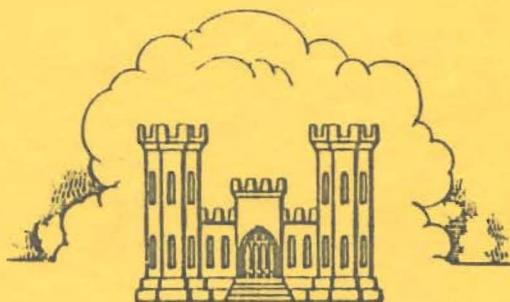


SUPPLEMENT TO STANDARD
OPERATION AND MAINTENANCE
MANUAL

SACRAMENTO RIVER
FLOOD CONTROL PROJECT

UNIT NO. 149
SOUTH LEVEE OF YUBA RIVER
MAINTENANCE AREA NO. 8



U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

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**SUPPLEMENT TO STANDARD
OPERATION AND MAINTENANCE MANUAL
SACRAMENTO RIVER FLOOD CONTROL PROJECT**

**UNIT NO. 149
SOUTH LEVEE OF YUBA RIVER
MAINTENANCE AREA NO. 8**

**U. S. Army Engineer District, Sacramento
Corps of Engineers
Sacramento, California
March 1963**

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ADDITIONS	DATE
Paragraph 2-01 b. (5) -- add special maintenance required for levee	July 1965

EXHIBITS

<u>Exhibit</u>	<u>Description</u>
A	Flood Control Regulations - - - - - Unattached (Contained in Standard Manual)
A-1	Location Map - - - - - 1 Sheet
B	"As Constructed" Drawings - - - - - Unattached
C	Plates of Suggested Flood Fighting Methods - - - - Unattached (Contained in Standard Manual)
D	Suggested Check List No. 1 - Levee Inspection Report - - - - - Unattached (Contained in Standard Manual)
E	Suggested Check List - Levee, Channels and Structures- - - - - Sheet 1 through 7
F	Letter of Acceptance by the State Reclamation Board - - - - - 1 Sheet
G	Suggested Semi-Annual Report Form - - - - - Sheets 1 and 2

SUPPLEMENT TO STANDARD
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SACRAMENTO RIVER FLOOD CONTROL PROJECT
UNIT NO. 149
SOUTH LEVEE OF YUBA RIVER
MAINTENANCE AREA NO. 8

SECTION I

INTRODUCTION

1-01. Location. The improvement covered by this manual is that part of the Sacramento River Flood Control Project levee and channel that lies along the left bank of the Yuba River in the vicinity of Marysville, California. Description by levee mileage: along the left bank of the Yuba River, Unit 1, mile 0.00 at the Simpson Lane crossing upstream to high ground at mile 3.91. The project levee of this unit lies within the State Department of Water Resources Maintenance Area No. 8 as shown on the location map, EXHIBIT A-1.

1-02. Project Works. The flood control improvement covered by this manual is part of the Sacramento River Flood Control Project authorized by the Flood Control Act of 1917, as modified by the Acts of 1928, 1937 and 1941, and consists of the left bank levee and channel of the Yuba River that lies within Maintenance Area No. 8. The above described levee has been constructed by local interests and portions as shown on the drawings of EXHIBIT B were enlarged or repaired by the Corps of Engineers to conform with project standards.

1-03. Protection Provided. The levee of this unit is an essential feature of the Sacramento River Flood Control Project. It provides direct protection to adjacent residential and agricultural lands against flood waters of the Yuba River. The elevation of the adopted flood plane profile in the Yuba River varies from 79.3 at the lower end of Maintenance Area No. 8 to 98.8 at high ground on the upstream end. Elevations are referred to U S. Corps of Engineers datum. This reach of the Yuba River has a project design capacity of 120,000 cubic feet per second. The levee within this unit provides for a freeboard of at least 3 feet above the adopted flood plane profile.

1-04. Construction Data and Contractor. Construction required by the Corps of Engineers to bring levees of this unit to project standards and to perform repair work to locally built levees was accomplished under the following contracts:

a. Construction of new levee at Dantonis Orchard was accomplished and completed on 11 January 1929.

b. Raising and strengthening the existing levee along the Yuba River was accomplished under Contract No. W-1105-ENG-1498 by Harms Bros. and completed on 21 February 1935.

c. Closing of levee breaks along the south bank of the Yuba River between Marysville and Hammonton was accomplished under Job Order No. 330, and completed in July 1938.

d. Emergency repairs along the south bank of the Yuba River near Hammonton was accomplished under Contract No. W-04-167-ENG-399 by Kelley Bros., and completed on 11 December 1950.

e. Emergency levee repairs along the Yuba River was accomplished under Contract No. DA-04-167-CIVENG-57-49 by C. K. Hulse during the period from 24 September 1956 to 19 July 1957.

f. Levee construction along the south levee of the Yuba from the S.P.R.R. upstream to high ground was accomplished under Contract No. DA-04-167-CIVENG-62-62 by Lee Stephens during the period from 3 May 1962 to 17 August 1962.

1-05. Flood Flows. For purposes of this manual, the term "flood" or "high water period" shall refer to flows when the water surface in the Yuba River reaches or exceeds the reading of 85.0 on the U. S. Geological Survey gage located on the left bank of the Yuba River 4.2 miles northeast of Marysville. Gage is set on U. S. Corps of Engineers datum.

1-06. Assurances Provided by Local Interests. Assurance of co-operation by local interests is provided by State Legislation, as contained in Chapter 3, Part 2, Division 5 of the State Water Code. (See paragraph 2-02a of the Standard Manual.)

1-07. Acceptance by the State Reclamation Board. Responsibility for operating and maintaining the completed work was officially accepted by the State Reclamation Board by letter dated 19 September 1962 as shown on the attached letter of acceptance, EXHIBIT F.

1-08. Inspection Procedure. Since the enactment of State Legislation of Chapter 1528, Statutes of 1947, the Department of Water Resources, State of California, has made semi-annual inspections of all levees of authorized flood control projects in the Sacramento-San Joaquin drainage basin pursuant to the Federal Regulations of 16 August 1944 (Title 33), and reports its findings to the local agency, the State Reclamation Board, and the Sacramento District, Corps of Engineers, U. S. Army. 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 State Department of Water Resources the obligation of compliance with Sections 8371, 8372, and 8373 of the Water Code of the State of California. These sections of

the Code require the local responsible agencies to submit a report to the State Department of Water Resources on or before 1 June of each year on the condition of the levees within their jurisdiction. 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, or expenditure of Federal funds on the construction of such works.

The following procedure is used in inspecting the levees of the responsible maintaining agency:

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

- a. That all brush, trees and wild growth other than sod are removed from the levee crown and slopes.
- b. That all weeds, grass and debris on the levee have been burnished during the appropriate season, where not dangerous or impractical.
- c. That all grass and weeds on the levee have been mowed where removal by burning is dangerous or impractical. This applies only on peat levees or where burning would constitute a hazard to improvements.
- d. That all burrowing animals have been exterminated.
- e. That all caves, sloughs, burrows, holes, slips or other damaged portions of the levee have been repaired.
- f. That all irrigation and drainage structures through the levee are in good working condition.
- g. That no revetment work or riprap have been displaced, washed out or removed.
- h. That the crown of the levee is well shaped and maintained and that unauthorized vehicular travel is restricted.
- i. That stock grazing on the levee is restricted to conditions and seasons when the levee would not be seriously scarred or otherwise damaged thereby.
- j. That encroachments are not being erected on the levee which would hinder travel by authorized patrol vehicles.

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

Following this detailed inspection a joint field inspection is made with representatives of the responsible maintaining agency and the State Department of Water Resources to review and discuss the inspection report.

Upon completion of the fall inspection, the State Department of Water Resources publishes an annual report entitled, "Status of Project Levee Maintenance" which indicates the degree of proficiency attained by each obligated legal agency in providing required maintenance.

SECTION II

FEATURES OF THE PROJECT SUBJECT TO FLOOD CONTROL REGULATIONS

2-01. Levee.

a. Description. The levee along the left bank of the Yuba River is located as described in paragraphs 1-01 and 1-03 of this manual. The levee has been reconstructed with slopes of 1 on 3 waterside and 1 on 2 landside and a minimum crown width of 20 feet. The necessary drainage structures, road approaches, and appurtenances were also included in the work. For more complete detail in construction of the above-mentioned levee, refer to the "As Constructed" drawings of EXHIBIT B.

b. For pertinent Requirements of the Code of Federal Regulations and other requirements see the following:

- (1) Maintenance - paragraph 4-02 of the Standard Manual.
- (2) Check Lists - Exhibit E of this Supplement Manual.
- (3) Operation - paragraph 4-04 of the Standard Manual.
- (4) Special Instructions - paragraph 4-05 of the Standard Manual.

2-02. Drainage and Irrigation Structures.

a. Description. Drainage and irrigation structures which extend through the levee are located and described as follows:

Levee Mileage	Size of Pipe	Other Structure Description	Invert-ft. Below Crown
1.82	24" CMP	Slidegate in W.S. Riser	5.5
2.90	16" Concrete	Siphon Breaker W.S.	3.2

NOTE ON ABBREVIATIONS: CMP = Corrugated Metal Pipe
W S = Waterside

b. For pertinent Requirements of the Code of Federal Regulations and other requirements, see the following:

- (1) Maintenance - paragraph 5-02 of the Standard Manual.
- (2) Check Lists - Exhibit E of this Supplement Manual.

b. (5) Since the levee along the left bank of the Yuba River from Griffith Avenue to high ground is above the project flood plane; maintenance and operation will be limited to the patrol road only.

- (3) Operation - Paragraph 5-04 of the Standard Manual.
- (4) Additional Requirements - paragraph 5-05 of the Standard Manual.
- (5) Safety Requirements - paragraph 5-06 of the Standard Manual.

2-03. Channel.

a. Description. The floodway of the Yuba River adjacent to Maintenance Area No. 8 has a width of about 10,000 feet between levees. The project design capacity of the channel is 120,000 cubic feet per second within this unit.

b. For pertinent Requirements of the Code of Federal Regulations and other requirements see the following:

- (1) Maintenance - paragraph 6-02 of the Standard Manual.
- (2) Check Lists - Exhibit E of this Supplement Manual.
- (3) Operation - paragraph 6-04 of the Standard Manual.
- (4) Safety Requirements - paragraph 6-05 of the Standard Manual.

It shall be the duty of the local agency responsible for maintenance to keep in contact with the State Department of Water Resources Flood Operation Center during all high water periods, and maintain a patrol of the project works in their area during any high water period when daily higher high water levels exceed or are expected to exceed a reading of 85.0 on the U. S. Geological Survey gage located on the left bank of the Yuba River 4.2 miles northeast of Marysville, as referred to in paragraph 1-05 of this manual.

The flood Operation Center is responsible for data collection and issuance of a joint river or high tide forecast with the U. S. Weather Bureau and coordinates with the Sacramento District Engineer, and other agencies to keep apprised of the current situation in accordance with terms of the Memorandum of Understanding dated 1 November 1956, between the Division Engineer, U. S. Army Engineer Division, South Pacific, and the Director, Department of Water Resources, State of California for cooperative action during flood emergencies.

2-04. Miscellaneous Facilities.

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

(1) Utility Relocations. Because of the nature of the construction of the levee by local interests, no records of any utility relocations are available.

(2) Hydrographic Facilities.

(a) A continuous water stage recorder and staff gage located on the left bank of the Yuba River 4.2 miles northeast of Marysville. This gage to be maintained by the U. S. Geological Survey.

b. For pertinent Requirements of the Code of Federal Regulations and other requirements, see the following:

- (1) Maintenance - paragraph 7-02 of the Standard Manual.
- (2) Check Lists - paragraph 7-03 of the Standard Manual.
- (3) Operation - paragraph 7-04 of the Standard Manual.

SECTION III

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

3-01. Repair of Damage. In the event of serious damage to the project works, whether due to flood conditions or other causes, and which may be beyond the capability of local interests to repair, the local agency responsible for maintenance will contact a representative of the Department of Water Resources, State of California, who coordinates maintenance of project works of the Sacramento River Flood Control Project. The State representative will give assistance or advice, or will determine appropriate action to be taken.

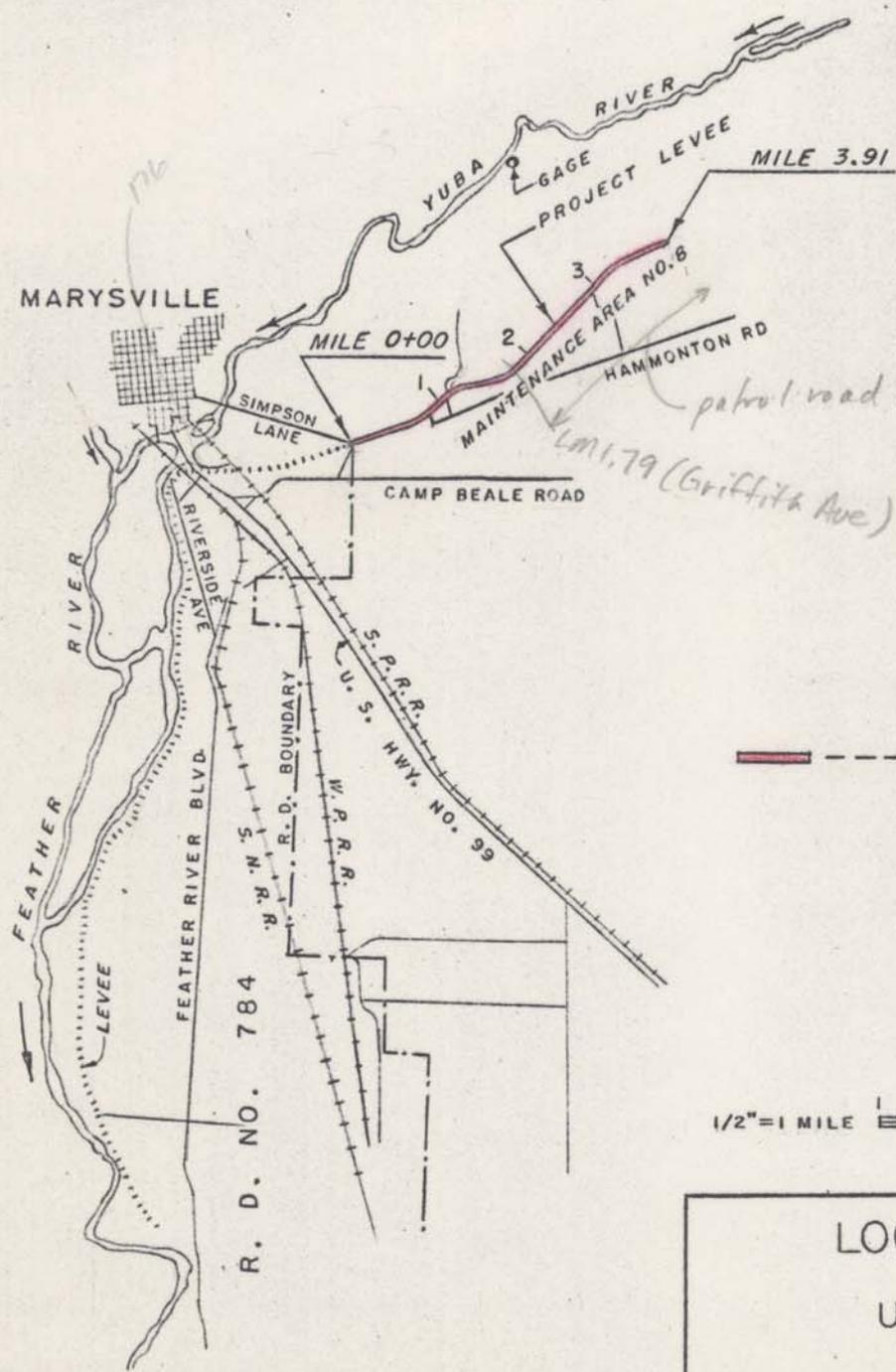
3-02. Applicable Methods of Combating Floods. For applicable methods of combating flood conditions, reference is made to Section VIII of the Standard Operation and Maintenance Manual where the subject is fully covered.

EXHIBIT A

FEDERAL FLOOD CONTROL REGULATIONS

(SEE STANDARD MANUAL)

EXHIBIT A

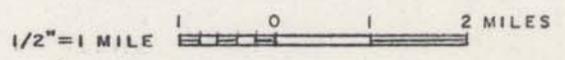


patrol road only, see # 2-016(5)
176

LEGEND

 --- Extent of Levees in this Unit.

SCALE IN MILES



LOCATION MAP
UNIT NO. 149
SOUTH LEVEE OF YUBA RIVER
MAINTENANCE AREA NO. 8

EXHIBIT B
"AS CONSTRUCTED"
DRAWINGS

See separate folder for the following drawings:

<u>File No.</u>	<u>Title</u>
4-4-140	Enlargement South Levee Yuba River, Recl. Dist. No. 784, in 1 sheet
4-4-418	Emergency Levee Repairs, Left Bank Yuba River, in 1 sheet
8-4-666	Levee Construction - Yuba River left bank S.P.R.R. to high ground, in 12 sheets

EXHIBIT B
Unattached

EXHIBIT C

PLATES OF SUGGESTED FLOOD FIGHTING METHODS

(SEE STANDARD MANUAL)

EXHIBIT C
Unattached

EXHIBIT D

SUGGESTED CHECK LIST NO. 1

LEVEE INSPECTION REPORT

(SEE STANDARD MANUAL)

EXHIBIT D

EXHIBIT E

SUGGESTED CHECK LISTS OF LEVEES,

CHANNEL AND STRUCTURES

For definition of "flood" or "high water period", see paragraph 1-05 of this manual.

SUGGESTED CHECK LIST NO. 2
UNIT NO. 149

Inspector's Report Sheet No. _____ Inspector _____

Date _____ Superintendent _____

Item	Remarks
(a) Location by Station	
(b) Settlement, sloughing, or loss of grade	
(c) Erosion of both slopes	
(d) Condition of roadways, including ramps	
(e) Evidence of seepage	
(f) Condition of farm gates and fencing	
(g) Maintenance measures taken since last inspection	
(h) Comments	

Instructions for Completing Sheet 2, Exhibit E
(To be printed on back of Sheet 2)

- Item (a) Indicate levee station of observation, obtained by pacing from nearest reference point; indicate right or left bank.
- Item (b) If sufficient settlement of earthwork has taken place to be noticeable by visual observation, indicate amount of settlement in tenths of a foot. If sloughing has caused a change in slope of the embankment sections, determine the new slope. Note areas where erosion or gulying of the section has occurred.
- Item (c) If sufficient erosion or gulying of back face of back toe of levee has taken place to be noticeable by visual inspection, indicate area affected and depth.
- Item (d) Note any natural change in any section of roadway or ramps. Indicate any inadequacy in surface drainage system.
- Item (e) Indicate any evidence of seepage through the embankment section.
- Item (f) Indicate the serviceability of all farm gates across the embankments and roadway, and indicate if repainting is required.
- Item (g) Indicate maintenance measures that have been performed since last inspection and their condition at the time of this inspection.
- Item (h) Record opinion, if any, of contributory causes for conditions observed and also any observations not covered under other columns.

NOTE: One copy of the Inspector's Report is to be mailed to the District Engineer immediately on completion, and one copy is to be attached to and submitted with the Superintendent's semi-annual report.

SUGGESTED CHECK LIST NO: 3

CHANNEL AND RIGHT-OF-WAY

UNIT NO. 149

Inspector's Report Sheet No. _____ Inspector _____

Date _____ Superintendent _____

Item	Remarks
(a) Name of Channel and location by Stations	
(b) Vegetal growth in channel	
(c) Debris and refuse in channel	
(d) New constauction within right- of-way	
(e) Extent of aggradation or de- gradation	
(f) Condition or riprapped section	
(g) Condition of bridges	
(h) Measures taken since last inspection	
(i) Comments	

Instructions for Completing Sheet 4, Exhibit E
(To be printed on back of Sheet 4)

- Item (a) Indicate station of observation obtained by pacing from nearest reference point.
- Item (b) Note nature, extent, and size of vegetal growth within the limits of flood flow channel.
- Item (c) Note nature and extent of debris and refuse that might cause clogging of the conduits of the irrigation intake works, fouling of the tainter gates, or the bridges over the channel.
- Item (d) Report any construction along the diversion channel or above the diversion channel or above the diversion works that has come to the attention of the inspector and that might affect the functioning of the project.
- Item (e) Indicate any change in grade or alignment of the channels, either by deposition or sediment or scour, that is noticeable by visual inspection. Estimate amount and extent.
- Item (f) Indicate any change that has taken place in the riprap such as disintegration of the rock, erosion, or movement of the rock. Note the presence of vegetal growth through the riprap.
- Item (g) Note any damage or settlement of the footings of the bridges. Indicate condition of wooden structures and if repainting is required. Indicate condition of bridge approaches, headwalls, and other appurtenances.
- Item (h) Indicate maintenance measures that have been performed since the last inspection and their condition at time of this inspection.
- Item (i) Record opinion, if any, of contributory causes for conditions observed, also any observations not covered under other columns.

NOTE: One copy of the Inspector's Report is to be mailed to the District Engineer immediately on completion and one copy is to be attached to and submitted with the Superintendent's semi-annual report.

SUGGESTED CHECK LIST NO. 4

DRAINAGE AND IRRIGATION STRUCTURES

UNIT NO. 149

Inspector's Report Sheet No. _____

Inspector _____

Date _____

Superintendent _____

(a)		1.82	Left
(b)	Bank		Left
(c)	Debris or other obstruction to flow		
(d)	Damage or settlement of pipe or conduit		
(e)	Condition of concrete headwall or invert paving		
(f)	Condition of right-of-way adjacent to structure		
(g)	Repair measures taken since last inspection		
(h)	Comments		

Instructions for Completing Sheet 6, Exhibit E
(To be printed on back of Sheet 6)

- (1) Enter station of all structures under Column (a) for check list.
- (2) Inspect inlet, barrel, and outlet for accumulation of sediment, rubbish and vegetal matter. Note condition under Column (c).
- (3) If any settlement or damage to the pipe, barrel, or invert of the drain has occurred, estimate the location and amount. Note particularly if any backfill has come into the pipe or been disturbed. Record observations under Column (d).
- (4) Inspect the concrete portions of the structures for evidence of settlement, cracks, "pop-outs", spaces, abrasive wear, or other deteriorations. Record conditions under Column (e).
- (5) Inspect backfill area adjacent to structure for evidence of erosion caused by overflow of the drainage structure and note conditions in column (f).
- (6) Under Column (g) indicate physical measures that have been taken to correct conditions reported in last inspection, and their condition at time of this inspection.
- (7) Under Column (h) record opinion, if any, of contributory causes for conditions observed, also any observations not covered under other columns.
- (8) A copy of the inspector's report is to be mailed to the District Engineer immediately on completion, and a record copy shall be attached to the Superintendent's semi-annual report.

EXHIBIT F

LETTERS OF TRANSFER

TO OR ACCEPTANCE BY THE STATE RECLAMATION BOARD

EXHIBIT F

C
O
P
Y

THE RECLAMATION BOARD
of the
STATE OF CALIFORNIA

C
O
P
Y

September 19, 1962

District Engineer
Corps of Engineers
U S. Army
P. O. Box 1739
Sacramento, California

Dear Sir:

Reference is made to your letter of August 30, 1962 concerning transfer to the State of California of levee improvement work along the left bank of the Yuba and Feather Rivers designated as Unit No. 667, which was completed in accordance with Specification No. 2740. This work consists of levee construction on the left bank of the Yuba River from River Mile 0.75 to high ground, and levee enlargement and surfacing of the left bank of the Feather River from River Mile 25.61 to 26.50.

The Reclamation Board at its meeting of September 6, 1962 formally accepted the above referred to levee improvement work for operation and maintenance.

Sincerely yours,

/s/A. N. Murray
A. N. MURRAY

General Manager and Chief Engineer

EXHIBIT G

SUGGESTED SEMI-ANNUAL REPORT FORM

EXHIBIT G

TO: The District Engineer
Sacramento District
Corps of Engineers
650 Capitol Avenue
Sacramento, California

Dear Sir:

The semi-annual report for the period (1 May 19__ to 31 October 19__) (1 November 19__ to 30 April 19__) Unit No. 149 of the Sacramento River Flood Control Project is as follows:

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

(Superintendent's summary of conditions)

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

(Outline the anticipated maintenance operations for the following 6 months.)

b. During this report period, major high water periods (water level at 85.0 on the gage 4.2 miles northeast of Marysville) occurred on the following dates:

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

Comments on the behavior of the protective works during such high water periods are as follows:
(Superintendent's log of flood observations)

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

(See Maintenance Manual _____.)

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

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

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

e. The status of maintenance measures, indicated in the previous semi-annual report as being required or as suggested by the representatives of the District Engineer, is as follows:

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

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

	<u>Labor</u>	<u>Material</u>	<u>Equipment</u>	<u>Overhead</u>	<u>Total</u>
1. Inspection					
2. Maintenance					
3. Flood fighting operations					
TOTAL					

Respectfully submitted,

Superintendent of Works