VI - HYDROLOGIC FORECASTS

6-01. General

The U. S. Army Corps of Engineers does not make any formal hydrologic forecasts for Brea Dam. Brea Creek water quality is also not predicted by the Corps of Engineers or any other agency.

a . Role of Corps of Engineers. Despite the lack of formal hydrologic forecasts, the Corps of Engineers carefully monitors the reservoir water surface elevation in Brea and the adjacent Fullerton and Carbon Canyon Reservoirs, and does notify other agencies of any significant changes or anticipated changes (see sec. 5-06.c.).

The Corps of Engineers, Los Angeles District Meteorologist prepares special quantitative precipitation forecasts (QPF's) for Brea Creek drainages and other watersheds. These are used in determining the potential for significant runoff into Brea and other reservoirs. These QPF's are used only for operation of the project and are not distributed to other agencies. The responsibility of weather forecast dissemination to other agencies belongs to the National Weather Service.

b. Role of Other Agencies. No other agency currently prepares forecasts of water surface elevations in Brea Reservoir or for discharges on Brea Creek, either upstream or downstream of Brea Dam. The closest that any forecast or warning would come to this might be a Flash Flood Watch or Flash Flood Warning issued by the National Weather Service.

The U.S. Army Corps of Engineers, Los Angeles District does receive real-time weather reports and forecasts, as well as historical weather data, from the National Weather Service. This is accomplished by means of weather facsimile pictures and teletype data and forecasts transmitted by the National Weather Service and also by means of direct telephone communication with the National Weather Service Forecast Office, Los Angeles, by the District Meteorologist.

Historical precipitation data are available from Orange County Environmental Management Agency. Historical streamflow data are also available from this agency and from the USGS. These data, while not of use in real-time operations, are important to studies of historical storms and floods which aid in the development and refinement of computerized rainfall-runoff forecast models.

6-02. Flood Condition Forecasts

Forecasts of flood hydrographs are not currently made. However, routine evaluation of inflow, observed precipitation, and forecast precipitation provides for valuable subjective predictions of flood situations. Using such information, the Reservoir Operation Center can evaluate if floodflows will increase or decrease over the next 24 hours. Plate 5-02 and plate 4-01 show the location of precipitation and stream gauges in and near the Brea basin and the key control points downstream of Brea Dam. A unit hydrograph for the watershed upstream of Brea Dam is listed on plate 4-13 and shown on plate 4-14. Forty-two hour upstream excess rainfall, and the corresponding total runoff volume, peak inflow to the reservoir, peak outflow and water surface elevation of

the reservoir, and peak discharges at downstream concentration (control) points are given on plate 6-01 for rainfall return periods of 500-, 200-, 100-, 50-, 25-, and 10-years, and for the Standard Project Flood (SPF) event.

6-03. Long-Range Forecasts

Because the watershed above Brea Dam is relatively small, (22 sq. mi.) with no major upstream flood-control facilities, and because water is impounded behind Brea Dam for as short a time as possible, there is little direct need for long-range forecasts in the operation of Brea Dam.

Only in the event of major impoundment at Brea Reservoir, as well as simultaneously at other reservoirs affecting Coyote Creek (see sec. 4-11), would a forecast of more than one day be of immediate significance to the regulation of Brea Dam. In such a case, the forecast of another impending major storm or lack of such storm might influence the release rate of water from Brea Dam in consideration of the release rates from other dams in order to prevent or minimize downstream damages.

Table 6-01.

Excess Rainfall, Runoff, Peak Inflow, Outflow at Dam and Peak Discharges at D/S Control Points for Various Return Periods

Return Period	42-Hour Excess Rainfall (Inch)	Runoff Volume (ac-ft)	Peak Inflow (cfs)	Peak Outflow (cfs)	Peak Discharge Max. W.S. Elev. (ft. NGVD)	Peak Discharge (cfs) Control Points Without Dam Release			Peak Discharge (cfs) Control Points With Dam Release		
						CP-2	CP-3	CP-4	CP-2	CP-3	CP-4
500-Year	8.35	9,800	11,758	5,644	283.5	1,126	2,026	3,089	6,594	7,223	7,967
200-Year	6.59	7,700	9,169	1,500	277.9	903	1,625	2,415	1,881	2,452	3,209
100-Year	5.27	6,200	7,302	1,486	268.9	741	1,336	1,986	1,784	2,178	2,798
50-Year	4.06	4,700	5,539	1,500	257.7	589	1,062	1,581	1,861	2,199	2,636
25-Year	2.91	3,400	3,940	1,500	245.07	448	812	1,210	1,818	2,127	2,529
10-Year	1.62	1,900	2,145	1,351	230.5	294	536	801	1,638	1,876	2,133