overflow Areas: The berm areas and waterside rights-of-way.

a. All brush, trees and wild growth other than sod are to be removed.

b. All weeds, grass and debris shall be burned during the appropriate season, when not dangerous, impractical or unlawful.

c. All grass and weeds shall be mowed or sprayed, if allowable, where removal by burning is a hazard to improvements or unlawful.

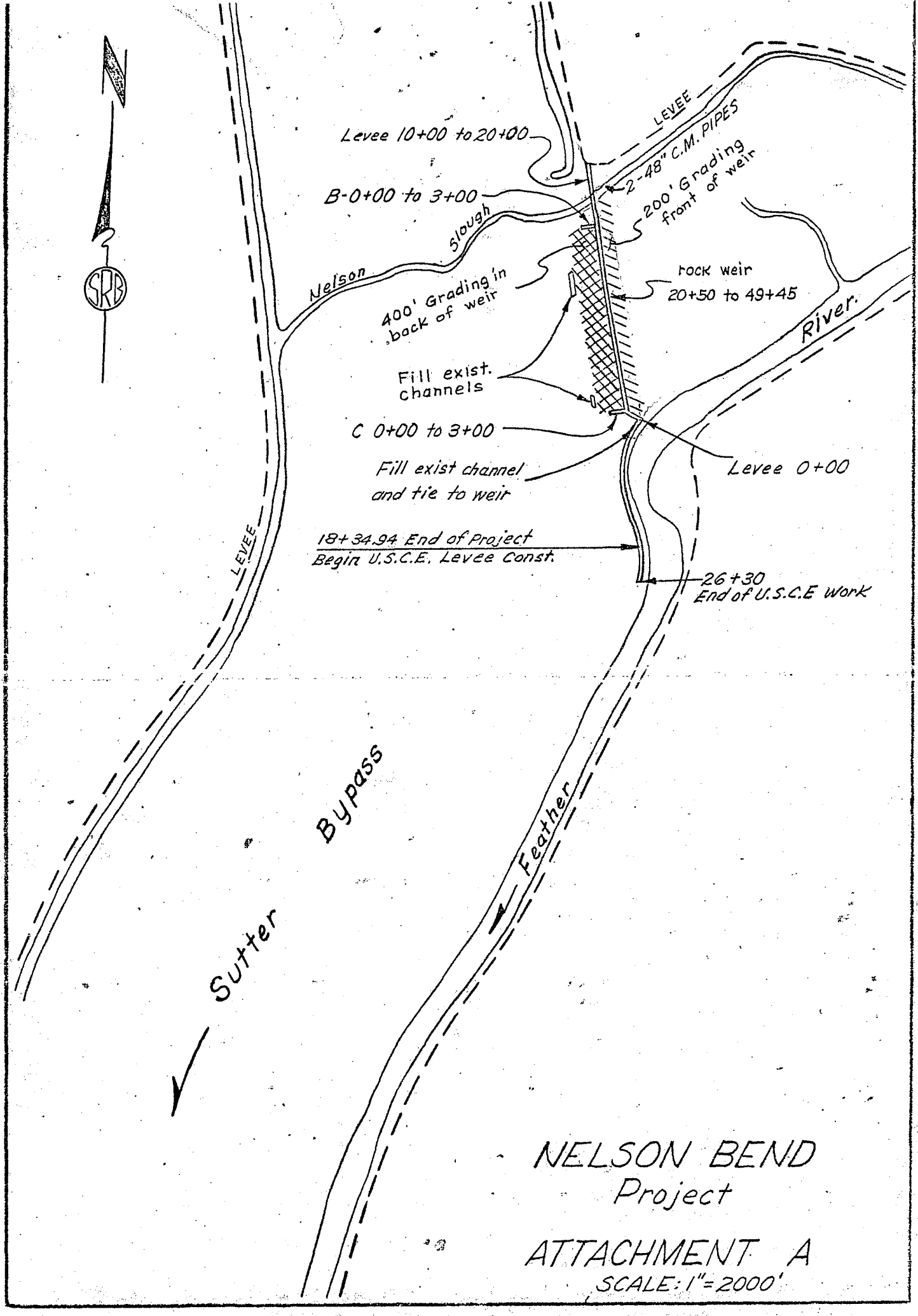
d. All burrowing animals are to be exterminated.

e. All caves, sloughs, burrows, holes, slips and other damaged portions of the levee are to be repaired.

f. Encroachments and use of the areas shall not be allowed except as authorized by approved application from the State Reclamation Board.

2.04 Rock Groins: Rock groins were constructed upstream and normal to the weir and their integrity should be maintained. The groins were designed to aid in the prevention of channels forming parallel and adjacent to the upstream side of the weir. There will be occasions when the right

bank overflow of the Feather River will not overtop the weir, but will be deflected southerly along the upstream face of the weir and will flow back into the channel of the river. On these occasions, there is a possibility of channels forming along the upstream face of the weir with possible detrimental effects to the structure. Any channels formed on the immediate upstream or downstream side of the weir should be filled and rocked if necessary.


LEVEE
Levee 10+00 to 20+00
2-48" C.M. PIPES
B-0+00 to 3+00
200' Grading front of weir
Nelson Slough
400' Grading in back of weir
rock weir 20+50 to 49+45
River.
Fill exist. channels
C 0+00 to 3+00
Fill exist channel and tie to weir
Levee 0+00
18+34.94 End of Project
Begin U.S.C.E. Levee Const.
26+30 End of U.S.C.E work
LEVEE
Bypass
Feather
Sutter
NELSON BEND
Project
ATTACHMENT A
SCALE: 1"=2000'

ATTACHMENT B

For copies of "As-Built" plans

for (State)

Nelson Bend Modification Project, Feather River

contact

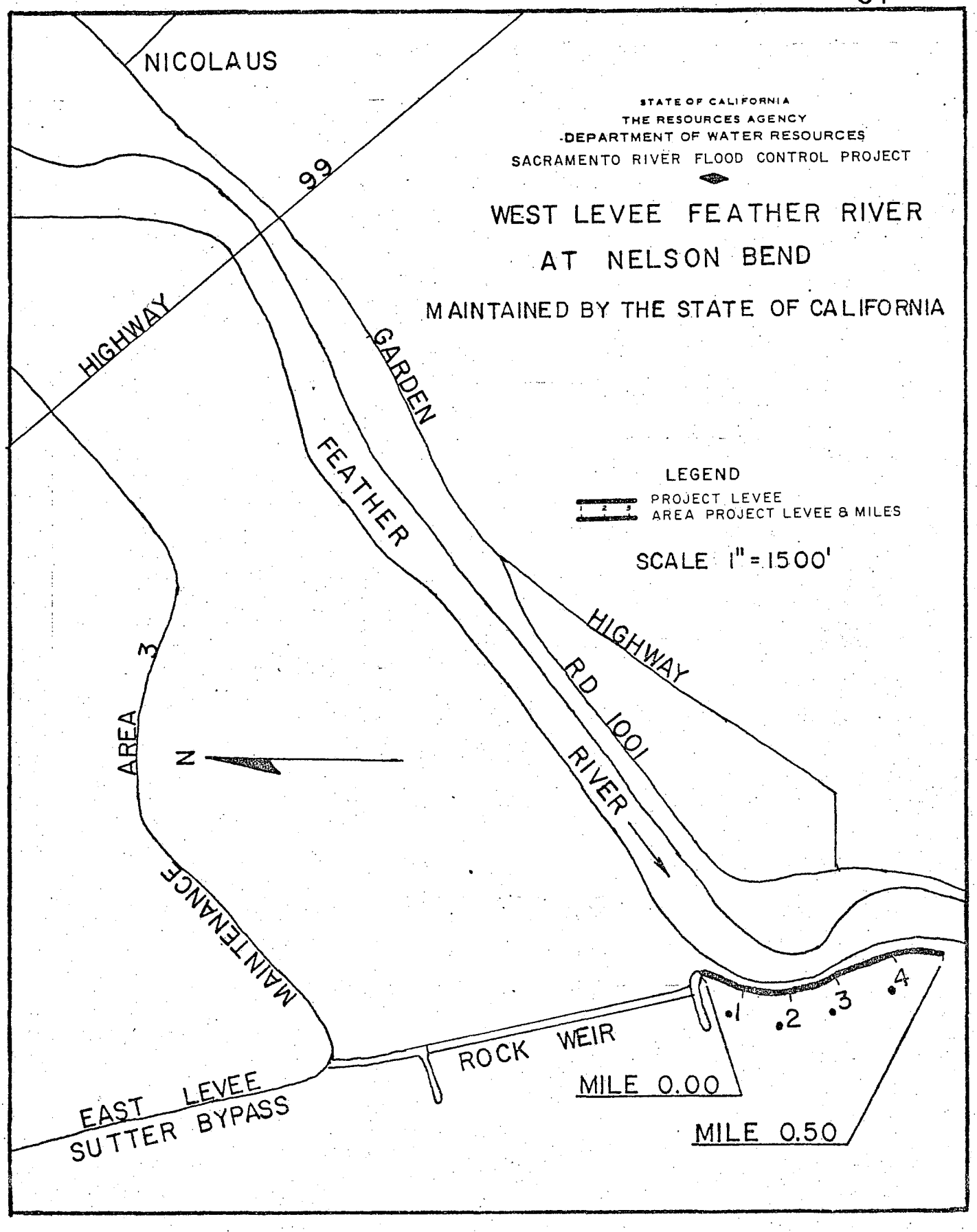
Micro Document Management Unit
Department of Water Resources
1416 - 9th Street
Sacramento, CA 95814

for (Federal)

contact

Corps of Engineers
Emergency Repair
Vicinity of Nelson Bend
Levee Construction and Bank Protection
P.L. 99/84

Flood Control Section
Construction and Operation Division
650 Capitol Mall
Sacramento, CA 95814


STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
SACRAMENTO RIVER FLOOD CONTROL PROJECT
WEST LEVEE FEATHER RIVER
AT NELSON BEND
MAINTAINED BY THE STATE OF CALIFORNIA
LEGEND
PROJECT LEVEE
AREA PROJECT LEVEE & MILES
SCALE 1" = 1500'
NICOLAUS
99
HIGHWAY
GARDEN
FEATHER
HIGHWAY
RD 1001
RIVER
AREA 3
MAINTENANCE
N
ROCK WEIR
EAST LEVEE
SUTTER BYPASS
MILE 0.00
MILE 0.50
.1
.2
.3
.4

WEST LEVEE FEATHER RIVER AT NELSON BEND

Plate No. 57
Sutter Bypass Key

Right Bank Feather River

Mile	Inspection Log
0.00	Right bank levee of the Feather River at the southern end of Nelson Bend Weir. Mileage runs downstream.
0.00 - 0.50	Waterward levee slope is rock revetted.
0.00	Ramp on waterward slope.
0.07 - 0.50	Bank is rock revetted.
0.45	Ramp on landward slope.
0.50	End of levee.