

LOWER SAN JOAQUIN RIVER
FLOOD CONTROL PROJECT

OPERATION AND MAINTENANCE
MANUAL

FOR

LEVEES, IRRIGATION AND DRAINAGE STRUCTURES,
CHANNELS AND MISCELLANEOUS FACILITIES

PART I

THE RECLAMATION BOARD

1967

(AMENDED IN 1978)

ADDENDUM

to: Standard Operation and Maintenance Manual

For The
LOWER SAN JOAQUIN RIVER LEVEES
LOWER SAN JOAQUIN RIVER AND
TRIBUTARIES PROJECT, CALIFORNIA

Dated April 1959

Prepared by: U.S. Army Engineer District
Sacramento, California

1-01 Reference. Lower San Joaquin River Flood Control Project, Operation and Maintenance Manual for Levees, Irrigation and Drainage Structures, Channels and Miscellaneous Facilities. Part 1, the Reclamation Board 1967 (Amended in 1978).

*This is a
DWR O&M
Manual
Filed in
binder*

1-02 Location. The improvement covered by this addendum is a part of the San Joaquin River and Tributaries project. The improvement is in the Eastside Bypass near Sand Slough. The area lies about 13 miles south-westerly from Merced and 5 miles westerly from El Nido, California. The area is located in the Lower San Joaquin River Levee District, see Exhibit A.

1-03 Construction Data. Removal of sand deposits was accomplished to bring the East Side Bypass back to project standards. This work was completed under Contract No. DACW05-84-B-0004 during the period of time from 15 November 1984 to 14 February 1985. Specification 7305 Drawing No. 7-6-1846. The channels and floodways were excavated in two sections from left bank levee station 552+00 to 592+00 and 617+00 to 667+00. The channel bottom width is 100 feet wide with 1V to 3H side slopes.

1-04 Channel. The channel will be maintained as specified in the manual referenced in 1-01. The low flow channel bottom width will be 100 feet, with 1V on 3H side slopes; and the invert is set 6 feet below the floodway berm. Elevation of the flood way berm is set to the design elevation of the left levee landward toe.

1-05 Maintenance. The low flow channel will be kept clear of all sediment and debris. Any floatable debris will be burned to ash or removed outside the floodway before the advent of the spring floods.

1-06 Intergovernmental Agreements. Assurance of cooperation by local interests is provided by the State of California in accordance with Section 221 of Public Law 91-611, Exhibit B.

Encl

FOREWORD

In 1958, the Lower San Joaquin Levee District agreed to operate and maintain this flood control project when completed. This agreement was amended in 1962. The State of California completed construction of this flood control project in 1966. This maintenance manual was adopted by the Board in 1967.

In 1978, The Reclamation Board authorized the Department of Fish and Game to plant and maintain a pilot reach of the Chowchilla Canal Bypass between the Firebaugh-Madera Road and Avenue 14 for wildlife habitat. At that time this maintenance manual was modified to reflect adoption of the pilot program for wildlife plantings.

The Lower San Joaquin Levee District continues to have responsibility to operate and maintain this flood control project including all levees and channels. The Department of Fish and Game will be responsible for maintaining the wildlife plantings. This manual describes the responsibilities of these two agencies and the responsibilities of the Department of Water Resources and the State Reclamation Board.

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PART I

THE RECLAMATION BOARD
1967
(AMENDED IN 1978)

LOCATION	ADDITION OR REVISION	DATE
1400	Add subparagraph a	Jan 2009
1510	Add subparagraph 1510.17	Jan 2009
Appendix H	Add Appendix H: Letters of Transfer and/or Acceptance	Jan 2009
Appendix I	Add Appendix I: "As-Constructed" Drawings	Jan 2009
Appendix I	Add Plan Sheets G-1, C-1 to C-9 (10 sheets)	Jan 2009
1510	Add subparagraph 1510.18	25 May 2011
Appendix H	Add letter of transfer dated 9 Nov 2000	25 May 2011
1510	Add subparagraph 1510.19	25 May 2011
Appendix H	Add letter of transfer dated 30 Jan 2001	25 May 2011
Appendix I	Add drawing no. SJ-4-112	25 May 2011
1510	Add subparagraph 1510.20	25 May 2011
Appendix H	Add copy of letter of transfer dated 20 Feb 2001 (SJ 21)	25 May 2011
Appendix H	Add copy of letter of transfer dated 20 Feb 2001 (SJ 22)	25 May 2011
Appendix I	Add drawing no. SJ-4-113 (SJ 21)	25 May 2011
Appendix I	Add drawing no. SJ-4-113 (SJ 22)	25 May 2011
1510	Add subparagraph 1510.21	25 May 2011
Appendix H	Add copy of letter of transfer dated 20 Mar 2001 (SJ 19)	25 May 2011
1510	Add subparagraph 1510.22	25 May 2011
Appendix H	Add copy of letter of transfer dated 6 Apr 2001	25 May 2011
1510	Add subparagraph 1510.23	25 May 2011
Appendix H	Add copy of letter of transfer dated 20 Mar 2001 (SJ 23)	25 May 2011
Appendix I	Add drawing no. 7-4-1854	25 May 2011
Appendix H	Add copy of letter of transfer dated 24 Nov 2010	25 May 2011

LOCATION	ADDITION OR REVISION	DATE
Table of Contents	Updated Table of Contents	25 May 2011

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INTRODUCTION

1000

Purpose of the Manuals

1100

Operation and Maintenance Manuals have been prepared by the Department of Water Resources, Flood Control Office, for The Reclamation Board to be employed by the Lower San Joaquin Levee District and the Department of Fish and Game. The district has the responsibility^{1/} for the operation and maintenance of the authorized Lower San Joaquin River Flood Control Project. The Department of Fish and Game^{2/} has the responsibility for maintaining a pilot reach of wildlife habitat between Firebaugh-Madera Road and Avenue 14.

The manuals set forth operating criteria and maintenance standards to be used by the district for the integrity of the project. This manual also sets forth maintenance standards to be used by the Department of Fish and Game in maintaining the pilot reach of wildlife habitat.

The Operation and Maintenance Manuals

1200

The Operation and Maintenance Manuals have been divided into three parts for easier use and handling.

Part I -- General Data and Operation and Maintenance Manual for Levees, Irrigation and Drainage Structures, Channels and Miscellaneous Facilities

1210

The manual contains Chapter 1000 -- Introduction and Chapter 2000 -- General Rules and Procedures, which pertain

1/ See Agreements -- Appendix A.

2/ See Lease -- Appendix A.

Part I -- General Data and Operation and Maintenance Manual for Levees, Irrigation and Drainage Structures, Channels and Miscellaneous Facilities (Continued)

1210

to all three manuals. In addition, general flood control features of the project are included as follows: Chapter 3000 -- Levees; Chapter 4000 -- Irrigation and Drainage Structures; Chapter 5000 -- Channels; Chapter 6000 -- Miscellaneous Facilities; Chapter 7000 -- Flood Damage. Completing this manual are the Appendices that include:

Copies of Agreements, Maps, Plates of Methods of Flood Fighting, Inspection Checklists for included facilities and Semiannual Report Form.

Part II -- Operation and Maintenance Manual for Mariposa Bypass and Eastside Bypass Automatic Control Structures and Appurtenances 1220

These two structures are adjacent and the operation of one is dependent on the operation of the other. For this reason, it is only natural that the operation criteria and maintenance standards for the structures and appurtenances appear under one cover.

Included in this manual are complete descriptions of the facilities, maintenance guides, operation criteria and procedures, safety requirements, and inspection checklists.

A copy of this manual shall be available in the installations control house.

part III -- Operation and Maintenance Manual for
San Joaquin River and Chowchilla Canal
Bypass Automatic Control Structures and
Appurtenances

1230

These two structures are adjacent and the operation of one is also dependent on the operation of the other. The maintenance standards for the structures and appurtenances appear under one cover.

Included in this manual are complete descriptions of the facilities, maintenance guides, operation criteria and procedures, safety requirements, and inspection checklists.

A copy of this manual shall be available in the installations control house.

Location

1300

The project works are located within the Lower San Joaquin Levee District boundaries in the Counties of Merced, Madera, and Fresno. The improvements extend along and adjacent to the San Joaquin River from the Merced River to Gravelly Ford (excluding that portion situated between Mendota Dam and the San Joaquin River Control Structure), along and adjacent to the alignment of the Eastside Bypass from the San Joaquin River to the Chowchilla Canal Bypass, along and adjacent to the alignment of the Chowchilla Canal Bypass from the Fresno River to the San Joaquin River, along and adjacent to the alignment of Bear and Owens Creeks between the Eastside Bypass and the East Side Canal, along the East Side Canal from the Eastside Bypass to a point approximately 1.8 miles northwest of Bear Creek, along the alignment of the Mariposa

Location (Continued)

1300

Bypass between the San Joaquin River and the Eastside Bypass, along the alignment of Ash Slough between the Eastside Bypass and the Chowchilla Canal, and along and adjacent to the alignment of Berenda Slough from the Eastside Bypass to a point approximately 1 mile upstream, as shown on the Location Map, Appendix B.^{3/}

Project Works

1400

The project works covered by this manual include all completed portions of the authorized Lower San Joaquin River Flood Control Project. The project works consist basically of levees constructed along natural drainage channels to increase floodwater carrying capacity and levees constructed for floodwater bypass channels (for project design flows see schematic diagram, Appendix D). The necessary drainage structures have been incorporated into the levee system to intercept cutoff of natural and interior drainage, along with irrigation structures.

The levees have gravel patrol roads on the levee crown, access roads to the levees and patrol bridges across flood and river channels from levee crown to levee crown so that all portions of the flood control system are reachable at all times to vehicular travel necessary for flood fighting and

^{3/} Originals of plates and agreements are on file at The Reclamation Board Office in Sacramento.

and project maintenance operations. The necessary fencing and gates have been provided for the integrity of the project works.

Channels of the project have been cleared and grubbed of debris, brush, trees, and other wild growth to increase the floodwater carrying capacity of the channels during periods of high water. A pilot reach of the Chowchilla Bypass between Avenue 14 on the north and the Madera-Firebaugh Road on the south has been planted to provide wildlife habitat.

The project consists of other miscellaneous facilities such as control structures to divert floodflows and hydrologic facilities of levees, irrigation and drainage structures, channels, and miscellaneous of the project works can be found in Sections 3000, 4000, 5000, and 6000, respectively, of this manual. Descriptions for the automatic control structures and appurtenant facilities can be found in Part II and Part III Manuals. All elevations or vertical control for the project works when referred to are on U.S.C. & G.S. Sea Level Datum, 1929 adjustment.

a. Three seepage berms and a seepage cutoff wall were constructed as part of a 2006 PL 84-99 rehabilitation project.

Construction History

The initial contract of the construction of the authorized Lower San Joaquin River Flood Control Project was signed into effect May 1, 1959. The project utilized the alignment of portions of levee systems already in existence in the form

Construction History (Continued)

1500

of canal banks. These levees were reconstructed and rehabilitated along with the construction of new levees and appurtenances formulating the project. Following is the construction history of the authorized project.

First Contract. Contract 1 (Specifications 1510.1 59-1)^{4/} was awarded to Fredericksen & Kasler of Sacramento, California, on May 1, 1959, to perform the work as described below for a cost of \$1,956,117.50.

1. This work consisted of constructing approximately 51 miles of new levees, enlarging approximately 5 miles of existing levees, construction of 140 drainage and irrigation structures, and clearing along and adjacent to the natural channel of the San Joaquin River. The work also included constructing bank protective works, fencing, and improvements to the Hills Ferry County Road.

2. This work is located in Merced County and extends from a point near the junction of the Merced and San Joaquin Rivers to the head of Sand Slough approximately 4.5 miles downstream from State Highway 152.

Second Contract. Contract 2 (Specifications 1510.2 60-6) was awarded to John E. Northrup Company of La Canada, California, on April 27, 1960, to perform the work as described below for a cost of \$86,350.00.

^{4/} Copies of contract specifications are on file at The Reclamation Board office in Sacramento.

Second Contract (Continued)

1510.2

1. This work consisted of clearing and grubbing along and adjacent to the natural channel of the San Joaquin River for a distance of approximately 19.1 miles.

2. This work is located in Merced, Madera, and Fresno Counties and extends from near the head of Sand Slough, approximately 4.5 miles downstream from State Highway 152, at River Mile 168.6 to the south line of Section 32, T. 11 S., R. 14 E., M.D.B.&M. a point approximately 7.5 miles downstream from the City of Firebaugh, at River Mile 187.7.

Third Contract. Contract 3A (Specifica-

1510.3

tions 60-20) was awarded to the Granite Construction Company of Watsonville, California, on December 20, 1960, to perform the work as described below for a cost of \$245,850.00.

1. This work consisted primarily of furnishing, hauling, placing, and compacting a crushed mineral aggregate surfacing on approximately 60 miles of existing levee crown, road ramps, widened levee areas, and certain existing access roads.

2. This work is located in Merced County and extends from a point near the junction of the Merced and San Joaquin Rivers to the head of Sand Slough, approximately 4.5 miles downstream from State Highway 152.

Fourth Contract. Contract 3 (Specifica-

1510.4

tions 61-1) was awarded to Charles L. Harney, Inc. of San Francisco, California, on May 25, 1961, to perform the work described below for a cost of \$1,445,736.20.

Fourth Contract (Continued)

1510.4

1. The work consisted of the construction of approximately 19 miles of new levees, enlarging approximately 1.5 miles of existing levees, construction of 4 bridges, construction approach embankments and roads for these bridges, and constructing approximately 50 drainage and irrigation structures. The work also included approximately 25 acres of clearing along and adjacent to the bypass channels, constructing bank protection, placing crushed mineral aggregate surfacing on approximately 19.5 miles of levees constructed and enlarged, fencing, constructing approximately 2.5 miles of drainage ditch, and other miscellaneous items.

2. The work is located in Merced County and extends along the Eastside Bypass alignment from a point near the junction of Bear Creek with the San Joaquin River to the Interchange area, near the heading of Sand Slough from the San Joaquin River.

Fifth Contract. Contract 3C (Specifica-

1510.5

tions 61-2) was awarded to Charles L. Harney, Inc. of San Francisco on October 4, 1961, to perform the work described below for the cost of \$64,086.00.

1. This work consisted of removing and replacing existing levee embankment, constructing embankment at the site of the San Joaquin structure, excavating and refilling an inspection trench, widening levee, placing cobble revetment, constructing timber pump structure, constructing gate riser units, constructing road ramps, and furnishing

Fifth Contract (Continued)

1510.5

and placing gravel surfacing. This work also included bracing existing metal gate posts.

2. The work is located in Merced County and extends from a point near the junction of the Merced and San Joaquin Rivers to a point approximately 1 mile downstream from State Highway 152.

Sixth Contract. Contract 6 (Specifications 1510.6

62-09) was awarded to Frank P. Donovan of Santa Maria, California, on June 15, 1962, to perform the work described below for a cost of \$107,000.00

1. This work consisted of clearing and grubbing approximately 585 acres along and adjacent to the natural channel of the San Joaquin River for a distance of approximately 17.0 miles.

2. The work is located in Fresno and Madera Counties and extends from the south line of Section 32, T. 11 S., R. 14 E., M.D.B.&M, at River Mile 187.7, a point approximately 7.5 miles downstream from the City of Firebaugh, to Mendota Dam, at River Mile 204.7.

Seventh Contract. Contract 3D (Specifica- 1510.7

tions 62-03) was awarded to the L. M. Page Company of Monrovia, California, on September 14, 1962, to perform the work at a cost of \$106,886.15.

1. The work consisted of constructing 1.8 miles of new levees, enlarging approximately 1.5 miles of existing levees, constructing road ramps, and constructing

Seventh Contract (Continued)

1510.7

4 drainage and irrigation structures. Also included was placing of crushed mineral aggregate surfacing on the levees which were constructed, and seeding of the levee slopes.

2. The work is located in Merced County and extends along the San Joaquin River from a point near the head of Sand Slough to a point approximately 2 miles upstream from the head of Sand Slough.

Eighth Contract. Contract 3E (Specifica-

1510.8

tions 62-28) was awarded to H. Sykes of Patterson, California, on December 3, 1962, to perform the work described below for a cost of \$20,906.

1. This work consisted of furnishing and placing stone protection on the right bank Mariposa Bypass, constructing protection fill, furnishing and placing cobbles in the channel of Mariposa Bypass, and constructing chain link fabric cribs.

2. The work is located in Merced County, in the Mariposa Bypass just below the Mariposa Bypass Control Structure.

Ninth Contract. Contract 3B (Specifica-

1510.9

tions 63-25) was awarded to L. M. Page Company and W. A. Smith Corporation of Monrovia, California, a joint venture, on July 24, 1963, to perform the work described below for a cost of \$1,322,366.30.

1. This work consisted of constructing approximately 17.3 miles of new levees, and enlarging

Ninth Contract (Continued)

1510.9

approximately 6.1 miles of existing levees along the Eastside Bypass, Bear Creek, Owens Creek, and East Side Canal; constructing 5 bridges; constructing approach embankment roads for these bridges; constructing a siphon, and a diversion structure at the head of Bear Creek; and constructing approximately 50 drainage and irrigation structures. The work also included approximately 20 acres of clearing along and adjacent to the Eastside Bypass, Bear Creek, Owens Creek, and East Side Canal channels; constructing bank protection; placing crushed mineral aggregate surfacing on approximately 23.4 miles of levees to be constructed and enlarged; fencing; and other miscellaneous items.

2. The work is located in Merced County, and extends along the alignment of Eastside Bypass from a point near the junction of Bear Creek with the San Joaquin River to the East Side Canal, along Bear Creek and the San Joaquin River to the East Side Canal, along Bear Creek from the Bypass to the East Side Canal, along Owens Creek from the Bypass to the East Side Canal and along the East Side Canal from the Mariposa Bypass to a point approximately 1.8 miles northwest of Bear Creek.

Tenth Contract. Contract 3F (Specifications 63-27) was awarded to Jack Campbell, Incorporated of Fresno, California, on July 24, 1963, to perform the work described below for a cost of \$478,348.00.

1510.10

Tenth Contract (Continued)

1510.10

1. This work consisted of constructing the Mariposa Bypass control structure and enlarging approximately 0.7 mile of adjacent levees. The structure is made of concrete with open and gated bays and a concrete bridge across the top of the structure.

The work also included furnishing and installing anchors for the existing East Side Canal siphon.

2. The work is located in Merced County at the intersection of the Eastside Bypass and Mariposa Bypass, approximately 13 miles southwest of the City of Merced.

Eleventh Contract. Contract 4 (Specifica-

1510.11

tions 64-01) was awarded to Fredrickson and Watson Construction Company of Oakland, California, on January 20, 1964, to perform the work described below for a cost of \$2,072,214.00.

1. This work consisted of constructing approximately 24.2 miles of new levee; constructing 3 bridges; constructing approximately 44 drainage and irrigation structures, 4 drop structures, and 1 siphon. The work also included constructing bank protection; placing crushed mineral aggregate surfacing on approximately 24.2 miles of levees; fencing, constructing drainage and irrigation ditches, and other miscellaneous items.

2. The work is located in Merced and Madera Counties and extends along the Eastside Bypass alignment from the Sand Slough Interchange area to Avenue 18-1/2 and along the Ash Slough Alignment from the Eastside Bypass to the Chowchilla Canal.

Twelfth Contract. Contract 5-7 (Specifica- 1510.12

tions 64-42) was awarded to Pascal and Ludwig on January 20, 1965, to perform the work described below for a cost of \$2,477,958.00.

1. This work described of constructing approximately 43 miles of new levees, constructing 6 bridges, constructing approach embankments and roads, constructing 4 pipe arch culverts through county road approach embankments, constructing approximately 30 drainage and irrigation structures, and constructing 2 drop structures. The work also included constructing bank protection, placing crushed mineral aggregate surfacing on approximately 43 miles of new levee, construction 1 mile of new roadway, constructing fences, constructing drainage ditches, and miscellaneous items.

2. The work is located in Madera County and extends along the alignment of the Eastside Bypass from Avenue 18-1/2 to the Chowchilla Canal, along the alignment of Berenda Slough from the Eastside Bypass to the Chowchilla Canal, and along the alignment of the Chowchilla Bypass from the Fresno River to 1 mile northwest of the San Joaquin River.

Thirteenth Contract. Contract 3H (Specifi- 1510.13

cations 65-03) was awarded to Pascal and Ludwig on April 7, 1965, to perform the work described below for a cost of \$454,069.00.

1. This work consisted of constructing approximately 2 miles of levee enlargement, constructing levee

Thirteenth Contract (Continued)

1510.13

embankments, a concrete drop structure, approximately 600 feet of channel excavation, improving an existing drainage structure; and other miscellaneous items.

2. The work is located in Merced County at the west end of the Mariposa Bypass at its intersection with the San Joaquin River approximately 25 miles southwest of the City of Merced, California.

Fourteenth Contract. Contract 8 (Specifica- 1510.14

tions 65-30) was awarded to Fredrickson and Watson Construction Company on October 13, 1965, to perform the work described below for a cost of \$1,647,766.00.

1. This work consisted of clearing approximately 430 acres of San Joaquin River channel, installation of staff gages, construction of 2.7 miles of levees along both sides of the south end of the Chowchilla Canal Bypass, construction of 20 miles of levees from Lone Willow Slough to Gravelly Ford along both sides of the San Joaquin River, construction of the Chowchilla Canal Bypass-San Joaquin River Control Facilities, and construction of various drainage structures. The Chowchilla Canal Bypass-San Joaquin River Control Facilities consist of two reinforced concrete control structures with radial gates, hoists, and appurtenant electrical work.

2. The work is located in Madera and Fresno Counties, along 1.4 miles of the Chowchilla Canal Bypass, and along the San Joaquin River between Lone Willow Slough and

Fourteenth Contract (Continued)

1510.14

Gravelly Ford, from 23 to 34 miles west of Fresno, California. Five staff gages are located in Merced County.

Fifteenth Contract. Contract 3G (Specifica-

1510.15

tions 65-43) was awarded to Baldwin Warren Co., Inc., on December 1, 1965, to perform the work described below for a cost of \$597,978.20.

1. This work consisted of constructing approximately 365 feet of new levee; approach embankments; a concrete control structure; approximately 1,500 feet of channel excavation; constructing a control building, and a reinforced concrete box culvert; removing the existing control embankment, float wells, and other miscellaneous items.

2. The work is located in Merced County on the Eastside Bypass and the Mariposa Bypass, approximately 25 miles southwest of the City of Merced, California.

Sixteenth Contract. Contract 10 (Specifica-

1510.16

tions 66-30) was awarded to Ted Watkins Construction Company, Inc., and Ted Watkins on September 29, 1966, to perform the work described below for a cost of \$99,359.00.

1. This work consisted of constructing a reinforced concrete bridge with approach embankment on the Eastside Bypass at Triangle "T" Ranch, and a reinforced concrete drainage structure and 215 feet of new levee near the confluence of the Fresno and San Joaquin Rivers.

2. The work is located in Madera and Merced Counties approximately 20 miles southwest of the City of Merced, California.

Seventeenth Contract. P.L. 84-99 levee rehabilitation repairs. 1510.17

Work was completed under Contract No. W91238-08-D-0024 (Task Order No. 0001) by RDA Contracting, Inc. to install 3 seepage berms and a seepage cutoff wall within the Lower San Joaquin River Levee District as described in Table 1. All construction Activities were completed on November 19, 2008. Specification: P.L. 84-99 Levee Rehabilitation Repairs. Drawings: “PL 84-99 Levee Rehabilitation Repairs, CY2007 Order 1 & 4 Sites, Lower San Joaquin Levee District, As-Built Drawings”.

TABLE 1: LOWER SAN JOAQUIN LEVEE DISTRICT

SITE	COORDINATES (NAD 83)				SITE LENGTH (FT)	REPAIR TYPE
	(N)	(W)	(N)	(W)		
008	36.82899, -120.29763 to 36.82887, -120.29763				40	Seepage Berm
009	36.82461, -120.29891 to 36.82432, -120.29905				100	Seepage Berm
010	36.81937, -120.30109 to 36.81926, -120.30112				40	Seepage Berm
014 to 019 (Reach 1)	36.82495, -120.30115 to 36.81585, -120.30489				3,488	Cutoff Wall

Eighteenth Contract. Lower San Joaquin Levee District, SJ 26. 1510.18

Location/L.M.: Left bank of the Fresno River, right bank of Chowchilla Canal Bypass, and right bank of San Joaquin River. All sites are located on Basin 26 in Madera County, California. Locations are identified by Mile Posts (MP) which were measured using a vehicle odometer starting in the center of the Chowchilla Bypass Diversion Structure (Encl. 1).

Damages:

Unit 23, San Joaquin River, right bank

MP 0.60 Two sand boils on the landside of the levee.

- MP 0.65** Zone with several sand boils on the landside of the levee.
- MP 0.80** **Breach #1;** about 225 feet long with additional damage on either Side of the breach from MP 0.75 to 1.15 (several boils on the landside levee slopes). There was about 385 feet of fence missing.
- MP 1.10** Three sand boils on the landside of the levee.
- MP 2.40** **Breach #2;** about 460 feet long. There was about 430 feet of fence missing.
- MP 2.70** **Breach #3;** 20 feet wide.
- MP 4.55** **Breach #4;** about 228 feet long with a wide zone of damage beyond the main breach (many small breaches). There was about 1,330 feet of fence missing.
- MP 4.70** **Breach #5;** about 75 feet long.
- MP 5.60** Road damage, about 200 feet long.
- MP 5.90** Road damage, 4-inch ruts for about 40 feet.
- MP 6.00** Landside levee erosion about 58 feet long.
- MP 6.20** Road damage, 4-inch ruts for about 500 feet.
- MP 6.50** **Breach #6;** about 633 feet long. About 1,100 feet of fence missing.
- MP 6.90** **Breach #7;** about 100 feet long. About 240 feet of fence missing.
- MP 7.00** Landside erosion around 10 feet long.
- MP 8.20** Landside erosion around 110 feet long.

Unit 6, county Levees (Fresno River)

- MP 0.00** Landside erosion of the levee slope about 50 feet long and 5 feet wide.

MP 0.42 Landside erosion of the levee slope about 40 feet long and 2 feet wide.

MP 0.64 Piping/sand boil.

MP 1.17 Piping/sand boil.

Work Description:

Breaches: For levee breaches 1, 2, 4 and 6 on the San Joaquin River (Unit 23) the existing material placed during the emergency repair (Phase I and II) was removed and replaced with suitable material engineered to appropriate specifications. The berms constructed at breaches 1, 4, and 6 were removed and reconstructed with suitable material. Replaced 385 feet of missing fence in kind, at breaches #1. Replaced 430 feet of missing fence in kind, at breach #2. Replaced 1,330 feet of missing fence in kind, at breach #4. Replaced 1,100 feet of missing fence in kind at breach #6.

At breaches 3, 5, and 7, the backfill material placed during emergency repair was tested for suitability to appropriate specifications. Where the material was unsuitable, it was excavated and replaced with suitable material.

Sand/Toe Boils: Toe Boils in Unit 6, at LM 1.17; Unit 23, at LM 0.66 and LM 1.11 were repaired by 15 feet maximum length and 3 feet high gravel berm over excavated and backfilled boil section as per specifications. The lengths of repair were 100 feet, 100 feet, and 50 feet respectively.

Slope Erosion: Six areas were identified for slope erosion with lengths of 4,955 feet for Area 1; 334 feet for Area 2; 5987 feet for Area 3; 1870 feet for Area 4; 7779 feet

for Area 5; and 280 feet for Area 6. The total length of slope erosion was 21,245 feet. Compacted CL II aggregate base rock upper 0.3 foot on top of compacted fill was used to maintain 12 feet levee width. Compacted side slope fill was used into existing slope to maintain minimum 12 feet road width.

Project completed on 30 November 1997 by Earth Tech, Inc. under Contract No.

DACW05-97-C-0136; Specification NO. 9918E, Drawing No. 7-4-1860.

Nineteenth Contract. Lower San Joaquin Levee District, SJ 14 1510.19

Location/L.M.:

L.M. 0.09-0.30	WATERSIDE	San Joaquin River	Right bank
L.M. 0.30-0.70	WATERSIDE	San Joaquin River	Right bank
L.M. 0.70-1.10	WATERSIDE	San Joaquin River	Right bank
L.M. 1.10-1.20	WATERSIDE	San Joaquin River	Right bank
L.M. 1.20-1.25	WATERSIDE	San Joaquin River	Right bank

Work Description:

Placed Levee fill on waterside embankment, using filter fabric. Placed 1 foot thick Aggregate base on patrol road. Project completed by Ford Construction Company on 31 December 1997 under Contract No. DACW05-97-C-0130; Specification No. 9893E, Drawing No. SJ-4-112.

Twentieth Contract. Lower San Joaquin Levee District, SJ 21, 1510.20

SJ22.

Location/L.M.:

Unit 5, L.M. 13.98 – 16.23, Right Levee Eastside Bypass.

Unit 6: L.M. 11.85-12.55, L.M. 12.80-13.60, L.M. 15.80-16.30, L.M. 16.30-16.80, L.M. 16.80-17.00, Left Levee Eastside Bypass.

Work Description:

Unit 5: Placed and compact levee fill material on waterside slope in wavewash-damaged areas and restore slopes to pre-flood configuration.

Unit 6: All locations except for L.M. 16.30-16.80: Place and compact levee fill material on waterside slope in wavewash-damaged areas and restore slopes to pre-flood configuration. L.M. 16.30-16.80: On the waterside, excavate from crown of levee to a minimum of 1 foot below wavewash erosion, construct 5 ft. minimum key, place geotextile, and place and compact levee fill material and restore slope to pre-flood configuration.

Projects completed on 16 October 1997 by Cal, Inc. under Contract No. DACW05-97-C-0124; Specification No. 9894E, Drawing No. SJ-4-113.

Twenty-first Contract. Lower San Joaquin Levee District, SJ 19. 1510.21

Location/L.M.

Unit 9, L.M. 0.00-0.41, L.M. 5.45-5.60, L.M. 8.79-8.87, Right Bank, Owens Creek/San Joaquin River Levee.

Work Description:

Installed aggregate base on the Patrol Road between L.M. 0.00-0.41; installed a 50-foot-wide gravel berm, encapsulated in geotextile between L.M. 5.45-5.60; grading the slopes, placing fill and recompacting the embankment between L.M. 8.79-8.87.

Project completed on 25 October 1997 under Contract No. DACW05-97-C-0124;

Specification No. 9884E, Drawing No. 7-4-1856.

Twenty-second Contract. Lower San Joaquin Levee District. 1510.22

Location/L.M.

Unit 5, L.M. 6.69, L.M. 6.94, L.M. 8.55-8.60, Right Bank San Joaquin River.

Work Description:

Repaired embankment with levee fill and created a 12-foot-wide ramp at L.M. 6.69 (160'); repaired embankment with levee fill and a 12-foot-wide ramp on top at L.M. 6.94 (75'); placed embankment fill between L.M. 8.55 and 8.60. Project completed 10 October 1997 under Contract No. DACW05-97-C-0126; Specification No. 9728E, Drawing No. 7-4-1852.

Twenty-third Contract. Lower San Joaquin Levee District, 1510.23

SJ23.

Location/L.M.

Unit 2, L.M. 1.95-1.99, Left Bank Ash Slough.

Work Description:

Placed embankment fill and created a flat surface top; concrete rubble removed from existing embankment and reinstalled along the edge of the new berm with a 4-foot soil cover. Project completed on 10 October 1997 by Buddy's Contracting, under Contract No. DACW05-97-C-0126; Specification No. 9778E, Drawing No. 7-4-1854.

Flood Season and Danger Period

1600

For the purpose of this manual when flood season is referred to, it shall mean from November 15 to June 15 of each water year. In the early portion of the flood season, the San Joaquin Valley is in danger of flood from rain-flood runoff and in the latter part, there is danger of flooding from snowmelt runoff.

High Water Period. The term "high water period" for 1610 the project refers to flows that overflow the low flow channel onto the flood plain and come into contact with the levee. A more specific index is when the water surface in the Eastside Bypass reaches or exceeds the reading of 102.0 feet on the Department of Water Resources' gage located on the left bank of the Eastside Bypass near El Nido; on a reading of 63.0 feet on the USGS gage located near Newman on the left bank of the San Joaquin River at the old Hills Ferry Bridge site (just below the confluence of the San Joaquin and Merced Rivers). These gages are set on U.S.C. & G.S. mean sea level datum (1929 adjustment). For location of above-mentioned gages see Appendix B -- Location Map.

Notification of Levee Patrolling. The Department 1611 of Water Resources has a procedure of notifying local agencies when levee patrols are required for flood control works under the jurisdiction of the responsible agency. The procedure is as follows: The joint federal-state river forecasters of the Flood Operations Center in Sacramento closely follow storm and snowmelt runoff events in the Central Valley area. Project

inflows are from Pine Flat Dam on the Kings, Friant Dam on the San Joaquin, Big Dry Creek Reservoir and Diversion Channel, Fresno and Chowchilla Rivers, Merced County stream group reservoir (Burns, Bear, Owens, and Mariposa Creeks), New Exchequer Dam on the Merced, plus miscellaneous local inflow. When any river forecast of significance is issued to the district, the trustees or other responsible agency personnel are notified. They are given the river forecast, weather summary, and any other data pertinent to the situation.

After the initial notification from the Flood Operations Center, it is the district's responsibility to keep itself informed on river and weather conditions.

Streamflow Stages. Permanent arrangements should be made by the district with the Flood Operations Center, Department of Water Resources, Sacramento, to secure streamflow stages, forecasts of streamflow stages, and weather conditions of affected streams and drainage areas to properly plan adequate measures of protection. See Department of Water Resources' "Flood Emergency Operations Manual", which has been transmitted to the district.

Assurances Provided by Local Interests

1700

Assurance of cooperation by local interests to maintain and operate the project is provided by an agreement made and entered into by and between The Reclamation Board of the State of California and the Lower San Joaquin Levee District, dated

Assurances Provided by Local Interests (Continued)

1700

March 31, 1956, an agreement terminating the aforesaid agreement, dated October 7, 1958, and an agreement dated October 2, 1962, supplemental and amendatory to the agreement dated October 7, 1958. Copies of these agreements are included in this Manual, Appendix A.

Lease with the Department of Fish and Game

1705

A lease to allow the Department of Fish and Game to plant and maintain a pilot reach of the Chowchilla Canal Bypass between Avenue 14 and the Firebaugh-Madera Road was executed on JUN 14 1977. A copy of this lease is included in this Manual, Appendix A.

Formation of Maintenance Area. Sections 12878-12878.45 1710

of the 1965 State Water Code sets forth a procedure, available when necessary, whereby adequate and uniform maintenance of flood control projects may be secured. In substance, when the Department of Water Resources finds that there is a failure on the part of local agencies to properly maintain project works or that a local agency no longer desires to carry out project maintenance, a report to that effect is made to the State Reclamation Board, which is empowered, after hearing, to form a "maintenance area" and thereafter the Department of Water Resources maintains that particular unit of project works, and The Reclamation Board apportions the cost thereof upon the property benefited within the "maintenance area" on

Formation of Maintenance Area. (Continued)

1710

an ad valorem basis and the assessment is extended for collection together with county taxes on the county assessment roll.

Acceptance of the Lower San Joaquin Levee District

1800

Upon completion of the construction of any portion of the authorized Lower San Joaquin River Flood Control Project and receipt of written notice from The Reclamation Board, the district shall be responsible for the operation and maintenance of those completed portions of the project. Letters of written acceptance of completed portions of the project are on file with The Reclamation Board at Sacramento.

For Description and location of project works see Section 1500, "Construction History", and Appendix B. "Location Map".

General Rules and Procedures

2100

The general rules for maintenance and operation of the flood control works are as follows:

(1) The structures and facilities constructed by the State of California for local flood protection shall be continuously maintained in such a manner and operated at such times for such periods as may be necessary to obtain the maximum benefits.

(2) The Lower San Joaquin Levee District, the responsible local agency, which furnished assurance that it will maintain and operate completed portions of the Lower San Joaquin River Flood Control Project in accordance with regulations as set forth by The Reclamation Board and the United States, shall appoint an authorized agent for the District, hereinafter called the "Superintendent", who shall be responsible for the development and maintenance of, and directly in charge of, an organization responsible for the efficient operation and maintenance of all of the structures and facilities during flood periods and for continuous inspection and maintenance of the project works during periods of low water, all without cost to the State of California.

(3) The Department of Fish and Game, the agency which planted a pilot reach of the Chowchilla Canal Bypass for wildlife habitat, shall appoint an authorized agent, hereinafter called the

"Area Manager" who shall be responsible for the maintenance of the wildlife habitat in the pilot reach of the Chowchilla Canal Bypass.

(4) A reserve supply of materials needed during a flood emergency shall be kept on hand at all times.

(5) No encroachment or trespass, which will adversely affect the efficient operation or maintenance of the project works, shall be permitted upon the rights of way for the protective facilities. The Lower San Joaquin Levee District shall cooperate with The Reclamation Board in processing permits for construction of encroachments within the limits of the flood control system.

(6) No improvement shall be passed over, under, or through the walls, levees, improved channels or floodways, nor shall any excavation or construction be permitted within the limits of the project right of way, nor shall any change be made in any features of the works without prior determination by The Reclamation Board, or its authorized representative, that such improvement, excavation, construction, or alteration will not adversely affect the functioning of the protective facilities. Such improvements or alterations as may be found to be desirable and permissible under the above determination shall be constructed in accordance with standard engineering practice and to the design criteria of the project. Advice

regarding the effect of proposed improvements or alterations on the functioning of the project and information concerning methods of construction acceptable under standard engineering practice shall be obtained from The Reclamation Board, or if otherwise obtained, shall be submitted for the Board's approval. Drawings or prints showing such improvements or alterations as finally constructed shall be furnished The Reclamation Board after completion of the work.

The above statement shall not apply to any work of interior irrigation or drainage upon reclaimed land, which work is not actually on, through, or adjoining any portions of the flood control works under the jurisdiction of The Reclamation Board.

(7) It shall be the duty of the Superintendent to submit a semiannual report to The Reclamation Board covering inspection, maintenance, and operation of the protective works.

(8) It shall be the duty of the Area Manager to submit a semiannual report to The Reclamation Board covering inspection, maintenance, and operation of the wildlife habitat in the pilot reach of the Chowchilla Canal Bypass.

(9) The Reclamation Board or its authorized representative shall have access at all times to all portions of the protective works.

(10) Maintenance measures or repairs which The Reclamation Board deems necessary shall be promptly taken or made.

General Rules and Procedures (Continued)

2100

(11) Appropriate measures shall be taken by local authorities to insure that the activities of all local organizations operating public or private facilities connected with the protective works are coordinated with those of the Superintendent's organization during flood periods.

Clarification of Duties

2200

Most of the general duties outlined above are self-explanatory; however, amplification of items (2), (6), (7), and (10) is considered advisable to insure common interpretation. Therefore, the following items furnish suggestions for complying with those requirements:

Duties of Superintendent. Details of the duties of the Superintendent will be developed in other portions of the manual. The general duties should include the training of key personnel in such a manner that all contingencies may be handled in an expeditious manner. The Superintendent should ascertain that all of his key men have read those portions of the operation and maintenance manuals pertaining to their duties. The Superintendent should have available the names, addresses, and telephone numbers of all his key men and a reasonable number of substitutes therefor. These key men should, in turn, have similar data on all of the men necessary for assistance in the discharge of their duties. The key men should include the following:

Duties of Superintendent. (Continued)

2210

(1) An assistant to act for and in the absence of the Superintendent.

(2) Section leaders in sufficient number to lead maintenance patrol work of the entire levee during flood fights. High qualities of leadership and responsibility are necessary for these positions.

The name and address of the Superintendent appointed by local interests to be responsible for the continuous inspection, operation, and maintenance of the project works shall be furnished to The Reclamation Board, and in case of any change of Superintendent, The Reclamation Board shall be so notified.

Duties of The Department of Fish and Game Area Manager

2215

Details of the duties of the Wildlife Manager will be developed in other portions of the manual. The general duties should include the training of key personnel in such a manner that all contingencies may be handled in an expeditious manner. The Area Manager should ascertain that all of his key personnel have read those portions of the operation and maintenance manuals pertaining to their duties. The Area Manager should have available the names, addresses, and telephone numbers of all his key personnel and a reasonable number of substitutes therefor. These key personnel should, in turn, have similar data on all of the personnel necessary for assistance in the discharge of their duties. The key personnel should include the following:

Duties of the Department of Fish and Game Area

Manager (Continued)

2215

(1) An assistant to act for and in the absence of the Area Manager.

(2) Section leaders in sufficient number to lead maintenance patrol work of the pilot reach during flows which reach the wildlife habitat plantings. High qualities of leadership and responsibility are necessary for these positions.

The name and address of the Area Manager appointed by the Department of Fish and Game to be responsible for the continuous inspection and maintenance of the wildlife habitat in the project works within the pilot reach shall be furnished to The Reclamation Board and to the Lower San Joaquin Levee District, and in case of any change of the Area Manager, The Reclamation Board and the Lower San Joaquin Levee District shall be so notified.

Proposed Improvements or Alterations. Drawings or 2220
prints of proposed improvements or alterations to the existing flood control works must be submitted for approval to The Reclamation Board, sufficiently in advance of the proposed construction to permit adequate study and consideration of the work. Drawings or prints, in duplicate, showing any improvements or alterations as finally constructed should be furnished to The Reclamation Board after completion of the work.

Semiannual Inspection. The Superintendent of the

2230

district shall make semiannual inspections of all control structures, levees, irrigation and drainage structures, channels, and miscellaneous facilities of the authorized Lower San Joaquin Flood Control Project. These reports should be submitted within a 10-day period prior to June 1 and December 1 of each year and will include all dated copies of reports of inspections made during the period of report. Report of his findings of these inspections shall be made to the Department of Water Resources and The Reclamation Board. A form of the semiannual report is included as Appendix G of this manual.

Inspection by the Area Manager of the Department of

2235

Fish and Game who shall make semiannual inspections of shrubs, trees, and fences in the pilot study reach in the authorized Lower San Joaquin River Flood Control Project. These reports should be submitted within a 10-day period prior to June 1 of each year and will include all dated copies of reports of inspections made during the period of report. Report of his findings of these inspections shall be made to the Department of Water Resources, The Reclamation Board, and the Lower San Joaquin Levee District. A form of the semiannual report is included as Appendix G of this manual.

Coordination with Operation of Public and Private

2240

Facilities. The Superintendent should have specific knowledge of all pertinent public utilities and private facilities located within the district for which he is responsible in order to coordinate all phases of the flood-fighting activities. Such knowledge should be extended to include the names, telephone numbers, and addresses of all persons who might necessarily be contacted in case of damage to highway roads and bridges, railroads, powerlines, telephone lines, gas lines or structures.

Coordination with Operation of Public and Private

2245

Facilities by The Department of Fish and Game. The Area Manager should have specific knowledge of all pertinent public utilities and private facilities of the pilot reach located within the district. Such knowledge should include the names, telephone numbers, and addresses of all persons who might necessarily be contacted in case of damage to highway roads and bridges, powerlines, telephone lines, gas lines or structures.

Safety Requirements. Since patrolling of levees,

2250

maintenance of channels, operation of irrigation or drainage structures, and operation and maintenance of the automatic control structures will expose operating personnel to certain hazards, it is suggested that all pertinent safety codes be incorporated into operating procedures and that permanent operating personnel or temporarily employed personnel be

given the necessary protective equipment and apparel together with instructions to conduct their work without undue exposure to existing hazards. Watchmen or patrols employed during flood periods should consist of teams of not less than two men.

Inspection Procedure. The Department of Water Resources 2260 will make semiannual inspections of all features of the Lower San Joaquin River Flood Control Project and report its findings to the Lower San Joaquin Levee District and The Reclamation Board. Supervisory powers and duties of the Department of Water Resources are applicable to all features of the Lower San Joaquin River Flood Control Project operated and maintained by the district.

The following procedure is used in inspecting the flood control project maintained and operated by the district:

Inspection Procedure. Personnel of the Department of Water Resources make a detailed inspection in the spring and fall of each year and make a report on any required maintenance. The inspection objectives are to determine if the following items are being adhered to:

(1) That all brush, trees, and wild growth other than sod are removed from the levee crown and slopes.

(2) That all weeds, grass, and debris on the levees have been burned during the appropriate season where not dangerous or impractical. Cautions must be exercised to prevent burning authorized wildlife habitat in the pilot

Inspection Procedure. (Continued)

2260

study reach. Therefore, the Department of Fish and Game will cooperate in burning as set forth in Section 3215(8).

(3) That all grass and weeds on the levee have been removed by other means than burning where removal by burning is dangerous or impracticable. This applies only where burning would constitute a hazard to improvements.

(4) That all burrowing animals have been exterminated.

(5) That all caves, sloughs, burrows, holes, slips or other damaged portions of the levees have been repaired.

(6) That no revetment work or stone slope protection have been displaced, washed out or removed.

(7) That the crown of the levee is well shaped and maintained and that unauthorized vehicular travel is restricted.

(8) That stock grazing on the levees is restricted to conditions and seasons when the levee would not be seriously scarred or otherwise damaged thereby.

(9) That encroachments are not being erected on the levees which would hinder travel by authorized patrol vehicles.

(10) Prevent the erection of structures on, additions to, or alterations of, the levees unless authorized by permit from The Reclamation Board.

(11) That all irrigation and drainage structures through the levee are in good working condition; however,

a sand levee will be allowed at the head of the cross drain just upstream of the Firebaugh-Madera Road during the nonflood season.

(12) That an active channel maintenance program is being carried out.

(13) That all bridges of the project are in good condition.

(14) That all control structures are in good working condition.

(15) That all drainage ditches and culverts are clear of brush and wild growth, debris has been removed, and all caves, sloughs, holes, slips or other damaged portions of ditches have been repaired, and that they function properly. Growth in the low water channel of the pilot reach shall be carefully monitored by the Department of Water Resources Inspectors. Should growth in the low water channel in the opinion of these inspectors require remedial measures, the Department of Fish and Game will work with the Lower San Joaquin Levee District to correct any problem.

(16) In the pilot study reach, authorized plantings will be allowed in channels in accordance with the approved plans. The Department of Fish and Game will make certain that authorized plantings do not significantly decrease the channel capacity.

(17) That all fencing and gates that have been damaged have been repaired and work properly.

(18) That all damaged staff gages have been repaired.

(19) That all damaged mileage markers have been repaired and are in their proper location.

(20) That all automatic control structures and appurtenances are free of debris, damaged portions have been repaired, maintenance has been performed, and they function properly.

Following this detailed inspection, a joint field inspection is made with representatives of the Lower San Joaquin Levee District and the Department of Water Resources to review and discuss the inspection report. For the pilot study reach, the Department of Fish and Game representative will make a joint inspection with the Department of Water Resources and Levee District personnel to review and discuss the Department of Fish and Game inspection report for the pilot study reach.

Periodic Inspections. Inspections should be made by the Superintendent at the times specified below. 2270

(1) During the month of October which is prior to the beginning of the flood season.

(2) Immediately following each major high-water period.

(3) In the absence of high water, at periods not exceeding 90 days.

(4) At intermediate times as necessary.

Game. Inspections should be made by the Area Manager at the times specified below. (The Lower San Joaquin Levee District personnel will be invited to accompany the Area Manager on his inspection during the month of October and immediately following each major high-water period.):

(1) During the month of October, which is prior to the beginning of the flood season.

(2) Immediately following each major high-water period.

(3) In the absence of high water, at periods not exceeding 90 days.

(4) At intermediate times as necessary.

Checklists

2300

The checklists shown in Appendix F should be used in each inspection to insure that no features of the protective system are overlooked. Items requiring maintenance should be noted thereon; if items are satisfactory, they should be so indicated by a check.

Drawings

2400

Detailed "As Built" drawings^{5/} of the project works have been transmitted to the district on completion of the individual contracts (see Section 1500 - Construction History). These

^{5/} Originals of "As Built" drawings are on file at the Reclamation Board office in Sacramento.

Drawings (Continued)

2400

drawings shall be kept on file by the district for easy reference. The drawings are necessary for the operation and maintenance of the protective works.

Wildlife Habitat Drawings

2405

Detailed "As Built" drawings for the wildlife habitat facilities have been transmitted to the district. These drawings shall be kept on file by the district for easy reference. The drawings are necessary for the operation and maintenance of the wildlife habitat pilot reach.

LEVEES

3000

Description

3100

The levees described in this manual extend along and adjacent to the San Joaquin River from the Merced River to a point approximately 3 miles upstream from the Mariposa Bypass, from the junction with the Eastside Bypass at Sand Slough interchange pool to a point approximately 2.2 miles upstream, and from the junction with the Chowchilla Canal Bypass to Gravelly Ford; along and adjacent to the right bank of Salt Slough from the junction with the San Joaquin River to a point approximately 2.5 miles upstream; along and adjacent to the alignment of the Eastside Bypass from the San Joaquin River to the Chowchilla Canal Bypass; along and adjacent to Bear and Owens Creeks from the Eastside Bypass to the East Side Canal; along the alignment of the left bank of East Side Canal from the Eastside Bypass to a point approximately 1.8 miles northwest of Bear Creek; along and adjacent to the alignment of the Mariposa Bypass from the San Joaquin River to the Eastside Bypass; along and adjacent to Ash and Berenda Sloughs from the Eastside Bypass to the Chowchilla Canal; and along and adjacent to the alignment of the Chowchilla Canal Bypass from its junction with the Eastside Bypass to the San Joaquin River.

This system comprises a total distance of approximately 193.1 linear miles of levee as shown on the map showing levee units, Appendix C. These levees are with slopes of

Description (Continued)

3100

one on three waterside and one on two landside with crown widths varying from 12, 20, 24, to 28 feet. Levees constructed along streams have been provided with a freeboard of 3 feet above maximum design water surface elevation and on bypass levees the freeboard is 4 feet.

Patrol roads have been provided on the levee crown. These roads are 4-inch-thick crushed mineral aggregate surfacing with 3 percent cross slope from the levee centerline to the shoulder. The 12-foot-wide levee crown has a 10-foot-wide roadway with 1-foot taper at the shoulder and the 20-foot-wide levee crown has a 12-foot-wide roadway with 4-foot taper.

The necessary drainage structures, road approaches and access roads, bank protection, and appurtenances were also included in this work. For more complete detail in construction of the above-mentioned levees and appurtenances refer to the "As Built" drawings.

Maintenance

3200

General. The project shall be so maintained that the serviceability of the structures in flood periods will be assured. Periodic inspections shall be made by the Superintendent to see that proper maintenance measures are carried out. These inspections shall be made immediately prior to the beginning of the flood season, immediately following each major high-water period, and other times at intervals not

exceeding 90 days or oftener if needed to insure proper maintenance of the project.

Conditions warranting maintenance force action are as follows:

(1) Settlement, sloughing, or material loss of grade of levee cross section;

(2) Caving on either landside or riverside of the levee which might affect the stability of the levee section;

(3) Seepage, saturated areas, or sand boils;

(4) Drainage pipes through the levee and gates attached thereto that may cause trouble during high water;

(5) Displacement of revetment or riprap;

(6) Unauthorized activity around project levees such as burning of grass and weeds during inappropriate season which will retard or destroy the growth of the sod cover;

(7) Access roads to and on the levee which need repair;

(8) Cattle guards and gates needing replacement or repairs;

(9) Levee crown roadway needing reshaping for proper drainage;

(10) Unauthorized grazing or vehicular traffic on the levees:

(11) Unapproved encroachments on the levee or within the right of way which might endanger the structure or hinder its proper functioning during times of emergency.

General. Periodic inspections shall be made by the Area Manager to see that proper maintenance measures are carried out. These inspections shall be made immediately prior to the beginning of the flood season, immediately following each major high-water period, and other times at intervals not exceeding 90 days or oftener if needed to insure proper maintenance of the project.

Conditions warranting maintenance force action by the Department of Fish and Game within the pilot study reach are as follows:

1. Downed trees, bushes, and limbs shall be removed;
2. Dead limbs and trees shall be pruned and removed;
3. Growth of trees and shrubs outside the authorized limits within the pilot study reach shall be removed.
4. Sand deposits caused by trees and shrubs shall be removed.
5. The sand dam at the head of the cross channel just upstream of the Firebaugh-Madera Road shall be removed at the beginning of the flood season. This dam may be replaced at the end of the flood season.
6. Breakaway fencing shall be kept in good repair.
7. Trash and debris shall be removed.
8. When notified by the Lower San Joaquin Levee District that the District has planned burning the pilot study reach, reasonable precautions will be taken by the Department of Fish and Game to protect the wildlife

(Continued)

habitat plants; the District will employ reasonable safety precautions so that fire is not a danger to the plantings.

9. The Department of Fish and Game will prevent the rodent population from exceeding the level which existed prior to the planting of the 5.7-mile experimental reach. Should the rodent population exceed that level, the Department of Fish and Game will work with the Lower San Joaquin Levee District in a proportionate program to mitigate any problem caused by the rodents. The Lower San Joaquin Levee District will continue to provide its normal rodent control program in this reach.
10. The Department of Fish and Game will work with the Lower San Joaquin Levee District in alleviating any maintenance problems caused by the Department of Fish and Game planting program.
11. If mosquito abatement becomes necessary at any ponds created and maintained by the Department of Fish and Game, Fish and Game will be responsible for seeing that an abatement program is implemented.

Special Instructions. A list of items in conjunction with and directly related to levee maintenance is as follows: 3220

Revetment Work. (1) Where scour, wash, settlement failure of a portion of the originally provided stone 3221

protection has occurred, the scour or wash shall be filled with earth free from organic material, placed in layers and compacted as directed under "Repairs to Levee and Embankment" of this section, and additional stone placed so that the stone protection is brought up to its original section. In case of emergency when stone is not readily available, sandbags or bags filled with gravel may be used to make temporary repairs. When permanent repair of the stone protection is made, the stone used shall be as similar to the original kind and gradation as possible and shall be placed to the original thickness as shown on the "As Built" drawings.

(2) When it is indicated that stone protection on the levee or bank is required beyond the limits of the original construction or in reaches not originally provided with such protection, the district will provide for such by proper sloping of the banks and placement of stone protection as needed to protect completed work. The work shall be done in accordance with standard engineering practice. Drawings or prints showing such improvements or alterations shall be furnished the State Reclamation Board after completion of the work.

Care of Vegetation on Levee. (1) A good growth of sod is the desired vegetative cover on the levee and should be encouraged by necessary maintenance practices.

(2) Brush, trees, and other wild growth shall be cleared from the levee crown and slopes. A strip of brush

and small trees may be retained, through application to the Reclamation Board, on the flood plain within 10 feet of the levee on the waterward side where necessary to prevent erosion and wavewash.

(3) Weeds, grasses, and debris on the levee may be burned during appropriate seasons where not dangerous or impractical in order to permit the detection of cracks, holes, burrows, slips, and other damage and to permit the extermination of burrowing animals. Burning permits shall be obtained from the proper local authority by the Superintendent before burning is started. Where burning is dangerous or impracticable, the levee slopes shall be mowed to remove the tall grass and weeds.

Repairs to Levee Embankment. Fill needed to bring 3223

the levee section back to original cross section shall be placed in layers not exceeding 6 inches in thickness and compacted in accordance with the original specifications. The fill material shall be free from brush, roots, sod or other unsuitable material and be near optimum moisture content for compaction. Stripping of existing vegetative growth and scarifying the underlying material to a depth of 6 inches shall be done where necessary before new fill material is placed. New sod cover should be established as soon as possible by seeding after the first fall rains.

Depredations of Burrowing Animals. Burrowing

3224

animals such as muskrats, ground hogs, ground squirrels, moles, and gophers found in the levee should be exterminated after which the dens and runways should be opened up and backfilled with compacted material or pressure grouted with a cement grout mixture. Levees kept properly cleared are not seriously menaced by burrowing animals as they prefer areas where high grass, weeds, and brush are found. Several methods of extermination are found effective, such as trapping, baiting, and poison gases depending on the type of animal present and the time of year the work is done. Advice concerning the best methods can be obtained from the County Agricultural Agent.

Livestock Grazing on Levees. The landowners ad-

3225

joining the project levees have agreed to pay for additional maintenance costs of the levee due to livestock grazing. The major damage occurs during the rainy season when the levees are wet. The owners should be encouraged to keep the livestock off the levees during this period. Where damage occurs, the landowner adjoining the damaged section is the responsible party whether he owns the livestock or is leasing his land to another party.

Patrol Roads on Levees and Access Roads. Patrol

3226

roads on the levees and access roads to the levees shall be maintained in such a condition that they will be serviceable at all times to vehicular travel necessary for maintenance or flood-fighting operations.

Merced has agreed to assume the responsibility for the maintenance of the roadway surfaces and shoulders of the roads on the following reaches of levee:

(1) The roadway on the levee on the right bank of the Eastside Bypass between McNamara Road and Sandy Mush Road.

(2) The roadway on the levee on the left bank of the Eastside Bypass between a point approximately 400 feet west of McNamara Road and a line common to the United States-McNamara Road and a line common to the United States-McNamara Ranch properties.

(3) The roadway on the levee along the south side of the interchange area of the Eastside Bypass between the West Washington Bridge and the Sand Slough Bridge.

(4) The roadway on the levee along the eastern approach to the Hills Ferry Bridge.

Checklists 3300

A suggested form to use in the inspection of levees is located in Appendix F of this Manual. (See pages F-1, F-2 and F-3)

Operation 3400

During "high-water periods" (see Section 1600) the levees shall be patrolled continuously to locate possible sand boils or unusual wetness of the landward slope of the levee and to be certain that:

- (1) There are no indications of slides or sloughs developing;
- (2) Wavewash or scouring action is not occurring;

- (3) No low reaches of levee exist which may be overtopped;
- (4) No other conditions exist which might endanger the levee.

Appropriate advance measures shall be taken to insure the availability of adequate labor and materials to meet anticipated contingencies. Immediate steps will be taken to control any condition which endangers the levee and to repair the damaged section.

Patrols. It shall be the duty of the district to keep 3410 in contact with the Department of Water Resources' Flood Operations Center in Sacramento during all periods of flood danger, and to maintain a patrol of the project works in the area that floodflows have overflowed the low flow channel onto the flood plain and have come into contact with the levee (See Section 1600 -- "Flood Season and Danger Period").

Recommendations for setting up levee patrols and flood-fight techniques can be found in the Department of Water Resources' "Emergency Flood Operations Manual" under Sections 5500 -- Suggestions for Organizing Levee Patrols and 5600 -- Methods of Flood Fighting, respectively.

The Flood Operations Center is responsible for data collection and issuance of a joint river forecast with the National Weather Service and coordinates with the Corps of Engineers, Sacramento, District Engineer, and other agencies to keep appraised of the current situation in accordance with

Patrols. (Continued)

3410

the terms of the Memorandum of Understanding dated
1 November 1956, between the Division Engineer, U. S. Army
Engineer Division, South Pacific, and the Director,
Department of Water Resources, State of California, for
cooperative action during flood emergencies.

Description

4100

This section of the manual deals with the numerous irrigation and drainage structures which pass through, under, or over the levees to provide for the passage of water from the waterway to the protected area for irrigation or other usage or from the protected area to the waterway for drainage purposes. In general, these structures are corrugated metal pipes, reinforced concrete box culverts, steel pipes, or reinforced concrete pipes. Culverts have been constructed with reinforced concrete endwalls and headwalls. Cutoff walls have been provided of corresponding material as the culvert. Flow through culverts are controlled on the river side either with positive closure devices accessible during high water or with automatic flap gates.

The positive closure devices are gate riser units which consist of a corrugated metal pipe or reinforced concrete riser housing with slide gate and lift assembly, wood cover, and miscellaneous metal work. The slide gate lifting device is a threaded steel rod system with either the handwheel or pedestal-type lift. Miscellaneous metal work consists of locking device, ladder, gate lift support, and vent pipe. The district shall supply lock and key to secure the cover of the riser unit.

Automatic flap gates are cast steel flap gates attached at the discharge end of drainage structure which is on the waterside of the levee embankment.

Description (Continued)

4100

Drainage and irrigation structures which extend through the levee are listed as follows:

UNIT NO. 1

San Joaquin River - Right Bank

<u>Levee Mile</u>	<u>Size of Pipe</u>	<u>Description</u>	<u>Feet Below Crown</u>
0.02*	24" CMP	Flap Gate W.S.	8.5
0.35*	36" CMP	Flap Gate W.S.	15.5
0.62*	24" CMP	Flap Gate W.S.	6.6
0.87*	24" CMP	Flap Gate W.S.	6.6
0.95*	24" CMP	Flap Gate W.S.	5.9
1.17*	24" CMP	Flap Gate W.S.	5.6
1.34*	36" CMP	Flap Gate W.S.	9.8
1.48*	24" CMP	Flap Gate W.S.	9.5
1.69*	24" CMP	Flap Gate W.S.	11.6
1.83*	36" CMP	Flap Gate W.S.	11.2
1.98*	24" CMP	Flap Gate W.S.	7.9
2.08*	24" CMP	Flap Gate W.S.	8.0
2.25*	36" CMP	Flap Gate W.S.	9.6
2.52*	24" CMP	Flap Gate W.S.	7.0
2.70*	24" CMP	Flap Gate W.S.	5.7
3.16*	36" CMP	Flap Gate W.S.	7.1
3.50*	36" CMP	Flap Gate W.S.	6.8
3.95*	30" CMP	Flap Gate W.S.	4.4
4.16*	48" CMP	Flap Gate W.S.	10.1
4.27*	24" CMP	Flap Gate W.S.	9.9
4.72*	24" CMP	Flap Gate W.S.	7.9
5.05*	24" CMP	Flap Gate W.S.	5.8
5.95*	24" CMP	Flap Gate W.S.	6.5
6.13*	48" CMP	Flap Gate W.S.	9.0
6.40*	24" CMP	Flap Gate W.S.	7.6
6.64*	24" CMP	Flap Gate W.S.	7.7
6.90*	36" CMP	Flap Gate W.S.	8.2
7.21*	24" CMP	Flap Gate W.S.	3.1
7.46*	24" CMP	Flap Gate W.S.	6.0
7.69*	24" CMP	Flap Gate W.S.	8.0
8.07*	24" CMP	Flap Gate W.S.	6.3
8.41*	24" CMP	Flap Gate W.S.	4.4
8.61*	24" CMP	Flap Gate W.S.	6.9
8.93*	24" CMP	Flap Gate W.S.	7.2
9.00*	36" CMP	Flap Gate W.S.	6.6
9.03*	24" CMP	Flap Gate W.S.	7.2
9.37*	24" CMP	Flap Gate W.S.	7.6
9.67*	24" CMP	Flap Gate W.S.	0.6
9.93*	24" CMP	Flap Gate W.S.	6.0
10.23*	24" CMP	Flap Gate W.S.	7.3

Description (Continued)

4100

UNIT NO. 1 (Continued)

<u>Levee Mile</u>	<u>Size of Pipe</u>	<u>Description</u>	<u>Feet Below Crown</u>
10.72*	24" CMP	Flap Gate W.S.	4.2
10.72*	24" CMP	Flap Gate W.S.	4.2
11.00*	24" CMP	Flap Gate W.S.	4.8
11.18*	24" CMP	Flap Gate W.S.	3.6
11.48*	24" CMP	Flap Gate W.S.	8.7
11.76*	24" CMP	Flap Gate W.S.	15.0
12.11*	24" CMP	Flap Gate W.S.	10.5
12.94*	24" CMP	Flap Gate W.S.	7.5
13.48*	24" CMP	Flap Gate W.S.	12.1
13.58*	24" CMP	Flap Gate W.S.	12.1
13.81*	24" CMP	Flap Gate W.S.	8.9
14.21*	24" CMP	Flap Gate W.S.	11.9
14.65*	24" CMP	Flap Gate W.S.	7.7
15.29*	24" CMP	Flap Gate W.S.	6.6
15.57*	24" CMP	Flap Gate W.S.	6.5
15.81*	24" CMP	Flap Gate W.S.	9.2
16.09*	24" CMP	Flap Gate W.S.	9.6
16.15*	24" CMP	Flap Gate W.S.	12.7
16.72*	24" CMP	Flap Gate W.S.	9.4
17.01*	24" CMP	Flap Gate W.S.	9.6
17.19*	24" CMP	Flap Gate W.S.	11.0
17.26*	24" CMP	Flap Gate W.S.	13.8
17.53*	24" CMP	Flap Gate W.S.	7.5
18.19*	24" CMP	Flap Gate W.S.	10.0
18.45*	24" CMP	Flap Gate W.S.	8.1
18.79*	24" CMP	Flap Gate W.S.	10.4
19.17*	24" CMP	Flap Gate W.S.	7.4
19.34*	60" CMP	Flap Gate W.S.	15.5
19.54*	24" CMP	Flap Gate W.S.	7.1
19.81*	24" CMP	Flap Gate W.S.	6.5
20.18*	24" CMP	Flap Gate W.S.	7.2
20.27*	36" CMP	Flap Gate W.S.	8.0
20.71*	30" CMP	Flap Gate W.S.	8.9
21.40*	36" CMP	Flap Gate W.S.	5.6
21.76*	24" CMP	Flap Gate W.S.	4.7
22.13*	24" CMP	Flap Gate W.S.	7.2

UNIT NO. 2

San Joaquin River - Left Bank

<u>Levee Mile</u>	<u>Size of Pipe</u>	<u>Description</u>	<u>Feet Below Crown</u>
.24*	24" CMP	Flap Gate W.S.	8.8
.67*	24" CMP	Flap Gate W.S.	12.9
1.02*	24" CMP	Flap Gate W.S.	6.6

Description (Continued)

4100

UNIT NO. 2 (Continued)

<u>Levee Mile</u>	<u>Size of Pipe</u>	<u>Description</u>	<u>Feet Below Crown</u>
1.22*	24" CMP	Flap Gate W.S.	5.6
1.34*	36" CMP	Flap Gate W.S.	11.6
1.62*	24" CMP	Flap Gate W.S.	8.1
1.86*	24" CMP	Flap Gate W.S.	8.7
2.30*	24" CMP	Flap Gate W.S.	4.3
2.32*	24" CMP	Flap Gate W.S.	4.3
2.59*	24" CMP	Flap Gate W.S.	5.9
2.96*	24" CMP	Flap Gate W.S.	8.0
3.29*	24" CMP	Flap Gate W.S.	10.4
3.62*	24" CMP	Flap Gate W.S.	8.0
3.95*	24" CMP	Flap Gate W.S.	6.7
5.43*	24" CMP	Flap Gate W.S.	6.5
6.06*	24" CMP	Flap Gate W.S.	10.1
6.50*	24" CMP	Flap Gate W.S.	5.7
7.05*	24" CMP	Flap Gate W.S.	10.2
7.77*	24" CMP	Flap Gate W.S.	6.0
8.16*	24" CMP	Flap Gate W.S.	7.1
8.48*	24" CMP	Flap Gate W.S.	7.5
9.86*	24" CMP	Flap Gate W.S.	6.7
9.02*	36" CMP	Flap Gate W.S.	5.8
9.20*	24" CMP	Flap Gate W.S.	5.9
9.46*	24" CMP	Flap Gate W.S.	7.0
10.12*	24" CMP	Flap Gate W.S.	10.2
10.81*	24" CMP	Flap Gate W.S.	6.0
11.17*	24" CMP	Slide Gate W.S.	6.0
11.43*	24" CMP	Slide Gate W.S.	6.0
13.32*	24" CMP	Slide Gate W.S.	4.6

UNIT NO. 3

San Joaquin River - Right Bank

.43*	24" CMP	Flap Gate W.S.	9.8
.77*	24" CMP	Flap Gate W.S.	7.8
1.72*	24" CMP	Flap Gate W.S.	6.0
2.05*	36" CMP	Flap Gate W.S.	3.0

UNIT NO. 4

San Joaquin River - Left Bank

.27*	36" CMP	Flap Gate W.S.	14.7
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UNIT NO. 5

Eastside Bypass - Right Bank

<u>Levee Mile</u>	<u>Size of Pipe</u>	<u>Description</u>	<u>Feet Below Crown</u>
0.07*	24" CMP	Flap Gate W.S.	6.8
0.30*	24" CMP	Flap Gate W.S.	5.6
0.59*	30" CMP	Flap Gate W.S.	5.4
0.65*	36" CMP	Flap Gate W.S.	9.8
0.84*	24" CMP	Flap Gate W.S.	13.3
1.44*	36" CMP	Flap Gate W.S.	16.5
2.85*	24" CMP	Flap Gate W.S.	14.0
3.33*	24" CMP	Flap Gate W.S.	13.3
3.67*	24" CMP	Flap Gate W.S.	13.4
4.02*	24" CMP	Flap Gate W.S.	15.2
4.27*	24" CMP	Flap Gate W.S.	8.7
4.54*	24" CMP	Flap Gate W.S.	10.0
4.89*	24" CMP	Flap Gate W.S.	10.2
5.15*	24" CMP	Flap Gate W.S.	10.1
5.58*	24" CMP	Flap Gate W.S.	7.4
6.35*	24" CMP	Flap Gate W.S.	11.0
7.36*	24" CMP	Flap Gate W.S.	9.9
7.58*	24" CMP	Slide Gate W.S.	18.9
8.44*	24" CMP	Flap Gate W.S.	14.8
8.83*	Deadman Creek Drainage Ditch Structure	2 Slide Gates Land Side	9.8
8.90*	48" CMP	East Side Canal Siphon	12.6
9.26*	36" CMP	Slide Gate W.S.	11.9
10.05*	24" CMP	Slide Gate W.S.	13.9
11.48*	2-48" CMP	Slide Gates W.L.	12.0
11.63*	24" CMP	Flap Gate W.S.	9.4
11.99*	24" CMP	Flap Gate W.S. Flash Board Attach L.S.	10.1
12.38*	24" CMP	Flap Gate W.S. Flashboard Attach. L.S.	8.6
12.87*	24" CMP	Flap Gate W.S. Flashboard Attach. L.S.	8.5
13.40*	48" CMP	Flap Gate W.S. Flashboard Attach. L.S.	6.0
14.72*	24" CMP	Flap Gate W.S.	9.9
13.83*	24" CMP	Flap Gate W.S.	10.5
14.44*	24" CMP	Flap Gate W.S.	10.7
15.09*	36" CMP	Flap Gate W.S.	9.0
15.74*	24" CMP	Flap Gate W.S.	10.2

Description (Continued)

4100

UNIT No. 5 (Continued)

<u>Levee Mile</u>	<u>Size of Pipe</u>	<u>Description</u>	<u>Feet Below Crown</u>
15.77*	36" CMP	Slide Gate W.S.	7.7
15.80*	24" CMP	Flap Gate W.S.	10.6
16.67*	24" CMP	Flap Gate W.S.	10.2
17.20*	24" CMP	Flap Gate W.S.	9.4
17.52*	24" CMP	Flap Gate W.S.	9.1
18.07*	24" CMP	Flap Gate W.S.	11.8
18.68	24" CMP	Flap Gate W.S.	8.2
19.11	24" CMP	Flap Gate W.S.	10.4
19.15	24" CMP	Flap Gate W.S.	10.5
19.46	24" CMP	Flap Gate W.S.	9.4
19.50	24" CMP	Flap Gate W.S.	10.0
19.84	24" CMP	Flap Gate W.S.	8.5
19.92	36" CMP	Flap Gate W.S.	7.2
20.05	36" CMP	Flap Gate W.S.	7.3
20.18	36" CMP	Flap Gate W.S.	7.8
20.59	24" CMP	Flap Gate W.S.	8.8
21.08	24" CMP	Flap Gate W.S.	10.1
21.42	36" CMP	Flap Gate W.S.	10.0
21.81	24" CMP	Flap Gate W.S.	10.8
21.85	24" CMP	Flap Gate W.S.	9.0
22.19	24" CMP	Flap Gate W.S.	8.6
22.46	24" CMP	Flap Gate W.S.	8.8
22.79	24" CMP	Flap Gate W.S.	10.5
22.94	24" CMP	Flap Gate W.S.	9.5
23.15	30" CMP	Flap Gate W.S.	9.5
23.62	30" CMP	Flap Gate W.S.	9.9
23.85	36" CMP	Flap Gate W.S.	9.4
24.18	24" CMP	Flap Gate W.S.	9.4
24.46	24" CMP	Flap Gate W.S.	9.5
24.82	24" CMP	Flap Gate W.S.	9.1
24.87	30" CMP	Flap Gate W.S.	8.7
25.43	30" CMP	Flap Gate W.S.	9.2
25.51	30" CMP	Flap Gate W.S.	9.8
25.53	30" CMP	Flap Gate W.S.	9.9
26.11	24" CMP	Flap Gate W.S.	9.4
26.29	36" CMP	Flap Gate W.S.	10.2
26.85	24" CMP	Flap Gate W.S.	9.7
26.87	24" CMP	Flap Gate W.S.	9.6
27.22	36" CMP	Flap Gate W.S.	9.2
28.17	24" CMP	Flap Gate W.S.	9.2
28.69	30" CMP	Flap Gate W.S.	8.6
28.95	48" RCP	Rodunder siphon	11.7
		Slide Gate L.S.	
29.49	36" CMP	Flap Gate W.S.	7.5
29.72	2.5'x2.5' RCBC	Flap Gate W.S.	9.0
30.04	2.5'x2.5' RCBC	Flap Gate W.S.	10.1
30.96	2.5'x2.5' RCBC	Flap Gate W.S.	10.3

Description (Continued)

4100

UNIT NO. 5 (Continued)

<u>Levee Mile</u>	<u>Size of Pipe</u>	<u>Description</u>	<u>Feet Below Crown</u>
31.19	2.5'x2.5' RCBC	Flap Gate W.S.	10.4
31.64	4'x3' RCBC	Flap Gate W.S.	11.0
31.71	2.6'x2.6' RCBC	Flap Gate W.S.	10.0
		Headwall Flashboard Attachment L.S.	
32.22	2.6'x2.6' RCBC	Flap Gate W.S.	11.2
		Headwall Flashboard Attachment L.S.	
33.01	2.6'x2.6' RCBC	Flap Gate W.S.	9.2
33.72	2.6'x2.6' RCBC	Flap Gate W.S.	10.9
34.51	3'x3' RCBC	Slide Gate L.S.	5.9
		Chowchilla Canal Irrigation Structure	

UNIT NO. 6

Eastside Bypass - Left Bank

0.05*	24" CMP	Flap Gate W.S.	10.1
0.74*	24" CMP	Slide Gate W.S.	8.0
0.86*	24" CMP	Flap Gate W.S.	14.4
1.95*	24" CMP	Flap Gate W.S.	12.7
2.61*	36" CMP	Slide Gate W.S.	3.8
2.65*	24" CMP	Flap Gate W.S.	8.1
2.85*	24" CMP	Flap Gate W.S.	8.8
3.09*	24" CMP	Flap Gate W.S.	9.9
3.29*	24" CMP	Flap Gate W.S.	8.6
3.43*	36" CMP	Flap Gate W.S.	13.0
3.54*	36" CMP	Slide Gate W.S.	4.0
3.77*	24" CMP	Flap Gate W.S.	6.2
3.97*	36" CMP	Slide Gate W.S.	3.7
4.17*	24" CMP	Flap Gate W.S.	8.6
4.41*	24" CMP	Flap Gate W.S.	9.4
4.70	36" CMP	Slide Gate W.S.	4.8
4.75*	24" CMP	Flap Gate W.S.	8.7
4.94*	24" CMP	Flap Gate W.S.	8.9
5.34*	24" CMP	Flap Gate W.S.	9.0
5.63*	24" CMP	Flap Gate W.S.	9.0
6.06*	24" CMP	Flap Gate W.S.	7.1
6.79*	24" CMP	Slide Gate W.S.	6.6
6.97*	36" CMP	Slide Gate W.S.	7.7
7.29*	24" CMP	Flap Gate W.S.	8.8
7.74*	24" CMP	Flap Gate W.S.	10.0
8.21*	24" CMP	Flap Gate W.S.	14.8
8.51*	24" CMP	Flap Gate W.S.	9.4
9.64*	3-48 CMP Eastside Canal Diversion Box 1-36" CMP, 2-48" Slide Gates, 1-36" Slide Gate		

Description (Continued)

4100

UNIT NO. 6 (Continued)

<u>Levee Mile</u>	<u>Size of Pipe</u>	<u>Description</u>	<u>Feet Below Crown</u>
11.64*	24" CMP	Flap Gate W.S.	14.7
11.82*	36" CMP	Slide Gate W.S.	13.7
13.30*	24" CMP	Slide Gate W.S.	8.8
14.44*	24" CMP	Flap Gate W.S.	10.2
15.76*	24" CMP	Flap Gate W.S.	12.0
15.91*	36" CMP	Flap Gate W.S.	13.8
16.49*	36" CMP	Slide Gate W.S.	5.9
		Siphon Under Channel	
18.27*	24" CMP	Flap Gate W.S.	9.2
18.91	48" CMP	Slide Gate L.S.	5.0
		Siphon Under Channel	
18.97*	24" CMP	Slide Gate W.S.	8.3
19.36*	48" CMP	Slide Gate W.S.	16.3
19.85	2.5'x2.5' RCBC	Flap Gate W.S.	10.8
29.34	36" CMP	Irrigation Structure	9.7
		Slide Gate L.S.	
30.27	48" RCP	Rodunder Siphon	10.3
		Slide Gate L.S.	
35.33	6'x4' RCBC	Slide Gate W.S.	
		Fresno River Irrigation Structure	

UNIT NO. 7

Bear Creek - Right Bank

0.07*	24" CMP	Flap Gate W.S.	9.4
0.33*	24" CMP	Flap Gate W.S.	9.6
0.49*	36" CMP	Slide Gate W.S.	6.4
0.53*	24" CMP	Flap Gate W.S.	7.3
0.85*	24" CMP	Flap Gate W.S.	7.5
0.94*	24" CMP	Flap Gate W.S.	9.4
1.17*	48" CMP	Flap Gate W.S.	10.4
1.51*	24" CMP	Flap Gate W.S.	11.7
2.48	24" CMP	Flap Gate W.S.	7.4
2.64*	24" CMP	Flap Gate W.S.	9.4
3.09*	24" CMP	Flap Gate W.S.	8.3

UNIT NO. 8

Bear Creek - Left Bank

0.23*	24" CMP	Flap Gate W.S.	7.4
0.57*	24" CMP	Flap Gate W.S.	10.3
0.72*	24" CMP	Flap Gate W.S.	8.3

Description (Continued)

4100

UNIT NO. 8 (Continued)

<u>Levee Mile</u>	<u>Size of Pipe</u>	<u>Description</u>	<u>Feet Below Crown</u>
0.89*	24" CMP	Flap Gate W.S.	9.4
1.21*	24" CMP	Flap Gate W.S.	9.7
1.38*	24" CMP	Flap Gate W.S.	10.0
2.05*	24" CMP	Flap Gate W.S.	9.9
2.12*	24" CMP	Flap Gate W.S.	7.3
2.77*	24" CMP	Flap Gate W.S.	8.4
3.06*	36" CMP	Flap Gate W.S.	10.4
3.24*	24" CMP	Flap Gate W.S.	8.0
3.43*	24" CMP	Flap Gate W.S.	11.0

UNIT NO. 9

Owens Creek - Right Bank

0.47*	24" CMP	Slide Gate W.S.	16.6
0.70*	24" CMP	Flap Gate W.S.	6.5
0.87*	24" CMP	Crane Irrigation Structure 2-Slide Gates W.S.	7.5

UNIT NO. 10

Owens Creek - Left Bank

0.02*	24" CMP	Flap Gate W.S.	7.3
0.31*	36" CMP	Slide Gate W.S.	17.4

UNIT NO. 11

Mariposa Bypass - Right Bank

.42*	24" CMP	Flap Gate W.S.	8.9
.65*	24" CMP	Flap Gate W.S.	8.2
.84*	24" CMP	Flap Gate W.S.	8.2
1.13*	24" CMP	Flap Gate W.S.	7.8
1.50*	48" CMP	Slide Gate W.S.	12.4
1.99*	24" CMP	Flap Gate W.S.	10.6
3.04*	24" CMP	Flap Gate W.S.	14.6
3.32*	24" CMP	Flap Gate W.S.	7.3
3.33*	48" CMP	Slide Gate L.S. Eastside Canal Siphon	11.5

Description (Continued)

4100

UNIT NO. 12

Mariposa Bypass - Left Bank

<u>Levee Mile</u>	<u>Size of Pipe</u>	<u>Description</u>	<u>Feet Below Crown</u>
.39*	24" CMP	Flap Gate W.S.	8.5
1.06*	24" CMP	Flap Gate W.S.	8.1
1.27*	24" CMP	Flap Gate W.S.	15.0
1.53*	24" CMP	Flap Gate W.S.	11.4
2.16*	24" CMP	Flap Gate W.S.	11.7
2.70*	24" CMP	Flap Gate W.S.	8.7
3.00*	24" CMP	Flap Gate W.S.	12.3
3.36*	48" CMP	Eastside Canal Siphon	11.4

UNIT NO. 13

Ash Slough Levee - Right Bank

1.14	2-36" CMP	Rounder Irrigation Structure 2-Slide Gates W.S.	9.3
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UNIT NO. 14

Ash Slough Levee - Left Bank

1.15	36" CMP	Rounder Irrigation Structure Slide Gate W.S.	8.3
1.26	36" CMP	Irrigation Structure Slide Gate W.S.	6.3

UNIT NO. 15

Berenda Slough - Right Bank

.48	2.5'x2.5' RCBC	Flap Gate W.S.	7.1
1.01	2.5'x2.5' RCBC	Flap Gate W.S.	4.0
1.53	2.5'x2.5' RCBC	Flap Gate W.S.	4.5

UNIT NO. 16

Berenda Slough - Left Bank

1.46	2.5'x2.5' RCBC	Flap Gate W.S.	5.2
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UNIT NO. 17

Chowchilla Canal Bypass - Right Bank

<u>Levee Mile</u>	<u>Size of Pipe</u>	<u>Description</u>	<u>Feet Below Crown</u>
2.58	5'x4' RCBC	Flap Gate W.S.	9.1
4.69	5'x4' RCBC	Flap Gate W.S.	9.1
8.38	5'x4' RCBC	Flap Gate W.S.	10.6
9.89	5'x4' RCBC	Flap Gate W.S.	10.8
13.30	5'x4' RCBC	Flap Gate W.S.	9.5
14.69	2.5'x2.5' RCBC	Flap Gate W.S.	11.0

UNIT NO. 22

East Side Canal Levee - Left Bank

0.10*	24" CMP	Slide Gate L.S.	12.5
1.02*	36" RCP	Existing Siphon	5.0
1.57*	8" CMP	No Closure Device	6.2
2.72*	24" CMP	Slide Gate L.S.	8.3
5.48*	48" CMP	Slide Gate L.S.	11.4

UNIT NO. 23

San Joaquin River - Right Bank

.21	2.5'x2.5' RCBC	Flap Gate W.S.	9.7
5.71	3' x3' RCBC	Flap Gate W.S.	5.1
8.33	2.5'x2.5' RCBC	Flap Gate W.S.	2.2
8.54	2.5'x2.5' RCBC	Flap Gate W.S.	2.6
9.03	16" Steel	Irrigation Pipe (Well on W.S.)	2' Min
9.27	16" Steel	Irrigation Pipe (Well on W.S.)	2' Min.
9.76	2-5.25'x4' Barrel RCBC	2-Slide Gates W.S. (Gravelly Ford Canal Irrigation Structure)	5.3

UNIT NO. 24

San Joaquin River - Left Bank

8.15	36" C.P.	Flap Gate W.S.	--
8.32	12" C.P.	Flap Gate W.S.	--

UNIT NO. 25

Salt Slough - Right Bank

<u>Levee Mile</u>	<u>Size of Pipe</u>	<u>Description</u>	<u>Feet Below Crown</u>
0.02*	24" CMP	Flap Gate W.S.	8.5
0.35*	24" CMP	Flap Gate W.S.	9.6
0.58*	24" CMP	Flap Gate W.S.	12.7
0.97*	24" CMP	Flap Gate W.S.	11.4
2.05*	24" CMP	Flap Gate W.S.	2.0
2.45*	24" CMP	Flap Gate W.S.	9.2

Inspection and Maintenance 4200

General. Adequate measures shall be taken to insure 4210

that inlet and outlet channels are kept open and trash drift or debris is not allowed to accumulate near drainage structures. Flap gates and manually operated slide gates on drainage structures shall be examined, oiled, and trail operated at least once every 90 days. Periodic inspections shall be made by the Superintendent to be certain that:

- (1) Pipes, gates, operating mechanisms, riprap, and headwalls are in good condition;
- (2) Inlet and outlet channels are open with the exception noted in Section 2260(11);
- (3) Care is being exercised to prevent the accumulation of trash and debris near the structures and that fires are not allowed to occur near bituminous coated pipes;

* Denotes "as built" Drainage or irrigation structure.

Feet Below Crown denotes measurement from finish levee crown to top of pipe or culvert.

Note on Abbreviations: CMP - Corrugated Metal Pipe
 LS - Landside
 WS - Waterside
 RCBC - Reinforced Concrete Box Culvert

(4) Erosion is not occurring adjacent to the structures which might endanger its watertightness or stability.

Maintenance Activity. Immediate steps shall be taken 4220
to repair damage, replace missing or broken parts, or remedy
adverse conditions disclosed by such inspection. The
following maintenance activity shall be carried out:

(1) Lubricate moving parts of lift assembly, stems of lift gates, and hinge points of flap gates with a light film of high grade lubricant, such as, Alvania #2 EP, Molylcote Type G, Tycol Azepro 11.

(2) Damaged protective coatings of metal parts shall be replaced as soon as possible. The surface shall be thoroughly cleaned and an approved type of coating applied. The cleaning and coating shall be as specified by the manufacturers' recommendation for that item or the latest approved method.

(3) All eroded concrete shall be repaired as soon as erosion reaches a depth of 4 inches or any reinforcing steel is exposed. All evidence of settlements, uplift, or failure of concrete should be referred to the General Manager of the State Reclamation Board for analysis and recommendation of remedial measures.

(4) If the inspection shows that the automatic drainage structures have been jammed in an open position by debris or other obstructions, they shall be thoroughly cleaned so that

they swing freely to a true closure. If any parts of the gates have been damaged or broken, they shall be replaced by new parts.

Compliance with the provisions prescribed above pertaining to drainage structures is essential for proper maintenance of the levee system covered by this manual. Levee failure caused by neglected drainage structures are of common occurrence and it is of utmost importance that these structures always be kept in perfect working condition.

Care should be taken not to bury any of the side drainage inlets in the event that it becomes necessary to fill any of the low-lying pockets on the landside of the levee. Plans for the modification of side drainage facilities or the maintenance of side drainage facilities affected by filling of low-lying pockets should be submitted to The Reclamation Board for approval before such work is started.

Maintenance of irrigation structures is the responsibility of the individual property owner unless the district has agreed to maintain the structure.

Inspection. Periodic inspections shall be made to insure that all facilities are in good operating condition as follows:

(1) Since the outlets of pipes crossing under the levee are inundated at relatively low water stages, all pipes extending through the levee shall be inspected considerably in

advance of the beginning of the flood season. The gates on these pipes should be checked at the same time.

(2) Inspection of all drainage structures shall also be made following each major high-water period.

(3) At other times not exceeding 90 days.

(4) If the inspection of an irrigation structure of a private owner discloses any condition requiring repair or maintenance, the Superintendent shall notify the private owner about the deficient condition. When the next scheduled inspection is made and the structure deficiency has not been corrected, the Superintendent shall address a letter to the owner of the structure, with a copy to The Reclamation Board, directing attention to the conditions observed and requesting that immediate steps be taken to correct them. The owner of the structure will advise the district as to the nature of the corrections undertaken and the date that the corrections were completed. The district will advise The Reclamation Board of the actions taken by the property owner.

Encroachments. A permit from The Reclamation Board must 4240 be obtained for any additional fences, culverts, or other encroachments proposed by a property owner. Culvert or pipe installations will be made in accordance with standards and drawings established by The Reclamation Board. These standards and drawings and application forms may be obtained from The Reclamation Board, 1416 Ninth Street, Room 335-18,

Encroachments. (Continued)

4240

Sacramento, CA 95814. No work shall be undertaken unless approved by The Reclamation Board. A state engineer will check the installation for compliance with The Reclamation Board permit. This procedure insures that proposed encroachments will not be detrimental to the proper operation and maintenance of the project and also will insure that the proposed structures are properly installed.

The Superintendent or his assistants should advise the property owner of the need to obtain the Board permit prior to construction of additional irrigation or drainage structures.

Checklists

4300

A form suggested as a checklist for reporting inspections of drainage structures will be found in Appendix F. These should be used in each inspection to insure that structures are kept in working condition at all times. (See pages F-4 and F-5).

Operations

4400

Irrigation and drainage structures shall be operated to prevent or reduce flooding during the flood season and periods of high water. Whenever high-water conditions impend, all gates will be inspected a short time before water reaches the invert of the pipe and any object which might prevent closure of the gate shall be removed. Automatic and hand-operated slide gates and valves shall be closed to prevent escape of floodwaters

Operations (Continued)

4400

from the channel, All irrigation and drainage structures in levees shall be inspected frequently during floods to ascertain whether seepage is taking place along the lines of their contact with the embankment. Immediate steps should be taken to correct any situation which appears to be developing into a condition that will endanger the safety of the levee.

Positive Closure Devices. It is essential that the protection afforded by the flood control project not be nullified in any extent by backflow through irrigation and drainage structures. It is the responsibility of the Superintendent to see that the gates are operated according to the best interest of the project. 4410

Safety Requirements

4500

In removing large objects which have lodged against gate structures during periods of high water, exposed workmen should be provided with life vests and, if necessary, should have a safety line attached to their person attended by another worker. Similar hazardous work in the vicinity of structures should not be attempted unless two or more persons are present.

Compliance with the maintenance provisions prescribed in paragraph 4200 above pertaining to drainage structures is essential for proper maintenance of the levee system covered by this manual. Levee failure caused by neglected drainage

structures are of common occurrence; it is therefore of utmost importance that these structures always be kept in perfect working conditions.

CHANNELS

5000

Description

5100

The channel as defined for this project is that area lying along the waterway between the waterward toe of one levee and the waterward toe of the opposite levee. In cross section this includes the drainage channel and banks, and the area from top of bank to toe of levee which is called the berm or floodway.

The channels consist of natural drainage channels and bypass channels constructed as part of the project. These channels extend along and adjacent to the San Joaquin River from the Merced River to Mendota Dam, and from the junction with the Chowchilla Canal Bypass to Gravelly Ford; along and adjacent to Salt Slough from the junction with the San Joaquin River to a point approximately 2.5 miles upstream; along and adjacent to the alignment of the Eastside Bypass from the San Joaquin River to the Chowchilla Canal Bypass; along and adjacent to Bear and Owens Creeks from the Eastside Bypass to the East Side Canal; along and adjacent to the alignment of the Mariposa Bypass from the San Joaquin River to the Eastside Bypass; along and adjacent to Ash and Berenda Sloughs from the Eastside Bypass to the Chowchilla Canal; and along and adjacent to the alignment of the Chowchilla Canal Bypass from its junction with the Eastside Bypass to the San Joaquin River. These areas are as shown on the Location Map of Appendix B.

An important feature included under this chapter is the sediment settling basin situated in the Chowchilla Canal Bypass just below the control structure. The settling basin has been designed for a 1.5 project storm bed load. This volume of sedimentation storage is approximately 200,000 cubic yards. The main geometric shape of the settling basin measures 1,600 feet along the centerline of the bypass channel, 350 feet in width, and 7.5 feet in depth below an extended line between the entrance and exit inverts of the drainage channel. The side slopes are 3 to 1 with 500-foot-wedge-shaped transition at each end conforming to the drainage channel section.

Sedimentation disposal areas have been provided on the land-side of the Chowchilla Canal Bypass levees. On the right bank the spoil area extends from Levee Mile 14.70 to Levee Mile 16.09, and on the left bank from Levee Mile 13.99 to Levee Mile 15.27.

Ramps have been constructed for hauling the sedimentation material across the levees from the channel area to the spoil areas on the landward side of levee system. Three of these ramps are on the right levee, and five are on the left. Following is a plan and profile for assistance when it is necessary to reestablish the settling basin. Also shown is the location of ramps and spoil areas.

Periodic Inspections. Periodic inspections of improved channels and floodways shall be made by the Superintendent to be certain that: 5210

(1) The channel floodway is clear of debris, weeds, and wild growth, except for authorized plantings in the pilot study area.

(2) The channel or floodway is not being restricted by the depositing of waste materials, building of unauthorized structures or other encroachments.

(3) The capacity of the channel or floodway is not being reduced by the formation of shoals.

(4) That the sediment settling basin has maximum space available for deposition of debris material.

(5) Banks are not being damaged by rain or wave-wash and are not sloughing.

(6) Riprap sections are in good condition.

(7) Approach and egress channels adjacent to the improved channel or floodway are sufficiently clear of obstructions and debris to permit proper functioning of the project works.

Such inspections shall be made prior to the beginning and end of the flood season and at other periods at intervals not to exceed 90 days. Immediate steps will be taken to remedy any adverse conditions found on the inspections.

Channel Maintenance. The channels of the project shall be maintained and kept clear of regrowth of vegetation. This 5220

is necessary as regrowth of vegetation will change the flood-flow characteristics of the project channels. The purpose of channel maintenance is to insure that the channel is kept in as good a condition as when the project was constructed. Growth in the low water channel of the pilot reach shall be carefully monitored by the Department of Water Resources Inspectors. Should growth in the low water channel in the opinion of these inspectors require remedial measures, the Department of Fish and Game will work with the Lower San Joaquin Levee District to correct any problem. Care must be exercised not to remove authorized growth from areas within the pilot reach subject to the provisions of Section 3215 (10).

A regular program of channel maintenance shall be instituted by the district. Before the beginning of the flood season, the following maintenance operations shall be accomplished:

(1) With the exception of the authorized wildlife habitat in the pilot reach, tree and brush growth in the channel shall be cleared and removed along with any debris that may be present. For exception see 3222(2) - A strip of brush and small trees may be retained, through application to The Reclamation Board, on the flood plain within 10 feet of the levee on the waterward side where necessary to prevent erosion and wavewash. Regrowth of trees and brush will need regular attention.

Vegetation measuring 6 inches or more in largest diameter as measured 3 feet above the ground surface is classified as a tree. Vegetation measuring less than the above limiting diameter is classified as brush and includes willows, tules or like vegetation but does not include grass, weeds, crops, or other similar organic matter.

All debris resulting from clearing operations shall be burned and removed from the channel. Piling for burning shall be done in such a manner as to cause the least fire risk. Care must be exercised to not burn or damage authorized wildlife habitat, subject to the provisions of Section 3215(8). Burning shall be done in conformance with local regulations. All burning shall be so thorough that the materials are reduced to ashes. Debris which cannot be burned shall be removed from the channel and disposed of.

(2) Shoaling or aggradation at inlets and outlets of side drainage structures shall be removed so that the drains function properly.

(3) Suitable riprap material shall be placed to repair existing slope protection or in other locations found to be critical trouble points to stabilize the channel alignment and preserve the general uniformity of the bank lines.

(4) Sediment, rubbish, industrial waste, debris, plugs or other obstructions, except authorized wildlife habitiat in the pilot study area, shall be removed from the channel to prevent any tendency for the flow to be deflected within the

channel. The material that accumulates in the main channel as a result of turbulences shall be removed to keep the channel clear.

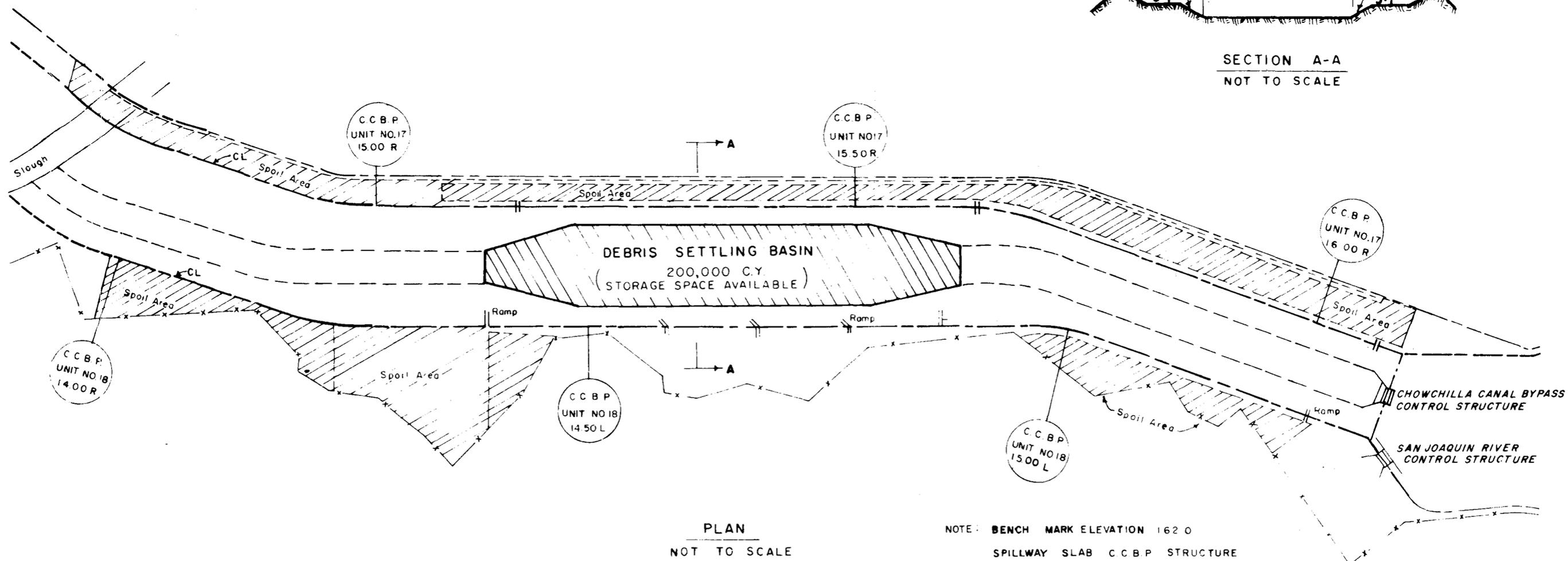
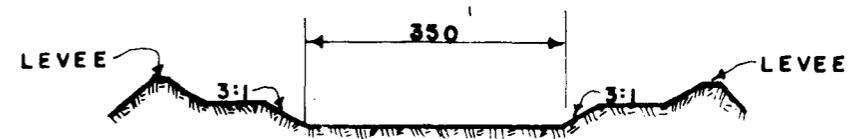
(5) Sediment and debris shall be removed from the sediment settling basin. The sediment settling basin, entrance and exit channel thereto, shall be restored to the lines and grades as shown on the preceding Sediment Settling Basin Plan and Profile sheet of this chapter.

The sediment material shall be wasted in designated spoil areas along the landside of the Chowchilla Canal Bypass levees. Material shall be graded to a uniform surface and sloped to drain. Compaction of this material is not required.

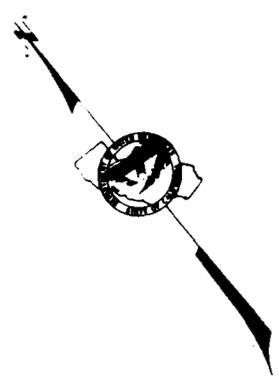
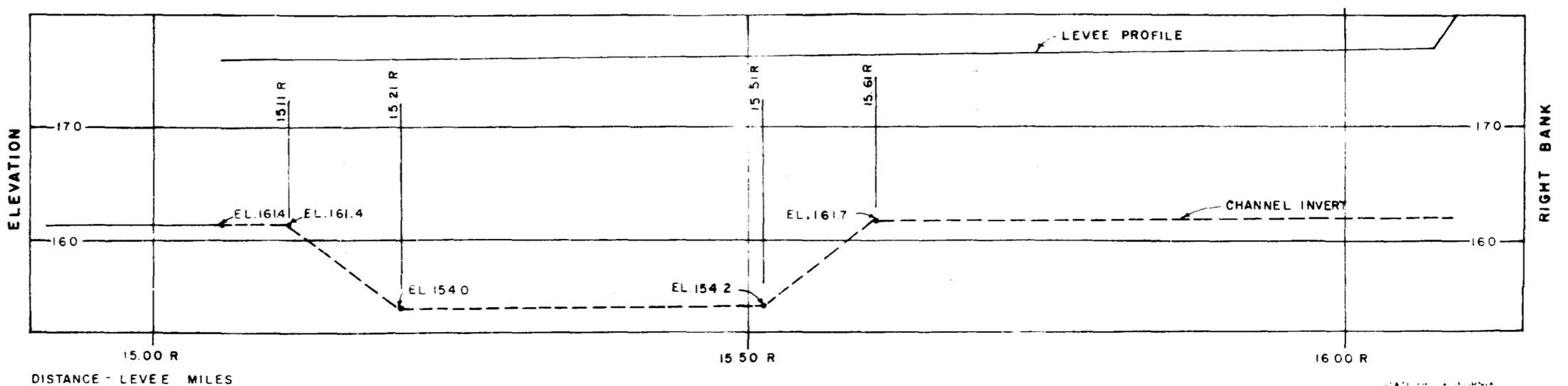
When spreading material in the spoil areas, care should be taken not to bury any of the drainage ditches or side drainage inlets. Material shall be placed against landside of levee when making lifts. Begin fill 5 feet away from right-of-way fence and maintain a 3 to 1 slope.

(6) Encroachments in the channel shall be noted and reported to The Reclamation Board immediately.

U. S. A. Wildlife Management Area. The district is responsible for project channel and levee maintenance within the area shown on the Location Maps (Appendix B as U. S. A. Wildlife Management Area). The U. S. Government is responsible for the maintenance of the following facilities within the channel of the wildlife management area:



NOTE: BENCH MARK ELEVATION 162.0
SPILLWAY SLAB C.C.B.P. STRUCTURE



STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
STATEWIDE OPERATIONS OFFICE

**PLAN AND PROFILE
OF
DEBRIS SETTLING BASIN
AND
SPOIL AREA
1966**

(1) 16-inch irrigation well and pump on elevated pad at levee height.

(2) 2,250 feet of low dikes, 3 feet high, 10:1 slopes with 6-foot crown.

(3) Drainage structure, 24 feet C.S.P. with 36-inch flashboard riser.

(4) Fences located in channel of wildlife management area.

Checklists

5300

Suggested forms to use in the inspection of the channels and the Debris Settling Basin are located in Appendix F. (See pages F-6, F-7, F-8, and F-9)

Operation

5400

Both banks of the channels and floodways shall be patrolled during periods of high water. Appropriate measures shall be taken to prevent the formation of jams of debris. Large objects which become lodged against the bank shall be removed. The improved channel or floodway shall be thoroughly inspected immediately following each major high-water period. As soon as practical thereafter, all snags and other debris shall be removed and all damage to walls, drainage outlets, or other flood control structures repaired.

Safety Requirements

5500

Clearing of channels presents hazards, which, unless foreseen and guarded against, may result in serious consequences.

Clearing the channel of growing vegetal matter involves the use of axes, brush-hooks or other sharp-edged hand tools.

In order that the work may be accomplished with a minimum of exposure, the following precautions should be observed:

- (1) Instruct employees in proper use of tools and equipment.
- (2) Keep tools sharp and inspect tools for possible loose or warped handles or lack of proper wedges.
- (3) Allow sufficient distance between workers.
- (4) Clear area of branches or vines which might deflect swing of axe.
- (5) When clearing channel of debris, workmen should be cautioned to keep a sharp lookout for poisonous snakes.
- (6) Extra care should be taken to prevent exposure of susceptible workmen to poison oak.
- (7) Should it become necessary to remove large objects which have lodged against the bank or which are causing an obstruction to the flow during the period of high water, workmen who may be exposed to water hazards should be provided with life vests and, if necessary, should have a safety line attached to their person attended by another worker.

MISCELLANEOUS FACILITIES

6000

Description

6100

Miscellaneous facilities and structures which were constructed by contract as a part of, or in conjunction with, the protective works and which affect their functioning include the following items:

Bridges, Low Water and Dip Crossings. Bridges, low water and dip crossings are listed as follows and are located as shown on Location Map, Appendix B. 6110

- (1) Bear Creek Patrol Bridge over Eastside Bypass.
- (2) Sand Slough Patrol Bridge over Sand Slough Interchange Pool.
- (3) East Side Canal Patrol Bridge over Bear Creek.
- (4) Sandy Mush Road County Bridge over Eastside Bypass.
- (5) West Washington Road County Bridge over Eastside Bypass.
- (6) Avenue 21 County Bridge over Eastside Bypass.
- (7) Road 4 County Bridge over Eastside Bypass.
- (8) Avenue 18-1/2 County Bridge over Eastside Bypass.
- (9) Road 9 County Bridge over Berenda Slough.
- (10) Road 9 County Bridge over Eastside Bypass.
- (11) Avenue 14 County Bridge over Chowchilla Bypass.
- (12) Firebaugh-Madera Road Bridge over Chowchilla Bypass.
- (13) Firebaugh-Fresno Road Bridge over Chowchilla Bypass.
- (14) Triangle "T" Ranch Access Bridge over Eastside Bypass.

(15) Harney Access Bridge across channel of Eastside Bypass. (Deck 2 feet below maximum design water surface elevation.)

(16) Dickinson Ferry Road (Greenhouse Road) Access Bridge across channel of Eastside Bypass. (Deck 3 feet below maximum design water surface elevation.)

(17) Hayfield Access Bridge across channel of Eastside Bypass. (Deck 5 feet below maximum design water surface elevation.)

(18) Chamberlain Road Access Bridge across channel of Eastside Bypass. (Deck 2 feet below maximum design water surface elevation.)

(19) Crane Access Bridge across channel of Bear Creek. (Deck 3.5 feet below maximum design water surface elevation.)

(20) State Highway 152 Bridge across Eastside Bypass.

(21) Low water (dip) crossing of Bear Creek at west line of Section 3, T. 8 S., R. 11 E.

(22) Low water crossing (pipe culvert), Eastside Bypass along west line of Section 14, T. 8 S., R. 11 E.

(23) McNamara Road low water (dip) crossing of Eastside Bypass along east line, Section 32, T. 8 S., R. 11 E.

(24) Newhall low water (dip) crossing of Eastside Bypass. North line, Section 30, T. 9 S., R. 13 E.

All bridges are reinforced concrete structures consisting of piles, deck slab, with abutment at each end. The patrol and access bridges are 18-feet 4-inches in width, the

county bridges 30-feet 4-inches wide, and the Highway 152 Bridge is 34-feet wide. They have either a metal or timber guardrail. Approach embankments connect the bridge ends to the adjacent levee. The embankment slopes have a 12-inch-thick layer of stone protection from the toe to a point 3 feet below the top.

Bridges for patrol and access purposes have been constructed as part of the major control structures. These are as follows:

- (1) Mariposa Bypass Control Structure and patrol bridge.
- (2) Eastside Bypass Control Structure and patrol bridge.
- (3) Chowchilla Bypass Control Structure and patrol bridge.
- (4) San Joaquin River Control Structure and patrol bridge.

The new bridges in conjunction with the major control structures are more fully described in the control structure manuals.

Structures. Miscellaneous structures which are a part of the project are listed as follows: 6120

- (1) San Joaquin River Structure

The San Joaquin River structure is located in the channel of the San Joaquin River at the junction of the Eastside Bypass and Sand Slough interchange pool. The structure is a reinforced concrete culvert through the levee with head and

end walls. Also appurtenant to the installation are a timber sheet piling cutoff wall and 24-inch-thick stone protection on the downstream slopes of the river bank. Portions of the stone protection adjacent to the end wall have been grouted.

The culvert has four 5-foot-3-inch-by-6-foot barrels with each opening 5 feet square. A slide gate and lift device has been installed at the upstream end of each barrel.

(2) Sand Slough Structure

The Sand Slough structure is located at the junction of the San Joaquin River and Eastside Bypass at Sand Slough interchange pool. The structure consists of stone grouted cobble cutoff walls, grouted cobble slope and crest paving, and reinforced concrete Parshall flume with timber flashboards.

(3) Bear Creek Diversion Structure

The Bear Creek Diversion structure is located in the channel of Bear Creek at the junction with East Side Canal. The structure is reinforced concrete with cutoff wall, invert slab 14 feet wide and 52 feet long. One-foot-thick walls forming six 7-foot-wide bays, end walls and wing walls, 3-foot-wide catwalk spanning all the bays from end wall to end wall, and flashboards (3-inch x 12-inch x 7 feet 10 inches) of Redwood -- 10 each bay. Also included is the grouted stone channel, slope protection and levees extending from the patrol bridge upstream to the head of the project; and the asphalt concrete patrol road on the left bank extending from the patrol bridge to the diversion structure.

(4) Owens Creek Structure

The Owens Creek structure is an existing structure which controls the flow into the project at East Side Canal and Owens Creek. The structure is reinforced concrete with seven bays, invert slab, end walls and wing walls. Flashboards are in the upstream end of the structure to control the water surface elevation in the East Side Canal.

A 12-foot-wide timber decking has been constructed across the structure as part of the project. The decking provides access across Owens Creek for patrol and maintenance purposes.

(5) Fresno River Drainage Structure

The Fresno River drainage structure is located at the mouth of the Fresno River. More specifically, its location is in the right bank of the San Joaquin River approximately 1.2 miles upstream from the end of Levee Unit No. 3. The structure is a 4-by-6-foot reinforced concrete box culvert. The riser unit and slide gate with pedestal type lifting device is on the landward side of the San Joaquin River. The culvert has a head and end wall with a 2-by-8-foot-wide channel invert stone protection adjacent to and the full length of the headwall.

Included with the installation is a levee embankment plugging the channel of the Fresno River along the axis of the right bank levee of the San Joaquin River. The Fresno River Channel between Eastside Bypass and the San Joaquin River is interior drainage and is not a part of the project works.

(6) Drop Structures

These structures are reinforced concrete with cutoff walls, crest or headwall, spillway apron slab, floor blocks, endsills, sidewalls, and wingwalls. Stone protection for channel and slopes has been provided upstream and downstream of the structure. A levee embankment connects the structure with the levee system.

Drop structures with headwalls extending above the invert of the channel have drain ports so that water will not pound upstream of the structure. Drop structures constructed as a part of the project are listed with their location as follows:

<u>Stream</u>	<u>Location</u>	<u>Weir Crest Elev.</u>
Mariposa Bypass	Left bank -- L.M. 0.00	85.0
Ash Slough	Left bank -- L.M. 0.09	138.5
Ash Slough	Left bank -- L.M. 0.38	142.0
Ash Slough	Left bank -- L.M. 0.76	145.5
Ash Slough	Left bank -- L.M. 1.14	149.0
Eastside Bypass	Left bank -- L.M. 35.31	147.4
Eastside Bypass	Left bank -- L.M. 35.74	151.5

Drainage Ditches and Culverts. There are three general 6130 types of drainage ditches constructed as a part of the project works. These are: Type "A" drain ditch constructed between right-of-way line and landward toe of levee. It has a vee-shaped cross section with one-to-one side slopes and depth that varies. This ditch provides drainage on the landward

side of levee to drainage structure inlets in the locations as shown on the plans; Type "B" drain ditch has been constructed on the waterward side of levee. It has a trapezoidal cross section with 2-to-1 side slopes, 10-foot-wide bottom, and depth that varies. This ditch provides drainage from outlet of drainage structure across berm to low flow channel in the locations as shown on the plans; Type "C" drain ditch connect Type "A" drain ditches to drainage structure inlets in the locations as shown on the plans. The Type "C" drainage ditch is similar to the Type "B" except it has 2-to-1 side slopes and a 5-foot-wide bottom; also included under this section is any other type of drainage ditch not mentioned above but constructed as a part of the project.

Culverts have been provided under certain levee approach embankments on the landward side to facilitate passage of drainage. The culvert locations, types, and sizes are as shown on the contract drawing.

Drain Channel and Pipe Arch Culverts. The Drain Channel 6140 is located on the landside of the Chowchilla Canal Bypass right bank levee, Unit No. 17. The centerline of the Drain Channel is situated 50 feet inside of the right-of-way line and extends from Levee Mile 0.64, where the channel discharges into the Fresno River, to Levee Mile 14.66, the head of the channel. The typical cross section of the Drain Channel is trapezoidal. The bottom varies in width from 10 feet, 20 feet, and 40 feet with side slopes of 2-to-1. The channel invert varies from 2 to 11 feet below natural ground.

Drain Channel and Pipe Arch Culverts. (Continued)

6140

Three county roads are intersected by the Drain Channel. Multiplate pipe arch culverts have been provided to pass drainage through the county road approach embankments. Pipe arches are 12-gauge corrugated metal. Bituminous coating have been applied to the plates. Culvert ends extend 2 feet beyond the embankment slope and have been beveled parallel to the embankment slope.

The Drain Channel has a 50-foot transition reach from the typical channel trapizoidal cross section to the ends of the pipe arch culverts. Following is additional descriptive detail for the Drain Channel and pipe arch culverts.

CHOWCHILLA CANAL BYPASS -- UNIT NO. 17

Drain Channel		
Levee Mile	Bottom Width	Average Depth Below Natural Ground
0.64 to 0.74	40 feet	3 to 4 feet
0.74 to 8.33	20 feet	5 feet
8.33 to 14.66	10 feet	5 feet

Pipe Arch Culverts			
Levee: Mile	Size of Pipe	Invert : Elevation	: County Road Approach Embankment
2.55	(2) 13'3" x 9'4" x 106'	151.8'	Avenue 14
8.35	(1) 18'9" x 12'2" x 126'	156.1'	Firebaugh-Madera Road
9.86	(1) 13'3" x 9'4" x 98'	157.3	Firebaugh-Fresno Road

Fencing and Gates. The fencing of this project consists 6150 of right of way and channel breakaway fencing. The posts are either metal (10 feet maximum center to center) or wood (R/w--14 feet maximum center to center, breakaway -- 17 feet maximum center to center). Fencing is made of four or five strands of barbed wire with wire stay at third points between posts. The gates are the drag or metal drive type.

The right-of-way line of the exterior of the project works is bound by fencing. Downstream of the Sand Slough interchange area, the State owns flowage easement over the floodways. Channel breakaway fencing delineates property lines within this portion of the project. Upstream of the interchange area, the State owns the land of the floodways in fee. As a result, all fencing has been removed within the floodway in that portion of the project.

Any fencing within the project right of way, either by the property owner in the case of State easement lands, or by a lessee in the case of State fee lands, must be under Reclamation Board permit prior to construction

Hydrologic Facilities. Hydrologic facilities installed 6160 on the levees and channels portion of the project consist of the following:

Staff Gages. (1) Bear Creek at East Side Canal. 6161
Located on the left bank Bear Creek just downstream on East Side Canal.

(2) Owens Creek at East Side Canal. Located on the left bank Owens Creek just downstream of East Side Canal.

(3) Mariposa Bypass at Eastside Bypass. Located on the left bank Mariposa Bypass just downstream of Mariposa Bypass Automatic Control Structure.

(4) San Joaquin River at Eastside Bypass. Located on the left bank just downstream of the San Joaquin River Control Structure.

(5) Eastside Bypass at Washington Road. Located on the right bank Eastside Bypass upstream from West Washington Road County Bridge.

(6) Ash Slough at Chowchilla Canal. CCID installed gage on the upstream face of the right wing wall of the Ash Slough drop structure, just downstream of the Chowchilla Canal.

(7) Berenda Slough at Chowchilla Canal. Located on the left bank of Berenda Slough downstream from Chowchilla Canal.

(8) Fresno River at Chowchilla Canal. Located on the right bank Fresno River downstream from Chowchilla Canal.

A staff gage installation consists of three timber staff gage posts in line and normal to the centerline of the levee. One is located in the low water channel, another is on the berm and the third is on the levee slope. The posts vary in height from 4 to 8 feet above grade. The 1-foot-diameter posts have been set 5 feet below grade with a

Staff Gages. (Continued)

6161

6-inch-thick concrete ring backfill from the bottom of the post to grade. A 2-x-8-inch redwood face plate is bolted to the timber post. Attached to this face plate is an enameled metal staff gage set to U.S.C. & G.S. sea level datum, 1929 adjustment; which can be read to the nearest one-tenth of a foot.

An exception to the above typical staff gage installation is the installation of staff gages at Ash Slough at Chowchilla Canal. At this location, two 2-x-8-inch redwood face plates have been anchor bolted to the upstream face of the drop structures right headwall. As in the typical installation, an enameled metal staff gage is attached to each timber face plate.

Water Stage Recorders. (1) San Joaquin River

6162

near Newman -- U. S. Geological Survey's continuous water stage recorder and staff gage located on left bank 300 feet downstream from new bridge on Hills Ferry Road, and 500 feet downstream from Merced River. This installation is maintained by the U. S. Geological Survey. A telemetering device, operated and maintained by the Department of Water Resources for river forecasting purposes, is also a part of this station. (Datum U.S.C. & G.S.)

(2) San Joaquin River at Fremont Ford Bridge -- U. S. Geological Survey's continuous water stage recorder and staff gage located on left bank 30 feet downstream from

Water Stage Recorders. (Continued)

6162

Fremont Ford Bridge. This installation is maintained by the U. S. Geological Survey. (Datum U.S.C. & G.S.)

(3) San Joaquin River near Stevinson -- Department of Water Resources' continuous water stage recorder and staff gage located on bridge on Lander Avenue. This installation is maintained by the Department of Water Resources.

(Datum U.S.C. & G.S.)

(4) Eastside Bypass near El Nido -- Department of Water Resources' continuous water stage recorder and staff gage located on the left bank approximately 0.6 mile downstream of Chamberlain road access bridge. This station is maintained by the Department of Water Resources. A telemetering device, operated and maintained by the Department of Water Resources for river forecasting purposes, is also a part of this installation. (Datum U.S.C. & G.S.)

(5) San Joaquin River near Dos Palos -- U. S. Bureau of Reclamation's continuous water stage recorder and staff gage located 800 feet below the head of Temple Slough, 6.5 miles east of Dos Palos. This installation is maintained by the U. S. Bureau of Reclamation. (Datum U.S.E.D)

(6) San Joaquin River near Mendota -- U. S. Bureau of Reclamation's continuous water stage recorder and staff gage located 2.5 miles below Mendota Dam, 4 miles north of Mendota. This installation is maintained by the U. S. Bureau of Reclamation. A telemetering device, operated and maintained by the Department of Water Resources for river forecasting purposes, is also a part of this station. (Datum U.S.B.R.)

Water Stage Recorders. (Continued)

6162

(7) San Joaquin River below Gravelly Ford -- U. S. Bureau of Reclamation's continuous water stage recorder and staff gage located on the left bank on the west section line of Section 18, T. 3 S., R. 17 E. This installation has a telemetering device and is operated and maintained by the U. S. Bureau of Reclamation.

Mileage Markers. The project has been divided into numerous levee units as shown on the map in Appednix C. Mileage markers have been furnished and installed every one-half mile in each unit. The marker designates the unit and levee mile beginning at the downstream end of the particular unit and proceeding upstream. These markers have been placed for location and direction purposes.

6170

The mileage marker consists of metal post, anchor, and target plates. The 7-foot-long post with anchor near bottom has been driven 3 feet into the ground at the edge of the levee. Two target plates have been welded to the top of the post with the faces perpendicular to the centerline of the levee and visible to traffic in either direction. Painted on the face plates are the unit designation and levee mileage

Inspection and Maintenance

6200

Inspection of miscellaneous facilities and maintenance requirements shall be made at the same time that the inspection and maintenance of other features of the project are made.

If the inspection of any miscellaneous facility of a private party (either constructed before, during, or after the completion of the project) discloses any condition that indicates the probability of failure during periods of high water, the Superintendent shall address a letter to the owner of the structure, with a copy to The Reclamation Board, directing attention to the conditions observed and requesting that immediate steps be taken to correct them. A report on the action taken by the owner shall be submitted to The Reclamation Board with the next annual report.

Bridges. Degree of inspection and maintenance for various types of bridge ownership in the project are as follows:

County Bridges. The State's interest and the responsibility of the levee district in county road bridges is primarily confined to their affect on the safety and functioning of the flood control works. However, any conditions noted in the inspection that may affect them in any way should, as a matter of courtesy, be brought to the attention of the responsible agency.

The district and the Counties of Merced and Madera have agreed to certain maintenance responsibilities concerning the following county bridges:

County Bridges. (Continued)

6211

County of Merced

- (1) Sandy Mush Road Bridge over Eastside Bypass.
- (2) Sand Slough Patrol Bridge, over Sand Slough interchange pool.
- (3) West Washington Road Bridge over Eastside Bypass.
- (4) Dickinson Ferry Road (Greenhouse Road) Access Bridge, across channel of Eastside Bypass.
- (5) Chamberlain Road Access Bridge, across channel of Eastside Bypass.

County of Madera

- (1) Avenue 21 Bridge, over Eastside Bypass.
- (2) Road 4 Bridge, over Eastside Bypass.
- (3) Avenue 18-1/2 Bridge, over Eastside Bypass.
- (4) Road 9 Bridge, over Eastside Bypass.
- (5) Avenue 14 Bridge, over Chowchilla Bypass.
- (6) Firebaugh-Madera Road Bridge, over Chowchilla.
- (7) Firebaugh-Fresno Road Bridge, over Chowchilla Bypass.
- (8) Road 9 Bridge, over Berenda Slough.

District's Maintenance Responsibility.

6211.1

The levee district's maintenance responsibility concerning the above-mentioned county bridges has been agreed to as follows:

- (1) The substructure of the bridges;
- (2) The waterside approach embankments to the bridges and adjoining levee;

District's Maintenance Responsibility. (Continued) 6211.1

- (3) The embankment slope stone protection.

Counties' Maintenance Responsibility. The 6211.2

Counties of Merced and Madera maintenance responsibility concerning their respective county bridges has been agreed to as follows:

- (1) Roadway surfaces, including shoulders and parking area over and across embankments, levees and bridges;
- (2) The landside approach embankments to the bridges;
- (3) The superstructure of the bridges, including the deck and roadway, guardrails or sidewalks, and lighting facilities where provided;
- (4) Markings and signs on the bridges;
- (5) Maintaining control of public traffic on said roadways with said control to include the erection and maintenance of appropriate roadside signs and warning devices.

Patrol Bridge. The patrol bridge should have a 6212
good appearance and when making inspection look for the following:

Concrete spalling, eroding, severe cracking, or exposure of reinforcing bars; make sure deck expansion hinges are functioning properly, are clean, and metal work and adjacent concrete are in good condition; railings not damaged or out of alignment, and bolts secure; erosion to channel at piles, bridge embankment, bank protection, and abutment seat;

Patrol Bridge. (Continued)

6212

and if protective finishing damaged, repaint with approved type of materials after surfacing is prepared and apply as set forth in contract specifications.

If any item is in need of repair or maintenance include in the next scheduled maintenance activity.

Access Bridges. Low level crossings were con-

6213

structed for the use of individual property owners. They should be checked prior to each flood season and after each period of high flow to see that a condition has not developed which will be detrimental to the safety of the flood control project. Any such condition should be called to the attention of the appropriate landowner for remedial work. These low-level access bridges have removable timber guard rails.

Division of Highways Route 152 Bridge and Route

6214

140 Bridge. The State has an interest in this from the aspect of flood control and the Department of Transportation through ownership of the bridge. The State's flood control responsibility and responsibility of the levee district in the above highway bridge is primarily confined to the effect of the safe functioning of the flood control works.

Any conditions noted in the inspection that may affect the bridge in any way should, as a matter of courtesy, be brought to the attention of the Division of Highways.

Structures. Listed as follows are the items to consider 6220 when making the inspection and maintenance of structures.

Structures. (Continued)

6220

(1) San Joaquin River Structure

This structure shall have a good general appearance and function properly. The entrance and exit of the structure and the barrels of the conduit shall be clear of any foreign objects or debris. Check to see if the concrete is spalling, eroding, cracking excessively, or reinforcing bars are exposed; metal work is not damaged or in need of refinishing; embankment and slope protection adjacent to the structure or appurtenant to, are free of uncontrolled weed growth, and not in need of reshaping or repair. If any item is in need of repair or maintenance include required work in the next scheduled maintenance activity.

(2) Sand Slough Structure

This structure shall have a good general appearance and function properly. The weir and Parshall flume shall be clear of any foreign objects or debris. Check to see if the concrete is spalling, eroding, cracking excessively, or reinforcing bars are exposed; embankment and grouted slope protection adjacent to the structure or appurtenant to are free of uncontrolled weed growth, and not in need of reshaping or repair. If any item is in need of repair or maintenance include in the next scheduled maintenance activity.

(3) Bear Creek Diversion Structure

During the flood season (see paragraph 1600) the district will be responsible for maintenance of the Bear Creek diversion structure and appurtenance excluding the siphon.

Structures. (Continued)

6220

During the irrigation season the East Side Canal and Irrigation Company will be responsible for maintenance of the Bear Creek Irrigation Structure and appurtenances. (Joint Use Agreement #1596 on file at The Reclamation Board.)

(4) Owens Creek Control Structure

This structure shall have a good general appearance and function properly. Check concrete structure and wood decking. See that timber members are properly secured and not damaged. If wood caps, stringers, decking, or treads are in need of repairs or replacement, schedule work for next project maintenance activity.

(5) Drop Structures

These structures shall have a good general appearance and function properly. Check to make sure channel, structure, and immediate downstream channel are clear of debris; stone protection is not undermined or covered by excessive weed growth; concrete is not spalling, eroding, cracking excessively, or reinforcing bars are not exposed; drainage ports are clear and functioning properly. The embankment between the structure and levee shall be included in the regular levee maintenance program. If any item is in need of repair include work for next scheduled maintenance program.

Drainage Ditches and Culverts. Drainage ditches and culverts shall be maintained in good condition and function properly. The ditches shall drain in the direction and manner in which they were designed and constructed. A small

6230

sand dam shall be allowed at the head of the drainage ditch just upstream of the Madera-Firebaugh Road during the nonflood season. Adequate measures shall be taken to insure that drainage ditches are kept open (except in the pilot reach where authorized growth, such as in the sumps, shall be allowed), free of weeds or wild growth, and that trash drift or debris is not allowed to accumulate. Check for change in cross section such as erosion, sloughing, scouring, and disposition of soil. Growth in the low water channel of the pilot reach shall be carefully monitored by the Department of Water Resources Inspectors. Should growth in the low water channel in the opinion of these inspectors require remedial measures, the Department of Fish and Game will work with the Lower San Joaquin Levee District to correct any problems.

The culvert's inlet channel, barrel, and outlet shall be free of trash or debris. Check for erosion adjacent to the embankment of the inlet and outlet of the pipe. If any drainage ditch reach or culvert is in need of repair, cleaning, or other type of maintenance function include work in the next scheduled maintenance activity.

Drain Channel and Pipe Arch Culvert. Drain channel and 6240 pipe arch culverts shall be maintained in good condition and function properly. Adequate measures shall be taken to insure that the Drain Channel is kept open, free of weeds or wild growth, and that trash or debris is not allowed to accumulate.

Check for change in cross section such as erosion, sloughing, scouring, and disposition of debris material.

The pipe arches' inlet, barrel, and outlet shall be free of trash or debris. Check for erosion adjacent to the embankment and the channel inlet and outlet of the culverts. Inspect the entire length of the pipe arches for damage to the plates and bituminous protective coating. If the Drain Channel is in need of repair, cleaning, or weed control, and the pipe arches are in need of repair to plates or protective coating, or other type of maintenance function, include work in the next scheduled maintenance activity.

Fencing and Gates. Fencing and gates shall be main-

tained in good condition and function properly. Fence and gate posts shall be stable, true to line and plumb; barbed wire shall be continuous, taut, properly spaced and attached to each post with wire stay at third points between posts. If any fencing or gate is in need of repair, replacement or other type of maintenance include in the next scheduled maintenance activity.

After a high-water period if any channel breakaway fencing needs to be reinstalled, it shall be reinstalled as soon as practical. This condition is dependent on the wetness of the berm in the flood plain.

Hydrologic Facilities. Staff gages shall be maintained 6260
by the district. Stage recorder installations are maintained
by their respective owners. The district should remove trash
or debris that accumulates near an installation, and notify
the interested owner if repairs or maintenance seems necessary.

The staff gage installations shall be kept in good condi-
tion and clear of trash or debris; check to see if posts are
plumb; erosion to channel near posts is not taking place; post
and face plate is not damaged. Any item that needs repairing,
replacing or maintaining shall be included in the next scheduled
maintenance activity.

If vertical control of the staff gages requires checking
or the enameled metal plate needs replacing or maintenance,
notify the Department of Water Resources, San Joaquin District
Office in Fresno.

Mileage Markers. Mileage markers shall be maintained 6270
in good condition. Check to see that markers are plumb, clean,
not bent or damaged. If markers require repair, replacement,
or maintenance such as painting, straightening, parts replace-
ment, complete replacement, or cleaning include work in next
scheduled maintenance activity.

Checklists

6300

Recommended checklists for miscellaneous facilities are shown
in Appendix F. (See pages F-10 to F-24 inclusive.)

Operation

6400

Miscellaneous facilities shall be operated to prevent or reduce flooding during periods of high water. Those facilities constructed as a part of the protective works shall not be used for purposes other than flood protection during the flood season without approval of The Reclamation Board, unless designed therefor.

Bridges. The above general operation statement applies to this paragraph. 6410

The removable wooden guard rails on the private access bridges shall be removed during the flood season to provide for the unimpeded flow of water across the low level bridges.

Structures. The above general operation statement applied to this paragraph with the following supplemental criteria: 6420

(1) San Joaquin River Structure

The San Joaquin River Structure shall be operated in the following manner.

Manual Operation:

1. Begin gate operation when $Q = 10,000$ cfs in the Interchange Area.
2. Open one gate fully (assumed opening time is one-half hour).
3. Wait two hours.
4. Repeat Steps 2 and 3 until all gates are open.

If the district desires to modify the gates to a power operation, the manual operation schedule will not be valid

because the short gate opening time will cause a high initial surge velocity. The power operation schedule is predicated on opening each gate in two steps of short time magnitude with a 30-minute waiting period between each step to minimize the surge caused by the rapid opening.

Power Operation:

1. Begin operation with $Q = 10,000$ cfs in the Interchange Area.
2. Open one gate through one-half opening (assumed opening time five minutes).
3. Wait one-half hour.
4. Repeat Step 2.
5. Wait two hours.
6. Repeat Steps 2 through 5 until all gates are open.

It is suggested that whenever the gates are operated, the two interior gates be opened first in order to maintain relatively symmetrical discharge from the structure. Actual operating conditions may show that safe and practical adjustments to the schedules can be made.

During periods of receding floodflows in the Interchange Area, the gates may be operated by reversing the opening schedule, closing the four gates when the flood channel capacity drops below 10,000 cfs, or leaving the gates open during the entire recession of flow.

Following is a drawing "San Joaquin River Structure Rating Curves", dated July 14, 1967, showing the theoretical

discharge rating of the structure in relation to the control elevations of the structure and the flow through the Interchange Area. The control gate operator can monitor the staff gage on the San Joaquin River just upstream of the structure. The Department of Water Resources, San Joaquin District Office in Fresno will assist the district to verify the computed rating curve for the staff gage at this location. If the staff gage cannot be read, the Eastside Bypass' El Nido gaging station can serve to monitor the gate operation.

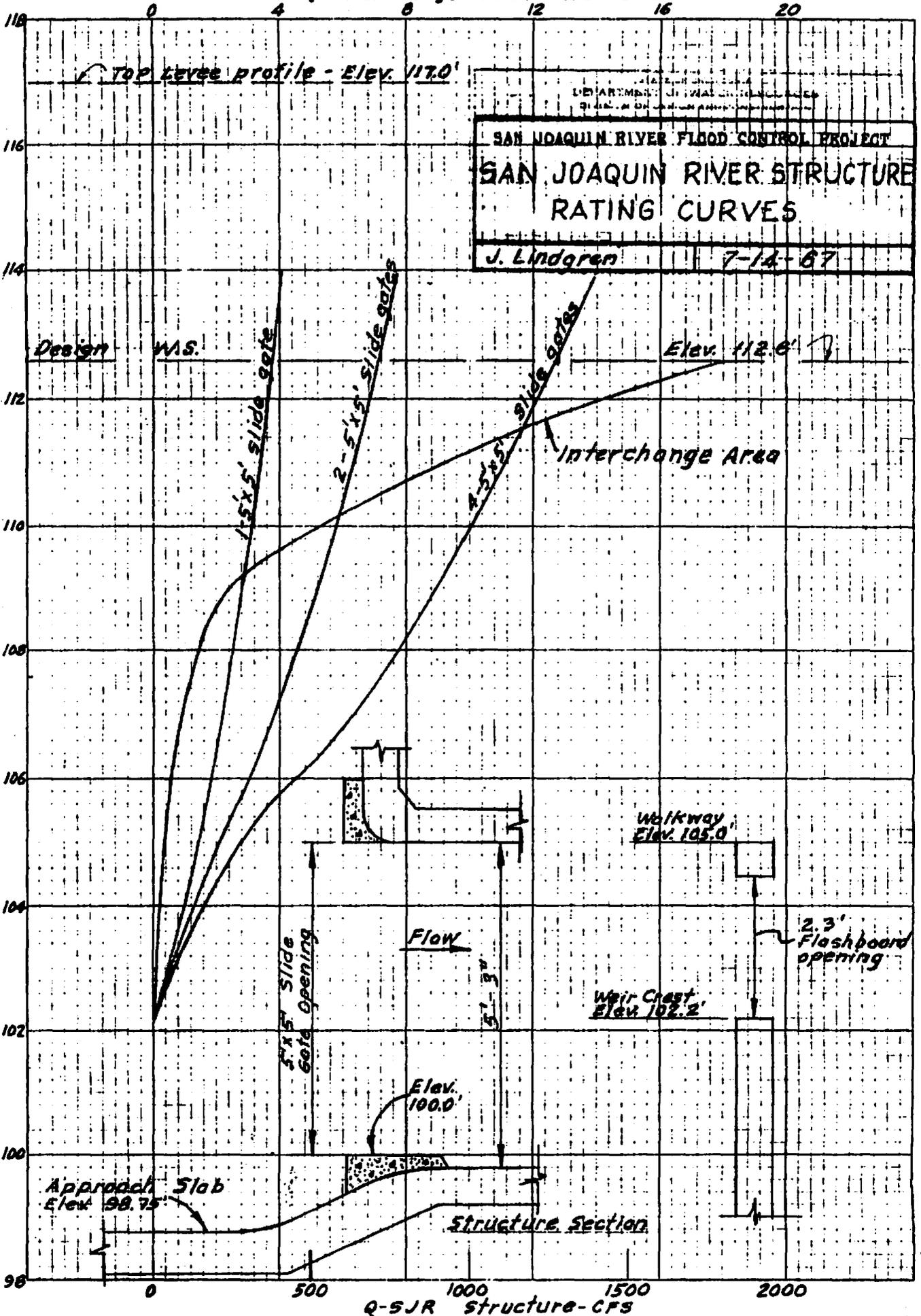
(2) Sand Slough Structure

The Sand Slough structure and San Joaquin River control structure have been designed to divide and divide automatically the flows, ranging from minimum measurable flow to and including 200 cfs, occurring in the San Joaquin River above the river and the Sand Slough structure so that the first 50 cfs of flow in the river will be diverted into Sand Slough and that all flows in excess thereof will be divided as equally as possible between the river and Sand Slough. In addition, the structure has been so designed so that the automatic low flows diversion may be changed temporarily by the Superintendent whenever necessary to deliver water introduced into the river only for transportation and regulated so as not to affect the water rights of local interests.

(3) Bear Creek Siphon and Diversion Structure

All flashboards shall be removed from the diversion structure during the flood season, November 15 to June 15 of each water year, or shall be removed as directed.

Q Interchange Area - 1000 CFS



KOE 10 X 10 TO THE INCH 46 0703
7 1/2 X 10 INCHES
KEUFFEL & ESSER CO.

Drainage Ditches and Culverts. The above general operation statement applies to this paragraph. 6430

Drain Channel and Pipe Arch Culverts. The above general operation statement applied to this paragraph. 6440

Fencing and Gates. The above general operation statement applied to this paragraph. 6450

Hydrologic Facilities. The above general operation statement applied to this paragraph with the following supplemental criteria: 6460

Staff Gages. The staff gage installations constructed as a part of the project are for the purpose of indexing flows. The staff gages as described in Section 7141 shall be read and recorded once a week on a routine basis throughout the flood season. Each month's record shall be duplicated and a copy sent to the Department of Water Resources, P. O. Box 388, Sacramento, California 95802 -- Attention: Flood Control Office, Flood Forecasting Branch. 6461

To reproduce an adequate stage hydrograph of moderate and high flows, it will be necessary to record water surface elevations at more frequent intervals than the once-a-week basis described above. The following criteria will be of assistance for period of recording: with moderate to high flows in the low flow channel, record water surface elevation once a day; when the water stage is above the toe of the levee, read and record the water stage every six hours. In

the latter case, in all probability, the district should be in a condition of levee patrols required on a 24-hour basis.

A sample copy of Staff Gage Record form can be found following this paragraph. Make an original copy and reproduce it so that an ample supply is available for use. One form will readily contain the regular monthly report of one stage reading per station per week: Eight days' record of one stage reading per day; and two days' record of four stage readings per day. The time of the corresponding staff gage reading can be recorded in either of the two accepted methods. These are 1 to 12 o'clock a.m. or p.m. and the 24-hour clock 0000 to 2400 hours.

RECORD OF STAFF GAGE READINGS

19__

STATION	MONTH	DAY							
BEAR CR. AT EAST SIDE CANAL	TIME								
	STAGE								
OWENS CR. AT EAST SIDE CANAL	TIME								
	STAGE								
MARIPOSA BYPASS AT EASTSIDE BYPASS	TIME								
	STAGE								
SAN JOAQUIN R. AT EASTSIDE BYPASS	TIME								
	STAGE								
EASTSIDE BYPASS AT WASHINGTON ROAD	TIME								
	STAGE								
ASH SLOUGH AT CHOWCHILLA CANAL	TIME								
	STAGE								
BERENDA SLOUGH AT CHOWCHILLA CANAL	TIME								
	STAGE								
FRESNO R. AT CHOWCHILLA CANAL	TIME								
	STAGE								

NOTE:

	<u>NOON</u>						<u>MIDNIGHT</u>		
NORMAL CLOCK	3 AM	6 AM	9 AM	12:05 PM	3 PM	6 PM	9 PM	12 PM	12:45 AM
24-HOUR CLOCK	0300	0600	0900	1205	1500	1800	2100	2400	0045

REPAIR OF DAMAGE TO PROJECT WORKS AND
METHODS OF COMBATING FLOOD CONDITIONS

7000

Repair of Damage

7100

In the event of serious damage to the project works, whether due to flood conditions or other causes and which may be beyond the capability of local interests to repair, the district shall contact the representative of the Department of Water Resources, State of California, who coordinates maintenance of the project works of the Lower San Joaquin River Flood Control Project. The state representative will give assistance or advice, or will determine appropriate action to be taken

Applicable Methods of Combating Floods

7200

For applicable methods of combating flood conditions, reference is made to the Department of Water Resources "Flood Emergency Operations Manual", where the subject is fully covered. For plates of methods of Flood Fighting see Appendix E.

APPENDICES

- A Copies of Agreements Providing Assurances by the Lower San Joaquin Levee District and Resolution Adopted by The Reclamation Board and copies of a Lease between the Department of Fish and Game and The Reclamation Board.
- B Location Map of Lower San Joaquin River Flood Control Project, Merced River to Friant Dam.
- C Map Showing Levee Units of Lower San Joaquin River Flood Control Project, Merced River to Friant Dam.
- D Schematic Diagram of Design Flows for Adopted Plan of Lower San Joaquin River Flood Control Project, Merced River to Friant Dam.
- F Plates of Methods of Flood Fighting.
- F Checklists.
- G Suggested Semiannual Report Form.

APPENDIX A

A G R E E M E N T

This agreement made and entered into by and between THE RECLAMATION BOARD of the State of California, hereinafter referred to as the "Board" and the LOWER SAN JOAQUIN LEVEE DISTRICT, hereinafter referred to as the "District", on the 31st day of March, 1956, in view of the following circumstances:

WHEREAS, the Federal Flood Control Act of 1944 (58 Stat. 887) authorized construction by the United States of a project of flood control for the San Joaquin River as described in House Document No. 2, 78th Congress, Second Session; and

WHEREAS, the State of California in 1945 authorized the same project of flood control, Section 12651 of the Water Code, and authorized The Reclamation Board to give satisfactory assurances to the Secretary of the Army that the required local cooperation be furnished by the State in connection with the aforesaid project; and

WHEREAS, the State Legislature has authorized the State Reclamation Board to acquire the land easements and rights of way necessary for construction of the project, in accordance with the authorized plan of flood control, and has appropriated funds to commence acquisition of said lands, easements and rights of way; and

WHEREAS, The Reclamation Board is not authorized to expend any funds upon this project until some other public agency has assumed the obligation of maintenance and operation of the

works and the obligation to hold the United States harmless from damages due to the construction of the works; and

WHEREAS, Congress has appropriated funds necessary to commence construction of the project by the Corps of Engineers, United States Army, and the Corps of Engineers has requested that the State fulfill its obligation in the acquisition of lands, easements and rights of way; and

WHEREAS, the proposed project for the San Joaquin River will be beneficial to the lands and properties located within the Lower San Joaquin Levee District and the flood control works presently maintained and operated by said District;

NOW, THEREFORE, IT IS HEREBY AGREED:

(1) The Board, as funds become available to it for expenditure, will acquire, without cost to the District, such lands, easements and rights of way as may be necessary for the construction of the project of flood control for the Lower San Joaquin River and its tributaries as authorized by Section 12651 of the Water Code of the State of California, or as subsequently modified; provided, however, that lands, easements and rights of way presently utilized for or occupied by levee and channel improvements or other flood control project works shall be conveyed, without charge, by the District to the Sacramento and San Joaquin Drainage District for joint use by the latter agency and the District for flood control and reclamation purposes.

- (2) In consideration therefor the District agrees:
- (a) To hold and save the United States free from damages due to the construction works which lie within the boundaries or jurisdiction of the Lower San Joaquin Levee District, and also from damages due to their subsequent maintenance and operation;
 - (b) To maintain and operate, in accordance with the regulations prescribed by the Secretary of the Army, all levee and channel improvements together with all other project works within the jurisdiction or boundaries of the Lower San Joaquin Levee District. Maintenance and operation of these works shall commence immediately, but shall not include the performance of work to be accomplished in connection with the initial construction of the project;
 - (c) To hold and save the State of California, the Sacramento and San Joaquin Drainage District and The Reclamation Board, their successors or assigns, free and harmless from any and all claims arising out of or in connection with the aforesaid obligations assumed by the Lower San Joaquin Levee District.

IN WITNESS WHEREOF, the parties hereto have executed this agreement on the date first hereinabove mentioned.

LOWER SAN JOAQUIN LEVEE DISTRICT

By /s/ H. B. Wolfe
Chairman President

By /s/ A. R. Cocke
Secretary

THE RECLAMATION BOARD

By /s/ A. R. Gallaway, Jr.
President

By /s/ George H. Holmes
Secretary

A G R E E M E N T

This agreement made and entered into by and between THE RECLAMATION BOARD of the State of California, hereinafter referred to as the "Board", and the LOWER SAN JOAQUIN LEVEE DISTRICT, hereinafter referred to as "District", on the 7th day of October, 1958, in view of the following circumstances:

WHEREAS, the Federal Flood Control Act of 1944 (58 Stat. 887) authorized construction by the United States of a project of flood control for the San Joaquin River as described in House Document No. 2, 78th Congress, Second Session; and

WHEREAS, the State of California in 1945 authorized the Board to give satisfactory assurances to the Secretary of the Army that the required local cooperation be furnished by the State in connection with the aforesaid project; and

WHEREAS, the State Legislature in 1955 authorized the Board to adopt a modified project of flood control for the area lying within the boundaries of District, by the amendment of Section 8621 of the Water Code; and

WHEREAS, the Board did on December 12, 1955, adopt a modified plan of flood control for this area and did on March 26, 1958, modify the said plan subject to certain conditions; and

WHEREAS, the State Legislature has appropriated funds to the Board for the commencement of the acquisition of lands, easements and rights of way for this project and for the commencement of its construction; and

WHEREAS, the Board is not authorized to expend these funds upon the project until some other public agency has assumed the obligation of maintaining and operating the project works and the obligation to hold and save the United States and the State free and harmless from damages as set forth below; and

WHEREAS, "District" has the authority to assume these obligations; and

WHEREAS, the proposed project for this area will be beneficial to the lands and properties located within District;

NOW, THEREFORE, IT IS HEREBY AGREED:

(1) That District hereby agrees:

- (a) To hold and save the United States free from damages due to the construction works;
- (b) To, upon completion of the construction by the Board of any portion of the above project and receipt of written notice from the Board of such completion, thereafter hold and save the State of California and the Board harmless from all claims, damages, or liability due to incident to the design, construction, operation, repair, and maintenance of such portion of the said plan of improvement for flood control, whether the same be caused by the negligence of the State of California, or the Board, or of their officers, agents or employees, or otherwise.

(c) To, upon completion of the construction by the Board of any portion of the above project and receipt of written notice from the Board of such completion, thereafter maintain and operate, in accordance with the regulations prescribed by the Board or the United States, all of such portion of the said plan of improvement for flood control.

(2) That upon final execution and approval of this agreement that certain agreement between the parties hereto dated March 31, 1956, shall terminate.

IN WITNESS WHEREOF, the parties hereto have executed this agreement on the date first hereinabove mentioned.

THE RECLAMATION BOARD

By /s/ A. R. Gallaway, Jr.
President

By /s/ George H. Holmes
Secretary

LOWER SAN JOAQUIN LEVEE DISTRICT

By /s/ H. B. Wolfsen
President

By /s/ A. R. Cocke
Secretary

R E S O L U T I O N

ADOPTED BY THE RECLAMATION BOARD
MAY 4, 1961

WHEREAS, this Board did on December 12, 1955, in Los Banos, California, pursuant to Section 8621 of the Water Code of the State of California, adopt a substitute plan of flood control for San Joaquin River and tributaries between the Mouth of the Merced River and Friant Dam, as set forth in a report of the Division of Water Resources, Department of Public Works, issued in July 1954 and supplemented in November 1955; and

WHEREAS, this Board did modify the said substitute plan at a meeting in Los Banos on March 26, 1958, in accordance with the report of the Department of Water Resources entitled "Supplement to 1954 Report on Control of Floods, Lower San Joaquin River and Tributaries, Friant Dam to Merced River", dated February 1958; and

WHEREAS, both the original plan and the modification thereof were approved by the Department of Finance and the Corps of Engineers; and

WHEREAS, various interests have raised objections to that portion of the plan involving the area upstream of Sand Slough; and

WHEREAS, a hearing was held in Los Banos on July 24, 1959, to consider modification of the plan between Gravelly Ford Canal and the proposed Fresno River Detention Basin; and

WHEREAS, as a result of this hearing the Board did appoint Harold E. Hedger, an experienced consulting engineer, to

thoroughly investigate possible alternate plans in this reach of the project; and

WHEREAS, on July 20, 1960, said Harold E. Hedger did present a fully documented report to this Board, copies of which were distributed widely among individuals, associations and public bodies throughout the affected areas and which was discussed at a public hearing of this Board held in Los Banos on December 1, 1960; and

WHEREAS, the plan adopted on December 12, 1955, and the modification thereof on March 26, 1958, contemplated that many years might elapse before flood control reservoirs were constructed on Fresno and Chowchilla Rivers and that early construction and operation of the Fresno River Detention Basin and associated works as a part of the Lower San Joaquin Flood Control Project would be necessary during the period prior to completion of such reservoirs; and

WHEREAS, rights of way for said Fresno River Detention Basin and certain associated features were purchased by this Board in anticipation of such early construction and operation and

WHEREAS, reports of the Chief of Engineers to the Congress with respect to Fresno and Chowchilla River Reservoirs are far advanced, bills for authorization of said reservoirs are pending in the Congress, and the conditions which led this Board to plan for interim operation of said Detention Basin features are much less likely to occur; and

WHEREAS, at said December 1, 1960 public hearing and subsequently thereto it was proposed that further investigation be made a plan to carry part of the waters of the San Joaquin River in a by-pass following the Chowchilla Canal to Fresno River, thence northwesterly to Sand Slough rather than only to the vicinity of the Fresno River Detention Basin; and

WHEREAS, such an investigation was made by the Department of Water Resources and the results presented in a memorandum report dated March 15, 1961; and

WHEREAS, the results of this investigation were reported to this Board at a public hearing held in Sacramento on March 16, 1961, and lengthy testimony was received from the proponents and opponents of the said modification of the project and the said modification of the project was described in full detail; and

WHEREAS, this Board has thoroughly reviewed all of the material presented to it at the various public hearings and meetings and in the various reports involving proposed modification of the said March 26, 1958 plan; and

WHEREAS, this study has revealed the superiority from a flood control standpoint of modifying the project in accordance with the recommendation of the Lower San Joaquin Levee District, to wit: By eliminating construction of the Fresno River Detention Basin and associated features and by constructing a Chowchilla Canal By-pass in general conformance with the plan outlined in the said memorandum report of March 15, 1961; and

WHEREAS, the estimated cost to construct such a modified plan between Sand Slough and the head of Gravelly Ford Canal is

\$9,059,000, while the cost to construct the previously adopted plan is now estimated to be \$9,701,000; and

WHEREAS, any plan which may be adopted modifying the plan will require the approval of the Department of Finance and the Corps of Engineers, U. S. Army, and will also require the revision of the October 7, 1958, agreement between this Board and the Lower San Joaquin Levee District:

NOW, THEREFORE, BE IT HEREBY RESOLVED that this Board does determine that the modification of the plan of flood control for the San Joaquin River and Tributaries, as fully described at its public hearing of March 16, 1961, which did in substance provide for a by-pass to divert up to 5,500 cubic feet per second of water from the San Joaquin River at the head of Lone Willow Slough through the Chowchilla Canal, northerly to the area of Sand Slough, and for elimination of the Fresno River Detention Basin and related works, will substantially improve the project of flood control while reducing the overall cost of the project, this Board does, subject to modification from time to time by this Board, adopt this modified substitute plan as outlined at its meeting of March 16, 1961, subject to the following express conditions:

(1) That no construction shall be commenced until new assurances, satisfactory to this Board, have been received whereby the Lower San Joaquin Levee District, or other responsible entities agree to operate and maintain the project upon its completion and to hold and save the United States free from damages due to

the construction works, and to hold and save the State of California harmless from all claims, damages or liability due or incidental to the design, construction, operation, repair and maintenance of any portion of the project.

(2) Land now owned by the State and acquired by this Board for the Fresno River Detention Basin and associated features be held under control of this Board pending disposal following completion of flood control reservoirs on Fresno and Chochilla Rivers.

(3) That the Department of Finance and the Corps of Engineers shall approve said project as modified prior to the commencement of any construction or any right of way acquisition.

(4) That no payment shall be made for any existing flood control works or for any lands, easements or rights of way on which such works have been constructed, which will be incorporated partially or wholly into the project.

STATE OF CALIFORNIA)
COUNTY OF SACRAMENTO)ss
Office of The Reclamation Board)

I, ROBERT W. JAMES, Assistant Secretary of The Reclamation Board, do hereby certify that the above foregoing is a true and correct copy of a resolution adopted by The Reclamation Board at its meeting held May 4, 1961.

IN WITNESS WHEREOF, I have hereunto set my hand and
affixed the official seal of The Reclamation Board, this 9th day
of May, 1961.

/s/ Robert W. James
ROBERT W. JAMES
Assistant Secretary

"SEAL"

A G R E E M E N T

THIS AGREEMENT made and entered into by and between THE RECLAMATION BOARD of the State of California, hereinafter referred to as the "Board", and the LOWER SAN JOAQUIN LEVEE DISTRICT, hereinafter referred to as "District", on the 2nd day of October, 1962, as supplemental and amendatory to that certain agreement between the parties hereto, dated October 7, 1958, in view of the following circumstances:

WHEREAS, the project of flood control for the San Joaquin River and tributaries between the mouth of the Merced River and Friant Dam, adopted by Board on December 12, 1955, as modified by the Board on March 26, 1958, provided that the Pick-Anderson By-pass should carry up to 500 cubic feet per second of the project flow; and

WHEREAS, the Board and the District desire that the Pick-Anderson By-pass be eliminated as a flood channel and that the structures at the head of Sand Slough be modified to divert an additional 500 cubic feet per second of flow down the Eastside By-pass and to limit the flow down the San Joaquin River immediately below the structures at Sand Slough to a maximum of 1500 cubic feet per second; and

WHEREAS, District did, by a resolution adopted on April 10, 1962, approve the modification of the project in the manner recited above; and

WHEREAS, Board concluded that the said modification in the project was feasible and, therefore, did, on September 6, 1962,

so modify the project subject to District executing within 30 days a revised agreement agreeing to assume full responsibility for any liability arising from the said modification;

NOW, THEREFORE, IT IS HEREBY AGREED:

That all of the provisions of that certain agreement dated October 7, 1958, between the parties hereto, shall be fully applicable to the project of flood control for the San Joaquin River and tributaries upstream of the mouth of the Merced River as modified by the Board on September 6, 1962, by the elimination of the Pick-Anderson By-pass and the limiting of the flow in the San Joaquin River immediately below the structures Sand Slough to 1500 cubic feet per second.

IN WITNESS WHEREOF, the parties hereto have executed this agreement on the date first hereinabove written

THE RECLAMATION BOARD of the
State of California

By /s/ Stanley W. Kronick
President

By /s/ Wallace McCormack
Secretary

LOWER SAN JOAQUIN LEVEE
DISTRICT

By /s/ H.B. Wolfson
President

By /s/ D. G. Nelson
President

LEASE BETWEEN THE DEPARTMENT OF FISH
AND GAME AND THE RECLAMATION BOARD
CHOWCHILLA CANAL BYPASS

There is hereby leased to the DEPARTMENT OF FISH AND GAME, pursuant to the Lease Agreement dated March 22, 1977 between said DEPARTMENT and THE RECLAMATION BOARD, an interest, as set forth in Paragraph 3 of said Lease Agreement in the real property hereinafter described upon the terms set forth in Paragraph 4 of said Lease Agreement.

Description:

(See attached Exhibit A, which is made a part hereof by this reference.)

Special Conditions:

1. The real property described hereinabove shall be used for the development and maintenance of wildlife habitat, public recreation, and hunting.
public ~~or~~
2. No/vehicular traffic shall be permitted on the property.
3. Notwithstanding the provisions of Paragraph 1 of said Lease Agreement, the term of this lease will be for a period of five (5) years commencing July 1, 1977 and ending June 30, 1982.

DEPARTMENT OF FISH AND GAME

By *James L. Ledy*

JUN 14 1977

Date: _____

SACRAMENTO AND SAN JOAQUIN
DRAINAGE DISTRICT, acting for
and through The Reclamation
Board

By *[Signature]*

Deputy Director, Department
of Water Resources, acting
for and through The
Reclamation Board

I hereby certify that all conditions for exemption for and through The set forth in State Administrative Manual Section 1209 have been complied with and this document is exempt from review by the Department of Finance.

Asst. Chief Counsel, DWR

[Signature]
Asst. Chief Counsel, DWR

Signature

A-16

APPROVED:

DEPARTMENT OF GENERAL SERVICES

By *John P. Healy*
JOHN P. HEALY, Acting Senior Land Agent

EXHIBIT A TO LEASE NO. 77-728C

All those portions of Sections Twenty-eight (28), Twenty-nine(29), Thirty-two (32) and Thirty-three (33), Township Eleven (11) South, Range Fifteen (15) East, M.D.M. and Sections Four (4), Nine (9), Ten (10), Fifteen (15), Sixteen (16) and Twenty-two (22), Township Twelve (12) South, Range Fifteen (15) East, M.D.M., described in those certain deeds to the Sacramento and San Joaquin Drainage District recorded in the official records of Madera County, California, listed as follows:

<u>DEED NO.</u>	<u>RECORDING DATE</u>	<u>RECORDING DATA</u>
3727	9/28/64	Vol. 914 OR, Pg. 587
3335	12/14/64	Vol. 921 OR, Pg. 164
3469	6/7/65	Vol. 935 OR, Pg. 596
3423	6/7/65	Vol. 935 OR, Pg. 593
3447	6/24/65	Vol. 937 OR, Pg. 326

being the Chowchilla Canal Bypass lying between Avenue 14 and Firebaugh Boulevard, as said roads existed on May 31, 1977, containing an area of 602 acres, more or less.

APPENDIX B

AGREEMENT BETWEEN
THE UNITED STATES OF AMERICA
AND
THE STATE OF CALIFORNIA
FOR LOCAL COOPERATION AT EASTSIDE BYPASS
AT SAN JOAQUIN RIVER

THIS AGREEMENT entered into this 17th day of October 1984, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), represented by the Contracting Officer executing this agreement, and the STATE OF CALIFORNIA (hereinafter called the "State") represented by the California State Reclamation Board, WITNESSETH THAT:

WHEREAS, construction of Lower San Joaquin River and Tributaries Project (hereinafter called the "Project") was authorized by the Flood Control Act of 22 December 1944 and modified by Section 205 of the 1983 Supplemental Appropriations Act (Public Law 98-63); and

WHEREAS, the State hereby represents that it has the authority and capability to furnish the non-Federal cooperation required by the Federal legislation authorizing the Project and by other applicable law for participation in a Project modification within the Eastside Bypass;

NOW, THEREFORE; the parties agree as follows:

1. The State agrees that, upon notification that the Government will commence construction of modifications to the Lower San Joaquin River and Tributaries Project consisting of the removal of sand deposition from within:

EXHIBIT B

the Eastside Bypass at the confluence with the San Joaquin River as described in Design Memorandum No. 5 for the Project, and such modification is to be substantially in accordance with the authorized Project, the State shall, in consideration of the Government commencing this modification of such project, fulfill the requirements of non-Federal cooperation specified in such legislation, to wit:

a. Provide, without cost to the United States, all lands, easements, and rights-of-way necessary for the modifications;

b. Hold and save the United States free from damages due to construction, operation, and maintenance of the Project modification not including damages due to the fault or negligence of the Government or its contractors;

c. Maintain and operate after completion, the Project modification works in accordance with rules and regulations prescribed by the Department of the Army;

d. Undertake all relocations and alterations of roads, bridges, (except railroad bridges), buildings, irrigation facilities, and other utilities which are necessary for the construction and operation of the Project modification;

e. Comply with Section 601 of Title VI of the Civil Rights Act of 1964 (P.L. 88-352) that no person shall be excluded from participation in, denied the benefit of, or be subjected to discrimination in connection with the Project modification on the grounds of race, creed, or national origin.

f. Assure that, in conjunction with acquiring rights-of-way, affected persons will be adequately informed of the benefits, policies, and procedures described in the Uniform Relocation Assistance and Real Property

Acquisition Policies Act of 1970 (Public Law 91-646), and in accordance with Section 210 and 305 of said Act and implementing regulations, assure that:

(1) Fair and reasonable relocation payments and assistance shall be provided for or for displaced persons, as are required to be provided by a Federal agency under Sections 202, 203 and 204 of the Act;

(2) Relocation assistance programs offering the services described in Section 205 of said Act shall be provided to such displaced persons;

(3) Within a reasonable period of time prior to displacement, decent, safe, and sanitary replacement dwellings will be available to displaced persons in accordance with Section 205(c)(3) of said Act;

(4) In acquiring real property, it will be guided, to the greatest extent practicable under State Law, by the land acquisition policies in Section 301 and the provisions of Section 302 of said Act; and

h. Assume responsibility and pay damages, if necessary, in the event there is a failure to perform in accordance with the terms of this agreement and any other applicable provisions of Section 221 of Public Law 91-611.

2. The State hereby gives the Government a right to enter at reasonable times and in a reasonable manner, upon lands which it owns or controls, for access to the modifications for the purpose of inspection. If such inspection shows that the State for any reason is failing to repair and maintain the modifications in accordance with the assurances hereunder and has persisted in such failure after a reasonable notice in writing by the Government delivered to the Assistant Secretary of the Board, the Government

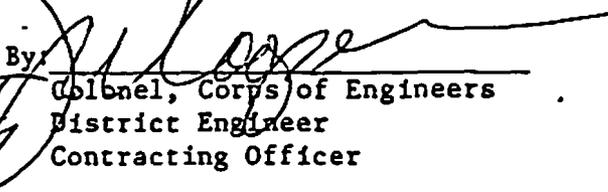
shall have the further right, as stated above, to enter upon the land for the purpose of operating, repairing, and maintaining the modifications.

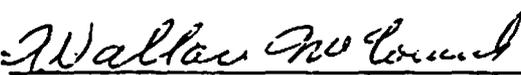
Operation, repair, and maintenance by the Government in such event shall not operate to relieve the State of responsibility to meet its obligations as set forth in paragraph 1 of this Agreement, or to preclude the Government from pursuing any other remedy at law or equity.

IN WITNESS WHEREOF, the parties hereto have executed this contract as of the day and year first above written.

THE UNITED STATES OF AMERICA

THE STATE OF CALIFORNIA

By: 
Lt. Colonel, Corps of Engineers
District Engineer
Contracting Officer

By: 
The Reclamation Board

FOR THE SECRETARY OF THE ARMY

Date: October 7, 1984

Date: 17 October 1984

CERTIFICATE OF APPROVAL

I, the undersigned Attorney at Law, as attorney for the State of California, which said State has undertaken to act as local sponsor of a modification to the Lower San Joaquin River and Tributaries Project, consisting of the removal of sand deposition from within the Eastside Bypass at the confluence of San Joaquin River, hereby certify that I have reviewed the Agreement dated this _____ day of _____, 1984, between the United States of America and the State of California, represented by the California State Reclamation Board, and have approved said Agreement and the provisions contained therein, both as to form and substance, including, but not limited to, those provisions whereby the Board has agreed to pay damages, if necessary, in the event of failure to perform in accordance with Section 221 of Public Law 91-611.

IN WITNESS WHEREOF, I have made and executed this Certificate this

9th day of October, 1984.

John K. Van de Kamp

Attorney General,
State of California

BY:

William D. Cunningham

TITLE:

Deputy Attorney General

CERTIFICATE OF APPROVAL

I, the undersigned Attorney at Law, as legal counsel for The Reclamation Board which has undertaken to act as local sponsor of a modification to the lower San Joaquin River and Tributaries Project consisting of the removal of sand deposition from within the Eastside Bypass at the confluence of San Joaquin River, hereby certify that I have reviewed the Agreement dated the _____ day of _____, 1984, between the United States of America and the State of California and have approved said Agreement and the provisions contained therein, both as to form and substance, including, but not limited to, those provisions whereby the State of California has agreed to pay damages, if necessary, in the event of failure to perform in accordance with Section 221 of Public Law 91-611.

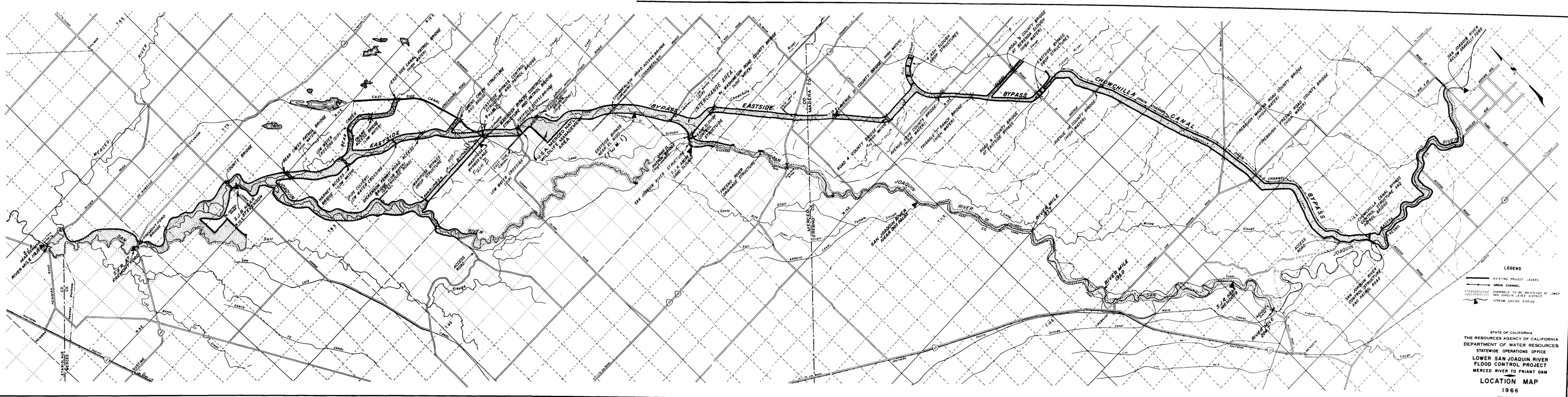
IN WITNESS WHEREOF, I have made and executed this Certificate this _____

9th day of October 1984.

BY: _____

Attorney for The Reclamation Board

APPENDIX B



LEGEND

- EXISTING PROJECT LEVELS
- DRAIN CHANNEL
- CHANNELS TO BE MAINTAINED BY LOWER SAN JOAQUIN LEVEL DISTRICT
- ▲ STREAM GAGING STATION

STATE OF CALIFORNIA
 THE RESOURCES AGENCY OF CALIFORNIA
 DEPARTMENT OF WATER RESOURCES
 STATEWIDE OPERATIONS OFFICE
**LOWER SAN JOAQUIN RIVER
 FLOOD CONTROL PROJECT
 MERCED RIVER TO FRIANT DAM**
LOCATION MAP
 1966
 SCALE OF MILES

APPENDIX C

UNIT No. 1 - SAN JOAQUIN RIVER RIGHT BANK LEVEE ALONG AND ADJACENT TO THE SAN JOAQUIN RIVER FROM JUNCTION OF MERCED RIVER TO A POINT APPROXIMATELY 3.0 MILES UPSTREAM FROM MARIPOSA BYPASS.

UNIT No. 2 - SAN JOAQUIN RIVER LEFT BANK LEVEE ALONG AND ADJACENT TO THE SAN JOAQUIN RIVER FROM JUNCTION WITH SALT SLOUGH TO A POINT APPROXIMATELY 2.0 MILES UPSTREAM FROM MARIPOSA BYPASS.

UNIT No. 3 - SAN JOAQUIN RIVER RIGHT BANK LEVEE ALONG AND ADJACENT TO THE SAN JOAQUIN RIVER FROM EASTSIDE BYPASS AT SAND SLOUGH INTERCHANGE POOL TO A POINT APPROXIMATELY 2.2 MILES UPSTREAM.

UNIT No. 4 - SAN JOAQUIN RIVER LEFT BANK LEVEE ALONG AND ADJACENT TO THE SAN JOAQUIN RIVER FROM EASTSIDE BYPASS AT SAND SLOUGH INTERCHANGE POOL TO A POINT APPROXIMATELY 1.6 MILES UPSTREAM.

UNIT No. 5 - EASTSIDE BYPASS RIGHT BANK LEVEE ALONG AND ADJACENT TO THE ALIGNMENT OF EASTSIDE BYPASS FROM JUNCTION WITH THE SAN JOAQUIN RIVER TO CHOWCHILLA CANAL BYPASS.

UNIT No. 6 - EASTSIDE BYPASS LEFT BANK LEVEE ALONG AND ADJACENT TO THE ALIGNMENT OF EASTSIDE BYPASS FROM JUNCTION WITH THE SAN JOAQUIN RIVER TO CHOWCHILLA CANAL BYPASS.

UNIT No. 7 - BEAR CREEK RIGHT BANK LEVEE ALONG AND ADJACENT TO BEAR CREEK FROM JUNCTION WITH EASTSIDE BYPASS TO EAST SIDE CANAL.

UNIT No. 8 - BEAR CREEK LEFT BANK LEVEE ALONG AND ADJACENT TO BEAR CREEK FROM JUNCTION WITH EASTSIDE BYPASS TO EAST SIDE CANAL.

UNIT No. 9 - OWENS CREEK RIGHT BANK LEVEE ALONG AND ADJACENT TO OWENS CREEK FROM JUNCTION WITH EASTSIDE BYPASS TO EAST SIDE CANAL.

UNIT No. 10 - OWENS CREEK LEFT BANK LEVEE ALONG AND ADJACENT TO OWENS CREEK FROM JUNCTION WITH EASTSIDE BYPASS TO EAST SIDE CANAL.

UNIT No. 11 - MARIPOSA BYPASS RIGHT BANK LEVEE ALONG AND ADJACENT THE ALIGNMENT OF MARIPOSA BYPASS FROM JUNCTION WITH SAN JOAQUIN RIVER TO EASTSIDE BYPASS.

UNIT No. 12 - MARIPOSA BYPASS LEFT BANK LEVEE ALONG AND ADJACENT THE ALIGNMENT OF MARIPOSA BYPASS FROM JUNCTION WITH SAN JOAQUIN RIVER TO EASTSIDE BYPASS.

UNIT No. 13 - ASH SLOUGH RIGHT BANK LEVEE ALONG AND ADJACENT ASH SLOUGH FROM JUNCTION WITH EASTSIDE BYPASS TO CHOWCHILLA CANAL.

UNIT No. 14 - ASH SLOUGH LEFT BANK LEVEE ALONG AND ADJACENT ASH SLOUGH FROM JUNCTION WITH EASTSIDE BYPASS TO CHOWCHILLA CANAL.

UNIT No. 15 - BERENDA SLOUGH RIGHT BANK LEVEE ALONG AND ADJACENT BERENDA SLOUGH FROM JUNCTION WITH EASTSIDE BYPASS TO CHOWCHILLA CANAL.

UNIT No. 16 - BERENDA SLOUGH LEFT BANK LEVEE ALONG AND ADJACENT TO BERENDA SLOUGH FROM JUNCTION WITH EASTSIDE BYPASS TO CHOWCHILLA CANAL.

UNIT No. 17 - CHOWCHILLA CANAL BYPASS RIGHT BANK LEVEE ALONG AND ADJACENT THE ALIGNMENT OF CHOWCHILLA CANAL BYPASS FROM JUNCTION OF EASTSIDE BYPASS AT FRESNO RIVER TO SAN JOAQUIN RIVER.

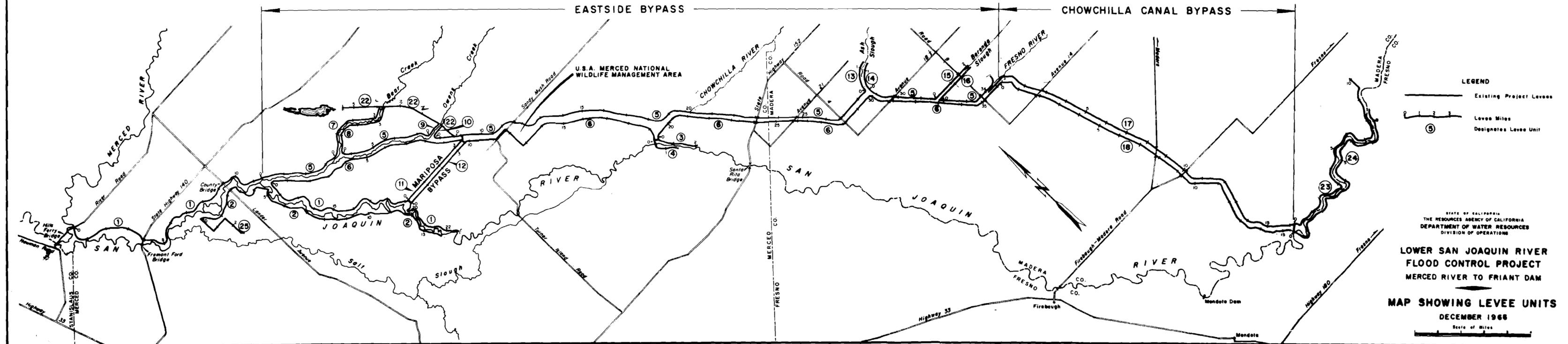
UNIT No. 18 - CHOWCHILLA CANAL BYPASS LEFT BANK LEVEE ALONG AND ADJACENT THE ALIGNMENT OF CHOWCHILLA CANAL BYPASS FROM JUNCTION WITH EASTSIDE BYPASS TO SAN JOAQUIN RIVER.

UNIT No. 22 - EAST SIDE CANAL LEVEE ALONG AND ADJACENT THE LEFT BANK EAST SIDE CANAL EMBANKMENT FROM JUNCTION WITH EASTSIDE BYPASS TO A POINT APPROXIMATELY 1.7 MILES NORTHWEST OF BEAR CREEK.

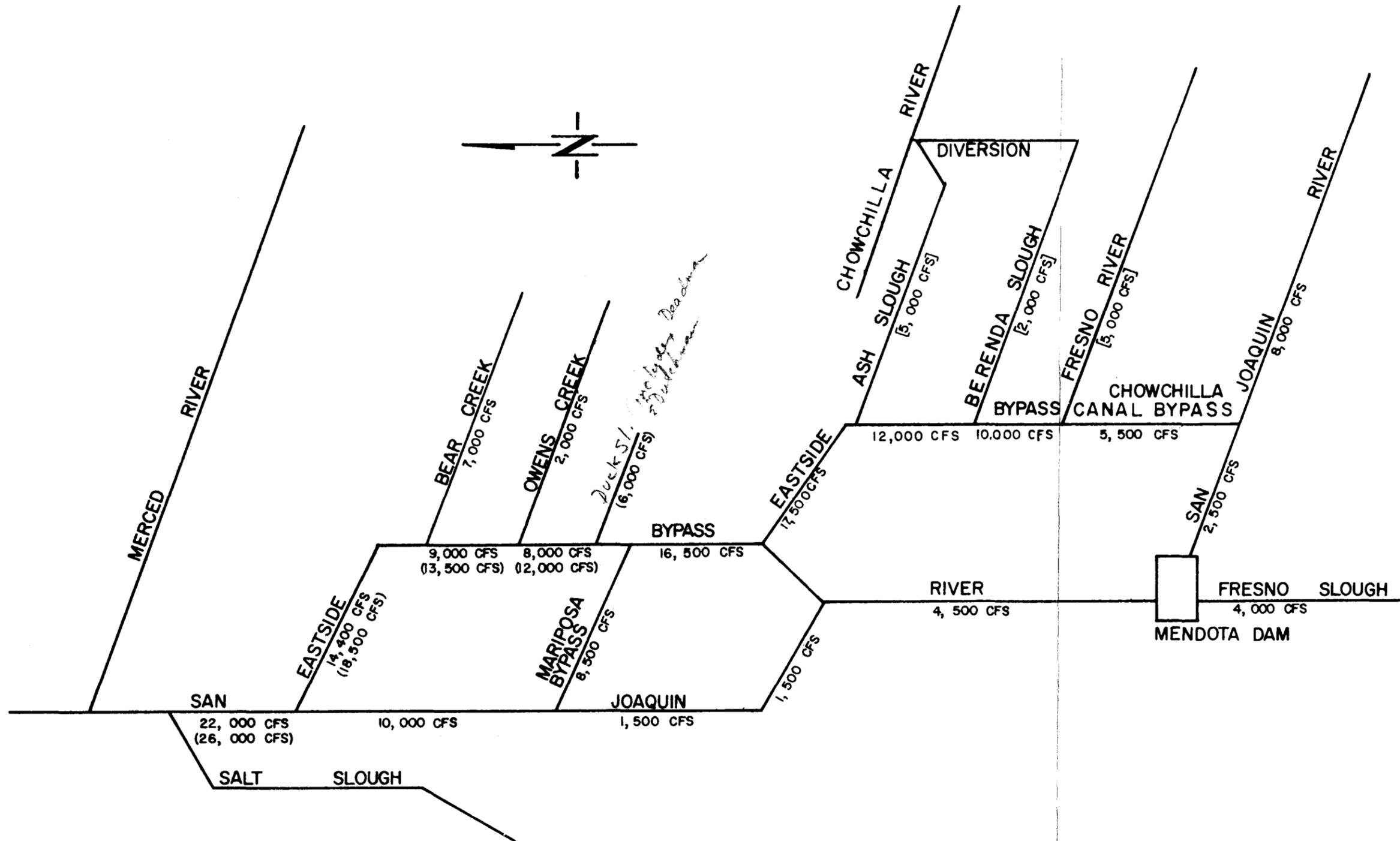
UNIT No. 23 - SAN JOAQUIN RIVER RIGHT BANK LEVEE ALONG AND ADJACENT THE SAN JOAQUIN RIVER FROM JUNCTION WITH CHOWCHILLA CANAL BYPASS TO GRAVELLY FORD CANAL.

UNIT No. 24 - SAN JOAQUIN RIVER LEFT BANK LEVEE ALONG AND ADJACENT THE SAN JOAQUIN RIVER FROM JUNCTION WITH CHOWCHILLA CANAL BYPASS TO A POINT APPROXIMATELY 8.5 MILES UPSTREAM.

UNIT No. 25 - SALT SLOUGH RIGHT BANK LEVEE ALONG AND ADJACENT TO SALT SLOUGH FROM JUNCTION WITH SAN JOAQUIN RIVER TO A POINT APPROXIMATELY 2.5 MILES UPSTREAM.



APPENDIX D



[] FUTURE OPERATING CAPACITY (DESIGNED INTO SYSTEM)
 () FUTURE OPERATING CAPACITY

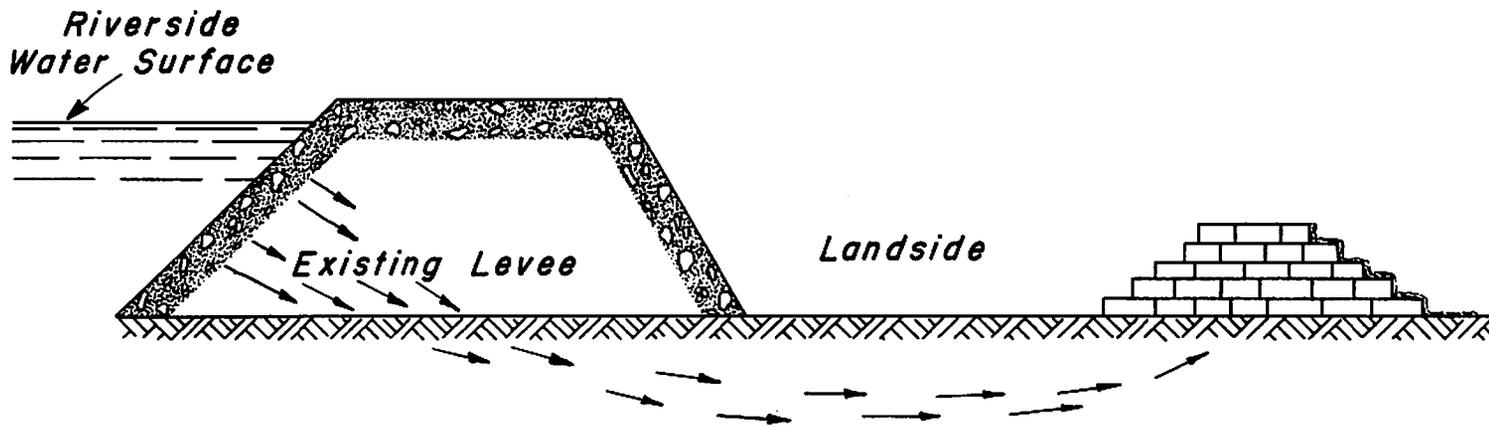
STATE OF CALIFORNIA
 THE RESOURCES AGENCY OF CALIFORNIA
 DEPARTMENT OF WATER RESOURCES
 DIVISION OF OPERATIONS

**LOWER SAN JOAQUIN RIVER
 FLOOD CONTROL PROJECT**
 MERCED RIVER TO FRIANT DAM
 SCHEMATIC DIAGRAM OF DESIGN FLOWS
 FOR ADOPTED PLAN

1964

APPENDIX E

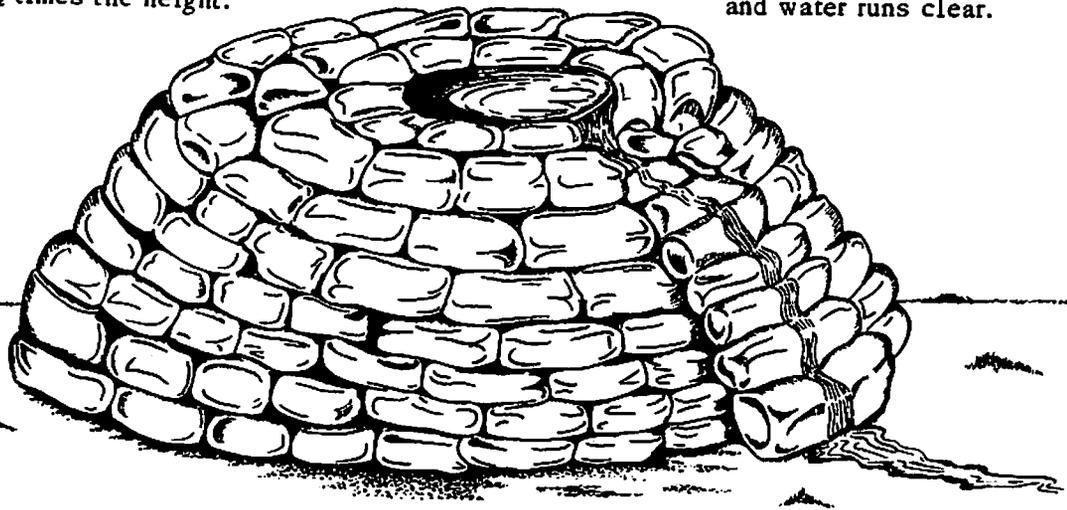
PLATES OF METHODS OF FLOOD FIGHTING



Bottom width should be at least $1\frac{1}{2}$ times the height.

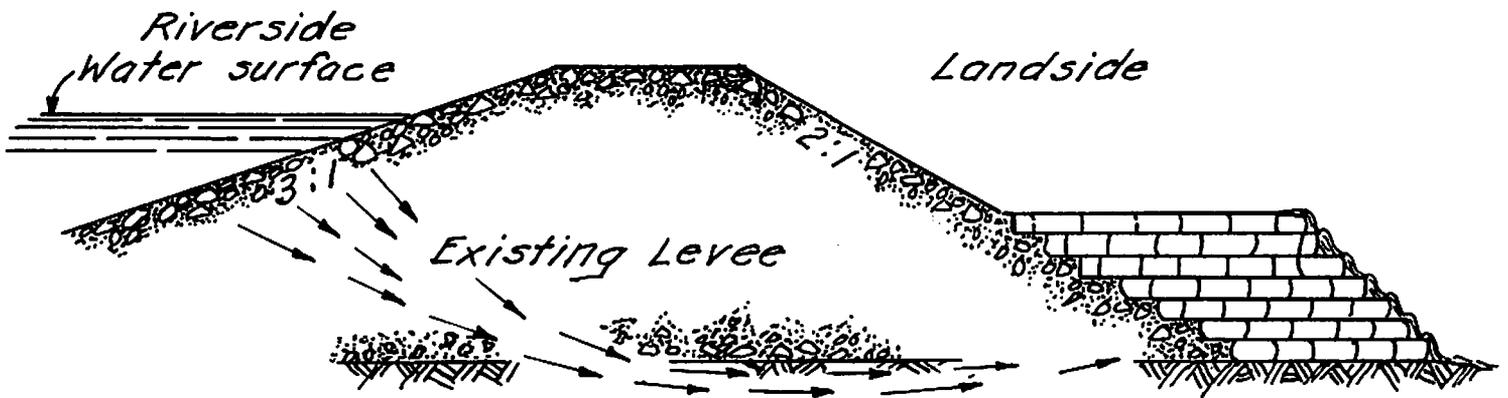
NEVER completely stop the flow from a sand boil. This may cause the boil to "break out" in an adjacent area.

ALWAYS control the boil to the point it ceases to carry material and water runs clear.

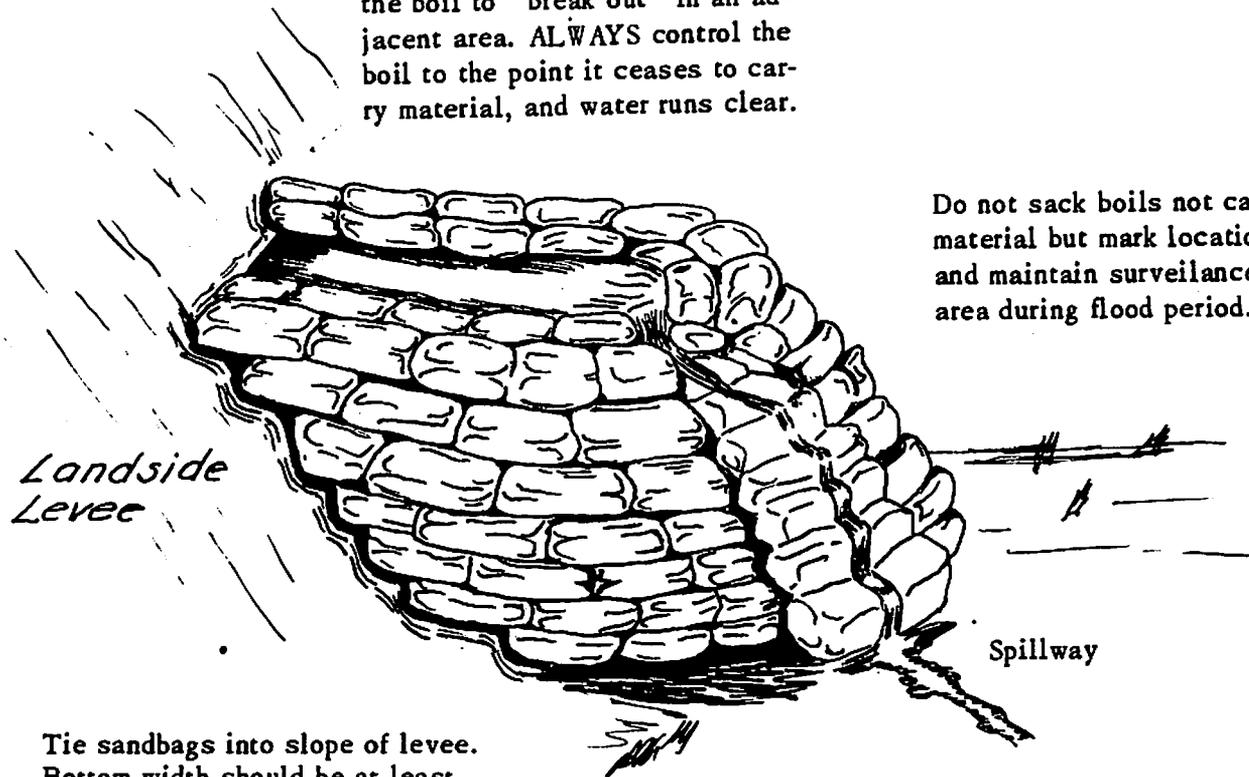


Do not sack boils not carrying material but maintain surveillance during flood periods.

STATE OF CALIFORNIA
 DEPARTMENT OF WATER RESOURCES
 STATEWIDE OPERATIONS OFFICE
 FLOOD OPERATIONS CENTER
 METHODS OF FLOOD FIGHTING
 CONTROL OF SAND BOILS
 (Away from levee)



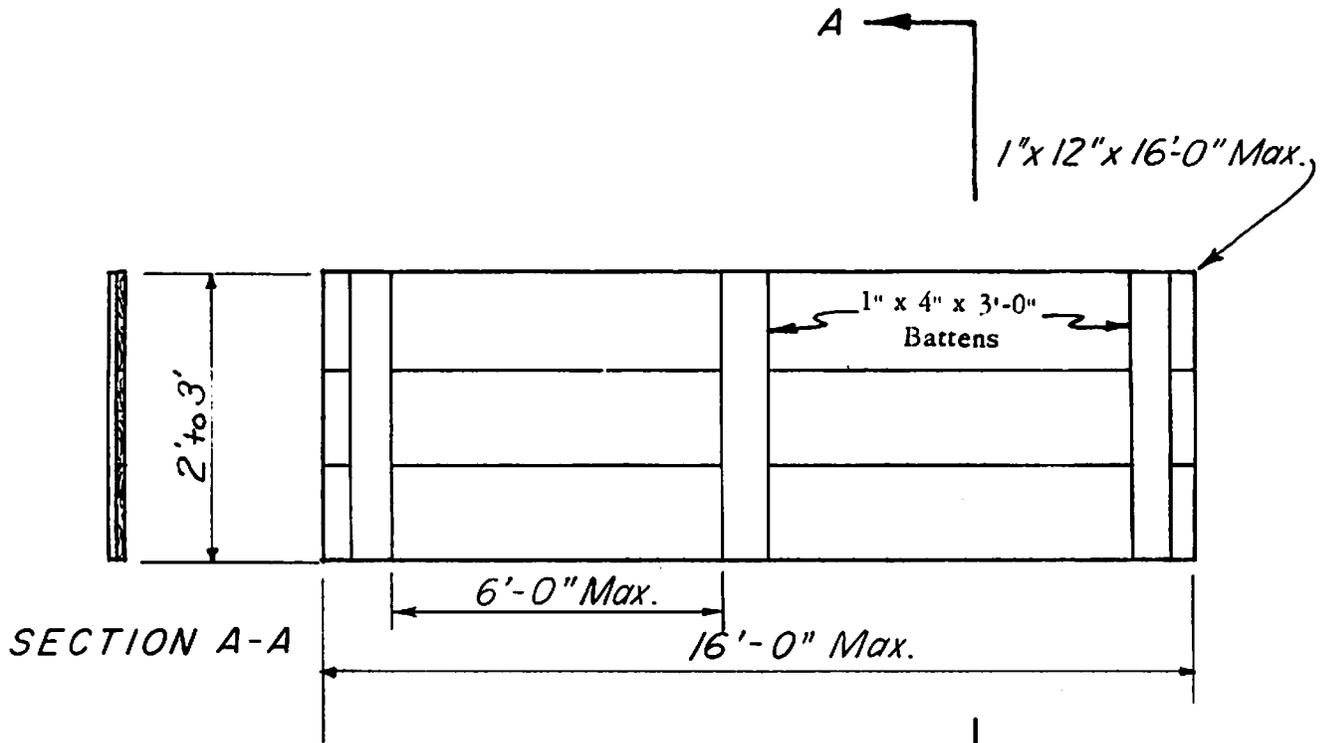
NEVER completely stop the flow from a sand boil. This may cause the boil to "break out" in an adjacent area. ALWAYS control the boil to the point it ceases to carry material, and water runs clear.



Do not sack boils not carrying material but mark location well and maintain surveillance of this area during flood period.

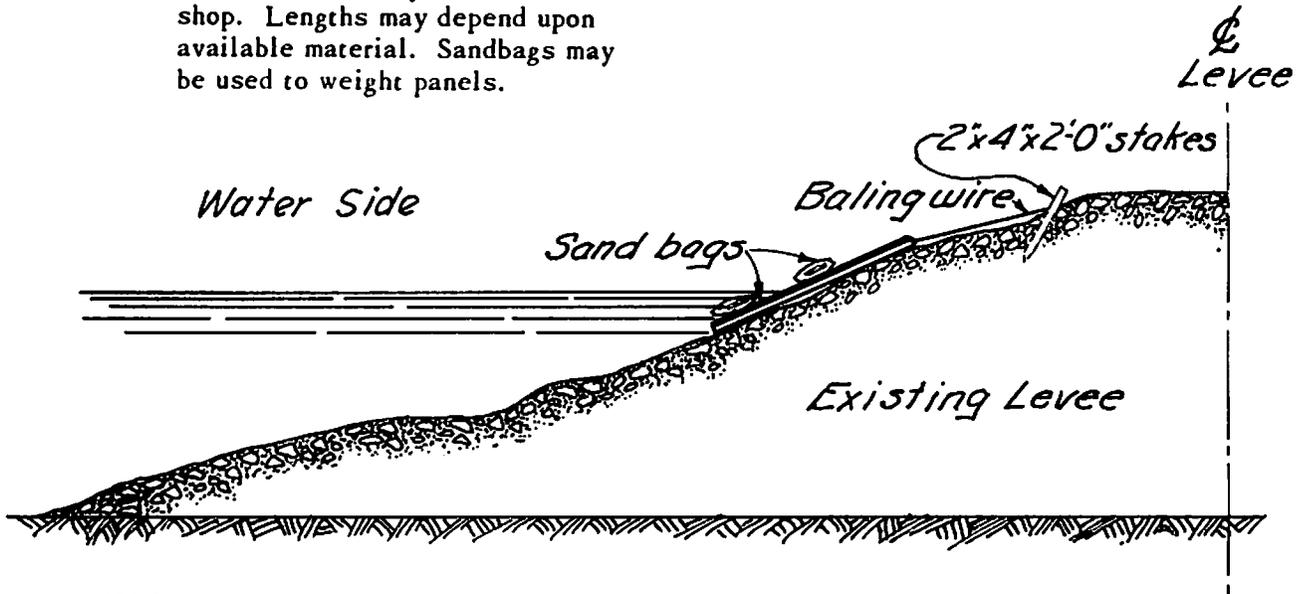
Tie sandbags into slope of levee. Bottom width should be at least 1½ times height.

STATE OF CALIFORNIA
 DEPARTMENT OF WATER RESOURCES
 STATEWIDE OPERATIONS OFFICE
 FLOOD OPERATIONS CENTER
 METHODS OF FLOOD FIGHTING
 CONTROL OF SAND BOILS
 (Near levee)



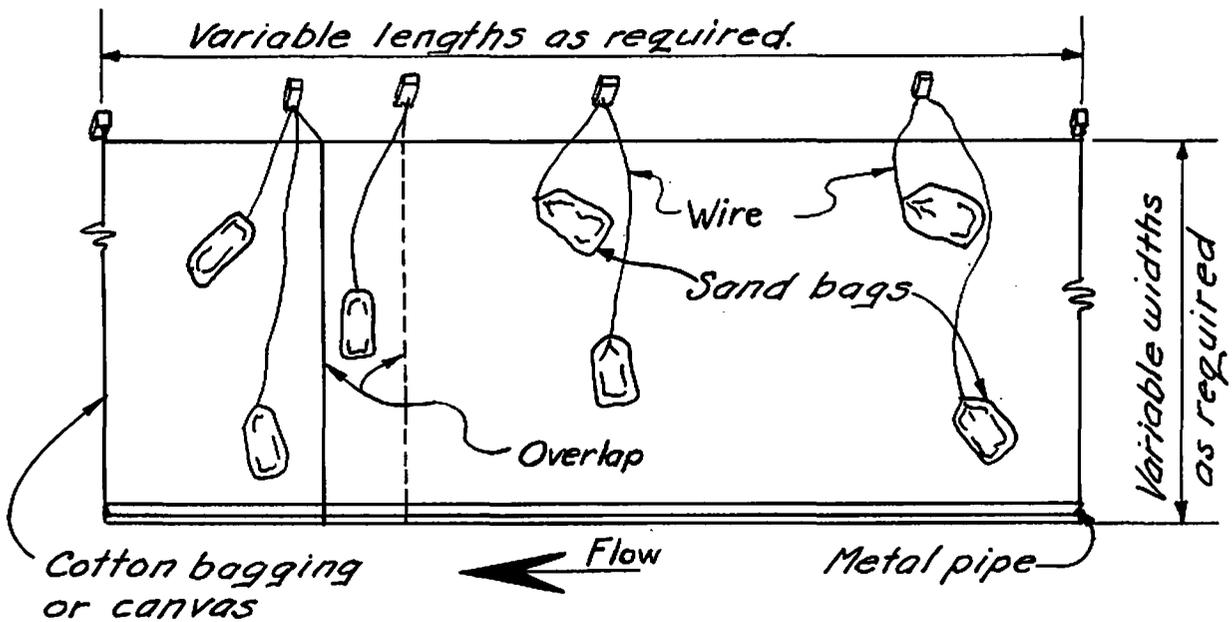
Panels should be prefabricated in shop. Lengths may depend upon available material. Sandbags may be used to weight panels.

Wires are used to raise or lower panels with varying water elevation.

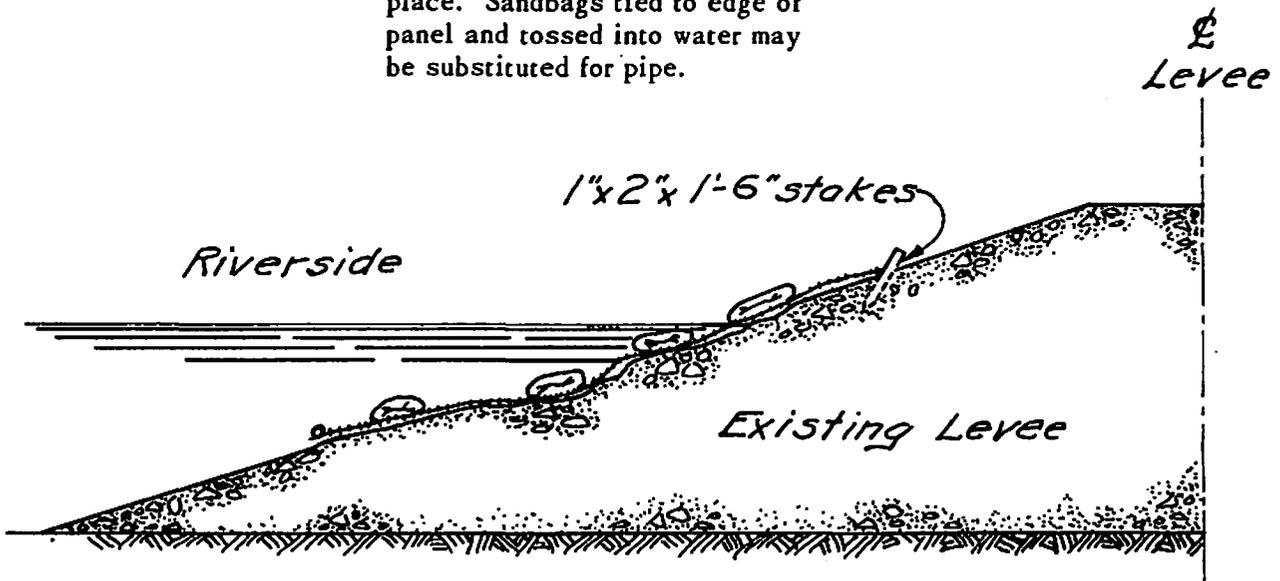


NOTE: Panels may be placed in a vertical position depending upon existing conditions.

STATE OF CALIFORNIA
 DEPARTMENT OF WATER RESOURCES
 STATEWIDE OPERATIONS OFFICE
 FLOOD OPERATIONS CENTER
 METHODS OF FLOOD FIGHTING
 WAVE WASH PROTECTION



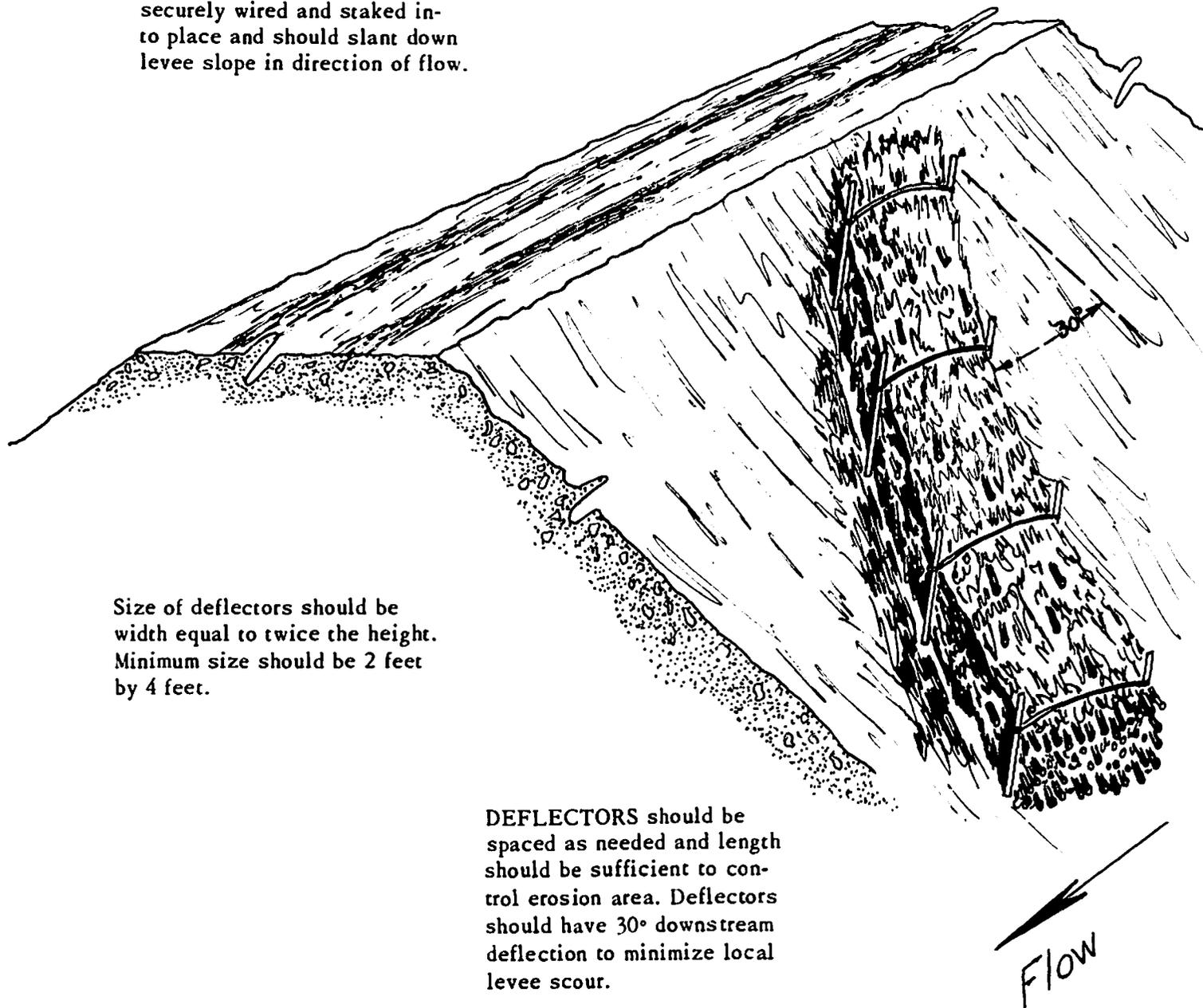
Material is wrapped on pipe and rolled into water. Bags placed at random keep cloth panels in place. Sandbags tied to edge of panel and tossed into water may be substituted for pipe.



Always lay cloth panels in an upstream direction. Tie all bags to levee with wire and stakes.

STATE OF CALIFORNIA
 DEPARTMENT OF WATER RESOURCES
 STATEWIDE OPERATIONS OFFICE
 FLOOD OPERATIONS CENTER
 METHODS OF FLOOD FIGHTING
 WAVE WASH PROTECTION

DEFLECTORS may consist of brush, stone-filled bags or tree tops. Material should be securely wired and staked into place and should slant down levee slope in direction of flow.



Size of deflectors should be width equal to twice the height. Minimum size should be 2 feet by 4 feet.

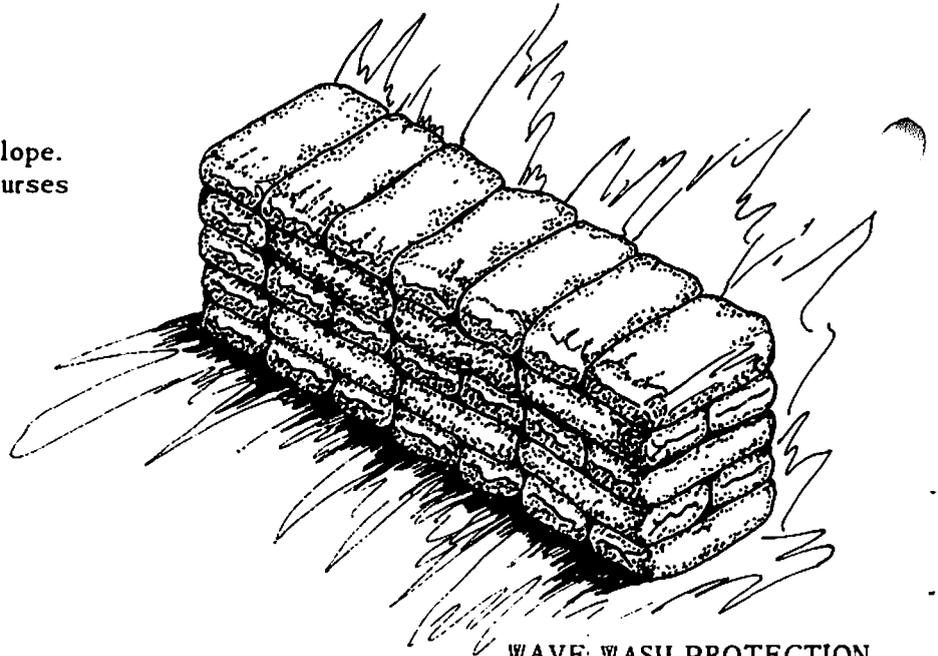
DEFLECTORS should be spaced as needed and length should be sufficient to control erosion area. Deflectors should have 30° downstream deflection to minimize local levee scour.

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
STATEWIDE OPERATIONS OFFICE
FLOOD OPERATIONS CENTER
METHODS OF FLOOD FIGHTING

CONTROL OF CURRENT SCOURING

REVETMENTS

Place bags perpendicular to slope.
Place header and stretcher courses
as shown.



WAVE WASH PROTECTION

GENERAL:

1. Fill sandbags $\frac{1}{2}$ to $\frac{2}{3}$ full.
2. Fold open end of bag over & tuck underneath.
3. Tramp bags with feet to obtain an impervious section.
4. Use fine sand or silt for filling bags.

NOTE: Improperly placed bags
can result in failure & serious
damage.

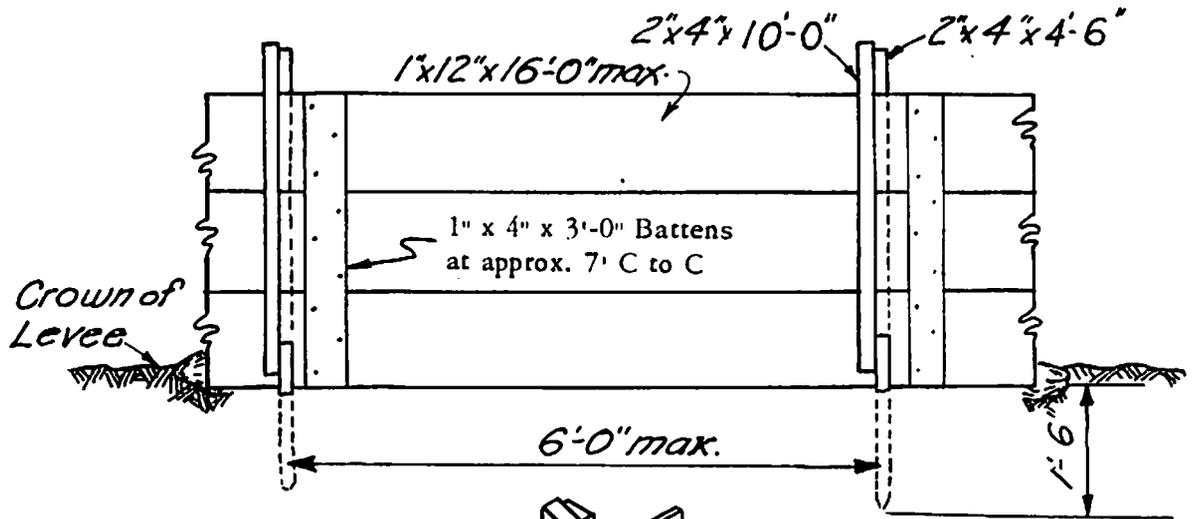
LEVEE OVERTOPPING

LEVEE SECTION

For heights 1 foot or less lay 3 single
staggered courses in a lengthwise
direction. For heights in excess of 1
foot lay bags in manner shown above
with height proportional to base.

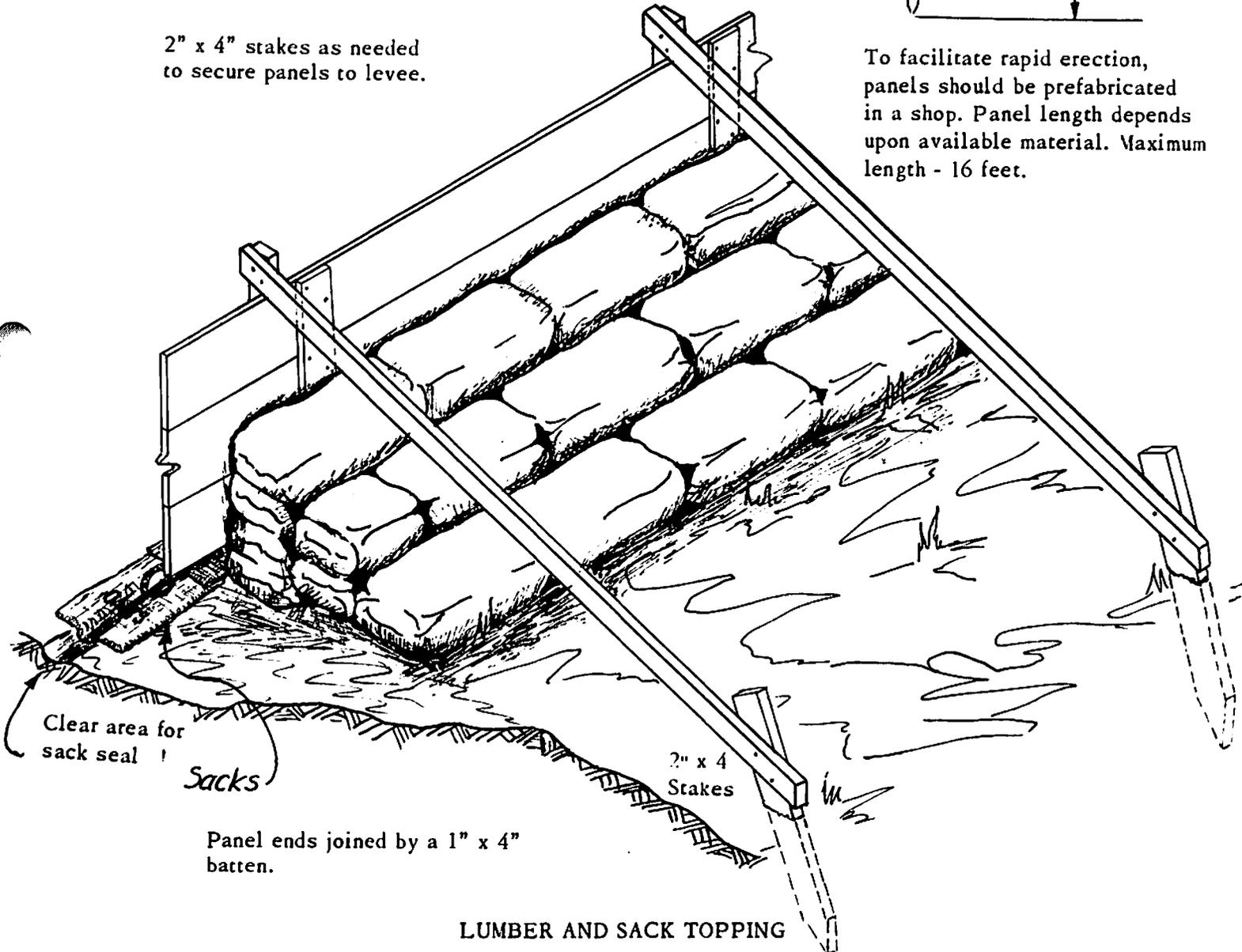
STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
STATEWIDE OPERATIONS OFFICE
FLOOD OPERATIONS CENTER
METHODS OF FLOOD FIGHTING

ADDITIONAL USES OF SANDBAGS



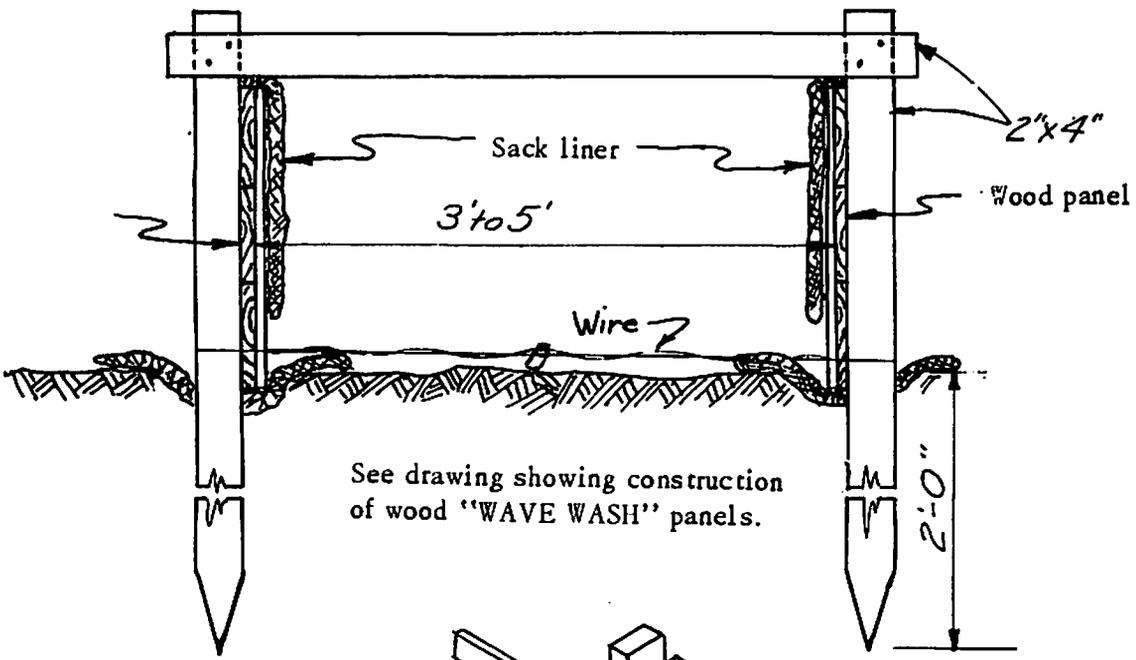
2" x 4" stakes as needed to secure panels to levee.

To facilitate rapid erection, panels should be prefabricated in a shop. Panel length depends upon available material. Maximum length - 16 feet.

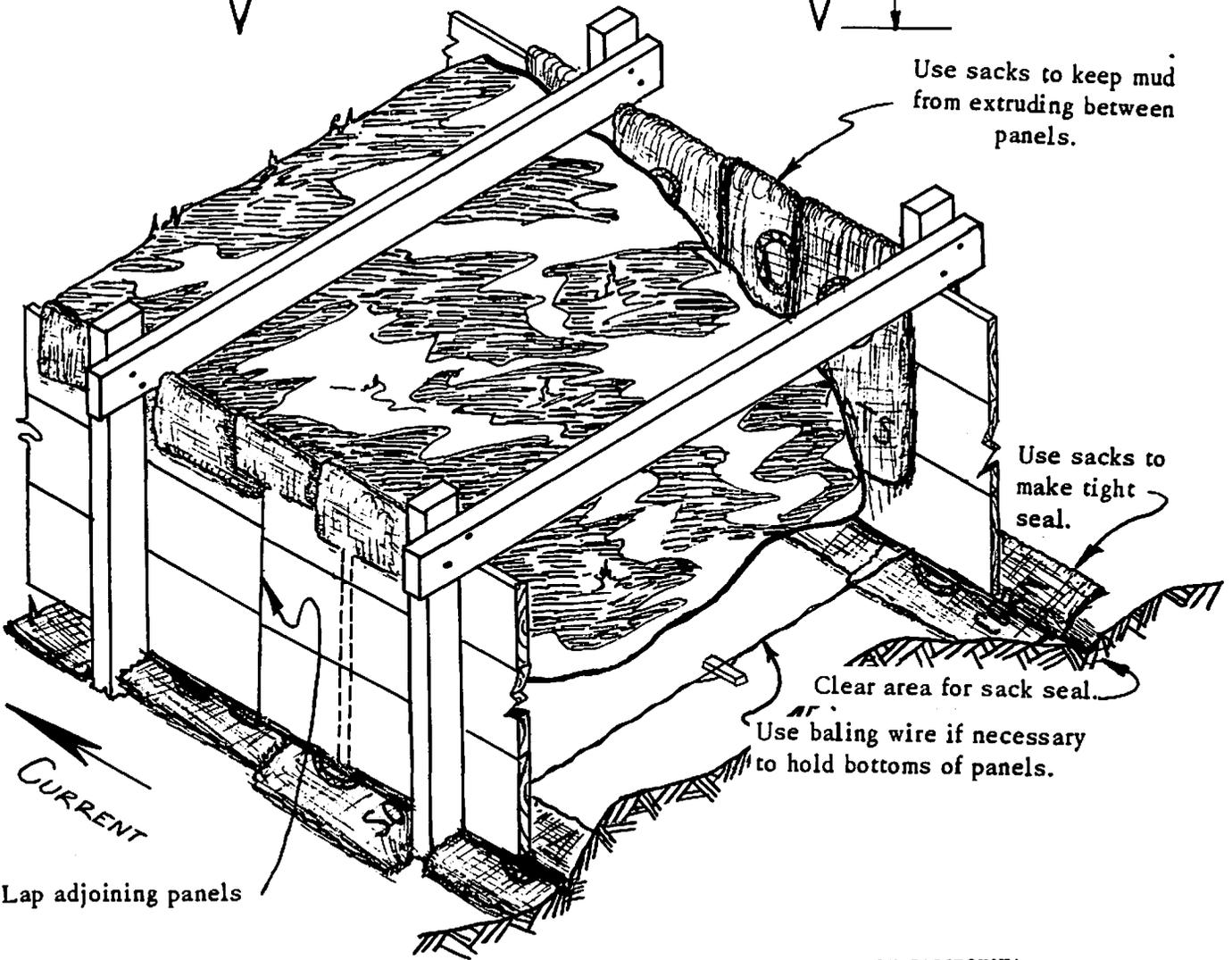


STATE OF CALIFORNIA
 DEPARTMENT OF WATER RESOURCES
 STATEWIDE OPERATIONS OFFICE
 FLOOD OPERATIONS CENTER
 METHODS OF FLOOD FIGHTING

CONTROL OF LEVEE OVERTOPPING



See drawing showing construction of wood "WAVE WASH" panels.



Lap adjoining panels

MUD BOX

STATE OF CALIFORNIA
 DEPARTMENT OF WATER RESOURCES
 STATEWIDE OPERATIONS OFFICE
 FLOOD OPERATIONS CENTER
 METHODS OF FLOOD FIGHTING

CONTROL OF LEVEE OVERTOPPING

APPENDIX F

CHECKLISTS

SUGGESTED CHECKLIST NO. 1A - LEVEES

Unit Number or Numbers _____

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Item	(a) Location	(b) Condition	(c) Maintenance Mea- sures Taken Since Last Inspection	(d) Remarks
Settlement, sloughing, or loss of grade				
Caving or erosion of levee slopes				
Dislodged or displaced stone protection				
Sod on levee slope				
Weed or undesirable vegetation				
Animal burrows				
Evidence of seepage or sand boils				

SUGGESTED CHECKLIST NO. 1B - LEVEES

Unit Number or Numbers

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Item	(a) Location	(b) Condition	(c) Maintenance Mea- sures Taken Since Last Inspection	(d) Remarks
Patrol road and levee crown				
Access Roads				
Ramps				
Farm gates and fencing				
Unauthorized encroachments on rights-of-way				

SUGGESTED CHECKLIST NO. 2

DRAINAGE AND IRRIGATION STRUCTURES

Unit Number or Numbers

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

(a) Location by Levee Mileage	(b) Debris or Other Obstruction to Flow	(c) Damage or Settlement of Pipe or Conduit	(d) Condition of Concrete Headwall or Invert Paving	(e) Condition of Right-of-Way Adjacent to Structure	(f) Maintenance Measures Taken Since Last Inspection	(g) Remarks

F-4

Instructions for Completing Sheets F-1, F-2
(To be Printed on Back of F-1, F-2)

- Item (a) -- For a given Unit or Units record adverse levee mileage where adverse affect corresponding to listed item has taken place or is occurring. If condition of item is adequate write full length.
- Item (b) -- Describe physical condition of specific item listed or if full length of Unit or Units is adequate rate good, fair, etc.
- Item (c) -- Indicate maintenance measures that have been performed since last inspection and their condition at the time of this inspection.
- Item (d) -- Record opinion, if any, of contributory causes for conditions observed and also any observations not under other columns.

Instruction for Completing Sheet F-4
(To be Printed on Back of Sheet F-4)

- Item (a) -- Enter levee mileage of structure not up to standards. If irrigation and drainage structures of unit are adequate under all items of Checklist No. 2 enter full length.
- Item (b) -- Inspect inlet, barrel, and outlet for accumulation of sediment, rubbish, and vegetal matter.
- Item (c) -- If any settlement or damage to the pipe, barrel, or invert of the drain has occurred, estimate the location and amount. Note particularly if any backfill has come into the conduit or been disturbed.
- Item (d) -- Inspect the concrete portions of the structures for evidence of settlement, cracks, pop-outs, spaces, abrasive wear, or other deterioration.
- Item (e) -- Inspect backfill area adjacent to structure for evidence of erosion caused by overflow of the structure.
- Item (f) -- Indicate physical measures that have been taken to correct conditions reported in last inspection, and their condition at time of this inspection.
- Item (g) -- Record opinion, if any, of contributory causes for conditions observed, also any observations not covered under other items.

SUGGESTED CHECKLIST NO. 3A - CHANNELS

Write name of River, Bypass or Slough _____

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Item	(a) Location	(b) Condition	(c) Maintenance Measures Taken Since Last Inspection	(d) Remarks
Vegetal growth in channel				
Debris and refuse in channel				
Extent of aggradation or degradation				
Condition of stone protection reach				
Condition of channel adjacent to bridges				
Unauthorized encroachments within right-of-way				

F-6

Instructions for Completing Sheet F-6
(To be Printed on Back of F-6)

- Item (a) -- For a given Unit or Units record adverse levee mileage where adverse affect corresponding to listed item has taken place or is occurring. If condition of item is adequate write full length.
- Item (b) -- Describe physical condition of specific item listed or if full length of Unit or Units is adequate rate good, fair, etc.
- Item (c) -- Indicate maintenance measures that have been performed since last inspection and their condition at the time of this inspection.
- Item (d) -- Record opinion, if any, of contributory causes for conditions observed and also any observations not under other columns.

SUGGESTED CHECKLIST NO. 3B - CHANNELS

DEBRIS SETTLING BASIN
CHOWCHILLA CANAL BYPASS

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Item	Location	(1) As Constructed	(2) Average Existing	(3) Average Depth	(4)	(5) Area	(6)	(7) Volume Cu. Ft.
<u>SECTION A</u> Entrance Channel Invert	L.M. 15.61 R	161.7'	----	----	-- x 150' =	A ----		
<u>SECTION B</u> Bottom Set- tling Basin	L.M. 15.51 R	154.2'	----	----	-- x 350' =	B ----	$\frac{A+B}{2} \times 500'$	----
<u>SECTION C</u> Bottom Set- tling Basin	L.M. 15.35 R	154.1'	----	----	-- x 350' =	C ----	$\frac{B+C}{2} \times 800'$	----
<u>SECTION D</u> Bottom Set- tling Basin	L.M. 15.21 R	154.0'	----	----	-- x 350' =	D ----	$\frac{C+D}{2} \times 800'$	----
<u>SECTION E</u> Existing Chan- nel Invert	L.M. 15.11 R	161.4'	----	----	-- x 150' =	E ----	$\frac{D+E}{2} \times 500'$	----
Maintenance Measures Taken Since Last Inspection							Total Vol. in Cu.Ft.	<u>27</u>
Remarks							Total Vol. in Cu.Yd.	----

Instructions for Completing Sheet F-8
(To be Printed on Back of F-8)

Item -- Supply cross-sections as required. Sections shown assume disposition of material on level plane.

-- Indicate maintenance measures that have been performed since last inspection and their condition at the time of this inspection.

-- If there has been no change in the storage capacity of the settling basin state this fact under remarks.

Location -- Supply necessary horizontal control.

(1) -- As constructed elevation -- See plan and profile Chapter 5000.

(2) -- Assign average existing elevation from cross-section.

(3) -- Column (2) -- Column (1).

(4) -- Column (3) x mean width of section.

(5) -- Product of (4) or area of section.

(6) -- Average end method (first reach would be area Section A + area Section B \div 2 x length of reach).

(7) -- Volume of reach in cubic feet. Summation gives total volume of debris in cubic feet. Divide by 27 and volume is converted to cubic yards.

SUGGESTED CHECKLIST NO. 4A - MISCELLANEOUS FACILITIES

BRIDGES

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Bridge Name	(a) Note Condition of				(b) Maintenance Measures Taken Since Last Inspection	(c) Remarks
	Piles and Abutments	Embankment and Stone Protection	Deck Slab and Hinge Point	Railing		
Bear Creek Patrol Bridge						
Sand Slough Patrol Bridge						
East Side Canal Patrol Bridge						
Sandy Mush Road-County						
West Washington Road-County						
Avenue 21- County						
Road 4- County						

SUGGESTED CHECKLIST NO. 4B - MISCELLANEOUS FACILITIES

BRIDGES

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Bridge Name	(a) Note Condition of				(b) Maintenance Measures Taken Since Last Inspection	(c) Remarks
	Piles and Abutments	Embankment and Stone Protection	Deck Slab and Hinge Point	Railing		
Avenue 18 $\frac{1}{2}$ - County						
Road 9 Ber. Sl. - County						
Road 9 E.S.B.P. - County						
Avenue 14 - County						
Firebaugh- Madera Road - County						
Firebaugh- Fresno Road - County						
Triangle "T" Access						

TT-11
F-11

SUGGESTED CHECKLIST NO. 4C - MISCELLANEOUS FACILITIES

BRIDGES

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Bridge Name	(a) Note Condition of				(b) Maintenance Measures Taken Since Last Inspection	(c) Remarks
	Piles and Abutments	Embankment and Stone Protection	Deck Slab and Hinge Point	Railing		
Harney Access						
Dickinson Ferry Road Access						
Hayfield Access						
Chamberlain Road Access						
Crane Access						

SUGGESTED CHECKLIST NO. 4D - MISCELLANEOUS FACILITIES

CONTROL STRUCTURES

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Name of Structure	(a) Note Condition of					(b) Maintenance Measures Taken Since Last Inspection	(c) Remarks
	Debris or Other Obstruction to Flow	Concrete	Embankment and Stone Protection	Damage or Settlement	Flow Control Hardware		
San Joaquin River Control Structure							
Sand Slough Control Structure							
Bear Creek Diversion Structure							
Owens Creek Control Structure							
Fresno River Drainage Structure							

SUGGESTED CHECKLIST NO. 4E - MISCELLANEOUS FACILITIES

CONTROL STRUCTURES

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Name of Structure	Location	(a) Note Condition of				(b) Maintenance Measures Taken Since Last Inspection	(c) Remarks
		Debris or Other Obstructions to Flow	Concrete	Embankment and Stone Protection	Damage or Settlement		
Mariposa Bypass Drop Structure	MBP L.M. 0.00 L						
Ash Slough Drop Structure	Ash Sl. L.M. 0.09 L						
Ash Slough Drop Structure	Ash Sl. L.M. 0.38 L						
Ash Slough Drop Structure	Ash Sl. L.M. 0.76 L						
Ash Slough Drop Structure	Ash Sl. L.M. 1.14 L						
Eastside Bypass Drop Structure	E.S.B.P. L.M. 35.31L						
Eastside Bypass Drop Structure	E.S.B.P. L.M. 35.74L						

F-14

Instructions for Completing Sheets F-10, F-11, F-12, F-13, F-14
(To be Printed on Back of F-10, F-11, F-12, F-13, F-14)

- Item (a) -- Describe physical condition of specific items listed or if adequate rate good, fair, etc.
- Item (b) -- Indicate maintenance measures that have been performed since last inspection and their condition at the time of this inspection.
- Item (c) -- Record opinion, if any, of contributory causes for conditions observed and also any observations not under other columns.

SUGGESTED CHECKLIST NO. 4F - MISCELLANEOUS FACILITIES

DRAINAGE DITCHES AND CULVERTS

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

<u>Drainage Ditch</u> Item	(a) Location	(b) Condition	(c) Maintenance Mea- sures Taken Since Last Inspection	(d) Remarks
Vegetal Growth				
Debris or Other Obstruction to Flow				
Caving, Sloughing, or erosion to Slopes				
<u>Culvert</u> Item	(a) Location	(b) Condition	(c) Maintenance Mea- sures Taken Since Last Inspection	(d) Remarks
Debris or Obstruction to Flow				
Damage or Settle- ment of Pipe or Conduit				
Erosion around Pipe				

F-16

SUGGESTED CHECKLIST NO. 4G - MISCELLANEOUS FACILITIES

DRAIN CHANNEL AND PIPE ARCH CULVERTS

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

F-17

<u>Drain Channel</u> Item	(a) Location	(b) Condition	(c) Maintenance Mea- sures Taken Since Last Inspection	(d) Remarks
Vegetal Growth				
Debris or Other Obstruction to Flow				
Caving, Sloughing, or Erosion to Slopes				
<u>Pipe Arches</u> Item	(a) Location	(b) Condition	(c) Maintenance Mea- sures Taken Since Last Inspection	(d) Remarks
Debris or Obstruction to Flow				
Damage to Plates or Settlement of Pipe				
Erosion Adjacent to Pipe				
Damage to Bituminous Coating				

SUGGESTED CHECKLIST NO. 4H - MISCELLANEOUS FACILITIES

FENCING AND GATES

Unit Number of Numbers

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Item	(a) Location	(b) Condition	(c) Maintenance Mea- sures Taken Since Last Inspection	(d) Remarks
R/W Fencing Posts				
R/W Fencing Strands and Wire Stays				
R/W Fencing Gates				
Channel Breakaway Fencing Posts				
Channel Breakaway Fencing Strands and Wire Stays				
Channel Breakaway Fencing Gates				

F-18

Instructions for Completing Sheets F-16, F-17, F-18
(To be Printed on Back of F-16, F-17, F-18)

- Item (a) -- For a given Unit or Units record levee mileage where adverse affect corresponding to listed item has taken place or is occurring. If condition of item is adequate write full length.
- Item (b) -- Describe physical condition of specific item listed or if full length of Unit or Units is adequate rate good, fair, etc.
- Item (c) -- Indicate maintenance measures that have been performed since last inspection and their condition at the time of this inspection.
- Item (d) -- Record opinion, if any, of contributory causes for conditions observed and also any observations not under other columns.

SUGGESTED CHECKLIST NO. 4I - MISCELLANEOUS FACILITIES

STAFF GAGES

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Item	Location	(a) Note Condition of				(b) Maintenance Measures Taken Since Last Inspection	(c) Remarks
		Clear Trash or Debris	Wood Posts & Plates	Metal Hardware	Metal Staff Gage		
Bear Creek at East Side Canal	left bank						
Owens Creek at East Side Canal	left bank						
Mariposa Bypass at Eastside Bypass	left bank						
San Joaquin River at Eastside Bypass	left bank						
Eastside Bypass at Washington Road	right bank						
Ash Slough at Chowchilla Canal	right bank						
Berenda Slough at Chowchilla Canal	left bank						
Fresno River at Chowchilla Canal	right bank						
Water Stage Recorders							

SUGGESTED CHECKLIST NO. 4J - MISCELLANEOUS FACILITIES

MILEAGE MARKERS

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Unit No.	(a) Note Condition of				(b) Maintenance Mea- sures Taken Since Last Inspection	(c) Remarks
	Posts in Proper Location	Protective Coating	Character Readability	Damage		
1						
2						
3						
4						
5						
6						
7						
8						
9						

SUGGESTED CHECKLIST NO. 4K - MISCELLANEOUS FACILITIES - Continued

MILEAGE MARKERS

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Unit No.	(a) Note Condition of				(b) Maintenance Measures Taken Since Last Inspection	(c) Remarks
	Posts in Proper Location	Protective Coating	Character Readability	Damage		
10						
11						
12						
13						
14						
15						
16						
17						
18						

SUGGESTED CHECKLIST NO. 4L - MISCELLANEOUS FACILITIES - Continued

MILEAGE MARKERS

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

Unit No.	(a) Note Condition of			Damage	(b) Maintenance Measures Taken Since Last Inspection	(c) Remarks
	Posts in Proper Location	Protective Coating	Character Readability			
22						
23						
24						
25						

F-23

Instructions for Completing Sheets F-20, F-21, F-22, F-23
(To be Printed on Back of F-20, F-21, F-22, F-23)

Item (a) -- Describe physical condition of specific items listed
or if adequate rate good, fair, etc.

Item (b) -- Indicate maintenance measures that have been performed
since last inspection and their condition at the time
of this inspection.

Item (c) -- Record opinion, if any, of contributory causes for
conditions observed and also any observations not
under other columns.

APPENDIX G

SUGGESTED SEMIANNUAL REPORT FORM

TO: The Reclamation Board
Room 1335
1416 - 9th Street
Sacramento, California

(1 May 19__)
(1 Nov 19__)

Gentlemen:

The semiannual report for the period (1 May 19__ to 31 October 19__) (1 November 19__ to 30 April 19__) of the Lower San Joaquin River Flood Control Project.

a. The physical condition of the protective works is indicated by the inspector's report, copies of which are enclosed, and may be summarized as follows:

(Superintendent's summary of conditions)

It is our intention to perform the following maintenance work in order to repair or correct the conditions indicated:

(Outline the anticipated maintenance operations for the following six months.)

b. During this report period, major high-water periods (water level at 63.0 on the gage at the Hills Ferry Bridge on the San Joaquin River, and 102.0 on the gage on the Eastside Bypass near El Nido) occurred on the following dates:

<u>Dates</u>	<u>Maximum Elevation</u>
_____	_____
_____	_____
_____	_____

Comments on the behavior of the protective works during such high-water periods are as follows:

(Superintendent's log of flood observations)

During the high-water stages when the water level reached a height of _____, on the gage or excess thereof (dates) _____, it was necessary to organize and carry out flood operations as follows:

c. The inspections have indicated (no) or (the following) encroachments or trespasses upon the project right-of-way.

d. (No) (_____) permits have been issued for (the following) improvements or construction within the project right-of-way.

Executed copies of the permit documents issued are transmitted for your files.

e. The status of maintenance measures, indicated in the previous semiannual report as being required or as suggested by the representatives of the Department of Water Resources is as follows:

(Statement of maintenance operations, item by item with percent completion.)

f. The fiscal statement of the Superintendent's operations for the current report period is as follows:

Labor Material Equipment Overhead Total

1. Inspection
2. Maintenance
3. Flood Fighting
Operations

TOTAL

Respectfully submitted,

Superintendent

APPENDIX H

LETTERS OF TRANSFER AND/OR ACCEPTANCE



DEPARTMENT OF THE ARMY
U.S. Army Engineer District, Sacramento
Corps of Engineers
1325 J Street
Sacramento, California 95814-2922

REPLY TO
ATTENTION OF

Flood Protection and Navigation Section

NOV 24 2010

Mr. Jay Punia, Executive Officer
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, California 95821

Dear Mr. Punia:

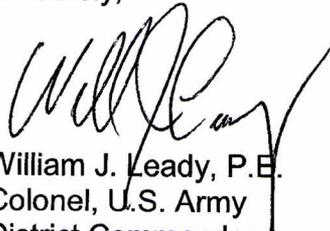
The U.S. Army Corps of Engineers completed a portion of work under PL 84-99, Flood Control and Coastal Emergencies (FCCE) (33 U.S.C. 701n) (69 Stat. 186) for emergency management activities. Repairs were made to rehabilitate various sites within Lower San Joaquin Levee District. Additional information about the repair and location of the sites may be found in the document titled, "Project Information Report for Public Law (P.L.) 84-99 Levee Rehabilitation, Lower San Joaquin Levee District, Amendment #1: Amended to include Order 4 sites (Final)", dated January 7, 2008.

The rehabilitation meets the requirements of the existing Operation and Maintenance Manual (O&M) and enclosed revision. The subject flood damage reduction project is considered complete as of the date of this letter. The repairs were completed under Contract Number W91238-08-D-0024, Task Order Number 1. As-constructed drawings and revisions to the Operation and Maintenance Manual are enclosed. The Central Valley Flood Protection Board shall continue to operate and maintain the completed Rehabilitation Effort as part of the project.

If you have any questions regarding this project, please contact Ms. Paige Caldwell (916) 557-6919 or Ms. Christy Jones (916) 557-7107, Readiness Section. If you have any questions regarding this transfer, please contact Mr. Ryan Larson at (916) 557-7568 or Mr. Robert Murakami at (916) 557-6738, Flood Protection and Navigation Section.

A copy of this letter is being furnished to Lower San Joaquin Levee District, 11704 West Henry Miller Avenue, Dos Palos, CA 93620.

Sincerely,


William J. Leady, P.E.
Colonel, U.S. Army
District Commander

Enclosure

LSSLD
Part 1

cc: CESPCK-CO-E (Jones)

MURAKAMI

LARSON *RSL*

NAGY *WBU*

CALDWELL *EPL*

OLSEN *(D)*

MAHONEY *Erman*

NLO FAUSTINO *A*

MULLINS *W*

LEADY

APR 06 2001

Navigation and Flood Control Unit

Mr. Peter D. Rabbon, General Manager
The Reclamation Board
State of California
1416 9th Street, Room 1601
Sacramento, California 95814

Dear Mr. Rabbon:

This letter is to transfer a portion of work on the right bank of the San Joaquin River Unit 5, at L.M. 6.69 (160'), L.M. 6.94 (75'), and L.M. 8.55-8.60, in Lower San Joaquin Levee District (LSJLD), to the State of California for operation and maintenance.

The work consisted of restoring the right waterside bank of the San Joaquin River damaged by the January 1997 Flood. These repairs include repairing the embankment with levee fill and creating a 12-foot-wide ramp at L.M 6.69 (160'). At L.M 6.94 (75'), the embankment was repaired with levee fill and a 12-foot-wide ramp on top was created. Embankment fill was also placed between L.M 8.55 and 8.60. The work as listed in the enclosure was completed on October 10, 1997, in accordance with Specification No. 9728E, Drawing File No.7-4-1852, Contract No. DACW05-97-C-0126.

The work was performed under the general authority of 33 U.S.C. 701n (69 Stat. 186) PL 84-99 and now meets the requirements of the Operations and Maintenance Manual for the San Joaquin River in LSJLD. Therefore, said flood control work, together with the waterway banks contiguous thereto, are transferred as of the date of this letter to the State of California for operation and maintenance.

This portion of the project work will be added by amendment to the Operation and Maintenance Manual, San Joaquin River Flood Control Project that is being transferred under separate cover.

Sincerely,

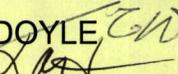
Robert A. O'Brien
Lieutenant Colonel,
Corps of Engineers
Deputy District Engineer


MINTON


TAVAMA

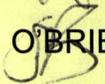

SANDNER


DURHAM-AGUILERA


DOYLE


KORMAN


CHARLTON


O'BRIEN

Enclosure

cc:
CESPK-CO-E
CESPK-ED
CESPK-ED-D
CESPK-PM
CESPK-CO-RV

MAR 20 2001

Mr. Peter D. Rabbon, General Manager
The Reclamation Board
State of California
1416 - 9th Street, Room 1601
Sacramento, California 95814

Dear Mr. Rabbon:

This letter is to transfer a portion of work on the left bank of the San Joaquin River at L.M. 1.95-1.99 (Unit 2, Ash Slough), in Lower San Joaquin Levee District (LSJLD), to the State of California for operation and maintenance.

The work consisted of restoring the left waterside bank of the San Joaquin River damaged by the January 1997 Flood by repairing the embankment with levee fill between L.M 1.95-1.99 (Unit 2). Levee embankment fill was placed and a flat surface on top was created. Concrete rubble was removed from the existing embankment and was reinstalled along the edge of the new berm with a 4-foot soil cover. The work as listed in the enclosure was completed on October 10, 1997, in accordance with Specification No. 9778E, Drawing File No.7-4-1854, Contract No. DACW05-97-C-0126.

The work was performed under the general authority of the 33 U.S.C. 701n (69 Stat. 186) PL 84-99 and now meets the requirements of the Operations and Maintenance Manual for the San Joaquin River Flood Control System in SJ23 LSJLD. Therefore, said flood control work, together with the waterway banks contiguous thereto, are transferred as of the date of this letter to the State of California for operation and maintenance.

This portion of the project work will be added by amendment to the Operation and Maintenance Manual, San Joaquin River Flood Control Project, which is being transferred under separate cover.

Sincerely,

Robert A. O'Brien
Lieutenant Colonel,
Corps of Engineers
Deputy District Engineer

w/o Enclosure

cc:
CESPK-CO
CESPK-CO-E
CESPK-ED
CESPK-ED-D
CESPK-PM
CESPK-CO-RV

LSJLD

MINTON/dd
TAVANA
SANDNER
WINTON
DURHAM-AGUILERA
DOYLE
KORMAN
CHARLTON
O'BRIEN

Navigation and Flood Control Unit

MAR 20 2001

Mr. Peter D. Rabbon, General Manager
The Reclamation Board
State of California
1416 - 9th Street, Room 1601
Sacramento, California 95814

Dear Mr. Rabbon:

This letter is to transfer a portion of work on the right bank of the San Joaquin River/Owens Creek from L.M. 0.00-0.41, L.M. 5.45-5.60, L.M. 8.79-8.87, SJ 19 (Owens Creek) to the State of California for operation and maintenance.

The work consists of restoring both waterside and landside of the Owens Creek/San Joaquin River levee damaged by the January 1997 Flood. These repairs include installing the aggregate base on the Patrol Road between L.M 0.00-0.41 (right bank side), installing a 50-foot-wide gravel berm, encapsulated in geotextile between L.M. 5.45-5.60, and grading the slopes, placing fill and recompacting the embankment between L.M. 8.79-8.87. The work as listed in the enclosure was completed on 25 October 1997, in accordance with Specification No. 9884E, Drawing File No.7-4-1856, Contract No. DACW05-97-C-0124.

The work was performed under the general authority of 33 U.S.C. 701n (69 Stat. 186) PL 84-99 and now meets the requirements of the Operations and Maintenance Manual for the San Joaquin River Flood Control System in SJ 19 (Owens Creek). Therefore, said flood control work, together with the waterway banks contiguous thereto, are transferred as of the date of this letter to the State of California for operation and maintenance.

This portion of the project work will be added by amendment to the Operation and Maintenance Manual, San Joaquin River Flood Control Project.

Sincerely,

Robert A. O'Brien
Lieutenant Colonel,
Corps of Engineers
Deputy District Engineer

LSJLW

JM
MINTON/dd
mt
TAVANA
df
SANDNER
Z
WINTON
KOB
DURHAM-AGUILERA
td
DOYLE
part
KORMAN
fr
CHARLTON
Rob
O'BRIEN

Enclosure

cc:
CESPK-CO-E
CESPK-ED
CESPK-ED-D
CESPK-PM
CESPK-CO-RV

File

Navigation and Flood Control Unit

FEB 20 2001

Mr. Peter D. Rabbon, General Manager
The Reclamation Board
State of California
1416 - 9th Street, Room 1601
Sacramento, California 95814

Dear Mr. Rabbon:

This letter is to transfer a portion of work on the right levee of the East Side Bypass in Lower San Joaquin Levee District (LSJLD) Unit 5 from the access gate at L.M. 11.48 to the Ash Slough drop structures at L.M. 28.64 to the State of California for operation and maintenance.

The work consisted of repairing the right levee of the East Side Bypass damaged by wavewash from the January 1997 Flood, in Unit 5. Repairs made to the waterside of the levee at L.M. 13.98-16.23 consisted of placing and compacting levee fill material in the damaged areas and restoring slopes to pre-flood configuration. The work as listed in the enclosure was completed on Oct. 16, 1997 in accordance with Specification No. 9884E, Drawing File No. SJ-4-113, Contract No. DACW05-97-C-0124.

The work was performed under the general authority of 33 U.S.C. 701n (69 Stat. 186) PL 84-99 and now meets the requirements of the Operations and Maintenance Manual for the San Joaquin River Flood Control in system in LSJLD. Therefore, said flood control work, together with the waterway banks contiguous thereto, are transferred as of the date of this letter to the State of California for operation and maintenance that is being transferred under separate cover.

This portion of the project work will be added by amendment to the Operation and Maintenance Manual, San Joaquin River Flood Control Project which is being transferred under separate cover.

Sincerely,

Michael J. Walsh
Colonel, Corps of Engineers
District Engineer

MINTON/dd
 TAVANA
 SANDNER
 WINTON
 DURHAM-AGUILERA
 DOYLE
 KORMAN
 CHARLTON
 O'BRIEN
 WALSH

Enclosure

cc:
 CESPCK-CO
 CESPCK-CO-E
 CESPCK-ED
 CESPCK-ED-D
 CESPCK-PM
 CESPCK-CO-RV

LSJLD

Navigation and Flood Control Unit

Mr. Peter D. Rabbon, General Manager
The Reclamation Board
State of California
1416 - 9th Street, Room 1601
Sacramento, California 95814

FEB 20 2001

Dear Mr. Rabbon:

This letter is to transfer a portion of work on the left levee of the East Side Bypass in Lower San Joaquin Levee District (LSJLD) Unit 6 from the access gate at L.M. 11.80 and 11.85 to the Sand Slough structure at L.M. 19.42 in Unit 6, to the State of California for operation and maintenance.

The work consisted of repairing the left levee of the East Side Bypass damaged by wavewash from the January 1997 Flood, in Unit 6. Repairs made to the waterside of the levee at L.M. 16.30-16.80 consisted of excavating from levee crown to 1-foot below the wavewash damage, constructing a 5-foot minimum width key, and placing and compacting levee fill material and restoring the slope to its pre-flood condition. Repairs to the waterside of the levee at L.M. 11.85-12.55, L.M. 12.80-13.60, L.M. 15.80-16.30, and L.M. 16.80-17.00 consisted of placing and compacting levee fill material in the damaged areas and restoring slopes to pre-flood configuration. The work as listed in the enclosure was completed on Oct. 16, 1997 in accordance with Specification No. 9884E, Drawing File No. SJ-4-113, Contract No. DACW05-97-C-0124.

The work was performed under the general authority of 33 U.S.C. 701n (69 Stat. 186) PL 84-99 and now meets the requirements of the Operations and Maintenance Manual for the San Joaquin River Flood Control System in LSJLD. Therefore, said flood control work, together with the waterway banks contiguous thereto, are transferred as of the date of this letter to the State of California for operation and maintenance.

This portion of the project work will be added by amendment to the Operation and Maintenance Manual, San Joaquin River Flood Control Project that is being transferred under separate cover.

Sincerely,

Michael J. Walsh
Colonel, Corps of Engineers
District Engineer

w/o Enclosure

cc:
CESPK-CO
CESPK-CO-E
CESPK-ED
CESPK-ED-D
CESPK-PM
CESPK-CO-RV

MINTON/dd *JM*

TAVANA *TA*

SANDNER *SN*

WINTON *W*

DURHAM-AGUILERA *DA*

DOYLE *DO*

KORMAN *K*

CHARLTON *CH*

O'BRIEN *OB*

WALSH *W*

LSJLD

JAN 30 2001

Navigation and Flood Control Unit

Mr. Peter D. Rabbon
General Manager
The Reclamation Board
State of California
1416 9th Street, Room 1601
Sacramento, California 95814

Dear Mr. Rabbon:

This letter is to transfer a portion of work on the left bank of the San Joaquin River from L.M. 0.09-0.30, L.M. 0.30-0.70, L.M. 0.70-1.10, L.M. 1.10-1.20, and L.M. 1.20-1.25 within the Lower San Joaquin Levee District (LSJLD), to the State of California for operation and maintenance.

The work consisted of restoring the right waterside bank of the San Joaquin River damaged by the January 1997 Flood by repairing the embankment with levee fill between L.M. 0.09-1.25. In addition to this work, the Patrol Road was repaired by placing 1-foot-thick aggregate base within this levee segment. The work as listed in the enclosure was completed on December 31, 1997, in accordance with Specification No. 9893E, Drawing File No. SJ-4-112, Contract No. DACW05-97-C-0130.

The work was performed under the general authority of 33 U.S.C. 701n (69 Stat. 186) PL 84-99 and now meets the requirements of the San Joaquin River in LSJLD. Therefore, said flood control work, together with the waterway banks contiguous thereto, are transferred as of the date of this letter to the State of California for operation and maintenance.

This portion of the project work will be added by amendment to the Operation and Maintenance Manual, San Joaquin River Flood Control Project.

Sincerely,

Michael J. Walsh
Colonel, Corps of Engineers
District Engineer

Enclosure

cc:

CESPK-CO
CESPK-CO-E
CESPK-ED
CESPK-ED-D
CESPK-PM
CESPK-CO-RV

MINTON/dd

TAVANA

SANDNER

WINTON

DURHAM-AGUILERA

DOYLE

KORMAN

CHARLTON

O'BRIEN

WALSH



DEPARTMENT OF THE ARMY
 U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
 CORPS OF ENGINEERS
 1325 J STREET
 SACRAMENTO, CALIFORNIA 95814-2922

REPLY TO
 ATTENTION OF

Civil Design Section B

Mr. Peter D. Rabbon
 General Manager
 The Reclamation Board
 State of California
 1416 9th Street, Room 1601
 Sacramento, California 95814

SNOW

Dear Mr. Rabbon:

This is in regard to the joint inspection, made for the purpose of transferring a portion of the left bank levee of the Fresno River, from Mile Post (MP) 0.00 to MP 1.17; right bank of Chowchilla Bypass; and left bank of San Joaquin River, from MP 0.60 to MP 1.17, all in Basin No. SJ 26 (Enclosure 1), to the State of California for operation and maintenance.

820

The work consisted of repairing the left bank levee of the Fresno River, right bank of the Chowchilla Bypass, and left bank of the San Joaquin River damaged by seven levee breaches, several sand boils, and six areas of slope erosion from the January 1997 Flood, in SJ 26. The seven breaches were repaired by removing the material placed during emergency repair (Phase I and II) and replaced with suitable material engineered to appropriate specifications. The sand boils in Unit 6, at LM 1.17; in Unit 23 at LM 0.66 and LM 1.1 were repaired by 15 feet maximum length and 3 feet high gravel berm over excavated and backfilled boil sections as per specifications. The six areas of wave erosion totaling 21,245 feet were repaired with compacted CL II aggregate base rock upper 0.3 foot on top of compacted fill to maintain 12 feet levee width. Compacted side slope fill was placed onto the existing slope to maintain a minimum road width of 12 feet. The work as listed in Enclosure 2, was completed on November 30, 1997 in accordance with Specification No. 9918E, Drawing File No. 7-4-1860, Contract No. DACW05-97-C-0136.

The work was performed under the general authority of 33 U.S.C. 701n (69 Stat. 186) PL 84-99 and now meets the requirements of the Fresno River, the Chowchilla Canal Bypass, and the San Joaquin River in SJ 26. Therefore, said flood control work, together with the waterway banks contiguous thereto, are transferred as of the date of this letter to the State of California for operation and maintenance.

This portion of the work will be added by amendment to the Operation and Maintenance Manual, San Joaquin River Flood Control Project.

Sincerely,

LSJLD

Michael J. Walsh
 Colonel, Corps of Engineers
 District Engineer

Enclosures

CC:
CESPK-CO
CESPK-CO-E
CESPK-OC
CESPK-RE
CESPK-ED
CESPK-ED-D

RS

SINGH
CESPK-ED-D

TORBIK *R7*
CESPK-ED-D

~~MACK~~
CESPK-ED-D

f DOYLE *210*
CESPK-ED

ll
CLOWARD
CESPK-CO-E

for DURHAM AGUILERA
CESPK-CO

ch KORMAN
CESPK-OC

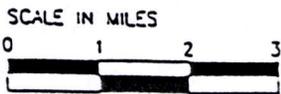
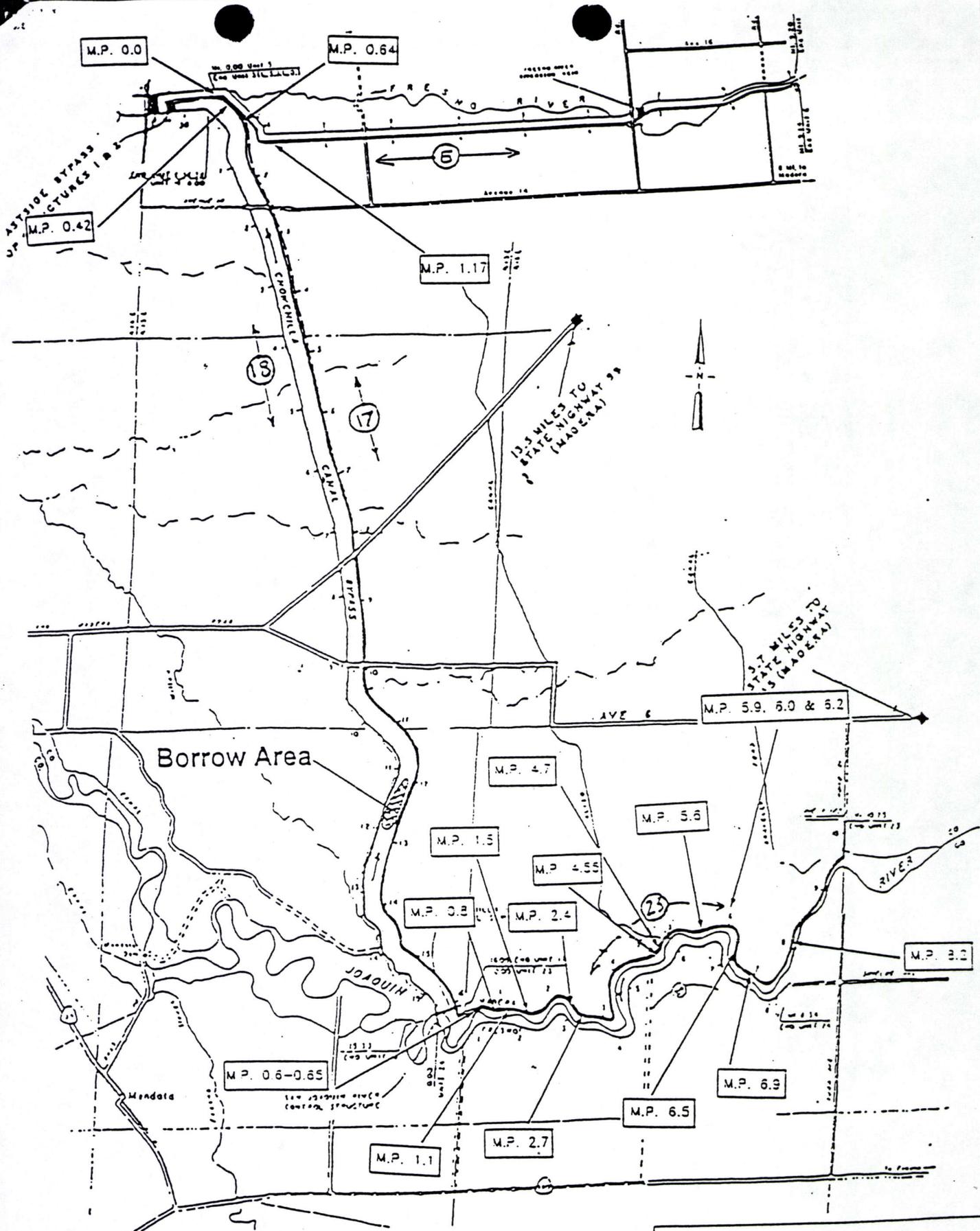
J FISHER
CESPK-RE

MA CHELTON
CESPK-DD-P

OB O'BRIEN
CESPK-DD

WA WALSH
CESPK-DE

*LSJLD
Part 1*



MADERA COUNTY, CALIFORNIA
 EMERGENCY LEVEE REPAIR

SJ 26
 SAN JOAQUIN LEVEE DISTRICT

ARMY CORPS OF ENGINEERS, SACRAMENTO, CALIF.

ENCLOSURE 1

APPENDIX I

“AS-CONSTRUCTED” DRAWINGS

EXHIBIT I

“AS CONSTRUCTED”
DRAWINGS

See separate folder for the following drawings:

<u>File No.</u>	<u>Title</u>
None	PL 84-99 Levee Rehabilitation Repairs CY 2007 Orders 1 & 4 Sites, Lower San Joaquin Levee District, Fresno and Madera Counties, California, in 10 sheets.
SJ-4-112	Lower San Joaquin River, RD 2092, SJ14 Phase III Levee Restoration Stanislaus County, California, in 2 sheets.
SJ-4-113	Lower San Joaquin River LSJLD, SJ21 Phase III Levee Restoration Merced and Madera Counties, California, in 3 sheets.
SJ-4-113	Lower San Joaquin River LSJLD, SJ22 Phase III Levee Restoration Merced and Madera Counties, California, in 2 sheets.
7-4-1854	Madera County, California Emergency Levee Repair, SJ 23 in 2 sheets.