

LIBRARY  
UNIVERSITY OF CALIFORNIA  
DAVIS









UNIVERSITY OF CALIFORNIA  
LIBRARY  
EASTS  
COPY 2

State of California  
THE RESOURCES AGENCY

Department of Water Resources

BULLETIN No. 149-66

PROJECT LEVEE  
MAINTENANCE AND REPAIR  
1966 INSPECTION REPORT



MARCH 1967

**RONALD REAGAN**  
*Governor*  
State of California

**WILLIAM R. GIANELLI**  
*Director*  
Department of Water Resources

LIBRARY  
UNIVERSITY OF CALIFORNIA  
DAVIS



State of California  
THE RESOURCES AGENCY  
Department of Water Resources  
BULLETIN No. 149-66

PROJECT LEVEE  
MAINTENANCE AND REPAIR  
1966 INSPECTION REPORT

MARCH 1967

RONALD REAGAN  
*Governor*  
State of California

WILLIAM R. GIANELLI  
*Director*  
Department of Water Resources



TABLE OF CONTENTS

	<u>Page</u>
ORGANIZATION . . . . .	v
ABSTRACT . . . . .	vi
CHAPTER I. INTRODUCTION . . . . .	1
Authorization . . . . .	1
Area of Inspection . . . . .	3
CHAPTER II. STATUS OF LEVEE MAINTENANCE . . . . .	5
Description of Tables . . . . .	7
Maintenance Ratings . . . . .	8
Summation of the 1966 Maintenance Performance by Project . .	14
CHAPTER III. PROJECT MAINTENANCE DEFICIENCIES . . . . .	15
Areas of Previous Levee Instability . . . . .	15
CHAPTER IV. STATUS OF CHANNEL MAINTENANCE . . . . .	19
Channel Clearing 1966 . . . . .	20

TABLES

Table No.

1	SUMMARIES OF PROJECT LEVEE MAINTENANCE Sacramento and American River Flood Control Projects . . . . .	23
2	SUMMARIES OF PROJECT LEVEE MAINTENANCE San Joaquin River and Tributaries . . . . .	31
3	SUMMARIES OF PROJECT LEVEE MAINTENANCE Miscellaneous Projects . . . . .	34

TABLE OF CONTENTS (Continued)

Page

Table No.

4	MAINTENANCE PERFORMANCE BY YEARS Sacramento and American River Flood Control Projects . . . . .	35
5	MAINTENANCE PERFORMANCE BY YEARS San Joaquin River and Tributaries and Miscellaneous Projects . . . . .	41
6	1966 SUMMARY OF MAINTENANCE PERFORMANCE ON Sacramento and American River Flood Control Projects . . . . .	43
7	1966 SUMMARY OF MAINTENANCE PERFORMANCE ON San Joaquin River and Tributaries and Miscellaneous Projects . . . . .	44
APPENDIX A		
	STANDARD MAINTENANCE PROCEDURES . . . . .	47
APPENDIX B		
	MAJOR LEVEE RECONSTRUCTION DURING 1966 . . . . .	57
APPENDIX C		
	SACRAMENTO RIVER BANK PROTECTION PROJECT 1966 SURVEY . . . . .	69

PLATES

Plate No.

1	Sacramento River Flood Control Project
2	San Joaquin River Flood Control Project

STATE OF CALIFORNIA  
THE RESOURCES AGENCY  
DEPARTMENT OF WATER RESOURCES

RONALD REAGAN, Governor of California  
WILLIAM R. GIANELLI, Director, Department of Water Resources  
ALFRED R. GOLZE', Chief Engineer  
JOHN R. TEERINK, Assistant Chief Engineer

. . . . .

SACRAMENTO DISTRICT

Carl A. Werner. . . . . District Engineer  
Lawrence A. Mullnix . . . . . Chief, Operations Section

This report was prepared under the  
supervision of

John F. Wright, Jr. . . . . Water Resources Engineering Associate  
Donald H. Neudeck . . . . . Water Resources Engineering Associate

Assisted by

Daniel J. Pailey. . . . . Water Resources Technician II  
Herb F. DeWitt. . . . . Water Resources Technician I  
John M. McQueary. . . . . Water Resources Technician I

## ABSTRACT

Bulletin No. 149-66 PROJECT LEVEE MAINTENANCE AND REPAIR  
1966 INSPECTION REPORT May 1967

The report entitled "Bulletin 149-66, Project Levee Maintenance and Repair" contains ratings of the quality of maintenance performed during 1966 on levees within the flood control projects totaling 1,374 miles in length. / Project levees inspected include the Sacramento, American, San Joaquin, Calaveras, Littlejohns and Truckee Rivers, Merced County Stream Group, Middle Creek, Big Dry Creek Reservoir and Diversion and the Lower San Joaquin Flood Control Project. / The report also contains information in regard to standard maintenance procedures, levee reconstruction completed by the U. S. Corps of Engineers, results of the 1966 bank erosion survey, and foldout plates showing locations of project levees and the various maintaining agencies.

## CHAPTER I. INTRODUCTION

This is the annual inspection report for 1966, covering the flood control project works that were constructed, maintained and operated under cooperative state and federal agreements in the Sacramento and San Joaquin Valleys.

Inspection and detailed reports on the conditions of all project levees have been made each year since 1947. Copies of those reports were transmitted to the trustees, or other responsible officials, in each of the respective areas inspected and to The Reclamation Board and U. S. Corps of Engineers.

This bulletin includes the results of the inspection made during the fall of 1966 and reports on the degree of progress made by each agency on the maintenance or repair of levees subsequent to the spring inspection. The ratings given each district reflect the latest conclusions of the Department of Water Resources as to the degree of compliance with federal regulations. The report also includes project maintenance deficiencies, channel clearing accomplished during 1966, standard maintenance procedures, major levee reconstruction during 1966 and the results of the annual bank survey of the Sacramento River and its tributaries.

### Authorization

The State Water Code sets forth the duties and responsibilities of the Department of Water Resources and public districts or agencies with regard to operation and maintenance of federally constructed flood control projects in all cases where

the Federal Government does not maintain or operate them. Those units enumerated in Section 8361 of the Water Code are maintained and operated at state expense by the Department. The maintenance and operation of all other project flood control works are the responsibility, liability, and duty of public agencies other than the State of California, in accordance with the provisions of Sections 8370 and 12642 of the Water Code.

Since the enactment of Chapter 1528, Statutes of 1947, the Department has made semiannual inspections of all the levees of authorized flood control projects in the Sacramento-San Joaquin Drainage Basin pursuant to the federal regulations of August 16, 1944, and reported its findings to the local agency, The Reclamation Board and the U. S. Corps of Engineers. This activity, initiated pursuant to Section 208.10(a) of the federal regulations, has in effect provided for transfer from the local agencies to the Department the obligation of complying with Sections 8371, 8372 and 8373 of the Water Code. The supervisory powers and duties of the Department are applicable to all works of the Sacramento River Flood Control Project maintained and operated by the local agencies, without regard to status of completion, by whom constructed or expenditure of federal funds on such works.

The Water Code, as amended by Chapter 1800, Statutes of 1957, sets forth a procedure which is available when necessary, whereby adequate and uniform maintenance throughout the State may be secured for all federal flood control projects authorized by the State for financial assistance, including Soil Conservation

Service projects. In substance, formation of a maintenance area is initiated following a finding by the Department that there has been a failure on the part of a local agency to properly maintain project works in accordance with federal regulations, or that a local agency no longer desires to operate and maintain the project. Thereafter, by following the prescribed procedure (including the holding of a hearing if protests are filed by the local agency), The Reclamation Board (for projects within the Sacramento-San Joaquin Drainage Basin), or the Department of Water Resources (for projects in other areas of the State), may form a maintenance area in which the Department of Water Resources maintains that particular unit of the project works. Cost of maintenance is apportioned upon the property benefited within the maintenance area on an ad valorem basis. The assessment is extended for collection with county taxes on the county assessment roll.

At present, there are 11 maintenance areas within the Sacramento River Flood Control Project and two on the Major and Minor Tributaries Project.

#### Area of Inspection

This report covers the following project levees aggregating 1,374 miles in length, situated in 100 districts or areas:

1. Sacramento River and Tributaries
2. American River
3. Lower San Joaquin River and Tributaries
4. Calaveras River, Littlejohns Creek and Tributaries

5. Merced County Stream Group
6. Big Dry Creek Reservoir and Diversion
7. Middle Creek
8. Truckee River
9. Lower San Joaquin Flood Control District
10. Sacramento River Bank Protection Project

Each levee unit of a district or area was inspected, and required maintenance or repairs noted on a check sheet.

## CHAPTER II. STATUS OF LEVEE MAINTENANCE

Inspections and detailed reports in regard to the maintenance condition of all project levees have been made in the spring and fall of each year since 1947. Following these detailed inspections, a joint field inspection is made with representatives of each local maintaining agency and representatives of the State Department of Water Resources to review and discuss the inspection report. The maintenance regulations are explained and attention called to portions of levee work in urgent need of maintenance or repair. Representatives of the local maintaining agency are also given a copy of the inspection sheet listing work that should be accomplished in order to comply with the federal regulations.

With the increasing urban development and recreational needs, the flood control system of the Sacramento and San Joaquin Valleys is being encroached upon more and more. Control of encroachments is essential to the safety and integrity of the system. Section 8710 of the Water Code of the State of California requires that all plans for encroachments must be approved by The Reclamation Board prior to their construction.

The Department of Water Resources and U. S. Army, Corps of Engineers review these plans from an engineering and maintenance standpoint. The effect of the encroachment on the flood control project is also studied. Comments and recommendations are forwarded to The Reclamation Board for consideration before that

Board acts to approve or deny the planned encroachment. The Department of Water Resources is also responsible for the inspection of the construction of any approved encroachment. The inspections are made to determine that good construction standards are being followed and that the construction is in accordance with the approved plans.

In 1966, a total of 432 applications for encroachments on the various projects of the flood control system were reviewed by the Department. Of this number, nine were denied by The Reclamation Board and ten are pending. The pending applications either require more detailed plans or additional study. It is essential that each local maintaining agency police its levee system in order to control unauthorized encroachments.

Many of the ratings listed as "poor" or "fair" could have been improved by the simple expedient of removing undesirable growth on the levee slopes and rock revetments. This could have been accomplished by spraying the undesirable vegetation with selective herbicides in the spring or fall and burning during the late summer season. Such treatment would have made it possible to view the levee section and detect and repair any burrow holes, caves, slough, or other damages to the levee not otherwise apparent.

Other examples of inadequate maintenance were:

(a) Failure to shape crown roadways so as to provide proper drainage during wet weather and to add gravel where needed. (b) Allowing abandoned pipes not properly sealed and inoperative and leaky pipes, to remain in the levee section. (c) Allowing unauthorized grazing or vehicular traffic on the levees. (d) Not burning or mowing grass and weeds during appropriate seasons.

### Description of Tables

The status of maintenance is presented herein, in tabular form for convenience of review. The quality of maintenance provided for the levees of the various projects is shown for each maintaining agency.

Table 1 lists all maintaining agencies of Project Levees of the Sacramento River and its tributaries. Table 2 lists maintaining agencies for works completed to date on the San Joaquin River and Tributaries Project, the Calaveras River and Littlejohns Creek Project, the Merced County Stream Group Project, and the Big Dry Creek Reservoir and Diversion Project in Fresno County. Table 3 lists the maintaining agencies for all works completed to date on the Middle Creek Project and Truckee River Project. The latter two projects are located outside of the Sacramento-San Joaquin Valleys.

In Tables 1, 2, and 3, each district or area responsible for maintenance of the separate portions of levees within its boundaries of jurisdiction is listed along with the agency's levee unit number, the stream and bank on which the levee is located, and the length of levee in miles. The columns under Compliance with Federal Regulations Governing Maintenance list 12 major factors taken from the federal regulations and are the basis for determining the overall ratings assigned each district for performance of maintenance for 1966.

The two columns under Overall Ratings list first the progress attained during the year and secondly the maintenance practices performed by the maintaining agencies. The last column lists any remarks that are pertinent to assigning the ratings.

Table 4 presents a tabulation of maintenance performance for each district or area in the Sacramento River and Tributaries Project from 1947 through 1966. The ratings for districts with more than one unit are composite ratings.

Table 5 presents a tabulation of maintenance performance for each district or area in the San Joaquin River and Tributaries Project and the miscellaneous projects from 1958 through 1966. The ratings for districts with more than one unit are composite ratings.

Tables 6 and 7 list the districts and areas numerically or alphabetically according to their performance ratings for 1966. The ratings for those districts and areas which have more than one levee unit are a composite of the ratings for the individual levee units.

#### Maintenance Ratings

Maintenance ratings are based upon adherence to the procedures outlined in a leaflet prepared by the Department of Water Resources, entitled "Recommendations for Levee Maintenance", which is a condensation of the federal regulations for levee maintenance. These recommendations, which are explained in Appendix A, have been made available to the various agencies responsible for the performance of maintenance.

The ratings assigned to a particular unit and shown in this report are the results of an appraisal of the 12 major factors listed along with the important items considered in assigning the rating for each major factor:

1. District Maintenance Program - Has the maintaining agency initiated a definite maintenance program with a set budget to provide for the program?

2. Readiness For Flood Emergency - Has the maintaining agency organized a definite plan to effectively combat a flood situation? Has one individual been appointed to supervise and be responsible to carry out the plan? Does the maintaining agency have a stockpile of standard flood fighting equipment such as sacks, burlap, canvas, hand tools and access to portable radios for communications during levee patrolling?

3. Adequate Levee Section and Grade - Does the maintaining agency's levee system meet the standards for the levee section and grade for their particular levee system?

The following tabulation lists the standard levee sections for the various projects:

(Tabulation on Page 10)

STANDARD LEVEL SECTIONS

<u>Project</u>	<u>Crown Width in Feet</u>	<u>Slope</u>		<u>Freeboard</u>
		<u>Landward</u>	<u>Waterward</u>	
<u>Sacramento River and Tributaries</u>				
Old Sacramento River	20 <sup>1/</sup>	1 on 2	1 on 3	3
Sacramento Major Tributaries	20	1 on 2	1 on 3	3
Sacramento Minor Tributaries	12	1 on 2	1 on 3	3
Bypasses (Yolo & Sutter)	20	1 on 2	1 on 3	5
<u>San Joaquin River and Tributaries</u>				
Rt. Bank San Joaquin downstream from Walthal Sl. to Burns Cut	20	1 on 2	1 on 3	3
Lt. Bank San Joaquin downstream from Banta Carbona Intake to Burns Cut	20	1 on 2	1 on 3	3
San Joaquin River & Tributaries above these points & Old River	12	1 on 2	1 on 3	3
Bear Creek	12	1 on 2	1 on 3	3
San Joaquin River & Tributaries above Merced River	12 <sup>2/</sup>	1 on 2	1 on 3	3
Bypasses (Eastside Mari- posa & Chowchilla)	12 <sup>2/</sup>	1 on 2	1 on 3	4

<sup>1/</sup> The crown width at a number of locations exceeds 20 feet due to public highways or right-of-way agreements.

<sup>2/</sup> At a few locations the crown width has been increased due to poor soil conditions or right-of-way agreements.

4. Adequate Encroachment Control - Has the maintaining agency made a concentrated effort on its own to protect the levee section from the establishment of unauthorized encroachments? Has the agency made an effort to remove any of the unauthorized encroachments?

5. Control of Wild Growth - Has the maintaining agency cleared all of the wild growth, such as willows, elderberry, locust, bamboo and other undesirable growth from both slopes and rock revetment?

6. Rodent Control - Has the maintaining agency put forth an effective program for exterminating burrowing animals? Do the maintenance crews make periodic inspections of the levee slopes to exterminate any new infestation of rodents?

7. Repair of Cracks, Burrows and Rainwash - Has the local maintaining agency made all the necessary repairs to any cracks, burrows or rainwash damage on the levee slopes? A number of the local districts exterminate the burrowing rodents but fail to backfill the open burrow.

8. Repair of Erosion and Caving - Has the local maintaining agency made repairs to eroded and caved areas along their banks and levees? If early repairs are made to these damaged areas by the maintaining agency major bank protection work and levee repair can be avoided.

9. Condition of Rock Revetment - Has the maintaining agency effectively controlled and removed wild

growth from the revetment? Have repairs been made to areas where the revetment has been displaced or damaged?

10. Condition of Crown Roadway and Gates - Has the maintaining agency properly shaped the crown roadway so as to provide proper drainage during wet weather? Have ruts been filled and gravel added to provide access at all times for maintenance, patrolling and flood fighting vehicles? Are all gates maintained and repaired to effectively control access by unauthorized vehicular traffic?

11. Control of Livestock Pasturing - Has the maintaining agency properly controlled unauthorized stock pasturing of the levee slopes and insured that any stock damaged sections have been repaired?

12. Condition of Pipes - The following items concerning pipes, if applicable, are noted during the inspection:

- a. Is there any debris or any other obstruction at the ends of the pipe to prevent its proper operation?
- b. Is there any damage or settlement to the pipe?
- c. Is the metal sound? Are rust holes beginning to show on the exposed portions of the pipe?
- d. Are all gates and valves in good operating condition?

- e. Have any cracks occurred in the headwalls?
- f. Is there any erosion occurring adjacent to the structures which might endanger its water tightness or stability?

It should be pointed out that a rating pertains only to the maintenance performance and not to the stability of the levee. For example, a poor maintenance rating does not necessarily imply that the stability of the levee is impaired.

The ratings used in classifying the quality of maintenance performed by each agency area are as follows:

1. "Outstanding" indicates the maintenance work is in complete accordance with the federal regulations governing maintenance and operation of flood control works.

2. "Good" indicates the maintenance work provided is in accordance with federal regulations or varies from that standard only in minor instances.

3. "Fair" indicates that while the work is generally acceptable, considerable improvement is required for compliance with standards.

4. "Poor" indicates that no maintenance or only a token amount has been performed, and indicates that the agency is not fulfilling its obligation to provide adequate maintenance.

SUMMARY OF THE 1966 MAINTENANCE PERFORMANCE BY PROJECT

<u>Project</u>	<u>Miles of Levees</u>	1966 Maintenance Evaluation (Percent)		
		<u>Good</u>	<u>Fair</u>	<u>Poor</u>
Sacramento River Flood <sup>1/</sup> Control Project	1063.3	75	23	2
American River Project	8.3	100	-	-
San Joaquin River and <sup>2/</sup> Tributaries Project	91.1	56	38	6
Calaveras River and Littlejohns Creek and Tributaries Project	32.8	100	-	-
Littlejohns Creek Channel <sup>3/</sup>	23.6	100	-	-
Merced County Stream Group Project	6.4	100	-	-
Big Dry Creek Reservoir and Diversion Project	9.3	100	-	-
Middle Creek Project	11.2	100	-	-
Lower San Joaquin Flood Control Project	127.0	100	-	-
Truckee River Project <sup>3/</sup>	0.6	100	-	-
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Miles (Levee Only)	1349.4			
Percentage of Total Miles		77	21	2

1/ Includes areas where there is only bank protection

2/ 23.5 miles of levee were not included in this total due to reconstruction work by the U.S.C. of E.

3/ Channel only

### CHAPTER III. PROJECT MAINTENANCE DEFICIENCIES

In order to continue to improve the quality of maintenance in areas or districts in the Sacramento and San Joaquin Flood Control Projects, there must be an active public agency to perform the required maintenance work. However, areas still exist where there is no local organized district to perform the required maintenance of project works.

The following is a description of the areas in which there is no present organization:

1. Eastern Honcut Creek Area. The levee, 1.49 miles in length, is situated along the left bank of Honcut Creek, extending from the Western Pacific Railroad tracks easterly to high ground. The entire levee has been reconstructed by the Corps of Engineers

2. The left bank of the San Joaquin River from Durham Ferry Road to Mossdale Bridge and the left bank of Paradise Cut from U. S. Highway 99 upstream to Paradise Dam and the right bank of Paradise Cut from Southern Pacific Railroad crossing upstream to Paradise Dam. These levees total 11.9 miles in length. The Corps of Engineers has reconstructed 5.7 miles of the total and is in the process of reconstructing the remaining 6.2 miles.

#### Areas of Previous Levee Instability

During the 1966 inspection, areas of previous levee instability were inspected at the following locations.

Reclamation District No. 341 - Sherman Island

Levee mile 8.90 to 9.68 - Continued subsidence at this location has occurred since reconstruction of the levee in 1954. New material has been placed on the levee section from time to time, then reshaped and more material added, in an attempt to stabilize the levee section. In 1964, the U. S. Corps of Engineers enlarged and shaped the levee, placed stone protection on the waterward slope and graveled the crown roadway. Active subsidence 0.5 to 1.0 feet in depth along with longitudinal cracks have reoccurred between levee miles 9.15 to 9.21 and 9.24 to 9.26. Subsidence that occurred in 1965 between levee miles 9.03 to 9.08 and 9.21 to 9.22 remained inactive during 1966.

Reclamation District No. 536 - Egbert Tract

Unit No. 1, right bank of Lindsey Slough.

Levee mile 2.38 to 2.45 - Subsidence along landward side of levee crown and shoulder 1.0 to 1.5 feet below crown elevation. No change since 1965. During 1966 the local district graded this section and added gravel to the crown roadway.

Levee mile 3.50 to 3.57 - Subsidence along landward side of levee crown and shoulder was repaired in 1966 by the local district.

Reclamation District No. 1601 - Twitchell Island

Left bank, Threemile Slough.

Levee mile 0.51 to 1.20 - Subsidence at this location occurred during reconstruction of the levee in 1954. Material was later added to the crown and landward slope from time to time and although the activity continues, the rate of subsidence

has materially lessened. The Corps of Engineers has also placed rock on the waterward slope along most of this reach since 1954. During 1964, subsidence occurred between levee mile 0.78 and 1.01 along the landward crown and shoulder 2.0 to 5.0 feet below crown elevation. No new subsidence was observed in this area during 1966.

Reclamation District No. 2098 - Cache Haas Slough Area

Due to the instability of the levee section between levee mile 3.62 to 4.43, Unit No. 1 and levee mile 4.43 to 5.80, Unit No. 2, the U. S. Corps of Engineers has not transferred the above portions to the State of California for operation and maintenance. Following is the condition of the areas both within the Corps' responsibility and within the local district's responsibility:

Unit No. 1, right bank Yolo Bypass.

Levee mile 3.63 to 3.68 - During the summer of 1966 the Corps of Engineers reconstructed the levee to the required grade and section. No new subsidence has developed.

Levee mile 3.78 to 3.82 - Levee crown has subsided 0.5 to 1.0 foot below crown elevation. Very little change during 1966.

Levee mile 3.82 to 3.86 - During the summer of 1966 the Corps of Engineers reconstructed the levee to the required grade and section. In the fall, this section subsided approximately 1.0 foot.

Unit No. 2, left bank Cache Slough.

Levee mile 5.13 to 5.24 - This section of levee continues to remain very unstable. The Corps of Engineers continued

to reconstruct this section of levee in the summer and fall of 1966. The crown elevation remains 3.5 feet below the original elevation.

Levee mile 6.89 to 6.90 - Slip along landward side of levee crown and shoulder. The local district continues to make repairs at this location by adding additional material to the waterward slope in an effort to maintain a standard levee section.

Levee mile 7.41 to 7.43 - During 1965 the crown and landward shoulder subsided 1.0 to 2.0 feet below the original crown elevation. In the summer of 1966 the local district reconstructed the levee to the required grade and section. In the fall of 1966 this section again subsided approximately 1.0 foot.

Levee mile 7.92 to 7.96 - During 1965 the landward slope developed a circular slip. In the summer of 1966 the local district reconstructed the slope to required section. In the fall of 1966 this section again slipped approximately 0.5 to 1.0 foot below grade.

#### CHAPTER IV. STATUS OF CHANNEL MAINTENANCE

Through Section 8361 of the Water Code, the State of California is responsible for maintaining the channels and overflow channels of the Sacramento River and its tributaries within the Sacramento and San Joaquin Drainage District. Senate Bill No. 20, amending Section 8361 of the Water Code, was passed in 1965 and gave the Department of Water Resources the responsibility of the maintenance of flood control channels outside of the Sacramento and San Joaquin Drainage District boundaries but adjacent to the reaches wherein federal and state authorized flood control works have been constructed along the Sacramento River and its tributaries.

During 1966, the Department of Water Resources made an inspection of the channels and floodways of the Sacramento and San Joaquin Rivers and their tributaries and the Middle Creek Flood Control Project. The purpose of this inspection was to determine the amount of channel or floodway acreage cleared or recleared by the Department or local interests. These areas were plotted on aerial mosaics and the acreage calculated.

The purpose of the channel and floodway inspection and maintenance is to insure that conditions which adversely affect the channel capacity are eliminated. The integrity of the flood control system must be maintained and the freeboard of the levee system not encroached upon. Maintenance is also required to control adverse velocities which might be directed against the levee system. An annual inspection will be made of the channels and floodways to determine the acreage cleared or recleared.

The following tabulation lists the acreage cleared in the various channels during 1966 by the maintaining agencies:

CHANNEL CLEARING 1966

<u>Maintaining Agency</u>	<u>Channel or Floodway</u>	<u>New Clearing in Acres</u>	<u>Brush Control in Acres</u>
State of California	American River	33.0	-
State of California	Yolo Bypass	85.0	20.0
State of California	Middle Creek	-	4.0
State of California	Feather River	112.5	529.5
State of California	Honcut Creek	48.8	-
State of California	Sacramento River	-	49.5
State of California	Sutter Bypass	112.5	-
Lower San Joaquin Levee District	San Joaquin River upstream from Merced River	386.5	-
	Total	<u>778.3</u>	<u>603.0</u>

T A B L E S







TABLE I

SACRAMENTO VALLEY STREAMS  
SUMMARIES OF PROJECT LEVEE MAINTENANCE FOR - 1966

SHEET 3 OF 8 SHEETS

District or area	Unit number	Stream	Bank	Length of levee in miles	Compliance with Federal regulations governing maintenance of flood protection works													Overall ratings		Remarks							
					District maintenance program	Readiness for flood emergency	Adequate levee section & grade	Adequate enclosure	Wetlands (including riparian)	Control of landside wild growth	Rodent control	Repair of cracks	Repairs to trunks	Repair of erosion and caving	Condition of rock revetment	Condition of crown roadways & gates	Control of livestock pasturing	Condition of pipes	Progress		Maintenance						
R.D. No. 704	5	Interceptor Canal	X	4.2	G	O	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G				
do.	6	South Dry Creek	X	1.5	G	O	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G			
R.D. No. 705	1	Sacramento Yolo Bypass	X	2.4	F	P	G	P	P	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F		
do.	2	do.	X	3.3	F	P	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		
R.D. No. 787		Colusa Drain	X	4.4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		
R.D. No. 817	1	South Dry Cr.	X	3.8	G	F	G	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	Slopes Should be Sprayed With Herbicides	
do.	2	Bear	X	3.9	F	F	G	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	Slopes Should be Sprayed With Herbicides	
R.D. No. 827	1	Sacramento	X	1.4	P	P	G	P	G	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Token Maintenance Only
do.	2	Yolo Bypass	X	2.8	F	P	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
R.D. No. 900	1	Sacramento	X	8.0	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
do.	2	Yolo Bypass	X	5.7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
R.D. No. 999	1	Yolo Bypass	X	15.4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	This Levee Does Not Receive Flood Water Against It
do.	2	Miner Slough	X	2.3	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
do.	3	Sutter Sl.	X	3.7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
do.	4	Sacramento	X	1.2	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
do.	5	Elk Slough	X	9.7	P	G	G	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	This Levee Receives Only Backwater Against It
R.D. No. 1000	1	Sacramento	X	18.6	O	O	G	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
do.	2	American	X	2.3	O	O	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
do.	3	Matomas	X	17.3	O	O	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
do.	4	East Canal	X	4.4	O	O	G	O	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
do.	4	Matomas Cross Canal	X	4.4	O	O	G	O	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
R.D. No. 1001	1	Yankee Sl.	X	4.2	G	G	G	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	Large Weeds Should Be Mowed on Crown Road - way and Shoulder

O - Outstanding G - Good F - Fair P - Poor



TABLE 1

SACRAMENTO VALLEY STREAMS  
SUMMARIES OF PROJECT LEVEL MAINTENANCE FOR - 1966

SHEET 5 OF 8 SHEETS

District or area	Unit number	Stream	Bank		Length of levee in miles	Compliance with Federal regulations governing maintenance of flood protection works										Overall ratings		Remarks	
			R/L	B/L		District maintenance program	Request for flood emergency assistance	Adequate levee section & grade	Adequate encroachment control	Wetlands (including riparian) control	Control of wild growth on landside	Rodent control	Repair of cracks, burrows & tomahs	Repair of erosion and caving	Condition of rock revetment	Condition of crown roadways & gates	Control of livestock pasturing		Condition of pipes
R.D. No. 2098 do. do.	2	Cache Slough	X	X	2.9	G	G	G	G	G	G	G	G	G	G	G	G	G	G
	3	Haas Slough	X	X	1.6	G	G	G	G	G	G	G	G	G	G	G	G	G	G
	4	Back Levee	X	X	3.0	G	G	G	G	G	G	G	G	G	G	G	G	G	G
	1	South Dry Cr.	X	X	4.8	P	F	F	F	F	F	F	F	F	F	F	F	F	F
R.D. No. 2103 do.	2	Bear	X	X	4.9	P	F	F	F	F	F	F	F	F	F	F	F	F	F
R.D. No. 2104 do.	1	Cache Slough	X	X	2.6	F	F	F	F	F	F	F	F	F	F	F	F	F	F
American River Flood Control District	2	Haas Slough	X	X	4.8	F	F	F	F	F	F	F	F	F	F	F	F	F	F
	1	Arcade Cr.	X	X	2.1	G	G	G	G	G	G	G	G	G	G	G	G	G	G
Sacramento River West Side Levee District	2	Natomas East Canal	X	X	4.0	G	G	G	G	G	G	G	G	G	G	G	G	G	G
	3	American	X	X	3.4	G	G	G	G	G	G	G	G	G	G	G	G	G	G
	4	American	X	X	11.0	G	G	G	G	G	G	G	G	G	G	G	G	G	G
	5	Sacramento	X	X	0.4	G	G	G	G	G	G	G	G	G	G	G	G	G	G
	6	Linda Creek	X	X	1.3	G	G	G	G	G	G	G	G	G	G	G	G	G	G
	7	Arcade Creek	X	X	1.9	G	G	G	G	G	G	G	G	G	G	G	G	G	G
	1	Sacramento	X	X	50.2	F	G	G	F	P	F	G	G	F	G	G	P	G	F
City of Marysville	1	Simmerly Sl.	X	X	3.2	O	O	G	G	G	G	G	G	G	G	G	G	G	G
	3	Feather	X	X	1.3	O	O	G	G	G	G	G	G	G	G	G	G	G	G
	3	Yuba	X	X	6.9	O	O	G	G	G	G	G	G	G	G	G	G	G	G
City of Sacramento	1	Knights Landing Ridge	X	X	6.4	F	G	G	G	G	G	G	G	G	G	G	G	G	G
	2	Knights Landing Ridge	X	X	6.1	F	G	G	G	G	G	G	G	G	G	G	G	G	G
Eastern Honcut Creek Area	1	Honcut Cr.	X	X	1.5	P	G	G	F	F	F	F	F	F	F	F	F	F	F
	1	Honcut Cr.	X	X	1.5	P	G	G	F	F	F	F	F	F	F	F	F	F	F

O - Outstanding G - Good F - Fair P - Poor

TABLE I  
SACRAMENTO VALLEY STREAMS  
SUMMARIES OF PROJECT LEVEE MAINTENANCE FOR - 1966

SHEET 6 OF 8 SHEETS

District or area	Unit number	Stream	Bank	Length of Levee in miles	Compliance with federal regulations governing maintenance of flood protection works												Overall ratings		Remarks
					District maintenance program	Readiness for flood emergency	Adequate section & grade	Adequate encroachment control	Worship (including rock)	Control of wild growth	Control of landside	Rodent control	Repair of cracks, burrows & tomahawk	Repair of erosion and caving	Condition of rock revetment	Condition of roadways & gates	Control of livestock pasturing	Condition of pipes	
Tehama County El. Control District	1	Deer Creek	X	4.1	F	G	G	G	F	F	G	G	G	G	G	G	G	F	
	2	Deer Creek	X	1.5	F	G	F	G	G	F	G	G	G	G	G	G	G	F	
	3	Deer Creek	X	4.1	F	G	G	F	F	G	G	G	G	G	G	G	G	F	
	4	Elder Creek	X	4.0	F	G	G	F	F	G	G	G	G	G	G	G	G	F	
	5	Elder Creek	X	0.5	F	G	G	F	F	G	G	G	G	G	G	G	G	F	
	6	Sacramento	X	0.6	F	G	G	F	F	G	G	G	G	G	G	G	G	F	
	7	Sacramento	X	0.6	F	G	G	F	F	G	G	G	G	G	G	G	G	F	
	8	Sacramento	X	0.3	F	G	G	F	F	G	G	G	G	G	G	G	G	F	
	9	Sacramento	X	0.7	F	G	G	F	F	G	G	G	G	G	G	G	G	F	
	10	Sacramento	X	0.5	F	G	G	F	F	G	G	G	G	G	G	G	G	F	
	11	Sacramento	X	0.5	F	G	G	F	F	G	G	G	G	G	G	G	G	F	
	12	Sacramento	X	0.5	F	G	G	F	F	G	G	G	G	G	G	G	G	F	Spray Rock Revetment
Yolo County		Cache Creek	X	0.2	F	G	G	G	G	G	G	G	G	G	G	G	G	G	
Butte County	1	Mud Creek	X	7.3	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	2	Mud Creek	X	8.2	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	3	Sycamore Cr. & Sheep	X	4.2	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	4	Hollow Creek	X	2.9	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	5	Sycamore Cr. & Dry Creek	X	1.8	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
do.	Big Chico Diversion	2/																	
STATE OF CALIFORNIA																			
Sacramento River East Levee	1	Sacramento	X	20.4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	2	Colusa Bypass	X	2.0	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	3	Woulton Bypass	X	2.3	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
Wadsworth Canal	1	Wadsworth Canal	X	4.7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	2	Wadsworth Canal	X	4.7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
Sutter Bypass		Sutter Bypass	X	22.4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
		Sutter Bypass	X	22.4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	

1/ Channel and Rock Revetment Sites  
2/ Channel Only  
O - Outstanding G - Good F - Fair P - Poor



TABLE II

SACRAMENTO VALLEY STREAMS  
SUMMARIES OF PROJECT LEVEE MAINTENANCE FOR - 1966

SHEET 8 OF 8 SHEETS

District or area	Unit number	Stream	Bank		Length of levee in miles	Compliance with federal regulations governing maintenance of flood protection works												Overall ratings		Remarks	
			Rt	Lt		Strict maintenance program	Readiness for flood emergency	Adequate levee section & grade	Adequate encroachment control	Wetlands (including rock) control	Landside wild growth	Rodent control	Repair of cracks, burrows & ramwash	Repair of erosion and caving	Condition of rock treatment	Condition of roadways & gates	Control of livestock pasturing	Condition of pipes	Progress		Maintenance
Mtc. Area No. 3		Feather	X		5.2	G	O	G	G	G	G	G	G	G	G	G	G	G	G		
Mtc. Area No. 4		Sacramento	X		3.4	G	O	G	G	G	G	G	G	G	G	G	G	G	G	G	
Mtc. Area No. 5	1	Butte Creek	X		15.4	G	O	G	G	G	G	G	G	G	G	G	G	G	G	G	
do.	2	Butte Creek	X		16.5	G	O	G	G	G	G	G	G	G	G	G	G	G	G	G	
Mtc. Area No. 6		Sacramento	X		6.0	G	O	G	F	G	G	G	G	G	G	G	G	G	G	G	Spray Rock Reveiment
Mtc. Area No. 7		Feather	X		12.1	G	O	G	F	G	G	G	G	G	G	G	G	G	G	G	
Mtc. Area No. 8		Yuba	X		3.8	G	O	G	G	G	G	G	G	G	G	G	G	G	G	G	
Mtc. Area No. 9		Sacramento	X		19.6	G	O	G	F	G	G	G	G	G	G	G	G	G	G	G	Clear Rock Reveiment
Mtc. Area No. 10		American	X		4.3	G	O	G	G	G	G	G	G	G	G	G	G	G	G	G	
Mtc. Area No. 11		American	X		4.0	G	O	G	G	G	G	G	G	G	G	G	G	G	G	G	
Mtc. Area No. 12		Colusa Drain	X		11.3	G	O	G	G	G	G	G	G	G	G	G	G	G	G	G	
Mtc. Area No. 13	1	Cherokee Canal	X		18.9	G	O	G	G	G	G	G	G	G	G	G	G	G	G	G	
do.	2	Cherokee Canal	X		23.1	G	O	G	G	G	G	G	G	G	G	G	G	G	G	G	

O - Outstanding G - Good F - Fair P - Poor

TABLE 2

**SAN JOAQUIN VALLEY STREAMS**  
**SUMMARIES OF PROJECT LEVEE MAINTENANCE FOR - 1966**

SHEET 1 OF 3 SHEETS

District or -red	Unit number	Stream	Book	Length of Levee Miles	Compliance with Federal regulations governing maintenance of flood protection works												Overall ratings		Remarks		
					Price monitoring	Adequate for flood emergencies	Adequate section & grade	Adequate erosion control	Woods (including rock)	Control of wild growth	Landslide control	Rodent control	Birds & rains	Repair of erosion and caving	Condition of rock revetment	Condition of crown roadways & gates	Control of livestock pasturing	Condition of pipes		Progress	Maintenance
R.D. No. 1		Old River	X	1.2	G	G	G	G	G	G	G	G	G	G	G	G	G	G			
R.D. No. 17	1	French Camp Slough	X	1.8	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G		
do.	2	San Joaquin	X	14.4	G	G	F	G	G	G	G	G	G	G	G	G	G	G	G		
R.D. No. 404	1	San Joaquin	X	2.3	F	G	F	F	P	G	G	G	G	G	G	P	F	F	F		
do.	2	French Camp Slough	X	1.8	F	G	G	F	F	P	G	G	G	G	G	G	G	F	F		
R.D. No. 524		San Joaquin	X	6.3	F	G	F	P	F	G	G	G	G	G	F	G	G	F	F		
R.D. No. 544	1	San Joaquin	X	6.1	F	G	F	F	F	G	F	G	G	G	G	G	G	G	F	F	
do.	2	Old River	X	4.2	F	G	F	F	F	G	F	G	G	G	G	G	G	G	F	F	
R.D. No. 2056		Paradise Cut	X	6.7	G	G	F	G	G	G	G	G	G	G	G	G	G	G	G	G	
R.D. No. 2062	1	San Joaquin	X	2.6	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
do.	2	Paradise Cut	X	4.0	G	G	F	G	G	G	G	G	G	G	P	G	G	G	G	G	
do.	3	Old River	X	5.6	G	G	G	G	G	G	G	G	G	G	P	G	G	G	G	G	
R.D. No. 2063		San Joaquin	X	10.6	G	G	F	G	G	G	G	G	G	G	G	G	G	G	F	G	
R.D. No. 2064	1	San Joaquin	X	5.4	Levee Under Construction By U.S.C. of E.																
do.	2	Stanislaus	X	4.3	Levee Under Construction By U.S.C. of E.																
R.D. No. 2075		San Joaquin	X	7.6	Levee Under Construction By U.S.C. of E.																
R.D. No. 2089	1	Old River	X	1.5	F	G	G	F	G	G	F	G	G	G	F	G	G	G	F	F	
do.	2	Salmon Sl.	X	1.4	F	G	G	F	G	G	F	G	G	G	F	G	G	G	F	F	
R.D. No. 2091		San Joaquin	X	7.6	F	G	G	F	G	F	P	G	G	G	F	G	G	G	F	F	
R.D. No. 2092		San Joaquin	X	3.8	G	F	G	G	G	G	G	G	G	G	-	P	G	G	G	F	
R.D. No. 2094	1	San Joaquin	X	2.8	G	G	G	F	G	G	G	G	G	G	G	G	G	G	G	G	G
do.	2	San Joaquin	X	0.5	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
R.D. No. 2096		San Joaquin	X	0.2	G	G	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G
San Joaquin (Unorganized)	1	San Joaquin	X	2.4	P	G	F	F	G	G	G	G	G	F	G	G	G	G	F	F	

0 - Outstanding    G - Good    F - Fair    P - Poor

1/ Spur Levee



TABLE 2

**SAN JOAQUIN VALLEY STREAMS  
SUMMARIES OF PROJECT LEVEE MAINTENANCE FOR -- 1966**

SHEET 3 OF 3 SHEETS

District or area	Unit number	Stream	Length of Levee in Miles	Bank	Compliance with Federal regulations governing maintenance of flood protection works												Overall ratings		Remarks
					District maintenance program	Repairs for flood emergency	Adequate levee section & grade	Adequate embankment	Wayside control	Control of wild growth (rock)	Landslide	Control of rodent control	Repair of burrows & gopher holes	Condition of rock retaining	Condition of crown	Roadways & gates	Control of livestock pasturing	Condition of pipes	
Lower San Joaquin Levee District	22	Eastside Canal	5-5	X	P	G	G	G	G	G	G	G	G	G	G	G	G	G	District Will Not Officially Accept Liability as Responsible Party State of California
	25	Salt Slough	2.5	X	G	G	G	G	G	G	G	G	G	G	G	G	G	F	
Merced County Stream Group	1	Black Rascal	1.6	X	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	2	Black Rascal	1.9	X	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	3	Owens Creek	1.4	X	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	4	Owens Creek	1.4	X	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
Fresno County Stream Group	1	Big Dry Cr. Reservoir	7.4	X	F	G	G	F	G	G	G	G	G	G	G	G	G	G	
	2	Big Dry Cr. Outlet	0.6	X	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	3	Little Dry Outlet	1.3	X	G	G	G	F	G	G	G	G	G	G	G	G	G	G	Encroachments in Overflow Channel

O - Outstanding    G - Good    F - Fair    P - Poor

TABLE 3

MISCELLANEOUS STREAMS  
SUMMARIES OF PROJECT LEVEE MAINTENANCE FOR - 1966

District or area	Unit number	Stream	Bank		Length of levee in miles	Compliance with federal regulations governing maintenance of flood protection works													Overall ratings		Remarks
			RI	LI		District maintenance program	Regdness for flood emergency	Adequate levee section & grade	Adequate encroachment control	Wetlands (including rock)	Control of wild growth	Land slide	Rodent control	Repair of cracks, burrows & tomahs	Repair of erosion and caving	Condition of rock revetment	Condition of crown roadways & gates	Control of livestock pasturing	Condition of pipes	Progress	
Lake County Flood Control District	1	Middle Creek	X		4.2	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	2	Middle Creek	X		3.1	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	3	Scott Creek	X		1.4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	4	Clover Creek & Bypass	X		1.5	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
	5	Clover Creek & Bypass	X		1.0	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
Placer County		Truckee		1/	0.6	G	-	F	G	G	-	-	-	-	-	-	-	-	-	G	G

1/ Channel Only 0 - Outstanding G - Good F - Fair P - Poor



SUMMARY OF MAINTENANCE BY YEARS  
SACRAMENTO AND AMERICAN RIVER FLOOD CONTROL PROJECTS

SHEET 2 OF 6 SHEETS

District or Area	Total miles	Summary maintenance record by years																											
		47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74
R. D. No. 536, Egbert	10.7	P	P	F	F	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
R. D. No. 537, Lovdal	6.1	P	P	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
R. D. No. 551, Pearson	6.8	P	P	F	F	F	F	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
R. D. No. 554, Walnut Grove	1.2	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
R. D. No. 556, Upper Andrus	11.2	P	P	P	G	F	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
R. D. No. 563, Tyler Island	12.4	P	P	P	G	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
R. D. No. 755, Randall	1.9	P	F	F	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
R. D. No. 765, Glide	1.7	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
R. D. No. 777, Live Oak	4.1	F	F	F	F	P	F	F	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
R. D. No. 784, Plumas Lake	32.4	F	F	G	G	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
R. D. No. 785, Driver	5.7	P	P	F	F	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
R. D. No. 787, Fair	4.4									G	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
R. D. No. 817, Carlin	7.7	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
R. D. No. 827, Elkhorn	4.2	P	P	F	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
R. D. No. 900, West Sacramento	13.7	F	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
R. D. No. 999, Netherlands	32.3	F	F	F	F	P	P	F	F	P	P	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F

1/ Levee Under Construction, Not Inspected



TABLE 4

SUMMARY OF MAINTENANCE BY YEARS  
SACRAMENTO AND AMERICAN RIVER FLOOD CONTROL PROJECTS

SHEET 4 OF 6 SHEETS

District or Area	Total miles	Summary maintenance record by years																														
		47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74			
City of Sacramento	3.6	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
Knights Landing Ridge D. D.	12.5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
Eastern Honcut Creek Area	1.5										P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
Deer Creek, Tehama County	6.9										P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
Elder Creek, Tehama County	8.1																G	G	G	F	G	F	G	F	G	F	G	F	G			
Sacramento River, County Tehama	3.9																												F	G	G	
Cache Creek, Yolo County	0.2																															
Chico, Mud & Sandy Creeks (Butte County)	24.4																														G	G
<u>STATE OF CALIFORNIA</u>																																
Sacto. R. E. Levee Colusa Co.	24.7	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
E & W Levee Wadsworth Canal	9.4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
E. Levee Sutter Bypass	22.4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
W. Levee Feather Riv. Hamilton	3.4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
Cache Creek & Settling Basin	23.1	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
N & S Levee Sacramento Bypass	3.6	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	
W. Levee Yolo Bypass	9.3	F	F	F	P	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	





TABLE 5

SUMMARY OF MAINTENANCE BY YEARS  
 SAN JOAQUIN AND TRIBUTARIES AND MISCELLANEOUS PROJECTS

SHEET 1 OF 2 SHEETS

District or Area	Total miles	Summary maintenance record by years																											
		47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74
R. D. No. 1, Union Island	1.2											P	G	G	G	G	G	G	G	G	G								
R. D. No. 17, Mossdale	16.2											F	F	G	G	<u>1</u>	G	G	G	G									
R. D. No. 404, Bogg's	4.1											P	P	P	F	G	G	F	F	F									
R. D. No. 524, Mid. Roberts Isl.	6.3											P	P	F	F	<u>1</u>	G	F	F	F									
R. D. No. 544, Upper Roberts Isl.	10.3											P	P	P	P	<u>1</u>	F	F	F	F									
R. D. No. 2058, Pescadero	6.7											P	P	G	G	G	G	G	G	G									
R. D. No. 2062, Island	12.2											P	F	G	G	G	G	G	G										
R. D. No. 2063, Crows Landing	10.6																	G	F	G	G	G							
R. D. No. 2064, River Junction	9.7															F	G	G	F	F	G	G	<u>1</u>						
R. D. No. 2075, McMullin	7.6															P	P	G	G	G	G	G	<u>1</u>						
R. D. No. 2089, Stark	2.9																P	P	F	<u>1</u>	F	P	F	F					
R. D. No. 2091, Chase	7.6																	G	P	P	F	F	F						
R. D. No. 2092, Dos Rios	3.8																	G	F	F	F	F	F						
R. D. No. 2094, Walthall	3.3																		F	G	G	G							
R. D. No. 2096, Lake Weatherbee	0.2																												
San Joaquin County (Unorganized)	11.9															P	P	P	P	P	P	P	P	P	P	P	P	P	P

1/ Reconstruction - Not Inspected 2/ b.2 Under Reconstruction - Not Inspected



TABLE 6

1966 SUMMARY OF MAINTENANCE PERFORMANCE ON SACRAMENTO RIVER AND TRIBUTARIES AND AMERICAN RIVER FLOOD CONTROL PROJECT		
GOOD	FAIR	POOR
L. D. No. 1	R. D. No. 3	R. D. No. 307
L. D. No. 2	R. D. No. 150	R. D. No. 369
L. D. No. 3	R. D. No. 317	R. D. No. 554
L. D. No. 9	R. D. No. 349	R. D. No. 827
R. D. No. 10	R. D. No. 551	R. D. No. 2103
R. D. No. 70	R. D. No. 556	Eastern Honcut Creek
R. D. No. 108	R. D. No. 563	
R. D. No. 341	R. D. No. 755	
R. D. No. 407	R. D. No. 765	
R. D. No. 501	R. D. No. 785	
R. D. No. 536	R. D. No. 817	
R. D. No. 537	R. D. No. 999	
R. D. No. 777	R. D. No. 1600	
R. D. No. 784	R. D. No. 1601	
R. D. No. 787	R. D. No. 2067	
R. D. No. 900	R. D. No. 2104	
R. D. No. 1000	Deer Creek (Tehama Co.)	
R. D. No. 1001 <sup>1/</sup>	Elder Creek (Tehama	
R. D. No. 1500 <sup>1/</sup>	County)	
R. D. No. 1660	Sacramento River	
R. D. No. 2035 <sup>1/</sup>	Westside Levee Dist	
R. D. No. 2060		
R. D. No. 2068		
R. D. No. 2098		
Amer. R. Fl. Cont. Dist.		
City of Marysville <sup>1/</sup>		
City of Sacramento		
Knights Landing Ridge		
D. D.		
Sacramento River		
(Tehama County)		
Cache Creek (Yolo County)		
Chico, Mud & Sandy Crks.		
(Butte County)		
State Maintained Areas		
Maintenance Areas		
Nos. 1, 2, 3, 4, 5,		
6, 7, 8, 9, 10, 11,		
12 & 13		

TABLE 7

1966 SUMMARY OF MAINTENANCE PERFORMANCE ON SAN JOAQUIN RIVER AND TRIBUTARIES AND MISCELLANEOUS PROJECTS		
GOOD	FAIR	POOR
R. D. No. 1 R. D. No. 17 R. D. No. 2058 R. D. No. 2062 R. D. No. 2063 R. D. No. 2094 R. D. No. 2096 Littlejohns & Duck Creek Diversion Duck Creek Dikes A, B, & C Bear Creek (San Joaquin County) Merced County Stream Group Middle Creek (Lake County) Truckee River (Channel) Lower San Joaquin Levee District Fresno County Stream Group	R. D. No. 404 R. D. No. 524 R. D. No. 544 R. D. No. 2089 R. D. No. 2091 R. D. No. 2092	San Joaquin County (Unorganized)

A P P E N D I X A

STANDARD MAINTENANCE PROCEDURES



## STANDARD MAINTENANCE PROCEDURES

Levee maintenance is a continuing task which must be carried on each year without interruption. Each year steps must be taken to exterminate burrowing animals and to provide for routine mowing and burning of grass and weeds, removal of wild growth and repair of damage by erosion or other causes. The principal objectives of annual maintenance are to produce a stable levee at the start of the high water season and to have the slopes clear for effective inspection and, if necessary, patrolling and flood fighting activities.

In order to secure a uniform degree of operation and maintenance on federal flood control projects throughout the nation, the U. S. Corps of Engineers has issued regulations governing the maintenance and operation of flood control works. These regulations established a high standard of maintenance.

"Recommendations for Levee Maintenance", listed hereafter with comments, were adapted from U. S. Corps of Engineers regulations by the Department of Water Resources:

"1. Clear brush, trees and wild growth, other than sod from the levee crown and slopes. Herbicides applied with suitable equipment, under proper control and conditions, have been successfully employed in eradicating pernicious growths of vegetation."

Contrary to the often expressed belief that growth of trees and brush is beneficial for protection of the levee slopes, long experience has demonstrated that this is in error for the following reasons:

Under wind and wave action the larger growths tend to pull at their root systems, causing them to uproot themselves, disturb the soil or rock revetment and permit accelerated erosion to take place. Fallen trees may also cause harmful current deflection and accumulate drift, which can compound the erosive action. The roots of large trees also attract burrowing animals to the protective shelter afforded.

Removal of such growth promotes a growth of sod or grass, the pliable roots of which tend to provide a soil binding net.

The application of herbicides, applied under permit obtained from the county agricultural commissioner, should be performed annually to eradicate noxious weeds and to prevent regrowth of larger plants.

"2. Burn weeds, grass and debris on the levee during the appropriate season, where not dangerous or impracticable, in order to permit the detection of cracks, holes, burrows, slips and other damage and to permit the detection and extermination of burrowing animals. Restrictions in the area in connection with air pollution control should be checked before undertaking any burning operation."

This task should be performed annually during the late summer months after adjacent high inflammable crops have been removed. Fireguards should be established around improvements and burning should be performed in such a manner as to take advantage of prevailing winds.

Burning before July destroys wildlife habitats and delaying the task until after the first rains has been unsuccessful in nearly all instances due to the high absorption rate of dry material, particularly the woody stemmed weeds.

"3. Mow grass and weeds on the levee where removal by burning is dangerous or impracticable, such as on peat levees or where burning would constitute a hazard to improvements, or where burning is restricted for any purpose."

This item is in lieu of burning as provided for in the preceding item. It is for the most part, intended to apply only to peat levees which comprise only a few miles.

Protection for improvements may be accomplished by mowing, fireguarding, or the use of soil sterilants.

"4. Exterminate burrowing animals with the use of poison, gas, or traps. This task required frequent patrols in order to assure successful results."

The control and extermination of burrowing animals must be pursued frequently and persistently in order to assure the safety of the levee during flood periods.

The eradication of these animals is a necessity and their elimination from an infested levee is extremely difficult. It can only be effectively accomplished on a cleared levee through constant effort. Care should be exercised not to poison birds and other desirable wildlife.

Observation indicates that, contrary to general belief, burrowing rodents can and do infest sand levees as well as those composed of heavier or more cohesive soils. A possible explanation for this condition is the fact that many of the sand levees are in reality a sand cover placed over an older soil levee. It is also a fact that some of the older pipe structures, those without cutoff walls, provide a means whereby burrowing rodents

can and do excavate burrows immediately under the pipe and thus provide a non-caving burrow.

"5. Repair caves, sloughs, burrows, holes slips or other damaged portions of the levee with suitable material properly bonded and compacted in place."

This item of the recommendations clearly defines the procedure required. However, particular attention should be directed to the complete filling and compacting of rodent burrows.

It has often been observed that maintenance personnel have effectively exterminated the burrowing animals but have failed to backfill the burrows, the most essential part of the task. If the burrows are filled, the detection of fresh diggings will show that the rodents were not exterminated and repeated poisoning or gassing is required.

"6. Examine and repair, as required, drains and appurtenant control works and other structures through the levee."

A thorough examination of each and every structure situated in, on, or through the levee, should be made at least once yearly to determine its stability. All component parts should also be examined for effectiveness of operation and reliability. The installation of new, or repairs to older structures, should be made only in accordance with adopted standards and under the supervision of qualified personnel.

Defective structures should be immediately repaired or replaced. Abandoned structures should be removed from the levee or otherwise treated so as not to become hazards.

"7. Replace or repair displaced or damaged revetment work or riprap."

The very fact that revetment works have been installed at a location is indicative of the need for extra protection and such works should never be permitted to deteriorate.

Damages to existing revetment works are for the most part, few in number. However, those which have occurred are largely caused by nonmaintenance. Growth of trees and brush should be controlled in order to prevent damage or displacement of revetment.

The early detection of damage and prompt repair will, in most instances, result in a minimum of effort and expense to restore the revetment. Many times a simple rearrangement of the stones or cobble will produce the desired result. Occasionally it may be necessary to place additional rock at damaged locations in the existing work.

"8. Maintain the road on the levee and shape the crown so as to provide uniform drainage. Restrict unauthorized vehicular travel."

Surfaced crown patrol roadways have been established on nearly all project levees exclusively for the convenience of maintenance patrols and flood fighting personnel. It is essential that the roads be maintained in good condition for these purposes. The roadway should be bladed and maintained to provide a smooth surface, without ruts or potholes. The levee shoulder should be sloped so as to immediately drain rainfall away from the crown. In general, the entire crown should be rounded with the center higher than the shoulders. A flat, level section across the crown is considered poor practice.

Except for those levees upon which a public road has been established, vehicular traffic should be restricted to maintenance personnel only. Proper maintenance includes the placing of additional surfacing when and as required, to provide a stable, reliable roadway for maintenance, patrols, and flood fighting.

"9. Restrict stock grazing on the levee to conditions and seasons when the levee would not be seriously scarred or otherwise damaged thereby."

This item is probably the most controversial requirement in the recommendations. Although considered a proprietary right by many landowners and operators adjacent to the levee, this practice is a privilege only, and if allowed, should be carried on only under strict surveillance. Several legal decisions have been rendered in support of this recommendation.

Grazing on the levees should be tolerated only under the control of and by permit from the responsible district authority. Under this plan, those who abuse the privilege may be restricted and prevented from causing damage, the repair of which becomes a local district obligation.

"10. Remove or rectify obstacles to travel by authorized patrol vehicles."

This recommendation is self-explanatory and fully justified, however, some further explanation is presented.

The desirability of preserving property lines may be justified; however, some of the existing levee gates erected for this purpose appear to have been installed to impede traffic

and the numerous intervening structures of a like nature are unnecessary for any purpose other than an obstruction, or for the undesirable practice or confining livestock on the levee. If cross fences and gates are necessary, they should be so constructed that they may be quickly and easily operated.

All other obstructions or encroachments on the levee should be removed unless specifically authorized by permit from The Reclamation Board.

"11. Prevent the erection of structures on, additions to, or alterations of the levee unless authorized by permit from The Reclamation Board."

This recommendation is not only a part of the federal regulations, but is specifically covered by state legislation which is all inclusive of any encroachment on the levees and other flood control works.

It is the responsibility of all districts or agencies to insure that before any work is started on any structure, building, pipeline, poleline, or construction of any kind, whether it is in, on along or under any levee, or fill on or next to the levee, or on the berm, or on the landside near the levee or in the overflow or flooded area, that an application, complete with plans, be filed in triplicate with The Reclamation Board. Approved applications are covered by a permit which designates the conditions under which the proposed work may be accomplished. One of the conditions of the permit is that three-day notice prior to the start of construction must be given to the Department of Water Resources.

The Department inspects and supervises the installation of these encroachments to insure that the work conforms to the plans and conditions as approved by The Reclamation Board.

"12. Organize forces, stock materials, and procure equipment for general maintenance and for patrols and repairs during emergencies."

In order to meet these requirements, a permanent operating organization, properly equipped, is necessary to perform ordinary maintenance, make repairs and direct supplementary forces during emergencies.

It is therefore suggested that the district, or other agency responsible for performing the work, provide the following:

(a) A superintendent to organize forces and direct operations.

(b) Stocks of standard flood fighting materials and supplies, such as sacks, burlap, canvas, lumber and etc. These stocks should be seriously considered, particularly in localities which might become isolated from sources of supply during emergencies.

(c) Suitable equipment for the performance of maintenance, secured either through purchase or rental. A list of available equipment should be made prior to the flood season for possible use during emergencies.

(d) Frequent patrols and inspections of the levees. During flood periods constant patrols should be inaugurated and continued for the duration of the emergency. Such patrols should be equipped with supplies, materials and tools.

Prior to flood season, arrangements should be made for the ready procurement of flood fighting labor forces and supervisory personnel.

A P P E N D I X    B

LEVEE CONSTRUCTION DURING 1966



MAJOR LEVEE RECONSTRUCTION  
DURING 1966

During 1966, the U. S. Corps of Engineers completed levee construction, reconstruction, patrol roads, turnouts, bank protection and channel improvement work on the following projects:

SACRAMENTO RIVER FLOOD CONTROL PROJECT

<u>Specifica- tion No.</u>	<u>Site Mile or Unit No.</u>	<u>Location</u>	<u>Maintaining Agency</u>	<u>Levee Mile</u>	<u>Description of Work Completed</u>
3058	41.2	Right Bank Sacto. River	R.D. No. 150 <sup>1/</sup>	7.01 to 7.27	Levee Recon- struction, Rock Revetment & Paved Crown Roadway
3058	40.6	Right Bank Sacto. River	R.D. No. 150	6.57 to 6.78	do.
3058	31.8	Right Bank Sacto. River	R.D. No. 3	16.91 to 17.12	do.
3058	31.3	Right Bank Sacto. River	R.D. No. 3	16.47 to 16.64	do.
3058	29.65	Right Bank Sacto. River	R.D. No. 3	14.80 to 14.92	do.
3058	26.08	Right Bank Sacto. River	R.D. No. 3	11.26 to 11.36	do.
3058	25.3	Right Bank Sacto. River	R.D. No. 3	10.45 to 10.62	do.
3058	20.8	Right Bank Sacto. River	R.D. No. 3	5.74 to 6.12	do.

1/ Reclamation District

<u>Specifica- tion No.</u>	<u>Site Mile or Unit No.</u>	<u>Location</u>	<u>Maintaining Agency</u>	<u>Levee Mile</u>	<u>Description of Work Completed</u>
3058	41.5	Left Bank Sacto. River	Mtc. Area No. 9	14.36 to 14.54	Levee Recon- struction, Rock Revetment & Paved Crown Roadway
3058	40.5	Left Bank Sacto. River	Mtc. Area No. 9	15.38 to 15.58	do.
3058	37.4	Left Bank Sacto. River	Mtc. Area No. 9	18.59 to 18.86	do.
3058	36.9	Left Bank Sacto. River	Mtc. Area No. 9	19.16 to 19.35	do.
3058	28.7	Left Bank Sacto. River	R.D. No. 551	5.93 to 6.27	do.
3058	28.2	Left Bank Sacto. River	R.D. No. 551	6.47 to 6.68	do.
3124	-	Left Bank Middle Creek	Lake County Flood Cont. District	4.20 to 7.32	Levee Recon- struction & Graveled Patrol Road at Toe
3131	-	Right Bank Sutter Bypass	R.D. No. 1500	1.96 to 8.32	Rock Revetment
3154	111.0	Right Bank Sacto. River	S.R.W.S.L.D. <sup>1/</sup>	18.83 to 18.99	Levee Recon- struction, Rock Revetment & Graveled Crown Roadway
3154	113.5	Right Bank Sacto. River	S.R.W.S.L.D.	21.30 to 21.76	do.
3154	113.9	Right Bank Sacto. River	S.R.W.S.L.D.	22.00 to 22.13	do.

1/ Sacramento River West Side Levee District

<u>Specifica- tion No.</u>	<u>Site Mile or Unit No.</u>	<u>Location</u>	<u>Maintaining Agency</u>	<u>Levee Mile</u>	<u>Description of Work Completed</u>
3154	115.7	Right Bank Sacto. River	S.R.W.S.L.D.	23.77 to 23.80	Levee Recon- struction, Rock Revetment & Graveled Crown Roadway
3154	116.5	Right Bank Sacto. River	S.R.W.S.L.D.	24.51 to 24.61	do.
3154	117.5	Right Bank Sacto. River	S.R.W.S.L.D.	25.45 to 25.61	do.
3154	128.2	Right Bank Sacto. River	S.R.W.S.L.D.	35.84 to 36.06	do.
3154	135.2	Right Bank Sacto. River	S.R.W.S.L.D.	42.04 to 42.28	do.
3154	137.8	Left Bank Sacto. River	R.D. No. 70	0.45 to 0.50	do.
3154	124.3	Left Bank Sacto. River	R.D. No. 70	13.11 to 13.33	do.
3154	117.5	Left Bank Sacto. River	R.D. No. 1500	32.24 to 32.53	do.
3154	114.8	Left Bank Sacto. River	R.D. No. 1500	29.53 to 29.72	do.
3154	114.2	Left Bank Sacto. River	R.D. No. 1500	28.99 to 29.03	do.
3154	112.6	Left Bank Sacto. River	R.D. No. 1500	27.23 to 27.58	do.

<u>Specification No.</u>	<u>Site Mile or Unit No.</u>	<u>Location</u>	<u>Maintaining Agency</u>	<u>Levee Mile</u>	<u>Description of Work Completed</u>
3154	77.6	Left Bank Sacto. River	R.D. No. 1000	1.22 to 1.30	Levee Reconstruction, Rock Revetment & Paved Crown Roadway
3154	2.98	Right Bank Bear River	R.D. No. 817	2.85 to 3.01	Levee Reconstruction, Rock Revetment & Graveled Crown Roadway
3154	1.76	Right Bank Bear River	R.D. No. 2103	1.73 to 1.80	do.
3154	4.90	Left Bank Bear River	R.D. No. 1001	4.77 to 5.04	do.
3154	7.12	Left Bank Bear River	R.D. No. 1001	7.00 to 7.24	do.
3154	11.6	Left Bank Bear River	R.D. No. 1001	11.47 to 11.65	do.
3154	24.5	Right Bank Feather River	L.D. No. 1 <sup>1</sup> / <sub>2</sub>	10.00 to 10.42	do.
3155	1.4	Left Bank Miner Slough	R.D. No. 501	1.50 to 1.66	Levee Reconstruction, Rock Revetment & Paved Crown Roadway
3155	2.0	Left Bank Miner Slough	R.D. No. 501	1.90 to 2.22	do.
3155	2.7	Left Bank Miner Slough	R.D. No. 501	2.68 to 2.94	do.

1/ Levee District

<u>Specifica- tion No.</u>	<u>Site Mile or Unit No.</u>	<u>Location</u>	<u>Maintaining Agency</u>	<u>Levee Mile</u>	<u>Description of Work Completed</u>
3155	3.0	Left Bank Miner Slough	R.D. No. 501	3.05 to 3.40	Levee Recon- struction, Rock Revetment & Paved Crown Roadway
3155	3.7	Left Bank Miner Slough	R.D. No. 501	3.90 to 4.00	do.
3155	4.0	Left Bank Miner Slough	R.D. No. 501	4.17 to 4.24	do.
3155	4.7	Left Bank Miner Slough	R.D. No. 501	4.83 to 5.03	do.
3155	5.2	Left Bank Miner Slough	R.D. No. 501	5.41 to 5.50	do.
3155	28.1	Right Bank Sutter Slough	R.D. No. 501	0.10 to 0.30	do.
3155	23.2	Right Bank Sutter Slough	R.D. No. 501	0.90 to 0.98	do.
3155	22.2	Right Bank Sutter Slough	R.D. No. 501	1.88 to 2.04	do.
3155	22.0	Left Bank Sutter Slough	R.D. No. 349	0.08 to 0.18	do.
3155	23.6	Left Bank Sutter Slough	R.D. No. 349	1.70 to 1.84	do.
3155	24.0	Left Bank Sutter Slough	R.D. No. 349	2.12 to 2.27	do.
3155	25.5	Left Bank Sutter Slough	R.D. No. 349	3.64 to 3.74	do.

<u>Specifica- tion No.</u>	<u>Site Mile or Unit No.</u>	<u>Location</u>	<u>Maintaining Agency</u>	<u>Levee Mile</u>	<u>Description of Work Completed</u>
3156	25.0	Right Bank Steamboat Slough	R.D. No. 349	1.06 to 1.20	Levee Recon- struction, Rock Revetment & Paved Crown Roadway
3156	24.4	Right Bank Steamboat Slough	R.D. No. 349	1.68 to 1.90	do.
3330	-	Left Bank Yolo Bypass	R.D. No. 537	0.00 to 1.28	Levee Recon- struction, Rock Revetment & Gravel Crown Roadway
3330	-	Left Bank Yolo Bypass	R.D. No. 785	0.00 to 1.04	do.
3353	39.5	Right Bank Sacto. River	R.D. No. 150	5.45 to 5.78	Rock Revetment
<u>SAN JOAQUIN RIVER FLOOD CONTROL PROJECT</u>					
3048	-	Right Bank Bear Creek	County of San Joaquin	12.90 to 16.02	Levee Recon- struction, Graveled Patrol Road and Channel Alignment
3048	-	Left Bank Bear Creek	County of San Joaquin	13.49 to 16.32	do.

<u>Specifica- tion No.</u>	<u>Site Mile or Unit No.</u>	<u>Location</u>	<u>Maintaining Agency</u>	<u>Levee Mile</u>	<u>Description of Work Completed</u>
3048	-	Right Bank N. Paddy Cr.	County of San Joaquin	0.14 to 3.51	Levee Recon- struction, Graveled Patrol Road & Channel Alignment
3048	-	Left Bank N. Paddy Cr.	County of San Joaquin	0.18 to 2.65	do.
3048	-	Right Bank Paddy Creek	County of San Joaquin	0.53 to 1.47	do.
3048	-	Left Bank Paddy Creek	County of San Joaquin	0.59 to 1.22	do.
3048	-	Left Bank Middle Paddy Creek	County of San Joaquin	0.00 to 1.45	do.
2894	-	Left Bank San Joaquin River	R.D. No. 2102	0.00 to 1.90	Levee Recon- struction & Graveled Patrol Road
2894	-	Left Bank San Joaquin River	R.D. No. 2100	0.00 to 2.63	do.
2894	-	Left Bank San Joaquin River	R.D. No. 2099	0.00 to 2.53	do.
2894	-	Left Bank San Joaquin River	R.D. No. 2101	0.00 to 3.26	do.

<u>Specifica- tion No.</u>	<u>Site Mile or Unit No.</u>	<u>Location</u>	<u>Maintaining Agency</u>	<u>Levee Mile</u>	<u>Description of Work Completed</u>
2894	-	Right Bank San Joaquin River	R.D. No. 2031	0.00 to 5.57	Levee Recon- struction & Graveled Patrol Road
2894	-	Left Bank Stanislaus River	R.D. No. 2031	0.00 to 7.43	do.

Total new construction during 1966 by Corps:

Miles of levee construction or  
reconstruction . . . . . 57.7

Miles of rock revetment . . . . . 24.5

A P P E N D I X    C

SACRAMENTO RIVER BANK PROTECTION  
PROJECT 1966 SURVEY



SACRAMENTO RIVER BANK PROTECTION PROJECT  
1966 SURVEY

The Sacramento River Bank Protection Project was authorized by the Flood Control Act of 1960. The project is a modification of the existing Sacramento River Flood Control Project to include a long-range program for construction of bank erosion control works and setback levees within the limits of the existing levee system.

Starting in 1961, joint annual bank surveys have been made in the fall of each year by the U. S. Corps of Engineers, The Reclamation Board, and the Department of Water Resources to locate sites where erosion or sloughing has occurred on levees or banks. Priority numbers are assigned to each damaged site and repair contracts scheduled by the Corps.

The tabulations on the following pages are results of the 1966 fall inspection.



SACRAMENTO RIVER BANK PROTECTION PROJECT  
1966 SURVEY

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Sacramento Right Bank	Mtc. Area 2	184.2	11.80	1,050	
	do.	183.8	11.60	1,350	
	do.	181.5	9.75	1,440	
	do.	179.5	7.70	2,980	
	do.	178.3	7.10	2,100	
	do.	177.4	6.33	550	
	do.	176.8	5.73	1,800	
	do.	176.4	5.32	1,980	
	do.	174.7	4.80	650	
	do.	174.2	4.25	3,350	
	do.	173.8	3.55	1,080	
	do.	173.4	2.85	2,950	
	do.	171.6	1.80	4,360	
	L.D. No. 2 <sup>1/1</sup>	170.0	4.30	1,800	
	do.	169.2	3.90	3,400	
	do.	167.3	1.80	2,290	
	do.	166.0	1.16	1,660	
	do.	165.5	1.05	1,480	
	Mtc. Area 1	162.8	15.75	900	
	do.	162.6	15.35	2,010	
do.	161.8	14.73	550		
do.	159.0	11.67	3,500		

1/ Levee District

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Sacramento Right Bank	Mtc. Area 1	157.6	10.63	600	
	do.	157.6	10.50	730	
	do.	156.8	9.80	1,680	
	do.	155.9	9.30	980	
	do.	155.1	9.03	400	
	do.	154.6	8.60	430	
	do.	154.5	8.44	280	
	do.	150.8	4.85	630	
	do.	148.2	4.00	670	
	do.	148.0	3.62	1,500	Unit No. 13
	do.	146.2	2.40	1,260	
	do.	145.7	1.74	800	
	do.	145.3	1.60	500	
	do.	145.2	1.30	740	
	do.	144.3	0.95	600	
	do.	143.9	0.37	250	
	do.	143.6	0.16	650	
	S.R.W.S.L.D. <sup>1/</sup>	143.4	50.20	100	
	do.	142.6	49.27	1,100	Unit No. 17
	do.	142.1	48.80	150	
	do.	141.7	48.51	1,100	Unit No. 17
	do.	140.9	47.63	250	
	do.	139.7	46.33	1,400	Unit No. 13
do.	139.1	45.72	1,850	Unit No. 13	
do.	138.8	45.44	300		

<sup>1/</sup> Sacramento River West Side Levee District

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Sacramento Right Bank	S.R.W.S.L.D.	138.5	45.20	2,050	
	do.	137.8	44.85	1,450	
	do.	137.6	44.79	170	
	do.	137.5	44.70	800	Unit No. 13
	do.	136.6	43.75	450	
	do.	135.9	43.07	600	
	do.	135.3	42.35	580	
	do.	135.2	42.16	1,300	Completed 1966
	do.	134.7	41.63	1,200	
	do.	134.0	41.08	800	
	do.	133.7	40.84	780	
	do.	132.9	40.08	1,150	
	do.	132.7	39.77	2,050	Unit No. 17
	do.	131.2	38.23	1,320	
	do.	130.7	37.74	400	Unit No. 17
	do.	130.4	37.37	2,130	
	do.	130.1	37.3	400	
	do.	129.2	36.60	1,900	
	do.	128.1	35.95	1,200	Completed 1966
	do.	127.8	35.70	1,780	
	do.	127.1	35.05	400	Unit No. 17
do.	126.9	34.84	600		
do.	126.2	34.14	2,980		
do.	125.1	33.13	500	Unit No. 17	
do.	124.7	32.78	1,450	Unit No. 17	

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Sacramento Right Bank	S.R.W.S.L.D.	124.5	32.60	500	
	do.	123.4	31.34	2,200	
	do.	123.1	31.02	1,200	Unit No. 17
	do.	122.3	30.38	3,080	
	do.	121.1	29.26	700	Unit No. 17
	do.	120.8	28.92	850	
	do.	120.1	28.13	350	
	do.	119.5	27.62	150	
	do.	119.3	27.36	650	
	do.	119.1	27.23	500	
	do.	118.1	26.27	200	
	do.	117.9	26.01	700	
	do.	117.5	25.53	800	Completed 1966
	do.	116.5	24.56	200	Completed 1966
	do.	115.7	23.78	200	Completed 1966
	do.	115.1	23.22	1,200	
	do.	114.1	22.24	1,300	Unit No. 16
	do.	113.9	22.06	550	Completed 1966
	do.	113.8	21.88	1,400	
	do.	113.5	21.53	2,400	Completed 1966
	do.	112.6	20.64	330	
	do.	112.3	20.38	400	Unit No. 17
	do.	112.0	20.00	850	
do.	111.7	19.73	600		
do.	111.5	19.46	1,500		



Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Sacramento Right Bank	S.R.W.S.L.D.	93.8	4.10	600	
	do.	93.2	3.58	2,220	
	do.	92.9	3.29	500	Unit No. 16
	do.	92.7	3.18	1,600	
	do.	92.2	2.53	1,800	
	do.	90.2	0.52	700	
	Mtc. Area 6	89.6	0.53	250	
	do.	89.5	0.69	1,350	Unit No. 20
	do.	89.15	1.05	2,400	Unit No. 12
	do.	88.2	1.88	1,200	
	do.	87.0	2.98	600	Unit No. 12
	do.	86.9	3.08	200	
	do.	86.8	3.22	850	
	do.	84.6	5.40	1,100	Unit No. 20
	do.	84.5	5.59	700	Unit No. 16
	do.	84.2	5.90	700	
	R.D. No. 1600 <sup>1/</sup>	81.0	9.77	1,400	Unit No. 20
	do.	80.7	9.51	1,200	Unit No. 12
	do.	79.5	8.80	3,175	Unit No. 12
	do.	79.2	8.44	150	
	do.	78.4	7.74	3,650	
	do.	77.8	7.13	200	Unit No. 16
	do.	77.4	6.80	200	
do.	77.0	6.40	750	Unit No. 16	
do.	75.8	5.10	250		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no
Sacramento Right Bank	R.D. No. 1600	75.2	4.60	2,400	
	do.	74.8	4.14	1,500	
	do.	74.5	3.80	850	
	do.	73.8	3.26	4,100	
	do.	73.2	2.62	550	
	do.	72.1	1.50	2,220	
	do.	71.9	1.17	500	Unit No. 16
	do.	71.7	1.08	600	
	do.	71.65	0.97	400	Unit No. 16
	do.	71.4	0.78	1,250	Unit No. 16
	do.	71.2	0.50	850	
	do.	70.9	0.12	1,050	
	R.D. No. 827	70.4	0.40	300	
	do.	66.7	0.60	200	
	R.D. No. 537	63.1	4.20	350	
	do.	62.9	4.43	580	
	do.	62.7	4.64	1,350	
	Mtc. Area 4	62.5	4.64	1,400	
	do.	62.25	0.32	1,700	Unit No. 13
	R.D. No. 900	58.4	0.53	270	
do.	57.7	1.50	1,100		
do.	57.2	2.04	200		
do.	56.0	3.14	800		
do.	55.8	3.36	600		
do.	54.5	4.70	3,000		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Sacramento Right Bank	R.D. No. 900	53.3	5.68	1,425	Unit No. 19
	do.	53.1	5.90	900	
	do.	52.9	6.17	2,200	Unit No. 11
	do.	52.3	6.79	2,400	Completed 1966
	do.	51.7	7.42	4,150	
	R.D. No. 765	51.2	0.14	1,475	Unit No. 19
	do.	50.4	0.95	400	
	R.D. No. 307	47.6	2.06	3,150	
	do.	46.3	3.32	900	
	do.	45.6	3.98	3,800	
	do.	44.5	5.20	8,000	
	R.D. No. 999	42.7	0.83	850	
	do.	42.5	0.64	850	Unit No. 19
	do.	42.3	0.55	1,050	
	do.	42.1	0.26	550	
	do.	41.9	0.05	200	
	R.D. No. 150	41.9	7.94	100	
	do.	41.2	7.14	1,350	Completed 1966
	do.	40.6	6.68	1,100	Completed 1966
	do.	39.5	5.66	2,600	Completed 1966
	do.	39.3	5.46	350	
	do.	38.0	4.04	950	Unit No. 11
do.	37.5	3.60	400	Unit No. 11	
do.	36.8	2.90	700	Unit No. 19	
do.	36.6	2.72	1,300		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Sacramento Right Bank	R.D. No. 150	36.4	2.48	650	
	do.	36.2	2.30	950	Unit No. 19
	do.	35.0	1.09	950	Unit No. 11
	do.	34.5	0.48	1,200	
	R.D. No. 349	33.1	0.84	700	
	do.	32.6	1.40	1,800	
	R.D. No. 3	31.8	17.02	1,400	Completed 1966
	do.	31.3	16.56	900	Completed 1966
	do.	31.0	16.28	400	
	do.	30.6	15.95	2,200	Unit No. 15
	do.	30.1	15.3	1,900	
	do.	29.65	14.87	750	Completed 1966
	do.	29.3	14.52	1,950	Unit No. 19
	do.	28.85	14.07	2,200	Unit No. 15
	do.	28.3	13.34	1,800	Unit No. 19
	do.	27.2	12.45	5,400	
	do.	26.4	11.70	1,820	
	do.	26.08	11.31	500	Completed 1966
	do.	25.60	10.88	1,650	
	do.	25.3	10.54	900	Completed 1966
	do.	24.5	9.70	930	
	do.	24.1	9.25	1,600	Unit No. 11
	do.	23.7	8.91	900	Unit No. 11
do.	23.2	8.28	2,900		
do.	22.1	7.20	1,100		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.	
Sacramento Right Bank	R.D. No. 3	21.8	6.86	600		
	do.	21.5	6.60	1,350		
	do.	21.1	6.22	850		
	do.	20.8	5.93	2,000	Completed 1966	
	do.	20.4	5.55	100	Unit No. 15	
	do.	20.4	5.45	200	Unit No. 15	
	do.	20.2	5.22	750		
	do.	19.9	5.01	200		
	do.	19.5	4.53	900	Unit No. 15	
	do.	19.0	4.16	1,050		
	do.	18.8	3.89	400	Unit No. 11	
	do.	18.5	3.61	600	Unit No. 11	
	do.	18.2	3.42	2,250		
	do.	17.8	2.92	100		
	do.	17.6	2.73	950		
	do.	17.2	2.37	2,000		
	do.	16.3	1.52	300		
	do.	15.8	0.98	600		
	Sacramento Left Bank	L.D. No. 3	172.5	9.70	3,250	
		do.	170.5	8.25	1,850	
do.		168.0	5.75	680		
do.		165.7	3.75	3,650		
do.		165.2	3.70	750		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no
Sacramento Left Bank	L.D. No. 3	164.5	3.34	100	
	do.	163.5	1.44	2,830	
	State of California	162.0	20.10	1,400	
	Butte Sl. to Glenn County	161.5	19.56	600	
	do.	161.0	19.00	1,400	
	do.	159.7	17.00	3,780	
	do.	157.4	15.60	2,880	
	do.	156.3	14.25	2,400	
	do.	155.7	13.74	450	
	do.	155.4	13.60	2,050	
	do.	154.9	13.50	900	
	do.	154.6	13.17	200	
	do.	153.8	12.90	500	
	do.	153.2	12.50	280	
	do.	153.0	12.18	300	
	do.	152.6	11.85	400	
	do.	152.5	11.68	450	
	do.	152.4	11.54	150	
	do.	152.0	10.90	1,270	
	do.	150.7	10.65	1,570	
	do.	149.5	10.17	1,700	
do.	148.3	9.34	2,500		
do.	147.5	8.60	2,750	Unit No. 13	
do.	147.3	7.90	3,740		
do.	145.7	6.74	1,200		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Sacramento Left Bank	State of California	145.0	5.85	1,600	
	Butte Sl. to Glenn County	144.3	5.70	330	
	do	144.2	5.67	200	
	do.	143.7	5.42	750	
	do.	143.5	5.20	430	
	do.	142.8	4.36	200	
	do.	142.4	3.95	400	
	do.	141.0	2.78	180	
	do.	140.7	2.50	1,400	Unit No. 13
	do.	140.5	2.32	500	Unit No. 17
	do.	140.4	2.16	1,220	
	do.	139.7	1.38	7,000	Unit No. 13
	do.	138.7	0.58	1,600	Unit No. 17
	do.	138.5	0.26	1,570	
	R.D. No. 70	138.2	0.00	550	
	do.	137.8	0.47	250	Completed 1966
	do.	137.6	0.60	1,150	Unit No. 13
	do.	136.6	1.52	700	Unit No. 17
	do.	136.0	2.25	1,180	
	do.	135.5	2.72	150	
	do.	135.1	3.07	1,150	
	do.	135.0	3.24	700	
	do.	134.8	3.46	760	
do.	132.6	5.70	1,020		
do.	132.4	5.89	1,180		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no
Sacramento Left Bank	R.D. No. 70	131.0	7.38	1,650	
	do.	130.6	7.60	600	
	do.	130.3	7.77	1,150	
	do.	129.6	8.55	2,760	
	do.	129.0	8.70	800	
	do.	128.7	9.06	1,310	
	do.	128.4	9.40	2,650	
	do.	127.4	10.06	1,070	
	do.	127.0	10.38	1,150	
	do.	126.9	10.49	250	
	do.	126.6	10.83	350	
	do.	126.2	11.23	870	
	do.	126.1	11.63	500	Unit No. 17
	do.	125.7	11.84	260	
	do.	125.4	12.02	1,500	Unit No. 17
	do.	125.1	12.38	250	
	do.	124.8	12.67	1,530	
	do.	124.4	13.04	650	
	do.	124.3	13.21	1,150	Completed 1966
	do.	124.1	13.41	930	
do.	123.6	13.4	450		
do.	123.5	13.97	420		
do.	123.0	14.29	300	Unit No. 17	
do.	122.5	14.98	350		
do.	122.3	15.2	650		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Sacramento Left Bank	R.D. No. 70	122.1	15.37	700	
	R.D. No.1660	121.8	0.20	650	
	do.	121.7	0.27	350	
	do.	121.5	0.47	1,700	
	do.	120.9	1.04	240	
	do.	119.9	2.13	200	
	do.	119.7	2.23	2,280	
	R.D. No.1500	118.5	33.48	1,000	
	do.	117.7	32.65	1,000	Unit No. 17
	do.	117.5	32.34	1,550	Completed 1966
	do.	117.3	32.00	1,600	Unit No. 17
	do.	116.5	31.47	400	
	do.	116.4	31.24	1,000	Unit No. 17
	do.	116.1	31.03	800	
	do.	115.6	30.35	1,400	Unit No. 16
	do.	114.8	29.63	1,000	Completed 1966
	do.	114.6	29.37	580	
	do.	114.5	29.27	500	
	do.	114.3	29.12	1,000	Unit No. 17
	do.	114.2	29.00	200	Completed 1966
	do.	112.6	27.40	1,900	Completed 1966
	do.	111.8	26.70	800	Unit No. 16
	do.	111.3	26.08	850	Unit No. 20
do.	111.2	25.95	700		
do.	106.0	20.82	1,420		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Sacramento Left Bank	R.D. No.1500	105.2	20.28	5,620	
	do.	104.3	19.35	400	
	do.	103.5	18.50	1,200	
	do.	102.9	17.95	700	
	do.	102.7	17.68	2,300	Unit No. 20
	do.	102.2	17.20	700	Unit No. 20
	do.	102.1	17.03	700	
	do.	101.5	16.60	1,600	
	do.	101.0	16.20	850	
	do.	99.9	15.37	230	
	do.	98.4	13.86	2,300	Unit No. 16
	do.	97.6	13.25	800	Unit No. 20
	do.	96.2	12.20	750	
	do.	95.9	11.97	650	
	do.	95.7	11.62	650	Unit No. 16
	do.	95.6	11.53	330	
	do.	95.4	11.42	900	Unit No. 16
	do.	95.3	11.26	1,000	
	do.	94.7	10.87	3,200	Unit No. 20
	do.	93.8	9.78	1,200	Unit No. 16
	do.	93.7	9.48	1,060	
	do.	93.3	9.14	2,500	Unit No. 20
	do.	91.6	7.56	2,800	Unit No. 12
do.	89.7	5.62	550		
do.	89.6	5.50	500	Unit No. 16	

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.	
Sacramento Left Bank	R.D. No.1500	89.0	4.85	1,600	Unit No. 12	
	do.	88.7	4.58	1,100		
	do.	88.2	3.95	380		
	do.	86.6	2.12	750		
	do.	86.1	1.51	100		
	do.	85.4	0.88	3,450		
	do.	84.6	0.05	1,100		
	R.D. No.1000	78.5	0.36	2,000		Completed 1966
	do.	78.1	0.70	900		
	do.	77.8	1.03	1,650		
	do.	77.6	1.25	400		
	do.	77.4	1.45	300		
	do.	77.1	1.80	730		
	do.	76.8	2.20	1,600		
	do.	76.5	2.45	300		
	do.	76.4	2.55	300		
	do.	76.3	2.64	200		
	do.	76.1	2.84	1,700		
	do.	75.8	3.28	2,250		
	do.	75.2	3.75	1,150		
	do.	74.9	4.10	620		
	do.	74.7	4.26	700		
	do.	73.9	5.07	5,000		
do.	70.3	8.62	1,800			
do.	69.8	9.21	500			

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Sacramento Left Bank	R.D. No.1000	69.4	9.67	650	
	do.	69.2	9.84	700	
	do.	69.0	10.07	1,050	
	do.	61.6	17.36	650	
	do.	61.5	17.50	600	Unit No. 12
	do.	61.0	18.04	800	Unit No. 16
	City of Sacramento	57.6	2.00	1,000	
	do.	57.0	2.52	100	
	do.	56.7	2.82	300	
	Mtc. Area 9	55.6	0.32	1,100	
	do.	54.3	1.48	1,250	
	do.	54.0	1.74	600	
	do.	53.7	2.24	1,950	Unit No. 19
	do.	53.3	2.60	650	
	do.	52.2	3.70	250	
	do.	51.7	4.12	1,850	
	do.	50.9	4.85	650	
	do.	50.7	5.13	400	
	do.	50.1	5.68	3,400	
	do.	49.6	6.23	1,000	
	do.	49.3	6.50	230	
	do.	49.1	6.68	650	
	do.	48.5	7.23	2,400	
do.	48.2	7.57	450		
do.	47.0	8.84	1,050		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Sacramento Left Bank	Mtc. Area 9	45.2	10.73	350	
	do.	44.3	11.75	550	
	do.	43.9	12.14	200	
	do.	43.8	12.23	400	
	do.	43.1	12.84	350	
	do.	42.9	13.02	1,200	Unit No. 19
	do.	42.0	13.96	2,100	Unit No. 19
	do.	41.5	14.48	950	Completed 1966
	do.	41.4	14.59	150	
	do.	41.3	14.73	250	
	do.	40.5	15.48	1,050	Completed 1966
	do.	40.3	15.73	200	
	do.	40.2	15.81	100	
	do.	40.1	15.95	800	
	do.	39.1	17.02	1,800	Unit No. 15
	do.	38.7	17.27	1,150	
	do.	38.6	17.46	350	
	do.	38.5	17.58	500	
	do.	38.3	17.80	400	
	do.	37.9	18.27	200	Unit No. 15
do.	37.6	18.52	700	Unit No. 15	
do.	37.4	18.75	1,100	Completed 1966	
do.	36.9	19.27	1,000	Completed 1966	
do.	36.7	19.53	800		
	R.D. No. 755	36.5	0.19	350	Unit No. 11

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no
Sacramento Left Bank	R.D. No. 755	36.0	0.72	1,000	Unit No. 19
	do.	35.3	1.42	1,200	
	R.D. No. 551	34.7	0.13	1,450	Unit No. 11
	do.	34.2	0.65	600	
	do.	33.7	1.20	1,900	
	do.	33.0	1.87	2,000	
	do.	32.6	2.23	1,500	
	do.	32.2	2.58	500	
	do.	32.1	2.70	650	
	do.	31.9	2.88	900	
	do.	31.3	3.48	2,200	
	do.	31.0	3.88	2,000	
	do.	30.4	4.40	1,450	Unit No. 19
	do.	29.9	4.88	500	Unit No. 11
	do.	29.7	5.08	1,750	Unit No. 11
	do.	29.4	5.47	2,350	
	do.	28.7	6.08	1,800	Completed 1966
	do.	28.4	6.41	550	Unit No. 15
	do.	28.2	6.60	700	Completed 1966
	do.	28.1	6.76	950	Unit No. 15
R.D. No. 369	27.8	0.16	900		
R.D. No. 554	26.8	0.41	900		
do.	26.5	0.77	750		
R.D. No. 556	26.4	0.02	250	Unit No. 15	
do.	26.1	0.35	2,550		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.	
Sacramento Left Bank	R.D. No. 556	25.4	1.06	150	Unit No. 19	
	do.	25.2	1.24	1,550		
	do.	24.9	1.54	1,050		
	do.	24.7	1.75	1,200		
	do.	24.2	2.23	600		
	do.	23.8	2.50	1,200		
	do.	23.2	3.15	2,550		
	do.	22.7	3.71	750		Unit No. 15
	do.	22.3	4.04	2,000		
	do.	22.1	4.28	550		
	do.	22.0	4.37	250		
	do.	21.7	4.62	1,300		
	do.	21.3	5.03	550		
	do.	21.0	5.46	1,900		
	R.D. No. 407	20.55	0.17	1,000		
	do.	20.4	0.37	350		
	do.	20.2	0.54	450		
	do.	20.0	0.70	850		
	do.	19.5	1.10	2,200		
	do.	19.0	1.70	2,300		
do.	18.6	2.05	250			
do.	18.2	2.54	150			
do.	17.6	3.13	100			
do.	17.5	3.18	100			
R.D. No. 2067	17.2	0.14	100			

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no
Sacramento Left Bank	R.D. No. 2067	16.8	0.60	1,200	Unit No. 15
	do.	16.6	0.81	500	Unit No. 11
	do.	15.4	1.99	400	Unit No. 15
	do.	15.2	2.08	850	
	do.	14.8	2.53	150	
	do.	13.7	3.47	200	
	do.	13.2	3.95	200	
	do.	13.0	4.22	1,050	
	do.	12.4	4.80	2,000	
	do.	11.1	6.00	4,750	
	do.	10.5	6.78	1,900	
Threemile Sl. Right Bank	R.D. No. 341	-	2.00	300	
	do.	-	0.68	550	
	do.	1.7	0.53	1,500	Unit No. 11
	do.	1.3	0.97	500	Unit No. 11
Threemile Sl Left Bank	R.D. No. 1601	-	0.65	400	
	do.	-	0.90	1,200	
	do.	-	1.11	100	
	do.	-	1.19	250	
Sutter Slough Right Bank	R.D. No. 150	28.1	0.18	1,250	Completed 1966
	do.	28.0	0.19	1,250	Completed 1966
	do.	27.9	0.03	350	
	R.D. No. 999	27.7	3.63	1,500	
	do.	27.5	3.35	450	
	do.	27.2	3.17	700	

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no	
Sutter Slough Right Bank	R.D. No. 999	26.5	2.35	2,000		
	do.	26.0	1.93	1,200		
	do.	25.6	1.53	800		
	do.	25.2	1.04	1,200		
	do.	24.5	0.28	2,750		
	R.D. No. 501	24.1	0.05	200		
	do.	23.6	0.57	3,550		
	do.	23.2	0.93	400	Completed 1966	
	do.	23.1	1.05	900		
	do.	22.5	1.65	2,650		
	do.	22.2	1.99	800	Completed 1966	
	do.	21.9	2.20	1,200		
	Sutter Slough Left Bank	R.D. No. 349	28.4	6.52	400	
		do	27.8	6.00	2,550	
do.		26.9	5.11	1,100		
do.		26.5	4.65	800		
do.		25.5	3.69	500	Completed 1966	
do.		24.1	2.28	800		
do.		24.0	2.20	750	Completed 1966	
do.		23.9	2.08	150		
do.		23.7	1.93	1,100		
do.		23.6	1.77	700	Completed 1966	
do.		23.4	1.62	1,100		
do.		23.2	1.33	700		
do.		23.0	1.15	300		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Sutter Slough Left Bank	R.D. No. 349	22.7	0.88	2,100	Completed 1966
	do.	22.1	0.30	750	
	do.	22.0	0.13	500	
	do.	21.9	0.02	250	
Miner Slough Right Bank	R.D. No. 999	7.20	1.86	950	Completed 1966
	do.	6.80	1.52	1,000	
	do.	6.60	1.25	1,000	
	do.	6.50	1.08	350	
	do.	6.30	0.97	550	
	do.	6.00	0.62	850	
Miner Slough Left Bank	R.D. No. 501	5.20	5.45	500	Completed 1966
	do.	4.70	4.93	1,000	Completed 1966
	do.	4.50	4.70	200	Completed 1966
	do.	4.0	4.20	350	
	do.	3.7	3.95	500	Completed 1966
	do.	3.0	3.22	1,850	Completed 1966
	do.	2.7	2.81	1,375	Completed 1966
	do.	2.5	2.63	450	Completed 1966
	do.	2.20	2.30	400	
	do.	2.0	2.06	1,700	
	do.	1.80	1.87	800	Completed 1966
	do.	1.60	1.70	250	
	do.	1.50	1.58	800	
	do.	1.20	1.25	450	
	do.	1.00	1.05	650	Completed 1966
	do.	0.80	0.90	350	

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Miner Slough Left Bank	R.D. No. 501	0.50	0.60	400	
	do.	0.00	0.04	200	
Cache Slough Left Bank	R.D. No. 501	16.0	1.26	150	
	do.	15.9	1.17	300	
	do.	15.5	0.43	400	
Steamboat Sl. Right Bank	R.D. No. 349	26.0	0.41	1,000	
	do.	25.7	0.45	300	
	do.	25.4	0.76	800	
	do.	25.0	1.13	750	Completed 1966
	do.	24.5	1.61	350	
	do.	24.4	1.79	1,150	Completed 1966
	do.	23.6	2.57	350	
	do.	22.3	3.96	250	
	do.	21.9	4.38	450	
	R.D. No. 501	21.8	0.01	200	Unit No. 10
	do.	21.4	0.42	1,400	Unit No. 10
	do.	21.0	0.75	1,900	
	do.	20.3	1.59	400	Unit No. 10
	do.	20.1	1.74	1,150	
	do.	19.3	2.55	900	Unit No. 10
	do.	19.1	2.73	900	
	do.	17.1	4.54	900	
	do.	16.8	4.90	300	
do.	16.2	5.53	100		
do.	16.1	5.58	200		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no
Steamboat Sl. Right Bank	R.D. No. 501	15.3	6.44	850	Unit No. 10
Steamboat Sl Left Bank	R.D. No. 3	26.0	0.07	1,000	
	do.	25.7	0.38	1,500	
	do.	25.3	0.75	300	
	do.	25.1	0.97	300	
	do.	24.8	1.23	1,000	
	do.	24.4	1.67	900	Unit No. 10
	do.	24.3	1.75	450	
	do.	24.2	1.84	325	Unit No. 10
	do.	24.1	1.93	250	
	do.	24.0	2.04	700	Unit No. 10
	do.	23.8	2.26	700	
	do.	23.7	2.39	350	Unit No. 10
	do.	23.5	2.64	300	
	do.	23.4	2.71	300	Unit No. 10
	do.	23.2	2.83	1,050	
	do.	22.8	3.24	200	Unit No. 10
	do.	22.4	3.68	1,450	
	do.	22.2	3.87	370	Unit No. 10
	do.	21.8	4.35	625	Unit No. 10
	do.	21.3	4.83	900	Unit No. 10
	do.	21.0	5.04	550	
	do.	20.9	5.23	1,300	Unit No. 10
	do.	20.7	5.38	400	
	do.	20.7	5.45	250	Unit No. 10

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Steamboat Sl. Left Bank	R.D. No. 3	20.5	5.55	950	
	do.	20.0	6.06	1,500	Unit No. 10
	do.	19.9	6.25	400	
	do.	19.6	6.54	850	
	do.	19.3	6.89	2,630	Unit No. 10
	do.	18.2	7.90	450	
	do.	18.0	8.15	2,100	Unit No. 10
	do.	17.7	8.40	500	
	do.	17.6	8.58	600	Unit No. 10
	do.	17.4	8.73	170	Unit No. 10
	do.	17.4	8.80	400	
	do.	17.3	8.85	200	Unit No. 10
	do.	16.6	9.57	1,270	Unit No. 10
	do.	15.9	10.18	400	
do.	15.2	10.90	1,300		
Feather Right Bank	Mtc. Area 7	-	4.22	950	Unit No. 18
	R.D. No. 777	41.4	1.17	1,300	Unit No. 12
	do.	39.5	0.45	600	Unit No. 12
	L.D. No. 1	24.5	10.21	2,200	Completed 1966
Feather Left Bank	R.D. No. 1001	5.7	6.78	1,100	Unit No. 12
	do.	2.1	10.41	1,100	Unit No. 12
	do.	1.9	10.58	700	Unit No. 18
	do.	1.8	10.70	500	Unit No. 12
Georgiana Sl. Right Bank	R.D. No. 556	11.5	0.75	475	
	do.	11.3	1.02	275	

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Georgiana Sl. Right Bank	R.D. No. 556	11.1	1.14	900	Unit No. 15
	do.	10.9	1.34	475	
	do.	9.9	2.32	375	
	do.	9.6	2.73	500	
	do.	8.9	3.25	100	
	do.	7.0	5.21	275	
	do.	6.8	5.42	150	
	R.D. No. 407	4.7	2.11	500	Unit No. 15
Georgiana Sl. Left Bank	R.D. No. 563	11.6	0.42	200	Unit No. 15
	do.	10.9	1.18	150	
	do.	10.0	2.13	425	
	do.	9.6	2.53	475	
	do.	9.1	3.14	200	
	do.	8.6	3.60	150	
	do.	8.5	3.70	1,150	
	do.	8.0	4.24	650	
	do.	7.9	4.35	4,125	
	do.	7.1	4.90	850	
	do.	6.4	5.92	275	
	do.	6.3	6.02	275	
	do.	6.1	6.26	575	
	do.	5.9	6.44	100	
	do.	5.8	6.53	100	
do.	5.7	6.64	150		
do.	5.5	6.84	100		

Stream and bank	Maintaining agency	River mile mid-point	Levee mile mid-point	Length in feet	Tentative reconstruction unit no.
Georgiana Sl. Left Bank	R.D. No. 563	4.9	7.45	200	
	do.	4.4	8.00	375	
	do.	4.2	8.27	475	
	do.	4.0	8.45	700	Unit No. 15
	do.	3.1	9.28	1,325	
	do.	2.0	10.48	200	
Elder Creek Right Bank	Tehama Co. Fl. Control District	0.26	0.26	1,000	Unit No. 18
	do.	0.91	0.91	1,500	Unit No. 13
Elder Creek Left Bank	Tehama Co. Fl. Control District	0.23	0.23	625	Unit No. 18
	do.	0.54	0.54	400	Unit No. 18
	do.	0.75	0.75	500	Unit No. 13
	do.	0.84	0.84	450	Unit No. 13
	do.	1.56	1.56	300	Unit No. 13
Bear River Right Bank	R.D. No. 2103	1.76	1.76	375	Completed 1966
	R.D. No. 817	2.50	2.50	525	Unit No. 18
	do.	2.98	2.83	1,400	Completed 1966
	do.	3.88	3.88	625	Unit No. 18
Bear River Left Bank	R.D. No. 1001	4.29	4.29	425	Completed 1966
	do.	4.64	4.64	850	Completed 1966
	do.	4.90	4.91	1,400	Completed 1966
	do.	7.12	7.12	1,275	Unit No. 18
	do.	11.6	11.56	950	Unit No. 18
South Dry Creek Left Bank	R.D. No. 2103	1.49	1.49	1,475	Unit No. 18
	do.	2.01	2.01	475	Unit No. 18
	R.D. No. 817	3.45	3.45	1,375	Unit No. 18

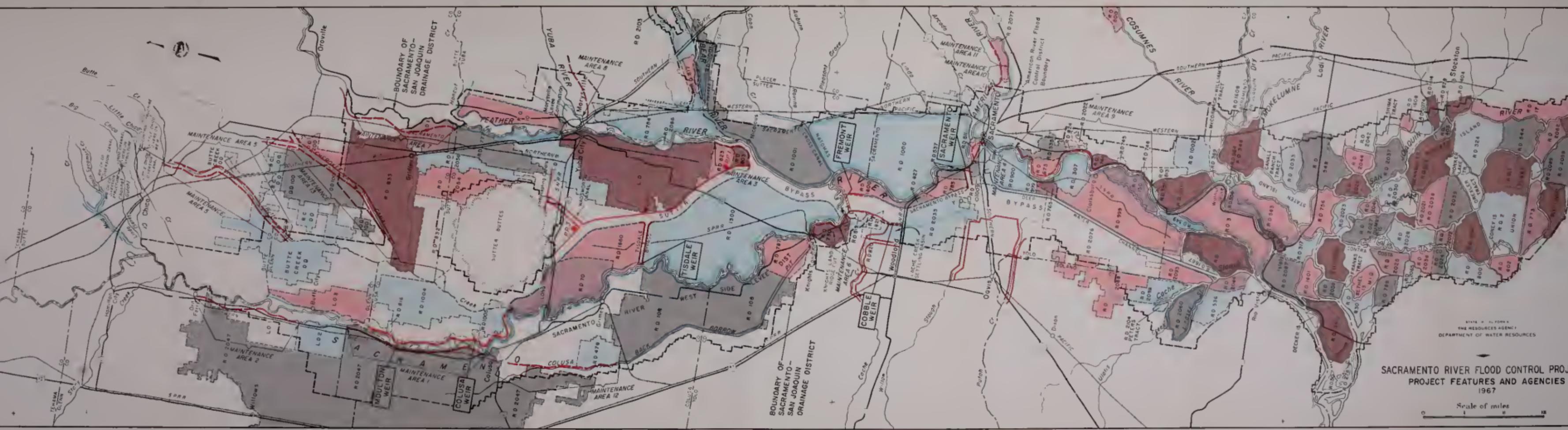








DEPARTMENT OF WATER RESOURCES  
FLOOD CONTROL DISTRICT  
FLOOD CONTROL CODE  
DEPARTMENT OF WATER RESOURCES  
FLOOD CONTROL, LEVEE, AND DRAINAGE  
MAINTAINED BY DEPARTMENT OF  
FLOOD CONTROL DISTRICTS AND MUNICIPALITIES  
FLOOD CONTROL DISTRICTS AND MUNICIPALITIES



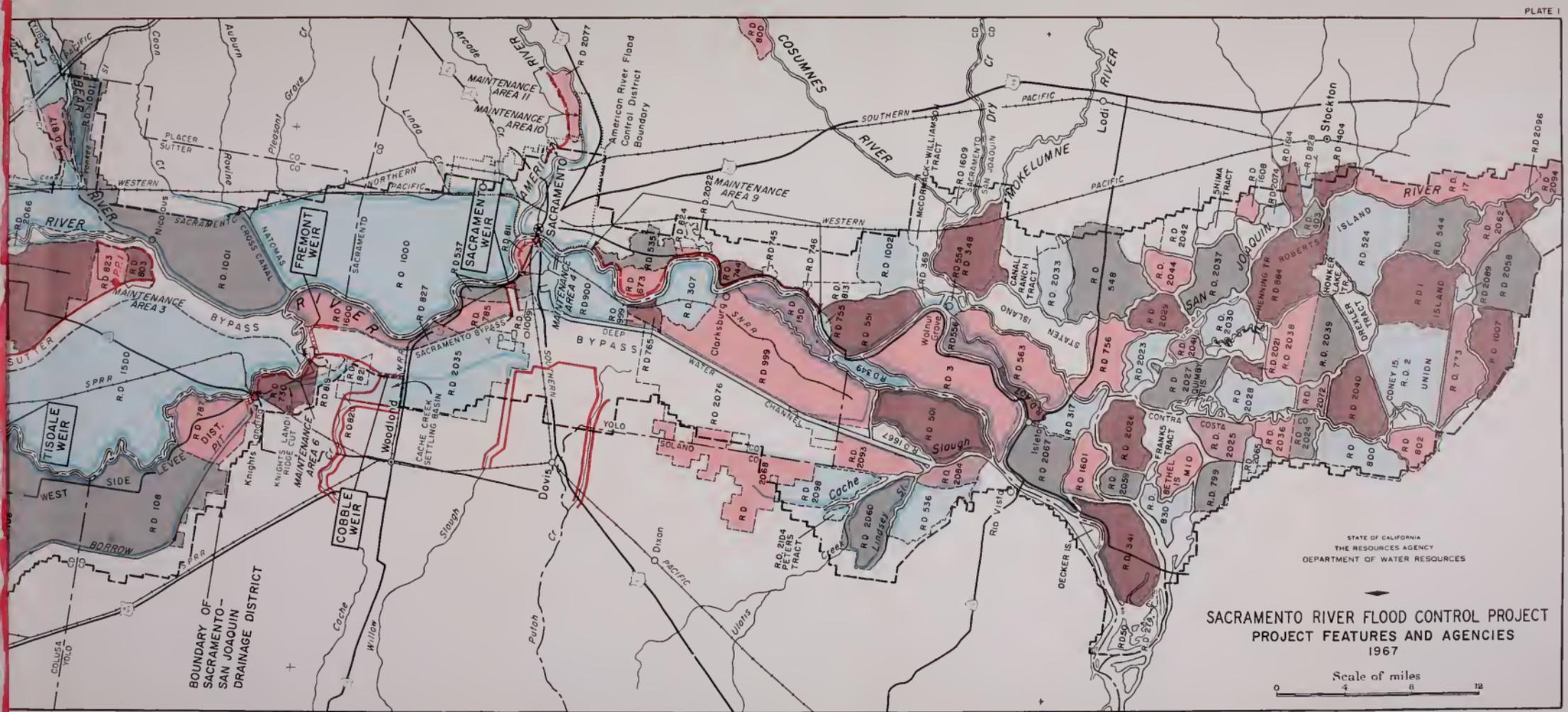
SACRAMENTO RIVER FLOOD CONTROL PROJECT  
PROJECT FEATURES AND AGENCIES  
1967

Scale of miles  
0 1 2

LEGEND

- PROJECT LEVELS MAINTAINED BY DEPARTMENT OF WATER RESOURCES' SEC. 12878 TO SEC 12878.45 OF THE 1961 WATER CODE
- PROJECT LEVELS MAINTAINED BY DEPARTMENT OF WATER RESOURCES
- PROJECT LEVELS MAINTAINED BY RECLAMATION, LEVEE, AND DRAINAGE DISTRICTS AND MUNICIPALITIES.
- P.P.1 PUMPING PLANTS AND STRUCTURES MAINTAINED BY DEPARTMENT OF WATER RESOURCES
- R.D.13 RECLAMATION, LEVEE, AND DRAINAGE DISTRICTS AND MUNICIPALITIES WHICH ARE ACTIVE (SHOWN IN COLOR)
- R.D.13 RECLAMATION, LEVEE, AND DRAINAGE DISTRICTS AND MUNICIPALITIES WHICH ARE INACTIVE.





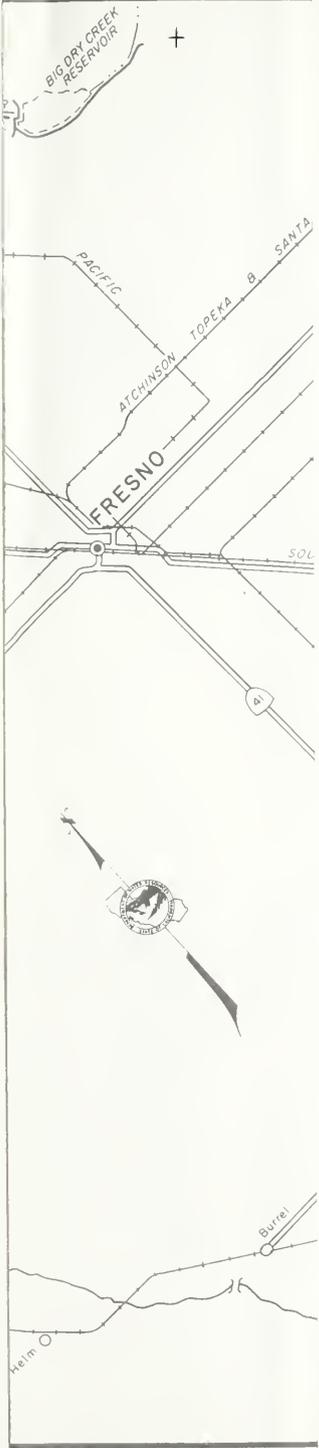
BOUNDARY OF  
SACRAMENTO -  
SAN JOAQUIN  
DRAINAGE DISTRICT

STATE OF CALIFORNIA  
THE RESOURCES AGENCY  
DEPARTMENT OF WATER RESOURCES

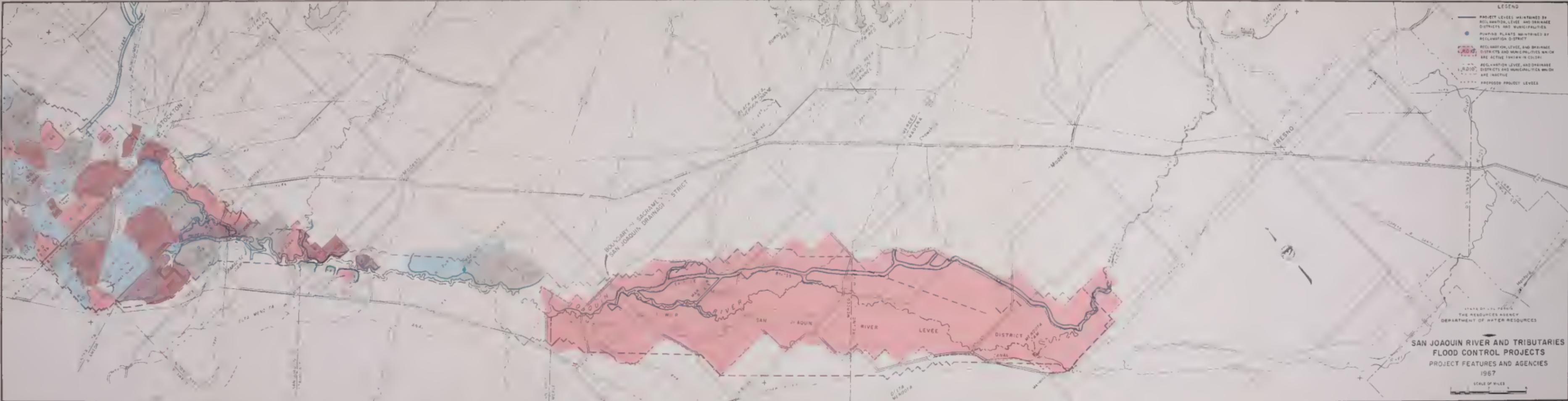
SACRAMENTO RIVER FLOOD CONTROL PROJECT  
PROJECT FEATURES AND AGENCIES  
1967

Scale of miles  
0 4 8 12





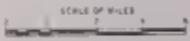




- LEGEND
- PROJECT LEVELS MAINTAINED BY RECLAMATION, LEVEE AND DRAINAGE DISTRICTS AND MUNICIPALITIES
  - PUMPING PLANTS MAINTAINED BY RECLAMATION DISTRICT
  - RECLAMATION, LEVEE, AND DRAINAGE DISTRICTS AND MUNICIPALITIES WHICH ARE ACTIVE (SHOWN IN COLOR)
  - - - RECLAMATION, LEVEE, AND DRAINAGE DISTRICTS AND MUNICIPALITIES WHICH ARE INACTIVE
  - ..... PROPOSED PROJECT LEVELS

STATE OF CALIFORNIA  
 THE RESOURCES AGENCY  
 DEPARTMENT OF WATER RESOURCES

**SAN JOAQUIN RIVER AND TRIBUTARIES  
 FLOOD CONTROL PROJECTS  
 PROJECT FEATURES AND AGENCIES  
 1967**















**THIS BOOK IS DUE ON THE LAST DATE  
STAMPED BELOW**

**RENEWED BOOKS ARE SUBJECT TO IMMEDIATE  
RECALL**

LIBRARY, UNIVERSITY OF CALIFORNIA, DAVIS

Book Slip-55m-10,68(J404668)458--A-31, 5



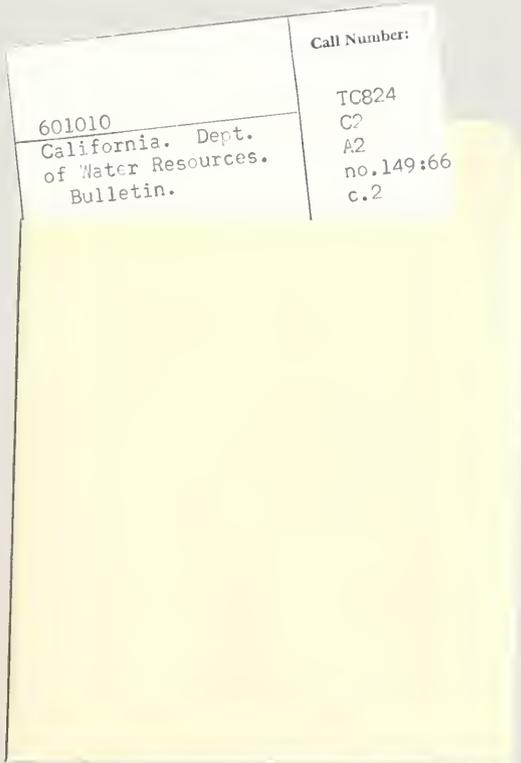
Nº 601010

California. Department  
of Water Resources.  
Bulletin.

TC824  
C2  
A2  
no.149:66  
c.2

PHYSICAL  
SCIENCES  
LIBRARY

LIBRARY  
UNIVERSITY OF CALIFORNIA  
DAVIS



	Call Number:
601010 California. Dept. of Water Resources. Bulletin.	TC824 C2 A2 no.149:66 c.2

