PART B

PLAN OF OPERATION

WHITTIER NARROWS FLOOD-CONTROL RESERVOIR

SAN GABRIEL RIVER BASIN, CALIF.

1 OCTOBER 1957

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PART B

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WHITTIER NARROWS FLOOD-CONTROL RESERVOIR
SAN GABRIEL RIVER BASIN, CALIF.

1. Operation requirements.--Whittier Narrows Reservoir will be operated for flood control and conservation in accordance with the regulation plan contained herein to achieve the following objectives:

a. To eliminate or minimize flood damaging flows along the Rio Hondo from the dam to the Los Angeles River and along the Los Angeles River from the Rio Hondo confluence to the Pacific Ocean.

b. To eliminate or minimize flood damaging flows along the San Gabriel River from the dam tot he Pacific Ocean.

c. To release San Gabriel River flows up to 5,000 cubic feet per second downs the San Gabriel River channel to satisfy water rights.

d. To divert rising water in the Rio Hondo above the dam to the original streambed below the dam.

e. To provide sufficient conservation storage to compensate for the estimated percolation that occurred in the natural Rio Hondo channel prior to the construction of the concrete-lined channel.

2. Prior plan of operation.--A plan of operation for Whittier Narrows flood-control basin was described in the report titled "Analysis of Design on San Gabriel River Improvement, Whittier Narrows Flood Control Basin, Volume I," dated January 1950 and approved by the Chief of Engineers. Under this plan, operation for flood control is flexible and depends upon the relative magnitude and synchronization of streamflow in the Los Angeles and San Gabriel Rivers and the Rio Hondo. The basic plan of operation provides for inflow to be passed through the outlet structure to the Rio Hondo with gates open until the reservoir water surface reaches elevation 208.4 when the outflow would reach 40,000 cubic feet per second. Above water-surface elevation 208.4, the outlet gates are operated to control the outflow to 40,000 cubic feet per second. This operation is reversed during falling stages.

3. The spillway gates discharge natural streamflow down the San Gabriel River up to 5,000 cubic feet per second to satisfy existing downstream water rights. During minor floodflows, releases are limited to 5,000 cubic feet person second to achieve a large amount of the natural streambed percolation without causing appreciable damage. However, the spillway gates might be closed during floodflows if, for example, the San Gabriel River channel from Coyote Creek to the Pacific Ocean were filled to capacity by floodflows from Coyote Creek and adjacent local drainage areas. If the water surface should rise to elevation 228.5, the spillway gates will automatically commence opening and continue until fully open at water-surface elevation 233.5. At elevation 234.0 (spillway design surcharge elevation) the discharge through the spillway gates is 251,000 cubic feet per second. During falling stages, the spillway gate operation is reversed.

4. If a cloudburst-type storm should center in those parts of the Los Angeles River drainage area that are uncontrolled by flood-control dams, the simultaneous flood above Whittier Narrows Dam would be smaller than the reservoir design flood and storage capacity which would be available in Whittier Narrows and Santa Fe Reservoirs. Under these conditions, the discharge through the outlets could be curtailed if necessary for several hours until the peak discharge on the Los Angeles River had occurred. As a safety factor, up to 12,000 cubic feet per second could be released for a short time through the spillway gates to the partially improved San Gabriel River, depending upon the available downstream channel capacity.

5. Flood-control operation.--The flood-control operation plan is identical to the plan described above. The operation for diversion and conservation below elevation 195.5 is described in part C of this appendix. The outlet gate operation schedule for the flood-control operation plan is shown in table B-1, and the spillway gate operation schedule is shown in table B-2. Prior to the completion of downstream channel improvements, the interim plan of operation described in part D of this appendix will be used. The final section of the down-stream channel improvement is currently scheduled for completion in December 1957.

6. Limitation on storage.--There is no legal authority for the storage of water above taking line (elev. 229.0) shown on plate A-8. Water may be stored for conservation to elevation 195.5 feet (approximately 1,000 acre-feet).

7. Limitations on releases.--Generally speaking, the only limitations on releases from the dam are imposed by downstream channel capacities, except during operation for conservation. However, if flood damage is occurring on the Rio Hondo below the dam or on the lower Los Angeles River, releases to the Rio Hondo will not exceed the Rio Hondo inflow as determined at inflow gaging stations except when

the safety at the dam is threatened. If flood damage is also occurring along the San Gabriel River channel, releases to the San Gabriel River will not exceed the San Gabriel inflow as determined at the inflow gaging station, except when the safety of the dam is threatened.

8. Division of responsibility for operation.--The primary responsibilities for operating Whittier Narrows Reservoir are delegated to units of the Engineering Division and Construction Division. Responsibility for the hydraulic operation of the reservoir has been delegated through channels to the chief, Hydrology and Reservoir Regulation Section. he is assisted in fulfilling this responsibility by the section's Reservoir Regulation Group and Hydrography Unit. The chief, Reservoir Regulation Group, during normal operation, is responsible for: (a) collecting hydraulic data, (b) transmitting operating instructions, (c) investigating and improving operating techniques, (d) training personnel for assignments during flood emergencies, (e) keeping the district's Flood-Emergency Manual current, (f) preparing reservoir regulation manuals, and keeping them current, and (g) maintaining prescribed records. The chief, Hydrography Unit, during normal operations, is responsible for: (a) collecting rainfall and runoff data, (b) maintaining a record of reservoir operations, (c) installing and servicing instruments, and (d) preparing required reports for higher authority.

9. During flood emergencies, the organization for effecting hydraulic operations is expanded and implemented by district employees that have been trained in their respective flood-emergency duties. A Hydraulic Operations Center is established, under the supervision of the chief, Hydrology and Reservoir Regulation Section, to supervise the operation of a Control Group and Hydrography Group. The Control Group contains a Flood Prediction Unit for forecasting flood inflows, a Dam Operation Unit to supervise operation of the dam, and River Patrol Unit to observe flow conditions in downstream channels. The Control Group also operates the district's communications system for flood operations. The Hydrography Group, which is primarily responsible for obtaining hydrographic data during flood emergencies, operates a Stream-Gaging Unit for measuring streamflow at pertinent locations. For more detailed information on organization and personnel assignments in the Los Angeles District during flood emergencies, reference is made to the district's current "Flood-Emergency Manual."

10. Responsibility for the physical operation of Whittier Narrows Reservoir has been delegated to the Construction Division. The duties of the Construction Division include: (a) safeguarding the project at all times, (b) maintaining the project in good working condition, (c) performing routine tests of equipment, (d) operating hydrologic and hydraulic equipment, (e) maintaining records as prescribed by the Hydrology and Reservoir Regulation Section, and (f) keeping informed of the information contained in the Reservoir Regulation Manual.

11. Normal organization.--The organization for effecting the operation at Whittier Narrows Dam during normal periods is shown on plate B-1. The names and telephone numbers of key personnel are shown on plate B-2.

12. Flood-emergency organization.--The organization for effecting the operation of Whittier Narrows Dam during flood emergencies is shown on plate B-3. The names and telephone numbers of key personnel are shown on plate B-4.

13. Instructions to dam tenders.--The dam tender at Whittier Narrows Dam is required to:

a. Be present at the dam when rainfall or runoff is occurring.

b. Furnish the Control Group at the district office a phone number through which he can be reached, whenever an assistant is not on duty.

c. See that all equipment at the reservoir including recorders, indicating gages, gate mechanisms, power units, radios, etc., is in operating condition.

d. Operate gates in accordance with instructions from the Control Group.

e. Keep the Control Group notified of any unusual developments such as trash accumulation, power failure, mechanical difficulties, etc.

f. Follow the fixed-gate operation schedule posted in the control house in the absence of communications with the Control Group or in the absence of a representative from that group.

g. Assist engineers, dispatched by the Control Group during flood emergencies, in every possible way.

h. Maintain routine records on prescribed forms, including water-surface elevations, inflow and outflow gage heights, precipitation amounts, gate openings, and a daily log.

i. Notify local authorities of anticipated releases when instructed to do so by the Control Group.

14. Modification of regulations.--The operation schedules serve as guides for personnel operating Whittier Narrows Dam during flood conditions. These schedules represent the best method of operation under a given set of predetermined conditions. The fixed schedules are predicated upon the control of a flood of given magnitude and will probably effect the best overall control. Deviations based upon the results of flood prediction may be made if there is high confidence in the prediction of runoff and future weather conditions. Deviations upon this basis should be made only under circumstances

that will clearly result in better control of a flood under the conditions which exist at the time. Careful consideration must be given to the consequences of deviation should that flood be of smaller or larger magnitude that that predicted.

15. Deviation from the fixed schedule of operation will normally be made only by the Reservoir Regulation Group of the district office. In the event of communication failure, the engineer dispatched from the district office will assume responsibility for deviating from the fixed schedule. Only under extreme circumstances involving levee failure or possible loss of lives should the outflow from the reservoir be throttled or completely stopped, and then only for a few hours. As soon as the emergency is over, the gates should be slowly opened to agree with the fixed schedule.

16. Coordination with other agencies.--During a flood situation, the Control Group on the district office maintains direct communications with other flood-control agencies for the exchange of hydraulic operations data. The Los Angeles Count6y Flood Control District operates several dams upstream from Whittier Narrows Dam and Spreading grounds below the dam. A teletype circuit and direct telephone line connect the Control Group with this agency. The Los Angeles County Flood Control District has furnished the following information pertaining to the operation of upstream reservoirs during flood periods:

a. Morris Dam.--

(1) Reservoir full to permanent spillway crest at start of flood.

(2) All outlets are closed

(3) Center spillway gate is down (open) and the two outside gates are up until reservoir elevation 1,170 is reached. Above elevation 1,170 outside gates are gradually lowered.

b. San Gabriel Dam.--

(1) 10,000 acre-feet in storage at start of flood.

(2) Outflow equals inflow until outlet capacity is reached; then outlets are wide open until spillway crest is reached.

(3) Above spillway crest, outlets are gradually closed to keep outflow constant until spillway discharge equals outlet capacity and outlets are completely closed.

c. Cogswell Dam.--

(1) 1,000 acre-feet in storage at start of flood.

(2) Outflow equals one-half of inflow until 2,000 cubic feet per second outflow is reached; then 2,000 cubic feet per second outflow is maintained until spillway is reached.

(3) Above spillway crest, outlets are closed.

d. Puddingstone Dam.--

(1) 12,000 acre-feet in storage at start of flood.

(2) Gates are wide open below spillway crest, outlet capacity at spillway crest 814 cubic feet per second.

(3) Above spillway crest, outlets are gradually closed to maintain 814 cubic feet per second total outflow until outlets are completely closed.

17. Coordination with other projects.--The operation of Whittier Narrows Reservoir will not require coordination with other projects after completion of the lower Los Angeles River channel, except during emergencies. The channel has been designed to contain the total discharge from upstream reservoirs and from uncontrolled areas during the occurrence of the standard project flood. During emergencies, the operation of Sepulveda, Hansen, Santa Fe, Whittier Narrows, Break, and Fullerton Reservoirs will be coordinated to give maximum protection to all channels and dams. Plans for coordinated operation with other projects prior to completion of the downstream channel are described in part D of this appendix.

18. Examples of regulation.--The reservoir design (standard project) flood and their spillway design (maximum probable) flood were routed through the reservoir under the flood operation plan, but the spillway gates were assumed closed until the reservoir filled to elevation 228.5 feet. This condition might develop with excessive local inflow into the San Gabriel River below the dam. The results of the routings are shown on plates B-5 and B-6. The maximum water surface for each flood would be somewhat lower if the spillway gates were regulated to release 5,000 cubic feet per second to elevation 228.5 feet as planned for flood operation.

19. The flood of 2-3 March 1938 (estimated 99,000 cubic feet per second peak at Pacific Coast Highway) was the largest flood of record on the Los Angeles and San Gabriel Rivers and on the Rio Hondo. Observed or reconstructed hydrographs for that flood were modified to account for the effect of reservoirs constructed since 1938. Substantial increases in the hydrographs were also made to reflect the increases in the amount of all-impervious valley area. In the modifications, unit-hydrograph procedures were incorporated wherever appropriate. At the beginning of the flood, Santa Fe flood-control reservoir was assumed to be empty. According to information supplied by Los Angeles County Flood Control District, San Gabriel Dam was

assumed to have 33,800 acre-feet of available flood-control storage, Cogswell Dam was assumed to have 9,600 acre-feet of storage available for flood control, and Morris Dam was assumed full to spillway crest. The operation of the upstream reservoirs, operated by the Los Angeles County Flood Control District, was in accordance with information obtained from them. A routing of the modified 2-3 March 1938 flood is shown on plate B-7. The spillway gates were assumed closed for this routing. A peak flow of 78,000 cubic feet per second in the Los Angels River below the Rio Hondo would result from this operation. Additional pertinent data are tabulated in table B-3.

20. The flood of 15-18 January 1952 (48,000 cubic feet per second peak at Pacific Coast Highway) was the second largest flood of record on the lower reaches of the Los Angeles River. Observed hydrographs were used to reconstruct the flood at Whittier Narrows Reservoir. Table B-3 contains the results of routing this flood through Whittier Narrows Dam under the flood operation plan. In the routing, it was assumed that no water was released to the San Gabriel River.

21. Operation reports.--The dam tender reports by radio or telephone to the Hydrology and Reservoir Regulation Section at about 0800 hours each workday or more frequently during storms as directed by the Hydrology and Reservoir Regulation section. He reports the pertinent operational data indicated in the forms shown on plates B-8 and B-9, and the rainfall as indicated on the form shown on plate B-10. The originals of these reports are forwarded to the Hydrology and Reservoir Regulation Section immediately following the end of the month. The data reported are tabulated on the form shown on plate B-11 and transferred to the forms shown on plates B-12 and B-13 for computing necessary data. Radio reports of precipitation are received daily by radio from the field or by telephone or teletype from the Los Angeles County Flood Control District. Reports are obtained at approximately 0800 hours each workday but more frequently during storms. Reports are entered on the form shown on plate B-14.

22. The hydrology and Reservoir Regulation Section prepares monthly operation reports and such other reports relative to the reservoir operation as may be necessary.

23. Operation record.--The operation record of Whittier Narrows Reservoir is maintained in the Hydrology and Reservoir Regulation Section files. A provisional record of operation is submitted to the Division office and tot he Chief of Engineers, using the forms on plate B-15. The record is submitted by the 15th of each month and contains data for the preceding month. Daily flows at the following gaging stations pertinent to the operation of Whittier Narrows Reservoir are published annually in the United States Geological Survey water supply papers:

a. Rio Hondo below Whittier Narrows Dam.

b. Rio Hondo above Whittier Narrows Dam.

c. San Gabriel River above Whittier Narrows Dam.

d. San Gabriel River bypass at Whittier Narrows Dam.

e. Mission Creek below Whittier Narrows Dam.

24. Weather forecasts.--The Control Center in the district office receives daily weather forecasts by teletype from the United States Weather Bureau office at the International Airport in Los Angels. Special forecasts are prepared when necessary. In addition to these predictions, weather forecasts are received from a private weather service. All forecasts are especially prepared for flood control use and contain predictions of precipitation amounts.

25. Flood predictions.--For predicting runoff from the drainage area above Whittier Narrows Dam, average recorded rainfall amounts, unit hydrographs, upstream-flow data, and forecasts of rainfall are used.

26. Studies in progress on planned.--Studies to improve the technique of predicting runoff from forecasted precipitation over the drainage area above Whittier Narrows Reservoir, utilizing an electronic computer are planned. It is essential that a reliable runoff prediction be available before any deviation from the fixed operation schedule is made.

27. Pertinent data.--Pertinent information and necessary operating curves for Whittier Narrows Dam, not mentioned elsewhere in this appendix, are listed in the following tabulation:

a. Table B-4, Whittier Narrows flood-control reservoir area and capacity table.

b. Plate B-16, Area and capacity curves, based on original survey of Dec. 1948 and bottom resurvey ending Mar. 1957.

c. Plate B-17, Rating curves, floodflow channel at Rosemead Blvd.

d. Plate B-18, Spillway discharge curves, one 50'x29' gate.

e. Plate B-19, Outlet discharge curves, on e 30'x19' gated outlet.

f. Plate B-20, Rating curve, Alhambra Wash near Klingerman Street.

g. Plate B-21, Rating curve, Rio Hondo below Garvey Avenue.

h. Plate B-22, Rating curve, San Gabriel River at Parkway Bridge.

i. Plate B-23, Rating curve, Rio Hondo below Whittier Narrows Dam.

j. Plate B-24, Rating curve, San Gabriel River at Beverly Boulevard.

k. Plate B-25, Rating curve, Rio Hondo at Stewart and Gray Road.

l. Plate B-26, Rating curve, Los Angeles River at Firestone Boulevard.

m. Plate B-27, Rating curve, Los Angeles River below Belhart Street.

n. Plate B-28, Rating curve, San Gabriel River at Florence Avenue.

o. Plate B-29, Rating curve, San Gabriel River at Spring Street.

p. Plate B-30, Discharge curve, Mission Creek upper 36" gate.

q. Plate B-31, Discharge curve, Mission Creek lower 30" gate.

r. Plate B-32, Rating curve, Mission Creek below Whittier Narrows Dam.

s. Plate B-33, Rating curve, 36" gate (diversion of rising water).

t. Plate B-34, Rating curve, floodflow channel at San Gabriel River.

28. Five large upstream reservoirs affect floodflows into Whittier Narrows Reservoir. Pertinent curves used for the operation of theses reservoirs are shown on the following plates:

a. Plate B-35, Operating curves, Santa Fe flood-control reservoir.

b. Plate B-36, Operating curves, Morris Dam.

c. Plate B-37, Operating curves, San Gabriel flood-control reservoir.

d. Plate B-38, Operating curves, Cogswell flood-control reservoir.

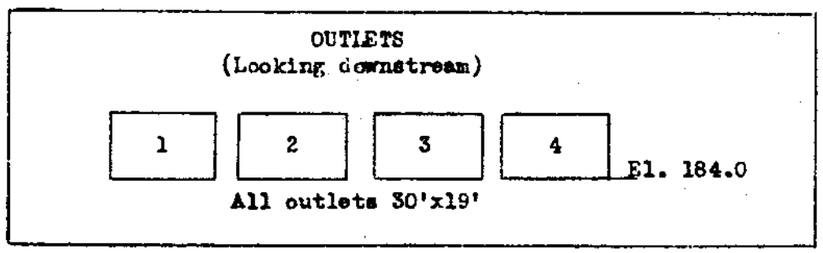
e. Plate B-39, Operating curves, Puddingstone flood-control reservoir.

Table B-1

Whittier Narrows flood-control reservoir outlet gate operation schedule for ultimate operation plan*

Step No.	When reservoir water surface is between elevations		Gate setting for gates as indicated				Outlet discharge	Downstream gage height
			No. 1	No. 2	No. 3	No. 4		
	Feet above mean sea level		Feet of opening	Feet of opening	Feet of opening	Feet of opening	Cubic feet per second	Feet
1	184.0 -	196.0	For conservation operation see table C-1					
2	196.0 -	208.7	19.0	19.0	19.0	19.0	13,800 - 40,900	8.21 - 13.66
3	208.7 -	209.8	19.0	[15.2]	[15.2]	19.0	39,000 - 41,000	13.34 - 13.68
4	209.8 -	211.2	[15.7]	15.2	15.2	[15.7]	39,000 - 41,000	13.34 - 13.68
5	211.2 -	212.9	[13.5]	[15.2]	[15.2]	[13.5]	39,000 - 41,000	13.34 - 13.68
6	212.9 -	214.7	13.5	[13.2]	[13.2]	13.5	39,000 - 41,000	13.34 - 13.68
7	214.7 -	217.0	[12.0]	13.2	13.2	[12.0]	39,000 - 41,000	13.34 - 13.68
8	217.0 -	219.5	12.0	[11.8]	[11.8]	12.0	39,000 - 41,000	13.34 - 13.68
9	219.5 -	221.9	[10.6]	11.8	11.8	[10.6]	39,000 - 41,000	13.34 - 13.68
10	221.9 -	224.7	10.6	[10.3]	[10.3]	10.6	39,000 - 41,000	13.34 - 13.68
11	224.7 -	227.5	[9.4]	10.3	10.3	[9.4]	39,100 - 41,000	13.36 - 13.68
12	227.5 -	230.5	9.4	[9.2]	[9.2]	9.4	39,100 - 41,000	13.36 - 13.68
13	230.5 -	234.2	[8.4]	9.2	9.2	[8.4]	39,000 - 41,000	13.34 - 13.68
14	234.2 -	239.0	8.4	[8.3]	[8.3]	8.4	39,100 - 41,400	13.36 - 13.75

* Schedule applicable for rising or falling stages.



INSTRUCTIONS

1. Communications with the district office existing.

a. Notify the hydraulic operations center when a gate change will be required according to the schedule.

b. To report gate settings, while operating on schedule, give the applicable step number only.

c. Notify the hydraulic operations center if unable to set the gates as instructed.

2. Communications with the district office interrupted.

a. Follow the gate operation schedule.

b. If one or more of the gates cannot be operated, adjust the remaining gates gradually and uniformly until the downstream gage height agrees with scheduled values. Keep a close check on gage height and change the gate openings as often as required. If the downstream gage height is not obtainable, adjust the gates that are functioning so that the sum of the gate openings will equal the sum of the openings shown in the schedule.

Table B-2

Whittier Narrows flood-control reservoir spillway gate operation schedule*

Step No.	When reservoir water surface is between elevations	Gate setting for gates as indicated									Computed discharge	Downstream gage height
		No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9		
	Feet above mean sea level	Feet of opening	Feet of opening	Feet of opening	Feet of opening	Feet of opening	Feet of opening	Feet of opening	Feet of opening	Feet of opening	Cubic feet per second	Feet
1	200.0 - 206.0	**2.1	0	0	**2.1	0	**2.1	0	0	**2.1	0 - 5,250	0 - 9.70
2	206.0 - 207.4	[1.5]	0	0	2.1	0	2.1	0	0	[1.5]	4,750 - 5,250	9.58 - 9.70
3	207.4 - 209.2	1.5	0	0	[1.5]	0	[1.5]	0	0	1.5	4,750 - 5,250	9.58 - 9.70
4	209.2 - 211.0	1.5	0	0	[1.3]	0	[1.3]	0	0	1.5	4,750 - 5,250	9.58 - 9.70
5	211.0 - 214.0	[1.2]	0	0	1.3	0	1.3	0	0	[1.2]	4,750 - 5,250	9.58 - 9.70
6	214.0 - 217.0	1.2	0	0	[1.0]	0	[1.0]	0	0	1.2	4,750 - 5,250	9.58 - 9.70
7	217.0 - 219.0	[1.0]	0	0	1.0	0	1.0	0	0	[1.0]	4,750 - 5,250	9.58 - 9.70
8	219.0 - 221.0	[0.8]	0	0	1.0	0	1.0	0	0	[0.8]	4,750 - 5,250	9.58 - 9.70
9	221.0 - 223.8	[0.7]	0	0	1.0	0	1.0	0	0	[0.7]	4,750 - 5,250	9.58 - 9.70
10	223.8 - 226.4	[0.6]	0	0	1.0	0	1.0	0	0	[0.6]	4,750 - 5,250	9.58 - 9.70
11	226.4 - 228.0	[0.5]	0	0	1.0	0	1.0	0	0	[0.5]	4,750 - 5,250	9.58 - 9.70
12	228.0 - ***228.5	[0.4]	(***)	(***)	1.0	(***)	1.0	(***)	(***)	[0.4]	4,750 - 5,250	9.58 - 9.70

* Schedule applicable for rising or falling stages.
** Gates No. 1, 4, 6, and 9 set at 1.6 prior to arrival of dam tender.
*** Automatic gate operation commences at elevation 228.5.

SPILLWAY
(Looking downstream)

El. 200 [1] [2] [3] [4] [5] [6] [7] [8] [9]

All gates 50'x29'

INSTRUCTIONS

1. Communications with the district office, existing.

a. Notify the hydraulic operations center when a gate change will be required according to the schedule.

b. To report gate settings, while operating on schedule, give the applicable step number only.

c. Notify the hydraulic operations center if unable to set the gates as instructed.

2. Communications with the district office, interrupted.

a. Follow the gate operation schedule.

b. If one or more of the gates cannot be operated, adjust the remaining gates gradually and uniformly until the downstream gage height agrees with scheduled values. Keep a close check on gage height and change the gate openings as often as required. If the downstream gage height is not obtainable, adjust the gates that are functioning so that the sum of the gate openings will equal the sum of the openings shown in the schedule.

Table B-3

Summary of flood routings, flood control operation plan

Location and items	Modified 2-3 March 1938 flood	15-18 January 1952 flood	Reservoir design flood	Spillway design flood
Whittier Narrows Dam:				
Rio Hondo--				
Maximum inflow....c.f.s..	20,500	6,500	#31,000	##148,000
Maximum outflow....c.f.s..	38,500	16,000	40,000	40,000
Maximum res. w.-s. elevation....ft., m.s.l..	207.9	197.4	228.5	234.0
San Gabriel River--				
Maximum inflow....c.f.s..	26,000	13,800	#51,000	##158,000
Maximum outflow....c.f.s..	0	0	300	251,000
Maximum res. w.-s. elevation....ft., m.s.l..	210.4	*205.2	228.5	234.0
Hansen Dam:**				
Maximum inflow....c.f.s..	48,500	3,000	(***)	(***)
Maximum outflow....c.f.s..	20,200	6,000	(***)	(***)
Maximum res. w.-s. elevation....ft., m.s.l..	1,062.6	1,013.4	(***)	(***)
Sepulveda Dam:**				
Maximum inflow....c.f.s..	18,100	12,700	(***)	(***)
Maximum outflow....c.f.s..	11,000	11,500	(***)	(***)
Maximum res. w.-s. elevation....ft., m.s.l..	702.7	694.7	(***)	(***)
Los Angeles River peak discharge:				
Below the Rio Hondo....c.f.s..	78,000	46,000	(***)	(***)
Near mouth....c.f.s..	79,000	55,000	(***)	(***)

* Elevation of Mission Creek pool.
** Hansen and Sepulveda Dams operated according to revised interim operation plan.
*** Not tabulated since routing was made to show operation at Whittier Narrows Dam only.
\# Combined peak inflow 70,000 cubic feet per second.
Combined peak inflow 305,000 cubic feet per second.

Table B-4

Whittier Narrows flood-control reservoir area and capacity table

Elevation	Area total reservoir	Capacity			
		Total reservoir	Rio Hondo pool	Mission Creek pool	San Gabriel pool
Feet above mean sea level	Acres	Acre-feet	Acre-feet	Acre-feet	Acre-feet
184	0	0	0	0	0
185	12	6	6	0	0
186	25	25	25	0	0
187	53	67	67	0	0
188	81	131	131	0	0
189	99	218	218	0	0
190	117	330	329	1	0
191	133	466	463	2	0
192	148	596	590	5	0
193	160	747	737	10	0
194	171	914	896	18	0
195	186	1,093	1,065	28	0
196	200	1,285	1,242	43	0
197	223	1,496	1,434	62	0
198	246	1,731	1,642	89	0
199	263	1,985	1,865	120	0
200	280	2,257	2,097	160	0
201	302	2,549	2,340	204	5
202	323	2,861	2,593	256	12
203	355	3,198	2,857	316	25
204	386	3,569	3,136	389	45
205	438	3,979	3,436	473	71
206	489	4,446	3,764	580	101
207	577	4,981	4,117	727	137
208	665	5,599	4,490	928	181
209	724	6,287	4,868	1,165	234
210	783	7,047	5,315	1,459	295
211	845	7,862	5,765	1,735	364
212	906	8,736	6,239	2,054	443
213	972	9,676	6,736	2,408	532
214	1,038	10,680	(*)	(*)	(*)
215	1,114	11,780	(*)	(*)	(*)
216	1,190	12,908	(*)	(*)	(*)
217	1,273	14,158	(*)	(*)	(*)
218	1,356	15,454	(*)	(*)	(*)
219	1,445	16,834	(*)	(*)	(*)
220	1,534	18,345	(*)	(*)	(*)
221	1,612	19,940	(*)	(*)	(*)
222	1,690	21,569	(*)	(*)	(*)
223	1,809	23,312	(*)	(*)	(*)
224	1,928	25,187	(*)	(*)	(*)
225	2,032	27,182	(*)	(*)	(*)
226	2,136	29,261	(*)	(*)	(*)
227	2,242	31,428	(*)	(*)	(*)
228	2,348	33,734	(*)	(*)	(*)
229	2,474	36,160	(*)	(*)	(*)
230	2,599	38,681	(*)	(*)	(*)
231	2,738	41,340	(*)	(*)	(*)
232	2,876	44,150	(*)	(*)	(*)
233	2,998	47,090	(*)	(*)	(*)
234	3,120	50,150	(*)	(*)	(*)
235	3,229	53,360	(*)	(*)	(*)
236	3,338	56,610	(*)	(*)	(*)
237	3,435	59,970	(*)	(*)	(*)
238	3,531	63,480	(*)	(*)	(*)
239	3,633	67,060	(*)	(*)	(*)
240	3,734	70,740	(*)	(*)	(*)

* Above elevation 213 pools become as one reservoir.