V - DATA COLLECTION AND COMMUNICATION NETWORKS

5-01 Hydrometeorological Stations

a. Facilities. Precipitation gauges, and reservoir and stream gauges in the Los Angeles area and the vicinity of Santa Fe Dam are shown on plates 5-1 and 5-2, respectively. Table 5-1 lists the precipitation gauges, along with their latitudes, longitudes, and elevations, that are located in and near the watershed above Santa Fe Dam. Table 5-2 lists the stream gauges in the watershed above Santa Fe Dam. Many of the stations consist of more than one type of gauge, such as a recording and a nonrecording precipitation gauge.

a. Reporting. Hydrologic data are observed and reported in 3 different ways, as illustrated in table 5-3.

(1) Manual. The Santa Fe Dam Operator observes precipitation, water surface elevation, and gate settings, and reports these to the District office, as described in section 5-06.a.

(2) Recording Instruments. The recording instruments store data on paper tape, which is removed at predetermined intervals (once each month, October-April, plus once during the summer) and maintained on file by the District.

(3) Telemetry System. Hydrologic data measured at the dam and other gauges are transmitted to the LAD office by the Los Angeles Telemetry System. These gauges automatically transit reports at predetermined intervals twice daily. However their mode of operation is "event reporting". As a gauge registers an event (specified quantity of precipitation, or water surface elevation change), current data are radio-transmitted to a repeater from which it is sent via microwave to the LAD office. Each gauge is programmed to

trigger whenever 0.04 inches of precipitation, or a 0.25-foot change in water surface elevation is recorded. All gauges can also be interrogated at any time for current data via polled mode.

(4) ALERT System. There is also an event-reporting gauge system throughout southern California sponsored by the National Weather Service. This system is referred to as the ALERT (Automatic Local Evaluation in Real Time) System. Access to this information can be obtained through the REPORT program on the Water Control Data System computer.

c. Maintenance. Each operating agency is responsible for the maintenance of its own gauges and/or telemetry radio equipment. In some cases, the gauge is operated by USGS, although it is owned by LAD or LACDPW.

5-02 Water Quality Stations

There are no water quality stations in the watershed above Santa Fe Dam.

5-03 Sediment Stations

There are no sediment stations in the watershed above Santa Fe Dam. There are sediment ranges in Santa Fe Reservoir (see pl. 4-1).

5-04 Recording Hydrologic Data

Each agency maintains records of its own data (section 5-01 above). The NWS data are placed in archives at the National Climatic Center in Asheville, North Carolina. Precipitation and other data are published monthly by the National Climatic Center in Climatological Data and Hourly Precipitation Data.

The State of California, Department of Water Resources, publishes the data from the ALERT telemetry gauge network on a monthly basis. LACDPW maintains their recording and non-recording data bases, and furnishes data to other agencies upon request. LAD maintains a data base from its recording and telemetry gauges and provides selected data to NWS for publication. Real Time Reports received from ALERT gauges and the Los Angeles Telemetry System gauges are stored in a database on the Water Control Data System Computer. LAD also enters data from its manual observations on various forms, which are maintained on file in the LAD ROC Office. These forms are discussed further in section 9-05 and illustrated in figures 9-1 through 9-7.

5-05 Communication Network

LAD maintains a voice radio communication network for its entire regulation activities. This routinely includes communications between the District Office and the various dam operators, as well as vehicles in the field. During periods of significant runoff, communication with the dam operators becomes vital. The existing radio network, which has proven itself reliable, is backed up by a second radio network; both of these are backed up by the local telephone system.

Power at the District Office is backed up by an emergency generator system; if all fails at the District Office, there is a complete radio system at LAD Base yard. The Base Yard is located approximately 12 miles east of the District Office.

5-06 Communication with Project

a. Regulating Office with Project Office. During the flood season (15 November through 15 April), a routine radio call is mdae at least once each weekday from LAD District Office to the dam operator at Santa Fe Dam. This "Morning Report" is usually made at 0800 hours, Monday through Friday. Other

routine or non-routine radio or telephone calls are made as needed. Direct communication with the operator at the dam is possible by calling Mobile Radio WUK 419. The dam operator's vehicle is assigned Mobile Radio WUK 4191.

In the event that all communication with LAD office, including LAD Base Yard, should be interrupted, a set of "Standing Instructions to the Dam Operator" has been compiled for Santa Fe Dam and a copy of these instructions is included in this manual in Exhibit A. LAD organization chart and important phone numbers for reservoir regulation decisions at Santa Fe Dam are given in table 9-1.

b. Between Project Office and Others. No routine communication exists between Santa Fe Dam and other agencies.

c. Between Regulating Office and Others. Before and during the earliest stages of any reservoir impoundment, LAD notifies offices of other agencies and selected private interests of the impending rises in the reservoir water surface elevation and corresponding outflow. A list of the agencies to notify, with applicable office and home telephone numbers, is published annually in LAD's "Instructions for Reservoir Operations Center Personnel" (the so-called "Orange Book"). During major runoff events, LAD ROC is in constant contact with LACDPW Hydraulics Branch to fully coordinate the operations of both agencies. LACDPW is directly tied into LAD radio and telephone system. LAD ROC is also in direct radio contact with channel observers dispatched to patrol the San Gabriel River during large floods.

5-07 Project reporting Instruction

During periods of water regulation, communications between the LAD office and each affected dam operator are made on a frequent basis. Normal communications occur once each hour, and more frequent communications are

sometimes required. If a gate change is required, ROC staff provide the radio operator at LAD office with the gate change instructions. These instructions are then broadcast to the dam operator. When the gate change is completed, the dam operator calls back to the District Office radio operator with information on the change. The radio operator then informs the ROC engineer who initiated the change. The dam operator records pertinent information associated with the gate change on the form shown on figure 9-1. This report form is subsequently submitted to LAD office.

Other special instructions to dam operators are conducted in a similar manner. This network of radio communications is also used by the dam operator to report any failure of machinery or other equipment, or any other unusual conditions at the dam.

5-08 Warnings

The responsibility for issuing all weather watches and warnings, and all flood and flash flood watches and warnings rests with the NWS. Local emergency officials of cities and counties are responsible for issuing any other public safety warnings, including unusual overflows evacuations, unsafe roads or bridges, and toxic spills. LAD is responsible for providing these official with up-to-date information, and forecasts where possible, of water rises within Santa Fe Reservoir and release rates into the Channel downstream of Santa Fe Dam. The ROC (Reservoir Operations Center) would notify the Los Angeles Police Department to initiate evacuation if a dam break is imminent.

TABLE 5-1. PRECIPITATION STATIONS IN AND NEAR THE SANTA FE DAM WATERSHED

STATION NAME[1]	RAIN GAUGE NUMBER[2]		LATITUDE	LONGITUDE	ELEV[3]	TYPE[4]
CAMP HI HILL (OPID"S)	L0057BE	W1904	34 15 18	118 05 41	4250	S R
STURTEVANT CAMP	L0058		34 13 21	118 01 52	3275	S
GLENDORA-ENGLEWILD RANCH	L0073		34 09 22	117 50 57	1145	S R
COLDBROOK-RANGER STATION	L0078B		34 17 26	117 50 26	3280	R
TABLE MOUNTAIN	L0082F		34 22 56	117 40 39	7420	S
BIG PINES RECREATION PARK	L0083B	W0779	34 22 44	117 41 20	6860	S R
MT BALDY-GUARD STATION	L0085G		34 14 12	117 39 32	4275	SRT
SAN DIMAS DAM	L0089BE		34 09 10	117 46 17	1350	SRA
AZUSA-CITY PARK	L0143B		34 08 03	117 54 17	610	S
SIERRA MADRE DAM	L0144		34 10 34	118 02 32	1100	S
TANBARK FLATS	L0158	W7750	34 12 20	117 45 40	2750	S R
DUARTE	L0172B		34 08 26	117 58 02	548	S
BIG DALTON DAM	L0223CE	W0758	34 10 06	117 48 36	1587	SRA
CRYSTAL LAKE	L0283C	W2198	34 19 02	117 50 28	5370	SRT
SAWPIT CANYON-DEER PARK	L0304		34 11 38	117 57 52	2690	R
COGSWELL DAM	L0334BE		34 14 37	117 57 35	2300	SRA
MT WILSON OBSERVATORY	L0338A		34 13 32	118 03 21	5675	S
SAN GABRIEL-EAST FORK	L0379B		34 14 09	117 48 18	1600	R
MORRIS DAM	L0390BE		34 10 53	117 52 43	1210	SRA
CEDAR SPRINGS	L0402F		34 21 21	117 52 34	6780	R
WEST AZUSA	L0406C		34 06 53	117 54 56	505	S
SAN GABRIEL DAM	L0425BE	W7779	34 12 19	117 51 38	1481	SRA
SANTA ANITA-FERN LODGE	L0432		34 12 32	118 01 03	2035	S
CHILAO-USFS CAMP	L0440D		34 20 00	118 01 23	5220	S
SANTA ANITA-SPRING CAMP	L0477D		34 12 52	117 58 56	4715	S R
CHILAO-STATE HWY MAINT STA.	L0492A		34 19 02	118 00 30	5280	RT
SAN ANTONIO CYN-SIERRA PH	L0619		34 12 29	117 40 26	3110	R
SAN GABRIEL CYN-POWER HSE	L0627	W7776	34 09 20	117 54 28	744	S R
SAN DIMAS CYN-FERN NO 2	L0740B		34 11 48	117 41 45	5200	S R
SAN DIMAS CYN-UPPER E FORK	L0741		34 11 41	117 44 26	2765	R
CAMP VALCREST	L1007C		34 20 40	117 58 41	5920	S
PALMER CANYON-FORKS	L1010C		34 09 32	117 42 06	2160	S
SANTA FE DAM (SNFE)	L1041B	W7926	34 07 04	117 58 24	427	RT
BUCKHORN FLAT	L1062		34 20 44	117 55 08	6760	R
SOLEDAD PASS	L1063		34 29 35	118 05 28	3520	S
UPPER WOLFSKILL CANYON	L1075		34 10 13	117 43 16	3625	R
BRADBURY DEBRIS BASIN	L1080B		34 09 23	117 57 58	935	R
BARLEY FLAT	L1121C		34 16 40	118 04 40	5525	S
RED BOX GAP	L1124B		34 15 30	118 06 18	4625	S
LAWD-EAST VALLEY	L1126		34 12 30	118 24 35	780	S
MT. DISAPPOINTMENT	L1138		34 14 42	118 06 07	5725	R

TABLE 5-1 (Continued).
PRECIPITATION STATIONS IN AND NEAR THE SANTA FE DAM WATERSHED

STATION NAME[1]	RAIN GAUGE NUMBER[2]	LATITUDE	LONGITUDE	ELEV[3]	TYPE[4]
WEST FORK SHORTCUT CYN	L1159	34 15 55	118 04 08	4425	R
SAN GABRIEL CYN-W FK-HELPT	L1160	34 15 02	118 01 30	3200	RA
MILE HIGH RANCH	L1166	34 24 40	117 46 15	5280	S
FENNER CANYON	L1167	34 23 25	117 46 27	1605	S
HOOKS DEBRIS BASIN	LX042B	34 09 15	117 52 35	1250	S

NOTES:

[1] See plate 5-1 for precipitation gauge locations.

[2] Rain gauge number beginning with:

L Indicates a Los Angeles County Department of Public Works designation.
W Indicates a U.S. Weather Service designation.

[3] Elevations in feet (NGVD).

[4] Rain gauge type as follows:

R Recording rain gauge.
S Standard 8" rain gauge (non-recording).
T Automatic telemetry.
A ALERT system rain gauge.

TABLE 5-2. STREAM GAUGING STATIONS IN AND NEAR THE SANTA FE DAM WATERSHED

STATION NAME	STATION NUMBER*	PERIOD OF RECORD	RECORDER TYPE	CHANNEL TYPE	DRAINAGE AREA (MI^2)
Fish Cr. abv mouth	U7R (11084500)	7/16-9/16, 7/17-present	punch tape	concrete control	6.36
San Gabriel River at Foothill Blvd.	F190R	2/32-present	punch tape	rip-rap control	230
San Gabriel River blw Morris Dam	U8R	May 1894-pres.	punch tape	natural w/ concrete control	212.4
San Gabriel River East Fork abv forks	P4BR	11/32-present	punch tape	natural w/ concrete control	88.2
San Gabriel River West Fork abv forks	P3R	12/30-7/38 9/38-present	punch tape	natural	102
San Gabriel River W. Fork blw Cogswell Dam	F209R	12/33-present	punch tape	natural w/ concrete control	39.2
San Gabriel River W. Fork at Cogswell Dam	F251R	4/48-present	punch tape	V-notch weir	40.4
San Gabriel River blw Santa Fe Dam	SNFE (11085000)	10/42-present	punch tape	concrete control	236

* Combination letter/number designation indicates LACDPW gauge (number designation in parentheses indicates gauge is operated by USGS).

TABLE 5-3. Methods of Reporting Hydrological Data

	Precipitation	Reservoir Water Surface Elevation	Streamflow Water Surface Elevation	Gate Heights
Manual	Glass Tube Precipitation Gauge	Staff Gauge	Staff Gauge	Gate Height Indicators
Recording	Precipitation Digital Recorder	Water Surface Recorder	Gauge Height Digital Recorder	Gate Height Recorder
Telemetry				
Interrogated - Gauge data is accessible by computer at all times.				
Fixed-Time Self-Reporting - Data is reported in at a specified time of day.				
Event-Reporting	Reports every 0.04 inch of rain	Reports every 0.25 inch of elevation change		
Gauge Type at Santa Fe Dam	Tipping Bucket[1]	Pressure Sensing System[1]		Gate Height Recorder[2]

1 Attached to Telemetry System
2 Not attached to Telemetry System