

V - DATA COLLECTION AND COMMUNICATION NETWORKS

5-01 Hydrometeorological Stations.

a. Facilities. Climatological, stream flow, and reservoir water level data are collected and monitored by gages located in and adjacent to the Mathews Canyon watershed. Active gages are listed in Table 5-1 and their locations are shown on Plate 5-01. Other gages located in the Muddy River Basin are listed in Table 5-2. Hydrometeorological facilities at the dam are listed and described in Table 5-3. A Geostationary Observational Environmental Satellite (GOES) data collection platform (DCP) located at the dam provides LAD with near real-time precipitation and reservoir water level data.

b. Reporting.

(1) Manual. Because Mathews Canyon Dam is ungated and self-regulating, there are no dam tenders at the dam to directly observe and report precipitation, water surface elevation, or outflow.

(2) Recording Instruments. The reservoir water surface elevation recorder, the water surface recorder at the downstream outlet channel gage, and the recording precipitation gages, automatically record by means of charts or punch tapes, which are collected every six months by the Corps of Engineers, Reservoir Regulation Section, Water Control Data Unit personnel.

(3) GOES Telemetry. Reservoir water level and precipitation data from Mathews Canyon Dam are collected at fifteen minute intervals, then transmitted to one of two GOES satellites, and then to a ground station every four hours. The data is then transmitted as eight hours of data. The eight hour blocks of reported data include the new four hour data plus the previous four hour data block. The GOES data are then collected and processed by a Domestic Satellite (DOMSAT) receive station located at the LAD office. The DOMSAT system processes and stores the data on the LAD's Water Control Data System (WCDS). GOES data can be viewed using the WCDS menu system or from the Reservoir Regulation Section web site.

c. Maintenance. The precipitation and stream gage stations located within the Mathews Canyon Dam reservoir are maintained by the LAD Reservoir Regulation Section, Water Control Data Unit (WCDCU). At least every six months, WCDCU personnel visit Mathews Canyon Dam to perform maintenance on all gages and to collect data from all recording instruments. Other gages located in the nearby city of Caliente are maintained by Lincoln County. Once the data has been collected from gages in Caliente, they are sent to the National Climatic Data Center (NCDC) for publishing. These active stations are shown on Table 5-1. Other gages throughout the Muddy River Basin that were maintained

by either Lincoln or Clark County, and by U.S. Geological Survey (USGS) are shown on Table 5-2.

5-02 Water Quality Stations.

a. Facilities. There are no water quality stations located in the watershed above Mathews Canyon Dam or in the downstream channel. From 1987 to 1994, the USGS operated a water quality station (USGS No. 09418700) at Meadow Valley Wash near Rox, Nevada. This station was located approximately 82 miles downstream from Mathews Canyon Dam, covering a drainage area of 2,384 square miles. Samples of runoff events were analyzed for specific dissolved ions and suspended sediment. The USGS have discontinued monitoring this water quality station since 1994.

b. Reporting. No formal agreements exist between the USGS and the Corps to transmit water quality data directly to the LAD.

c. Maintenance. The LAD had no maintenance responsibilities with respect to the former water quality station.

5-03 Sediment Stations.

a. Facilities. There are no sedimentation ranges in Mathews Canyon Reservoir. The volume and distribution of accumulated sediment are determined by surveys of the appropriate parts (usually the lower elevations) of the reservoir. To date, the total sediment accumulation has not significantly affected the overall flood control capacity of the reservoir, yet. Minor accumulation of sediment in the lower portion of the reservoir can cause problems with the performance of the water level gage and stream, however, this problem has been resolved by constructing a berm within the reservoir, as discussed in section 2-03.d.

b. Reporting. There are no reporting stations that allow the LAD to obtain sedimentation data. However, surveys are conducted after major storms where the water surface has exceeded elevation 5,455 feet, msl or after a visual inspection that indicates significant sedimentation.

c. Maintenance. There has never been a sediment station at Mathews Canyon Dam, thus the LAD has no maintenance responsibilities.

5-04 Recording Hydrologic Data. LAD permanently maintains records of all precipitation, reservoir water level, and stream flow data recorded by its gaging stations. From 1958 to 1984, the U.S. Geological Survey collected water surface elevation and precipitation data, and maintained the downstream flow gage at Mathews Canyon Dam. All data collected by the USGS at Mathews Canyon Dam were sent to the Corps of Engineers for processing by the hydrologic technical staff. The streamflow data collected

by the USGS were also published annually in their publications of “USGS Water Resources Data - Nevada”. The USGS no longer collects and publishes streamflow data for Mathews Canyon Dam.

Climatological data collected by the National Weather Service (NWS) from the Caliente station are archived at the National Oceanic Atmospheric Administration, National Climatic Data Center (NCDC) in Asheville, North Carolina. Precipitation and other data are published monthly by the NCDC in Climatological Data and Hourly Precipitation Data.

LAD receives real-time precipitation and water surface elevation data from Mathews Canyon Dam through GOES telemetry system which records directly into a computer data base. Real-time information is transmitted every 4 hours and can be viewed by accessing the WCDS menu system or the LAD web site. The data is also recorded by means of punch tapes and charts which are collected by the WCDU personnel every six months during scheduled maintenance times (usually during the spring and fall months) on four gages; two precipitation stations located upstream, as shown on Plate 5-01; a precipitation station located on top of the dam; and a stream gage station located downstream of the dam. Table 5-3 shows the hydrometeorological instrumentation and the specific types of data collected at each gaging station.

All hydrometeorological data collected by the WCDU personnel are processed to create an official record of operation.

5-05 Communication Network. The LAD does not maintain a voice radio communication network connection with Mathews Canyon Dam. It does not require dam tenders since the reservoir is ungated and self-regulating. However, daily reports from Mathews Canyon Dam are collected through the GOES DOMSAT Receive Station located in the downtown LAD office. Real-time information is transmitted every 4 hours and can be viewed by accessing the WCDS menu system or the LAD web site. There are also alarm functions within the GOES Telemetry system that notifies the LAD ROC staff in the event that critical situations are imminent. These situations include 1) when the water surface elevation reaches 5,440 feet, msl, the ROC notifies and activates the dam safety inspection team; and 2) prior to spillway flow at water surface elevation 5,461 feet, msl, the ROC then notifies the LAD’s Emergency Operation Center and affected local and other Federal Government agencies for possible evacuations and emergency operations. The “Orange Book” contains the list of the agencies, with names and phone numbers of their representatives.

5-06 Communication With Project.

a. Regulating Office with Project Office. There are no permanent attendants,

telephones or radios located at Mathews Canyon Dam. The outlet at the dam is ungated and self-regulating. The GOES Telemetry system is the primary source for monitoring precipitation and flood flow activities at Mathews Canyon Dam.

b. Between Project Office and Others. No routine communication exists between Mathews Canyon Dam and other agencies.

c. Between ROC and Others. A list of agencies to be notified, with applicable office and home telephone numbers is published annually in the LAD's Instructions for Reservoir Operations Center Personnel (unofficially called the "Orange Book"). Should a major runoff event occur, the LAD ROC would be in constant contact with the Lincoln County Emergency Management in Nevada to coordinate any potential emergency situation.

5-07 Project Reporting Instructions. The LAD Water Control Data Unit monitors the GOES telemetry to ensure collection of data. Technicians from the Water Control Data Unit are dispatched to restore data collection should the equipment fail. The Operations & Maintenance Branch of LAD dispatches a maintenance crew to Mathews Canyon Dam if there is a suspicion that the outlet gate is obstructed by debris. The outlet gate may be obstructed if the telemetry data shows there is low precipitation but abnormally high water surface elevations in the reservoir.

5-08 Warnings. The responsibility for issuing all weather watches and warnings and all flood and flash flood watches warnings rests with the National Weather Service. Local emergency officials of Lincoln County Emergency Management, NV are responsible for issuing any public warnings regarding unusual overflows, evacuations, unsafe roads or bridges, etc.

There was an existing agreement documented in the 1975 Water Control Manual between Lincoln County Emergency Management and the Corps of Engineers which indicated that when any of the following conditions are observed: rainfall of ½ inch in 2 hours in Caliente; rainfall of 1 to 2 inches in 2 hours at the dam or mountain area; a reservoir water surface elevation of 5,442.0 feet, msl; and if the reservoir water surface reaches elevation 5,675.0 feet, msl at the nearby Pine Canyon Dam, Lincoln County would contact the Corps. However, this agreement was established prior to the installation of the GOES Telemetry system and, therefore, no longer applies. If an uncontrolled spillway flow or dam breach were imminent, the ROC would notify the LAD Emergency Operations Center to commence their Mathews Canyon Dam flood emergency plan. The ROC would also notify the Lincoln County Emergency Management and other agencies listed in the "Orange Book".

Table 5-1. Active Hydrometeorological Gages In Vicinity of Mathews Canyon Dam Watershed

STATION NAME	ID	ELEV	LAT	LONG	COUNTY	AGENCY	YRS IN SERV	PARAMETERS
CALIENTE	1358*	4,400	37:37:00	114:31:00	LINCOLN	NCDC	1928-PRESENT	PRECIP, TEMP
MATHEWS CANYON WASH NR CALIENTE ¹	09418200**	5,409	37:29:55	114:13:20	LINCOLN	USACE	1958-PRESENT	STREAMFLOW
PINE CANYON WASH NR CALIENTE, NV ²	09418300**	5,595	37:28:40	114:19:00	LINCOLN	USACE	1958-PRESENT	STREAMFLOW
MATHEWS CANYON DAM (G)	CE47988A***	5,420	37:29:57	114:13:25	LINCOLN	USACE	1957-PRESENT	PRECIP, ELEV
PINE CANYON DAM (G)	CE479658***	5,595	37:28:38	114:18:24	LINCOLN	USACE	1957-PRESENT	PRECIP, ELEV
BUNKER PASS RAIN GAGE (N)	-	5,910	37:25:59	114:08:49	LINCOLN	USACE	1957-PRESENT	PRECIPITATION
MUD SPRINGS RAIN GAGE (N)	-	5,950	37:25:41	114:11:42	LINCOLN	USACE	1957-PRESENT	PRECIPITATION
JACK'S RANCH RAIN GAGE (N)	-	6,040	37:24:55	114:14:17	LINCOLN	USACE	1957-PRESENT	PRECIPITATION
SHEEP SPRINGS RAIN GAGE (N)	-	6,240	37:24:02	114:17:16	LINCOLN	USACE	1957-PRESENT	PRECIPITATION

See Plate 5-01 for locations.

Notes:

USGS - U.S. Geological Survey
 NCDC - National Climatic Data Center
 USACE - U.S. Army Corps of Engineers
 (G) - GOES gage
 (N) - Non-telemetry gage

* - NCDC ID
 ** - USGS ID
 *** - GOES ID

1 and 2. All data from these stations were collected by USGS from 1958 to 1984.
 USACE has been collecting data from these stations since 1984.

Table 5-2. Other Hydrometeorological Stations Located in Muddy River Basin

STATION NAME	ID	ELEV	LATITUDE	LONGITUDE	COUNTY	AGENCY	YRS IN SERV	PARAMETERS
ELGIN	2557*	3,390	37:21:00	114:32:00	LINCOLN	NCDC	1985-1997	PRECIP, TEMP, EVAP
ELGIN 3 SE	2562*	3,300	37:19:00	114:30:00	LINCOLN	NCDC	1965-1985	PRECIP, TEMP, EVAP
PIOCHE	6252*	6,170	37:56:00	114:27:00	LINCOLN	NCDC	1948-1997	PRECIP, TEMP, EVAP
SPRING VALLEY ST PK	7750*	5,950	38:02:00	114:11:00	LINCOLN	NCDC	1974-1997	PRECIP, TEMP, EVAP
URSINE	8538*	5,830	37:59:00	114:13:00	LINCOLN	NCDC	1964-1972	PRECIP, TEMP, EVAP
BUNKERVILLE	1327*	1,550	36:46:00	114:07:00	CLARK	NCDC	1979-1997	PRECIP, TEMP, EVAP
LOGANDALE UN EXP FARM	4651*	1,320	36:34:00	114:28:00	CLARK	NCDC	1968-1992	PRECIP, TEMP, EVAP
MESQUITE	5085*	1,570	36:48:00	114:04:00	CLARK	NCDC	1956-1965	PRECIP, TEMP, EVAP
OVERTON	5846*	1,220	36:31:00	114:25:00	CLARK	NCDC	1948-1997	PRECIP, TEMP, EVAP
VALLEY OF FIRE STATE PK	8588*	2,000	36:26:00	114:31:00	CLARK	NCDC	1972-1997	PRECIP, TEMP, EVAP
MESQUITE CA NR MESQUITE NV	09415060**	1,610	36:48:00	114:03:00	CLARK	USGS	1951-1955	DAILY FLOW
BUNKERVILLE CA NR BUNKERVILLE NV	09415080**	1,540	36:47:00	114:06:00	CLARK	USGS	1951-1955	DAILY FLOW
VIRGIN R AT RIVERSIDE, NV	09415190**	1,410	36:43:44	114:13:36	CLARK	USGS	1970-1995	DAILY, PEAK FLOW
VIRGIN R AB HALFWAY WASH NR RIVERSIDE NV	09415230**	1,320	36:40:28	114:17:54	CLARK	USGS	1978-1985	DAILY, PEAK FLOW
PHARANAGAT WASH NR MOAPA, NV	09415850**	2,110	36:43:46	114:46:09	CLARK	USGS	1988-1993	DAILY, PEAK FLOW
MUDDY SPRINGS AT LDS FARM NR MOAPA, NV	09415900**	-	36:43:18	114:42:53	CLARK	USGS	1985-1996	DAILY, PEAK FLOW
PEDERSON SPRING NR MOAPA, NV	09415910**	1,800	36:42:35	114:42:54	CLARK	USGS	1986-1996	DAILY, PEAK FLOW
WARM SPRINGS WEST NR, MOAPA, NV	09415920**	-	36:42:41	114:42:48	CLARK	USGS	1985-1996	DAILY, PEAK FLOW
MUDDY RIVER POWER DIV NR MOAPA, NV	09415950**	-	36:42:42	114:41:40	CLARK	USGS	1977-1985	DAILY, PEAK FLOW
MUDDY R AB MOAPA IND RES NR MOAPA NV	09416500**	1,670	36:41:00	114:41:00	CLARK	USGS	1914-1918	DAILY FLOW
MUDDY R AT RR PUMP PLANT NR MOAPA, NV	09417000**	1,585	36:39:30	114:38:30	CLARK	USGS	1914-1917	DAILY FLOW
CALIFORNIA WASH AB HIDDEN VALLEY RD NR MOAPA, NV	09417310**	1,610	36:38:15	114:37:23	CLARK	USGS	1990-1993	DAILY FLOW
MUDDY R AT WEISER RANCH NR MOAPA, NV	09417400**	1,495	36:39:45	114:34:27	CLARK	USGS	1915-1917	DAILY FLOW
MUDDY R NR OVERTON, NV	09419500**	1,432	36:38:00	114:30:00	CLARK	USGS	1913-1952	DAILY, PEAK FLOW
MUDDY R AB LAKE MEAD NR OVERTON, NV	09419515**	1,200	36:31:21	114:24:49	CLARK	USGS	1978-1993	DAILY, PEAK FLOW
ROGERS SPRING NR OVERTON BEACH, NV	09419550**	1,560	36:22:36	114:26:33	CLARK	USGS	1985-1996	DAILY, PEAK FLOW
MEADOW VALLEY WASH AT EAGLE CANYON, NR URSINE, NV	09417500**	5,500	38:00:10	114:12:20	LINCOLN	USGS	1962-1974	DAILY, PEAK FLOW
MEADOW VAL WASH NR PANACA, NV	09418000**	-	37:52:00	114:19:00	LINCOLN	USGS	1944-1949	DAILY FLOW
PULSIPHER WASH NR MESQUITE, NV	09415100**	1,580	36:48:04	114:06:37	CLARK	USGS	1963-1981	PEAK FLOW
MUDDY R TR NR ALAMO, NV	09415800**	2,650	37:02:00	114:58:50	LINCOLN	USGS	1964-1981	PEAK FLOW
PATTERSON WASH TR NR PIOCHE, NV	09418100**	5,900	38:09:00	114:35:10	LINCOLN	USGS	1964-1981	PEAK FLOW
CASELTON WASH NR PANACA, NV	09418150**	4,680	37:45:46	114:25:44	LINCOLN	USGS	1963-1981	PEAK FLOW
MEADOW VALLEY WASH TR NR CALIENTE, NV	09418450**	6,050	37:36:00	114:39:30	LINCOLN	USGS	1964-1981	PEAK FLOW
ESCALANTE VALLEY TR NR PANACA, NV	10242460**	6,300	37:44:10	114:08:20	LINCOLN	USGS	1964-1981	PEAK FLOW
DRY LAKE VALLEY TR NR CALIENTE, NV	10245270**	4,960	37:37:18	114:46:24	LINCOLN	USGS	1967-1981	PEAK FLOW

Notes:
 USGS - U.S. Geological Survey * - NCDC ID
 NCDC - National Climatic Data Center ** - USGS ID

TABLE 5-3. Hydrologic Instrumentation at Mathews Canyon Dam

Parameter	Gage Type	Report Mode	Stored Record	Comments
WATER SURFACE ELEVATION	Staff Boards	Visual Inspection	-	-
	Float Well System	GOES Telemetry	COE Telemetry HECDSS Computer Database	-
		A35 Stevens Recorder	Paper Strip Chart	
PRECIPITATION	Tipping Bucket	GOES Telemetry	COE Telemetry HECDSS Computer Database	Located on top of dam
	Tipping Bucket	Digital Recorder	Punch Tape	Located d/s of flow gage
OUTFLOW	Float Well System	Digital Recorder	Punch Tape	Maintained by USGS, 1957-1984, by USACE since 1985