ST.: 1-950 WATOPA PONTOON (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	107.3	155.9	437.8	496.1	526.7	661.9	600.3	321.9	195.3	158.4	132.6	115.0	325.8
1980/81	106.4	126.6	206.9	291.4	471.7	952.1	796.2	279.2	179.2	145.6	94.2	88.7	311.5
1981/82	87.0	89.4	135.3	222.9	391.9	501.6	289.7	191.9	132.5	112.1	96.7	82.8	194.5
1982/83	81.3	102.4	238.2	238.4	344.1	353.2	409.7	195.7	137.0	119.9	105.6	89.9	201.3
1983/84	91.4	135.9	134.8	200.4	230.3	273.4	204.4	122.0	88.8	82.5	73.2	62.4	141.6
1984/85	59.5	71.5	136.6	197.0	391.3	391.2	496.4	184.4	118.8	106.5	91.4	74.9	193.3
1985/86	63.3	69.3	90.4	149.8	363.7	604.2	521.9	226.7	140.6	117.2	103.1	80.6	210.9
1986/87	88.2	160.1	201.0	260.7	510.2	593.5	324.6	168.5	124.0	86.6	86.7	75.3	223.3
1987/88	80.2	74.3	97.2	183.4	369.6	582.6	463.9	165.2	121.9	106.4	90.4	74.8	200.8
1988/89	64.2	85.4	106.7	220.1	414.3	287.2	416.3	163.4	109.6	98.2	84.8	67.9	176.5
1989/90	63.6	65.2	87.9	146.4	324.6	225.8	346.3	195.7	114.0	95.2	84.4	68.9	151.5
1990/91	64.2	59.9	96.2	292.9	580.5	415.6	358.2	152.9	133.3	120.1	85.2	69.6	202.4
MEAN	79.7	99.7	164.1	241.6	409.9	496.9	435.7	197.3	132.9	112.4	94.0	79.2	211.1

ST.: 2-030 LUKULU (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	403.3	495.5	985.9	1784.1	1698.3	1920.9	1596.7	1046.5	672.1	543.9	470.3	412.8	1002.5
1980/81	361.1	403.9	541.1	674.2	1043.2	1617.9	1975.2	996.9	649.6	492.7	418.0	368.1	795.2
1981/82	328.8	332.1	412.2	651.8	738.3	1258.7	926.2	731.3	422.8	452.4	364.1	322.7	578.4
1982/83	310.2	378.9	698.2	782.6	1045.8	1056.6	1042.6	714.9	520.1	446.4	350.5	298.8	637.1
1983/84	280.5	301.6	353.4	591.4	1182.7	1445.1	1034.6	637.1	390.0	327.7	286.4	301.9	594.4
1984/85	294.0	325.9	411.7	550.8	887.6	1296.6	1455.4	816.9	490.0	380.5	322.1	284.6	626.3
1985/86	259.1	270.6	298.8	416.0	809.9	1316.2	1782.9	851.1	520.6	385.0	334.9	296.0	628.4
1986/87	307.5	445.5	663.1	839.8	1298.0	1588.0	1138.6	677.6	482.2	401.2	348.7	304.2	707.9
1987/88	387.0	411.1	436.5	485.2	955.4	1405.4	1396.1	810.6	506.5	396.5	436.4	421.9	670.7
1988/89	278.6	331.1	421.9	689.8	1135.3	2105.5	2253.7	1281.9	688.7	510.9	403.9	345.1	870.5
1989/90	332.2	328.4	333.4	464.4	814.9	752.3	931.4	749.4	467.8	372.6	327.6	289.6	513.7
1990/91	282.3	280.2	360.7	700.2	1619.3	1414.6	1184.8	777.3	498.4	342.2	305.1	273.5	669.9
MEAN	318.7	358.7	493.1	719.2	1102.4	1431.5	1393.2	841.0	525.7	421.0	364.0	326.6	691.3

ST.: 2-250 KALABO (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	9.8	11.3	21.4	73.3	139.7	301.2	159.4	80.6	53.6	33.2	18.3	11.8	76.1
1980/81	8.8	7.6	8.1	17.3	68.4	352.9	213.1	94.1	71.0	45.5	28.7	19.2	77.9
1981/82	13.9	11.3	10.8	10.4	13.0	54.4	90.0	62.7	47.8	28.7	23.9	19.6	32.2
1982/83	13.9	12.8	18.6	27.0	115.5	81.2	61.9	46.6	34.0	25.7	26.0	17.6	40.1
1983/84	12.9	11.4	11.4	11.4	39.4	79.4	83.5	70.4	51.6	37.7	25.0	16.7	37.6
1984/85	12.4	3.4	13.2	18.6	100.9	125.5	92.9	82.2	68.3	53.1	30.4	10.3	50.9
1985/86	13.6	10.7	9.6	10.2	14.0	53.8	194.4	95.0	69.6	46.9	28.9	18.9	47.1
1986/87	14.6	13.8	17.6	27.0	58.0	77.3	74.6	62.8	46.0	31.9	22.4	15.8	38.5
1987/88	11.8	9.1	10.8	25.6	26.0	125.9	281.9	96.9	76.4	54.6	34.7	21.3	64.6
1988/89	14.6	12.3	17.7	110.5	641.1	508.0	365.2	215.4	93.0	61.1	41.5	23.8	175.4
1989/90	15.7	12.4	10.6	12.8	20.3	72.4	83.7	69.6	48.9	31.4	20.2	15.0	34.4
1990/91	11.2	8.1	8.1	10.8	83.6	103.0	86.5	58.3	41.2	27.8	19.5	13.4	39.3
MEAN	12.9	10.4	13.2	29.6	110.0	161.3	148.9	86.2	58.4	39.8	26.6	17.0	59.5

ST.: 2-400 SENANGA (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	382.1	452.9	713.7	1214.6	1925.4	2160.0	1818.4	1874.7	1241.9	750.9	563.6	427.7	1127.1
1980/81	354.3	386.8	528.9	711.5	909.9	1677.5	2240.2	2023.0	820.1	715.2	496.0	391.2	937.9
1981/82	326.8	317.7	408.4	677.0	734.3	994.3	1438.2	1262.6	865.7	530.8	432.6	394.1	698.5
1982/83	305.3	360.0	583.2	775.6	930.9	1170.9	1204.9	1110.0	702.8	457.8	377.6	319.9	691.6
1983/84	277.4	311.3	386.1	571.2	852.6	1417.8	1603.8	1297.9	703.6	437.0	352.8	302.3	709.5
1984/85	445.3	365.8	466.2	603.0	841.0	1210.5	1641.0	1648.1	1091.4	569.2	416.4	346.0	803.6
1985/86	286.7	293.7	330.6	456.5	689.5	1035.5	1855.6	1689.7	1087.8	560.7	417.1	342.3	753.8
1986/87	332.5	465.2	690.5	889.7	1080.2	1623.2	1747.1	1431.2	873.2	537.1	424.8	346.9	870.1
1987/88	317.9	308.5	507.2	646.9	771.2	1182.2	1872.4	1638.2	1095.6	588.3	549.4	399.1	823.0
1988/89	307.3	350.9	437.7	665.0	1349.9	2129.5	2225.6	2209.0	1510.1	900.1	569.2	430.9	1090.4
1989/90	346.0	332.6	351.7	532.5	765.9	1001.1	1025.8	1143.6	929.6	522.4	389.6	320.3	638.4
1990/91	294.3	283.7	367.2	502.0	1171.5	1228.6	1680.0	1447.3	819.4	455.5	371.1	313.8	744.5
MEAN	331.3	352.4	481.0	687.1	1001.9	1402.6	1696.1	1564.6	978.4	585.4	446.7	361.2	824.1

ST.: 4-050 RAGLAN FARM (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	6.6	12.3	50.9	73.8	96.6	125.0	140.7	87.8	38.9	26.9	20.2	10.2	57.5
1980/81	5.9	4.8	11.9	29.6	53.7	102.7	110.0	44.3	24.0	13.6	9.6	6.2	34.7
1981/82	3.6	2.5	5.2	14.6	62.9	62.7	41.1	30.8	14.2	8.2	5.5	3.5	21.2
1982/83	2.9	4.4	27.1	42.4	100.9	83.7	41.8	23.2	10.9	6.6	4.7	3.0	29.3
1983/84	2.1	1.9	6.1	32.1	56.2	79.5	40.9	14.2	6.7	4.9	4.1	3.0	21.0
1984/85	2.4	2.9	12.9	28.5	69.9	74.6	86.4	42.8	19.4	11.7	7.5	4.5	30.3
1985/86	2.8	2.8	6.8	19.2	80.1	141.3	125.9	63.4	32.0	20.2	12.4	6.9	42.8
1986/87	4.6	9.6	17.5	38.0	101.6	114.6	80.0	35.8	18.4	11.9	8.9	5.4	37.2
1987/88	3.2	2.4	4.4	18.9	61.6	95.7	70.4	29.3	12.8	8.4	5.7	3.5	26.4
1988/89	2.3	3.0	6.7	26.7	62.2	67.5	89.9	40.2	17.2	9.5	6.5	3.7	28.0
1989/90	2.4	2.2	4.9	12.7	20.9	41.3	40.6	28.5	12.9	6.4	4.2	2.6	15.0
1990/91	2.0	1.8	3.0	14.2	57.5	65.8	58.0	27.5	11.8	6.9	4.9	3.0	21.4
MEAN	3.4	4.2	13.1	29.2	68.7	87.9	77.1	39.0	18.3	11.3	7.8	4.6	30.4

ST.: 4-120 MWAMBASHI (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	2.7	5.0	11.7	10.4	11.4	17.5	17.2	7.4	5.1	4.1	2.8	2.0	8.1
1980/81	1.7	1.8	3.9	6.1	11.0	66.9	9.9	5.8	3.8	2.9	2.4	1.8	9.8
1981/82	1.3	1.7	3.4	8.8	17.7	9.1	5.7	4.1	2.3	1.8	1.5	1.2	4.9
1982/83	1.2	2.3	6.1	9.2	22.9	11.6	6.8	3.5	2.3	2.1	1.7	1.2	5.9
1983/84	1.1	1.2	4.0	9.0	8.2	10.2	7.5	2.4	1.7	1.6	1.5	1.1	4.1
1984/85	0.9	1.6	16.3	20.6	24.8	16.7	11.7	7.1	4.5	3.2	2.4	2.0	9.3
1985/86	1.4	2.4	7.1	16.8	30.8	32.0	25.3	15.1	9.2	7.4	5.8	3.9	13.1
1986/87	3.7	7.8	7.6	11.6	20.2	15.2	9.5	4.8	3.2	2.7	2.1	1.5	7.5
1987/88	1.3	1.0	2.0	9.4	15.2	17.6	8.0	3.6	2.6	2.3	1.9	1.4	5.5
1988/89	1.0	1.5	3.3	8.4	17.9	11.6	13.3	4.6	2.9	2.7	2.3	1.6	5.9
1989/90	1.3	1.4	3.5	7.0	10.8	5.8	6.0	3.0	2.0	1.6	1.4	1.1	3.7
1990/91	0.9	0.9	1.8	11.6	14.9	13.8	8.9	3.6	2.1	1.8	1.7	1.4	5.3
MEAN	1.5	2.4	5.9	10.7	17.1	19.0	10.8	5.4	3.5	2.9	2.3	1.7	6.9

ST.: 4-130 SMITH'S BRIDGE (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	30.0	41.7	99.8	147.1	154.2	196.7	200.9	139.1	76.8	53.5	39.0	28.7	100.5
1980/81	21.9	16.9	41.2	90.4	132.2	193.7	163.2	92.8	53.8	36.2	27.6	19.1	73.7
1981/82	12.6	12.0	21.8	48.4	162.4	125.8	85.8	64.0	32.8	20.6	16.0	11.7	50.4
1982/83	11.5	17.9	74.5	103.6	213.8	165.4	107.1	56.8	32.7	22.9	17.3	12.1	68.7
1983/84	9.5	9.3	38.0	111.3	127.7	155.8	94.9	37.0	21.0	16.7	13.4	9.2	53.5
1984/85	7.3	12.1	92.2	127.2	200.8	179.1	162.0	103.4	63.4	34.3	23.4	16.0	84.4
1985/86	10.7	16.4	60.3	106.4	232.5	273.9	232.9	150.9	93.1	69.4	50.3	34.8	110.2
1986/87	31.3	47.4	59.1	110.9	203.4	193.7	148.4	87.6	39.8	29.1	22.9	16.3	81.7
1987/88	21.0	11.6	17.3	60.5	151.1	193.6	132.4	60.2	33.8	24.3	18.3	11.9	61.0
1988/89	8.5	27.6	24.4	85.3	178.7	160.6	179.7	92.9	44.3	37.5	32.9	28.7	74.3
1989/90	40.8	42.0	58.0	196.5	285.5	274.6	91.9	63.1	58.0	17.5	12.4	9.1	74.3
1990/91	7.3	6.8	13.2	87.5	152.3	164.4	130.8	67.4	33.3	22.0	16.3	10.9	74.3
MEAN	17.7	21.8	50.0	106.3	182.9	189.8	144.2	84.6	48.6	32.0	24.1	17.4	74.3

ST.: 4-200 MPATAMATO (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	37.0	45.0	140.9	168.1	190.8	276.0	254.8	145.6	81.9	59.8	44.9	31.6	123.0
1980/81	32.0	29.1	57.5	138.8	223.8	331.2	197.3	119.8	68.1	49.6	37.2	27.2	109.3
1981/82	19.2	18.1	32.2	65.6	177.6	131.3	83.3	63.8	36.8	26.5	22.2	18.2	57.9
1982/83	18.8	23.7	79.9	106.4	255.0	168.3	98.0	57.2	37.3	30.4	24.3	18.2	76.5
1983/84	15.0	15.1	41.9	126.4	128.9	167.0	96.8	40.9	29.5	24.4	19.9	15.5	60.1
1984/85	13.9	20.9	132.4	199.5	343.0	256.4	205.2	111.6	62.4	43.9	34.1	27.5	120.9
1985/86	23.0	30.5	81.8	170.2	440.8	469.9	391.3	225.4	117.1	75.1	54.4	37.6	176.4
1986/87	32.3	50.1	60.4	81.2	166.4	202.8	153.6	67.8	46.4	37.4	30.9	26.5	79.6
1987/88	23.9	20.4	24.3	74.6	157.3	212.5	220.2	67.4	43.6	35.1	30.5	26.6	78.0
1988/89	22.4	23.2	33.2	142.5	220.6	210.8	193.9	69.0	59.0	45.8	36.2	27.7	90.4
1989/90	8.77	8.31	19.77	97.06	162.36	127.80	96.64	49.03	31.92	21.00	14.85	12.03	54.1
1990/91	10.7	10.0	26.6	144.5	245.6	191.7	143.5	70.4	39.7	27.3	21.2	15.0	78.9
MEAN	21.4	24.5	60.9	126.2	226.0	228.8	177.9	90.7	54.5	39.7	30.9	23.6	92.1

ST.: 4-280 MACHIYA FERRY (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	45.5	58.9	202.1	270.5	311.0	415.5	417.4	285.1	129.2	90.9	72.5	51.4	195.8
1980/81	40.6	40.9	71.4	195.9	312.0	547.7	391.3	204.8	105.4	76.6	59.8	43.7	174.2
1981/82	33.7	30.0	43.2	87.3	250.9	250.1	121.5	95.2	59.5	43.4	35.9	28.8	90.0
1982/83	26.0	30.9	89.0	105.7	308.7	289.8	144.4	82.3	54.2	42.8	35.6	28.8	103.2
1983/84	22.4	21.2	39.0	157.8	152.1	236.9	151.1	57.8	36.8	30.5	25.7	20.7	79.3
1984/85	17.7	24.3	131.6	301.3	467.7	434.5	354.0	176.3	89.2	62.1	46.2	34.0	178.2
1985/86	24.6	28.9	74.7	193.1	410.5	484.1	487.3	311.3	139.2	87.6	66.0	46.6	196.2
1986/87	37.8	67.3	84.6	119.1	260.9	321.4	239.6	96.7	61.2	46.2	35.4	28.1	116.5
1987/88	23.8	17.9	24.4	108.1	245.7	337.6	350.4	96.2	56.5	42.3	34.7	28.3	113.8
1988/89	21.3	22.5	39.3	221.1	351.0	334.7	306.7	98.8	82.2	60.2	44.3	30.1	134.4
1989/90	22.9	21.4	49.8	129.3	193.4	148.1	116.1	81.3	47.0	31.3	26.5	21.9	74.1
1990/91	12.7	12.3	25.7	140.6	341.5	261.9	227.5	98.4	52.5	38.8	32.4	25.8	105.8
MEAN	27.4	31.4	72.9	169.1	300.5	338.5	275.6	140.4	76.1	54.4	42.9	32.4	130.1

ST.: 4-350 CHILENGA (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	58.5	70.4	202.3	361.1	399.9	564.6	600.4	466.2	204.5	136.6	102.4	69.3	269.7
1980/81	46.9	50.0	75.4	196.5	357.7	721.3	635.6	330.7	169.3	112.7	84.0	58.6	236.5
1981/82	40.5	33.7	54.8	96.5	269.3	419.6	202.7	145.6	84.3	54.7	42.7	32.9	123.1
1982/83	28.6	34.9	104.5	139.1	304.3	416.2	225.6	115.5	63.5	45.8	37.8	30.0	128.8
1983/84	23.8	22.7	39.6	180.3	185.6	273.8	262.4	115.5	53.2	39.6	32.0	24.7	104.4
1984/85	20.6	25.3	100.3	328.6	523.7	582.4	512.3	266.8	117.5	83.9	59.2	41.9	221.9
1985/86	28.2	30.8	66.5	196.1	387.8	592.8	641.0	513.9	209.8	122.8	86.9	56.2	244.4
1986/87	41.3	72.0	111.3	156.5	301.5	412.8	282.2	141.1	70.5	53.5	43.3	32.2	143.2
1987/88	24.8	20.2	36.7	75.4	275.0	457.6	479.8	166.2	70.7	51.6	43.7	37.7	144.9
1988/89	28.6	25.2	42.9	126.6	376.3	497.8	419.6	256.3	105.7	66.4	49.4	34.7	169.1
1989/90	26.1	24.1	49.7	139.3	217.5	256.1	157.0	113.8	60.6	37.8	28.3	22.8	94.4
1990/91	18.9	16.6	26.0	133.3	336.3	336.6	291.7	149.8	70.4	46.5	36.8	26.0	124.1
MEAN	32.2	35.5	75.8	177.4	327.9	460.9	392.5	231.8	106.7	71.0	53.9	38.9	167.1

ST.: 4-450 LUBUNGU (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	68.2	79.0	212.6	377.3	439.2	525.2	551.7	497.2	253.2	148.0	112.3	79.4	278.6
1980/81	56.4	59.4	76.6	214.6	434.3	722.3	673.5	453.9	218.2	146.0	103.3	72.5	269.3
1981/82	49.0	38.8	61.1	98.5	280.2	397.5	222.8	149.7	91.6	63.1	49.6	38.5	128.4
1982/83	29.7	38.1	99.8	138.7	256.9	363.9	255.3	121.2	71.0	51.3	42.4	33.3	125.1
1983/84	34.9	27.8	44.7	160.5	208.3	274.9	275.0	129.2	60.7	47.2	36.8	35.7	111.3
1984/85	31.8	36.3	108.8	282.2	493.4	496.4	478.7	269.8	143.0	90.6	65.4	47.8	212.0
1985/86	31.9	41.7	76.1	201.4	367.5	585.0	506.6	472.4	269.9	134.3	94.4	65.9	237.3
1986/87	48.7	74.3	107.8	163.2	303.4	411.0	294.2	150.7	78.2	59.3	49.9	37.5	148.2
1987/88	27.7	25.6	38.8	80.8	273.2	417.4	409.6	178.7	82.4	57.4	43.5	32.9	139.0
1988/89	25.0	22.2	39.5	109.1	364.5	475.4	374.2	277.6	113.7	72.3	57.2	39.9	164.2
1989/90	27.8	34.6	56.8	122.2	222.2	210.2	161.4	116.5	67.9	43.1	31.2	23.2	93.1
1990/91	19.2	18.5	24.0	115.4	290.3	325.5	240.2	141.6	74.5	52.9	38.5	26.0	113.9
MEAN	37.5	41.3	78.9	172.0	327.8	433.7	370.3	246.5	127.0	80.5	60.4	44.4	168.4

ST.: 4-560 CHIFUMPA PONTOON (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	48.5	64.9	157.3	164.1	231.6	270.5	260.6	235.7	124.2	76.1	59.5	44.4	144.8
1980/81	37.4	37.3	58.8	93.6	169.8	570.5	199.9	106.9	72.4	61.9	51.3	40.3	125.0
1981/82	30.5	27.4	33.6	61.0	151.7	97.3	62.6	48.5	36.7	33.4	48.9	38.5	55.8
1982/83	22.9	27.5	72.6	52.8	102.9	56.8	45.2	37.2	30.2	26.9	27.9	23.4	43.9
1983/84	22.3	22.9	85.9	81.8	79.1	99.6	67.4	38.2	31.7	29.9	26.6	22.1	50.6
1984/85	19.3	21.1	49.6	117.6	200.5	201.7	194.7	112.8	63.0	42.4	32.5	25.6	90.1
1985/86	21.0	25.0	39.1	90.5	158.5	247.7	215.5	201.5	118.6	63.0	46.6	35.0	105.2
1986/87	27.8	39.6	48.6	83.1	183.7	145.4	143.0	77.4	44.2	37.6	34.2	26.6	74.3
1987/88	23.7	21.2	36.8	84.0	177.5	373.4	147.2	60.1	46.5	38.8	33.3	28.0	89.2
1988/89	24.1	29.8	26.5	72.0	195.2	119.7	183.3	55.8	42.6	37.8	32.9	27.2	70.6
1989/90	23.6	23.4	32.7	49.8	109.9	78.7	136.8	61.3	41.6	35.2	31.4	26.2	54.2
1990/91	23.4	20.5	28.3	89.1	220.7	146.3	102.6	51.9	39.4	34.3	30.4	25.7	67.7
MEAN	27.1	30.1	55.8	86.6	165.1	200.6	146.6	90.6	57.6	43.1	38.0	30.2	80.9

ST.: 4-669 KAFUE HOOK BRIDGE (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	133.9	157.7	381.0	548.4	720.6	961.6	805.3	645.0	361.1	233.9	187.5	141.7	439.8
1980/81	108.5	119.3	157.9	372.2	819.6	1442.9	1039.3	626.9	317.7	218.1	174.7	136.3	461.1
1981/82	103.4	86.0	116.8	187.8	534.8	567.0	372.9	229.6	154.4	119.8	100.6	84.5	221.5
1982/83	71.6	85.7	200.8	227.0	396.3	456.4	333.6	180.6	118.7	96.1	82.3	69.3	193.2
1983/84	71.6	86.8	202.8	226.4	396.3	456.6	333.1	180.6	109.3	83.9	71.4	59.3	189.8
1984/85	47.6	56.0	136.7	383.0	823.0	648.1	649.7	444.3	200.1	138.5	108.4	85.8	310.1
1985/86	60.9	62.0	98.3	281.4	565.0	698.7	724.2	621.6	346.3	183.5	140.3	107.0	324.1
1986/87	88.0	122.5	162.8	192.1	461.0	499.4	374.6	205.9	129.0	106.5	95.1	73.6	209.2
1987/88	59.1	44.2	88.3	176.0	421.5	799.1	629.3	307.6	145.3	109.8	91.8	71.6	245.3
1988/89	56.4	58.7	84.7	184.9	609.5	495.1	501.2	329.3	178.6	117.1	94.5	95.0	233.7
1989/90	37.9	47.0	74.2	190.9	428.6	315.8	337.1	197.0	122.7	85.1	68.2	53.2	163.1
1990/91	41.1	33.5	74.2	285.8	479.8	477.4	391.3	218.6	132.8	90.3	76.1	60.0	196.7
MEAN	73.3	79.9	148.2	271.3	554.7	651.5	541.0	348.9	193.0	131.9	107.6	86.4	265.7

ST.: 4-941 KALEYA DAM SITE (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	0.18	0.21	0.29	0.24	0.22	0.24	0.21	0.19	0.19	0.20	0.19	0.17	0.21
1980/81	0.16	0.17	0.17	0.23	1.14	0.87	0.49	0.41	0.36	0.35	0.32	0.27	0.41
1981/82	0.21	0.21	0.44	0.32	0.62	0.29	0.23	0.22	0.22	0.23	0.23	0.21	0.29
1982/83	0.22	0.31	0.18	0.27	0.24	0.18	0.15	0.14	0.14	0.14	0.15	0.15	0.19
1983/84	0.14	0.13	0.16	0.18	0.20	0.16	0.13	0.12	0.13	0.12	0.12	0.10	0.14
1984/85	0.03	0.06	0.58	0.49	0.43	0.18	0.12	0.13	0.13	0.13	0.12	0.12	0.21
1985/86	0.10	0.39	0.62	0.29	0.51	0.18	0.20	0.16	0.12	0.15	0.14	0.12	0.25
1986/87	0.13	0.20	0.28	0.41	0.19	0.21	0.20	0.19	0.19	0.19	0.20	0.20	0.22
1987/88	0.20	0.20	0.20	0.20	0.22	0.25	0.20	0.34	0.34	0.34	0.34	0.34	0.26
1988/89	0.20	0.20	0.28	0.56	2.14	0.05	0.02	0.01	0.01	0.01	0.02	0.03	0.30
1989/90	0.12	0.13	0.12	0.12	0.15	0.13	0.13	0.12	0.11	0.11	0.10	0.10	0.12
1990/91	0.09	0.10	0.10	0.09	0.12	0.10	0.07	0.09	0.09	0.09	0.09	0.09	0.09
MEAN	0.15	0.19	0.28	0.28	0.51	0.24	0.18	0.18	0.17	0.17	0.17	0.16	0.22

ST.: 4-958 URUAFF FARM (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	0.47	0.16	0.37	0.04	0.38	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.12
1980/81	0.03	0.02	0.08	1.13	4.50	2.60	0.03	0.01	0.00	0.00	0.00	0.00	0.70
1981/82	0.00	0.02	0.00	0.21	0.13	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03
1982/83	0.05	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
1983/84	0.00	0.00	0.00	0.04	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
1984/85	0.00	0.00	0.02	0.02	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
1985/86	0.00	0.00	0.13	1.12	0.05	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.11
1986/87	0.03	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
1987/88	0.01	0.01	0.01	0.11	0.06	0.61	0.01	0.00	0.00	0.00	0.00	0.00	0.07
1988/89	0.00	0.00	0.00	0.27	8.85	0.54	0.49	0.00	0.00	0.00	0.00	0.00	0.85
1989/90	0.00	0.00	0.23	0.74	0.44	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.12
1990/91	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
MEAN	0.05	0.02	0.08	0.32	1.21	0.32	0.05	0.00	0.00	0.00	0.00	0.00	0.17

ST.: 5-030 EXCHANGE FARM (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	0.03	0.14	1.28	0.59	1.15	1.51	0.44	0.14	0.10	0.09	0.07	0.04	0.46
1980/81	0.03	0.03	0.10	0.43	3.06	1.14	0.37	0.28	0.12	0.09	0.07	0.04	0.48
1981/82	0.02	0.02	0.34	1.09	1.36	0.19	0.09	0.06	0.05	0.04	0.03	0.02	0.28
1982/83	0.04	0.02	0.05	0.45	0.20	0.04	0.02	0.01	0.01	0.01	0.01	0.05	0.08
1983/84	0.08	0.08	0.10	0.11	0.05	0.01	0.01	0.07	0.07	0.07	0.07	0.05	0.06
1984/85	0.03	0.03	0.46	0.08	0.93	0.07	0.03	0.02	0.02	0.02	0.02	0.01	0.14
1985/86	0.01	0.30	0.21	0.61	0.59	0.77	0.81	0.20	0.13	0.10	0.08	0.05	0.32
1986/87	0.04	0.03	0.23	0.56	0.13	0.05	0.02	0.01	0.01	0.01	0.02	0.02	0.10
1987/88	0.13	0.13	0.05	0.03	0.09	0.15	0.02	0.26	0.26	0.26	0.26	0.26	0.16
1988/89	0.14	0.13	0.20	0.59	5.03	1.61	0.45	0.18	0.12	0.09	0.06	0.04	0.72
1989/90	0.01	0.01	0.01	0.58	1.18	0.19	0.08	0.08	0.05	0.04	0.04	0.02	0.19
1990/91	0.01	0.01	0.03	0.63	0.44	0.26	0.12	0.07	0.05	0.05	0.05	0.03	0.15
MEAN	0.05	0.08	0.26	0.48	1.18	0.50	0.21	0.11	0.08	0.07	0.06	0.05	0.26

ST.: 5-940 LUANGWA BRIDGE (12 YEARS) MONTHLY DISCHARGE (m3/s)

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
1979/80	70.5	85.1	579.7	640.9	1188.5	2231.6	1885.6	881.0	461.0	315.3	216.5	109.0	722.1
1980/81	73.7	61.6	449.3	788.2	2290.5	1840.4	496.0	338.5	159.1	114.5	83.3	62.4	563.1
1981/82	45.8	34.2	55.2	772.1	2176.4	933.2	365.4	232.0	108.6	75.0	50.5	37.1	407.1
1982/83	27.0	39.4	321.4	549.4	1959.3	729.1	331.8	149.8	89.4	68.4	49.1	38.4	362.7
1983/84	27.0	20.7	209.9	911.5	1025.9	995.9	399.7	186.2	122.7	93.7	67.0	49.4	342.5
1984/85	43.4	82.1	660.2	1332.6	3044.0	1457.8	957.3	335.4	213.9	150.0	116.1	85.9	706.6
1985/86	64.9	106.9	358.6	3346.5	2829.1	1883.4	1506.9	573.0	318.3	243.7	189.3	123.9	962.1
1986/87	99.3	116.0	665.2	1247.5	1237.0	921.0	539.9	251.5	180.9	148.0	127.4	100.3	469.5
1987/88	83.7	71.9	200.9	797.3	2465.0	1896.2	744.3	268.3	171.5	124.6	92.0	70.9	582.2
1988/89	53.6	51.2	134.7	1152.7	3297.5	2435.9	1756.5	469.0	263.0	172.5	120.9	58.5	830.5
1989/90	0.3	27.1	1159.2	4880.1	3728.0	4578.6	2152.9	1032.7	186.9	145.4	107.3	66.5	1505.4
1990/91	45.9	52.0	77.3	981.2	1138.7	597.8	783.3	298.1	184.6	132.8	113.9	65.9	372.6
MEAN	52.9	62.4	406.0	1450.0	2198.3	1708.4	993.3	417.9	205.0	148.6	111.1	72.4	652.2

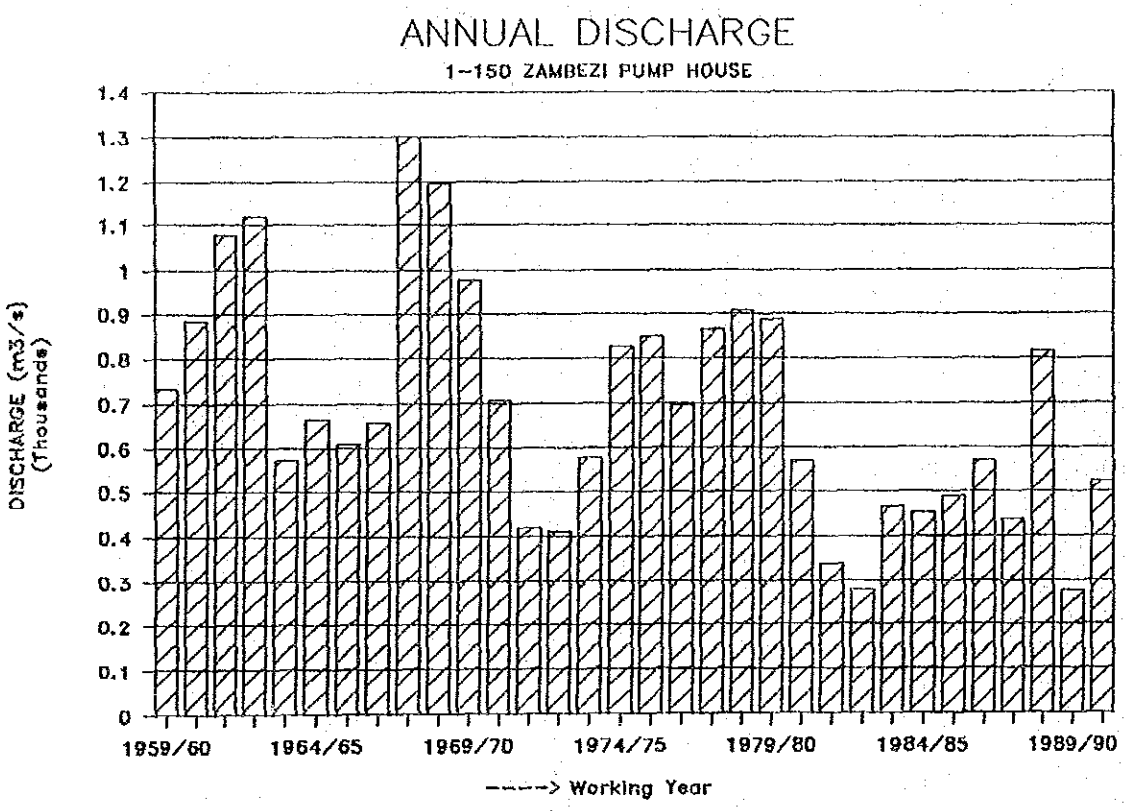
SUPPLEMENT - 4.6

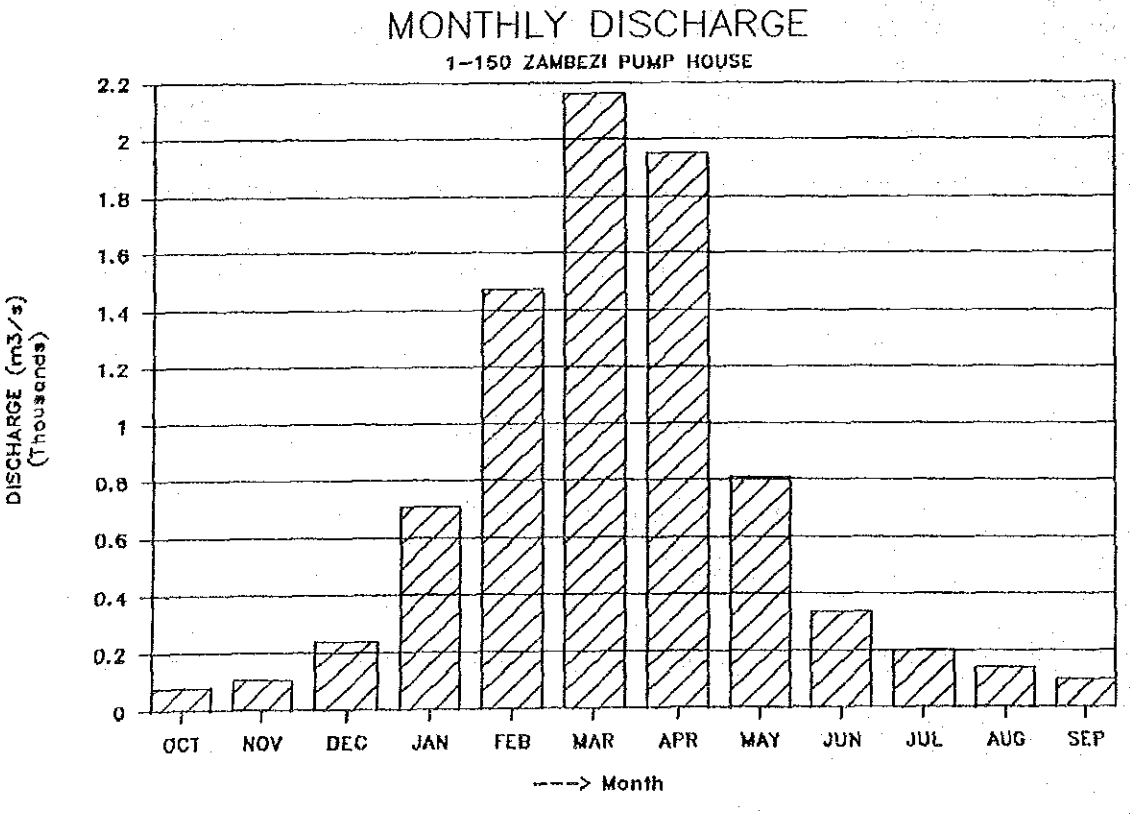
ANNUAL FLOW REGIME BY STATION

FLOW REGIME TABLE, ANNUAL DISCHARGE AND MONTHLY DISCHARGE

ST.: 1-150 ZAMBEZI PUMP HOUSE FLOW REGIME (m3/s)

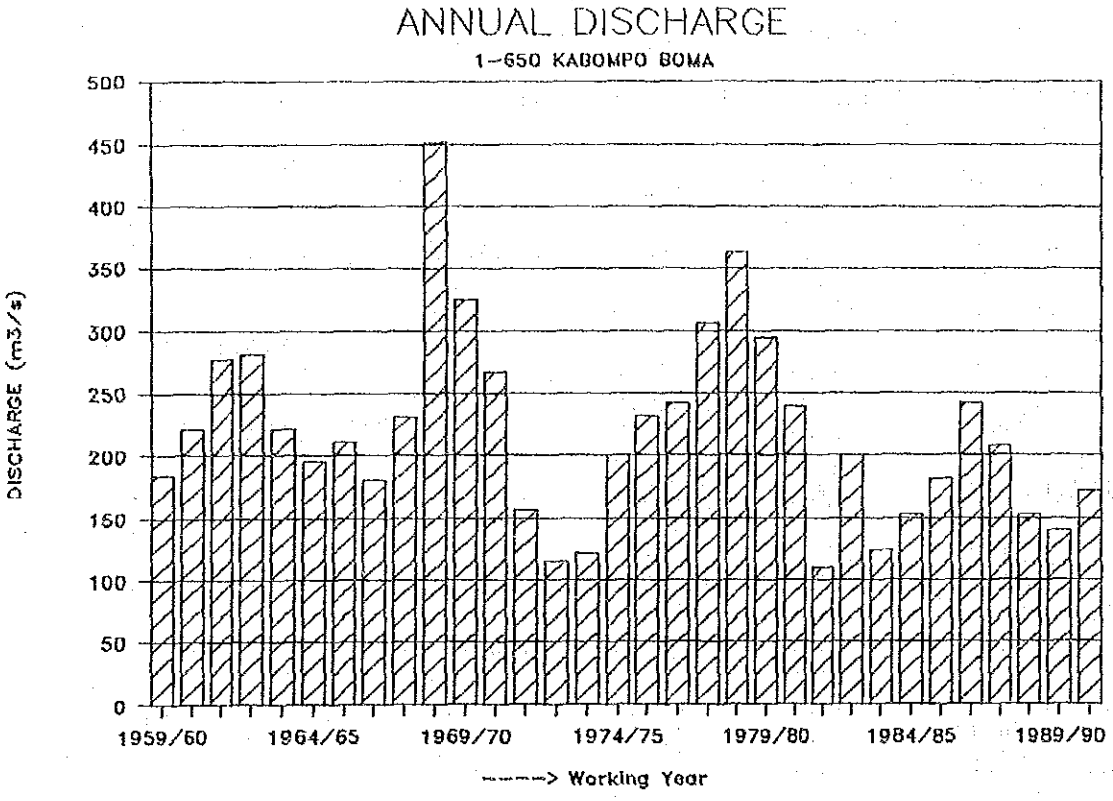
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	828.9	222.1	102.4	56.2	735.7
2	1960/61	901.5	265.5	125.5	65.9	886.4
3	1961/62	1604.4	363.7	158.5	87.4	1077.4
4	1962/63	2010.5	363.7	139.7	96.3	1119.5
5	1963/64	828.9	270.5	132.5	93.3	573.8
6	1964/65	864.9	217.6	108.8	73.6	663.4
7	1965/66	684.8	245.7	112.0	71.0	607.6
8	1966/67	977.2	204.1	99.3	79.0	657.9
9	1967/68	2617.8	418.6	157.7	71.0	1300.9
10	1968/69	1231.1	381.6	173.6	92.7	1180.3
11	1969/70	1040.9	336.0	175.7	106.5	978.4
12	1970/71	1023.1	304.5	139.7	99.3	705.8
13	1971/72	513.7	241.9	130.4	86.6	422.2
14	1972/73	512.3	196.7	107.8	71.7	412.0
15	1973/74	988.8	208.1	97.8	68.1	578.5
16	1974/75	1495.1	307.2	119.7	68.1	828.0
17	1975/76	1333.8	254.5	115.6	73.3	850.1
18	1976/77	1156.4	281.8	149.3	106.2	695.1
19	1977/78	874.9	322.5	121.7	80.9	865.9
20	1978/79	1132.4	360.2	170.4	94.2	908.1
21	1979/80	1650.1	350.9	149.3	95.4	889.6
22	1980/81	748.5	215.3	119.7	86.0	572.9
23	1981/82	401.7	174.0	103.1	72.5	338.1
24	1982/83	405.4	188.1	96.9	64.9	280.8
25	1983/84	636.4	121.7	71.2	49.1	469.4
26	1984/85	572.7	198.4	91.2	57.4	453.5
27	1985/86	574.2	152.0	74.4	55.8	490.3
28	1986/87	752.6	292.3	129.0	69.2	571.2
29	1987/88	633.3	155.4	90.6	71.0	439.8
30	1988/89	1153.3	300.2	131.1	68.4	816.4
31	1989/90	393.1	179.8	98.1	78.4	277.7
32	1990/91	759.4	162.4	83.4	67.6	525.7
	MEAN	978.2	258.0	121.1	77.4	692.9

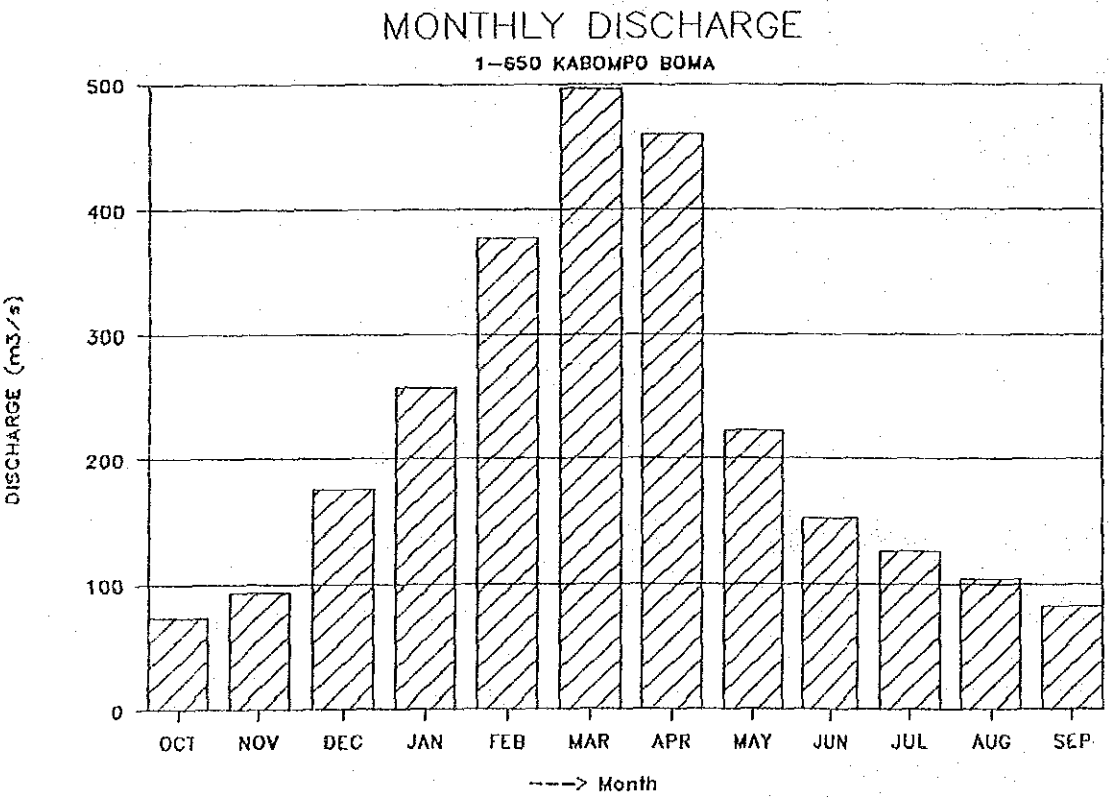

ANNUAL DISCHARGE
1-150 ZAMBEZI PUMP HOUSE
DISCHARGE (m3/s)
(Thousands)
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year


MONTHLY DISCHARGE
1-150 ZAMBEZI PUMP HOUSE
DISCHARGE (m3/s)
(Thousands)
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
----> Month

ST.: 1-650 KABOMPO BOMA FLOW REGIME (m3/s)

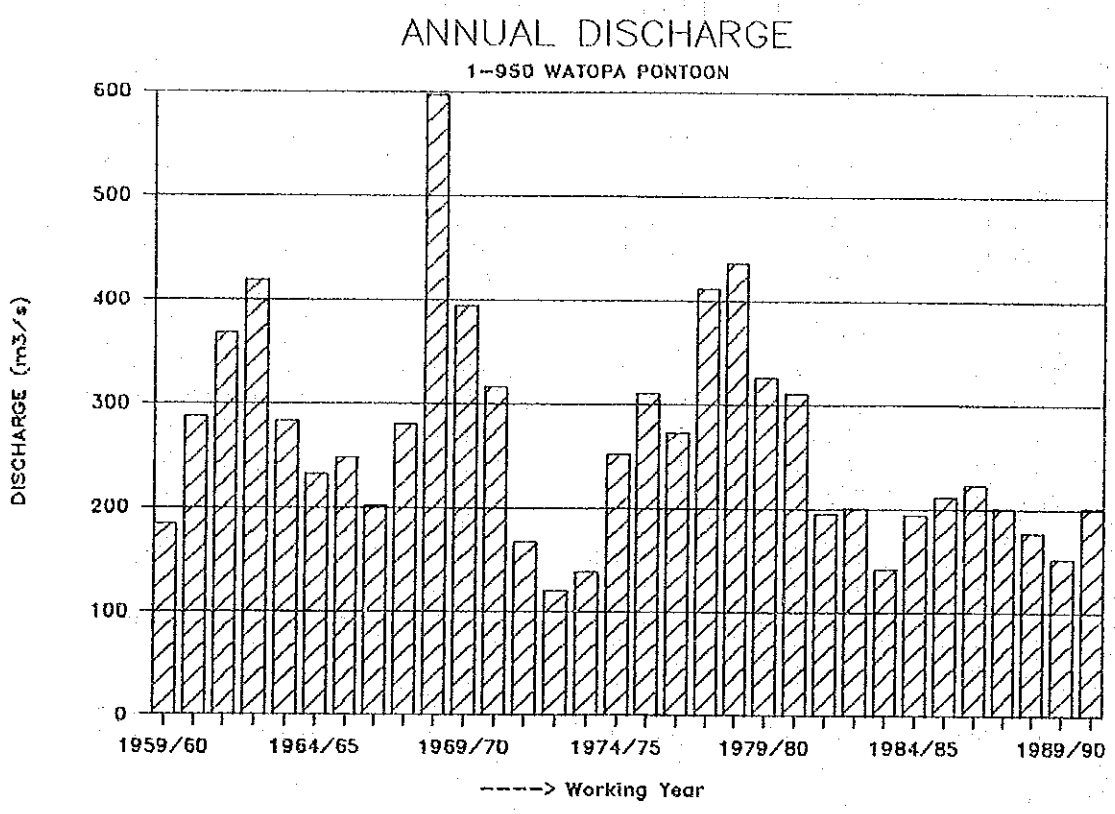
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	205.4	152.2	120.1	97.7	184.7
2	1960/61	241.1	116.9	77.9	37.1	221.3
3	1961/62	370.6	183.3	127.8	53.8	277.4
4	1962/63	461.6	190.1	111.5	65.3	281.6
5	1963/64	315.5	157.4	101.3	69.3	221.7
6	1964/65	272.9	133.5	86.9	61.3	195.6
7	1965/66	248.9	122.3	82.3	61.3	210.6
8	1966/67	197.0	106.4	91.6	73.5	180.6
9	1967/68	291.0	150.5	117.9	57.5	231.1
10	1968/69	550.9	235.7	157.4	61.3	451.0
11	1969/70	361.1	183.3	139.3	91.6	324.9
12	1970/71	361.1	183.3	111.5	86.9	266.6
13	1971/72	211.2	133.5	82.3	65.3	157.0
14	1972/73	157.4	82.3	61.3	46.8	115.3
15	1973/74	176.7	89.2	57.5	43.4	121.5
16	1974/75	324.3	116.9	77.9	37.1	200.1
17	1975/76	293.8	157.4	101.3	46.8	231.4
18	1976/77	370.6	176.7	116.9	82.3	242.7
19	1977/78	375.4	218.5	127.8	65.3	305.6
20	1978/79	472.3	229.7	157.4	86.9	362.7
21	1979/80	463.7	235.7	145.2	91.6	293.3
22	1980/81	326.1	197.0	83.7	21.2	240.2
23	1981/82	129.5	102.9	77.4	28.6	109.3
24	1982/83	266.4	177.3	101.3	64.5	200.6
25	1983/84	193.6	92.0	65.3	47.1	124.1
26	1984/85	182.7	93.5	75.3	51.6	153.0
27	1985/86	252.8	119.0	74.4	50.2	180.8
28	1986/87	262.3	190.1	112.6	76.1	242.6
29	1987/88	300.6	167.0	105.3	72.3	207.9
30	1988/89	220.7	119.6	79.2	52.7	153.1
31	1989/90	186.0	102.8	57.5	48.8	139.9
32	1990/91	228.2	102.5	67.3	40.8	171.8
	MEAN	289.7	150.6	98.5	60.5	218.7

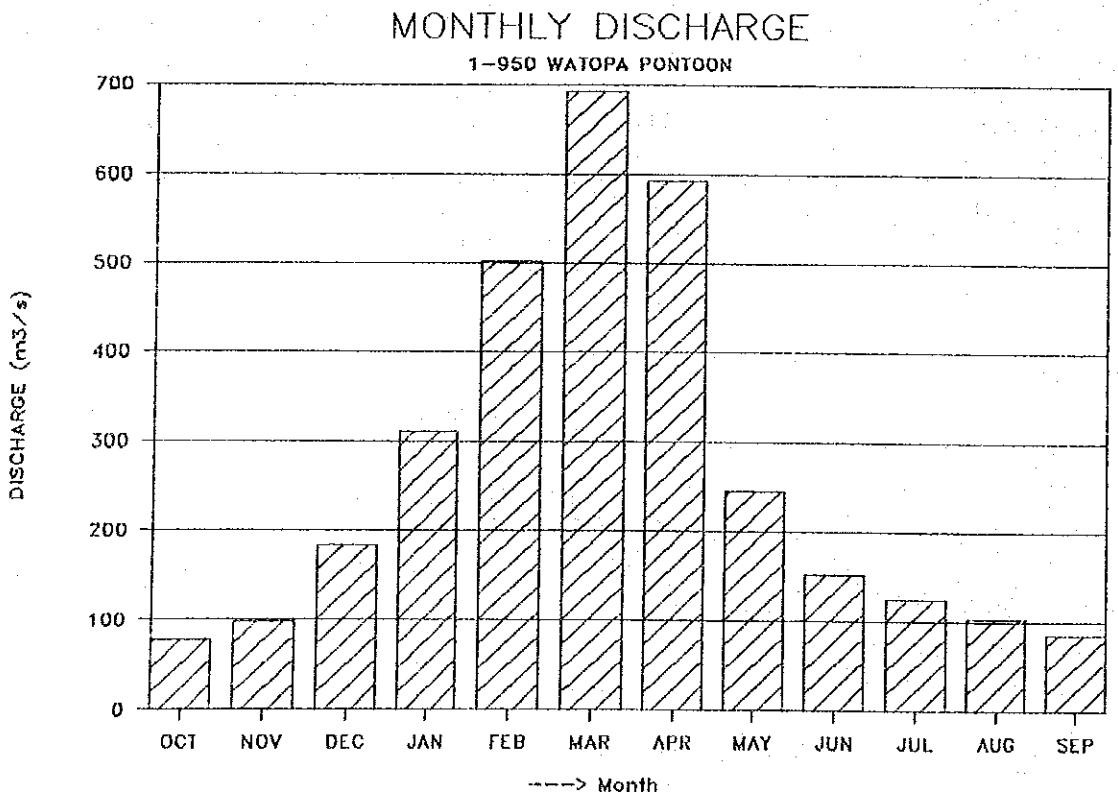

ANNUAL DISCHARGE
1-650 KABOMPO BOMA
DISCHARGE (m3/s)
500
450
400
350
300
250
200
150
100
50
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year


MONTHLY DISCHARGE
1-650 KABOMPO BOMA
DISCHARGE (m3/s)
500
400
300
200
100
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
----> Month

ST.: 1-950 WATOPA PONTOON FLOW REGIME (m3/s)

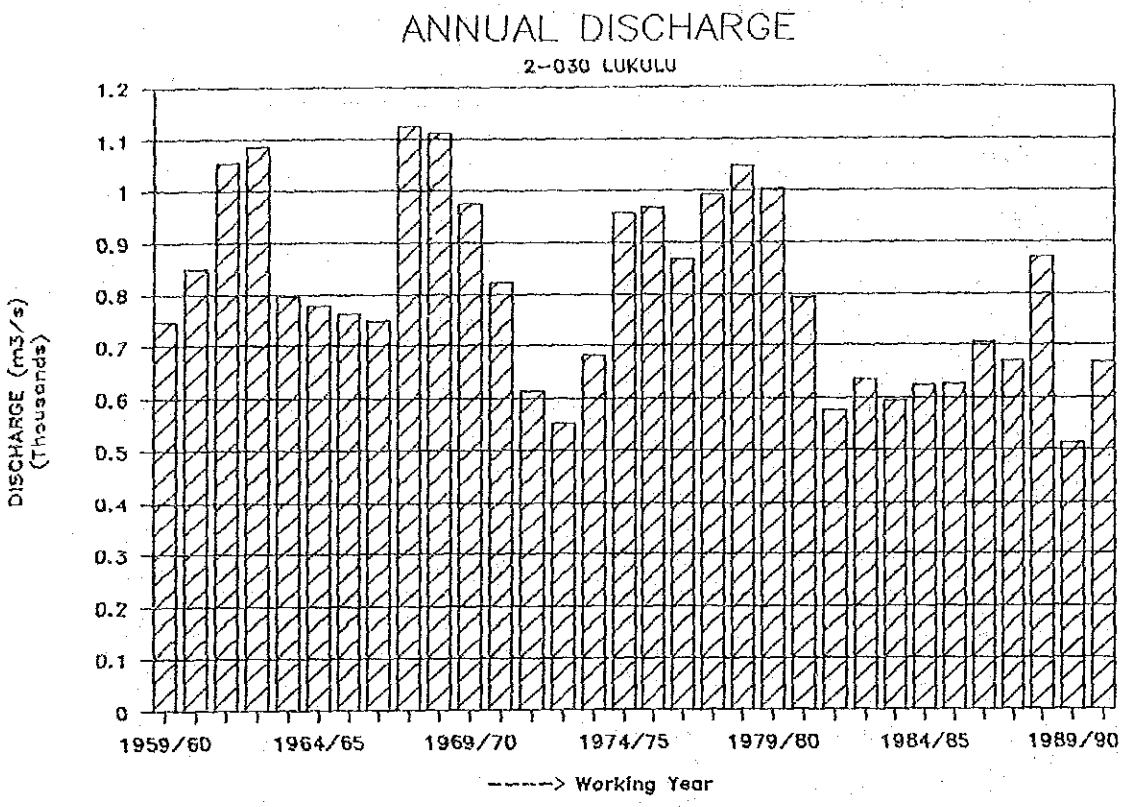
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	183.4	101.0	67.6	47.4	184.3
2	1960/61	262.6	125.7	88.1	54.6	288.3
3	1961/62	449.2	192.5	122.0	67.6	368.1
4	1962/63	794.3	187.9	114.8	78.9	419.7
5	1963/64	645.0	340.5	275.6	236.2	282.7
6	1964/65	319.3	137.2	94.4	76.0	232.0
7	1965/66	262.6	145.1	101.0	70.3	247.8
8	1966/67	262.6	122.0	89.6	70.3	202.4
9	1967/68	362.2	155.3	115.9	71.7	279.5
10	1968/69	697.1	265.3	153.2	74.0	597.4
11	1969/70	539.4	191.1	141.1	94.4	393.5
12	1970/71	388.0	178.9	111.3	88.1	316.2
13	1971/72	212.9	135.2	94.4	76.0	167.1
14	1972/73	155.3	86.5	73.1	59.6	120.1
15	1973/74	174.5	94.4	70.3	57.1	139.0
16	1974/75	401.2	113.7	78.9	49.8	251.2
17	1975/76	378.2	153.6	96.4	59.6	310.8
18	1976/77	431.8	162.8	111.3	88.1	272.8
19	1977/78	517.2	221.2	129.5	76.0	410.8
20	1978/79	598.1	231.2	149.1	91.5	435.9
21	1979/80	541.7	226.2	133.3	101.0	325.8
22	1980/81	349.7	187.9	108.1	77.9	311.5
23	1981/82	254.6	133.3	94.4	78.9	194.5
24	1982/83	261.5	151.2	102.7	72.6	201.3
25	1983/84	190.2	120.2	83.4	60.9	141.6
26	1984/85	231.2	116.6	83.4	57.1	193.3
27	1985/86	274.0	120.2	81.9	60.9	210.9
28	1986/87	236.3	157.4	93.8	67.6	223.3
29	1987/88	245.1	112.0	83.4	72.0	200.8
30	1988/89	251.9	106.1	80.4	62.2	176.5
31	1989/90	190.2	104.0	70.3	62.2	151.5
32	1990/91	285.7	86.2	64.3	5.3	202.4
	MEAN	354.6	155.1	104.9	73.9	264.2

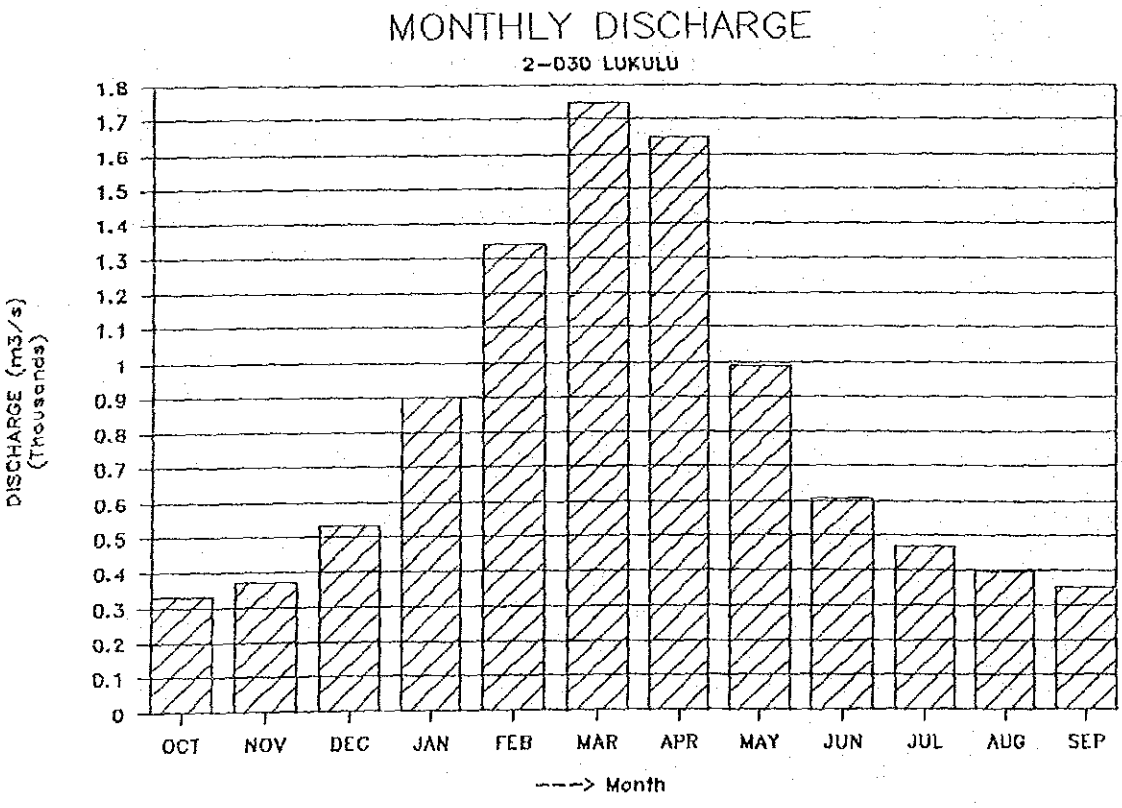

ANNUAL DISCHARGE
1-950 WATOPA PONTOON
DISCHARGE (m3/s)
600
500
400
300
200
100
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year


MONTHLY DISCHARGE
1-950 WATOPA PONTOON
DISCHARGE (m3/s)
700
600
500
400
300
200
100
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
----> Month

ST.: 2-030 LUKULU FLOW REGIME (m3/s)

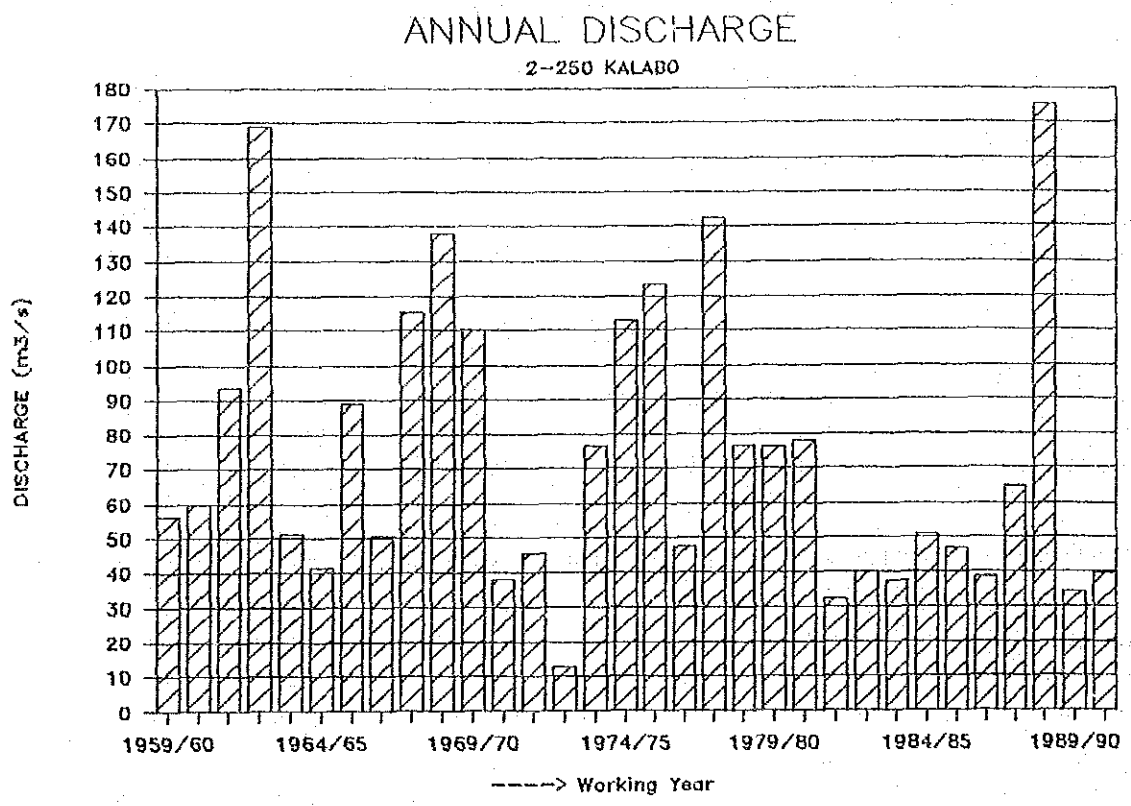
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	848.9	462.0	292.6	229.7	747.9
2	1960/61	1091.5	519.6	369.4	201.1	849.2
3	1961/62	1525.1	730.2	441.3	321.1	1053.8
4	1962/63	1748.6	686.9	448.2	357.0	1086.7
5	1963/64	1134.9	572.8	401.3	350.9	798.5
6	1964/65	1080.8	490.4	363.1	309.5	777.2
7	1965/66	926.4	527.1	375.6	303.8	763.7
8	1966/67	1070.1	455.1	344.8	309.5	750.6
9	1967/68	1972.9	695.5	427.7	394.8	1125.1
10	1968/69	1425.2	712.7	483.2	363.1	1113.1
11	1969/70	1247.0	620.5	462.0	369.4	976.9
12	1970/71	1102.2	572.8	407.8	357.0	822.1
13	1971/72	712.7	490.4	363.1	321.1	613.5
14	1972/73	670.0	407.8	326.9	270.8	552.7
15	1973/74	1017.6	441.3	321.1	260.2	683.3
16	1974/75	1537.8	620.5	427.7	270.8	956.4
17	1975/76	1425.2	588.5	414.4	363.1	964.8
18	1976/77	1305.1	620.5	441.3	382.0	868.8
19	1977/78	1212.8	653.3	434.5	344.8	993.8
20	1978/79	1376.5	704.1	512.2	375.6	1048.6
21	1979/80	1550.6	712.7	476.1	388.4	1002.5
22	1980/81	936.3	572.0	407.8	344.8	795.2
23	1981/82	730.2	472.0	344.8	315.3	578.4
24	1982/83	850.8	572.0	344.2	292.6	637.1
25	1983/84	757.7	365.6	303.8	271.3	594.4
26	1984/85	796.7	443.4	322.2	279.9	626.3
27	1985/86	824.4	389.6	295.9	256.5	628.4
28	1986/87	902.8	520.4	367.5	290.4	707.9
29	1987/88	829.1	442.4	420.1	366.9	670.7
30	1988/89	1042.6	545.5	362.5	275.1	870.5
31	1989/90	685.2	378.2	329.9	283.8	513.7
32	1990/91	923.8	399.3	290.4	267.6	669.9
	MEAN	1101.9	543.3	385.1	315.2	807.6

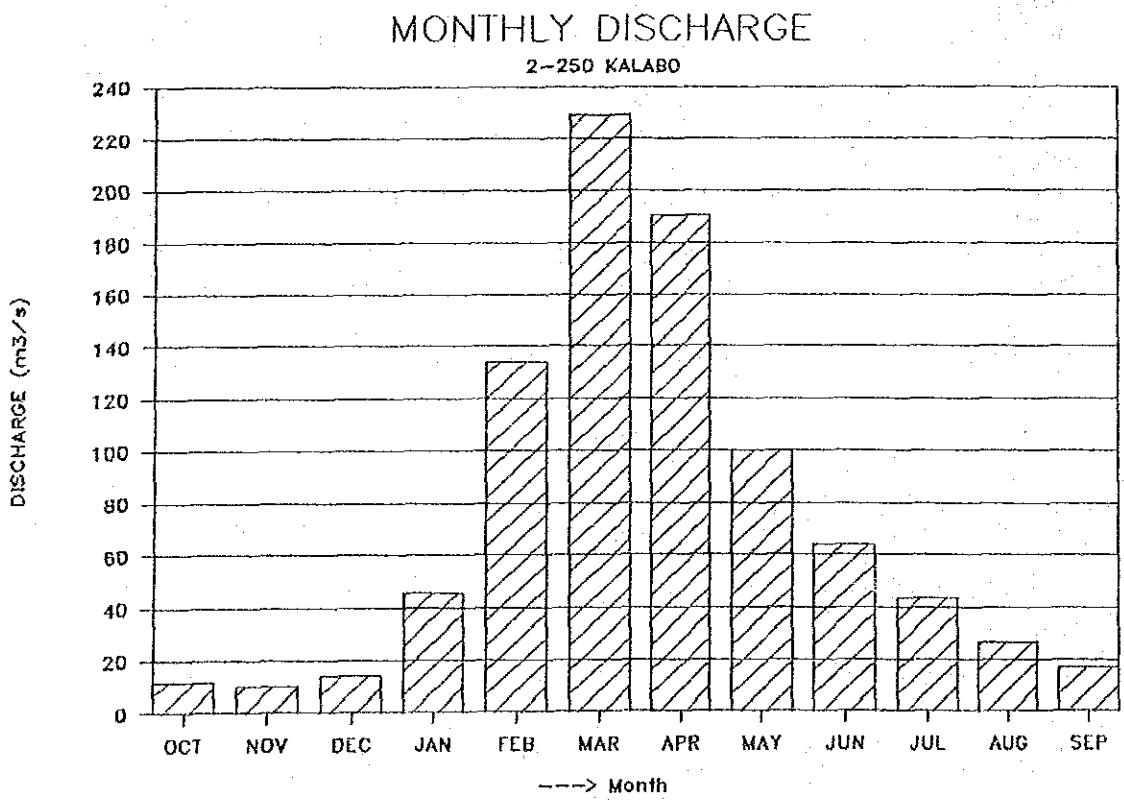

ANNUAL DISCHARGE
2-030 LUKULU
DISCHARGE (m3/s)
(Thousands)
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year


MONTHLY DISCHARGE
2-030 LUKULU
DISCHARGE (m3/s)
(Thousands)
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
---> Month

ST.: 2-250 KALABO FLOW REGIME (m3/s)

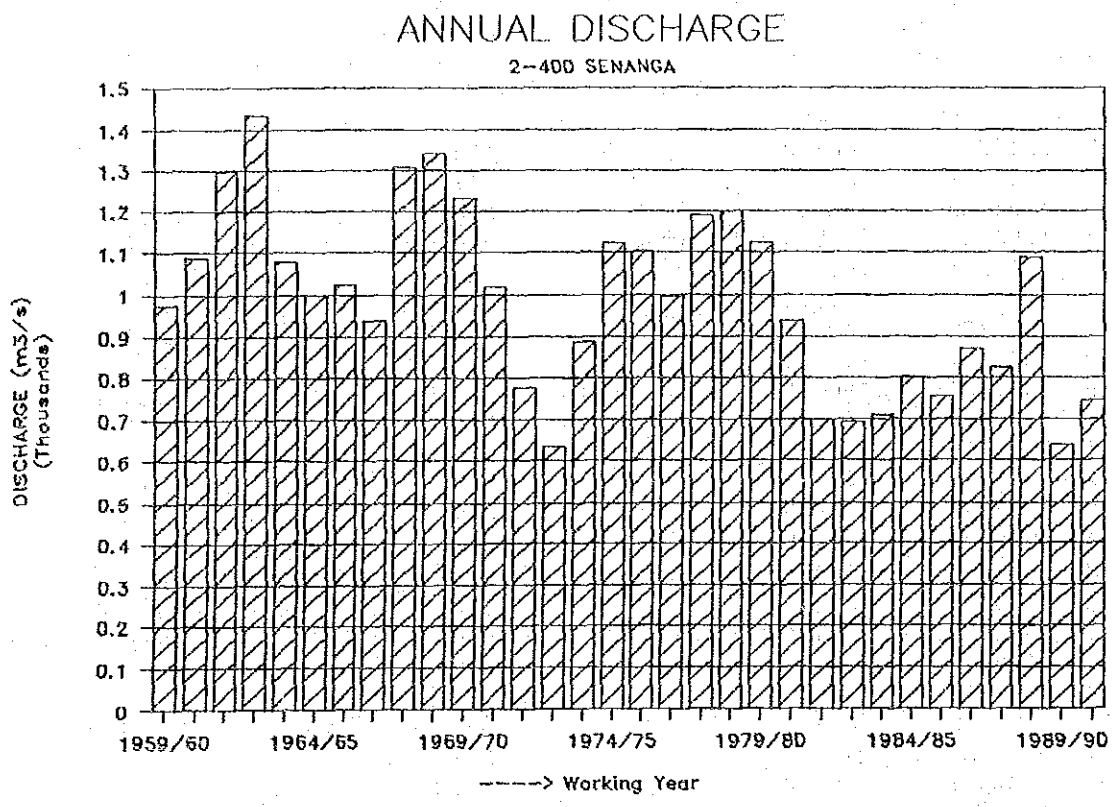
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	73.6	28.6	13.6	10.2	56.4
2	1960/61	83.9	23.5	13.0	9.7	59.3
3	1961/62	104.8	37.1	14.8	10.2	93.6
4	1962/63	302.5	56.3	18.9	9.7	169.0
5	1963/64	73.6	37.1	18.2	14.2	51.2
6	1964/65	72.2	26.8	12.4	9.1	41.6
7	1965/66	90.1	39.2	12.4	9.1	88.9
8	1966/67	83.9	37.6	15.5	11.8	50.6
9	1967/68	202.6	67.4	19.7	12.4	115.5
10	1968/69	147.0	45.6	17.9	11.8	137.9
11	1969/70	164.5	49.1	24.3	14.2	110.1
12	1970/71	60.7	25.1	10.4	8.2	38.0
13	1971/72	61.4	22.7	6.8	4.8	45.3
14	1972/73	15.9	8.2	5.3	4.1	12.7
15	1973/74	104.3	35.4	6.2	3.2	76.5
16	1974/75	170.0	36.4	8.6	5.1	113.1
17	1975/76	128.1	34.4	8.0	4.5	123.4
18	1976/77	61.8	34.9	11.3	7.2	47.8
19	1977/78	192.7	42.2	12.2	5.3	142.4
20	1978/79	105.3	33.5	15.0	11.3	76.6
21	1979/80	87.6	38.5	14.4	9.3	76.1
22	1980/81	81.8	32.8	10.8	7.0	77.9
23	1981/82	44.8	19.7	11.7	10.0	32.2
24	1982/83	48.3	28.3	17.7	12.1	40.1
25	1983/84	64.7	25.0	12.0	11.0	37.6
26	1984/85	80.2	38.0	12.6	3.3	50.9
27	1985/86	64.3	20.2	11.8	9.3	47.1
28	1986/87	59.9	28.6	16.6	13.5	38.5
29	1987/88	74.8	34.0	13.5	8.6	64.6
30	1988/89	305.0	57.0	19.1	11.6	175.4
31	1989/90	54.1	19.2	13.2	10.2	34.4
32	1990/91	53.7	20.1	10.9	7.7	39.3
	MEAN	103.7	33.8	13.4	9.1	73.9

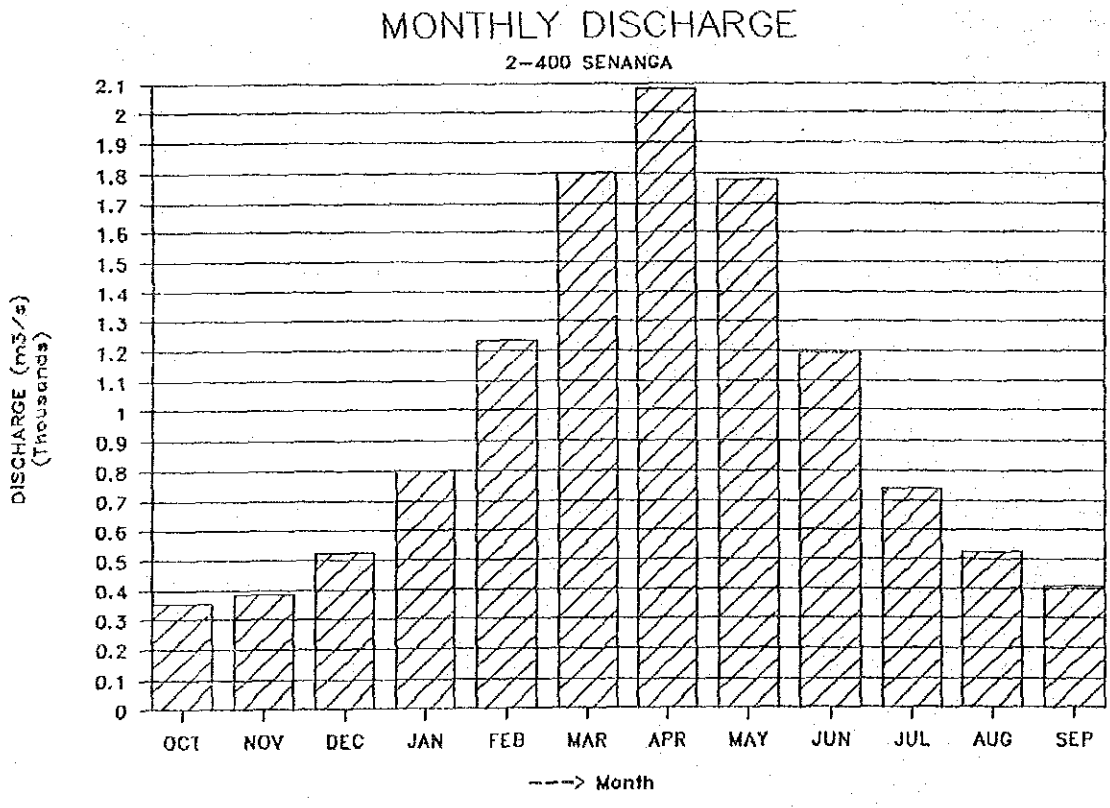

ANNUAL DISCHARGE
2-250 KALABO
DISCHARGE (m3/s)
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
----> Working Year


MONTHLY DISCHARGE
2-250 KALABO
DISCHARGE (m3/s)
240
220
200
180
160
140
120
100
80
60
40
20
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
---> Month

ST.: 2-400 SENANGA FLOW REGIME (m3/s)

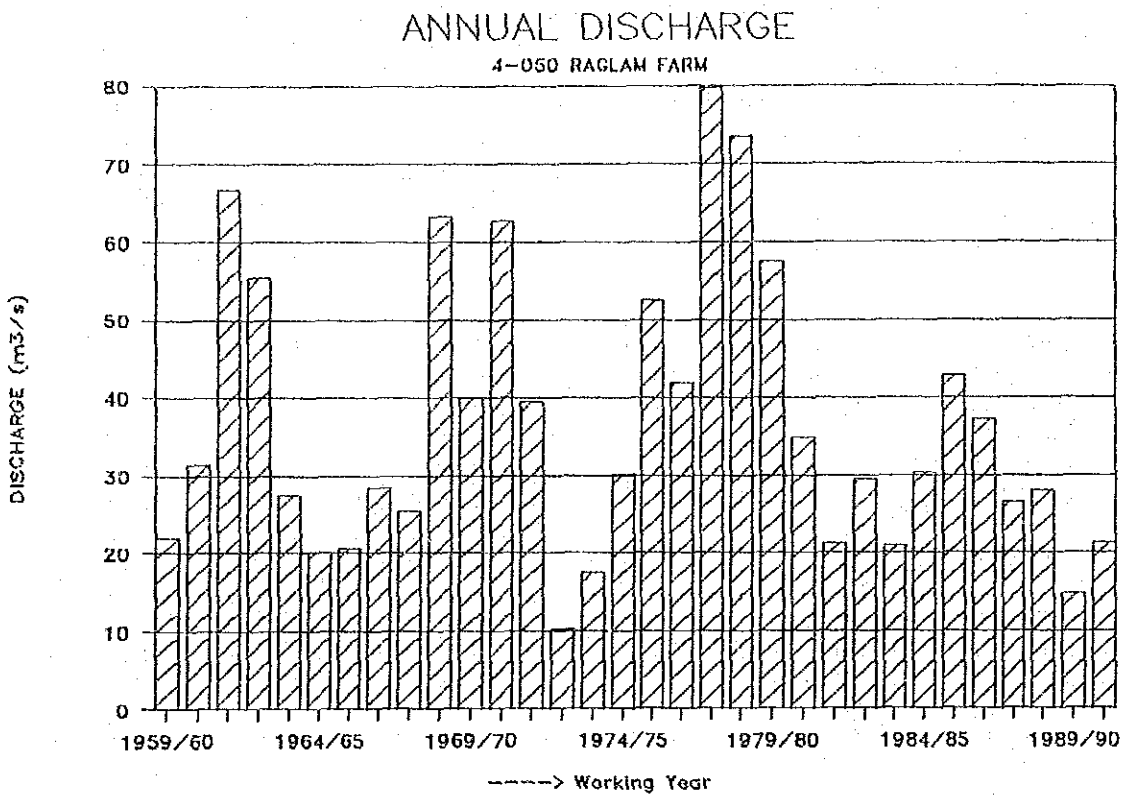
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	1401.5	683.3	402.2	296.9	975.4
2	1960/61	1568.9	789.3	447.0	319.8	1090.4
3	1961/62	1932.0	1010.5	574.4	376.5	1297.4
4	1962/63	2249.6	1066.5	574.4	419.9	1432.6
5	1963/64	1517.7	942.6	543.6	447.0	1081.1
6	1964/65	1417.8	717.8	465.6	385.0	1000.3
7	1965/66	1401.5	741.2	484.5	368.1	1025.3
8	1966/67	1337.2	649.6	411.0	368.1	937.0
9	1967/68	2188.2	969.5	523.5	335.6	1309.1
10	1968/69	1894.0	956.0	574.4	359.9	1343.5
11	1969/70	1782.2	903.0	574.4	428.8	1235.6
12	1970/71	1484.0	777.1	465.6	385.0	1019.5
13	1971/72	1038.3	638.6	402.2	335.6	778.7
14	1972/73	864.2	465.6	343.6	289.5	636.6
15	1973/74	1534.6	553.8	351.7	260.7	887.0
16	1974/75	1875.1	765.1	402.2	274.9	1125.4
17	1975/76	1837.6	741.2	419.9	304.5	1105.5
18	1976/77	1603.5	741.2	475.0	402.2	997.3
19	1977/78	1763.9	864.2	437.9	335.6	1189.8
20	1978/79	1691.7	789.4	630.9	359.9	1199.5
21	1979/80	1756.3	893.9	501.9	374.8	1127.1
22	1980/81	1131.3	691.2	427.9	345.2	937.9
23	1981/82	931.9	593.3	391.0	310.6	698.5
24	1982/83	988.5	597.5	365.6	297.7	691.6
25	1983/84	1007.7	486.4	326.9	272.7	709.5
26	1984/85	1132.7	572.3	436.0	327.6	803.6
27	1985/86	1021.5	494.1	337.1	279.2	753.8
28	1986/87	1184.5	725.9	432.4	314.4	870.1
29	1987/88	1109.5	604.7	370.6	306.0	823.0
30	1988/89	1854.4	717.8	435.1	300.7	1090.4
31	1989/90	978.9	515.6	345.2	310.6	638.4
32	1990/91	1220.9	449.8	328.4	282.9	744.5
	MEAN	1459.4	722.1	443.8	336.7	986.1

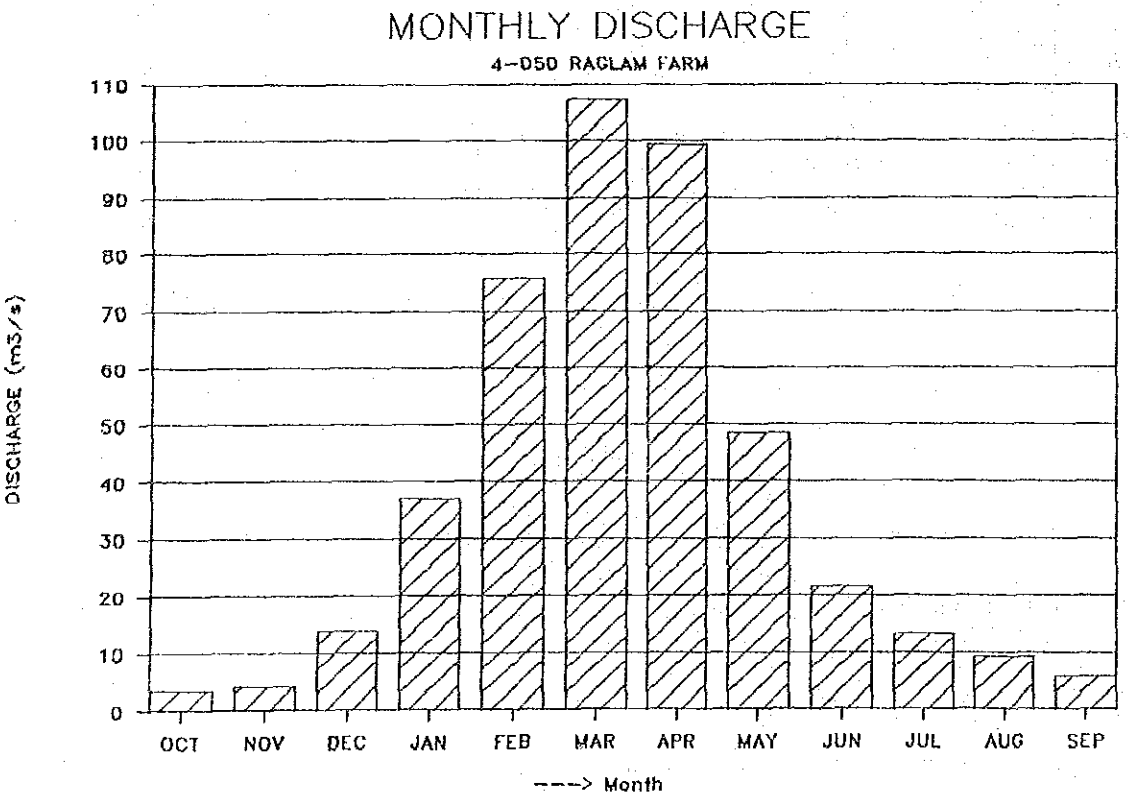

ANNUAL DISCHARGE
2-400 SENANGA
DISCHARGE (m3/s)
(Thousands)
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year


MONTHLY DISCHARGE
2-400 SENANGA
DISCHARGE (m3/s)
(Thousands)
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
---> Month

ST.: 4-050 RAGLAM FARM FLOW REGIME (m3/s)

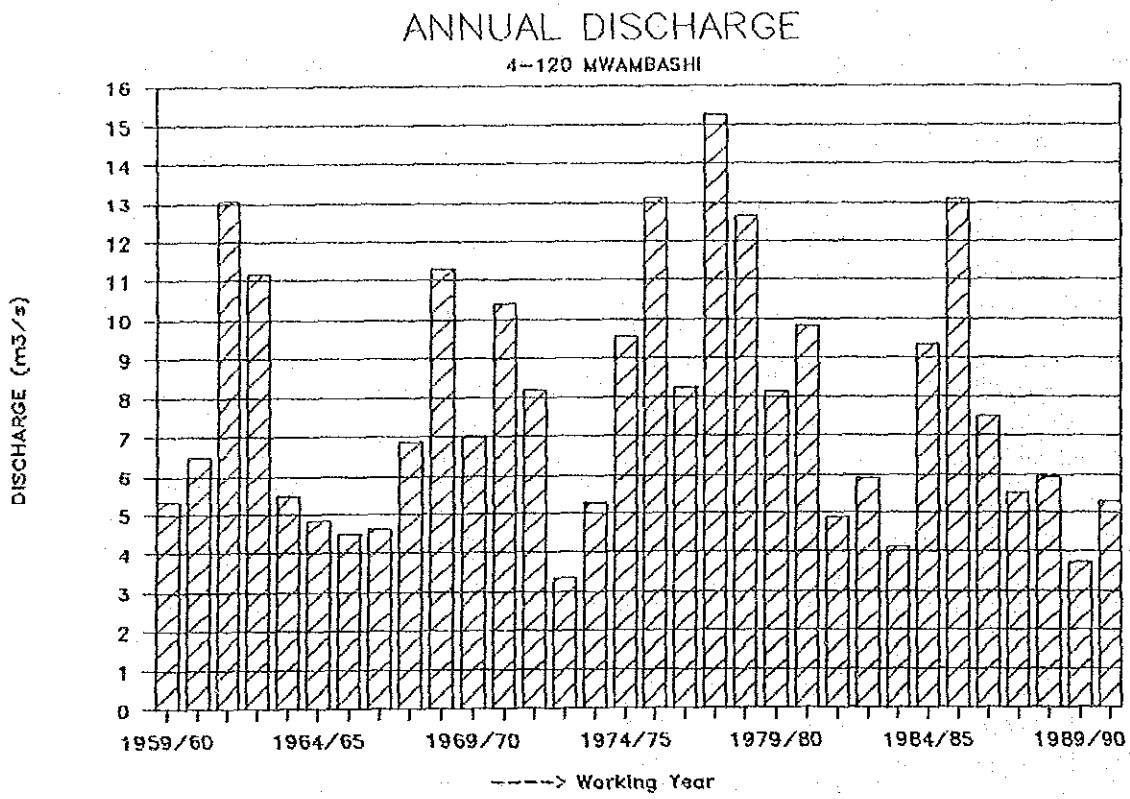
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	21.3	7.2	2.7	1.8	22.0
2	1960/61	54.3	14.5	3.6	1.7	31.3
3	1961/62	110.9	28.1	10.7	2.1	66.7
4	1962/63	102.6	25.5	9.5	3.4	55.3
5	1963/64	37.6	13.4	7.0	4.0	27.5
6	1964/65	32.9	8.5	4.6	2.3	20.2
7	1965/66	24.3	9.5	3.9	2.0	20.6
8	1966/67	28.0	10.2	4.0	1.8	28.3
9	1967/68	42.9	13.6	5.8	3.1	25.5
10	1968/69	117.5	24.6	8.7	2.1	63.1
11	1969/70	56.5	14.6	7.9	5.2	40.0
12	1970/71	106.6	24.7	10.8	3.0	62.7
13	1971/72	51.0	21.9	10.1	5.0	39.5
14	1972/73	15.5	5.5	4.2	2.7	10.2
15	1973/74	21.5	9.6	3.5	2.2	17.4
16	1974/75	30.5	14.0	4.6	2.1	30.1
17	1975/76	86.1	26.8	8.5	2.1	52.5
18	1976/77	60.0	16.0	7.0	2.8	41.9
19	1977/78	137.0	37.4	12.3	1.9	79.8
20	1978/79	112.4	40.4	18.6	4.4	73.4
21	1979/80	90.3	41.9	19.0	6.1	57.5
22	1980/81	45.0	19.1	7.2	4.6	34.7
23	1981/82	36.4	8.2	4.4	2.3	21.2
24	1982/83	39.4	14.4	4.1	2.4	29.3
25	1983/84	30.2	5.9	3.0	1.8	21.0
26	1984/85	50.4	17.1	4.7	2.1	30.3
27	1985/86	63.3	18.2	6.7	2.6	42.8
28	1986/87	48.6	17.7	9.3	4.2	37.2
29	1987/88	38.4	8.6	4.0	2.4	26.4
30	1988/89	44.3	11.5	4.3	2.3	28.0
31	1989/90	21.5	7.2	3.0	2.1	15.0
32	1990/91	35.9	7.5	2.8	1.6	21.4
	MEAN	56.0	17.0	6.9	2.8	36.6

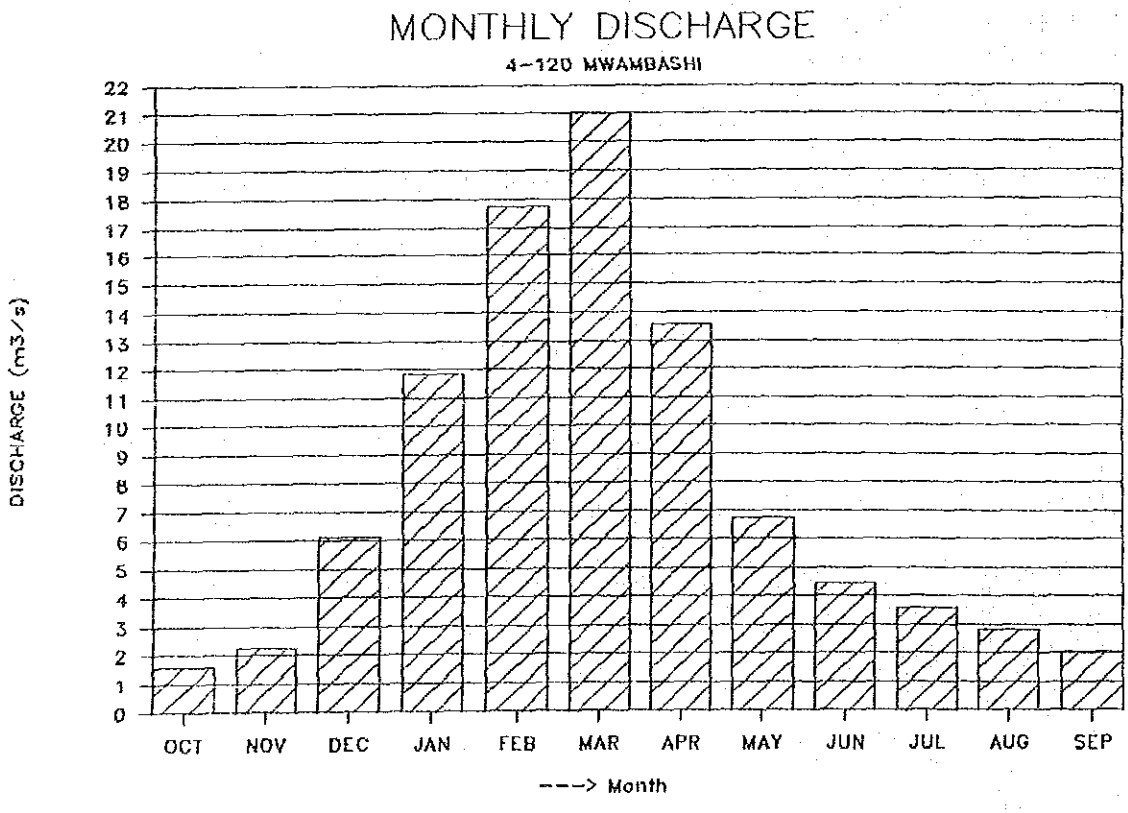

ANNUAL DISCHARGE
4-050 RAGLAM FARM
DISCHARGE (m3/s)
80
70
60
50
40
30
20
10
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year


MONTHLY DISCHARGE
4-050 RAGLAM FARM
DISCHARGE (m3/s)
110
100
90
80
70
60
50
40
30
20
10
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
----> Month

ST.: 4-120 MWAMBASHI FLOW REGIME (m3/s)

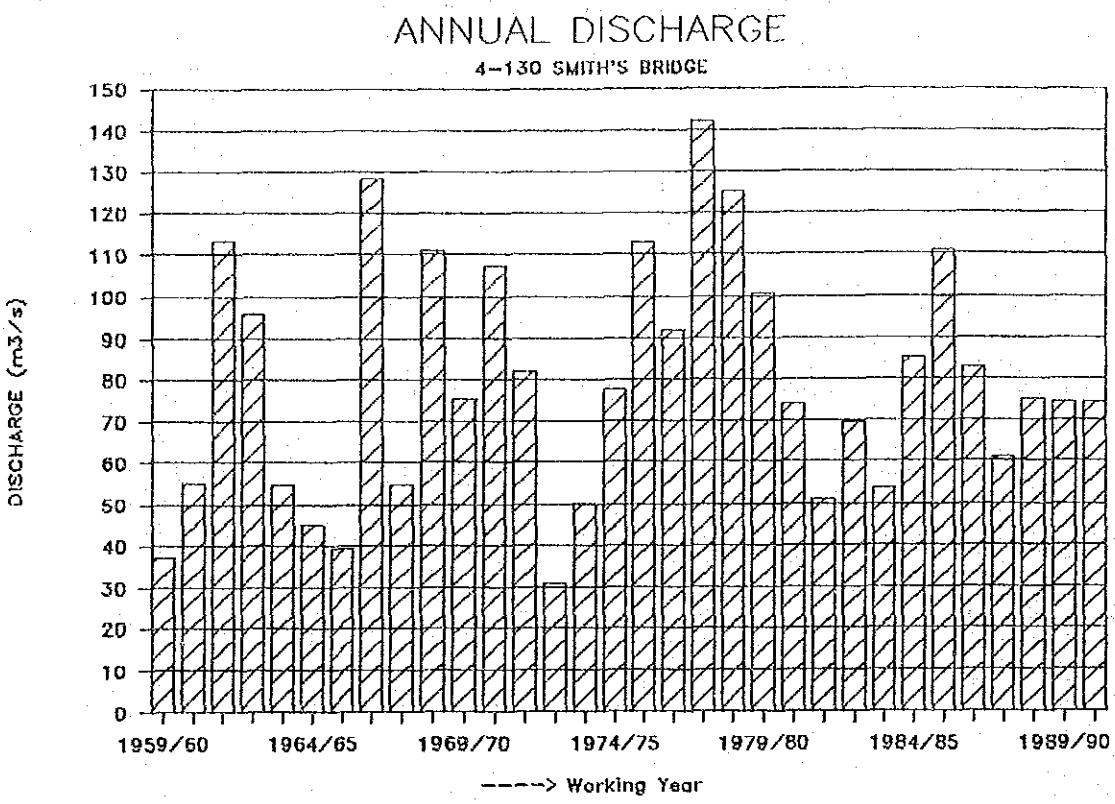
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	5.2	2.5	1.6	0.8	5.4
2	1960/61	8.0	3.8	1.7	0.9	6.5
3	1961/62	18.9	8.6	4.9	0.6	13.1
4	1962/63	17.1	6.8	3.5	1.9	11.2
5	1963/64	6.5	3.4	2.3	1.4	5.5
6	1964/65	7.2	2.6	1.7	1.1	4.8
7	1965/66	4.4	2.6	1.8	1.2	4.5
8	1966/67	5.1	2.5	1.6	0.9	4.6
9	1967/68	8.5	3.9	2.6	1.2	6.9
10	1968/69	16.8	6.7	3.3	1.1	11.3
11	1969/70	9.1	3.7	2.7	1.6	7.0
12	1970/71	17.3	5.2	2.7	1.3	10.4
13	1971/72	12.3	4.9	3.0	1.4	8.2
14	1972/73	3.8	2.0	1.7	1.2	3.4
15	1973/74	7.4	3.3	2.0	1.0	5.3
16	1974/75	15.1	5.0	2.8	1.0	9.6
17	1975/76	18.3	8.1	4.1	1.5	13.1
18	1976/77	10.6	4.6	3.0	1.7	8.2
19	1977/78	21.7	9.1	4.5	1.2	15.2
20	1978/79	19.1	7.8	4.0	2.5	12.6
21	1979/80	11.6	6.1	3.2	1.8	8.1
22	1980/81	7.4	3.6	2.0	1.5	9.8
23	1981/82	5.9	2.7	1.5	1.2	4.9
24	1982/83	6.4	3.0	1.8	1.0	5.9
25	1983/84	6.5	1.9	1.4	1.0	4.1
26	1984/85	15.8	4.9	2.2	0.8	9.3
27	1985/86	19.3	8.2	4.2	1.3	13.1
28	1986/87	10.3	5.2	2.9	1.5	7.5
29	1987/88	7.0	2.5	1.7	1.0	5.5
30	1988/89	9.7	2.9	1.7	1.0	5.9
31	1989/90	4.8	2.1	1.4	1.0	3.7
32	1990/91	7.4	2.0	1.4	0.8	5.3
	MEAN	10.8	4.4	2.5	1.2	7.8

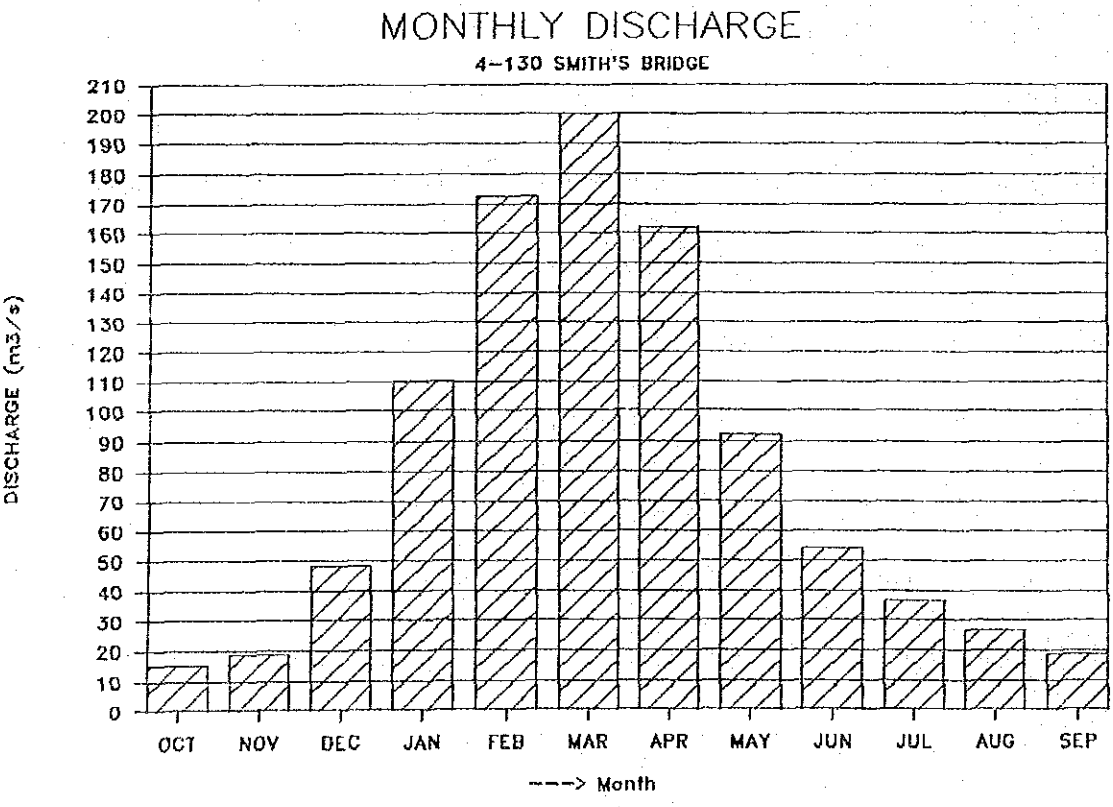

ANNUAL DISCHARGE
4-120 MWAMBASHI
DISCHARGE (m3/s)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year


MONTHLY DISCHARGE
4-120 MWAMBASHI
DISCHARGE (m3/s)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
---> Month

ST.: 4-130 SMITH'S BRIDGE FLOW REGIME (m3/s)

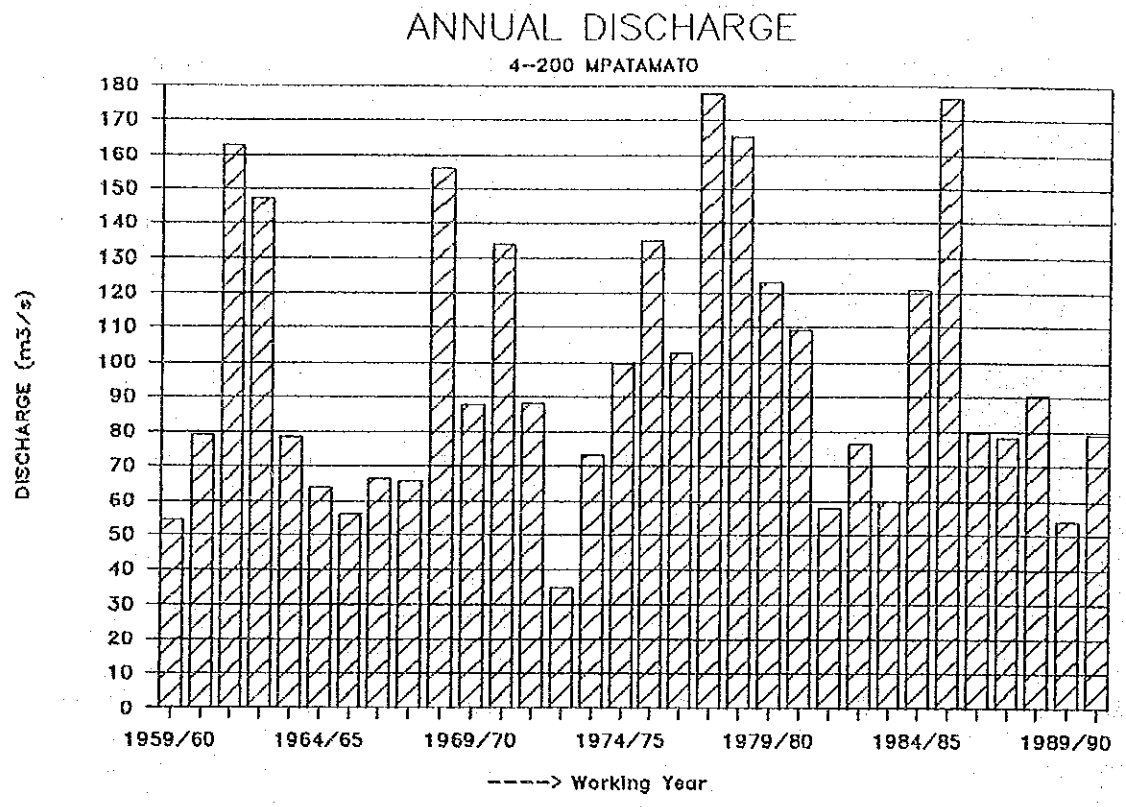
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	41.8	15.3	7.3	2.6	37.3
2	1960/61	86.9	28.9	8.8	3.3	55.2
3	1961/62	183.0	76.0	32.2	5.1	113.5
4	1962/63	167.1	58.8	25.4	13.0	96.0
5	1963/64	83.7	33.2	17.9	10.7	54.7
6	1964/65	77.2	21.5	12.1	6.4	45.3
7	1965/66	48.1	20.2	9.5	6.2	39.3
8	1966/67	207.8	81.6	53.2	39.2	128.5
9	1967/68	88.7	29.7	14.4	8.6	54.5
10	1968/69	200.9	73.8	22.5	4.8	111.2
11	1969/70	117.6	37.1	20.4	11.4	75.3
12	1970/71	194.0	67.3	29.2	8.3	107.4
13	1971/72	129.8	56.3	26.1	13.5	81.9
14	1972/73	41.1	17.7	13.2	7.8	31.0
15	1973/74	75.1	30.2	15.0	6.0	50.3
16	1974/75	118.0	46.7	18.6	6.4	77.7
17	1975/76	184.2	76.0	32.4	8.8	113.0
18	1976/77	142.1	58.6	28.2	17.4	91.7
19	1977/78	212.2	108.1	40.9	14.4	142.0
20	1978/79	190.6	97.3	45.5	25.8	125.2
21	1979/80	149.5	84.6	38.8	27.1	100.6
22	1980/81	114.6	47.0	24.5	14.9	74.1
23	1981/82	77.1	24.5	14.7	9.8	51.2
24	1982/83	90.4	38.8	17.2	9.1	69.6
25	1983/84	90.4	21.2	11.6	8.2	53.6
26	1984/85	147.9	61.8	19.0	6.6	85.1
27	1985/86	177.2	84.1	35.8	10.3	111.0
28	1986/87	118.9	51.1	28.7	15.3	82.5
29	1987/88	95.8	27.3	16.2	9.2	61.3
30	1988/89	120.3	38.8	28.7	8.3	75.1
31	1989/90	106.0	51.9	21.2	8.8	74.3
32	1990/91	92.3	24.9	11.4	5.8	74.3
	MEAN	124.1	49.7	23.1	11.0	79.5

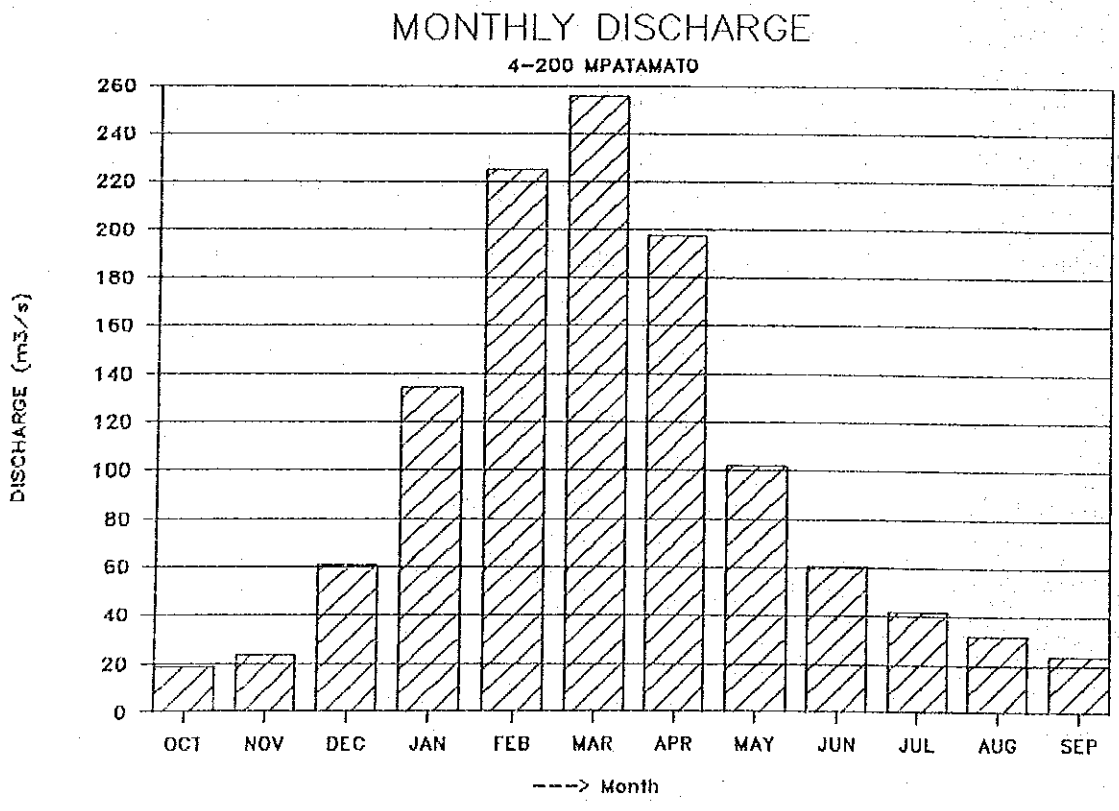

ANNUAL DISCHARGE
4-130 SMITH'S BRIDGE
DISCHARGE (m3/s)
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
----> Working Year


MONTHLY DISCHARGE
4-130 SMITH'S BRIDGE
DISCHARGE (m3/s)
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
---> Month

ST.: 4-200 MPATAMATO FLOW REGIME (m3/s)

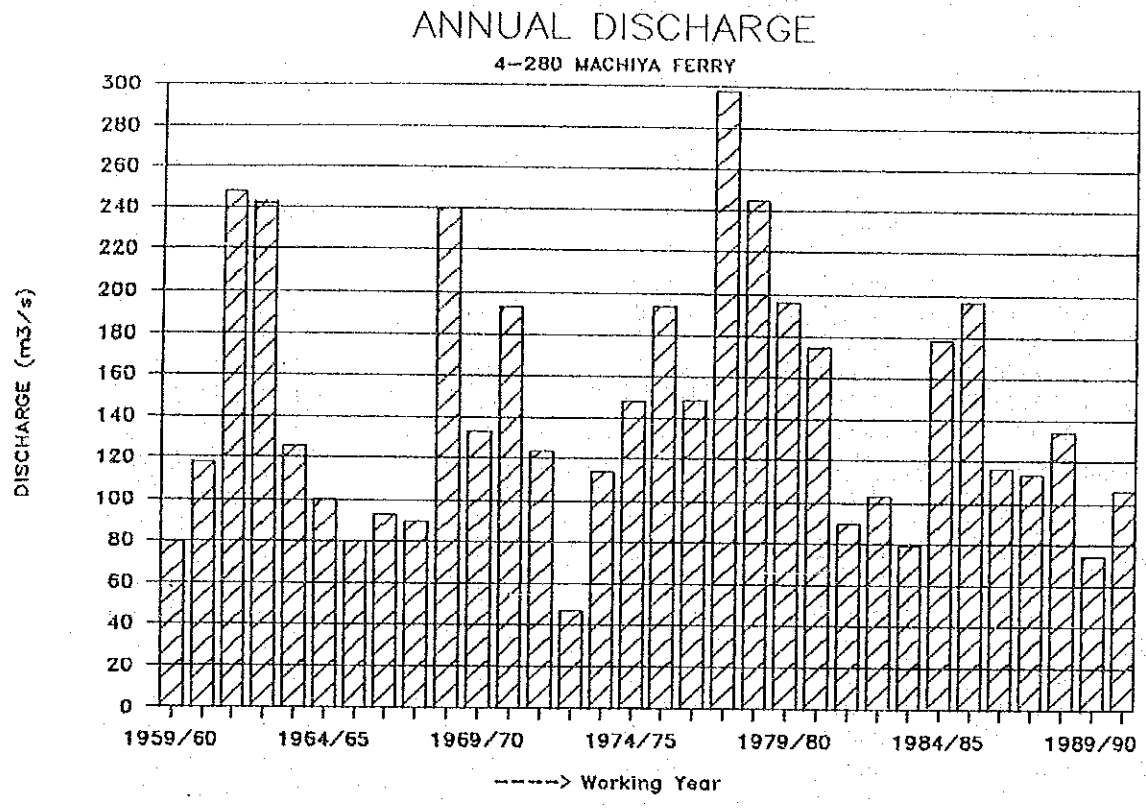
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	62.5	24.5	11.5	7.0	54.5
2	1960/61	111.0	38.2	15.0	7.4	79.0
3	1961/62	259.9	94.3	44.5	10.4	162.6
4	1962/63	259.9	74.7	37.2	18.4	147.3
5	1963/64	99.0	43.4	24.9	16.3	78.4
6	1964/65	96.6	31.5	19.8	13.1	63.9
7	1965/66	55.7	33.3	17.8	12.4	56.1
8	1966/67	76.9	32.5	17.1	10.8	66.6
9	1967/68	90.7	36.5	23.3	14.8	65.5
10	1968/69	249.9	82.1	31.2	11.5	156.2
11	1969/70	131.9	40.1	26.2	15.7	87.9
12	1970/71	214.9	69.5	31.6	12.9	134.1
13	1971/72	138.2	55.4	29.8	17.1	88.2
14	1972/73	41.3	22.1	17.0	12.1	34.9
15	1973/74	96.4	38.8	23.3	11.7	73.4
16	1974/75	160.1	51.8	24.1	10.1	99.7
17	1975/76	201.4	79.5	35.8	13.5	134.9
18	1976/77	151.5	53.7	30.4	21.2	102.8
19	1977/78	278.2	107.0	48.4	14.7	177.6
20	1978/79	234.8	144.4	53.1	27.9	165.3
21	1979/80	189.2	90.8	44.1	30.8	123.0
22	1980/81	157.6	60.8	33.7	22.8	109.3
23	1981/82	77.7	32.0	21.8	15.2	57.9
24	1982/83	93.8	42.1	25.3	15.1	76.5
25	1983/84	92.6	29.1	18.6	13.8	60.1
26	1984/85	208.2	64.7	30.1	13.2	120.9
27	1985/86	266.0	98.4	40.7	21.9	176.4
28	1986/87	209.8	79.8	47.5	19.0	79.6
29	1987/88	85.4	38.2	25.6	19.9	78.0
30	1988/89	152.2	49.8	30.1	21.5	90.4
31	1989/90	84.8	26.4	12.7	7.5	54.1
32	1990/91	125.2	33.1	17.1	8.9	78.9
	MEAN	148.5	56.2	28.4	15.3	97.9

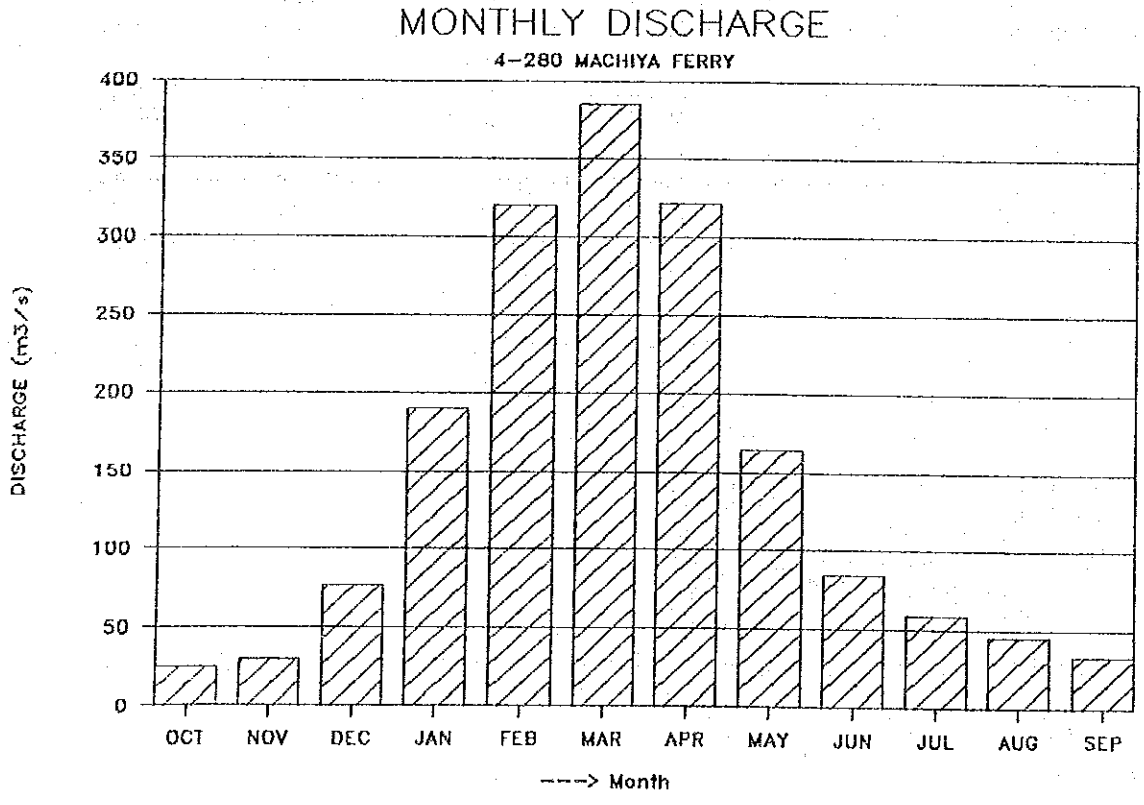

ANNUAL DISCHARGE
4-200 MPATAMATO
DISCHARGE (m3/s)
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year


MONTHLY DISCHARGE
4-200 MPATAMATO
DISCHARGE (m3/s)
260
240
220
200
180
160
140
120
100
80
60
40
20
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
---> Month

ST.: 4-280 MACHIYA FERRY FLOW REGIME (m3/s)

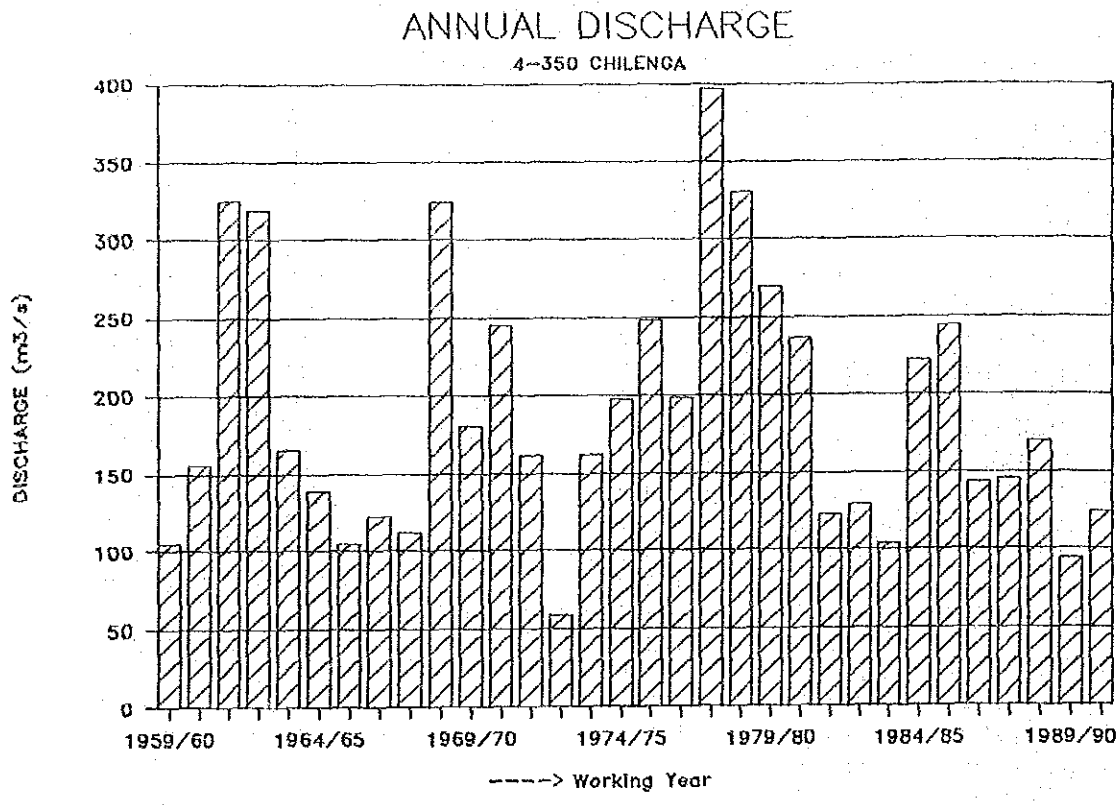
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	92.3	33.1	12.9	6.0	79.7
2	1960/61	167.7	54.5	18.5	6.6	118.0
3	1961/62	399.5	141.8	64.3	11.2	248.0
4	1962/63	435.6	118.4	55.5	26.3	242.9
5	1963/64	158.4	61.2	38.1	26.7	125.7
6	1964/65	148.4	42.8	28.3	18.2	100.5
7	1965/66	79.1	45.6	24.9	16.9	80.0
8	1966/67	110.0	42.6	23.9	13.9	93.3
9	1967/68	117.9	49.1	29.2	19.1	89.9
10	1968/69	397.3	116.8	49.3	14.6	240.2
11	1969/70	225.8	56.5	39.4	23.7	133.3
12	1970/71	342.2	92.3	44.6	20.2	193.1
13	1971/72	193.4	72.4	41.1	25.8	123.8
14	1972/73	55.2	28.1	23.7	17.0	47.2
15	1973/74	149.4	56.2	28.8	14.0	114.2
16	1974/75	254.0	72.2	36.4	15.7	148.0
17	1975/76	286.5	104.1	49.1	18.5	193.7
18	1976/77	212.4	74.1	42.1	31.5	148.6
19	1977/78	526.7	160.9	67.7	23.8	297.5
20	1978/79	359.6	155.9	70.8	39.5	245.6
21	1979/80	298.9	138.0	68.3	41.6	195.8
22	1980/81	265.7	89.6	48.4	36.1	174.2
23	1981/82	107.8	48.5	34.0	26.9	90.0
24	1982/83	108.5	58.8	34.5	24.6	103.2
25	1983/84	129.4	35.3	24.2	19.1	79.3
26	1984/85	321.6	87.1	36.9	16.1	178.2
27	1985/86	324.5	111.0	48.8	24.1	196.2
28	1986/87	169.0	72.7	40.3	27.4	116.5
29	1987/88	124.6	47.1	26.5	17.1	113.8
30	1988/89	237.2	66.8	34.0	19.8	134.4
31	1989/90	107.0	47.0	25.1	19.7	74.1
32	1990/91	179.6	42.1	25.1	12.2	105.8
	MEAN	221.4	75.7	38.6	21.1	144.5

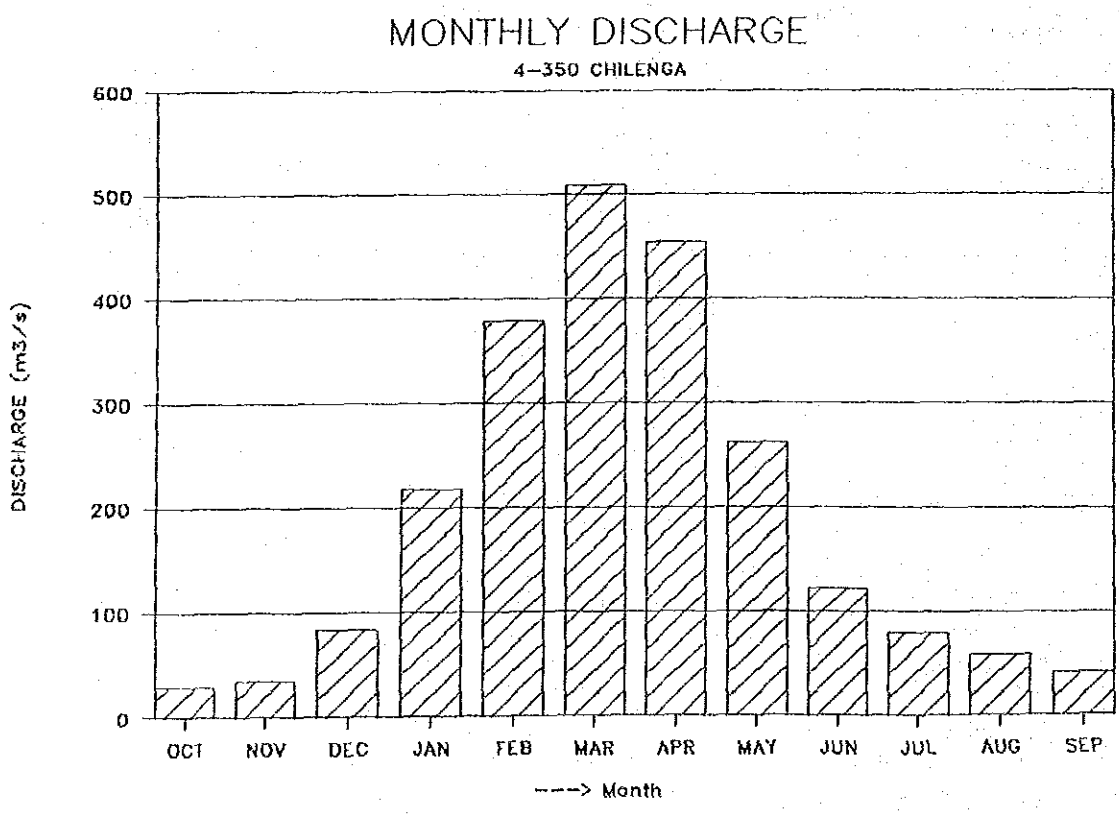

ANNUAL DISCHARGE
4-280 MACHIYA FERRY
DISCHARGE (m3/s)
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year


MONTHLY DISCHARGE
4-280 MACHIYA FERRY
DISCHARGE (m3/s)
400
350
300
250
200
150
100
50
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
----> Month

ST.: 4-350 CHILENGA FLOW REGIME (m3/s)

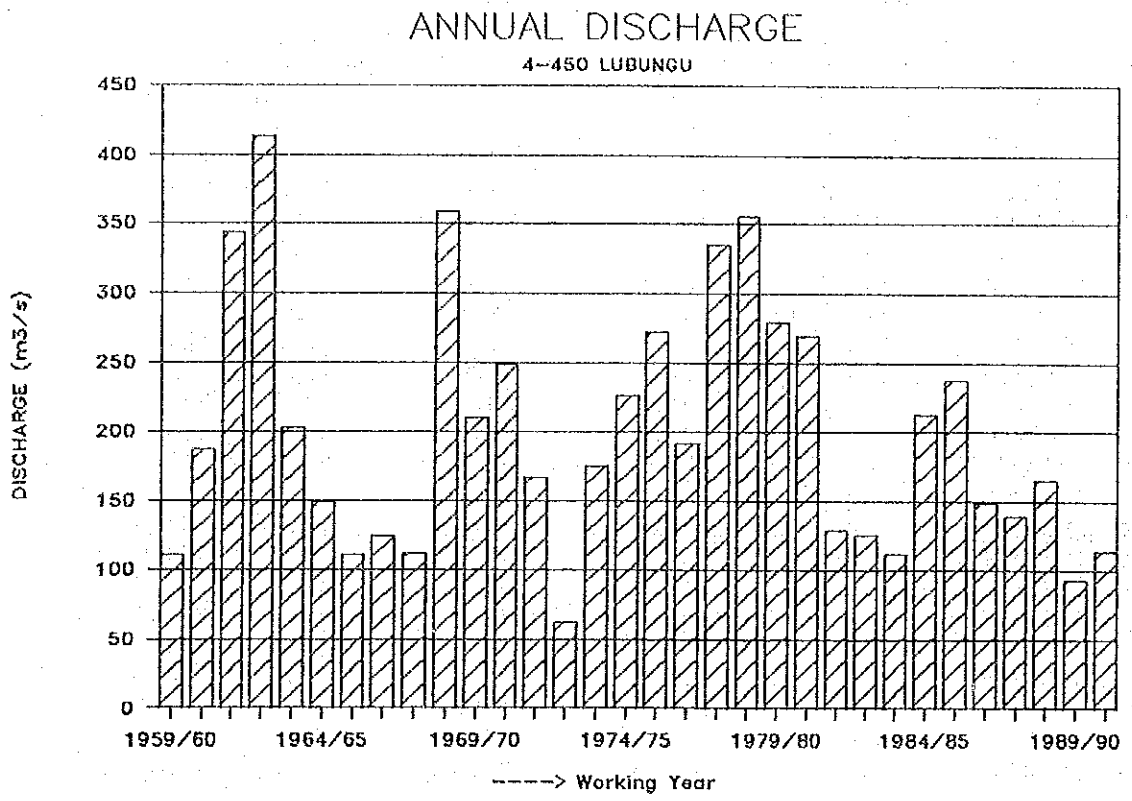
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	121.5	44.0	17.5	8.5	105.0
2	1960/61	220.2	72.0	24.8	9.4	155.2
3	1961/62	523.6	186.3	84.9	15.3	325.3
4	1962/63	570.9	155.6	73.3	35.1	318.6
5	1963/64	208.0	80.7	50.6	35.6	165.0
6	1964/65	215.7	52.4	32.8	23.0	138.9
7	1965/66	133.5	51.8	28.6	21.3	105.1
8	1966/67	157.0	52.4	27.3	17.4	122.5
9	1967/68	180.9	59.2	32.2	22.7	112.0
10	1968/69	577.1	166.9	61.3	18.3	322.9
11	1969/70	302.3	79.5	49.1	30.0	180.5
12	1970/71	431.1	124.1	53.2	24.7	244.6
13	1971/72	249.0	98.6	51.6	29.3	161.2
14	1972/73	76.5	32.1	26.9	20.1	59.5
15	1973/74	218.1	70.8	27.9	17.6	162.2
16	1974/75	363.5	84.4	33.6	15.3	197.8
17	1975/76	396.6	133.1	49.2	17.3	247.7
18	1976/77	256.2	102.6	47.3	31.8	198.5
19	1977/78	712.0	224.0	96.8	27.1	396.2
20	1978/79	467.1	215.4	97.7	54.8	330.2
21	1979/80	399.7	192.5	90.0	54.8	269.7
22	1980/81	318.7	128.3	62.5	44.3	236.5
23	1981/82	165.2	59.6	41.9	30.3	123.1
24	1982/83	152.3	70.8	35.7	26.6	128.8
25	1983/84	184.3	45.7	27.0	21.6	104.4
26	1984/85	399.7	106.6	42.5	18.9	221.9
27	1985/86	432.7	144.6	53.2	25.6	244.4
28	1986/87	212.0	85.8	47.7	30.7	143.2
29	1987/88	220.5	51.1	39.0	20.0	144.9
30	1988/89	264.6	70.2	35.4	24.7	169.1
31	1989/90	153.6	54.4	27.1	21.7	94.4
32	1990/91	210.2	50.5	24.1	16.2	124.1
	MEAN	296.7	98.3	46.6	25.3	189.2

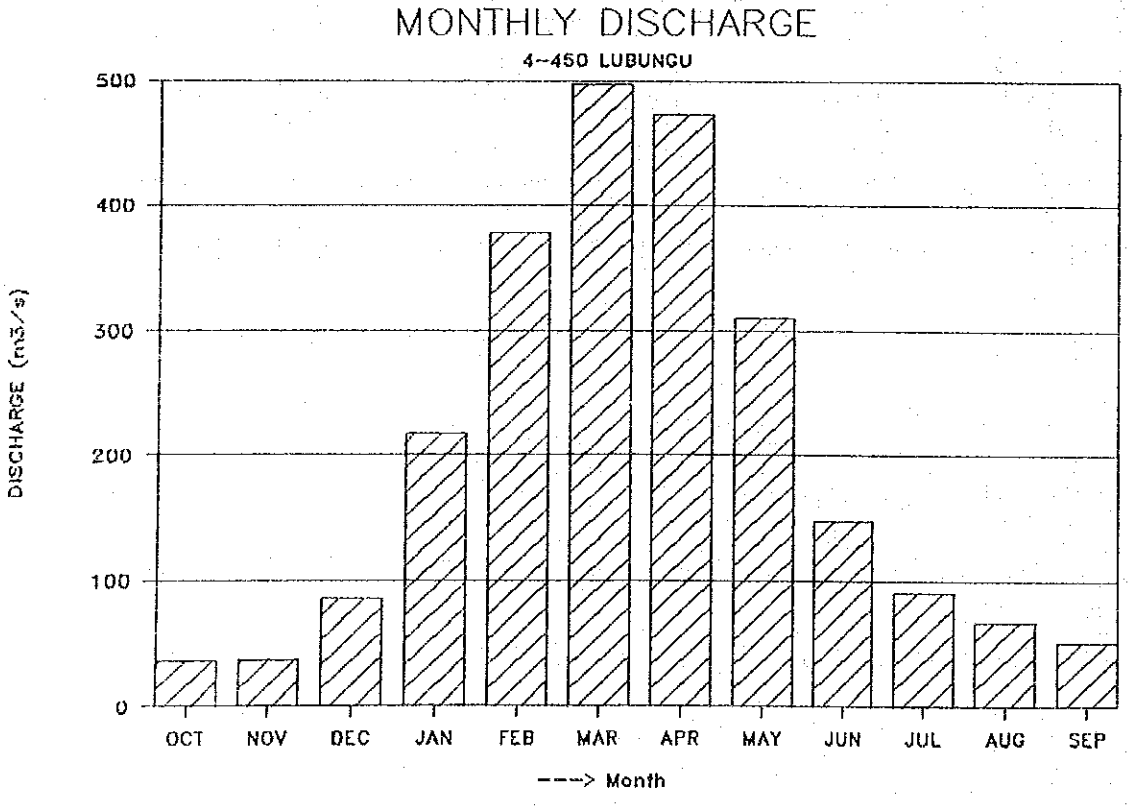

ANNUAL DISCHARGE
4-350 CHILENGA
DISCHARGE (m3/s)
400
350
300
250
200
150
100
50
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year


MONTHLY DISCHARGE
4-350 CHILENGA
DISCHARGE (m3/s)
600
500
400
300
200
100
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
----> Month

ST.: 4-450 LUBUNGU FLOW REGIME (m3/s)

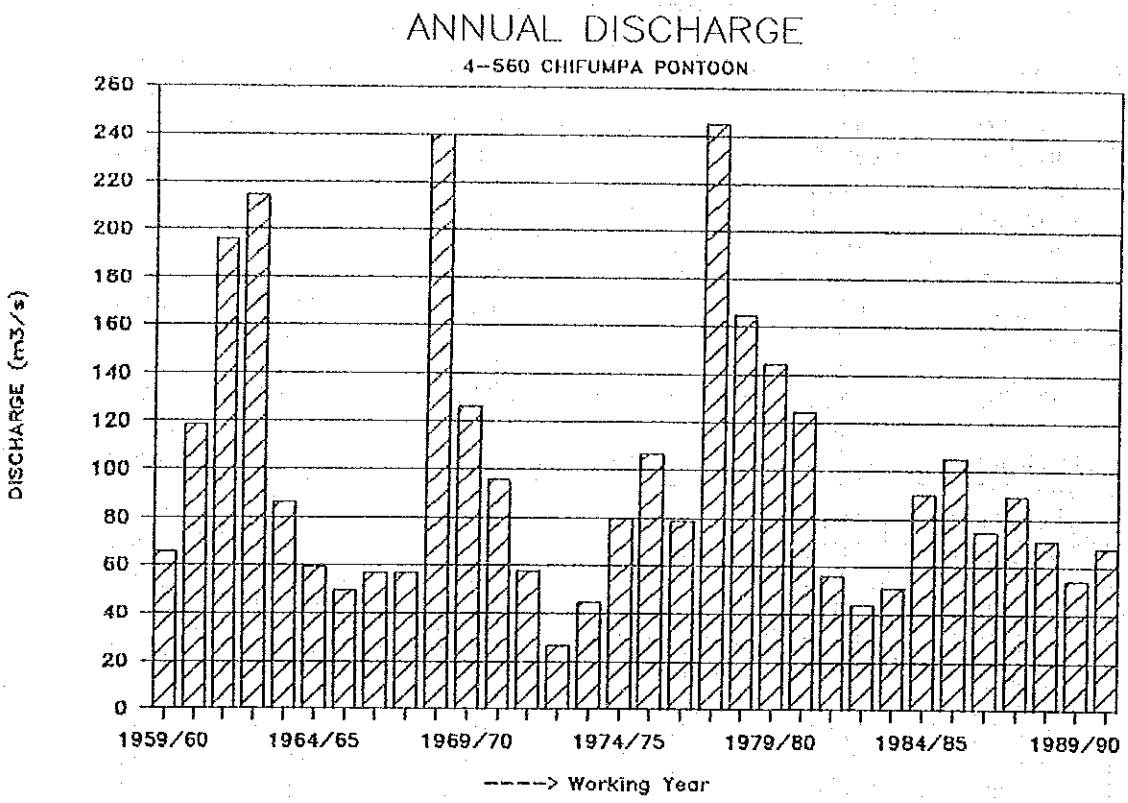
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	133.7	48.0	20.5	8.9	110.7
2	1960/61	327.0	80.8	31.8	12.2	187.4
3	1961/62	597.0	217.2	93.6	20.5	343.4
4	1962/63	683.7	230.0	100.4	43.4	413.8
5	1963/64	262.3	100.4	68.9	45.7	203.1
6	1964/65	245.9	63.3	39.0	27.2	149.1
7	1965/66	129.8	63.3	32.8	20.5	110.5
8	1966/67	166.9	58.5	29.9	13.8	124.4
9	1967/68	172.7	62.5	36.9	23.2	111.8
10	1968/69	620.7	201.3	83.9	14.8	358.9
11	1969/70	373.2	94.9	68.6	37.9	210.0
12	1970/71	462.2	129.8	60.9	25.8	247.7
13	1971/72	278.7	99.7	58.3	34.2	167.3
14	1972/73	82.7	36.9	28.8	18.7	61.8
15	1973/74	298.5	81.4	40.3	13.5	174.9
16	1974/75	418.3	111.7	52.1	18.2	225.8
17	1975/76	460.7	166.4	72.1	22.1	271.4
18	1976/77	275.2	107.4	61.5	45.4	191.1
19	1977/78	648.3	98.7	28.1	6.3	335.3
20	1978/79	516.0	251.3	115.7	64.8	355.3
21	1979/80	466.6	227.9	98.0	65.6	278.6
22	1980/81	414.8	154.3	70.4	52.9	269.3
23	1981/82	164.2	67.5	49.5	35.6	128.4
24	1982/83	158.1	75.0	39.0	29.0	125.1
25	1983/84	192.2	54.4	35.4	24.4	111.3
26	1984/85	349.3	121.4	49.2	30.1	212.0
27	1985/86	400.9	157.2	63.5	29.7	237.3
28	1986/87	216.8	88.4	54.4	34.8	148.2
29	1987/88	225.1	58.8	33.3	18.5	139.0
30	1988/89	300.9	73.3	40.6	20.3	164.2
31	1989/90	145.9	59.9	32.0	22.1	93.1
32	1990/91	182.8	52.1	22.9	18.5	113.9
	MEAN	324.1	109.2	53.5	28.1	199.2

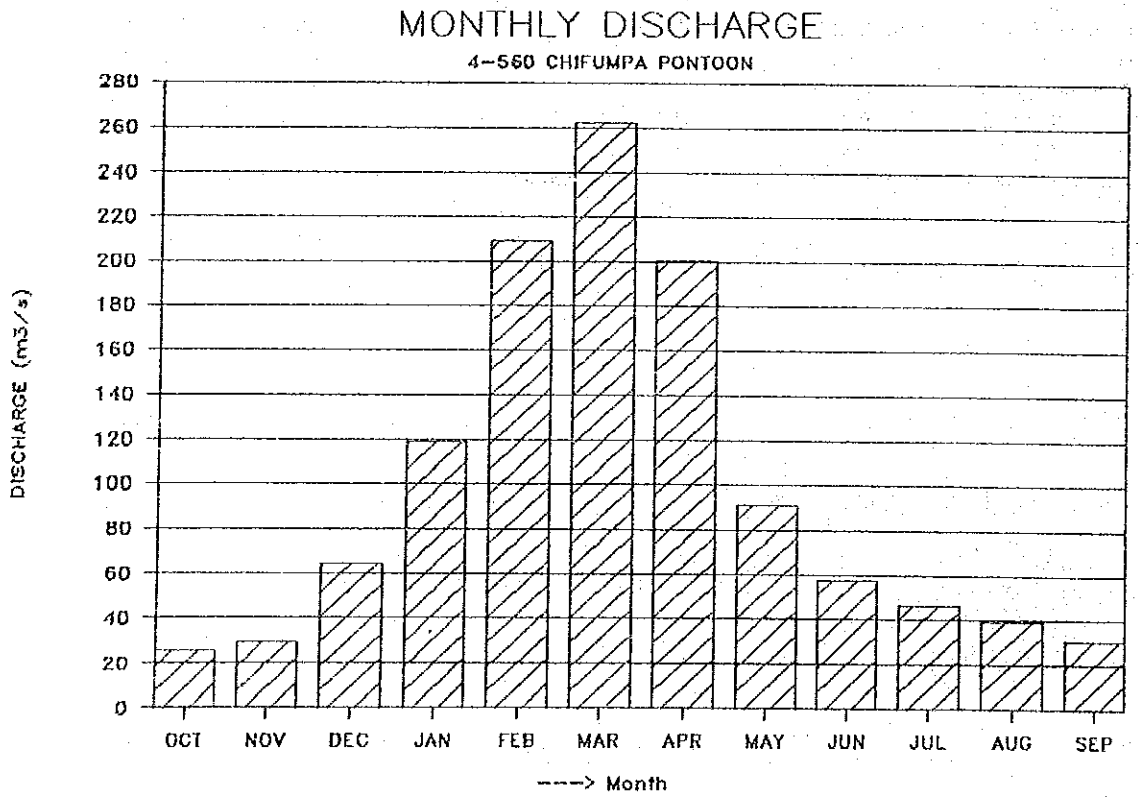

ANNUAL DISCHARGE
4-450 LUBUNGU
DISCHARGE (m3/s)
450
400
350
300
250
200
150
100
50
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year


MONTHLY DISCHARGE
4-450 LUBUNGU
DISCHARGE (m3/s)
500
400
300
200
100
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
----> Month

ST.: 4-560 CHIFUMPA PONTOON FLOW REGIME (m3/s)

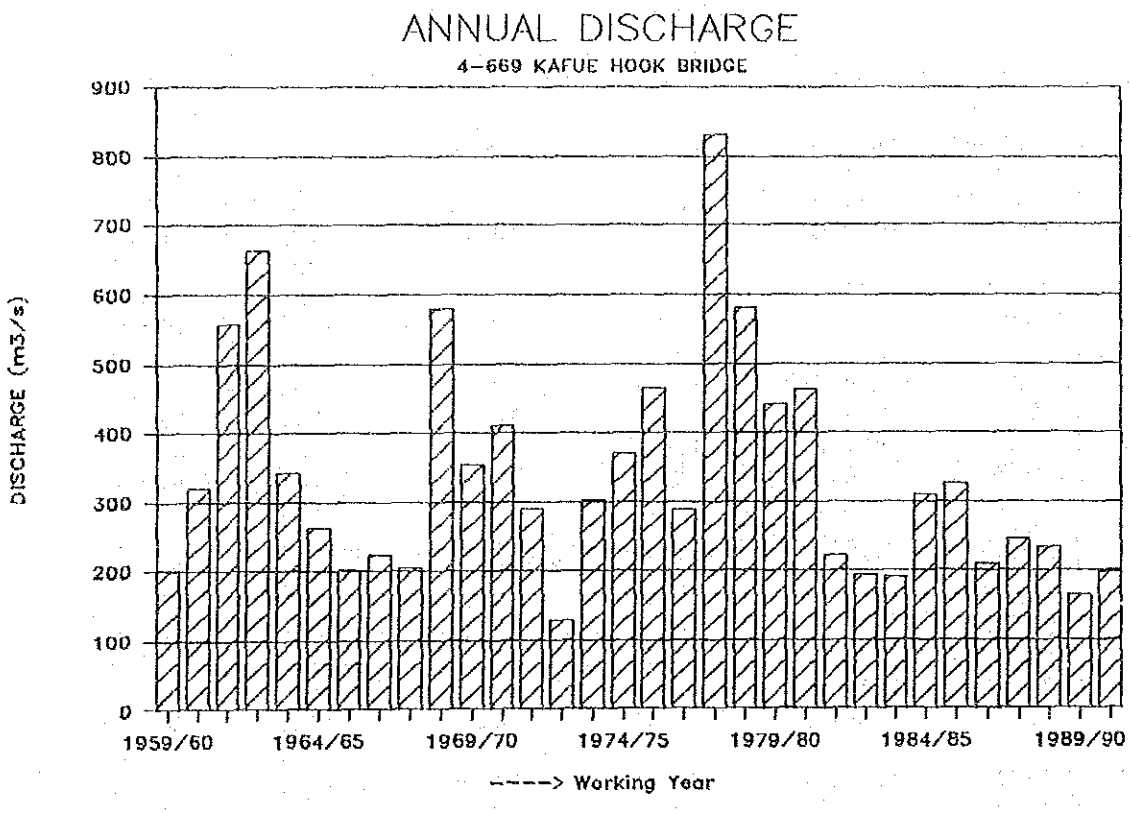
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	57.5	36.6	24.8	18.8	65.0
2	1960/61	100.8	51.8	31.2	20.4	118.4
3	1961/62	194.6	96.2	48.6	24.8	196.0
4	1962/63	364.3	83.1	50.7	27.9	214.9
5	1963/64	110.2	48.6	34.8	26.3	85.8
6	1964/65	69.7	33.0	24.8	20.4	59.2
7	1965/66	52.9	33.0	24.8	19.0	49.8
8	1966/67	59.4	33.5	25.1	18.0	56.5
9	1967/68	64.0	38.9	31.4	21.1	56.2
10	1968/69	301.7	87.1	49.9	20.4	240.3
11	1969/70	170.1	61.5	45.4	29.5	126.4
12	1970/71	131.1	59.6	39.6	25.1	96.3
13	1971/72	74.2	41.4	31.2	24.2	57.5
14	1972/73	29.5	20.3	17.5	14.3	26.3
15	1973/74	59.9	26.2	18.8	12.6	44.4
16	1974/75	142.6	40.6	27.6	13.4	79.4
17	1975/76	133.5	59.4	34.0	16.4	106.9
18	1976/77	98.9	49.7	31.8	25.7	78.9
19	1977/78	319.0	114.8	57.0	19.2	244.8
20	1978/79	226.8	113.4	70.0	38.9	164.9
21	1979/80	238.7	109.6	59.9	41.4	144.8
22	1980/81	117.7	68.5	45.4	33.5	125.0
23	1981/82	61.1	40.9	33.8	26.3	55.8
24	1982/83	53.6	33.5	26.6	21.8	43.9
25	1983/84	66.7	31.9	24.8	21.2	50.6
26	1984/85	391.8	240.8	159.9	29.3	90.1
27	1985/86	403.4	389.3	126.2	40.6	105.2
28	1986/87	103.5	45.4	35.9	25.5	74.3
29	1987/88	98.6	43.2	29.4	20.9	89.2
30	1988/89	82.6	39.4	28.7	23.1	70.6
31	1989/90	63.2	37.7	27.3	22.7	54.2
32	1990/91	90.8	36.2	26.0	19.7	67.7
	MEAN	141.6	70.2	42.0	23.8	98.1

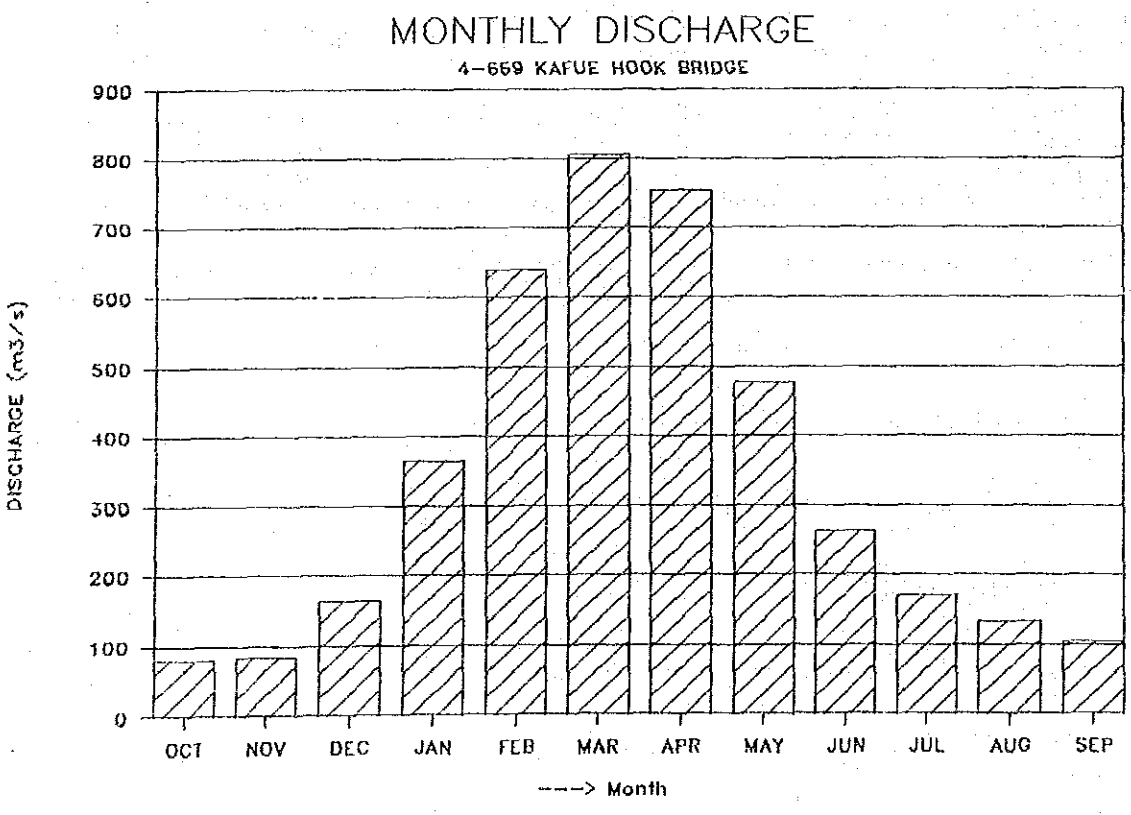

ANNUAL DISCHARGE
4-560 CHIFUMPA PONTOON
DISCHARGE (m3/s)
260
240
220
200
180
160
140
120
100
80
60
40
20
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year


MONTHLY DISCHARGE
4-560 CHIFUMPA PONTOON
DISCHARGE (m3/s)
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
----> Month

ST.: 4-669 KAFUE HOOK BRIDGE FLOW REGIME (m3/s)

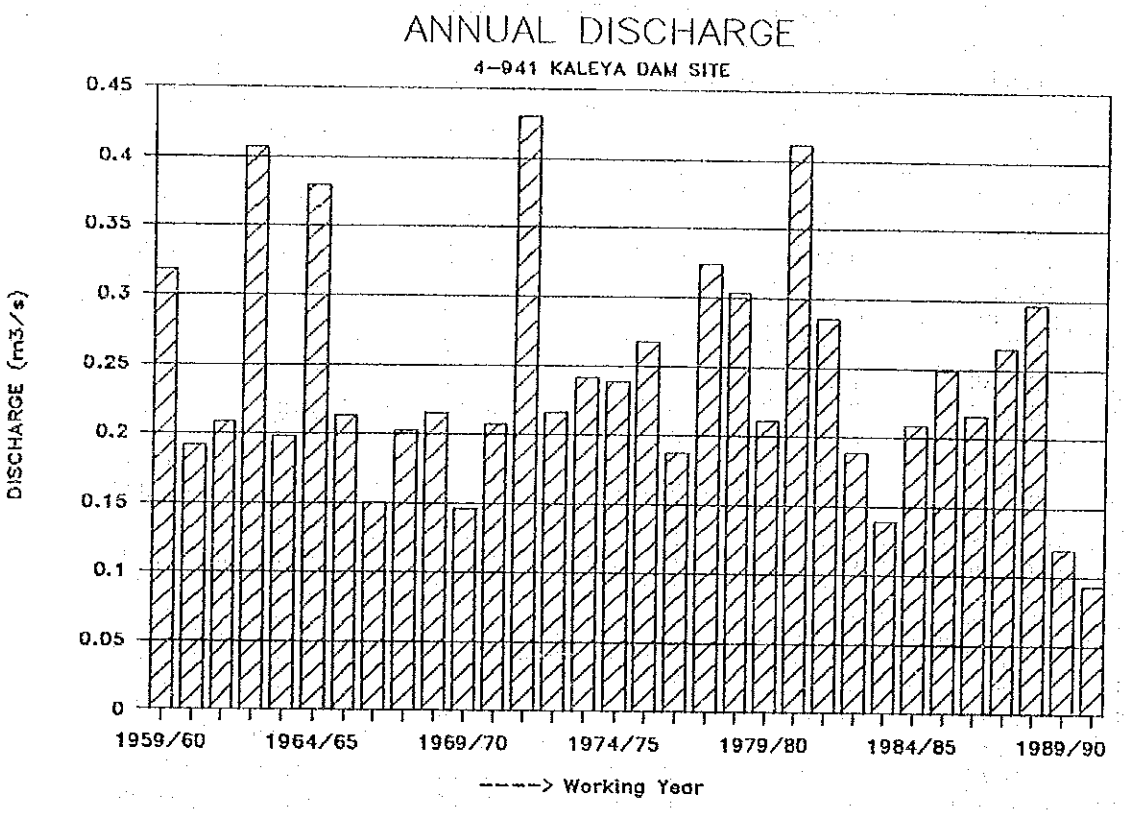
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	237.5	107.3	65.5	47.9	202.5
2	1960/61	531.1	157.1	82.8	53.0	319.0
3	1961/62	41.7	39.1	37.7	36.3	556.0
4	1962/63	1073.0	383.8	186.9	100.3	663.0
5	1963/64	432.8	186.9	139.1	103.8	342.9
6	1964/65	407.9	130.6	93.6	75.7	260.9
7	1965/66	231.5	130.6	84.2	65.5	202.3
8	1966/67	287.9	123.3	79.9	55.4	223.3
9	1967/68	296.7	129.4	90.4	69.4	204.2
10	1968/69	977.2	340.2	161.9	56.8	579.5
11	1969/70	601.3	178.6	138.7	92.0	353.3
12	1970/71	736.4	231.5	126.9	73.5	410.7
13	1971/72	458.6	185.8	122.9	85.7	288.7
14	1972/73	160.0	90.4	78.2	62.8	128.2
15	1973/74	422.6	139.5	80.3	38.5	303.1
16	1974/75	633.6	183.3	94.0	43.0	369.4
17	1975/76	776.4	248.1	129.8	52.2	464.6
18	1976/77	384.0	173.9	113.6	90.3	287.9
19	1977/78	1212.2	512.6	208.4	58.0	831.9
20	1978/79	765.7	387.8	211.2	144.1	580.7
21	1979/80	693.0	347.3	176.5	129.8	439.8
22	1980/81	648.2	243.1	141.8	104.9	461.1
23	1981/82	256.2	126.9	102.3	82.6	221.5
24	1982/83	239.8	134.4	80.4	67.8	193.2
25	1983/84	240.1	134.2	76.8	57.0	189.8
26	1984/85	533.1	173.1	84.3	43.8	310.1
27	1985/86	572.3	196.6	101.6	58.0	324.1
28	1986/87	270.8	138.0	100.3	69.2	209.2
29	1987/88	363.0	114.2	75.7	42.6	245.3
30	1988/89	385.3	121.9	88.8	52.7	233.7
31	1989/90	219.7	101.6	57.5	35.4	163.1
32	1990/91	278.2	81.4	36.9	3.6	196.7
	MEAN	480.2	186.6	107.8	67.2	336.2

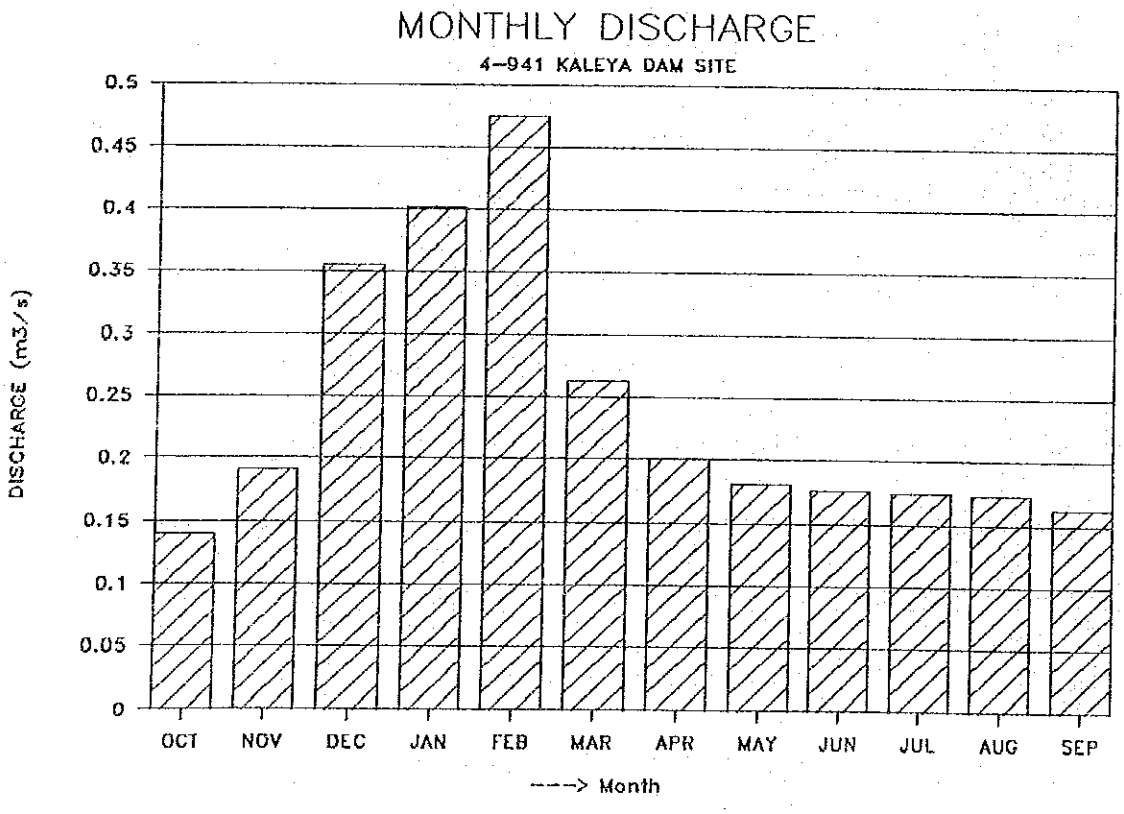

ANNUAL DISCHARGE
4-669 KAFUE HOOK BRIDGE
DISCHARGE (m3/s)
900
800
700
600
500
400
300
200
100
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
----> Working Year


MONTHLY DISCHARGE
4-669 KAFUE HOOK BRIDGE
DISCHARGE (m3/s)
900
800
700
600
500
400
300
200
100
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
---> Month

ST.: 4-941 KALEYA DAM SITE FLOW REGIME (m3/s)

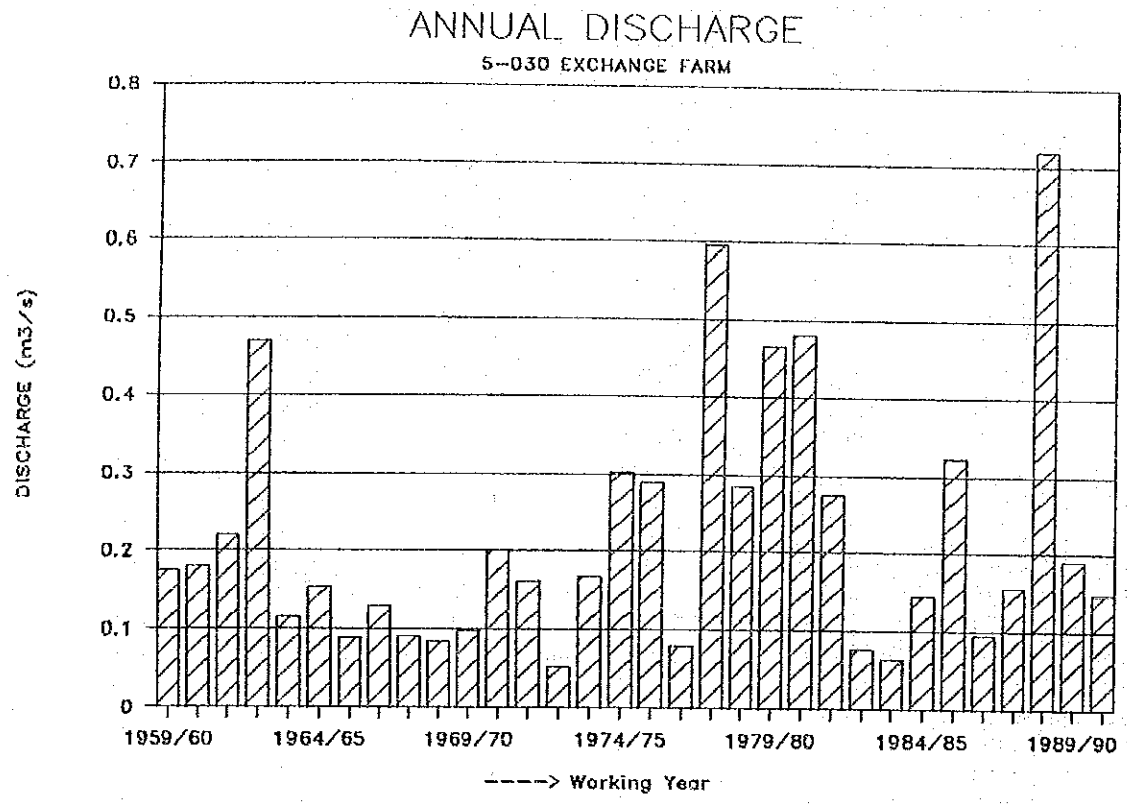
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	0.24	0.18	0.17	0.11	0.32
2	1960/61	0.16	0.14	0.13	0.11	0.19
3	1961/62	0.17	0.17	0.14	0.10	0.21
4	1962/63	0.36	0.27	0.23	0.11	0.41
5	1963/64	0.19	0.17	0.14	0.11	0.20
6	1964/65	0.17	0.13	0.11	0.10	0.38
7	1965/66	0.13	0.11	0.10	0.07	0.21
8	1966/67	0.12	0.10	0.09	0.08	0.15
9	1967/68	0.20	0.19	0.09	0.06	0.20
10	1968/69	0.13	0.11	0.10	0.02	0.22
11	1969/70	0.14	0.11	0.10	0.02	0.15
12	1970/71	0.20	0.20	0.09	0.02	0.21
13	1971/72	0.38	0.32	0.31	0.24	0.43
14	1972/73	0.17	0.16	0.14	0.11	0.22
15	1973/74	0.24	0.21	0.16	0.01	0.24
16	1974/75	0.22	0.20	0.18	0.15	0.24
17	1975/76	0.27	0.24	0.16	0.12	0.27
18	1976/77	0.18	0.16	0.14	0.14	0.19
19	1977/78	0.28	0.22	0.19	0.11	0.32
20	1978/79	0.30	0.25	0.20	0.16	0.30
21	1979/80	0.21	0.20	0.19	0.17	0.21
22	1980/81	0.41	0.33	0.16	0.15	0.41
23	1981/82	0.25	0.22	0.21	0.17	0.29
24	1982/83	0.18	0.16	0.14	0.14	0.19
25	1983/84	0.14	0.13	0.12	0.10	0.14
26	1984/85	0.14	0.13	0.11	0.01	0.21
27	1985/86	0.17	0.15	0.12	0.09	0.25
28	1986/87	0.20	0.20	0.19	0.12	0.22
29	1987/88	0.34	0.21	0.20	0.19	0.26
30	1988/89	0.20	0.03	0.01	0.01	0.30
31	1989/90	0.12	0.11	0.10	0.10	0.12
32	1990/91	0.09	0.09	0.08	0.06	0.09
	MEAN	0.21	0.18	0.14	0.10	0.24

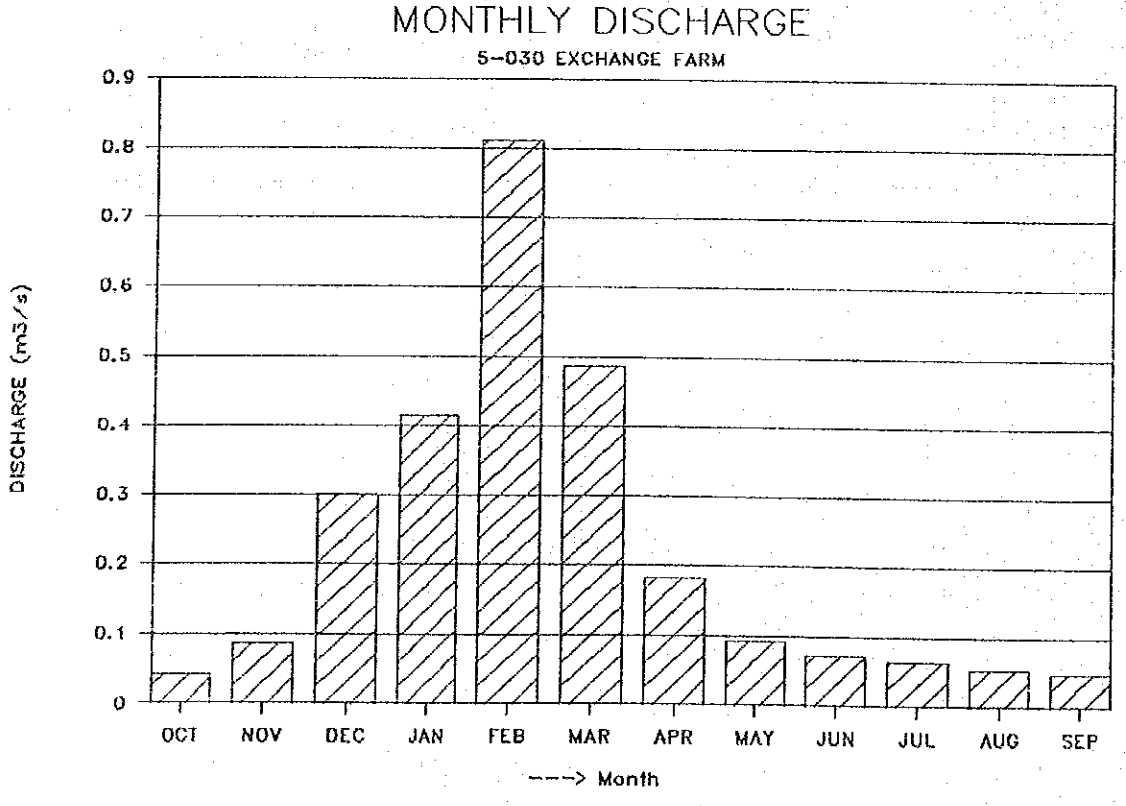

ANNUAL DISCHARGE
4-941 KALEYA DAM SITE
DISCHARGE (m3/s)
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year


MONTHLY DISCHARGE
4-941 KALEYA DAM SITE
DISCHARGE (m3/s)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
----> Month

ST.: 5-030 EXCHANGE FARM FLOW REGIME (m3/s)

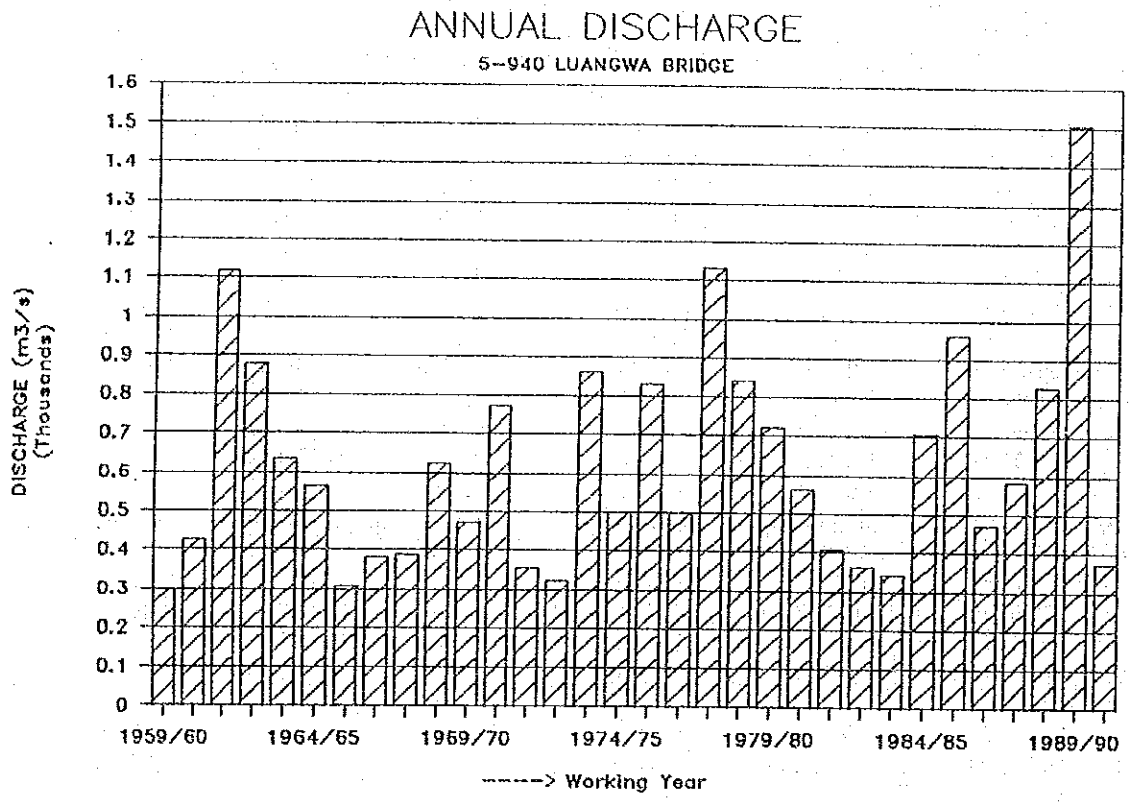
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	0.07	0.03	0.02	0.02	0.18
2	1960/61	0.11	0.04	0.03	0.01	0.18
3	1961/62	0.12	0.07	0.03	0.02	0.22
4	1962/63	0.31	0.11	0.06	0.02	0.47
5	1963/64	0.05	0.02	0.02	0.02	0.11
6	1964/65	0.08	0.03	0.02	0.01	0.15
7	1965/66	0.04	0.02	0.02	0.01	0.09
8	1966/67	0.10	0.05	0.03	0.01	0.13
9	1967/68	0.06	0.03	0.02	0.01	0.09
10	1968/69	0.06	0.03	0.01	0.01	0.08
11	1969/70	0.06	0.04	0.01	0.02	0.10
12	1970/71	0.20	0.20	0.08	0.02	0.20
13	1971/72	0.13	0.04	0.04	0.01	0.16
14	1972/73	0.08	0.03	0.01	0.01	0.05
15	1973/74	0.10	0.05	0.03	0.03	0.17
16	1974/75	0.23	0.10	0.06	0.01	0.30
17	1975/76	0.22	0.10	0.06	0.02	0.29
18	1976/77	0.07	0.03	0.03	0.01	0.08
19	1977/78	0.71	0.17	0.08	0.02	0.60
20	1978/79	0.21	0.07	0.04	0.02	0.28
21	1979/80	0.37	0.12	0.07	0.02	0.46
22	1980/81	0.25	0.10	0.05	0.02	0.48
23	1981/82	0.12	0.05	0.03	0.01	0.28
24	1982/83	0.04	0.01	0.01	0.01	0.08
25	1983/84	0.07	0.07	0.05	0.01	0.06
26	1984/85	0.05	0.02	0.01	0.04	0.14
27	1985/86	0.20	0.11	0.06	0.01	0.32
28	1986/87	0.05	0.02	0.01	0.01	0.10
29	1987/88	0.26	0.13	0.03	0.01	0.16
30	1988/89	0.30	0.14	0.09	0.04	0.72
31	1989/90	0.10	0.04	0.01	0.01	0.19
32	1990/91	0.11	0.05	0.03	0.01	0.15
	MEAN	0.15	0.07	0.04	0.02	0.22

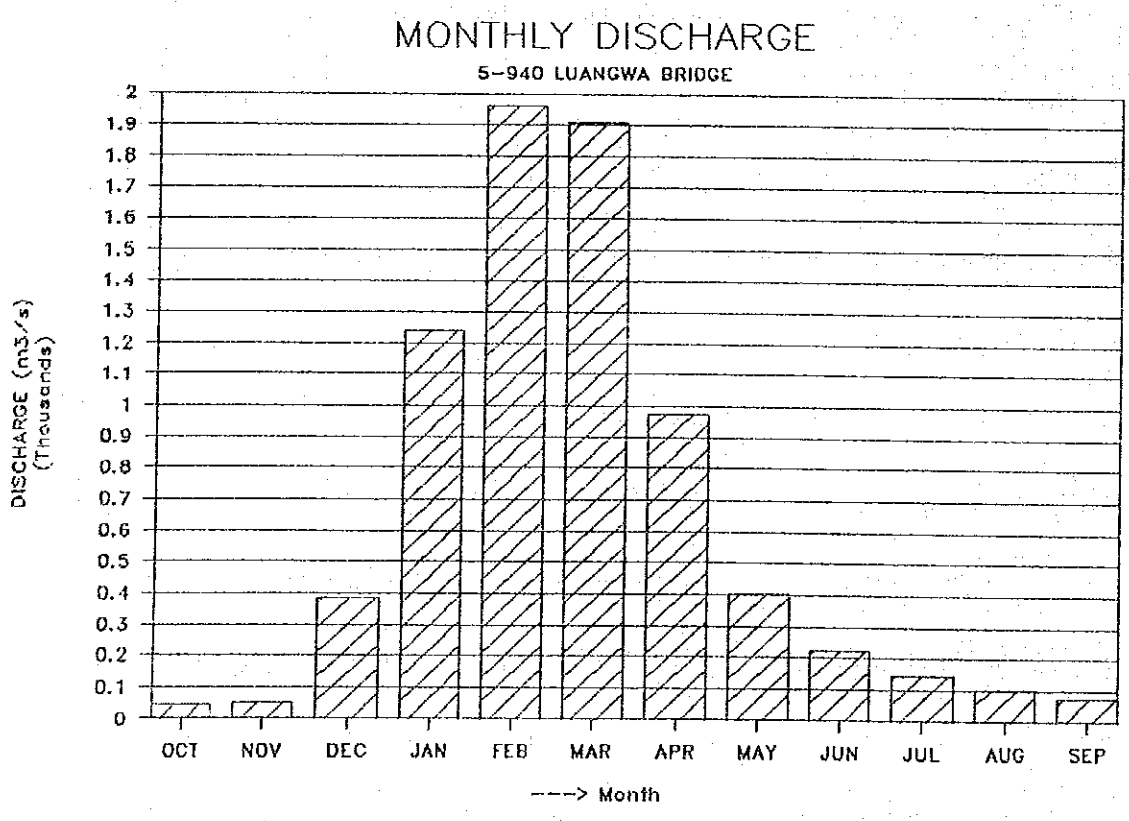

ANNUAL DISCHARGE
5-030 EXCHANGE FARM
DISCHARGE (m3/s)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
----> Working Year

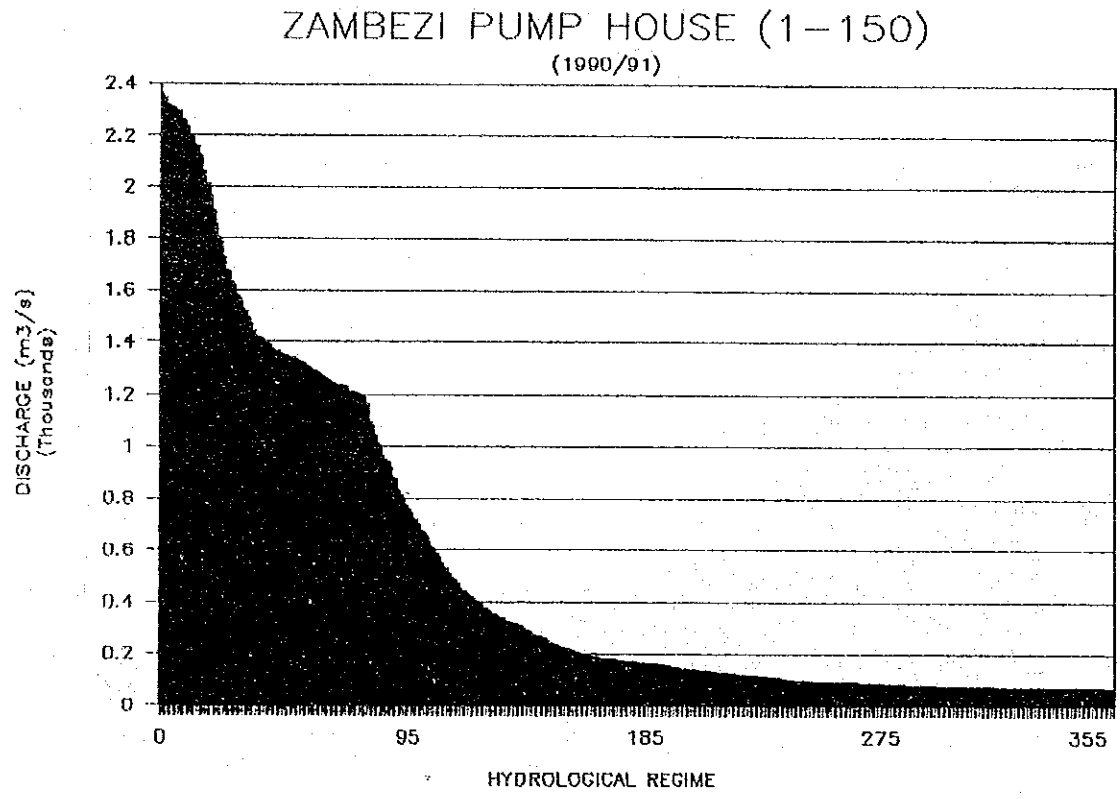

MONTHLY DISCHARGE
5-030 EXCHANGE FARM
DISCHARGE (m3/s)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
---> Month

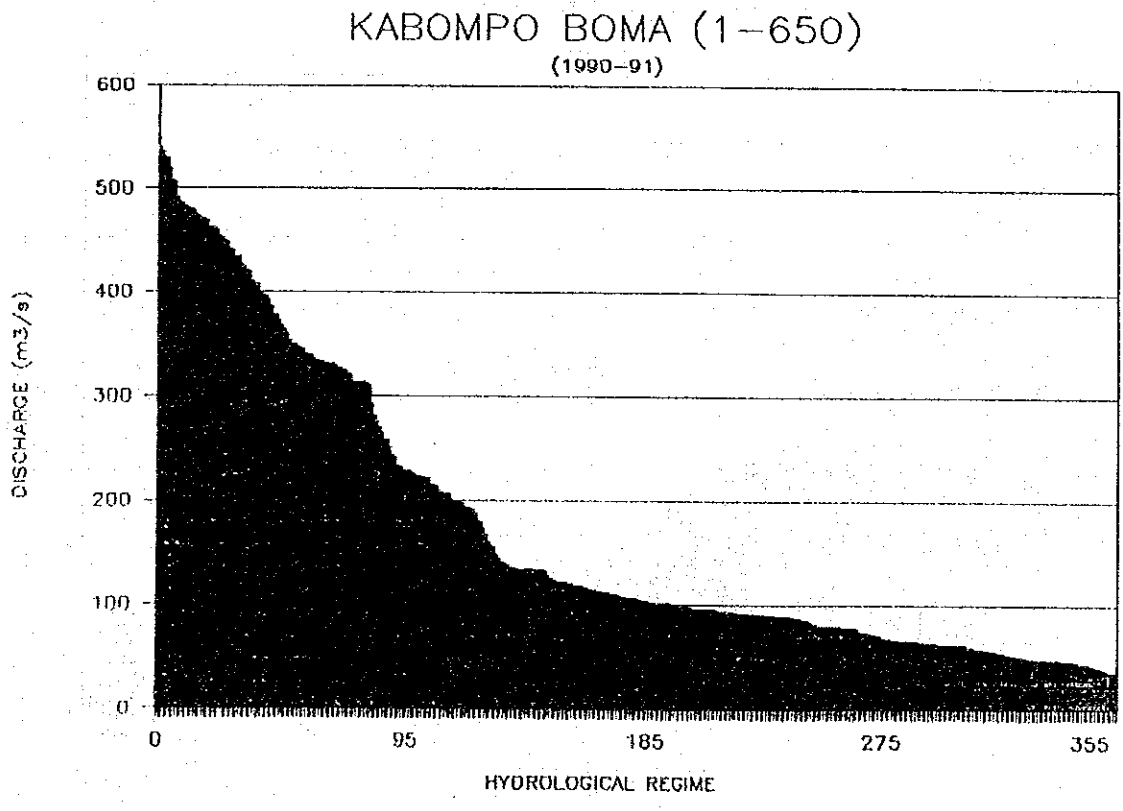
ST.: 5-940 LUANGWA BRIDGE FLOW REGIME (m3/s)

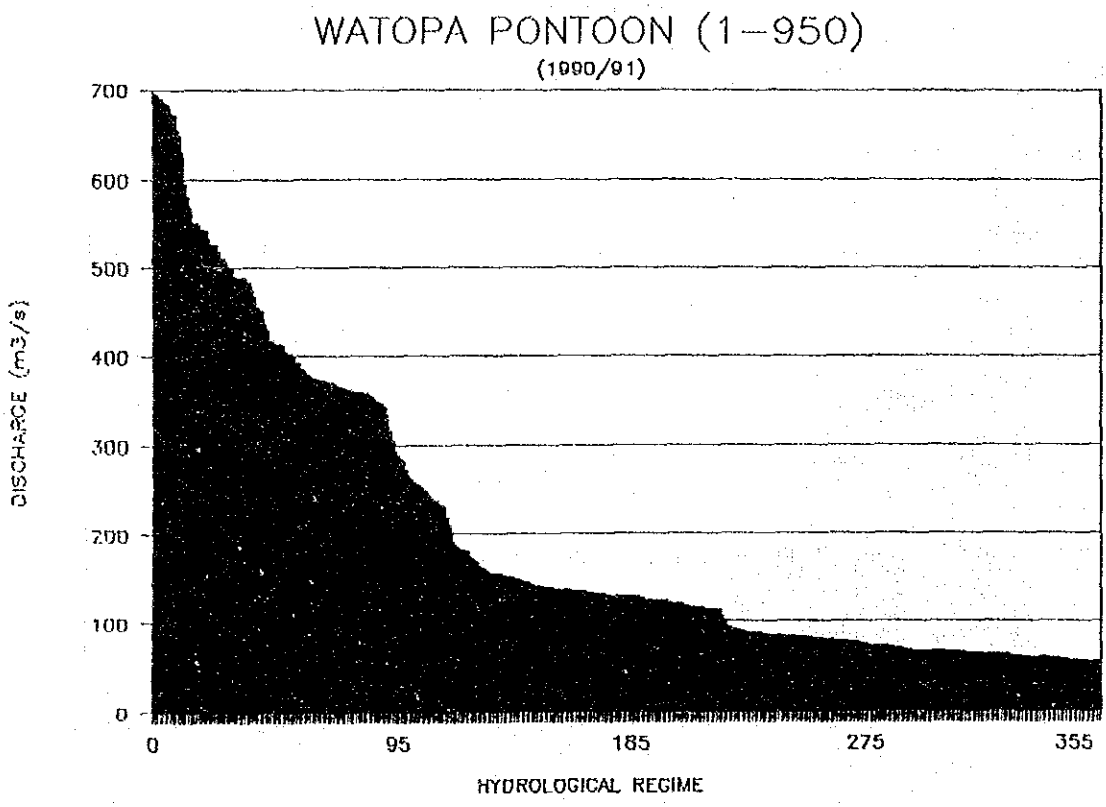
NO	YEAR	Q(95days)	Q(185day)	Q(275day)	Q(355day)	MEAN
1	1959/60	404.7	85.4	22.6	0.5	301.3
2	1960/61	516.1	123.9	47.3	6.9	427.3
3	1961/62	1894.1	251.6	99.0	24.9	1116.6
4	1962/63	1292.8	290.5	113.6	38.1	875.3
5	1963/64	689.7	175.8	94.4	54.0	633.4
6	1964/65	846.8	163.5	85.4	32.4	566.3
7	1965/66	315.1	89.8	57.6	20.4	308.5
8	1966/67	530.1	151.1	74.4	11.4	380.8
9	1967/68	427.8	172.1	90.7	55.4	388.1
10	1968/69	1124.3	232.5	116.7	58.3	623.1
11	1969/70	627.9	150.5	81.5	43.2	470.2
12	1970/71	960.5	232.5	99.0	60.5	773.5
13	1971/72	494.8	172.1	104.3	63.1	356.7
14	1972/73	381.2	168.4	93.5	73.2	323.4
15	1973/74	1047.3	228.2	80.2	53.0	861.2
16	1974/75	741.6	197.1	3.8	0.1	500.8
17	1975/76	1042.7	366.6	5.4	0.1	831.5
18	1976/77	844.1	104.3	10.3	0.7	499.6
19	1977/78	1598.0	250.8	64.6	34.4	1132.2
20	1978/79	1249.0	582.5	223.3	15.0	842.2
21	1979/80	879.1	512.6	160.3	62.7	722.1
22	1980/81	629.1	158.1	75.2	54.0	563.1
23	1981/82	371.2	86.3	45.4	30.8	407.1
24	1982/83	355.8	103.8	44.1	25.8	362.7
25	1983/84	507.5	111.6	48.6	20.4	342.5
26	1984/85	960.5	214.8	106.7	41.0	706.6
27	1985/86	1575.4	315.1	147.6	60.5	962.1
28	1986/87	711.0	186.0	118.7	92.1	469.5
29	1987/88	482.3	156.9	87.2	66.9	582.2
30	1988/89	1366.9	212.0	79.0	44.1	830.5
31	1989/90	2188.7	191.9	89.4	0.0	1505.4
32	1990/91	570.0	142.5	67.5	44.2	372.6
	MEAN	863.3	205.7	82.4	37.1	626.2

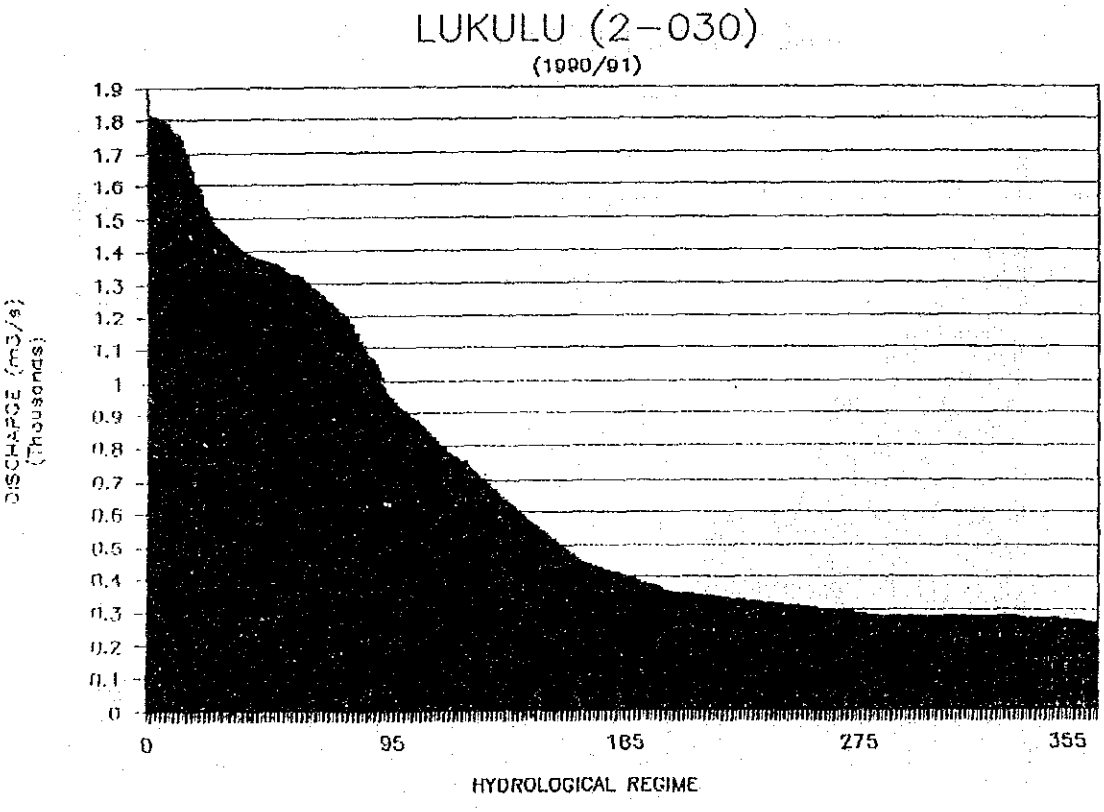

ANNUAL DISCHARGE
5-940 LUANGWA BRIDGE
DISCHARGE (m3/s)
(Thousands)
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1959/60
1964/65
1969/70
1974/75
1979/80
1984/85
1989/90
-----> Working Year

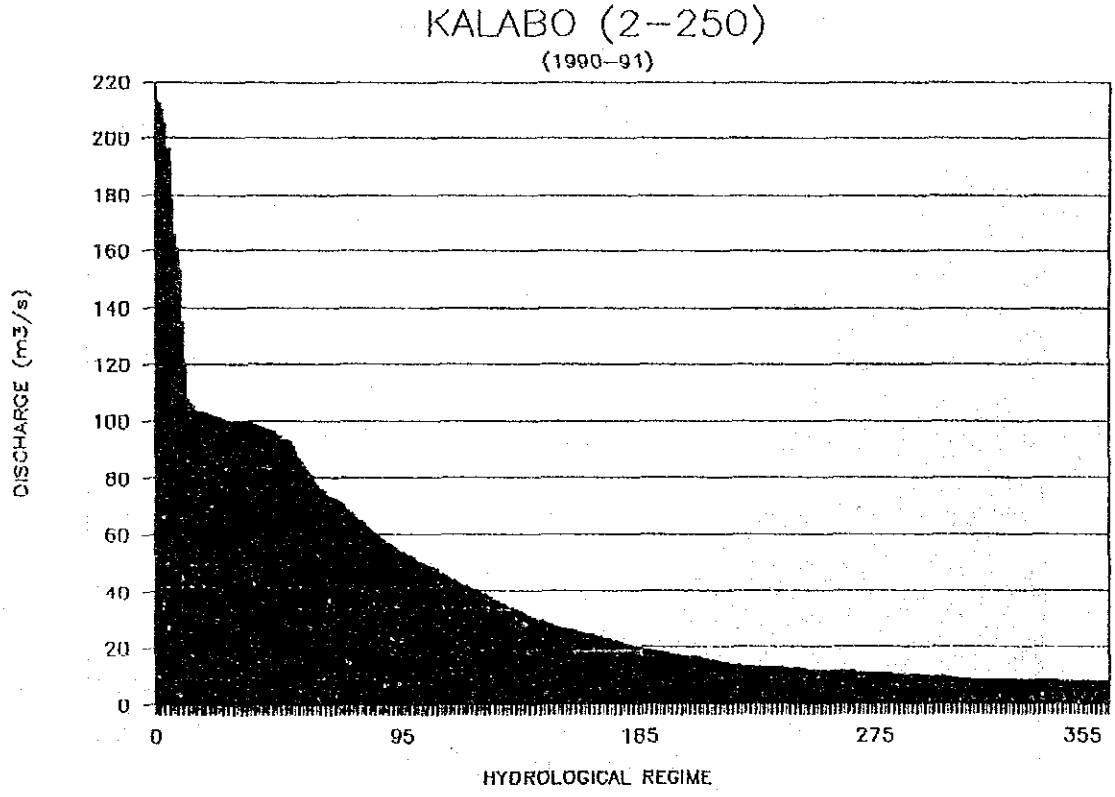

MONTHLY DISCHARGE
5-940 LUANGWA BRIDGE
DISCHARGE (m3/s)
(Thousands)
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
---> Month

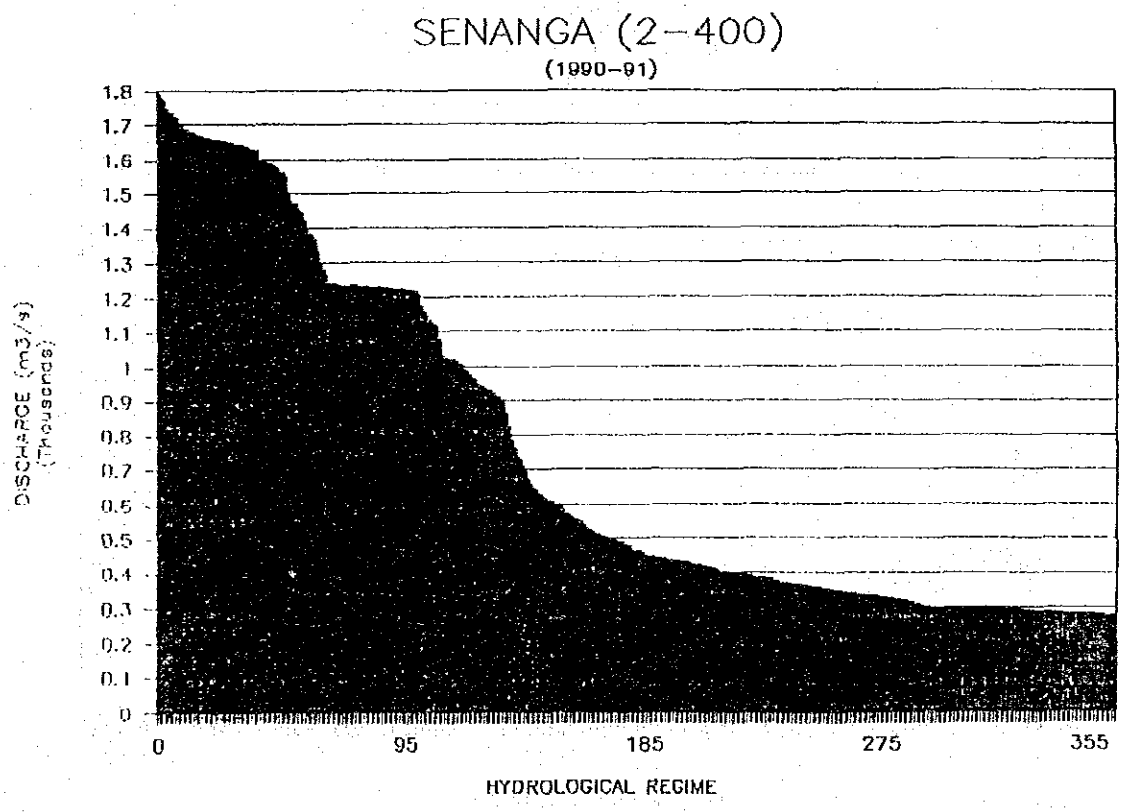

ZAMBEZI PUMP HOUSE (1-150)
(1990/91)
DISCHARGE (m3/s)
(Thousands)
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
95
185
275
355
HYDROLOGICAL REGIME

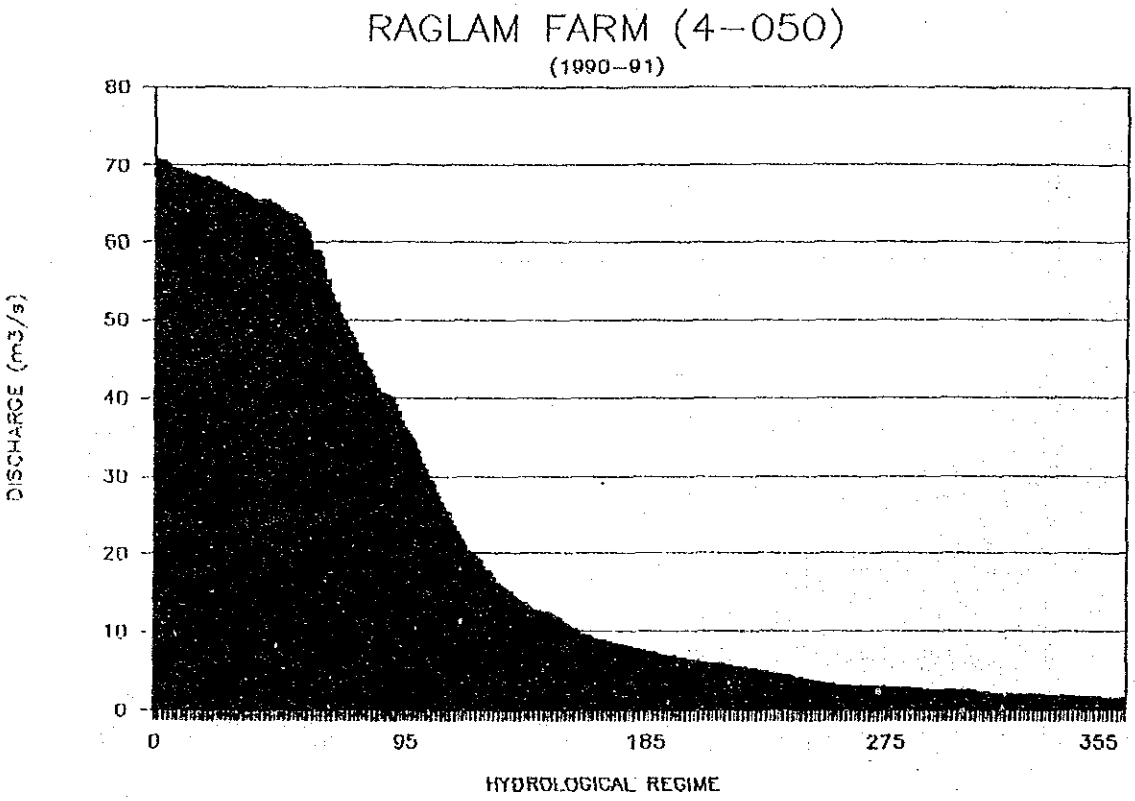

KABOMPO BOMA (1-650)
(1990-91)
DISCHARGE (m3/s)
600
500
400
300
200
100
0
0
95
185
275
355
HYDROLOGICAL REGIME

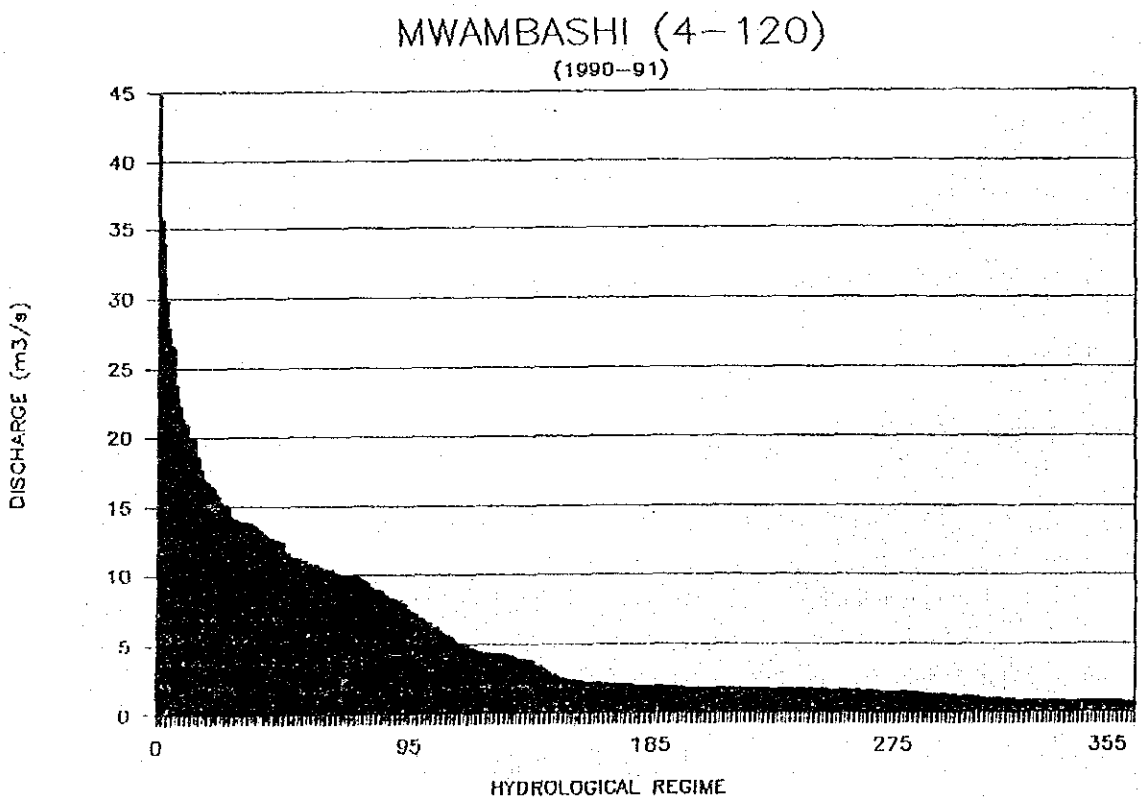

WATOPA PONTOON (1-950)
(1990/91)
DISCHARGE (m3/s)
700
600
500
400
300
200
100
0
0
95
185
275
355
HYDROLOGICAL REGIME


LUKULU (2-030)
(1990/91)
DISCHARGE (m3/s)
(Thousands)
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
95
185
275
355
HYDROLOGICAL REGIME


KALABO (2-250)
(1990-91)
DISCHARGE (m3/s)
220
200
180
160
140
120
100
80
60
40
20
0
0
95
185
275
355
HYDROLOGICAL REGIME

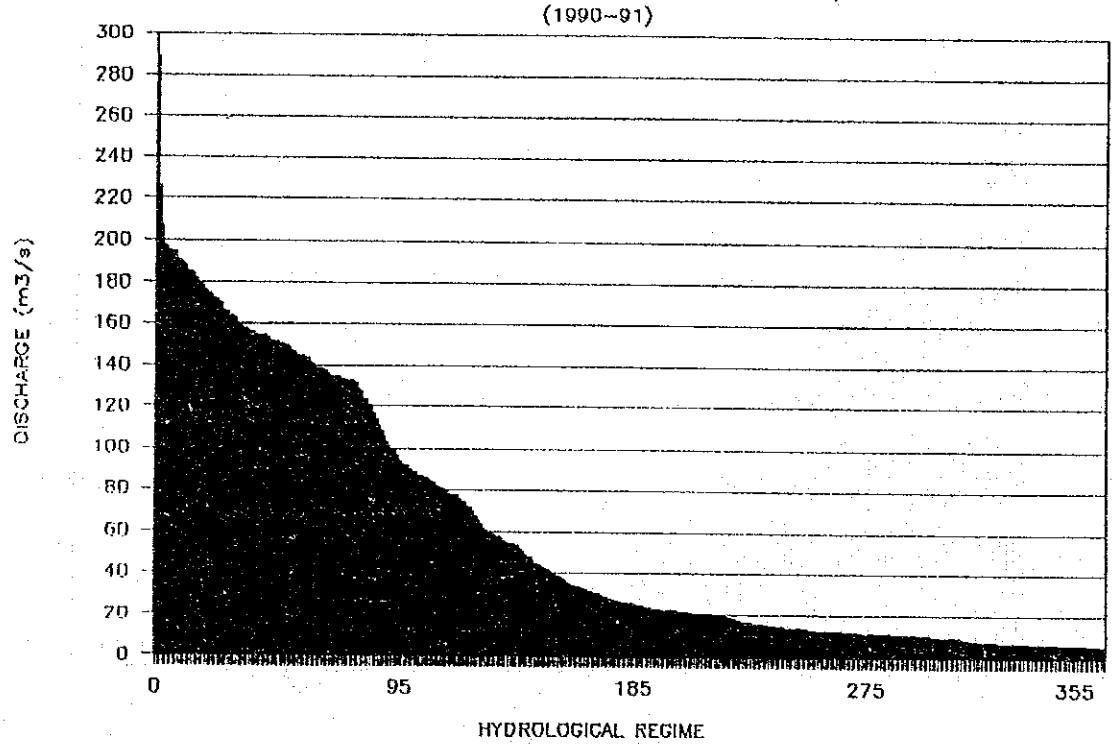

SENANGA (2-400)
(1990-91)
DISCHARGE (m3/s)
(Thousands)
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
95
185
275
355
HYDROLOGICAL REGIME


RAGLAM FARM (4-050)
(1990-91)
DISCHARGE (m3/s)
80
70
60
50
40
30
20
10
0
0
95
185
275
355
HYDROLOGICAL REGIME


MWAMBASHI (4-120)
(1990-91)
DISCHARGE (m3/s)
45
40
35
30
25
20
15
10
5
0
0
95
185
275
355
HYDROLOGICAL REGIME

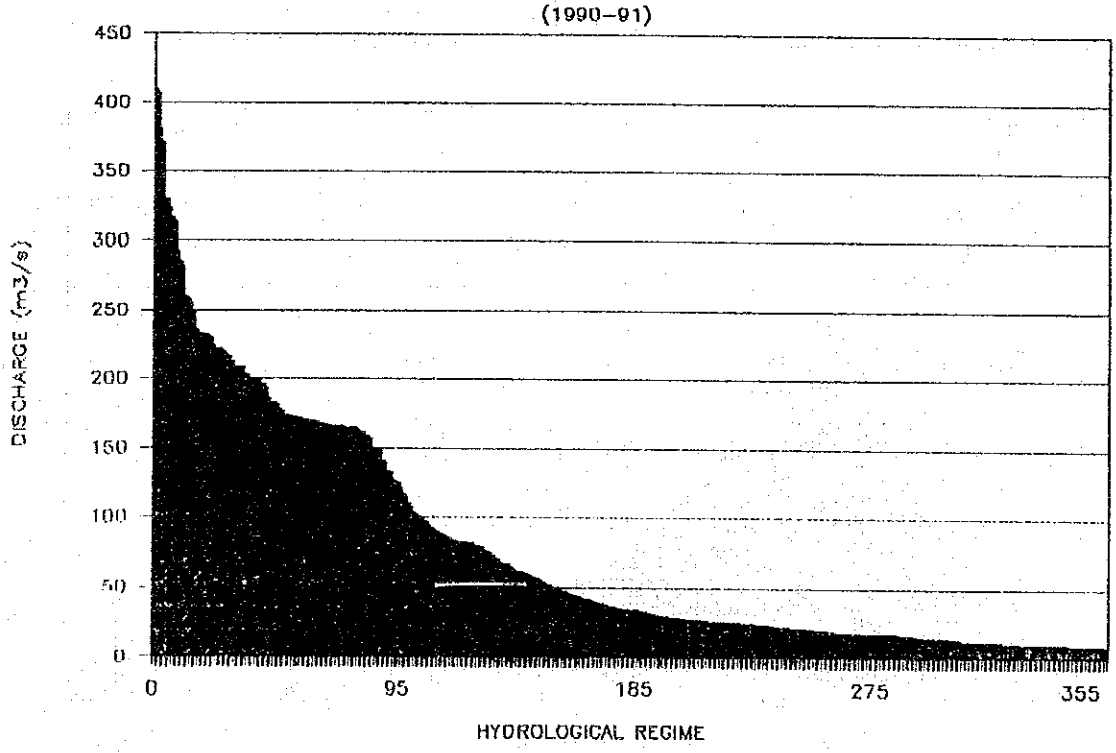
SMITH'S BRIDGE (4-130)

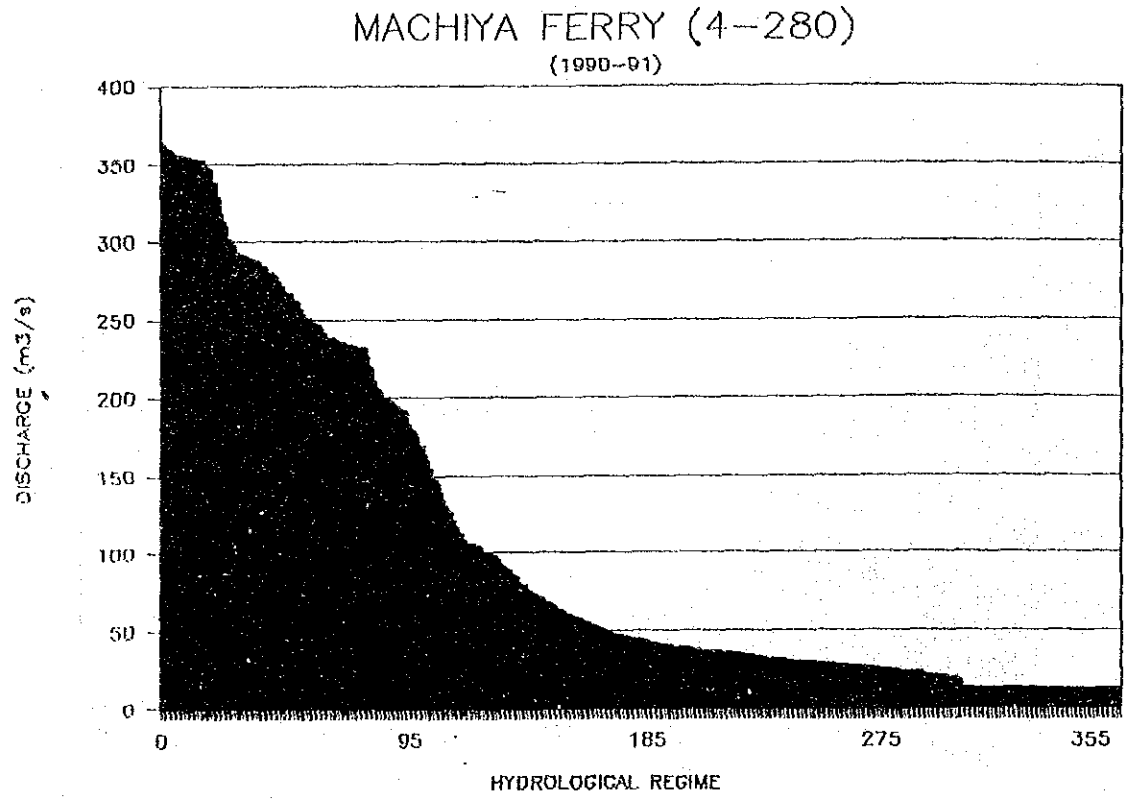
(1990-91)

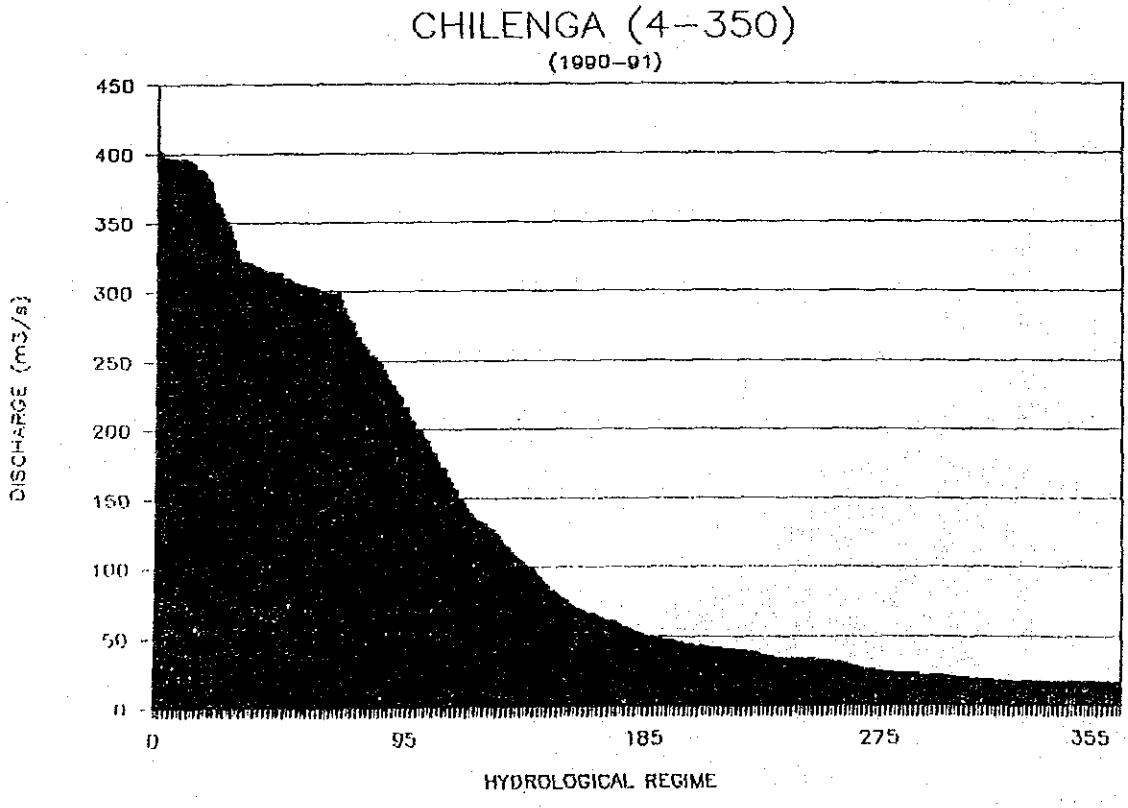


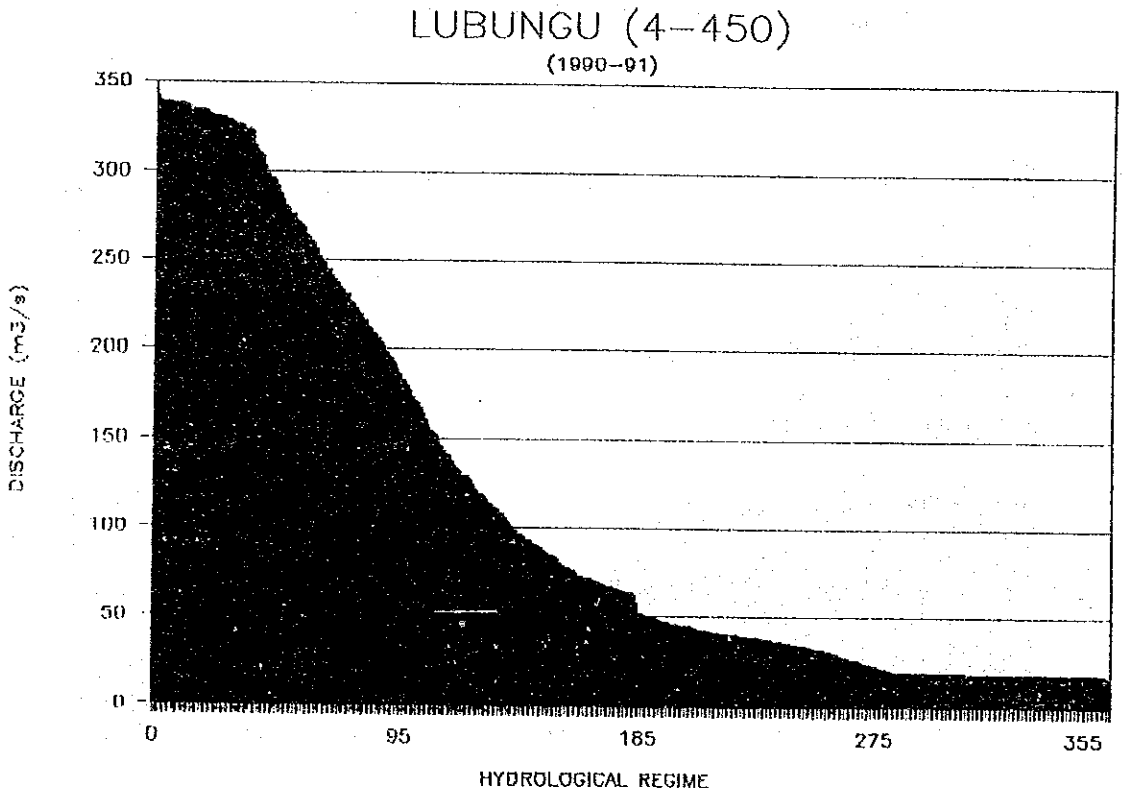
MPATAMATO (4-200)

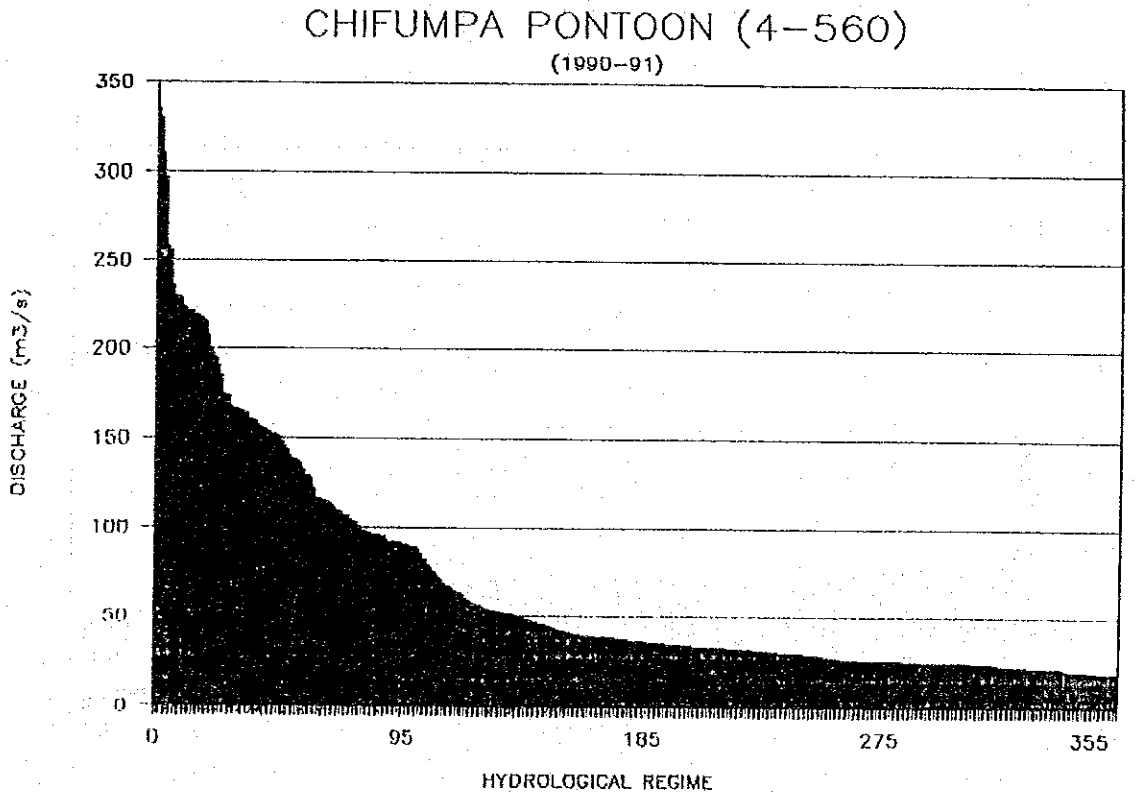
(1990-91)

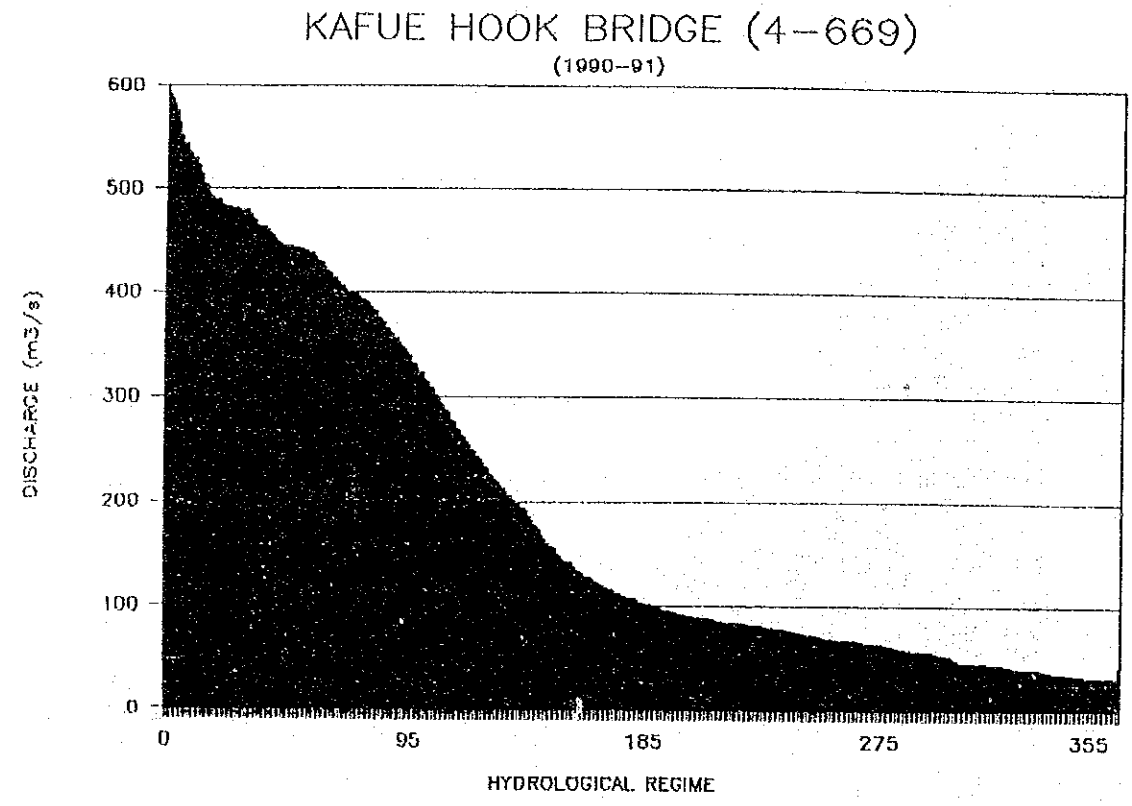


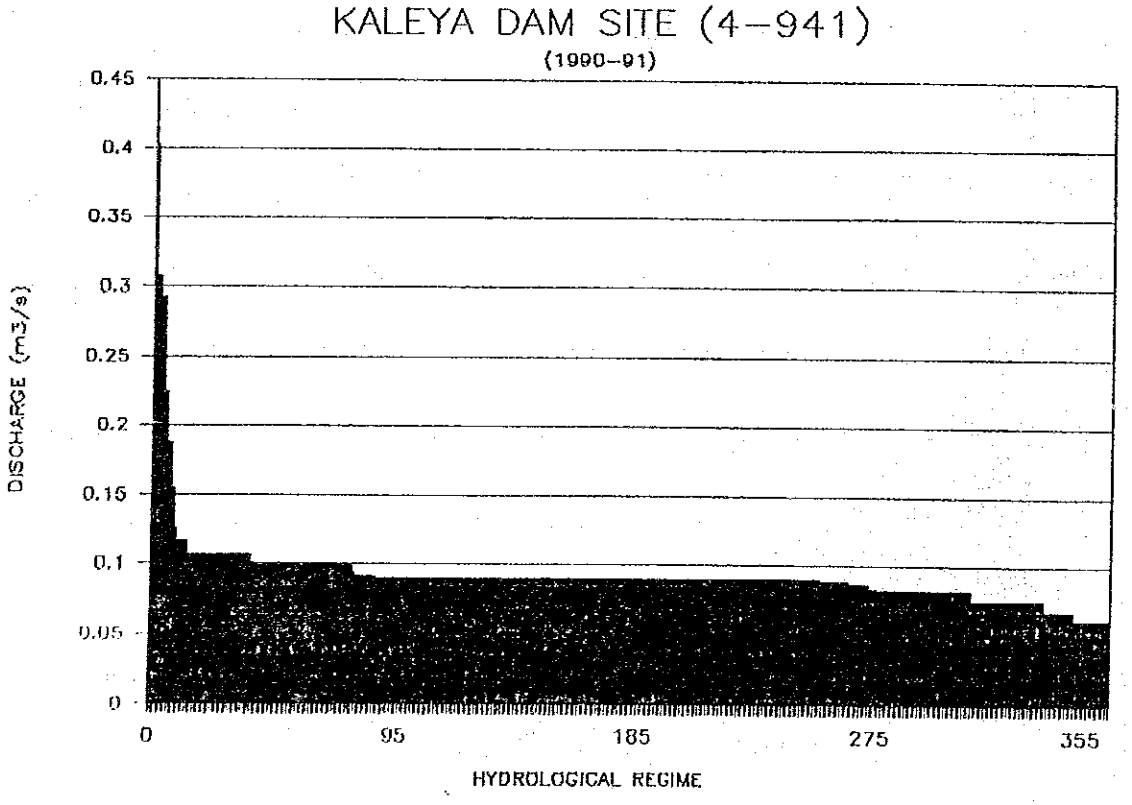

MACHIYA FERRY (4-280)
(1990-91)
DISCHARGE (m3/s)
400
350
300
250
200
150
100
50
0
0
95
185
275
355
HYDROLOGICAL REGIME

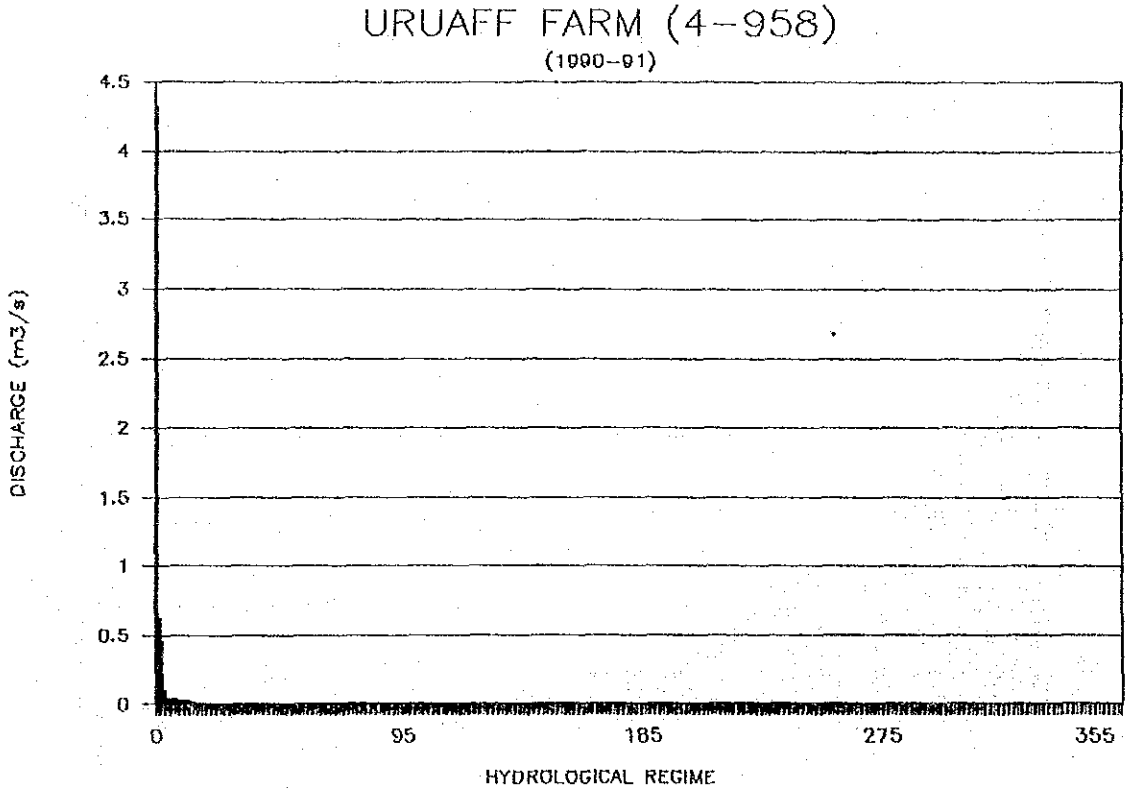

CHILENGA (4-350)
(1990-91)
DISCHARGE (m3/s)
450
400
350
300
250
200
150
100
50
0
0
95
185
275
355
HYDROLOGICAL REGIME

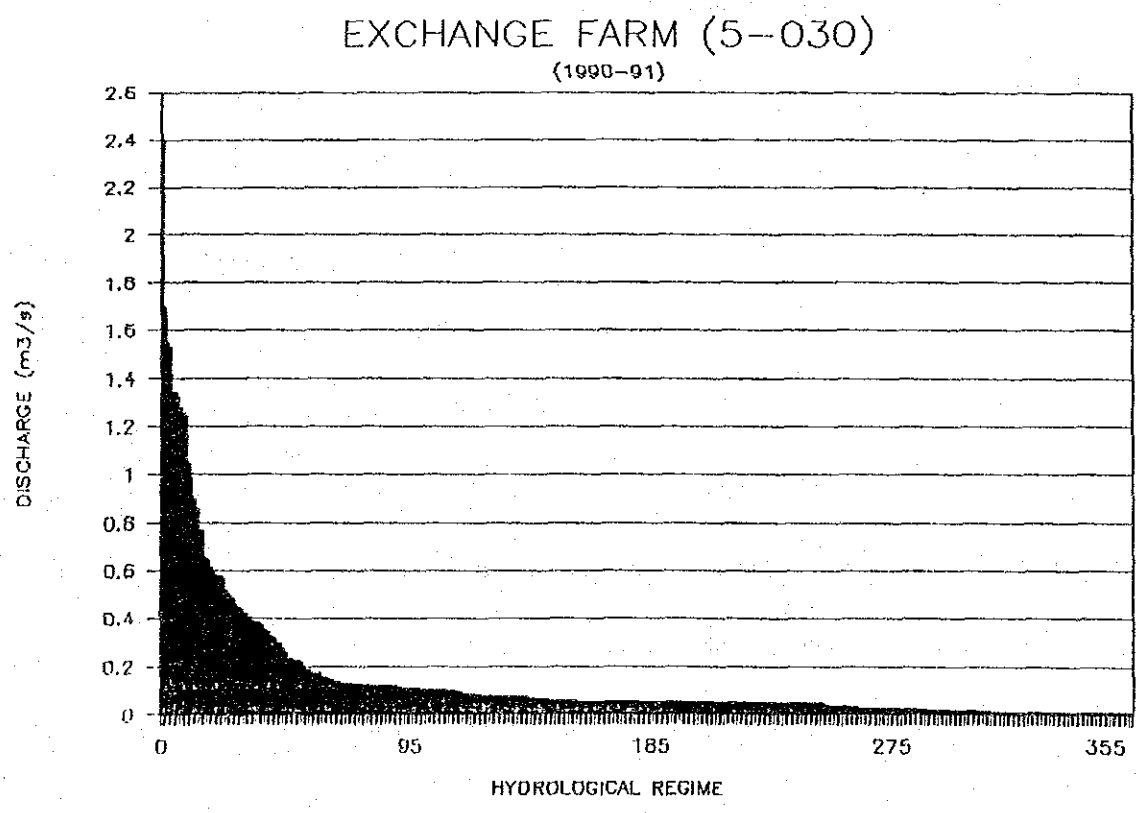

LUBUNGU (4-450)
(1990-91)
DISCHARGE (m3/s)
350
300
250
200
150
100
50
0
0
95
185
275
355
HYDROLOGICAL REGIME

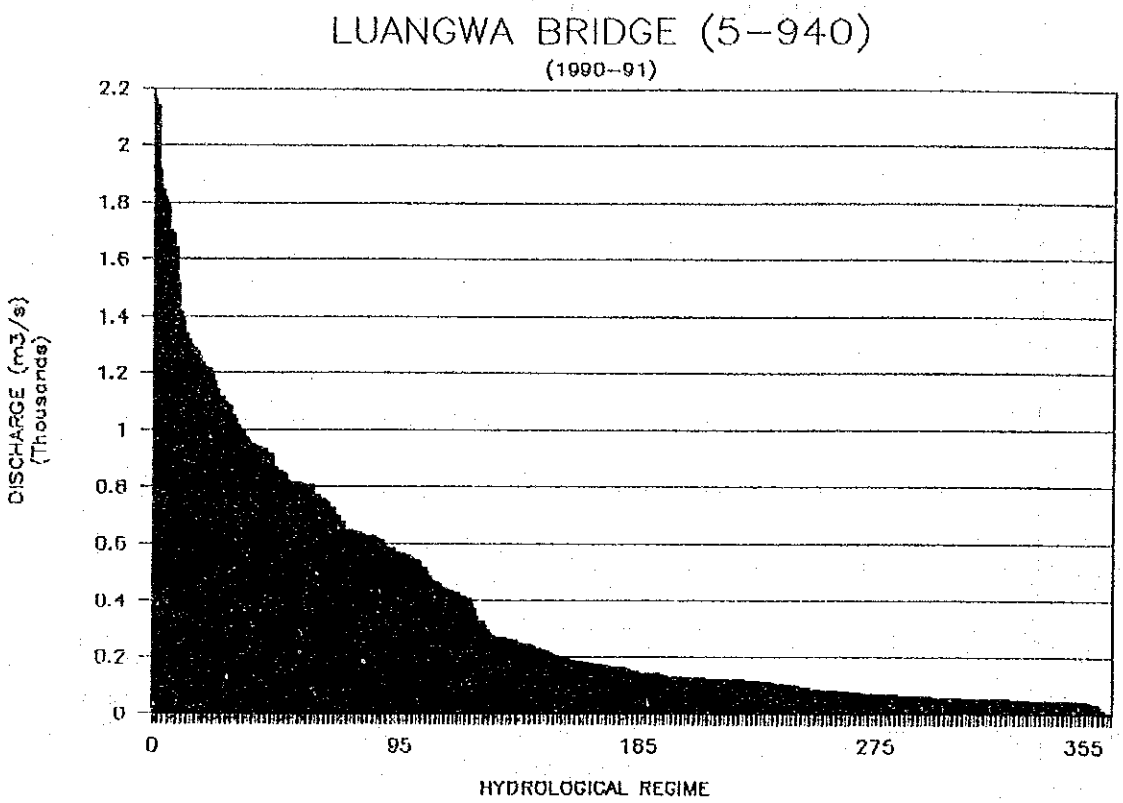

CHIFUMPA PONTOON (4-560)
(1990-91)
DISCHARGE (m3/s)
350
300
250
200
150
100
50
0
0
95
185
275
355
HYDROLOGICAL REGIME


KAFUE HOOK BRIDGE (4-669)
(1990-91)
DISCHARGE (m3/s)
600
500
400
300
200
100
0
0
95
185
275
355
HYDROLOGICAL REGIME


KALEYA DAM SITE (4-941)
(1990-91)
DISCHARGE (m3/s)
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0
95
185
275
355
HYDROLOGICAL REGIME


URUAFF FARM (4-958)
(1990-91)
DISCHARGE (m3/s)
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0
95
185
275
355
HYDROLOGICAL REGIME


EXCHANGE FARM (5-030)
(1990-91)
DISCHARGE (m3/s)
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
95
185
275
355
HYDROLOGICAL REGIME


LUANGWA BRIDGE (5-940)
(1990-91)
DISCHARGE (m3/s)
(Thousands)
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
95
185
275
355
HYDROLOGICAL REGIME

SUPPLEMENT - 4.7

LIST OF DATA INPUT AVILBILITY

<< Zambezi River Basin >> (1/2)

NO	Station No.	Name of River	Location Name	Input Avalability into Diskette D/R/W/L	H/R/W/L	F/M	H/Q	Dis.
1	1-040	Luinga	Ikelenge	O				
2	1-080	Zambezi	Kaleni Hill R/D	O				
3	1-100	Zambezi	Cholose	O				
4	1-105	Zambezi	Chavuma Falls	O				
5	1-130	Lunkunyi	Lunkunyi school	O				
6	1-135	Makondu	Chief Nyakulenga	O				
7	1-138	Makondu	Dipalata Mission	O				
8	1-141	Lunyiwu	Kakeki School	O				
9	1-143	Lunyiwu	Dipalata School	O				
10	1-145	Makondu	Chivatu Village	O				
11	1-150	Zambezi	Zambezi Pump House	O		O	O	O
12	1-205	Kabompo	Solwezi-Mwinilunga R/B	O				
13	1-305	W/Lumwana	Solwezi-Mwinilunga R/B	O				
14	1-310	Mwombezhi	Solwezi-Mwinilunga R/B	O				
15	1-313	Chimiwonga	Lumwana	O				
16	1-314	E/Lumwana	Lumwana Camp	O				
17	1-315	E/Lumwana	Solwezi-Mwinilunga R/B	O				
18	1-425	Luakela	Sachibondo	O				
19	1-430	W/lunga	Mwinilunga	O				
20	1-610	Kabompo	Manyinga R/B	O				
21	1-630	Manyinga	Manyinga	O				
22	1-650	Kabompo	Kabompo Boma	O		O	O	O
23	1-660	Chikonkwelo	Kashina Village	O				
24	1-670	Kabompo	Kabompo Old Pontoon	O				
25	1-690	Dongwe	Dongwe	O				
26	1-950	Kabompo	Watopa Pontoon	O		O	O	O
27	1-970	Mumbeji	Kabompo-Mwinilunga R/B	O				
28	2-020	Lungwebungu	Siakasumbi	O				
29	2-030	Zambezi	Lukulu	O		O	O	O
30	2-120	Luena	Longwe	O				
31	2-123	Luena	Kaoma-Kasempa R/B	O				
32	2-130	Luampa	Njenga School	O				
33	2-150	Luena	Kasambamezi (Hydro.site)	O				
34	2-200	Zambezi	Likapai	O				
35	2-250	Luanginga	Kalabo	O		O	O	O
36	2-270	Luambimba	Sishekanu	O				
37	2-310	Sikolongo	near zambezi Riv.	O				
38	2-320	Namitome	Namitome	O				
39	2-330	L/Zambezi	Matonga Platform	O				
40	2-340	Sefula	Sefula R/B	O				

[Note] D/R/W/L : Daily River Water Level
H/R/W/L : Houry River Water Level
F/M : Flow Measurement Data
H/Q : H-Q Curve Analysis
Dis. : River Water Discharge

NO	Station No.	Name of River	Location Name	Input Avalability into Diskette D/R/W/L	H/R/W/L	F/M	H/Q	Dis.
41	2-350	Nalolo Canal	Nalolo	O				
42	2-360	Kataba	Siandi R/B	O				
43	2-400	Zambezi	Senanga	O		O	O	O
44	2-450	Lueti/s	Lueti Pontoon	O				
45	2-475	Lui	Luatembo School	O				
46	2-700	Zambezi	Sesheke	O				
47	2-990	Zambezi	Mambova Harbour	O				
48	3-050	Zambezi	Livingstone Pump House	O				
49	3-120	Kalomo	William's Dam	O				
50	3-130	Kalomo	Kalomo Dam site	O				
51	3-335	Muzuma	Mwezia school	O				
52	3-350	Kazinze	Sinak-sikile R/B	O				
53	3-370	Nangombe	Tobontes's Village	O				
54	3-375	Lake kariba	Chiyabi	O				
55	3-380	Lake Kariba	Sikolwenzala Hills	O				
56	3-950	Zambezi	Lusitu Pump House	O				
57	3-980	Zambezi	Chirundu R/B	O				
58	5-012	Chongwe	Chongwe North	O				
59	5-016	Ngwerere	Ngwerere Estate Weir	O				
60	5-024	Chongwe	Chongwe-Ngwerere Conflu.	O				
61	5-025	Chongwe	Chongwe(G.E.R.) Bridge	O				
62	5-029	Chalimbana	Romar Farm	O				
63	5-030	Kapiriombwa	Exchange Farm	O	O	O	O	O
64	5-099	Zambezi	Feira Boma	O				

[Note] D/R/W/L : Daily River Water Level
H/R/W/L : Houry River Water Level
F/M : Flow Measurement Data
H/Q : H-Q Curve Analysis
Dis. : River Water Discharge

<< Kafue River Basin >> (1/3)

NO	Station No.	Name of River	Location Name	Input Avalability into Diskette R/W/L	F/M	H/Q	Dis.	Analysis
1	4-005	Kafue	Kipushi	O				
2	4-015	Muchindamu	Muchindamu	O				
3	4-040	Kafue	Ngosa Farm	O				
4	4-050	Kafue	Raglam Farm	O		O	O	O
5	4-060	Kafue	Chililabombwe	O				
6	4-090	Kafue	Kafironda	O				
7	4-095	Kafironda	Kafironda	O				
8	4-100	Mutundu	Mutundu	O				
9	4-120	Mwambashi	Mwambashi	O	O	O	O	O
10	4-130	Kafue	Smith's Bridge	O	O	O	O	O
11	4-150	Kafue	Wusakile Bridge	O				
12	4-152	Kamfinsa	Kamfinsa	O				
13	4-170	Baluba	Baluba	O				
14	4-180	Chapula	St.Joseph's Mission	O				
15	4-200	Kafue	Mpatamato	O	O	O	O	O
16	4-205	Kafulafuta	Ibenga Mission	O				
17	4-210	Kafubu	Itawa-Dambo	O				
18	4-239	Munkulungwe	Kaposa	O				
19	4-240	Kafubu	Fisenga	O				
20	4-245	Kafubu	Masaiti R/B	O				
21	4-250	Kafulafuta	Miputu Hills	O				
22	4-260	Kafue	Ndubeni	O				
23	4-265	Lufwanyama	Muteba	O				
24	4-266	Mpopo	Mpopo School	O				
25	4-267	Lufwanyama	Mpopo School	O				
26	4-268	Katembula	Katembula	O				
27	4-272	Lufwanyama	Kanakila	O				
28	4-280	Kafue	Machiya Ferry	O		O	O	O
29	4-281	Impumpu	Machiya	O				
30	4-302	Luswishi	Lwendo	O				
31	4-310	Luswishi	Kilundu	O				
32	4-340	Luswishi	Kangondi	O				
33	4-350	Kafue	Chilenga	O		O	O	O
34	4-375	Lukanda	Chikanda	O				
35	4-390	Lukanga Swamp	Chilwa Island	O				
36	4-400	Lukanga Swamp	Twenty Village	O				
37	4-435	Kafue	Mswebi	O				
38	4-450	Kafue	Lubungu	O		O	O	O
39	4-460	Lunga	Konikombe Hills	O				
40	4-500	Mutanda	Mutanda Mission	O				

[Note] D/R/W/L : Daily River Water Level
H/R/W/L : Houry River Water Level
F/M : Flow Measurement Data
H/Q : H-Q Curve Analysis
Dis. : River Water Discharge

NO	Station No.	Name of River	Location Name	Input Avalability into Diskette R/W/L	F/M	H/Q	Dis.	Analysis
41	4-505	Solwezi / Solwezi		O				
42	4-510	Lunga / Mujimanzovu		O				
43	4-515	Chifubwa / Solwezi Road		O				
44	4-550	Lunga / Kelongwa School		O				
45	4-560	Lunga / Chifumpa Pontoon		O		O	O	O
46	4-595	Lunga / Kasonso Mine		O				
47	4-620	Lufupa / Kasempa pump House		O				
48	4-669	Kafue / Kafue Hook Bridge		O		O	O	O
49	4-670	Kafue / Kafue Hook Pontoon		O				
50	4-675	Kafue / Chunga Camp		O				
51	4-676	Kafue / Chunga Rapids		O				
52	4-710	Kafue / Itezhi-Tezhi		O				
53	4-750	Nanzila / Nanzila Mission		O				
54	4-759	Kafue / Namwala Boma		O				
55	4-760	Kafue / Namwala Pontoon		O				
56	4-780	Kafue / Busangu Rapids		O				
57	4-790	Nansenga / Tepula		O				
58	4-820	Munyeke / Mapanza R/B		O				
59	4-821	Munyeke / Mapanza Mission		O				
60	4-850	Mutama / Mutama rapids		O				
61	4-880	Nangoma / Mycoye Bridge		O				
62	4-881	Nangoma / Muchabi		O				
63	4-890	Kafue / Nyimba		O				
64	4-907	Magoye / Railway Weir		O				
65	4-915	Magoye / Chimbumbu's		O				
66	4-918	Mwembeshi / Great North Road		O				
67	4-930	Kabile / Chikoloma Hills		O				
68	4-937	Mwembeshi / Lusaka- Mumbwa		O				
69	4-938	Kafue / Luwato		O				
70	4-940	Mwembeshi / Shibuyunji		O				
71	4-941	Kaleya / Kaleya Dam Site		O	O	O	O	O
72	4-942	Kaleya / Water Valley Weir		O				
73	4-943	Kaleya / Water Valley R/B		O				
74	4-945	Kaleya / Avilion Weir		O				
75	4-946	Kaleya / Avilion R/B		O				
76	4-947	Kaleya / Mendham Weir		O				
77	4-949	Kaleya / Kaleya R/B		O				
78	4-950	Kaleya / Heal's Estate		O				
79	4-952	Nakambala / Nakambala Upper Weir		O				
80	4-953	Nakambala / Nakambala Lower Weir		O				

[Note] D/R/W/L : **Daily River Water Level**
H/R/W/L : Houry River Water Level
F/M : Flow Measurement Data
H/Q : H-Q Curve Analysis
Dis. : River Water Discharge

<< Kafue River Basin >> (3/3)

NO	Station No.	Name of River	Location Name	Input Avalability into Diskette R/W/L	F/M	H/Q	Dis.	Analysis
81	4-955	Kafue	/ Cere's	O				
82	4-958	Mazabuka	/ Uruaff Farm	O	O	O	O	O
83	4-960	Kafue	/ Kafue Polder	O				
84	4-965	Nega-Nega	/ Nega- Nega	O				
85	4-975	Kafue	/ Kafue Railway Bridge	O				
86	4-977	Kafue	/ Kasaka	O				
87	4-980	Kafue	/ Kafue Road Bridge	O				
88	4-995	Kafue	/ Farowe	O				
89	4-999	Kafue	/ Mafungozi	O				

<< Luangwa River Basin >> (1/1)

NO	Station No.	Name of River	Location Name	Input Avalability into Diskette R/W/L	F/M	H/Q	Dis.	Analysis
1	5-300	Luangwa	/ Mulopwe Village	O				
2	5-350	Lundazi	/ Lundazi Dam	O				
3	5-400	Lumamba	/ Lumamba Dam	O				
4	5-550	Koba	/ Koba Bridge	O				
5	5-554	Lutembwe	/ St Marry's Mission	O				
6	5-555	Lutembwe	/ Lutembwe weir	O				
7	5-557	M'sipazi	/ Chadidza RD BG	O				
8	5-558	Kova	/ Kova Drift D/S	O				
9	5-560	M'sipazi	/ Madzimoyo Quarry	O				
10	5-561	Lutembwe	/ Madzimoyo Bridge	O				
11	5-562	Makungwa	/ Great East RD BG	O				
12	5-563	Nsadzu	/ Nsadzu Dam	O				
13	5-564	Katete	/ Katete Boma	O				
14	5-650	Luangwa	/ M'fuwe	O				
15	5-670	Lisiwasi	/ Masase	O				
16	5-755	Chiwefwe	/ M'kushi Boma	O				
17	5-775	Mushiwembwa	/ Johnson's Farm	O				
18	5-800	Luangwa	/ Ndevu Camp	O				
19	5-815	Mulungushi	/ Great North RD BG	O				
20	5-940	Luangwa	/ Luangwa RD BG	O		O	O	O
21	5-948	Rufunsa	/ Janeiro Village					

[Note] D/R/W/L : **Daily River Water Level**
H/R/W/L : Houry River Water Level
F/M : Flow Measurement Data
H/Q : H-Q Curve Analysis
Dis. : River Water Discharge

<< Chambeshi River Basin >> (1/1)

NO	Station No.	Name of River	Location Name	Input Avalability into Diskette R/W/L	F/M	H/Q	Dis.	Analysis
1	6-105	China	Senga Hill	O				
2	6-130	Nakonde	Nakonde Dam Site	O				
3	6-133	Kabulukutu	Chamfubu	O				
4	6-135	Chamfubu	Conflu. with Kabulukutu	O				
5	6-138	Kabulukutu	Ngoli Coffee Estate	O				
6	6-140	Chambeshi	Chandaweyaya	O				
7	6-145	Chambeshi	Mbesuma Ferry	O				
8	6-160	Mansenke	Nansala Falls	O				
9	6-170	Kalungwishi	Chunga Ranch	O				
10	6-200	Chozi	Chozi	O				
11	6-224	Mungu	Mungwi School	O				
12	6-235	Kalung Bemba	Kalungu	O				
13	6-242	Chimanabuwi	Chipoma Falls	O				
14	6-250	Lubu	Mundu Brigde	O				
15	6-275	Mansha	Shiwa Nganda	O				
16	6-289	Chambeshi	Chambeshi Pontoon	O				
17	6-290	Chambeshi	Chambeshi RD BG	O				
18	6-330	Luombe	Chismba Falls	O				
19	6-335	Lukupa	Kateshi Coffee Estate	O				
20	6-340	Milima	Milima	O				
21	6-350	Lukulu	Kasama-Luwindu RD BG	O				
22	6-370	Mulilasolo	Kasama	O				
23	6-400	Chambeshi	Mbati	O				
24	6-480	Luwitikila	Luwtikila Falls	O				
25	6-486	Luwitikila	Mpika RD BG	O				
26	6-500	Kanchibya	Mpika-Kasama RD BG	O				
27	6-510	Kachibya	Kopa Bridge	O				

[Note] D/R/W/L : **Daily River Water Level**
H/R/W/L : Houry River Water Level
F/M : Flow Measurement Data
H/Q : H-Q Curve Analysis
Dis. : River Water Discharge

<< Luapula River Basin >> (1/1)

NO	Station No.	Name of River	Location Name	Input Avalability into Diskette R/W/L	F/M	H/Q	Dis.	Analysis
1	6-020	Lufubu/Green Water Falls	Luwingu	O				
2	6-040	Bangweulu Lake/Nsombo Harbour		O				
3	6-060	Luena/Luena Mission		O				
4	6-065	Bangweulu/Lake Muchinchi		O				
5	6-080	Bangweulu/Samfya		O				
6	6-090	Bangweulu Lake/Mpata Point		O				
7	6-460	Bangweulu Swamps/Nsalushi Island		O				
8	6-465	Bangweulu Swamps/Mutwamina		O				
9	6-476	Bangweulu Swamps/Matongo		O				
10	6-520	Bangweulu Swamps/Kasoma		O				
11	6-525	Bangweulu Swamps/Kalimankonde		O				
12	6-665	Lwela/Chipota falls		O				
13	6-670	Luapula/Chembe Ferry		O				
14	6-700	Mansa/Mansa Pump House		O				
15	6-745	Luongo/Mukonshi		O				
16	6-750	Loungo/Mwenda-Kashiba RD BG		O				
17	6-760	Lufubu/Chibote Mission		O				
18	6-765	Lufubu/Chipili		O				
19	6-770	Loungo/Musonda Falls		O				
20	6-775	Luongo/Chibondo Pontoon		O				
21	6-785	Luapula/Kashiba		O				
22	6-790	Ngona/Ntumbachushi Falls		O				
23	6-800	Mweru Lake/Nchelenge		O				
24	6-855	Mutotoshi/Kapuma Falls		O				
25	6-860	Luangwa/Mumbuluma Falls		O				
26	6-865	Kalungwishi/Chimpempe Pontoon		O				
27	6-900	Kalungwishi/Olandi		O				
28	6-910	Chishela/Bulaya Pontoon		O				
29	6-915	Mwawe/Muwawe Cause Way		O				
30	6-920	Choma/Kaputa		O				
31	6-925	Mweru Wanitipa/Kampinda		O				
32	6-935	Mwambeshi/Nsama		O				
33	6-955	Mukubwe/Kambasa		O				
34	6-960	Mufuwe Dambo/Mukupa Latanoula		O				
35	6-980	Mweru Lake/Kafulwe Mission		O				

[Note] D/R/W/L : Daily River Water Level
H/R/W/L : Houry River Water Level
F/M : Flow Measurement Data
H/Q : H-Q Curve Analysis
Dis. : River Water Discharge

<< Tanganyika River Basin >> (1/1)

NO	Station No.	Name of River	Location Name	Input Avalability into Diskette R/W/L	F/M	H/Q	Dis.	Analysis
1	7-005	Lunzua	Kambole Bridge	O				
2	7-006	Lunzua	Lunzua Weir	O				
3	7-010	Lake Tanganyika	Mpulungu	O				
4	7-020	Lake Chila	Mbala	O				
5	7-021	Lucheche	Below Lake Chila	O				
6	7-750	Lufubu	Keso Falls	O				
7	7-800	Lake Tanganyika	Nsumbu Harbour	O				

[Note] D/R/W/L : **Daily River Water Level**
H/R/W/L : Houry River Water Level
F/M : Flow Measurement Data
H/Q : H-Q Curve Analysis
Dis. : River Water Discharge

List of Observation Wells

Station No.	Name of Well Sta.	Related Hydrological Station Name	Input Avalability into Diskette W/W/L	ANALYSIS
1	Kanyilaba	1-150 Zambezi P/H	O	O
2	Kanyayimba	1-650 Kabompo Boma	O	O
3	Watopa	1-950 Watopa Pontoon	O	O
4-1	Luanchuma	2-030 Lukulu	O	O
4-2	Lishuwa	2-030 Lukulu	O	O
5	Muchatanga	2-250 Kalabo	O	O
6-1	Milne Farm	2-400 Senanga	O	O
6-2	Litoya	2-400 Senanga	O	O
7	Kansofu	4-050 Raglam Farm	O	O
8	Mwambashi	4-120 Mwambashi	O	O
9	Kabulanda	4-130 Smith's Bridge	O	O
10	Mpatamato	4-200 Mpatamato	O	O
11	Machiya Ferr	4-280 Machiya Ferry	O	O
12	Chilenga	4-350 Chilenga	O	O
14	Lupemba	4-560 Chifumpa Pontoo	O	O
15	Kafue Hook B	4-669 Kafue H/B	O	O
16	Upper Kaleya	4-941 Kaleya Dam Site	O	O
17	Uruaff Farm	4-958 Uruaff Farm	O	O
18	Mutamina	5-030 Exchange Farm	O	O

[Note] W/W/L : Dairy Well Water Level Data

CHAPTER - 5

HYDROLOGIC OBSERVATION PLAN

<<<<< CHAPTER-5 HYDROLOGIC OBSERVATION PLAN >>>>>

C O N T E N T S

<<< S u p p l e m e n t >>>

<<< LIST OF FIGURES AND TABLES >>>

5 HYDROLOGIC OBSERVATION PLAN

5.1 Present Observation System

5.1.1 Present Situation

(1) Authorities responsible for Hydrologic Observation

In Zambia, the following hydrologic items are regularly observed by the government bodies respectively.

- Rainfall and other meteorological data:
  Department of Meteorology,
  Ministry of Power, Transport and Communication

- River water level and discharge:
  Department of Water Affairs, (DWA)
  Ministry of Water, Lands and Natural Resources

(2) Climatology and Meteorology

In Zambia, about 860 rainfall stations are registered at the Meteorologic Department. Refer to **Supplement-5.1**. Out of these stations, some 460 stations are working and observations are continued. In main cities, climatologic stations are installed and temperature, humidity, evaporation, wind speed etc. are observed besides rainfall.

(3) Hydrometry

Zambia is divided into the following six (6) basins:

a) Zambezi River Main Stream Basin
b) Kafue River Basin
c) Luangwa River Basin
d) Chambeshi River Basin
e) Luapula River Basin
f) Tanganyika Lake Basin

The basin a), b) and c) above belong to the Zambezi River System and the basin d) and e) belong to the Zaire River System. The catchment area of Zambezi River occupies about 3/4 of the whole area of Zambia.

In Zambia, more than 240 hydrometric stations are registered at the Department of Water Affairs (DWA). Refer to **Supplement-5.2 and 5.5**. At some stations, observation has stopped. At each working station, the daily river water level is observed by observer using the staff gauge.

The flow measurement is also carried out periodically by DWA staff, but the frequency of flow measurement has been decreased recently. At some stations, automatic recorders were installed, but at almost all stations, no recorder is working now.

5.1.2 Organization of DWA

In Zambia, the body responsible for collecting river hydrological data is DWA. DWA consists of the headquarters in Lusaka and 9 provincial offices. DWA's main activities are 1) water supply 2) hydrological observation 3) drilling and 4) dredging.

The main activities of each section are as shown in Table-5.1. The hydrological section, in charge of hydrological observation, is responsible for:

- Hydrological data collection
- Data processing and archiving
- Hydrologic analysis

However, other organizations like ZESCO (Zambia Electric Supply Corporation) and ZRA (Zambezi River Authority) are also involved in hydrological work for their own purposes.

In the organization of the hydrological section, the principal (or senior) hydrologist is the head of the section. After the principal hydrologist come the hydrologists. The officer-in-charge is the top among the hydrologists. In each provincial office, there is a provincial hydrological officer (RHO) or engineer (RHE) who is responsible for hydrological work in the province. At each hydrometric station, a gauge reader is employed by DWA. The daily water level gauging is continued by this gauge reader. The flow measurement is to be conducted by RHO or RHE.

Table-5.1 Main Activities of DWA by Section

Section Office	Location of Office	Water Supply	Hydro-logy	Drilling	Dred-ging
Headquarter	Lusaka	O	O	O	X
Lusaka	Lusaka	O	O	O	X
Central	Kabwe	O	O	O	X
Copperbelt	Ndola	O	O	O	X
North-Western	Solwezi	O	O	O	X
Western	Mongu	O	O	O	O
Southern	Choma	O	O	O	X
Eastern	Chipata	O	O	O	X
Northern	Kasama	O	O	O	O
Luapula	Mansa	O	O	O	X

5.1.3 Observation Network

The Provincial Office of DWA has Regional Hydrological Offices. There are eight (8) Regional Hydrological Offices. The hydrological activities of Lusaka Province and Central Province are covered by Lusaka Regional Hydrological Office. Each office is headed by RHO (or RHE) who is responsible for hydrological observation in the region.

In Table-5.2, the stations covered by each Regional Hydrological Office are shown.(Details are refered to **Supplement-5.2**) A total number of 151 hydrometric stations are currently maintained by the Regional Hydrological Offices. In some of the stations mentioned above, meteorological equipment for rainfall, evaporation, temperature, humidity, wind speed etc. is installed.

Table-5.2 Present Hydrometric Stations

Regional Hydrological Office	Location of Office	Working Stations	Temporally Closed Stations	Total
(1) < Lusaka >	Lusaka	20	13	33
(2) < Copperbelt >	Kitwe	16	17	33
(3) < North Western >	Solwezi	15	21	36
(4) < Western >	Mongu	11	6	17
(5) < Southern >	Mazabuka	11	24	35
(6) < Eastern >	Chipata	18	2	20
(7) < Northern >	Kasama	31	3	34
(8) < Luapula >	Kawamba	24	11	35
[T o t a l]		146	97	243

5.1.4 Observation Team

(1) Manpower

Each regional hydrological office has an observation team to conduct flow measurement. Also, the hydrological section in the Headquarters has extra observation teams led by hydrologists who are responsible for the designated river basins. These teams go out to the respective regions to check the work being performed by the regional observation team.

The Hydrological Section of DWA recognizes that there is a critical shortage of manpower, especially in professional and technical staff regarding hydrological observation as shown in Table-5.3.

Table-5.3 Staff Level in Hydrological Observation

Post	Present Number	Number Required by Hydrological Section
(1) Professional (Hydrologist)	4 persons (include of Officer in Charge)	11 persons - 8 persons (one/each region) - 1 officer-in-charge (in H/Q) - 1 deputy o-i-c (in H/Q) - 1 for data processing (in H/Q)
(2) Technical (Regional Hydrological Officer)	8 persons	8 persons 6 persons need to be trained to technical level (diploma) so as to assist hydrologists.
(3) Technicians (Data Processing in Head/q.)	8 persons	8 persons All persons are required to have some form of training to fulfill their duties.
(4) Other Staff	enough	Good mechanic staffs are required to maintain hydrologic equipment.

(2) Equipment

At present in almost all Regional Hydrological Offices, there is no full set of equipment to execute hydrological activities. There is a general lack of observation equipment, transport, camping set and so on.

Regarding the transport for hydrological observation through out the whole country, only two (2) vehicles are available at the moment. At least, eight (8) vehicles for the regional hydrological offices and three (3) vehicles for headquarter are required to sufficient enough hydrological activities.

There is also a need to replace the boats that are equipped at the stations due to decrepitude.

(3) Maintenance of Observation Equipment

Due to lack of funds, no major maintenance has been done on the equipment for hydrological observation. The condition of some of the boats, winches, current meters etc. are not satisfactory. Hydrological structures like weirs have not been maintained for the last 10 to 15 years.
Calibration of current meters has not been done since 1968. In short, almost all equipment apart from the relatively new need maintenance and reparation. In some cases, it is difficult to trust the accuracy of the equipment.

5.1.5 Frequency of Hydrological Observation

The frequency of discharge measurement has gradually reduced from 1975. No discharge measurement has been made at some stations for some years. This is mainly caused due to lack of funds allocated to hydrological observation. The quantities of hydrological activities in 1990 by catchment are shown in Table-5.4.

Table-5.4 Hydrological Activities in 1990

Catchment	(1)Water Level Gauging (times)	(2)Level Checking of S/G (times)	(3)Sediment Sampling & Analysis (samples)	(4)Flow Measurement (times)
(1)Zambezi R.	(82%)	(47%)	(5%)	(1.3%)
- Actual	464	28	15	4
- Expected	564	60	312	312
(2)Kafue R.	(84%)	(31%)	(2%)	(4.9%)
- Actual	393	24	5	14
- Expected	468	78	288	288
(3)Luapula R.	(78%)	(17%)	(6%)	(3.0%)
- Actual	235	9	10	5
- Expected	300	52	168	168
(4)Luangwa R.	(85%)	(35%)	(0%)	(0.0%)
- Actual	214	14	0	0
- Expected	252	40	192	192
(5)Chambesi R.	(81%)	(86%)	(2%)	(17%)
- Actual	203	43	5	36
- Expected	252	50	216	216
(6)Tanganyika L.	(82%)	(21%)	(67%)	(1.7%)
- Actual	69	3	8	2
- Expected	84	14	12	12
T o t a l	(82%)	(32%)	(3%)	(5.5%)
- Actual	1578	94	37	61
- Expected	1920	294	1118	1118

5.1.6 Training

Recently, there is no training program for hydrologists and technical staff intentionally organized by DWA, although some technical training programs are prepared by individual assistance projects donated by the other countries.

5.1.7 Data Filing and Analyzing System

The present data filing and analyzing system conducted in the hydrological section Lusaka, DWA is as shown in Fig.-5.1.

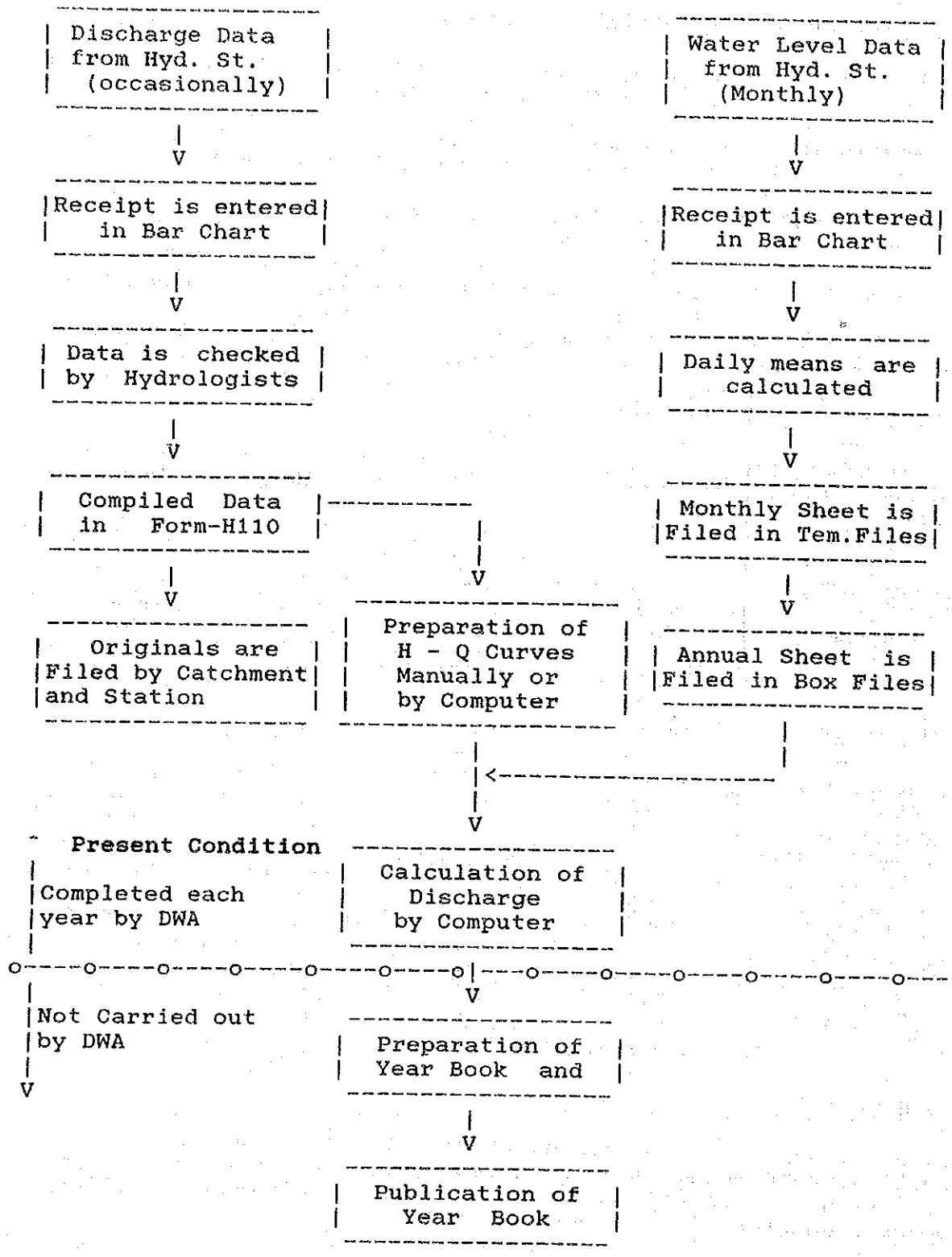


Fig.-5.1 Hydrological Data Filing and Analyzing System