

CHAPTER 9 RECOMMENDATION

Surface water data is the basic element in the planning, design, construction and operation of all water resources projects, which are extremely important to the nation's economy due to their impact on agricultural, industrial and social development. Thus systematic collection, processing and analysis of these surface water data are the primary factors in accurate assessment and management of a country's water resources. Although Zambian economy is not currently in good condition, limited budget should be effectively used for these objectives. The Study Team recommends followings:

(1) Network of Hydrometric Stations

There are 243 nation-wide hydrometric stations registered in DWA. At 160 of these stations, water levels have been measured continuously to date and 174 stations have discharge rating curves. The water level information which is collected by gauge readers employed by DWA, is returned on a monthly basis to the regional office. The data is checked and forwarded to the Hydrological Branch in Lusaka where it is entered into monthly summary sheets. However even at some principal stations with long recorded periods, maintenance and rehabilitation works had not been made because of lack of budget, transportation, equipment and proper management.

The useful hydrological data are those which are continuously and exactly collected and processed. Hydrological data collection at all the registered stations is difficult due to the limited budget. Then practically necessary stations as much as the budget affords should be selected, following the priority proposed by JICA Report in March 1992. At the selected station, daily water level should be certainly reported and discharge measurement should be carried out once or twice a year. In addition water quality investigation and sediment sampling also should be carried out in parallel with discharge measurement.

(2) Data Collection for Water Level and Discharge Measurement

Data collection of water levels has gone down due to retrenchment of gauge readers at a large number of stations since 1992. Discharge data collection also has become worse due to lack of transportation and limited budget. Moreover bad maintenance of surface water observation equipment, namely staff gauges, current meters, boats, is also one of the causes. Taking these situation into account, following recommendation is proposed:

- to employ permanent gauge readers and strict instruction should be given.
- Regional office should carried out flow measurement at the station covered by the office and also should maintain staff gauges.
- The accuracy of current meters should be examined.

(3) Data Management

All water level and flow measurement data managed by DWA are filed in the Hydrological Branch, DWA. The computerisation of data processing has advanced since the previous JICA project in 1992. DWA keeps most water level data on computer as LOTUS-123 files but some of the flow measurement data are stored on computer. These water level data on computer is necessary to be carefully checked for data accuracy because observation miss or imputing error were sometime found.

In the Study, the database system for water level and flow measurement data were provided. This database system has the function of archiving, analysing, presenting on computer and printing of all data. Data check is easy to be done, utilising these function.

Annual Hydrological Report including annual hydrological data and DWA's activities should be published for the availability to the public. As this database system presents good quality output of tables and figures for daily water levels and daily discharges, the outputs could be directly utilised for a manuscript.

(4) Adoption of Concept of Maintenance Flow

The concept of maintenance flow is not found in the "Water Act". The maintenance flow of a perennial river is required to maintain river water depth, conservation of groundwater, and the people's amenity. In the estimation of the intake rate potential from a river, the recorded minimum discharge is employed instead of average drought discharge used in dam development, because of the following reasons : At a dam development site, the discharge corresponding to the maintenance flow usually flows downstream and the frequency of the extreme low flow condition is relatively high. To the contrary, at a development site from which flow is directly abstracted, low flow conditions such as maintenance flow, rarely occurred.

However the maintenance flow is basically peculiar by rivers and depends on the environmental condition in the downstream reach. Thus more detailed investigation should be carried out for determining the maintenance flow and the intake rate potential from rivers.

(5) Necessity of Technical Training and Hydrological Data Management Engineer

Technical training is necessary for not only engineers but also field technicians and computer staffs. Engineers should trained field technicians on the hydrological technology. Field technicians have much experience in the fields and they know the field condition very well. They should be given the chance also to learn how to operate computer and database system. Besides computer staffs should be given the chance.

In order to enhance hydrological data management in DWA, a key engineer should be in Hydrological Branch in DWA. He should develop data processing system in the Branch and should train the staffs.

Appendices

Appendix - 1 List of Hydrometric Station Operated by DWA

Appendix - 2 Cross Section and Discharge Rating Curve at Hydrometric Station

Appendix - 3 Monthly Mean Discharge and Flow Regime at Hydrometric Station

Appendix - 1 List of Hydrometric Station Operated by DWA



List of Hydrometric Stations in Zambia

Ref.No. C.A. (km2)	River and Location	Opened	Closed	Data Availability						
				1940'	1950'	1960'	1970'	1980'	1990'	
				0123456789 0123456789 0123456789 0123456789 0123456789 0123456789 0123456789 0123456789 0123456789 0123456789						
Zambezi River Basin										
1-040	122 Luinga / Ikelenge	Nov-71		Y	Y	Y	Y	Y	Y	Y
1-080	764 Zambezi / Kalene Hill R/B	Nov-71		N	N	N	N	N	N	N
1-100	Zambezi / Cholose	Jul-59	Jun-92	Y	Y	Y	Y	Y	Y	Y
1-105	75,967 Zambezi / Chavuma Falls	Oct-55	Apr-72	N	N	N	N	N	N	N
1-130	Lunkunyi / Lunkunyi School	Dec-71	Sep-92	N	N	N	N	N	N	N
1-135	Makindu / Chief Nyakulenga	Dec-71		Y	Y	Y	Y	Y	Y	Y
1-138	749 Makindu / Dipalata Mission	Dec-71		N	N	N	N	N	N	N
1-141	Lunyiwu / Kakaki School	Dec-71		N	N	N	N	N	N	N
1-143	Lunyiwu / Dipalata Shool	Dec-71		Y	Y	Y	Y	Y	Y	Y
1-145	3,354 Makindu / Dhivatu Village	Dec-61		Y	Y	Y	Y	Y	Y	Y
1-150	82,275 Zambezi / Zambezi Pump House	Feb-47		Y	Y	Y	Y	Y	Y	Y
1-205	1,075 Kabonpo / Solwezi-Mwinilunga R/B	Jan-72	Aug-92	N	N	N	N	N	N	N
1-305	469 W/Lumwana / Solwezi-Mwinilunga R/B	Oct-76	Jul-89	N	N	N	N	N	N	N
1-310	3,041 Mvornbezi / Solwezi-Mwinilunga R/B	Nov-71		Y	Y	Y	Y	Y	Y	Y
1-313	Chimiwungo / Lumwana	Oct-76	Sep-78	N	N	N	N	N	N	N
1-314	E/Lumwana / Lumwana Camp	May-76	Dec-76	N	N	N	N	N	N	N
1-315	640 E/Lumwana / Solwezi-Mwinilunga R/B	Nov-71	Jun-83	Y	Y	Y	Y	Y	Y	Y
1-425	632 Luakela / Sachibondo	Oct-70		Y	Y	Y	Y	Y	Y	Y
1-430	4,538 W/Lunga / Mwinilunga	Jan-53	Nov-86	Y	Y	Y	Y	Y	Y	Y
1-610	Kabompo / Manyinga	Nov-71	Jul-92	N	N	N	N	N	N	N
1-630	Manyinga / Manyinga	Dec-61		N	N	N	N	N	N	N
1-650	Kabompo / Kabompo Boma	Oct-50		N	N	N	N	N	N	N
1-660	42,740 Kabompo / Kabompo Boma	Nov-71	Oct-77	N	N	N	N	N	N	N
1-670	Chikonkwelo / Kashina Village	Oct-52	Jun-72	Y	Y	Y	Y	Y	Y	Y
1-890	44,356 Kabompo / Kabompo Old Pontoon	Oct-58	Oct-62	N	N	N	N	N	N	N
1-890	Dongwe / Dongwe	Dec-91	Oct-92	Y	Y	Y	Y	Y	Y	Y
1-890	Dongwe / Dongwe (Reopen)	May-58		Y	Y	Y	Y	Y	Y	Y
1-950	66,449 Kabompo / Watopa Pontoon	Dec-71	Oct-76	N	N	N	N	N	N	N
1-970	Mumbaji / Kabompo-Mwinilunga R/B	Mar-58	Dec-88	N	N	N	N	N	N	N
2-020	43,030 Lungwebungu / Siakasumbi	Oct-50		Y	Y	Y	Y	Y	Y	Y
2-030	206,531 Zambezi / Lukulu	Feb-77	Jan-87	N	N	N	N	N	N	N
2-120	Luena / Longwe	Jan-77	Dec-87	Y	Y	Y	Y	Y	Y	Y
2-123	Luena / Kaoma-Kasempa R/B	Oct-61	Jan-87	N	N	N	N	N	N	N
2-130	7,016 Luampa / Njenga School	Oct-60	May-92	N	N	N	N	N	N	N
2-150	15,444 Luena / Kasambamezi (Hydro Site)	Oct-60		N	N	N	N	N	N	N
2-150	15,444 Luena / Kasambamezi (ZRA-Telemeiri Site)	Oct-60	May-92	N	N	N	N	N	N	N
2-200	Zambezi / Likapai	Nov-61	Feb-72	N	N	N	N	N	N	N

List of Hydrometric Stations in Zambia

Ref.No. C.A.(km2)	River and Location	Opened	Data Availability				Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N		
			1940'	1950'	1970'	1980'																			1990'	
2-250	34,620 Luanginga / Kalabo	Nov-57	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	0123456789	
2-270	5,959 Luanbimba / Sishekano	Jul-59																								
2-310	Sikolongo Canal / near Zambezi Riv.	Nov-61																								
2-320	831 Namitome / Namitome	Feb-62																								
2-330	276,710 LZambezi / Matonga Platform	Jan-56																								
2-340	140 Sefula / Sefula R/B	Feb-71																								
2-350	Nalolo Canal / Nalolo	Nov-61																								
2-350	Nalolo Canal / Nalolo (Reopen)	Sep-89																								
2-360	206,298 Kataba / Siandi R/B	Feb-71																								
2-400	278,298 Zambezi / Senanga	Nov-47																								
2-450	15,451 Lueti/S / Lueti Pontoon	Mar-61																								
2-475	1,854 Lui / Luatambo School	Nov-60																								
2-700	33,605 Zambezi / Sesheke	Jan-60																								
2-990	Zambezi / Mambova Harbour	Oct-71																								
3-045	Zambezi / Nanas Farm	Oct-90																								
3-050	223,698 Zambezi / Livingstone Pump House	Jan-61																								
3-120	Kalomo / William's Dam	Oct-80																								
3-130	1,899 Kalomo / Kalomo Dam Site	Mar-58																								
3-335	940 Muzuma / Mwezia School	Jul-70																								
3-350	215 Kazinze / Sinak-Sikile R/B	Jul-70																								
3-370	228 Kangombe / Tobontes's Village	Oct-69																								
3-375	Lake Kariba / Chiyabi	May-84																								
3-380	Lake Kariba / Sikolwenzala Hills	Aug-62																								
3-950	414,400 Zambezi / Lusitu Pump House	Aug-61																								
3-980	667,715 Zambezi / Chirundu R/B	Apr-63																								
5-012	Chongwe Chongwe North	Oct-73																								
5-016	303 Ngwerere / Ngwerere Estate Weir	Jan-55																								
5-024	Chongwe / Chongwe-Ngwerere Conflu.	Jan-77																								
5-025	1,813 Chongwe / Chongwe (G.E.R.) Bridge	Dec-68																								
5-029	118 Chalimbana / Romor Farm	Nov-53																								
5-030	107 Kapinombwa / Exchange Farm	Apr-57																								
5-099	Zambezi / Feira Boma	Mar-62																								
Kafue River Basin																										
4-005	440 Kafue / Kipuhsi	Aug-63																								
4-015	285 Muchindamu / Muchindamu	Aug-63																								
4-040	4,066 Kafue / Ngosa Farm	Oct-62																								
4-050	4,999 Kafue / Raglan Farm	Sep-59																								

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Ref.No. C.A.(km2)	River and Location	Opened	Closed	G.R.S.G. AutoDis.	Data Availability						
					1940'	1950'	1960'	1970'	1980'	1990'	
4-060	5,207 Kafue / Chililabombwe	Dec-58	Oct-74		OC 00#####000	#####	#####	#####	#####	#####	#####
4-090	7,148 Kafue / Kafironda	Dec-58			## #0#####000	#####	#####	#####	#####	#####	#####
4-095	27 Kafironda / Kafironda	May-73	Feb-80		#####	#####	#####	#####	#####	#####	#####
4-100	300 Mutundu / Mutundu	Jul-64			#####	#####	#####	#####	#####	#####	#####
4-120	869 Mwambashi / Mwambashi	Oct-59			# 0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-130	8,599 Kafue / Wusakile Bridge	Aug-59			# 0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-150	9,195 Kafue / Wusakile Bridge	Dec-58			#C 0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-152	192 Kamfinsa / Kamfinsa	Oct-61	Oct-87		#####	#####	#####	#####	#####	#####	#####
4-170	339 Batuba / Batuba	Jan-68	Apr-85		#C 0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-180	18 Chapula / St. Joseph's Mission	Feb-71	Nov-86		#0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-200	11,655 Kafue / Mpatamato	Dec-50	Oct-87		#####	#####	#####	#####	#####	#####	#####
4-203	Kafulafuta Kabwe / Ndola koka	Sep-85	Jan-90		#####	#####	#####	#####	#####	#####	#####
4-205	2,499 Kafue / Ibenga Mission	Oct-69	Sep-84		# 0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-210	306 Kafubu / Itawa-Dambo	Feb-73	Apr-87		#####	#####	#####	#####	#####	#####	#####
4-239	210 Munkulungwe / Kaposha	Jul-71	Jan-89		# 0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-240	951 Kafubu / Fisenge	Oct-69	Sep-84		#####	#####	#####	#####	#####	#####	#####
4-245	1,375 Kafubu / Masaiti R/B	Nov-62	Jan-89		#0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-250	4,817 Kafulafuta / Miputu Hills	Dec-62	Jan-89		#0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-260	18,726 Kafue / Ndubeni	Oct-63	Feb-72		#####	#####	#####	#####	#####	#####	#####
4-265	829 Lufwanyama / Muteba	May-71	Apr-85		#0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-266	69 Mpopo / Mpopo School	Mar-71	Apr-85		#0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-267	984 Lufwanyama / Mpopo School	Jun-71	Jan-87		#0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-268	267 Katembula / Katembula	Jun-71	Jan-87		#0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-272	2,890 Lufwanyama / Kanakila	Jun-71	Aug-87		#####	#####	#####	#####	#####	#####	#####
4-280	22,920 Kafue / Machiya Ferry	Jun-62	Aug-87		#####	#####	#####	#####	#####	#####	#####
4-281	598 Inpumpu / Machiya	Aug-71	Jan-87		#0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-302	2,668 Luswishi / Lwendo	Jun-71	Aug-87		#0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-310	3,600 Luswishi / Kiiundu	Oct-64	Oct-86		#0000000000	0000000000	0000000000	0000000000	0000000000	0000000000	0000000000
4-340	8,708 Luswishi / Kangondi	Aug-71	Jan-87		#####	#####	#####	#####	#####	#####	#####
4-350	34,162 Kafue / Chilenga	Jun-62	Jan-87		#####	#####	#####	#####	#####	#####	#####
4-375	80 Lukanda / Chikanda	Feb-76	Jan-87		#####	#####	#####	#####	#####	#####	#####
4-390	Lukanga Swamp / Chiwa Island	Jan-60	Jan-87		#####	#####	#####	#####	#####	#####	#####
4-400	Lukanga Swamp / Twenty Village	Nov-62	Jan-87		#####	#####	#####	#####	#####	#####	#####
4-435	50,479 Kafue / Mswebi	Sep-50	Jan-87		#####	#####	#####	#####	#####	#####	#####
4-450	54,442 Kafue / Lubungu	Jun-51	Jan-87		#####	#####	#####	#####	#####	#####	#####
4-460	11,655 Lunga / Konikombe Hills	Feb-64	Oct-86		#####	#####	#####	#####	#####	#####	#####
4-500	1,704 Nutanda / Mutanda Mission	Feb-71	Sep-85		#####	#####	#####	#####	#####	#####	#####

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Ref.No. C.A.(km2)	River and Location	Opened	Closed	Data Availability				1990'		
				1940'	1950'	1960'	1970'		1980'	1990'
4-505	427 Solwezi / Solwezi	Sep-71	Sep-85	Y	N	Y	N	N	#####00 000####	#####
4-510	7,997 Lunga / Mujimanzovu	Sep-63	Dec-86	Y	N	Y	N	N	#####0000000000000#####	#####
4-515	1,083 Chifubwa / Solwezi Road	Aug-81	Nov-86	Y	N	Y	N	N	#####0#####	#####
4-550	19,555 Lunga / Kelongwa School	Dec-63		Y	N	Y	N	N	#####0000000000000#####	#####
4-560	21,445 Lunga / Chifumpa Pontoon	Feb-53		Y	N	Y	N	N	#####00#####	#####
4-595	24,268 Lunga / Kasonso Mine	Jan-58	Jan-77	Y	N	Y	N	N	#####0#####	#####
4-620	1,062 Lufupa / Kasempa Pump House	Dec-63		Y	N	Y	N	N	#####0000000000000#####	#####
4-669	95,053 Kafue / Kafue Hook Bridge	Jan-68	Jul-73	Y	N	Y	N	N	#####0#####	#####
4-670	95,053 Kafue / Kafue Hook Pontoon	Jun-51		Y	N	Y	N	N	#####00000000000#####	#####
4-675	Kafue / Chunga Camp	Feb-69	Jan-77	Y	N	Y	N	N	#####00000000000#####	#####
4-675	Kafue / Chunga Camp	Feb-69	Apr-73	Y	N	Y	N	N	#####00000000000#####	#####
4-710	105,672 Kafue / Itenzi-Tezhi	Jan-52		Y	N	Y	N	N	#####0000000000000#####	#####
4-750	9,065 Nanzila / Nanzila Mission	Oct-63		Y	N	Y	N	N	#####0#####	#####
4-759	116,032 Kafue / Namwala Boma	1914		Y	N	Y	N	N	#####0000#####	#####
4-760	149,443 Kafue / Namwala Pontoon	Nov-51		Y	N	Y	N	N	#####000#####	#####
4-780	120,176 Kafue / Busangu Rapids	Nov-62	Jan-87	Y	N	Y	N	N	#####000#####	#####
4-790	1,528 Nansenga / Tepula	Dec-63	Jan-80	Y	N	Y	N	N	#####000#####	#####
4-820	1,787 Muniyoke / Mapanza R/B	1960	May-66	Y	N	Y	N	N	#####000#####	#####
4-821	1,787 Muniyoke / Mapanza Mission	May-60	Jan-87	Y	N	Y	N	N	#####000#####	#####
4-850	1,735 Mutama / Mutama Rapids	Oct-63	Jan-87	Y	N	Y	N	N	#####0000000#####	#####
4-880	777 Nangoma / Myooye Bridge	Oct-63		Y	N	Y	N	N	#####000#####	#####
4-881	Nangoma / Muchabi	Dec-77	Apr-85	Y	N	Y	N	N	#####0#####	#####
4-890	136,234 Kafue / Nyimba	Oct-62	Nov-87	Y	N	Y	N	N	#####00000000#####	#####
4-907	1,010 Magoye / Railway Weir	Mar-52	May-70	Y	N	Y	N	N	#####00000000#####	#####
4-915	1,865 Magoye / Chimbumbu's	Aug-70	Dec-86	Y	N	Y	N	N	#####0000000#####	#####
4-918	62 Mwembesh / Yreat North Road	Mar-77	May-71	Y	N	Y	N	N	#####0#####	#####
4-930	199 Kabile / Chikolomowa Hills	Dec-63	Nov-82	Y	N	Y	N	N	#####00000000#####	#####
4-937	2,163 Mwembeshi / Kusaka-Mumbwa	Nov-78	Aug-85	Y	N	Y	N	N	#####00000000#####	#####
4-938	Kafue / Luwato	Dec-62		Y	N	Y	N	N	#####0#####	#####
4-940	3,895 Mwembeshi / Shibuyunji	Dec-52	Oct-86	Y	N	Y	N	N	#####00000000#####	#####
4-941	45 Kaleya / Kaleya Dam Site	Dec-52	1975	Y	(Y)	Y	(Y)	Y	#####00000000#####	#####
4-942	63 Kaleya / Water Valley Weir	Oct-51	Oct-86	Y	(Y)	Y	(Y)	Y	#####00000000#####	#####
4-943	63 Kaleya / Water Valley Weir	Oct-58	Oct-86	Y	N	Y	N	N	#####00000000#####	#####
4-945	206 Kaleya / Avilion Weir	Dec-50	Jun-88	Y	N	Y	N	N	#####00000000#####	#####
4-946	206 Kaleya / Avilion R/B	Nov-58	Jun-88	Y	N	Y	N	N	#####00000000#####	#####
4-947	376 Kaleya / Mendham Weir	Nov-51	Jul-61	Y	N	Y	N	N	#####00000000#####	#####
4-949	549 Kaleya / Kaleya R/B	Nov-58	Jan-88	Y	N	Y	N	N	#####00000000#####	#####

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Ref.No. C.A.(km2)	River and Location	Opened	Closed	G.R. S.G. Auto Dis.	Data Availability							
					1940'	1950'	1960'	1970'	1980'	1990'		
4-950	596 Kaleya / Heal's Estate	Oct-51	Dec-86	N	Y	(Y)	Y	#####	#####	#####	#####	#####
4-952	7 Nakambala / Nakambala Upper Weir	Mar-58	Oct-65	N	Y	(Y)	Y	#####	#####	#####	#####	#####
4-953	9 Nakambala / Nakambala Lower Weir	Nov-52	Mar-87	N	Y	(Y)	Y	#####	#####	#####	#####	#####
4-955	149 Kafue / Cere's	May-51	Oct-86	N	Y	(Y)	Y	#####	#####	#####	#####	#####
4-958	140 Mazabuka / Uruaf Farm	Oct-52	Dec-87	N	Y	(Y)	Y	#####	#####	#####	#####	#####
4-960	149,350 Kafue / Kafue Polder	Jul-56	Dec-87	Y	Y	N	N	#####	#####	#####	#####	#####
4-965	Nakanega / Nega-Nega	Jan-69	Dec-87	N	Y	N	N	#####	#####	#####	#####	#####
4-975	148,265 Kafue / Kafue Railway Bridge	1905		N	Y	N	N	#####	#####	#####	#####	#####
4-977	150,971 Kafue / Kasaka	Aug-43	Oct-74	N	Y	N	N	#####	#####	#####	#####	#####
4-980	150,997 Kafue / Kafue Road Bridge	Jan-48	Oct-74	N	Y	N	N	#####	#####	#####	#####	#####
4-995	148,666	Sep-58	Jun-70	N	Y	N	N	#####	#####	#####	#####	#####
4-999	154,882 Kafue / Mafungozi	Sep-58	Jul-70	N	Y	N	N	#####	#####	#####	#####	#####
Luangwa River Basin												
5-300	Luangwa / Mulopwe Village	Sep-75	Dec-79	Y	Y	N	N	#####	#####	#####	#####	#####
5-350	1,101 Lundazi / Lundazi Dam	Feb-57		Y	Y	N	N	#####	#####	#####	#####	#####
5-400	Lumamba / Lumamba Dam	Aug-76		Y	Y	N	N	#####	#####	#####	#####	#####
5-550	10 Kova / Kova Bridge	Jan-73		Y	Y	N	N	#####	#####	#####	#####	#####
5-555	Lutembwe / Lutembwe Weir	Feb-73		Y	Y	(Y)	N	#####	#####	#####	#####	#####
5-557	75 M* sipazi / Chadidza RD BG	Jun-70		Y	Y	N	Y	#####	#####	#####	#####	#####
5-558	Kova / Kova Drift D/S	Jul-70		Y	Y	N	Y	#####	#####	#####	#####	#####
5-560	319 M* sipazi / Madzimoyo Quarry	Jun-70		Y	Y	(Y)	Y	#####	#####	#####	#####	#####
5-561	650 Lutembwe / Madzimoyo Bridge	Jun-70		Y	Y	N	Y	#####	#####	#####	#####	#####
5-562	65 Makungwa / Great East RD BG	Sep-70	May-85	Y	Y	N	Y	#####	#####	#####	#####	#####
5-563	Nsadzu / Nsadzu Dam	Aug-70		Y	Y	N	Y	#####	#####	#####	#####	#####
5-564	60 Katete / Katete Boma	Jul-73		Y	Y	N	Y	#####	#####	#####	#####	#####
5-650	Luangwa / M* fuwe	Oct-78		Y	Y	N	Y	#####	#####	#####	#####	#####
5-670	995 Lusiwasi / Masase	Nov-63		Y	Y	N	Y	#####	#####	#####	#####	#####
5-755	181 Chiwetwe / M* kushi Boma	Nov-65		Y	Y	N	Y	#####	#####	#####	#####	#####
5-775	106 Munshiwembwa / Johnson's Farm	Sep-62		Y	Y	N	Y	#####	#####	#####	#####	#####
5-800	55,488 Luangwa / Ndevu Camp	Sep-62		Y	Y	(Y)	N	#####	#####	#####	#####	#####
5-815	1,448 Mulungushi / Great North RD BG	Sep-80	Jun-89	N	Y	N	Y	#####	#####	#####	#####	#####
5-940	143,781 Luangwa / Luangwa RD BG	Mar-60	Feb-92	N	Y	N	Y	#####	#####	#####	#####	#####
5-948	2,134 Rufunsa / Janairo Village	Oct-48	Oct-89	Y	Y	N	Y	#####	#####	#####	#####	#####
Chambeshi River Basin												
6-105	23 China / Senga Hill	Feb-70	Nov-73	N	(Y)	N	Y	#####	#####	#####	#####	#####
6-130	Nakonde / Nakonde Dam Site	Sep-75		Y	Y	N	Y	#####	#####	#####	#####	#####
6-133	32 Kabulukutu / Chamfubu	Dec-86		Y	Y	N	Y	#####	#####	#####	#####	#####

List of Hydrometric Stations in Zambia

Ref.No. C.A.(km2)	River and Location	Opened	Closed	G.R. S.G. Auto Dis.	Data Availability						
					1940'	1950'	1960'	1970'	1980'	1990'	
6-135	12 Chamfubu / Conflu. with Kabulukutu	Dec-86	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-138	54 Kabulukutu / Ngoli Coffee Estate	Oct-86	N	Y	Y	Y	Y	Y	Y	Y	Y
6-140	6,628 Chambeshi / Chandaweyaya	Oct-59	N	Y	Y	Y	Y	Y	Y	Y	Y
6-145	6,045 Chambeshi / Mbesuma Ferry	Oct-74	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-160	95 Mansenke / Nansala Falls	Oct-61	N	Y	Y	Y	Y	Y	Y	Y	Y
6-170	2,901 Kalungwishi / Chunga Ranchi	Oct-59	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-200	2,198 Chozi / Chozi	Dec-59	N	Y	Y	Y	Y	Y	Y	Y	Y
6-224	101 Mungu / Mungwi School	Jan-58	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-235	2,097 Kalung Bemba / Kalungu	Oct-59	N	Y	Y	Y	Y	Y	Y	Y	Y
6-242	640 Chimmanabawi / Chipoma Falls	May-56	N	Y	Y	Y	Y	Y	Y	Y	Y
6-250	2,839 Lubu / Mundu	Oct-59	N	Y	Y	Y	Y	Y	Y	Y	Y
6-275	1,038 Mansha / Shiwa Nganda	Aug-64	N	Y	Y	Y	Y	Y	Y	Y	Y
6-289	34,188 Chambeshi / Chambeshi Pontoon	Dec-52	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-290	Chambeshi / Chambeshi RD BG	Feb-63	N	(Y)	N	Y	Y	Y	Y	Y	Y
6-330	2,548 Luombe / Chisamba Falls	Sep-54	N	Y	Y	Y	Y	Y	Y	Y	Y
6-335	550 Lukupa / Kateshi Coffee Estate	Oct-86	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-340	67 Miliima / Miliima	Feb-57	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-350	6,527 Lukulu / Kasama-Luwingu RD BG	Jun-70	N	Y	Y	Y	Y	Y	Y	Y	Y
6-370	12 Mfiliansolo / Kasama	Sep-61	N	(Y)	Y	Y	Y	Y	Y	Y	Y
6-400	42,921 Chambeshi Mbat	Nov-57	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-480	179 Lwitikila / Lwitikila Falls	Sep-58	N	Y	Y	Y	Y	Y	Y	Y	Y
6-486	839 Lwitikila / Mpika RD BG	Oct-69	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-500	1,215 Kanchibya / Mpika-Kasama RD BG	Dec-69	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-510	992 Kanchibya / Kopa Bridge	Oct-70	Y	Y	Y	Y	Y	Y	Y	Y	Y
Luapula River Basin											
6-020	161 Lutubu / Green Water Falls Luwingu	Nov-59	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-040	Bangweulu Lake / Nsombo Harbour	May-54	N	Y	Y	Y	Y	Y	Y	Y	Y
6-060	1,178 Luena / Luena Mission	Feb-70	N	Y	Y	Y	Y	Y	Y	Y	Y
6-065	Bangweulu / Lake Muchinchi	Jan-53	N	(Y)	N	Y	Y	Y	Y	Y	Y
6-080	Bangweulu / Samiya	Aug-54	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-090	Bangweulu Lake / Mpanta Point	Nov-57	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-450	Bangweulu Swamps / Nsalushi Island	Nov-57	N	(Y)	N	Y	Y	Y	Y	Y	Y
6-465	Bangweulu Swamps / Mutwamina	Nov-57	N	(Y)	N	Y	Y	Y	Y	Y	Y
6-475	Bangweulu Swamps / Matongo	Jan-54	N	Y	Y	Y	Y	Y	Y	Y	Y
6-520	Bangweulu swamps / Kasoma	Feb-63	N	Y	Y	Y	Y	Y	Y	Y	Y
6-525	Bangweulu Swamps / Kalimankonde	Nov-57	1N	(Y)	N	Y	Y	Y	Y	Y	Y
6-665	2,800 Lwela / Chipota Falls	Nov-70	Y	Y	Y	Y	Y	Y	Y	Y	Y

List of Hydrometric Stations in Zambia

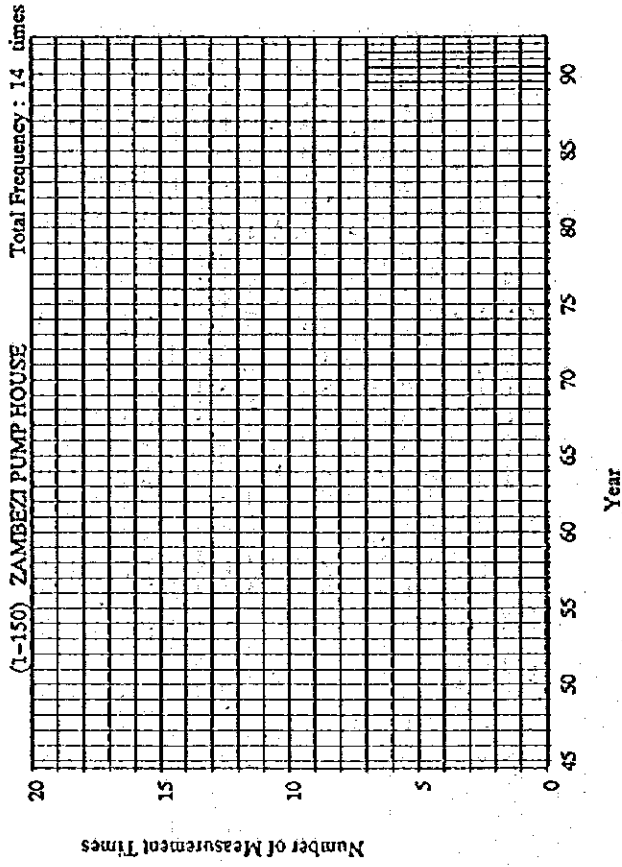
Ref.No. C.A.(km2)	River and Location	Opened	Data Availability								
			1940'	1950'	1960'	1970'	1980'	1990'			
			0123456789 0123456789 0123456789 0123456789 0123456789 0123456789								
6-670	122,507 Luapula / Chembe Ferry	Jun-57	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-700	1,510 Mansa / Mansa Pump House	Oct-55	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-745	Luongo / Mukonshi	1977	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-750	4,170 Luongo / Mvenda-Kashiba RD BG	Feb-70	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-760	121,088 Lufubu / Chibote Mission	Feb-76	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-765	1,220 Lufubu / Chipili	Nov-70	N	Y	Y	Y	Y	Y	Y	Y	Y
6-770	5,957 Luongo / Musonda Falls	Nov-57	N	(Y)	Y	Y	Y	Y	Y	Y	Y
6-775	6,045 Luongo / Chibondo Pontoon	Sep-56	N	Y	Y	Y	Y	Y	Y	Y	Y
6-785	16,058 Luapula / Kashiba	Oct-55	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-790	303 Ngona / Ntumbachushi Falls	Oct-57	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-800	Muweru Lake / Nchelenge	Dec-54	Y	(Y)	Y	Y	Y	Y	Y	Y	Y
6-800	Muweru Lake / Nchelenge (Reopen)	Mar-94	Y	(Y)	Y	Y	Y	Y	Y	Y	Y
6-855	383 Mutotshi / Kupuma Falls	Nov-57	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-860	4,895 Luangwa / Mumbuluma Falls	Sep-70	N	Y	Y	Y	Y	Y	Y	Y	Y
6-865	10,218 Kalungwishi / Chimpempe Pontoon	Mar-51	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-900	12,018 Kalungwishi / Kundabwika Falls	Aug-70	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-905	12,170 Kalungwishi / Olandi	Apr-54	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-910	2,186 Chishela / Bulaya Pontoon	Jun-58	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-915	1,166 Mwawe / Mwawe Cause Way	Sep-58	N	Y	Y	Y	Y	Y	Y	Y	Y
6-920	2,424 Choma / Kaputa	Sep-57	Y	(Y)	Y	Y	Y	Y	Y	Y	Y
6-925	2,424 Choma / Kaputa	Jan-70	Y	(Y)	Y	Y	Y	Y	Y	Y	Y
6-935	707 Mwambeshi / Nsama	Sep-57	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-955	1,015 Mukubwa / Kambasa	Jun-59	Y	Y	Y	Y	Y	Y	Y	Y	Y
6-960	Mofwe Dambo / Mukupa Katandula	Jul-58	N	Y	Y	Y	Y	Y	Y	Y	Y
6-980	Mwelu Lake / Kafuwe Mission	Oct-56	N	(Y)	Y	Y	Y	Y	Y	Y	Y
Lake Tanganyika Basin			Nov-55	Apr-90	N	N	N	N	N	N	N
7-005	363 Lunzua / Kambole Bridge	May-70	N	Y	Y	Y	Y	Y	Y	Y	Y
7-006	386 Lunzua / Lunzua Weir	Jan-57	N	Y	Y	Y	Y	Y	Y	Y	Y
7-010	Lake Tanganyika / Mpulung	Apr-57	N	Y	Y	Y	Y	Y	Y	Y	Y
7-020	57 Lake Chila / Mbala	Oct-55	Y	Y	Y	Y	Y	Y	Y	Y	Y
7-021	57 Lucheche / Below Lake Chila	Mar-70	Y	Y	Y	Y	Y	Y	Y	Y	Y
7-750	6,475 Lufubu / Keso Falls	Sep-57	N	Y	Y	Y	Y	Y	Y	Y	Y
7-800	Lake Tanganyika / Msumbu Harbour	Dec-60	Y	Y	Y	Y	Y	Y	Y	Y	Y

Appendix - 2 Cross Section and Discharge Rating Curve at Hydrometric Station

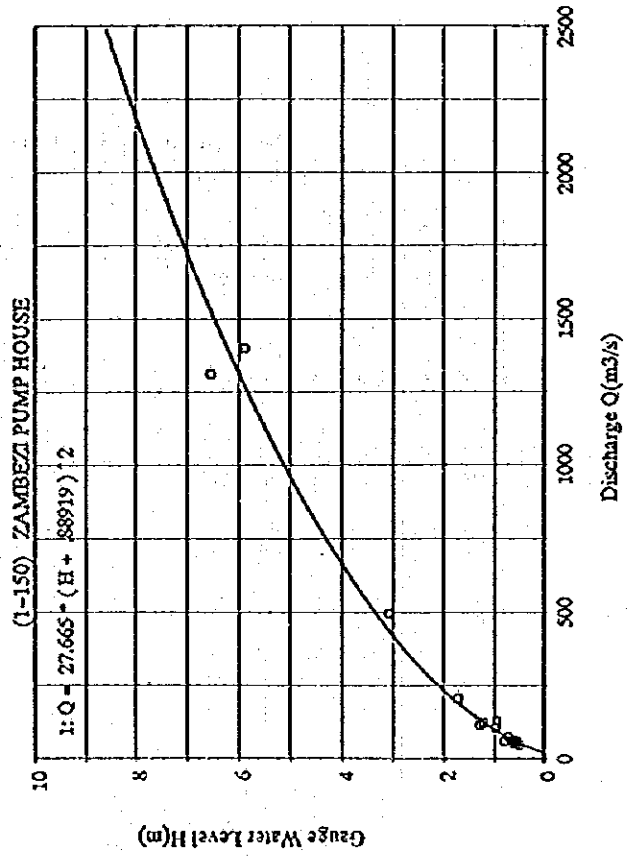
Discharge Rating Curve at Discharge Reference Points

No.	Station Name & Number	Discharge Rating Curve	Water Level Range	
PZ-02	Zambezi Pump House (1-150)	$Q = 27.665(H + 0.889)^2$	All of H	
PZ-03	Kabompo Boma (1-650)	$Q = 77.029(H - 0.842)^2$	All of H	
PZ-05	Watopa Pontoon (1-950)	$Q = 37.190(H - 0.523)^2$	$H \leq 4.2$ m	
		$Q = 14.203(H + 1.755)^2$	$H > 4.2$ m	
PZ-07	Lukulu (2-030)	$Q = 33.862(H + 2.121)^2$	All of H	
PZ-08	Kalabo (2-250)	$Q = 10.591(H + 0.293)^2$	$H \leq 3.4$ m	
		$Q = 169.37(H - 2.454)^2$	$H > 3.4$ m	
PZ-10	Senanga (2-400)	$Q = 64.534(H + 1.305)^2$	All of H	
PK-01	Raglan Farm (4-050)	$Q = 7.586(H - 1.007)^2$	$H \leq 2.5$ m	
		$Q = 3.587(H + 1.144)^2$	$H > 2.5$ m	
PK-02	Mwambashi (4-120)	$Q = 2.112(H - 0.069)^2$	$H \leq 2.8$ m	
		$Q = 6.168(H - 1.223)^2$	$H > 2.8$ m	
PK-03	Smith's Bridge (4-130)	$Q = 6.251(H + 0.133)^2$	All of H	
PK-04	Mpatamatu (4-200)	$Q = 7.507(H + 0.619)^2$	All of H	
PK-05	Machiya Ferry (4-280)	$Q = 11.409(H - 1.075)^2$	All of H	
PK-07	Chilenga (4-350)	$Q = 9.716(H + 0.291)^2$	$H \leq 5.5$ m	
		$Q = 51.843(H - 2.976)^2$	$H > 5.5$ m	
PK-08	Lubungu (4-450)	$Q = 32.665(H - 0.509)^2$	All of H	
PK-09	Chifumpa Pontoon (4-560)	$Q = 26.533(H + 0.484)^2$	All of H	
PK-11	Kafue Hook Bridge (4-669)	$Q = 115.30(H - 0.975)^2$	All of H	
PL-1	Mfuwe (5-650) (-82'02)	$Q = 21.558(H - 0.247)^2$	$H \leq 1.60$ m	
		$Q = 30.734(H - 0.470)^2$	$H > 1.60$ m	
		(82'02 ~ 83'09)	$Q = 10.551(H - 0.192)^2$	$H \leq 2.10$ m
		$Q = 16.615(H - 0.572)^2$	$2.10 < H \leq 5.00$ m	
		$Q = 37.217(H - 2.025)^2$	$H > 5.00$ m	
		(83'10 ~)	$Q = 2.034H^2$	$H \leq 1.50$ m
PL-2	Ndevu Camp (5-800)	$Q = 57.813(H - 1.219)^2$	$H > 1.50$ m	
		$Q = 2.292H^2$	$H \leq 1.20$ m	
PL-5	Luangwa Road Bridge (5-940)	$Q = 70.524(H - 0.984)^2$	$H > 1.20$ m	
		$Q = 6.222H^2$	$H \leq 1.50$ m	
PC-1	Chambeshi Old Pontoon. (6-289)	$Q = 61.556(H - 1.023)^2$	$H > 1.50$ m	
		$Q = 19.756(H - 0.018)^2$	All of H	
PC-2	Kasama-Luwingu Rd.Br. (6-350)	$Q = 16.644(H - 0.0652)^2$	All of H	
PP-2	Chembe Ferry (6-670)	$Q = 74.290(H - 2.299)^2$	All of H	
PP-3	Kashiba (6-785)	$Q = 33.143(H + 0.648)^2$	$H \leq 6.0$ m	
		$Q = 82.427(H - 1.803)^2$	$H > 6.0$ m	
PP-4	Kundabwika Falls (6-900)	$Q = 62.437(H + 0.196)^2$	All of H	
PT-1	Keso Falls (7-750)	$Q = 65.551(H - 0.573)^2$	All of H	

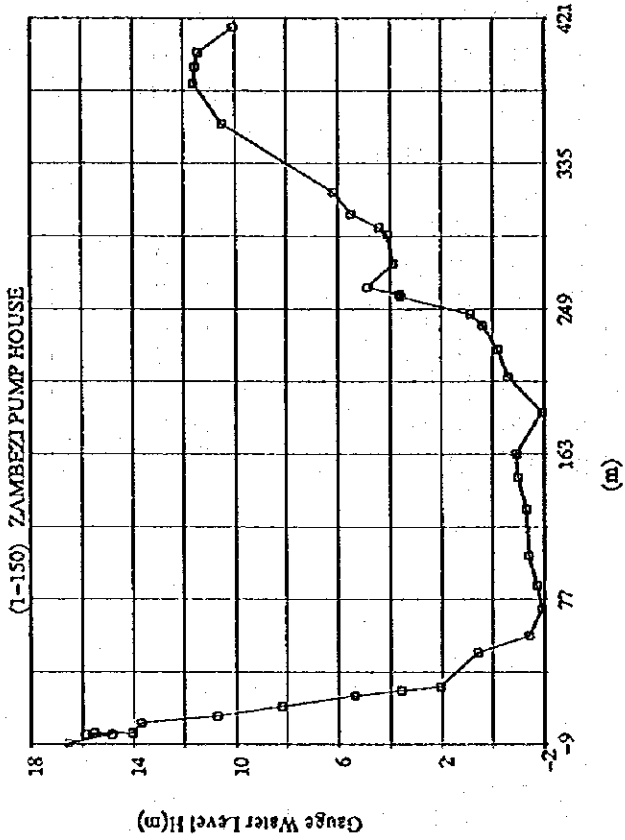
FREQUENCY OF FLOW MEASUREMENT



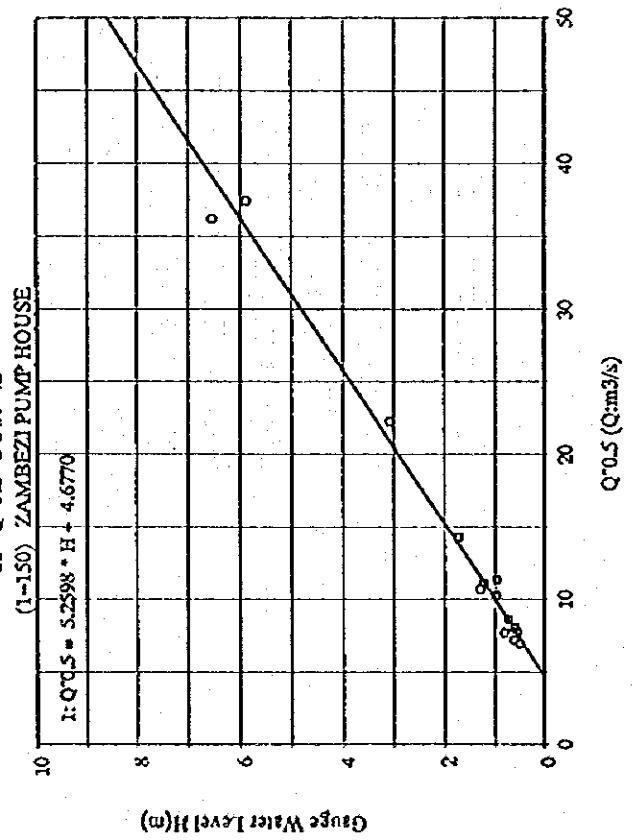
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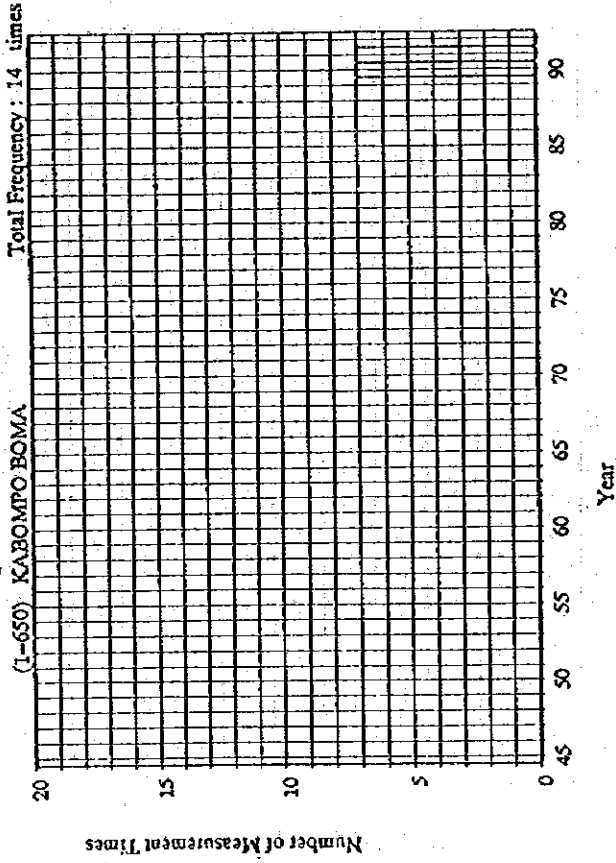
CROSS SECTION



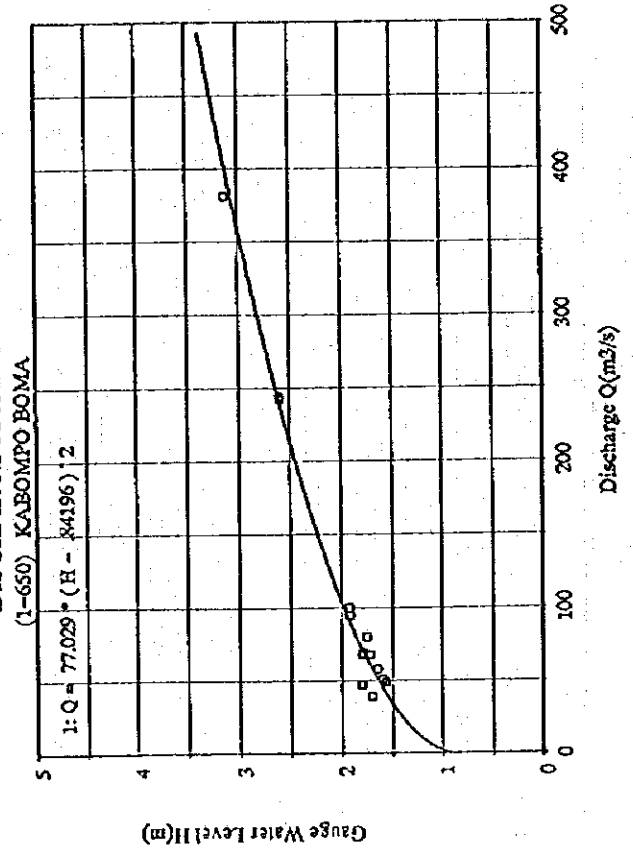
H-Q^{0.5} CURVE



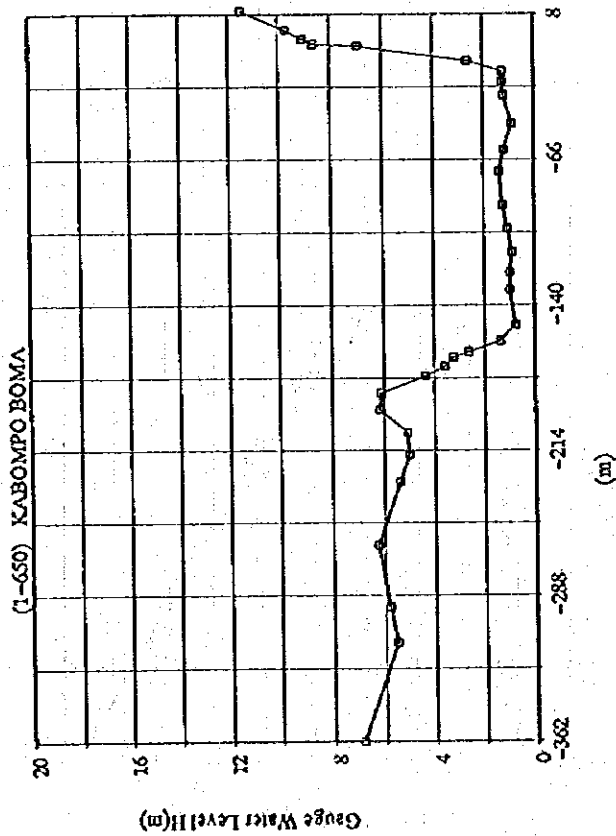
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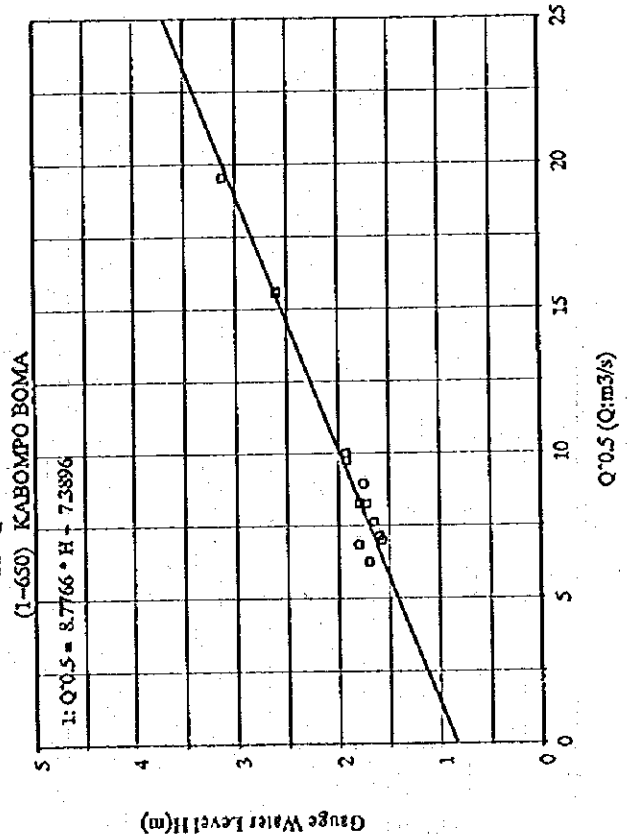
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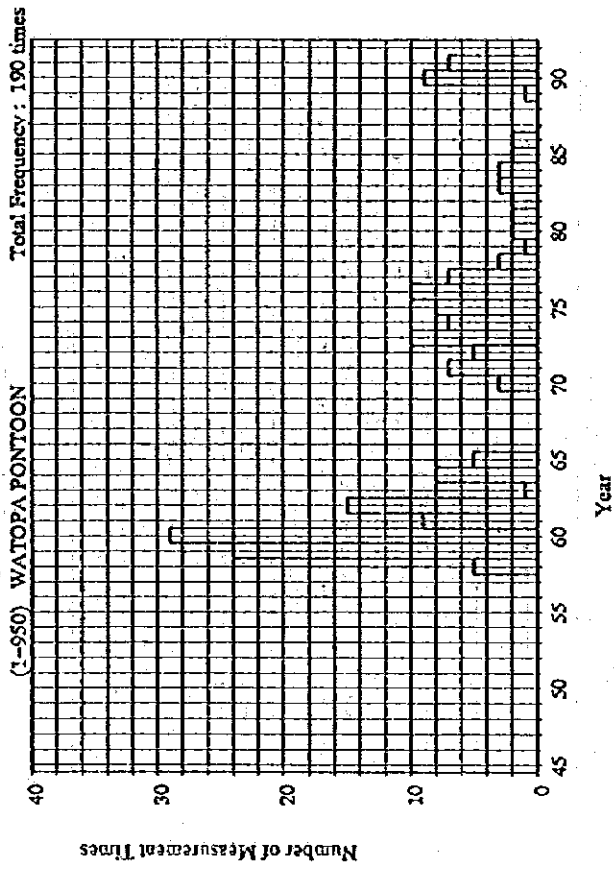
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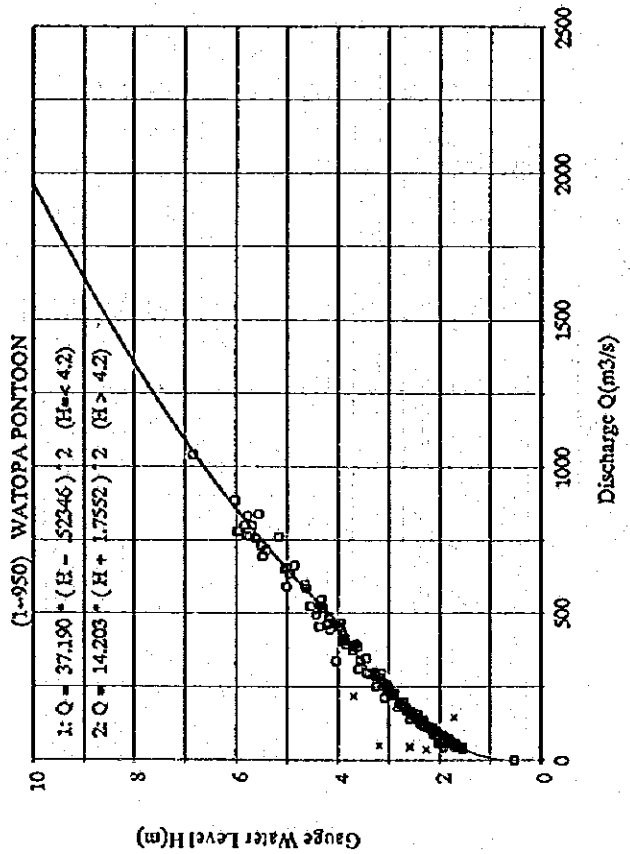
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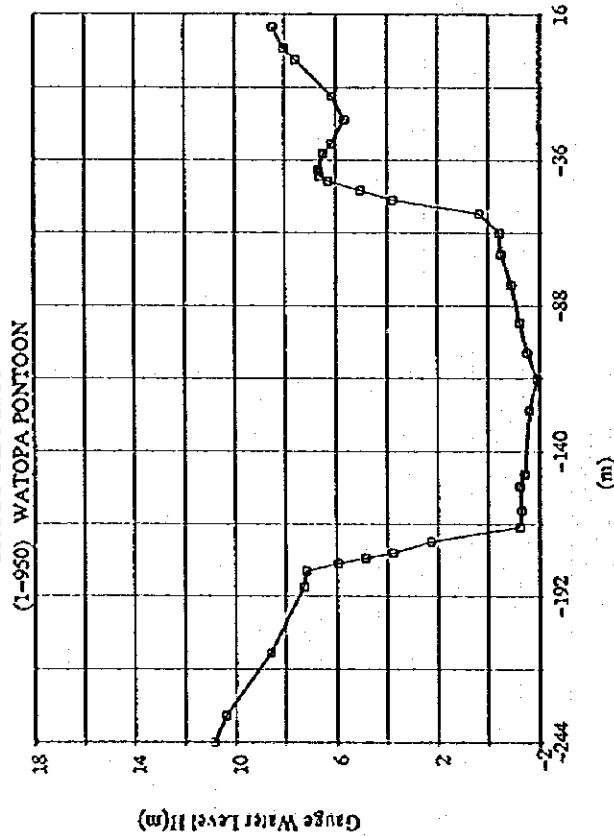
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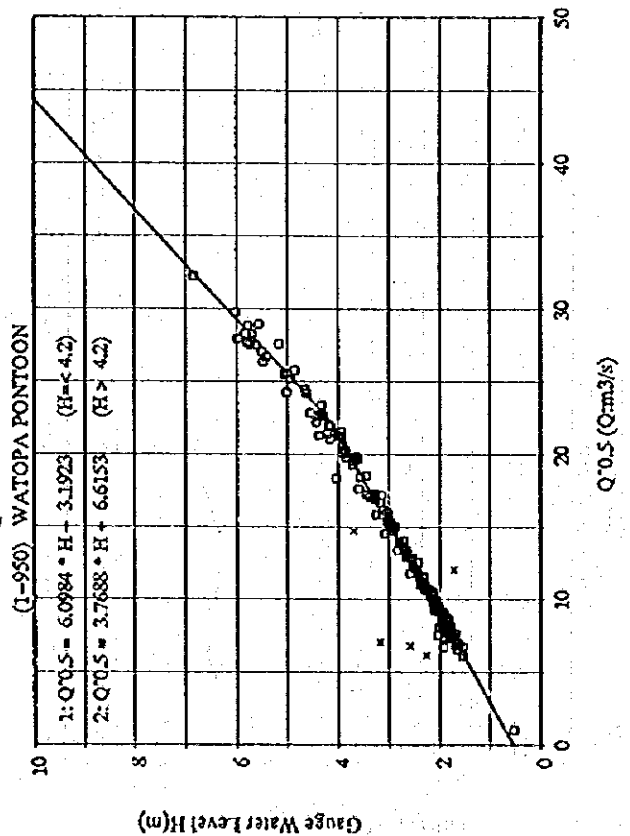
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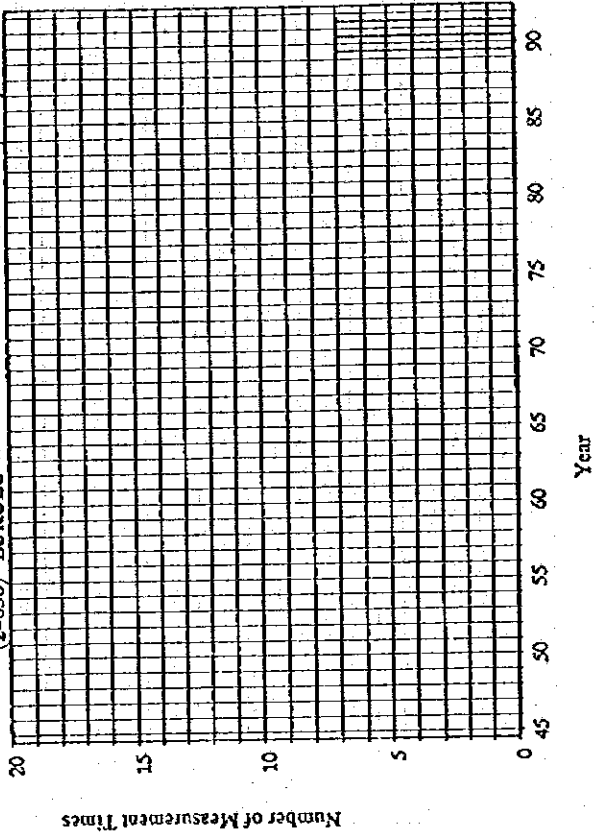


H-Q^0.5 CURVE



FREQUENCY OF FLOW MEASUREMENT

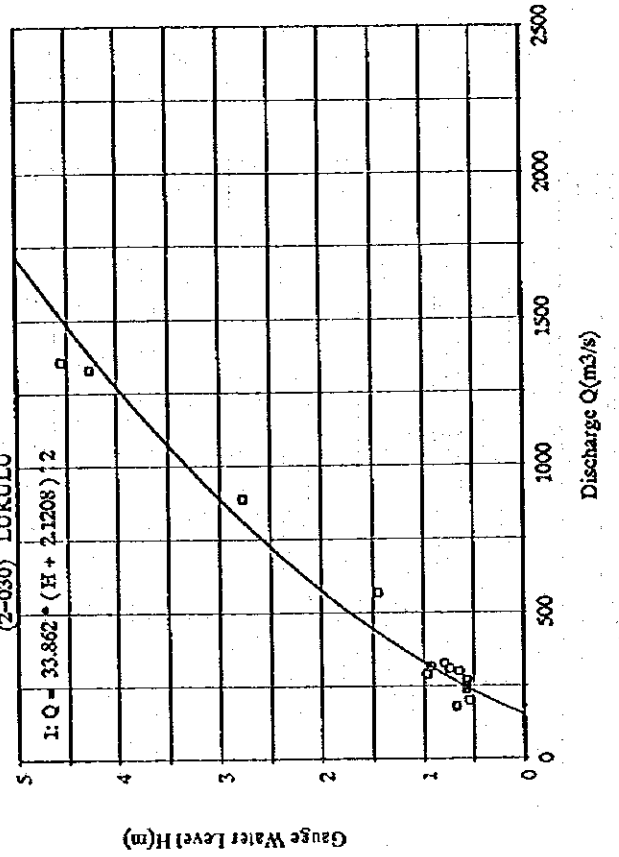
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Total Frequency: 14 Times



DISCHARGE RATING CURVE

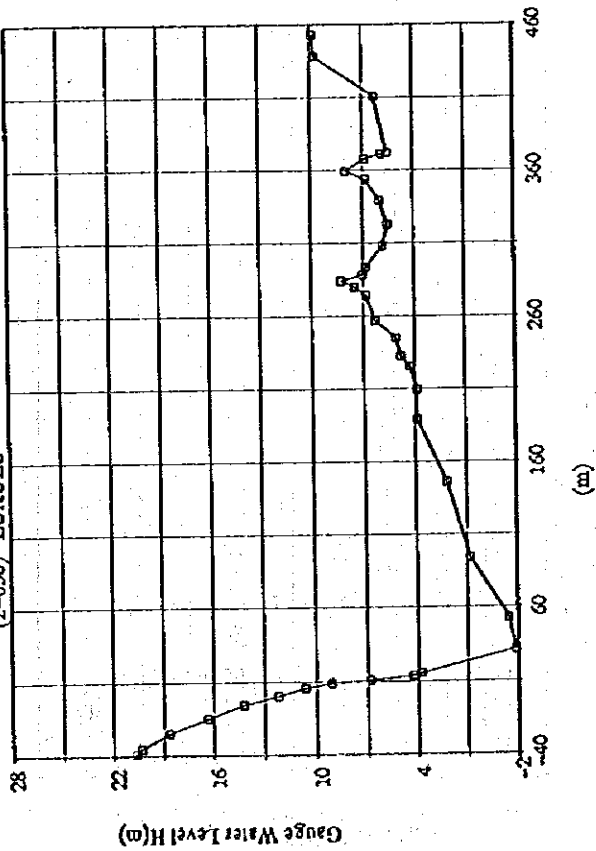
(2-030) LUKULU

$I: Q = 33.862 \cdot (H + 2.1208)^{1.2}$



CROSS SECTION

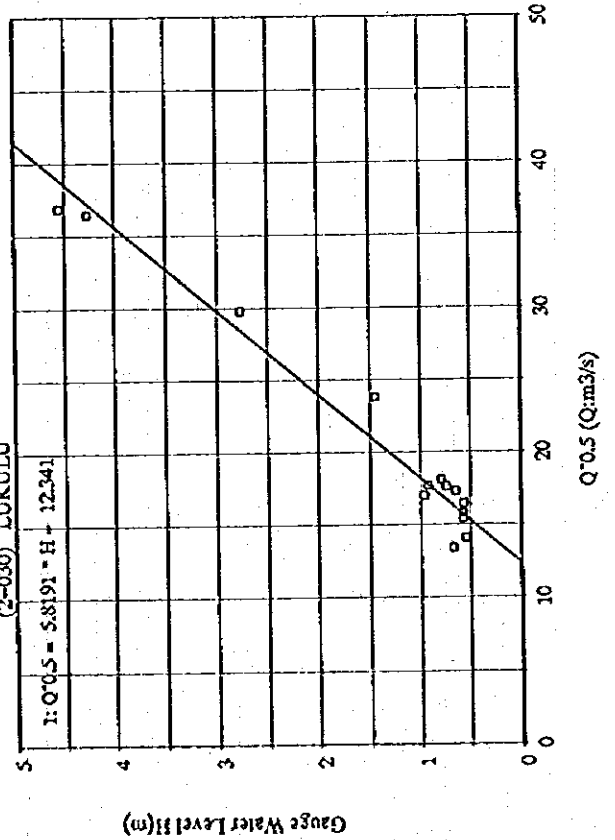
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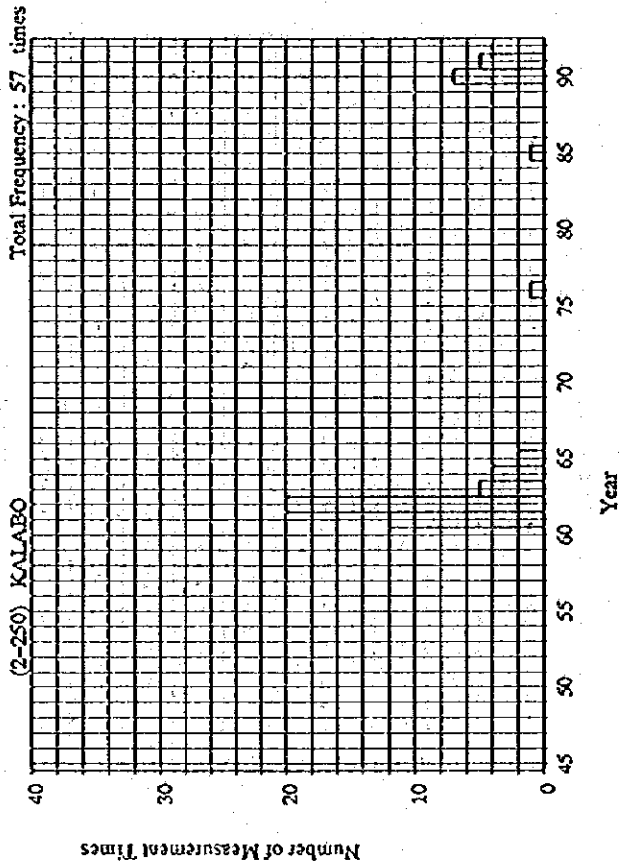
H-Q^0.5 CURVE

(2-030) LUKULU

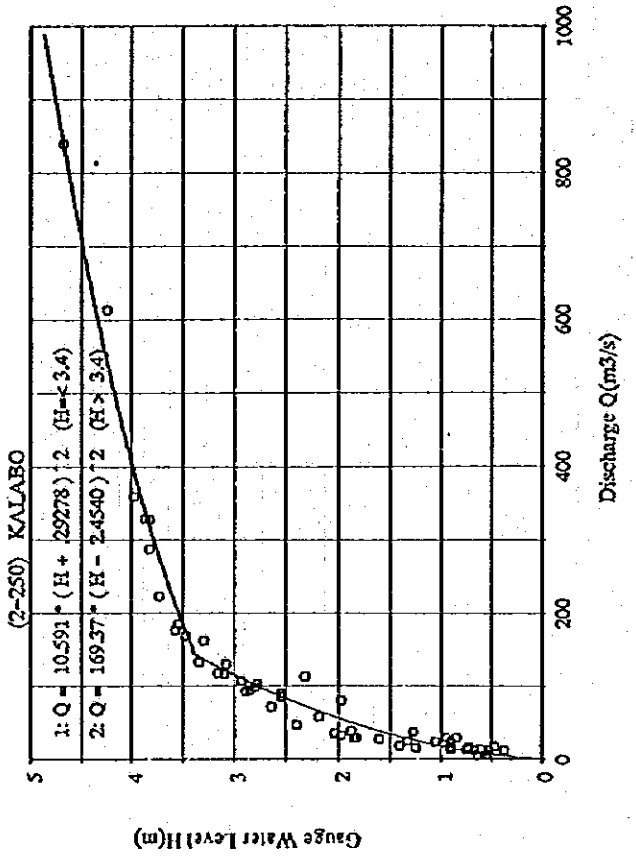
$I: Q^{0.5} = 5.8191 \cdot H + 12.241$



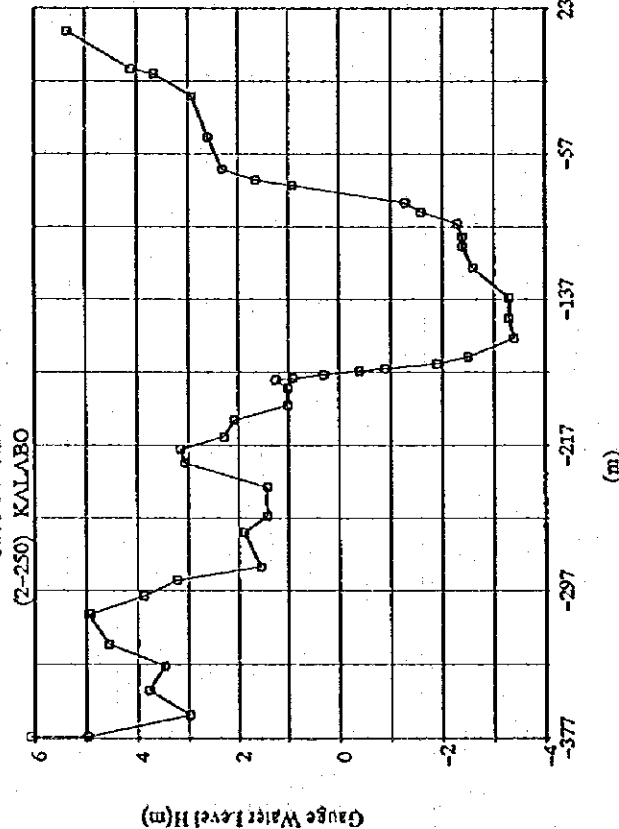
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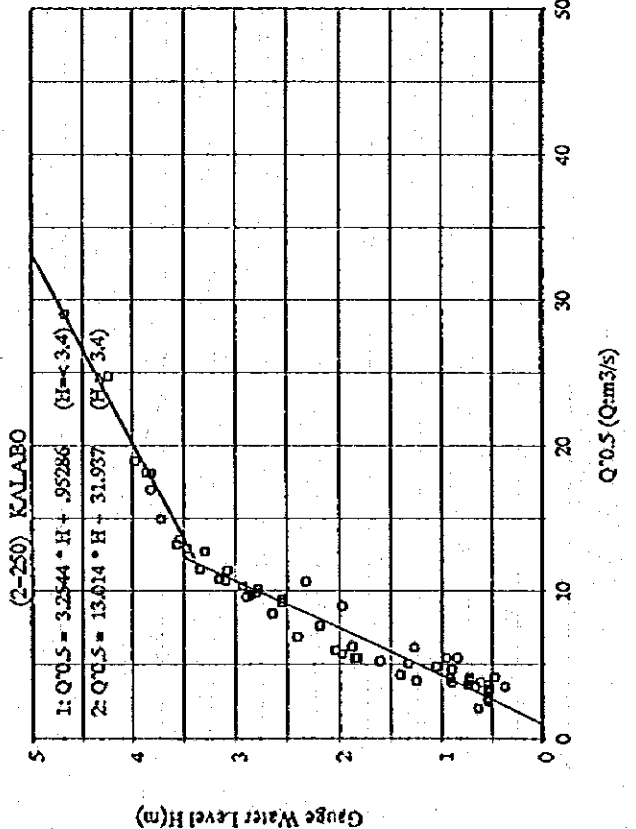
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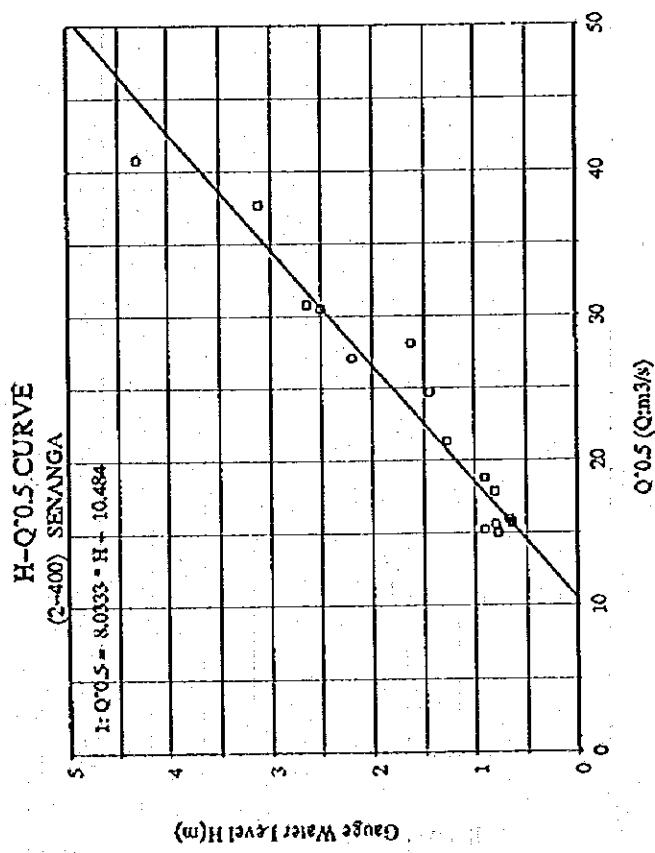
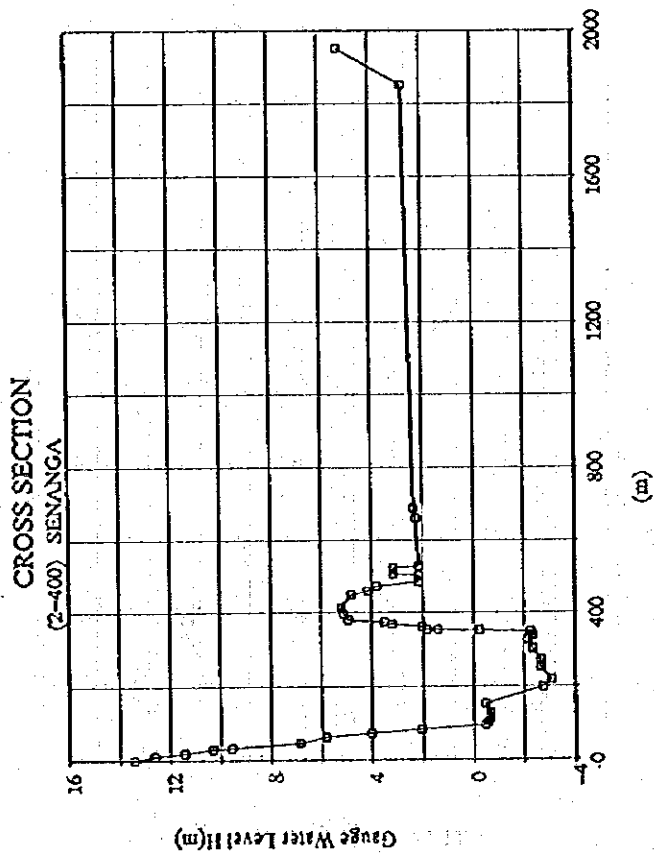
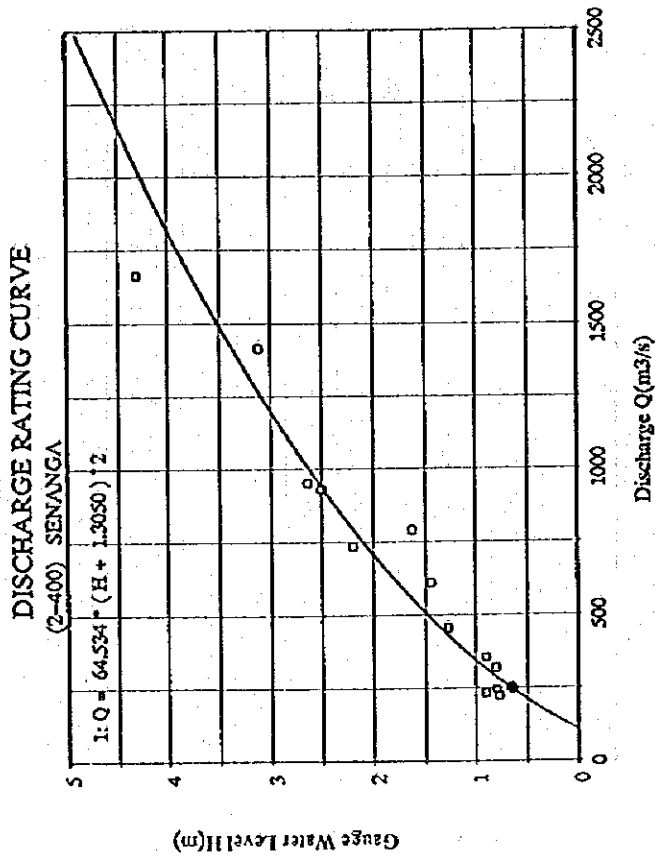
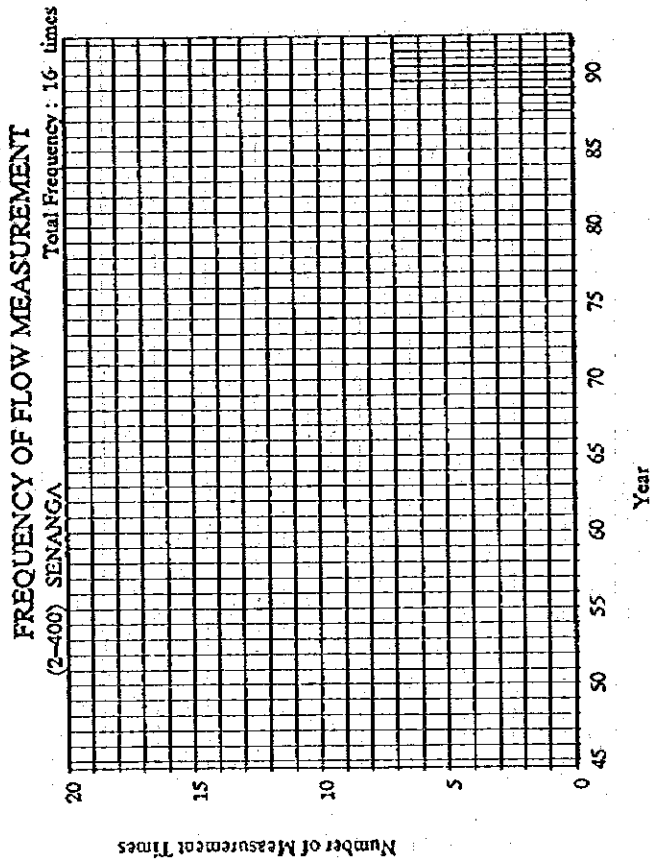


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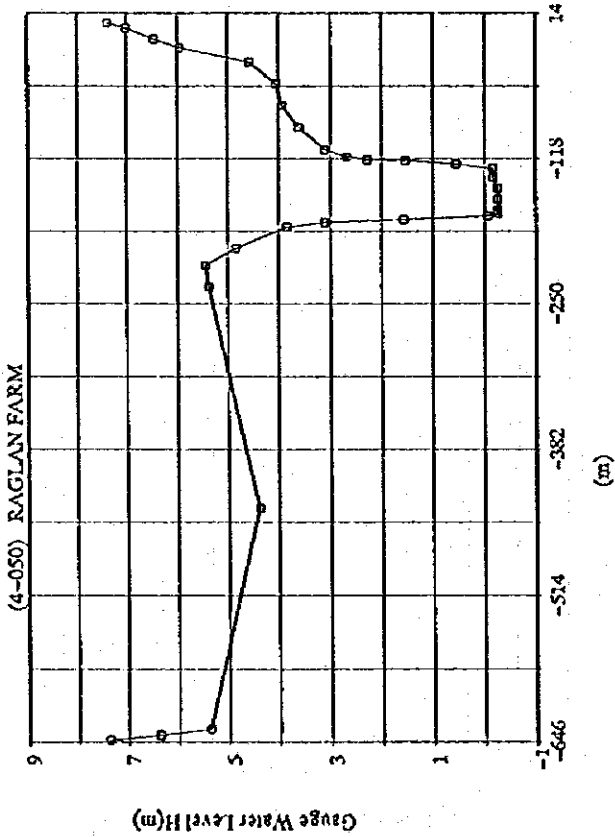


H-Q^0.5 CURVE

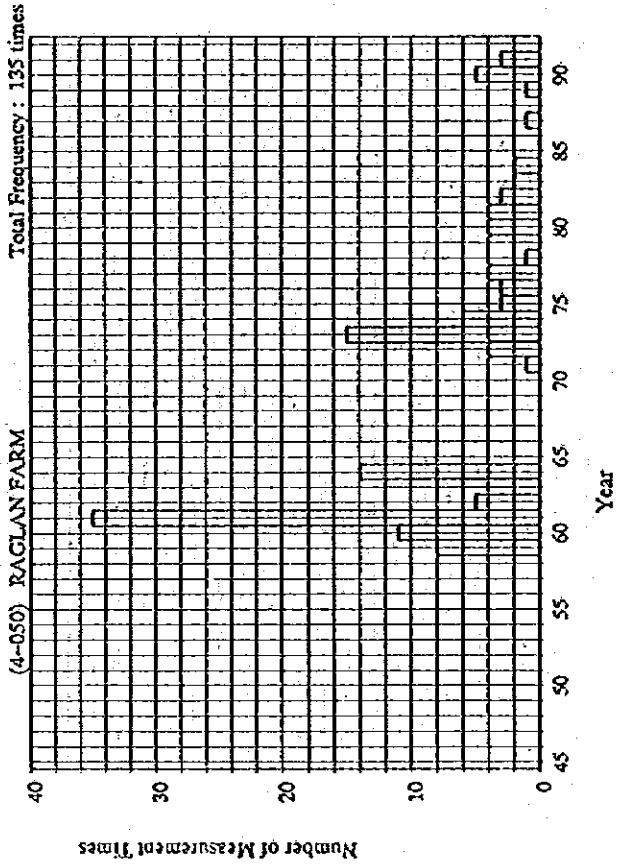




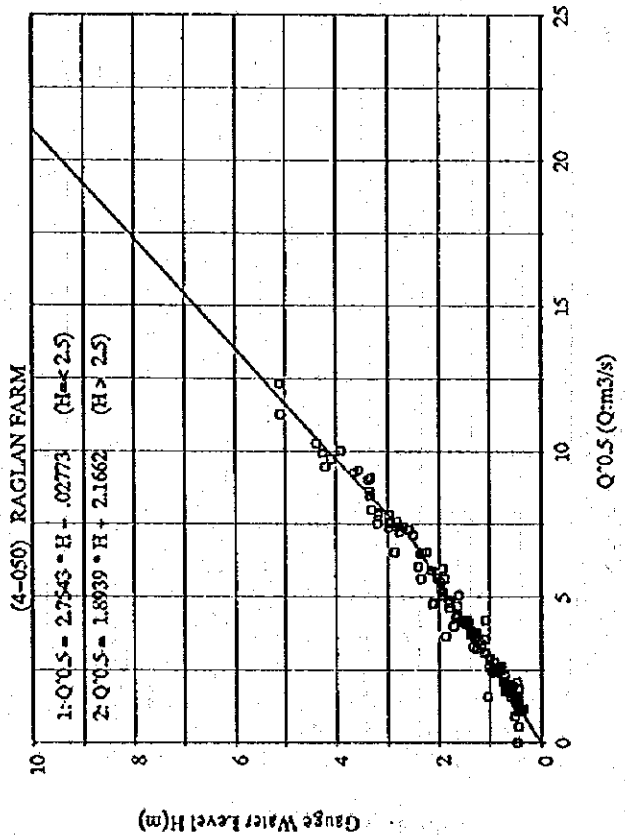
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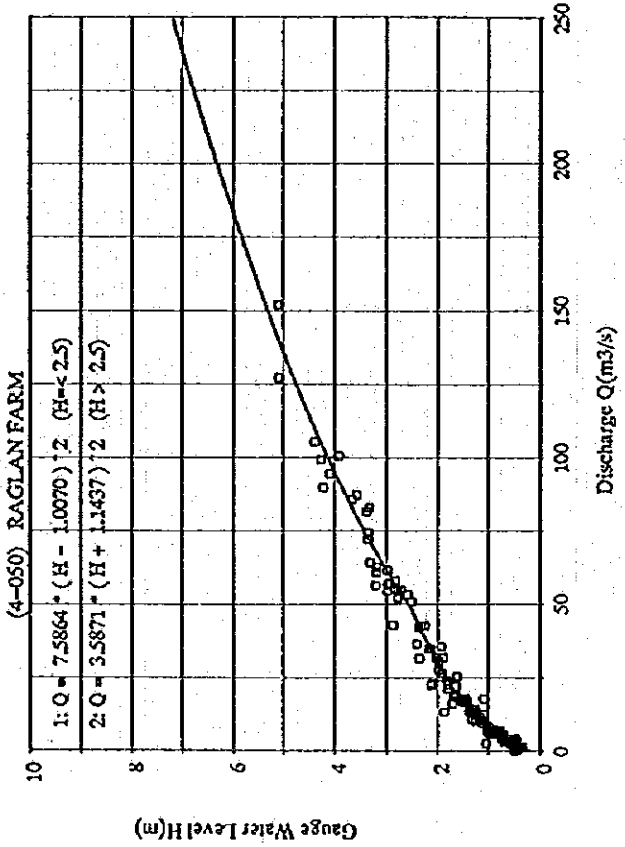
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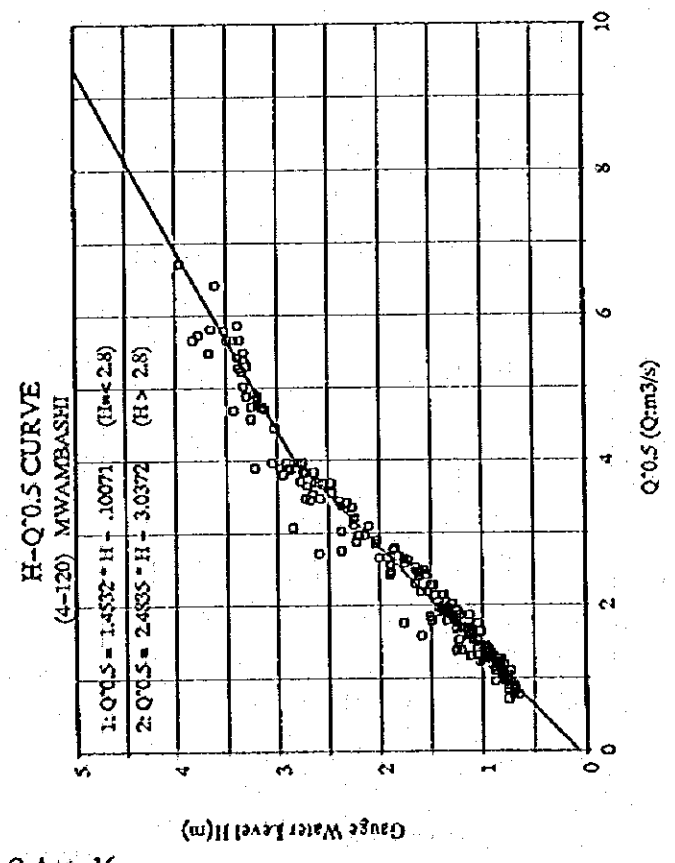
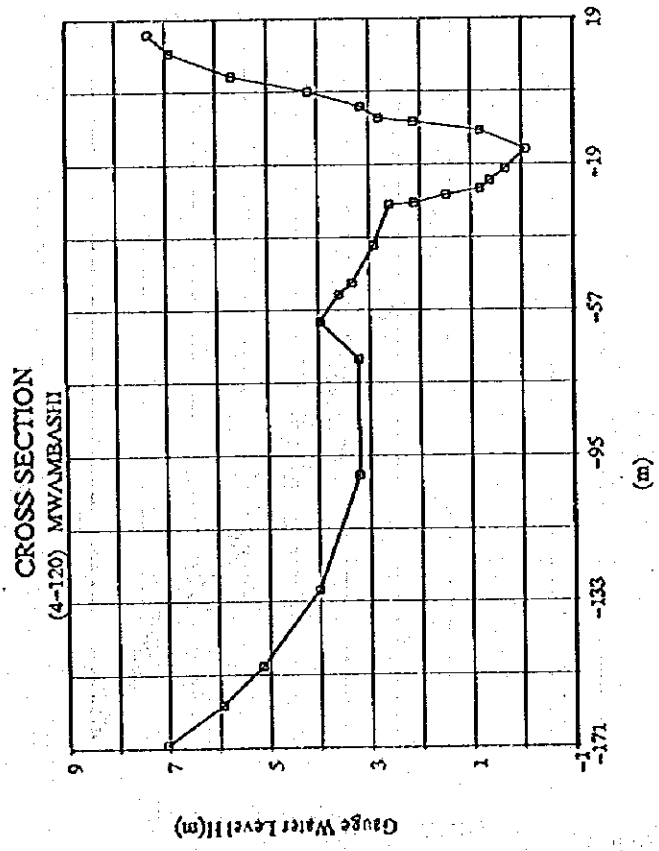
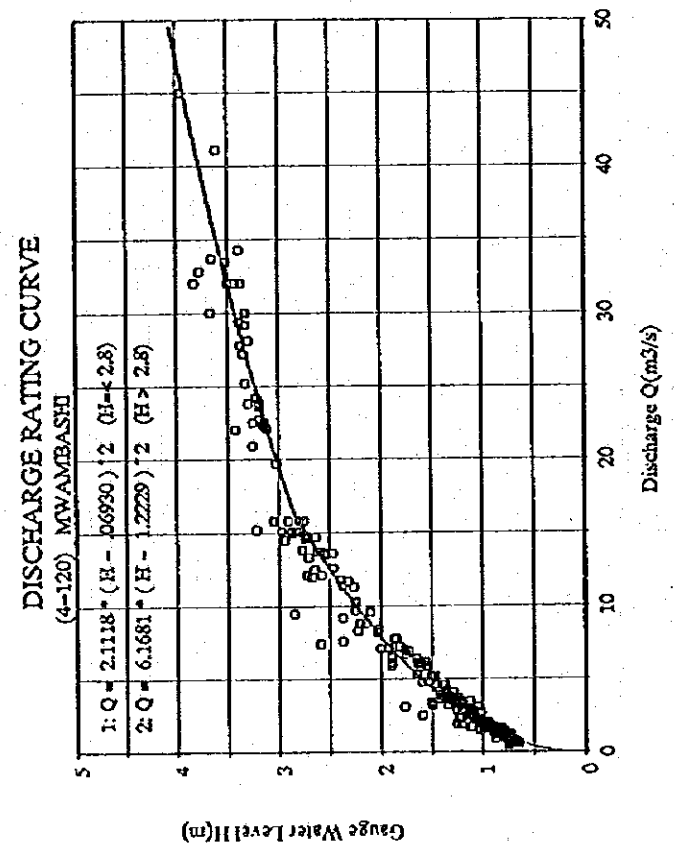
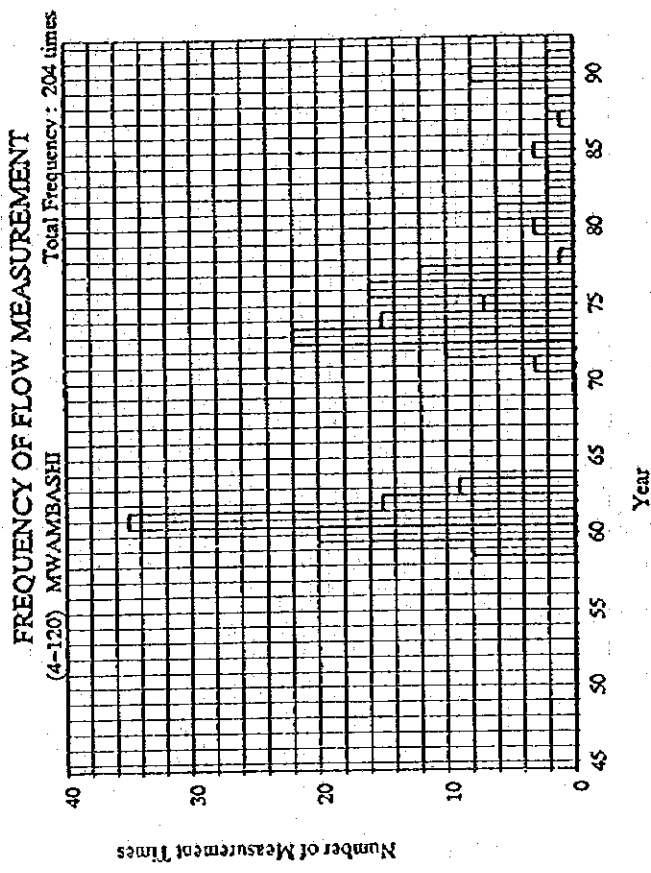


H-Q^{0.5} CURVE

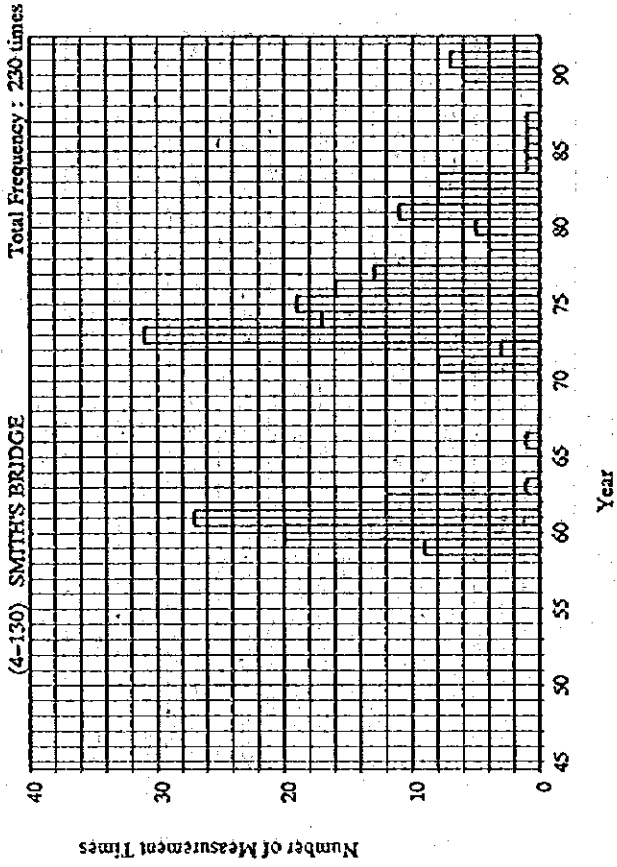


DISCHARGE RATING CURVE

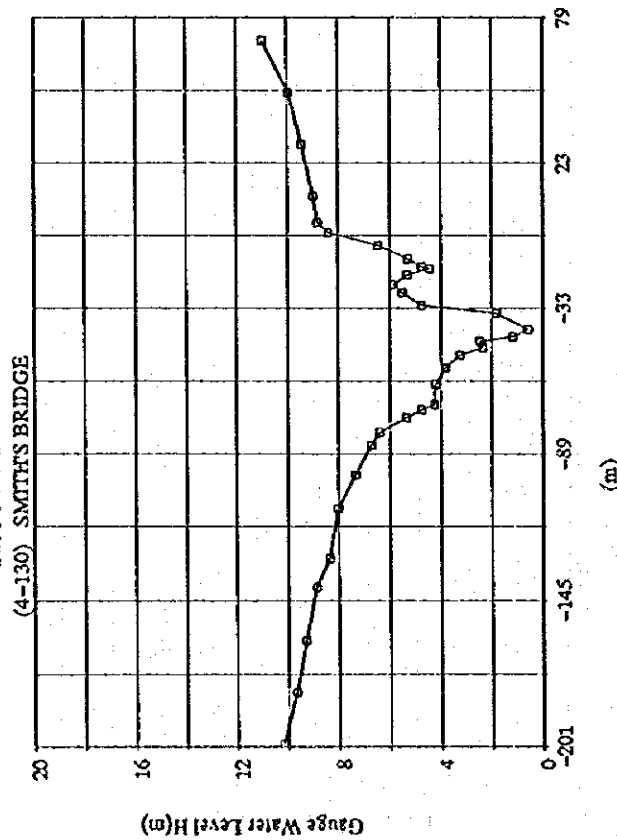




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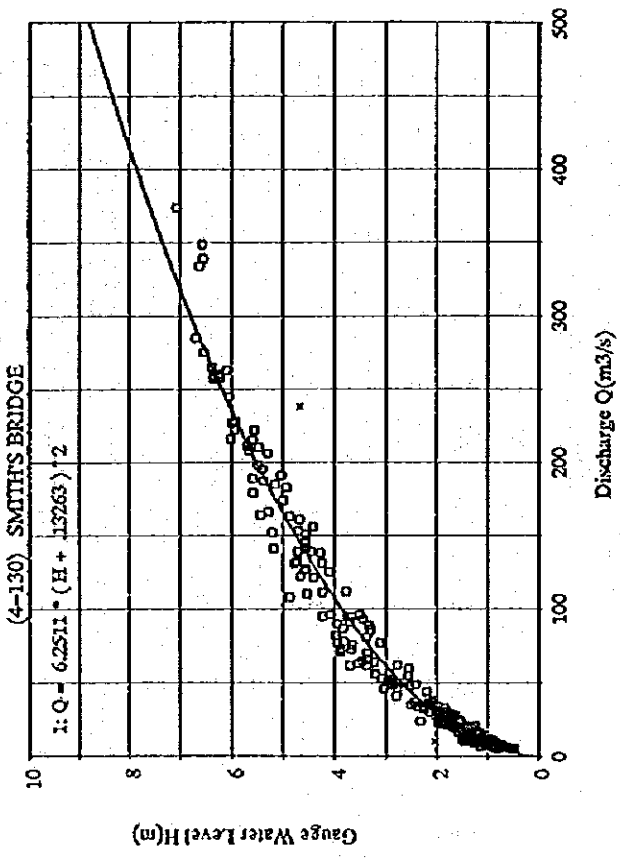


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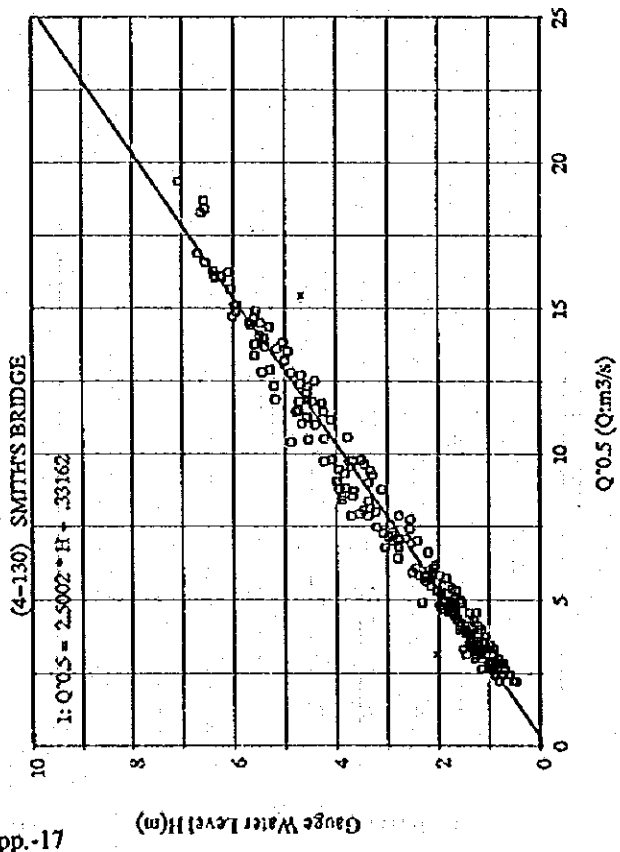


C-App-17

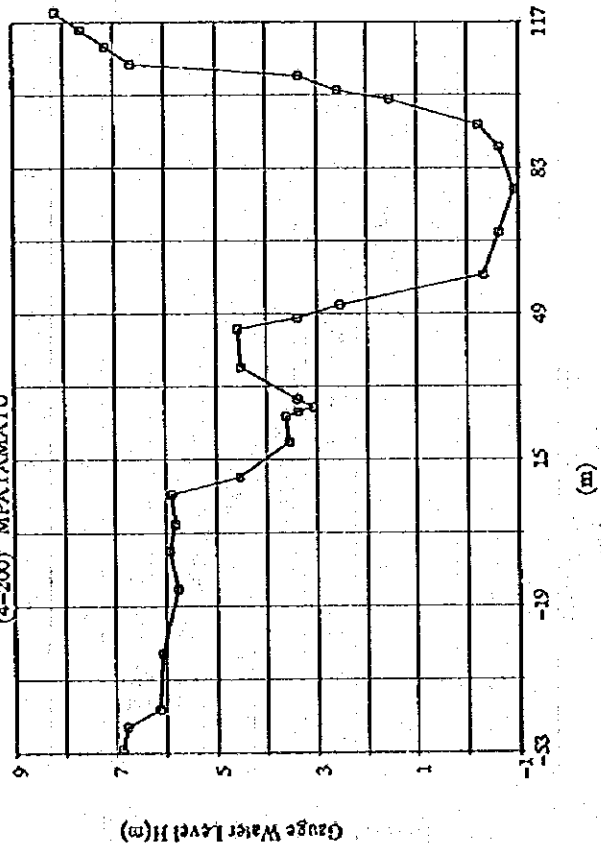
DISCHARGE RATING CURVE



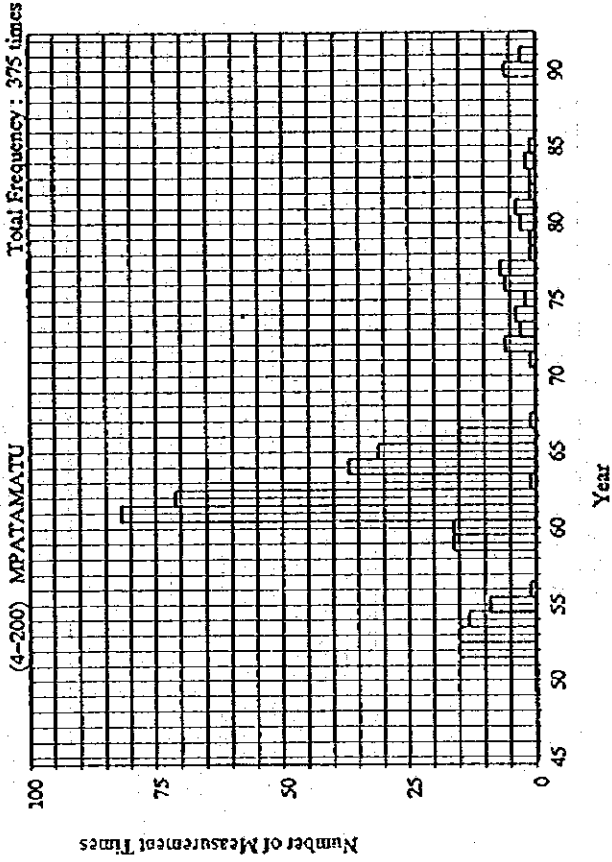
H-Q^{0.5} CURVE



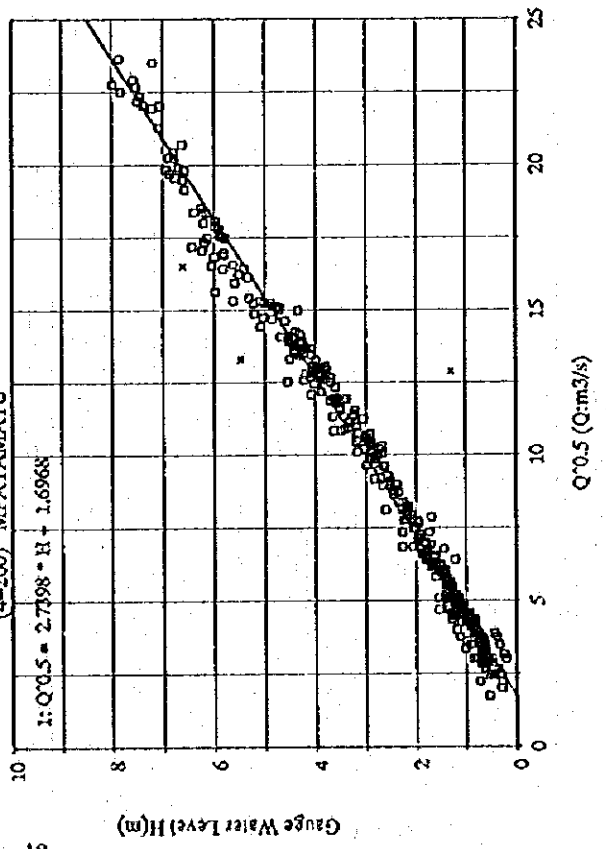
CROSS SECTION
(4-200) MPATAMATU



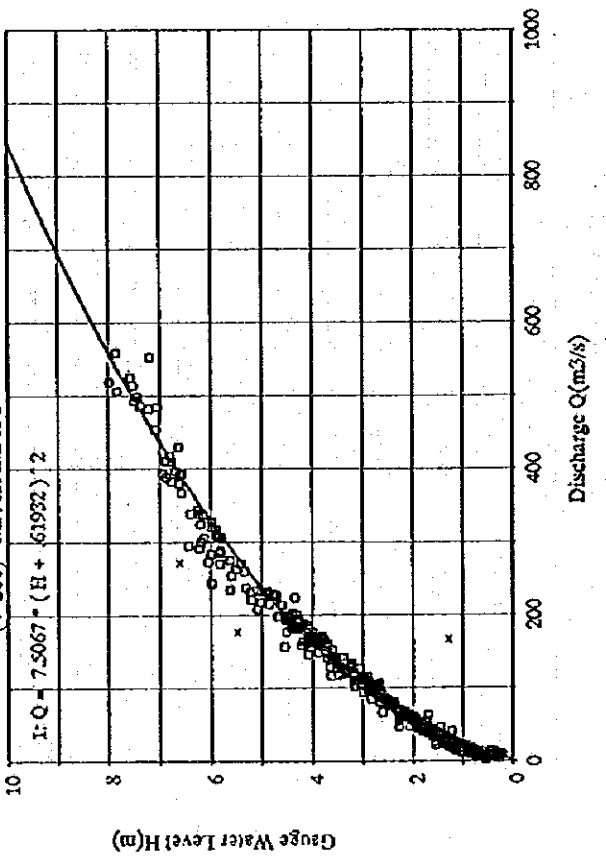
FREQUENCY OF FLOW MEASUREMENT
(4-200) MPATAMATU



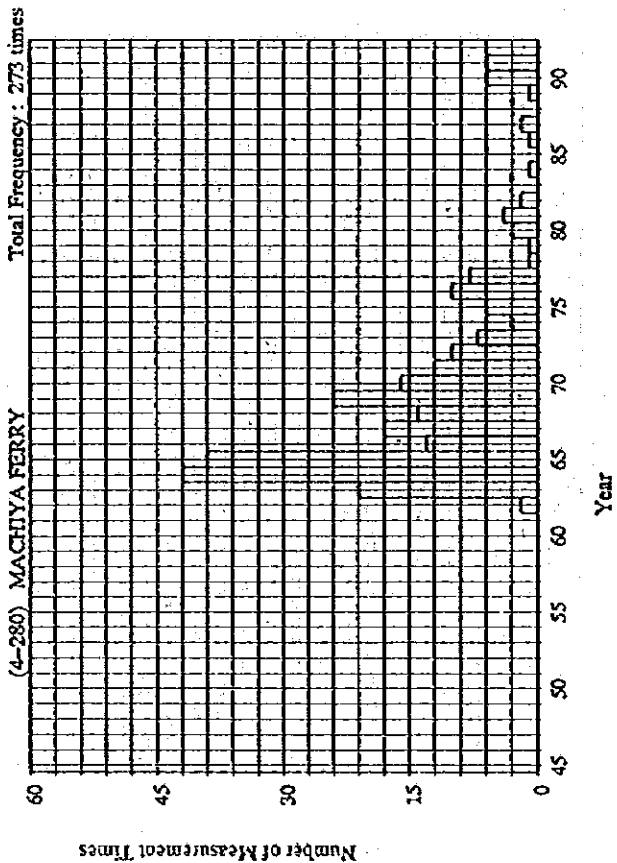
H-Q^{0.5} CURVE
(4-200) MPATAMATU



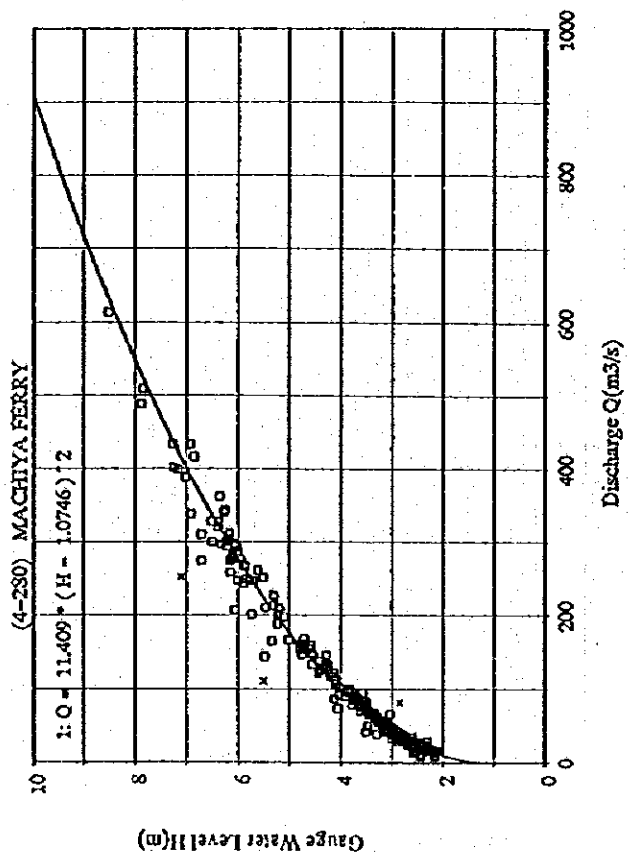
DISCHARGE RATING CURVE
(4-200) MPATAMATU



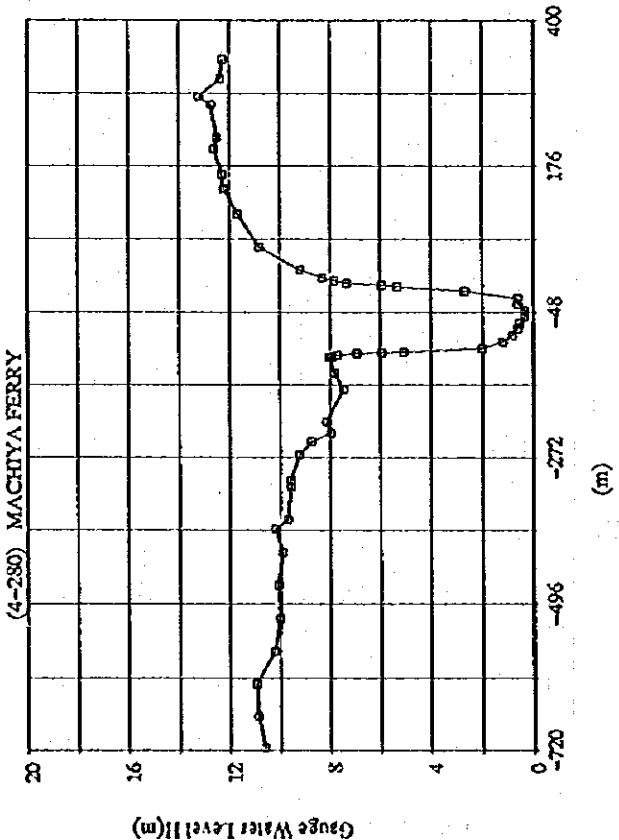
FREQUENCY OF FLOW MEASUREMENT



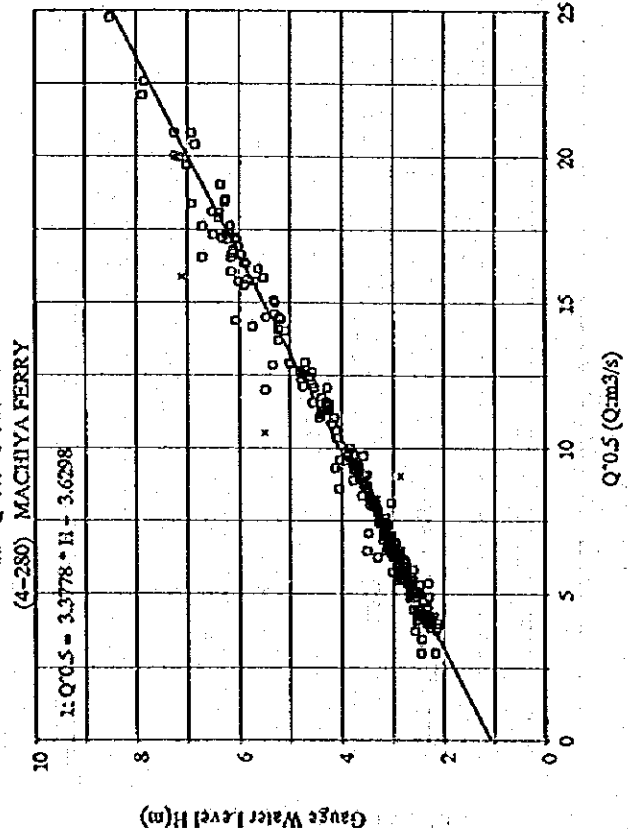
DISCHARGE RATING CURVE



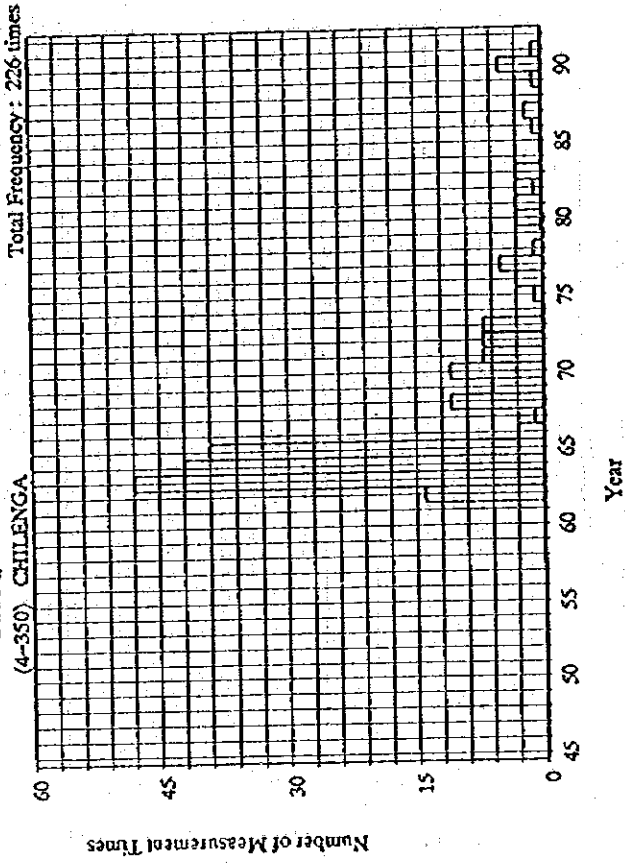
CROSS SECTION



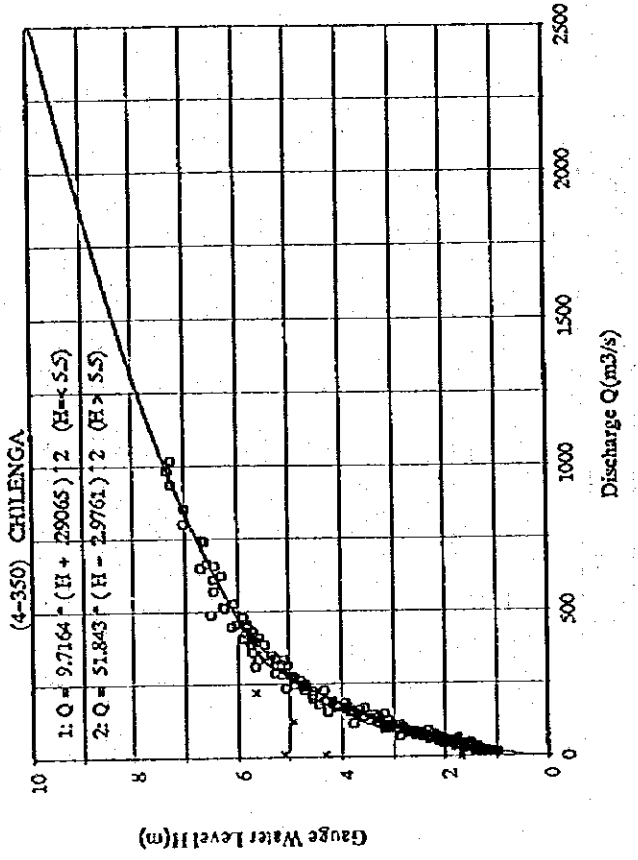
H-Q^0.5 CURVE



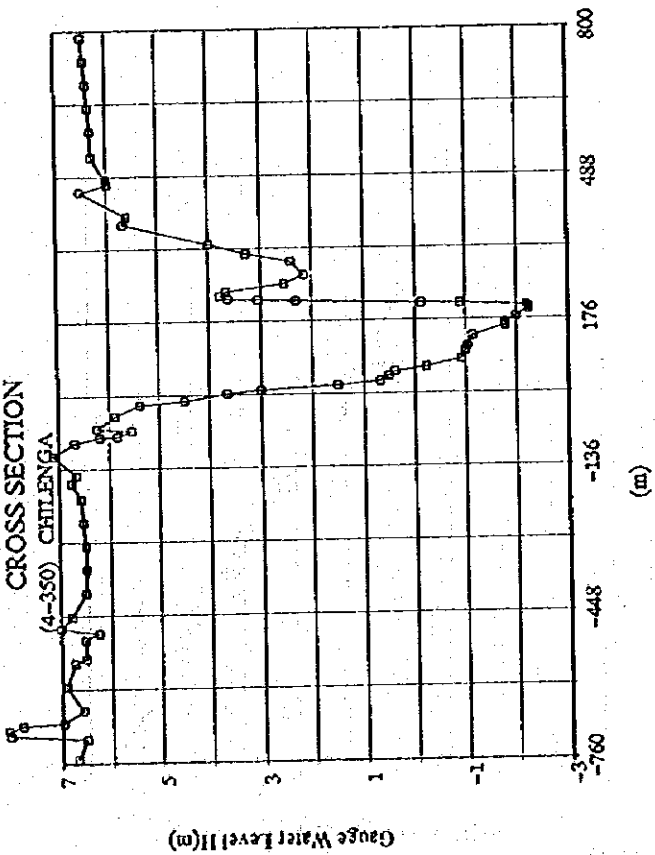
FREQUENCY OF FLOW MEASUREMENT



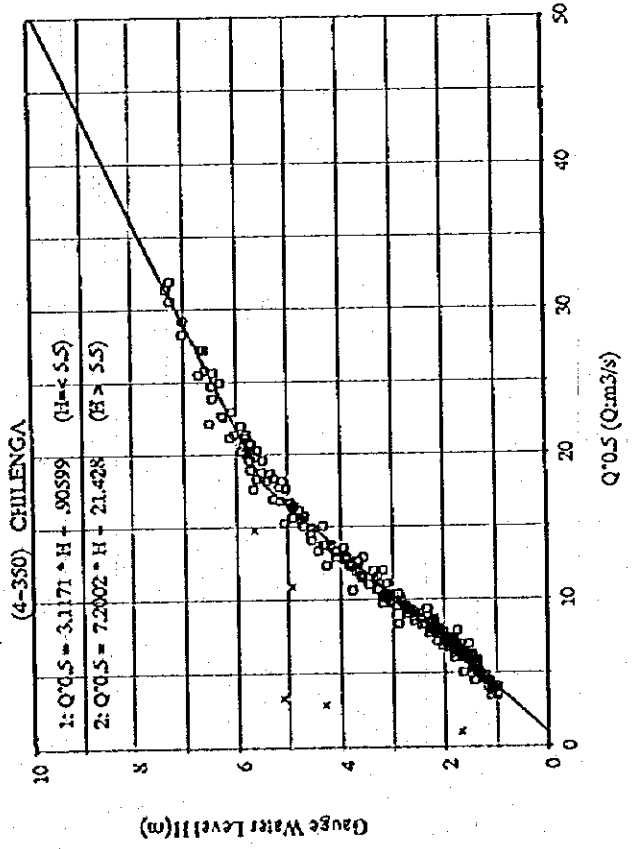
DISCHARGE RATING CURVE



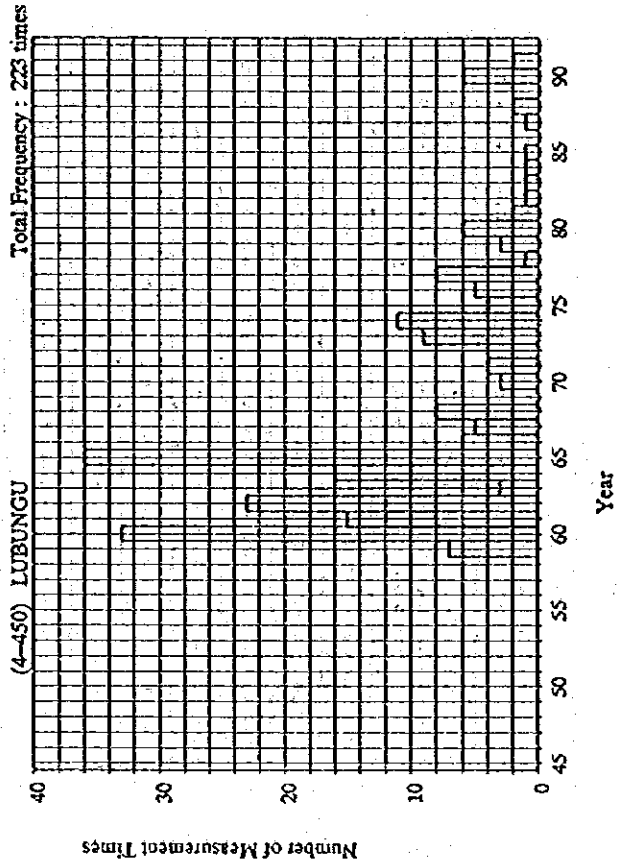
CROSS SECTION



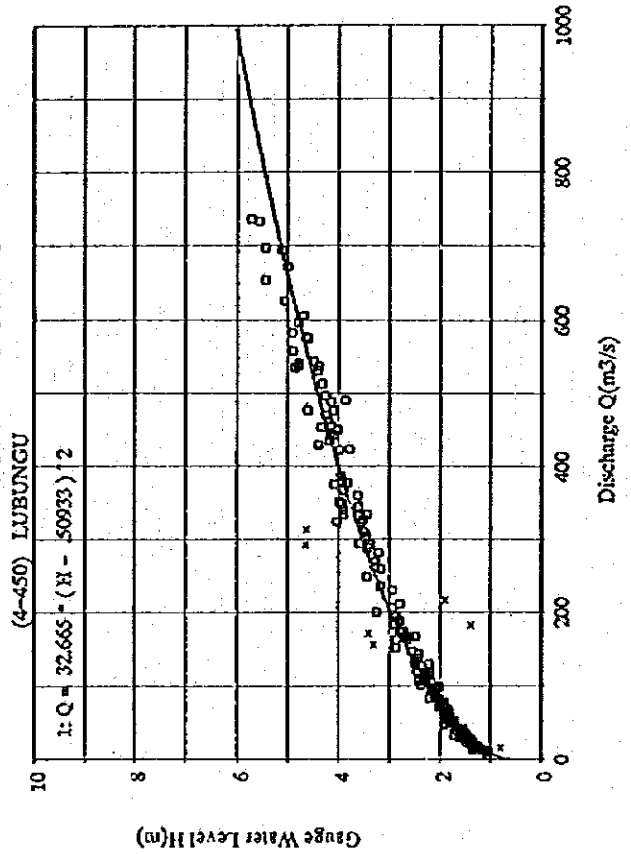
H-Q^{0.5} CURVE



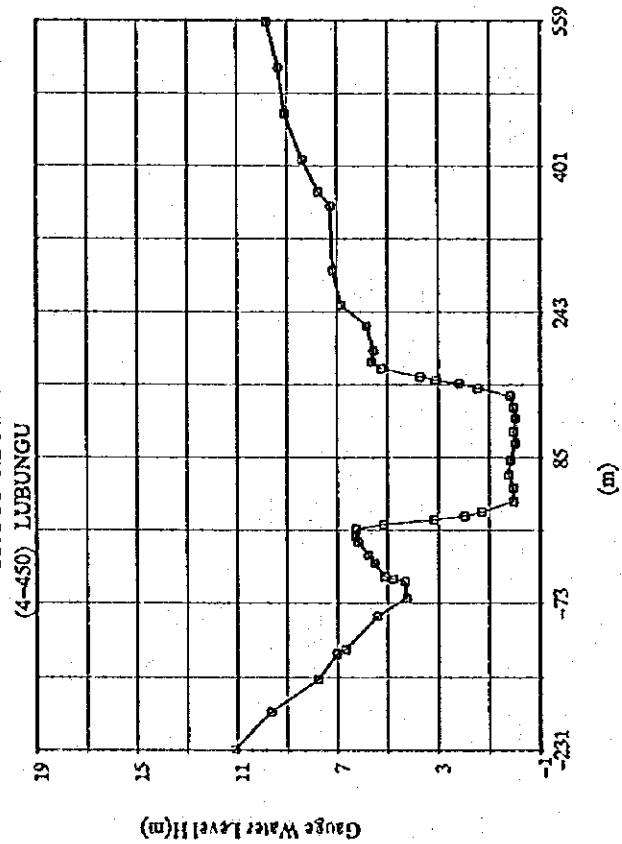
FREQUENCY OF FLOW MEASUREMENT



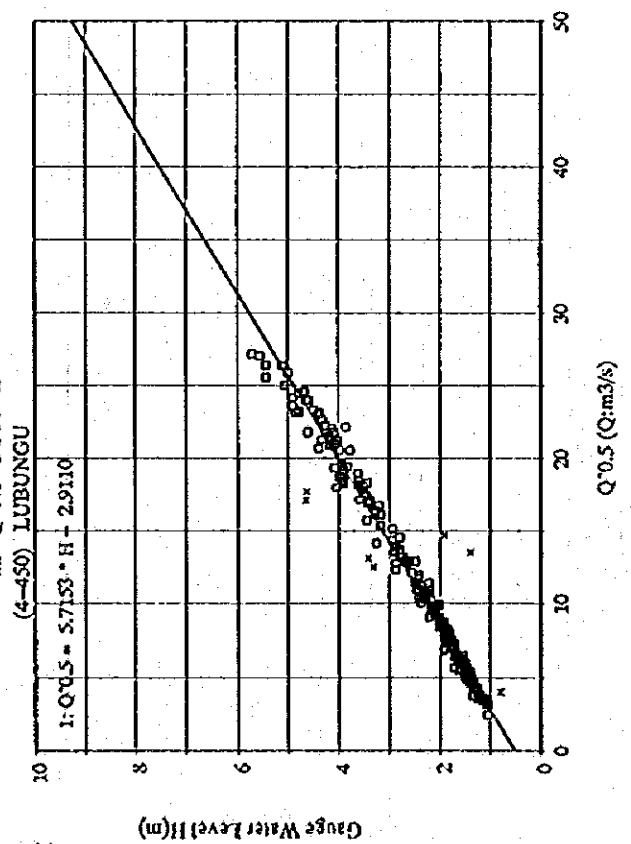
DISCHARGE RATING CURVE

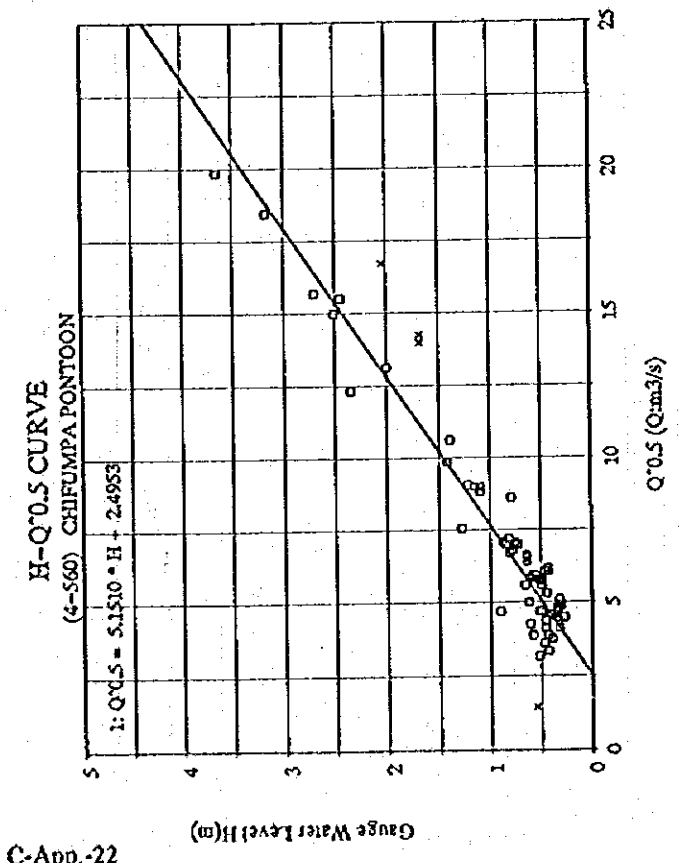
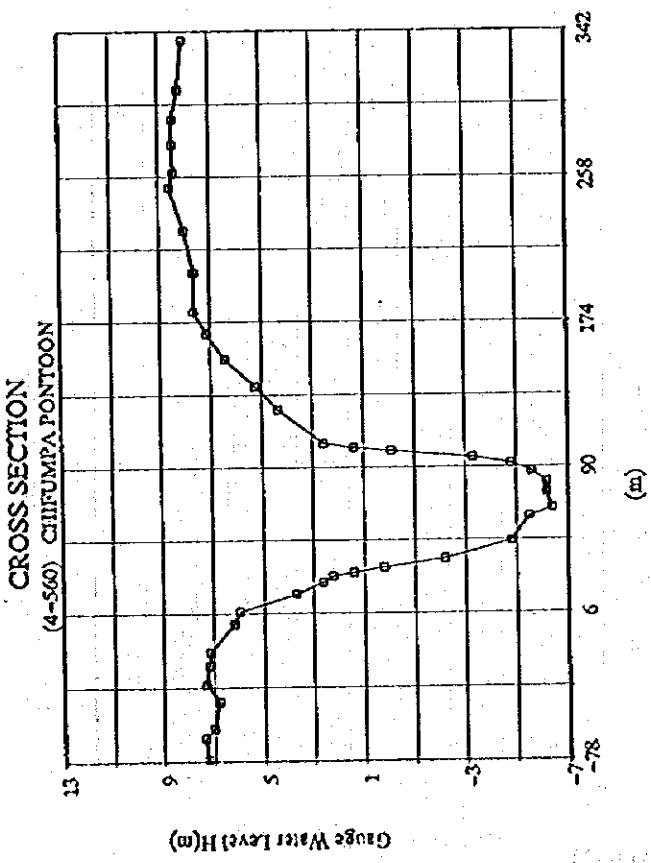
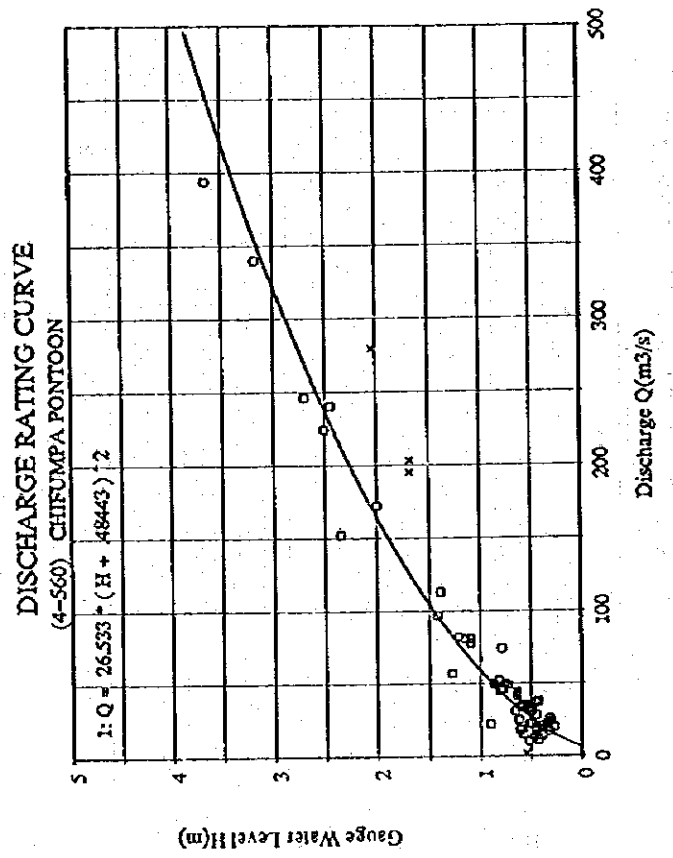
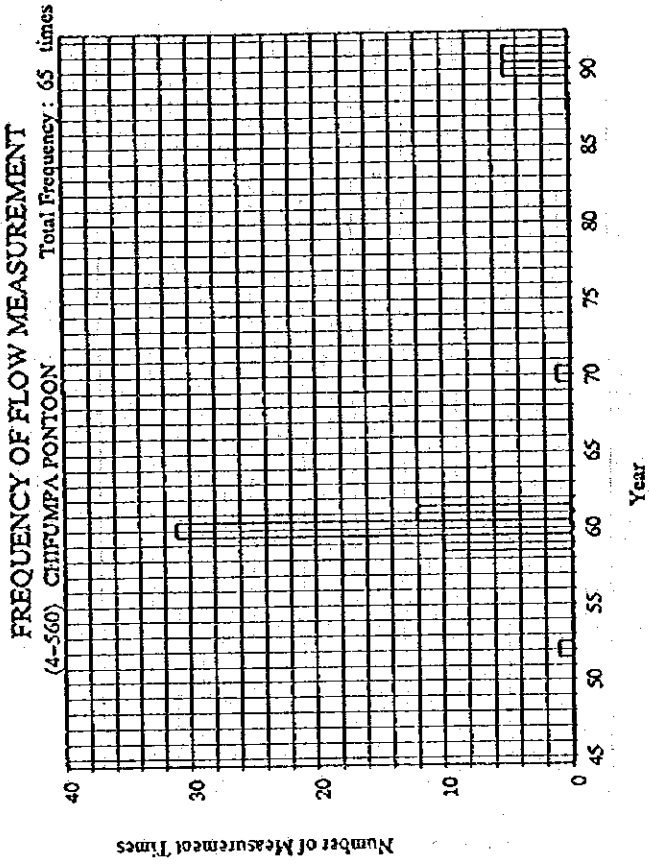


CROSS SECTION

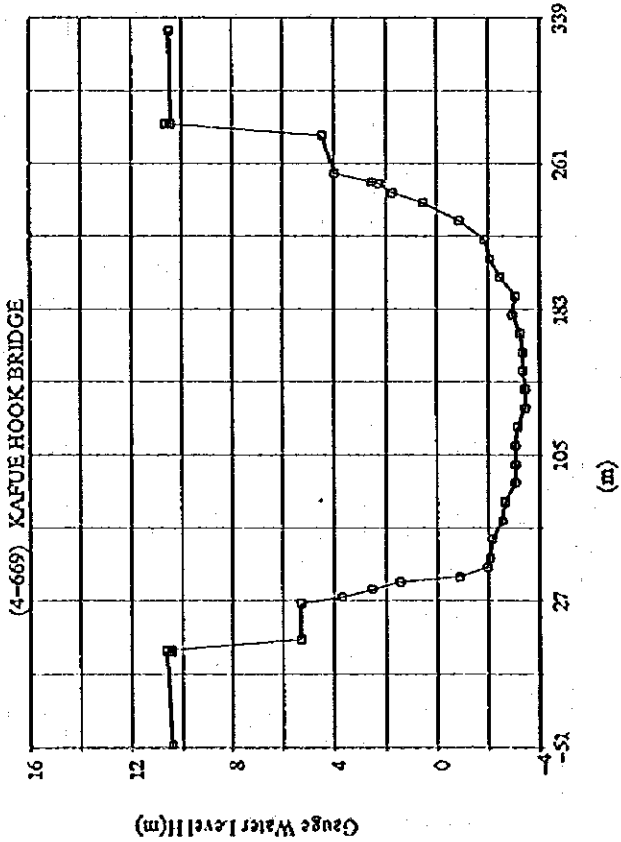


H-Q^{0.5} CURVE

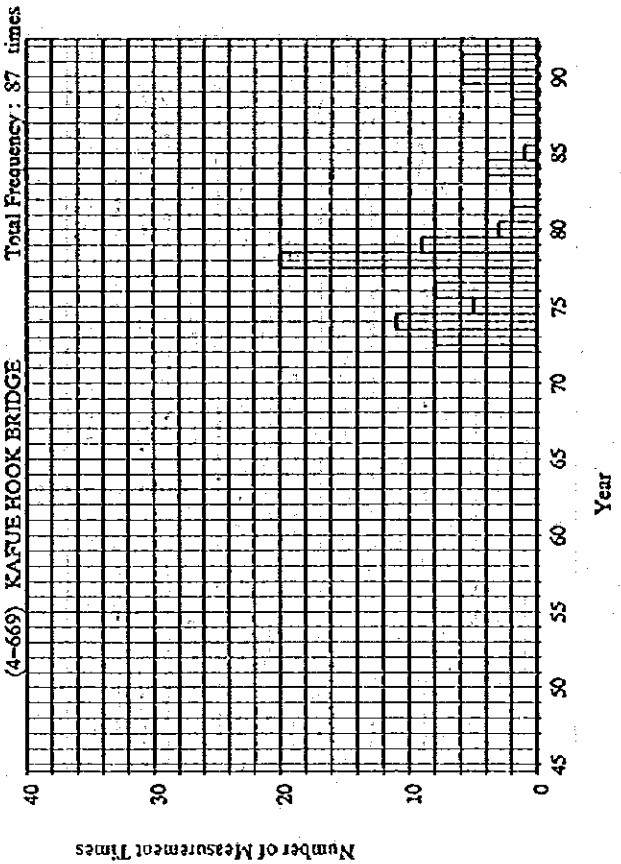




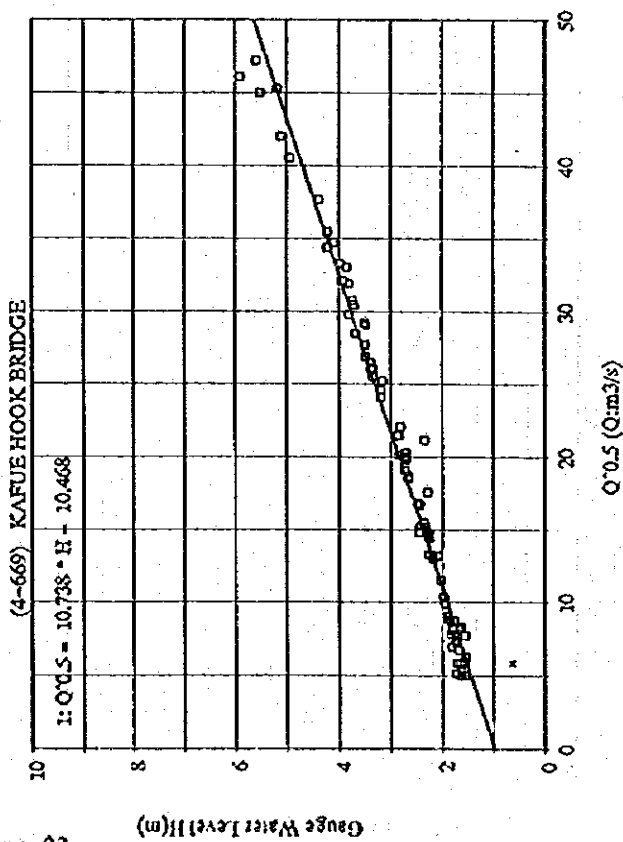
CROSS SECTION



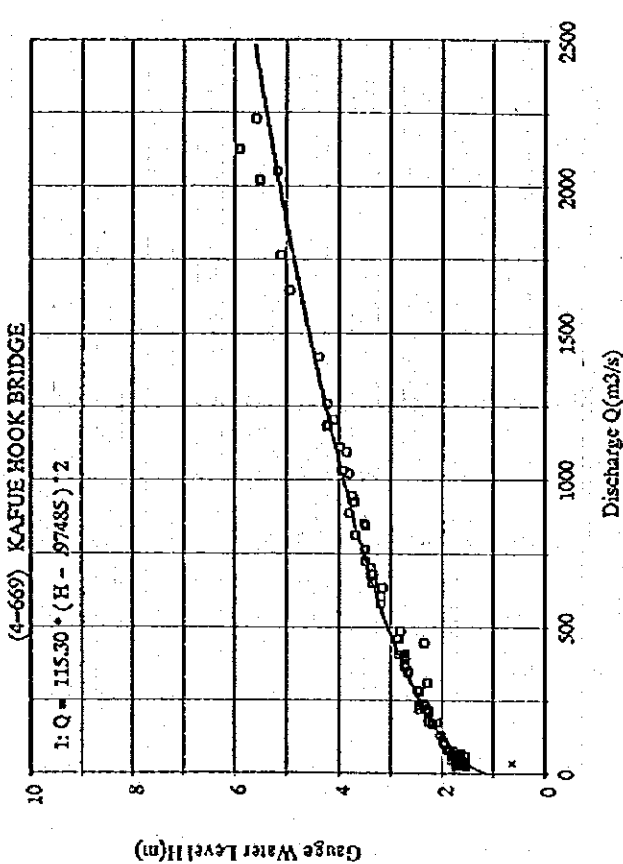
FREQUENCY OF FLOW MEASUREMENT



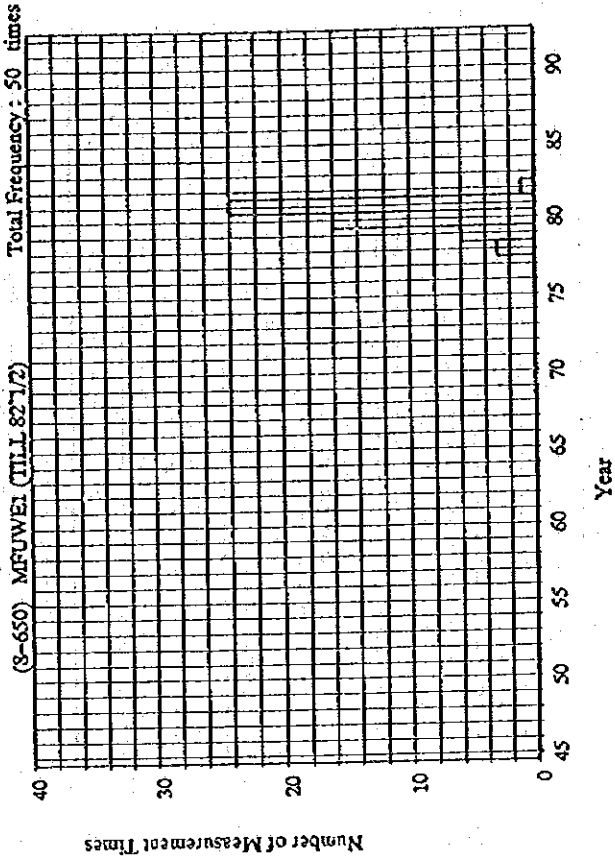
H-Q^{0.5} CURVE



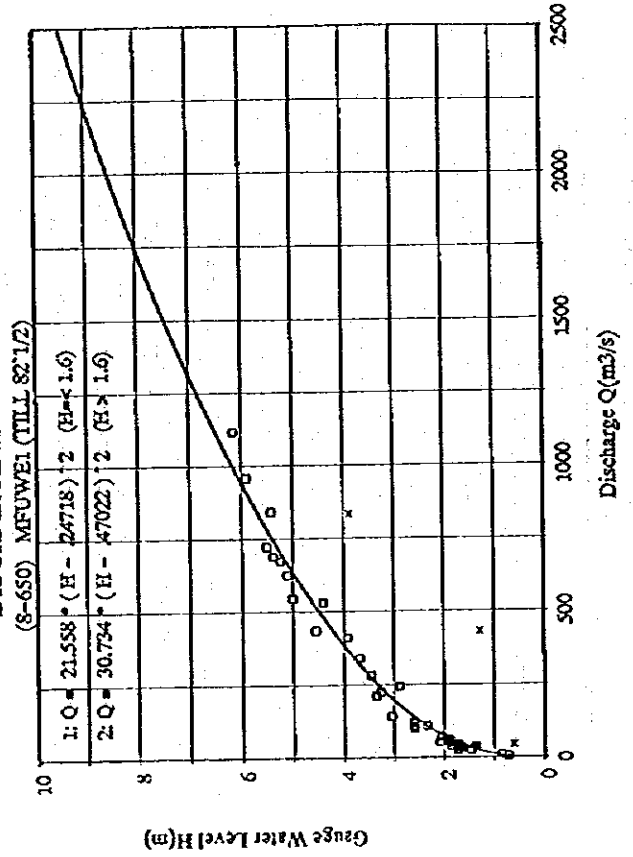
DISCHARGE RATING CURVE



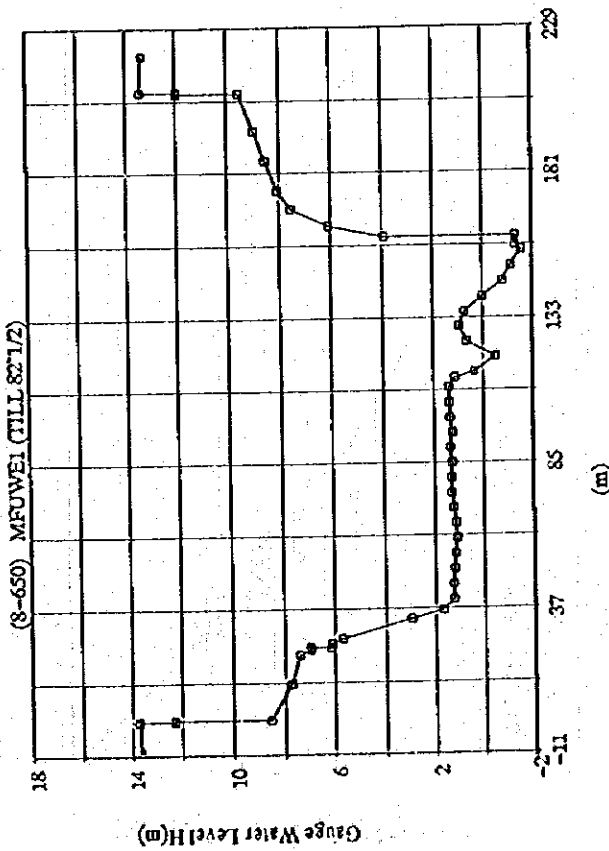
FREQUENCY OF FLOW MEASUREMENT



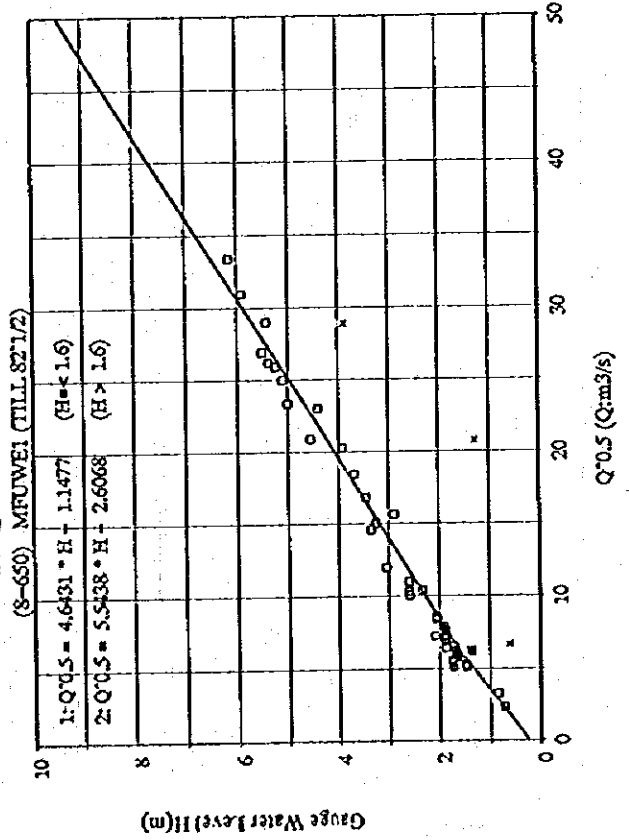
DISCHARGE RATING CURVE



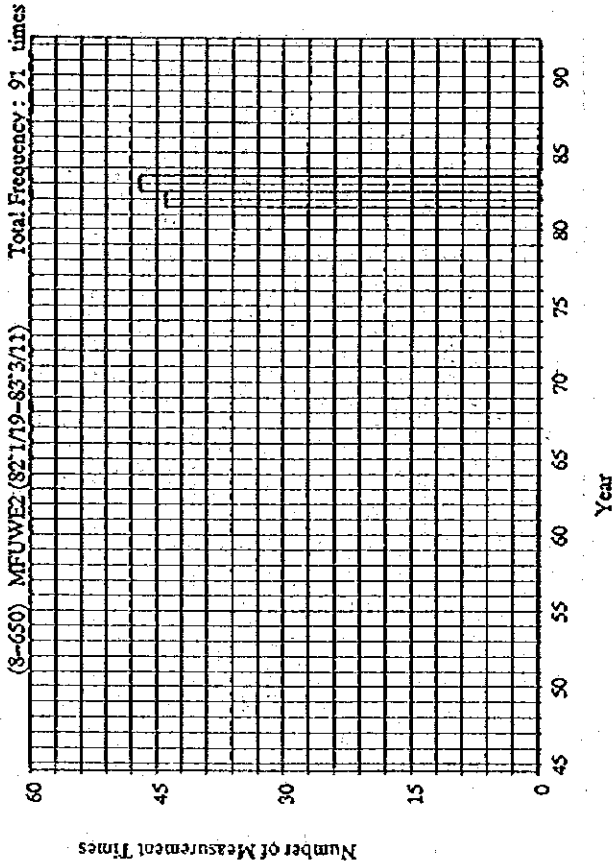
CROSS SECTION



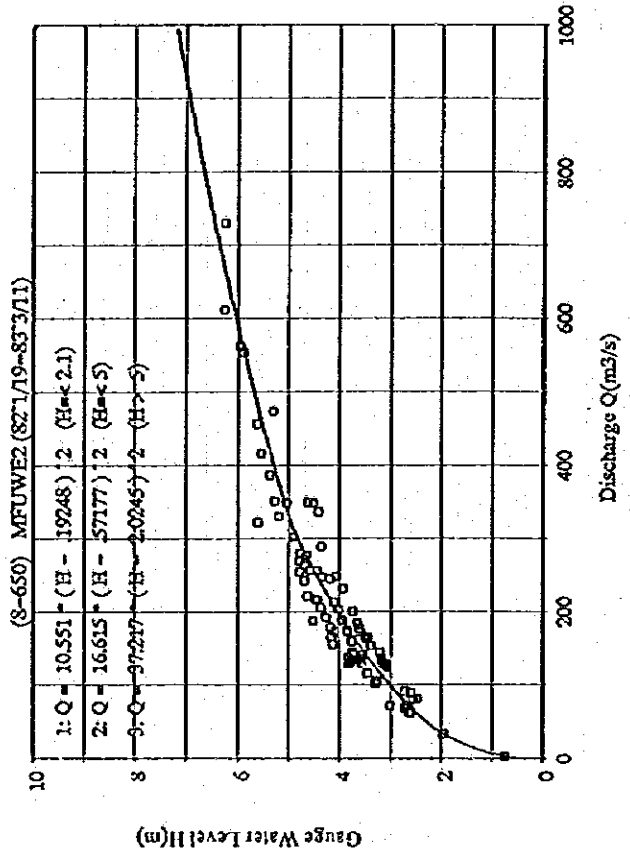
H-Q^{0.5} CURVE



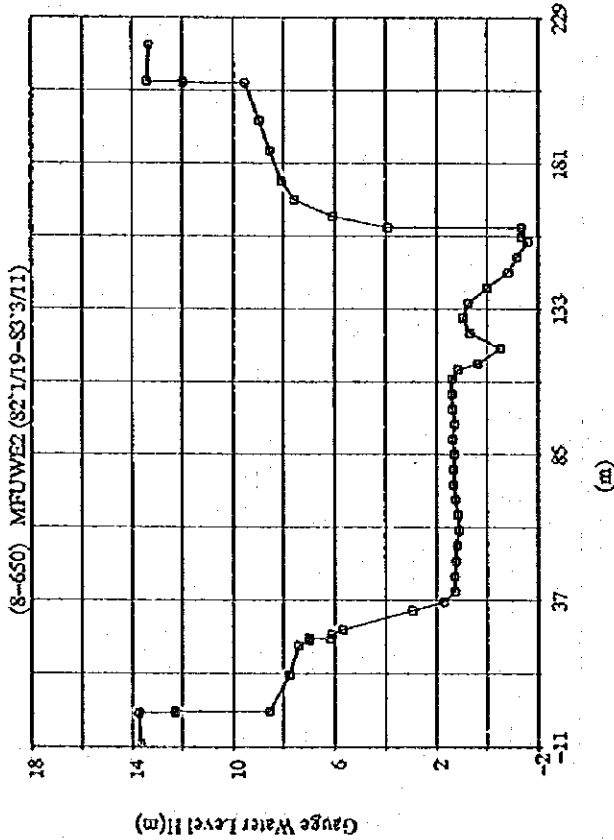
FREQUENCY OF FLOW MEASUREMENT



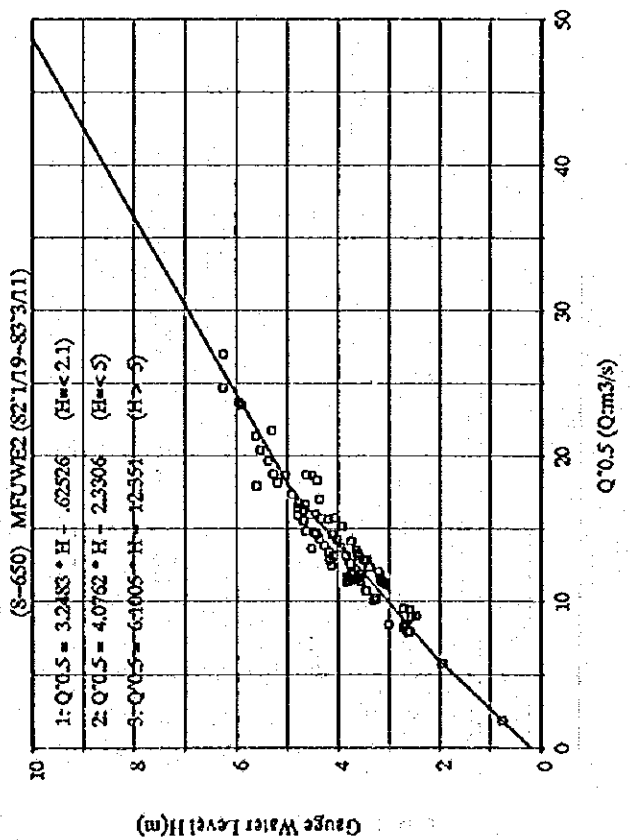
DISCHARGE RATING CURVE



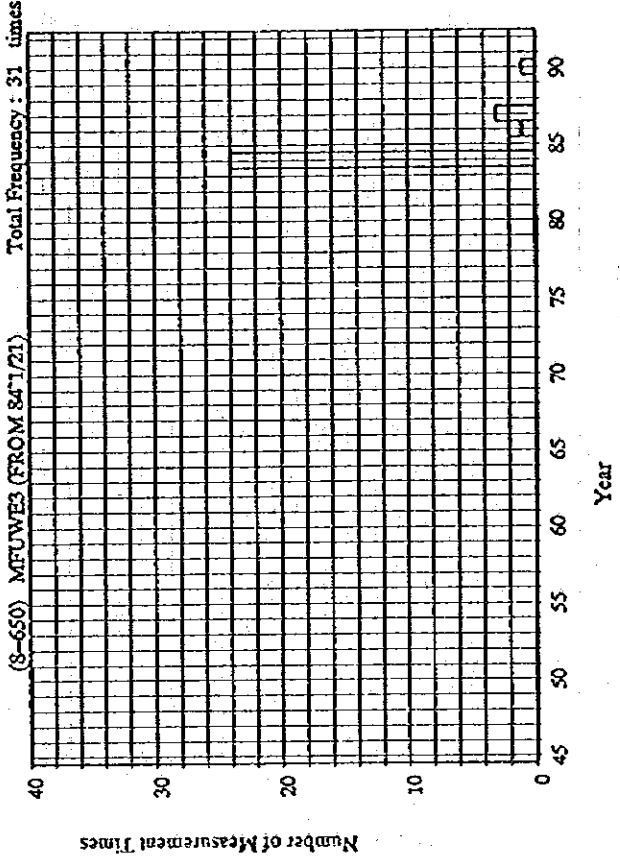
CROSS SECTION



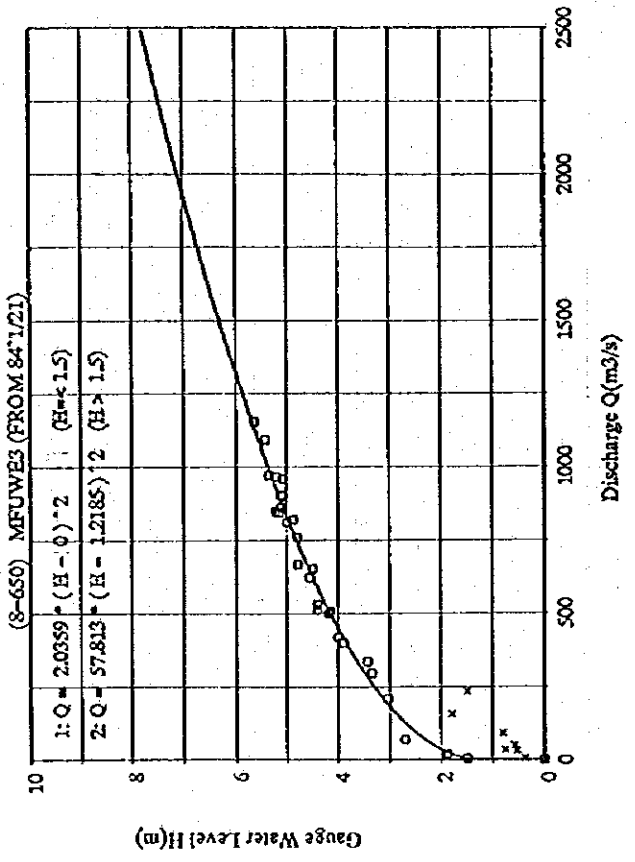
H-Q^0.5 CURVE



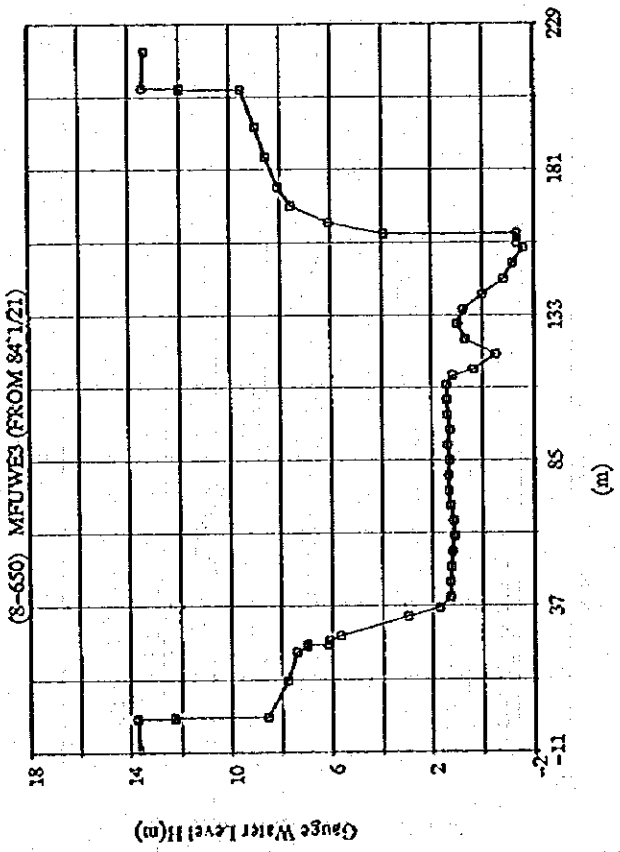
FREQUENCY OF FLOW MEASUREMENT



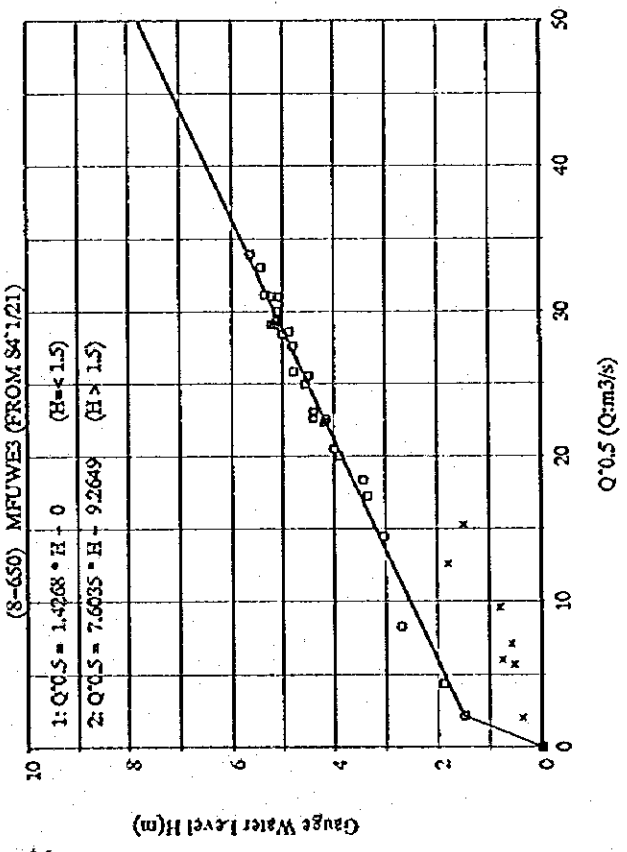
DISCHARGE RATING CURVE



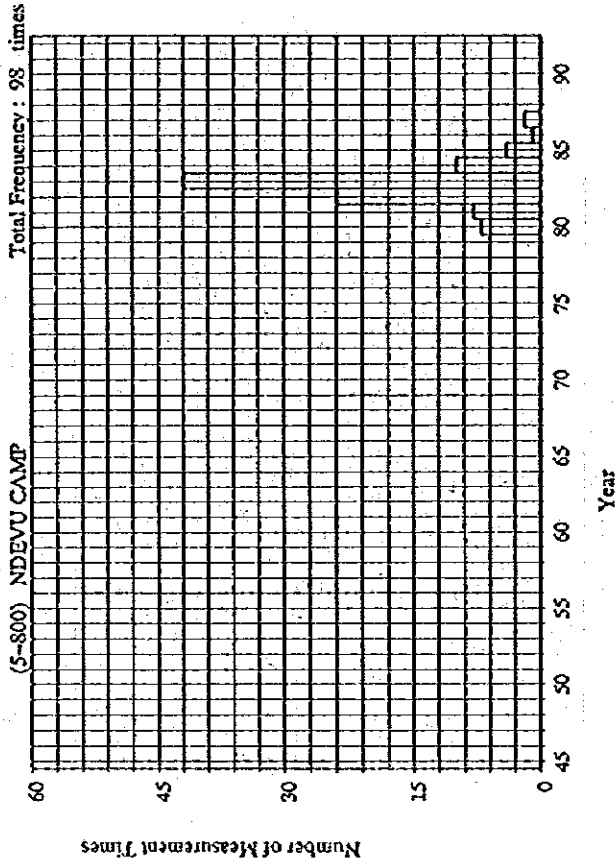
CROSS SECTION



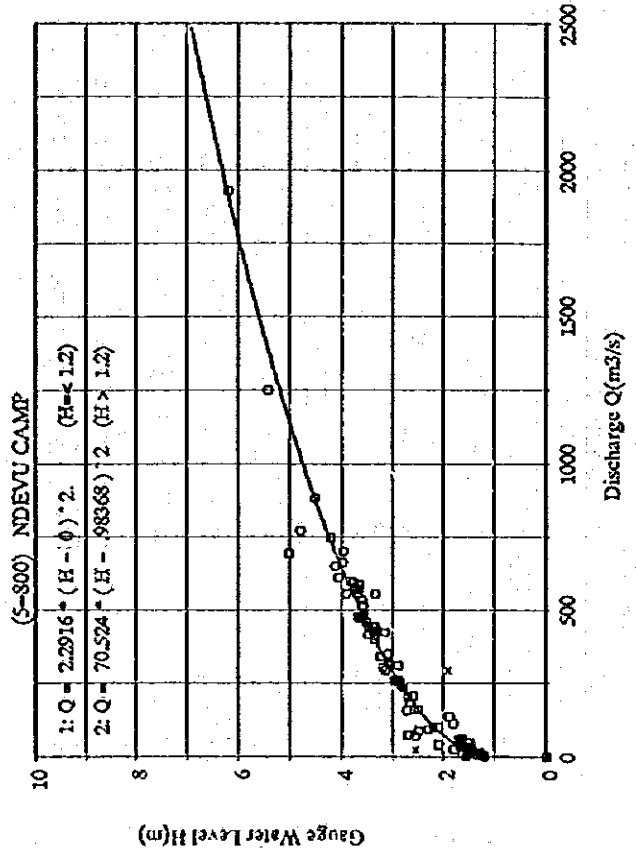
H-Q^0.5 CURVE



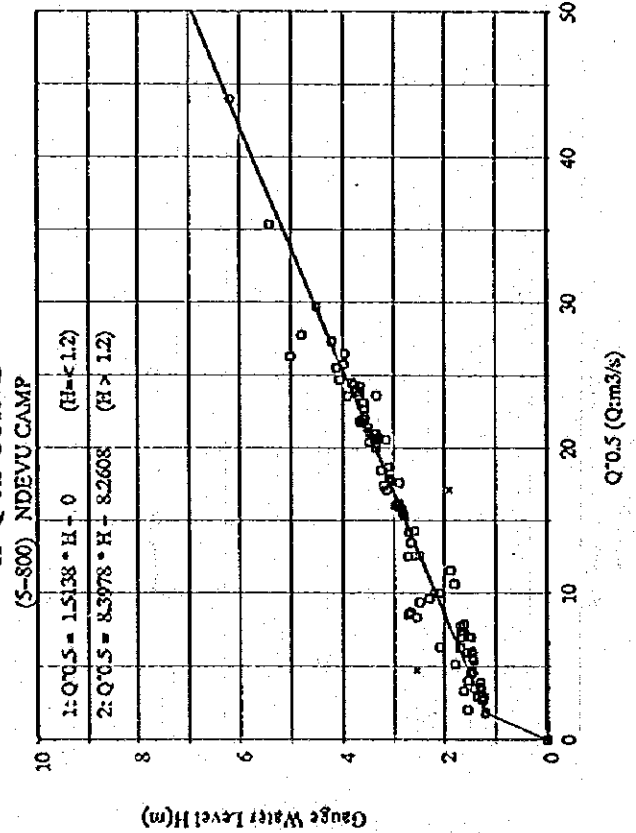
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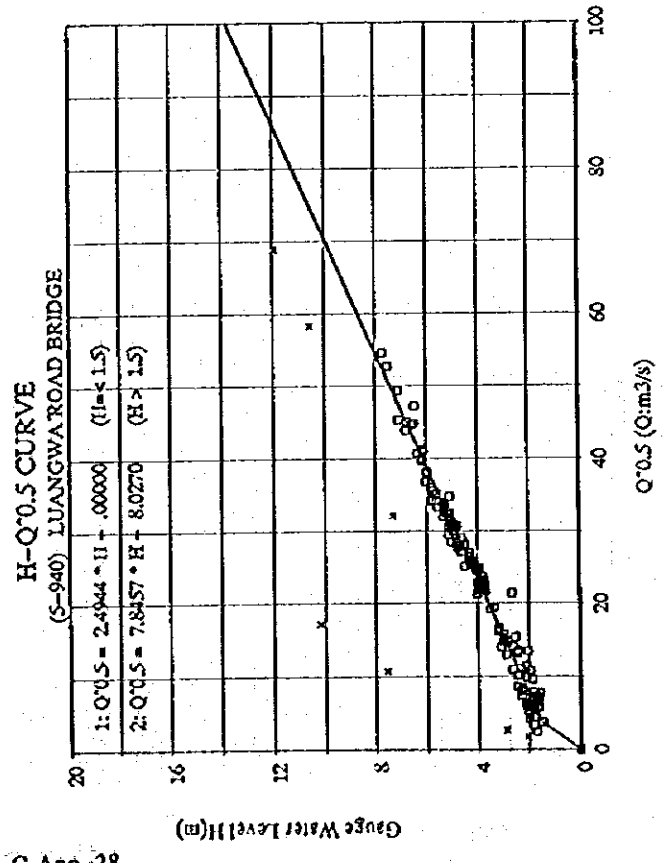
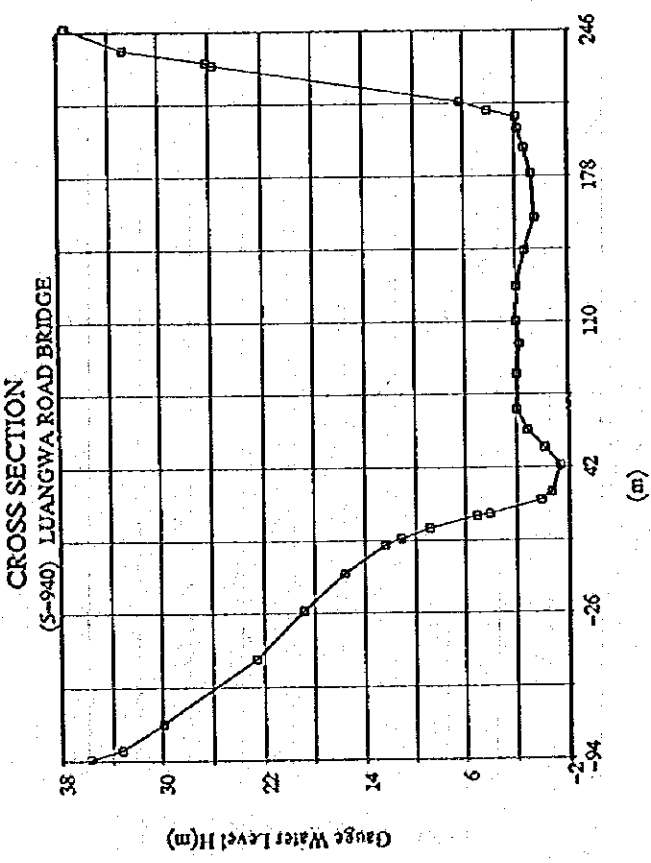
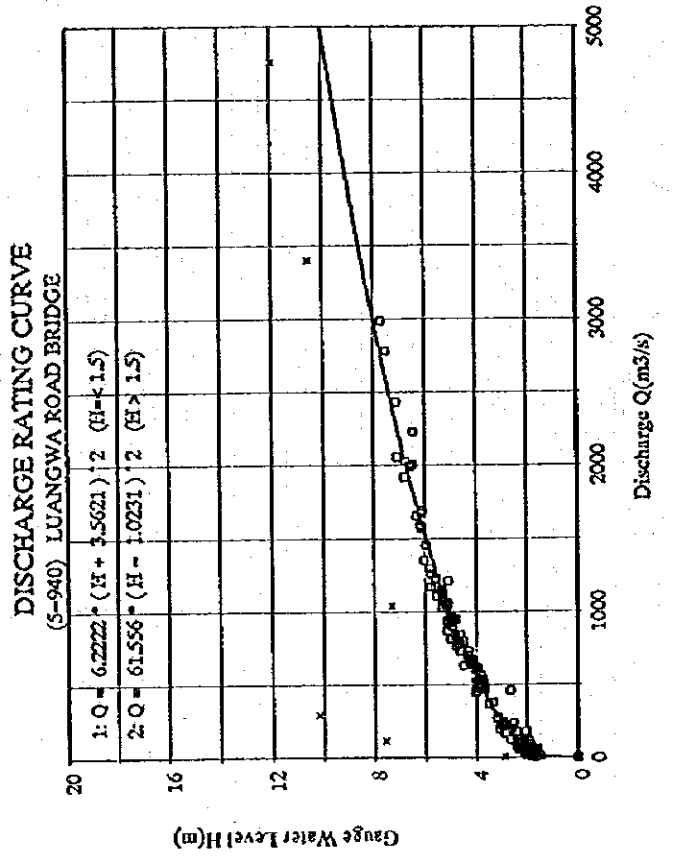
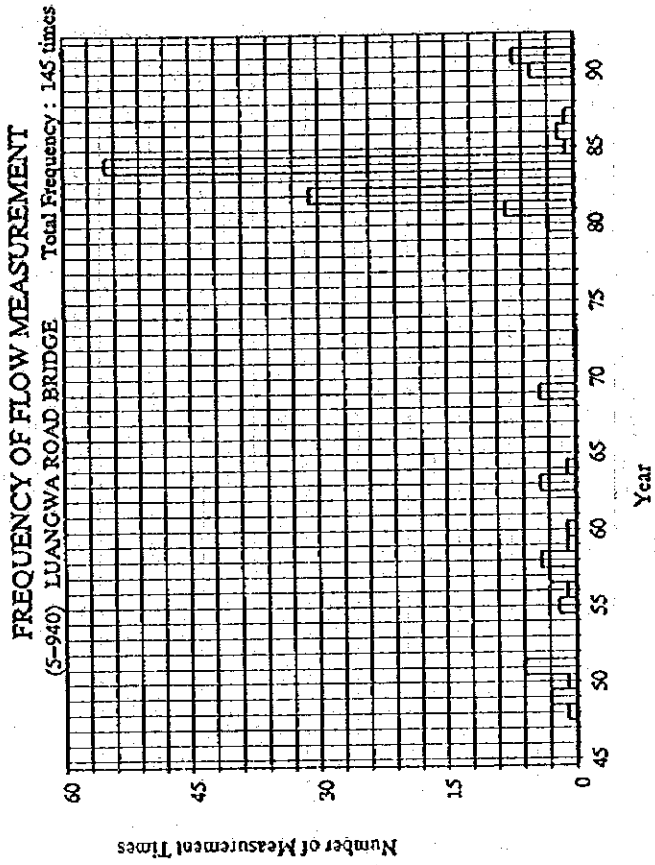


DISCHARGE RATING CURVE

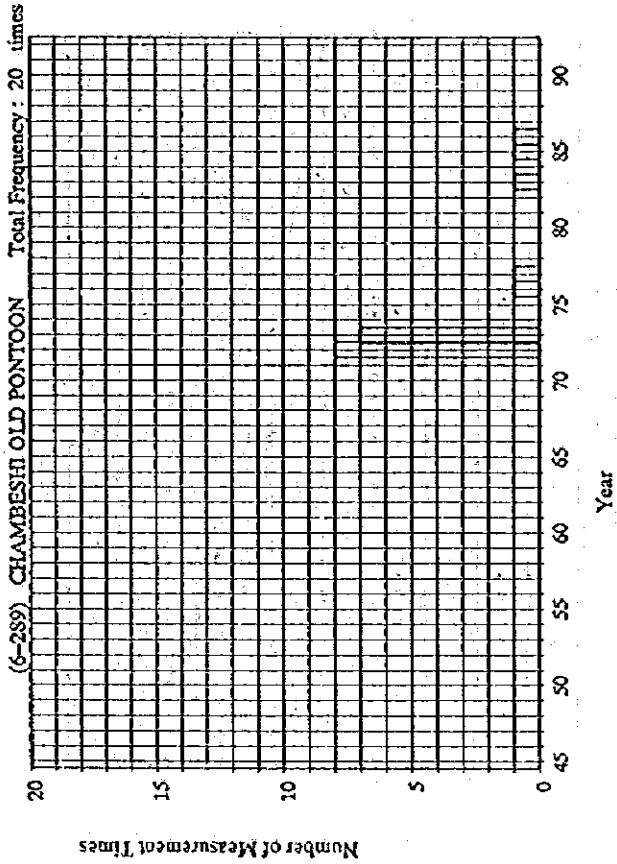


H-Q^{0.5} CURVE

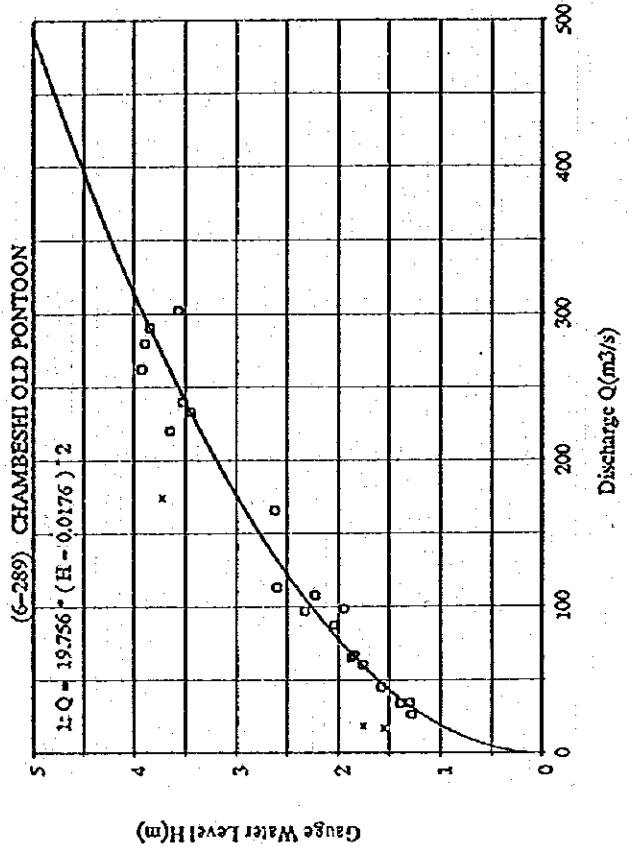




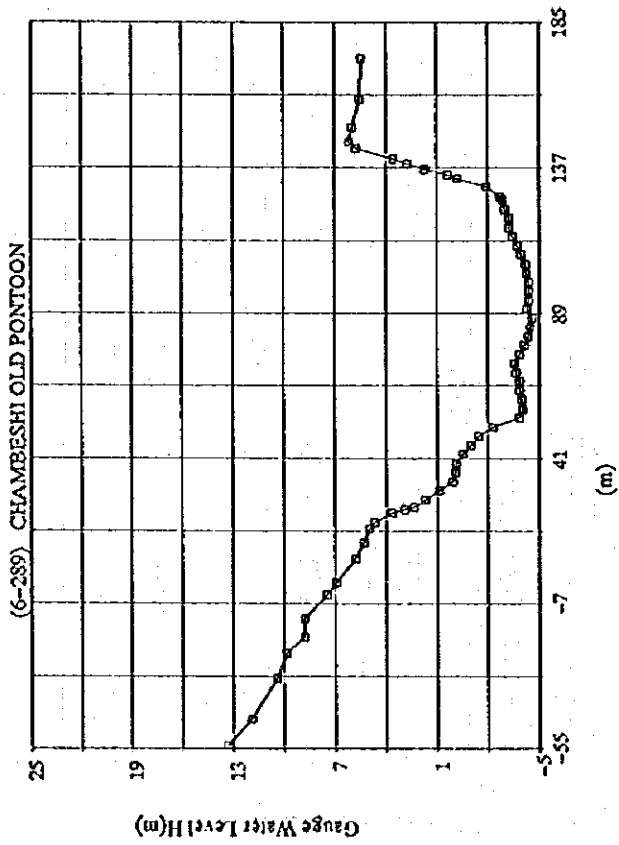
FREQUENCY OF FLOW MEASUREMENT



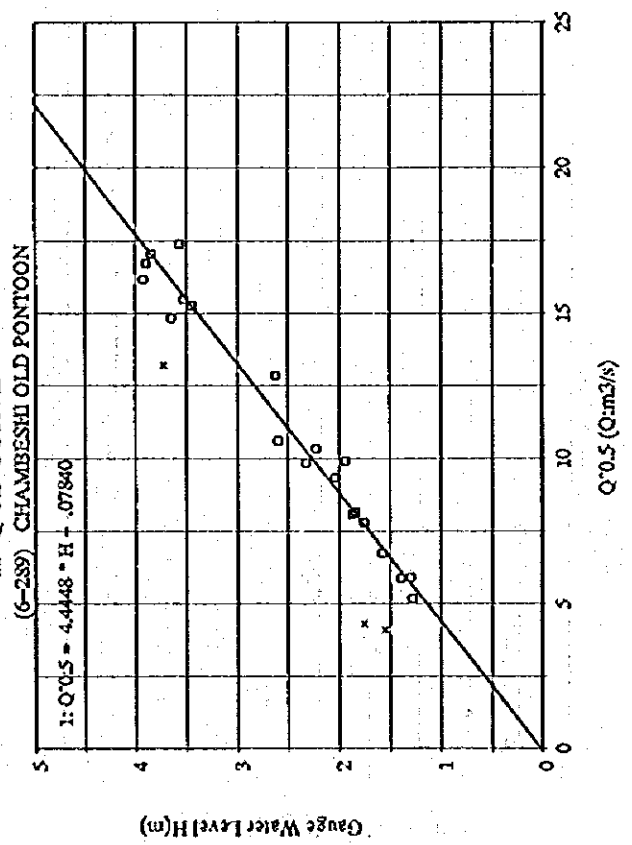
DISCHARGE RATING CURVE



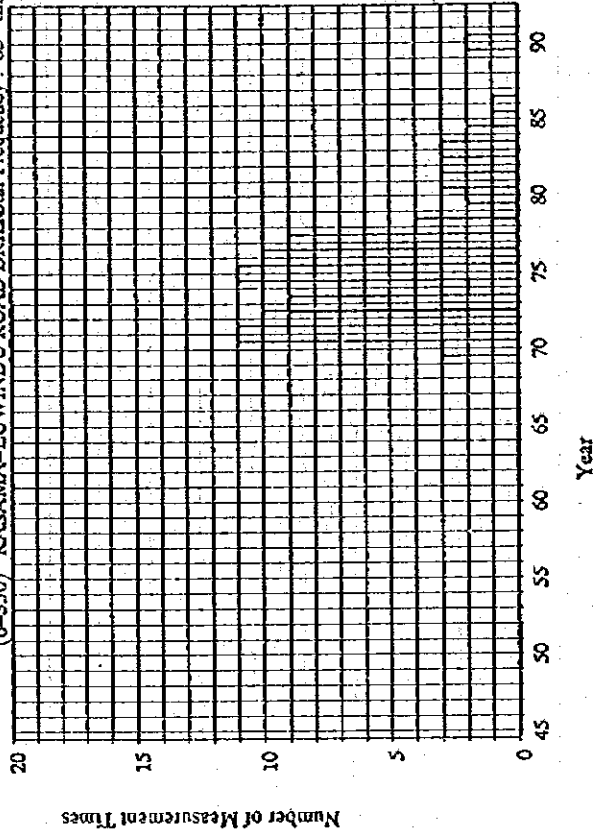
CROSS SECTION



H-Q^{0.5} CURVE



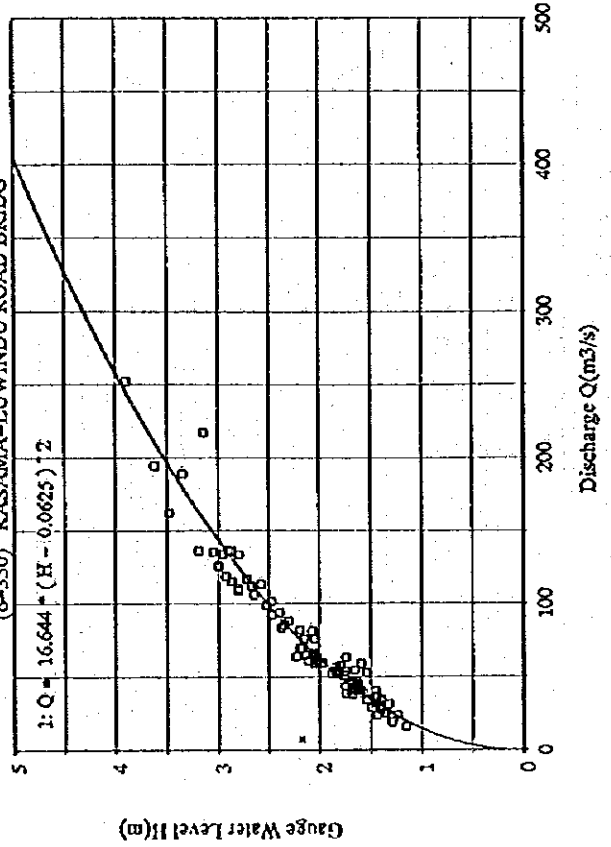
FREQUENCY OF FLOW MEASUREMENT
(6-350) KASAMA-LUWINDU ROAD BRIDGE Total Frequency : 85 times



DISCHARGE RATING CURVE

(6-350) KASAMA-LUWINDU ROAD BRIDGE

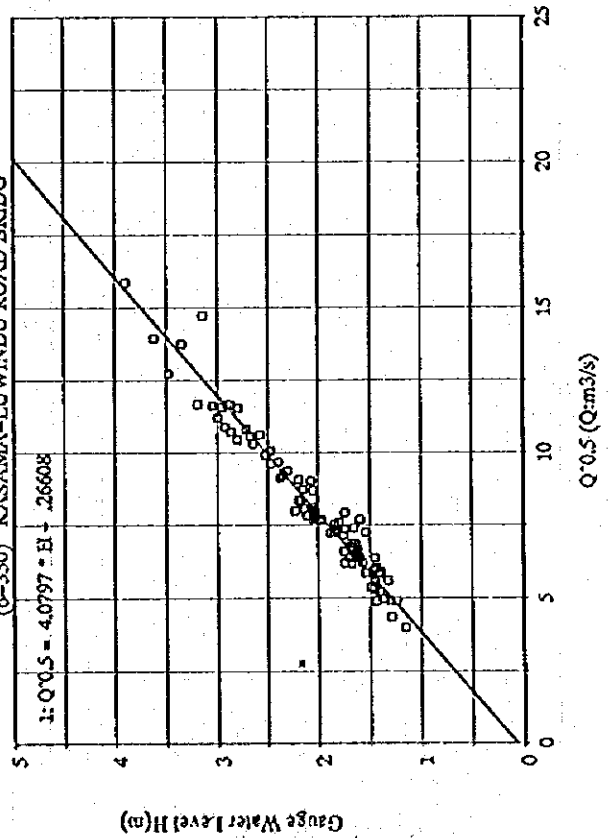
1: $Q = 16.644 \cdot H^{0.0625} \cdot 1.2$



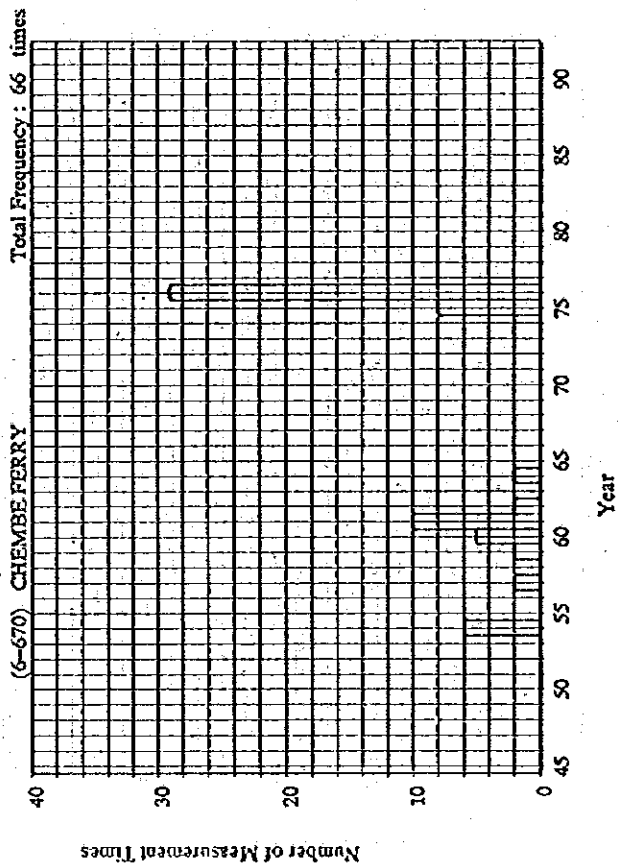
H-Q^{0.5} CURVE

(6-350) KASAMA-LUWINDU ROAD BRIDGE

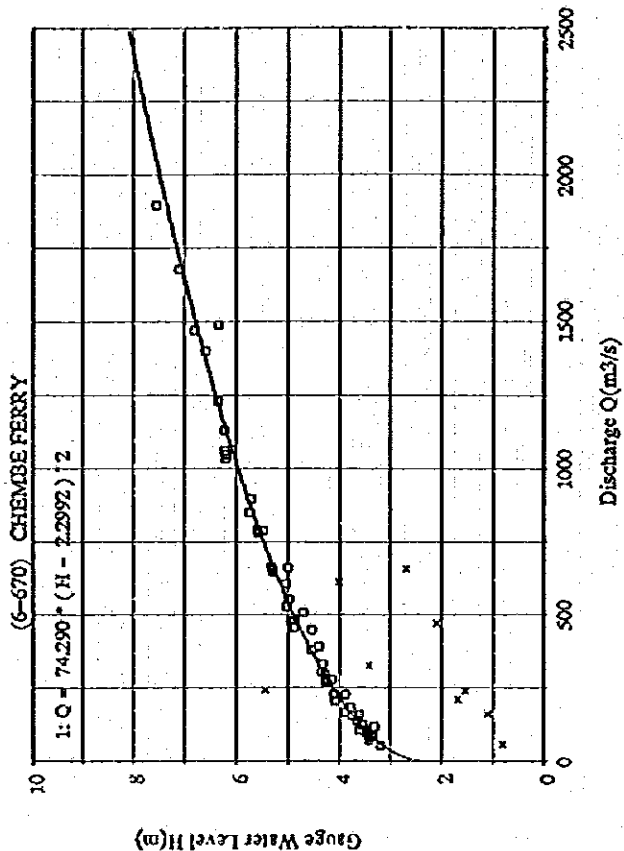
1: $Q^{0.5} = 4.0797 \cdot H^{0.26608}$



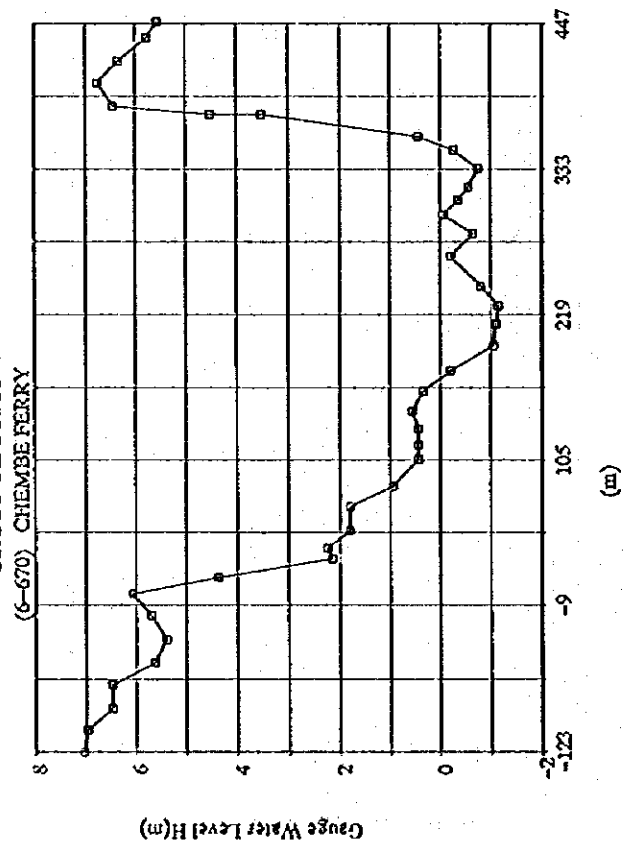
FREQUENCY OF FLOW MEASUREMENT



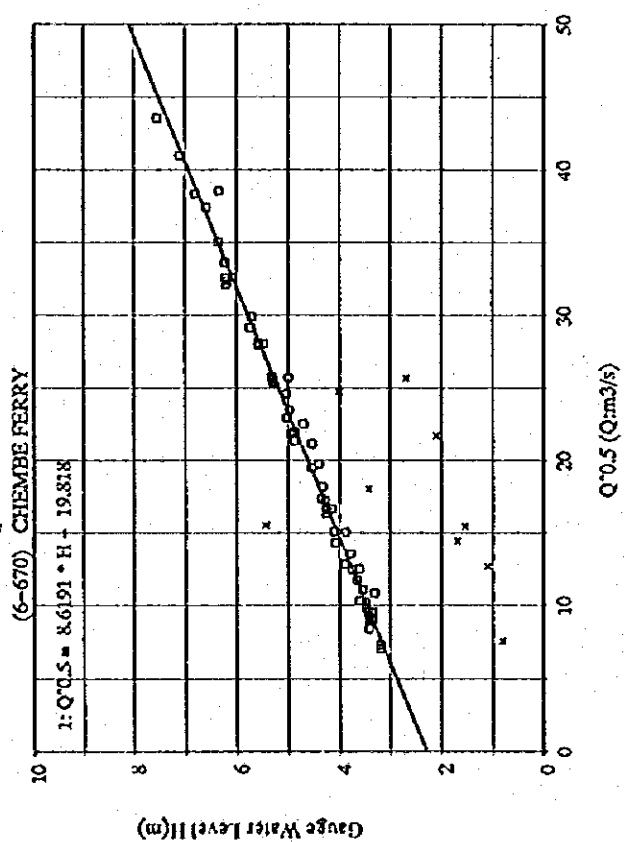
DISCHARGE RATING CURVE



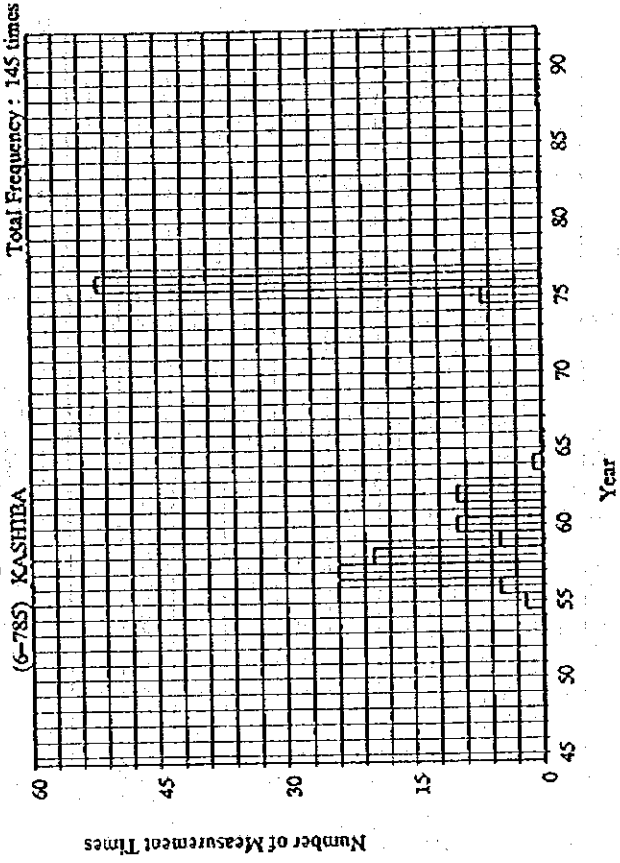
CROSS SECTION



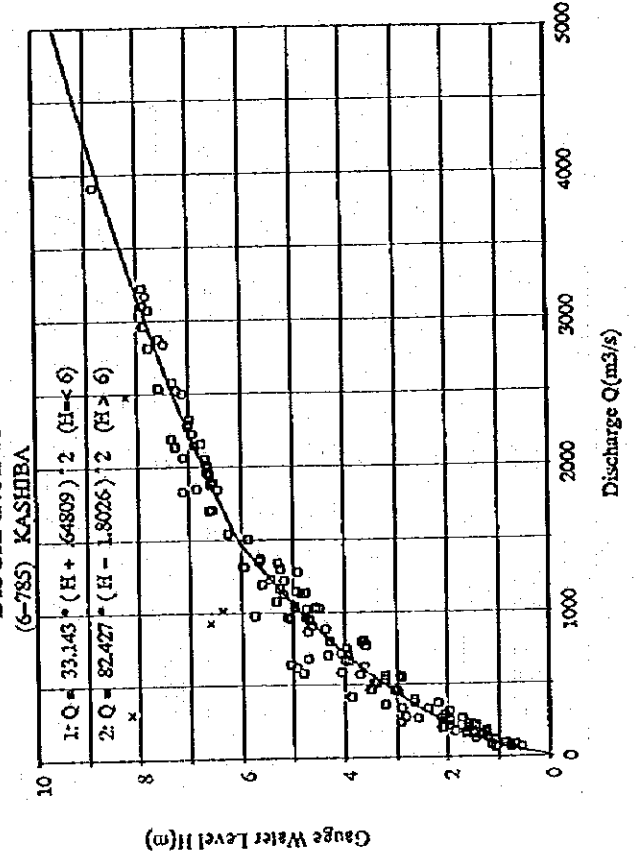
H-Q^{0.5} CURVE



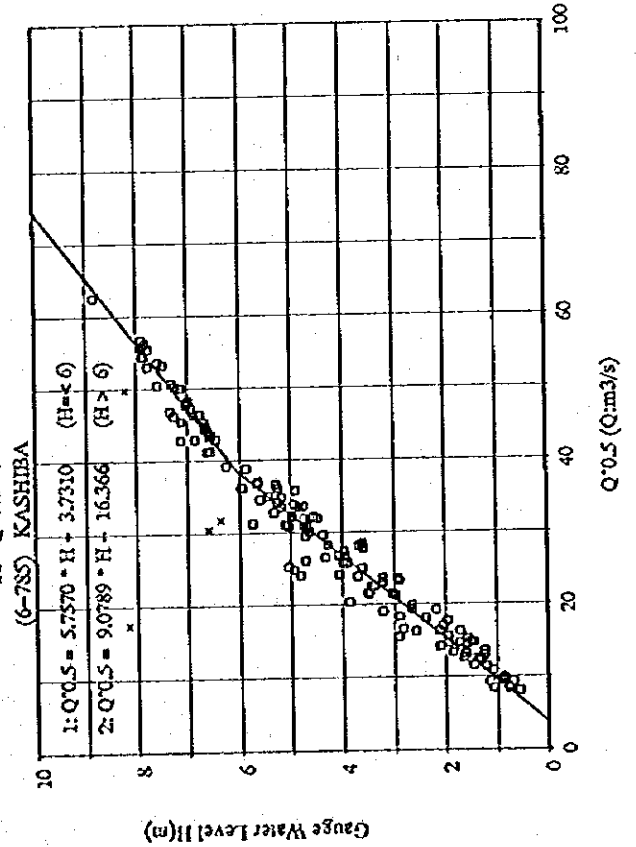
FREQUENCY OF FLOW MEASUREMENT



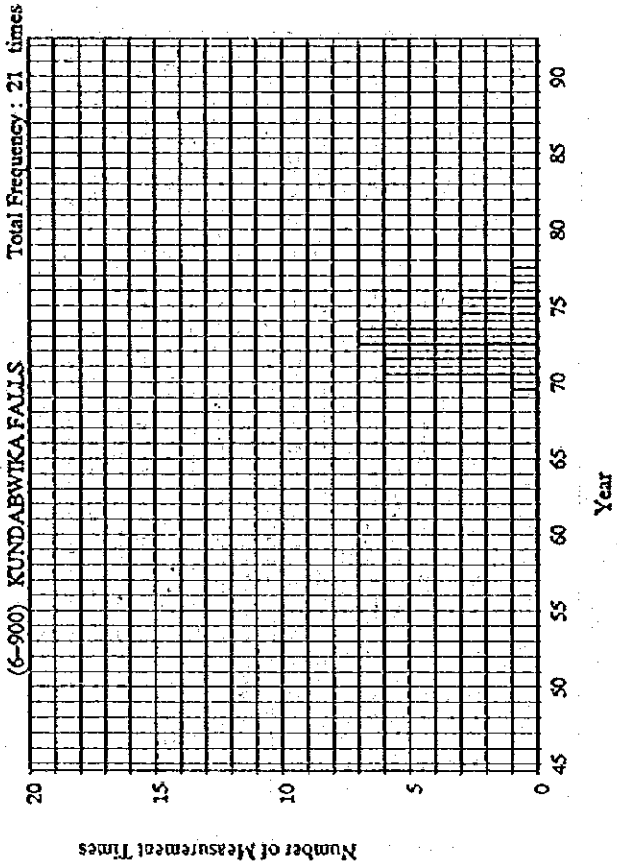
DISCHARGE RATING CURVE



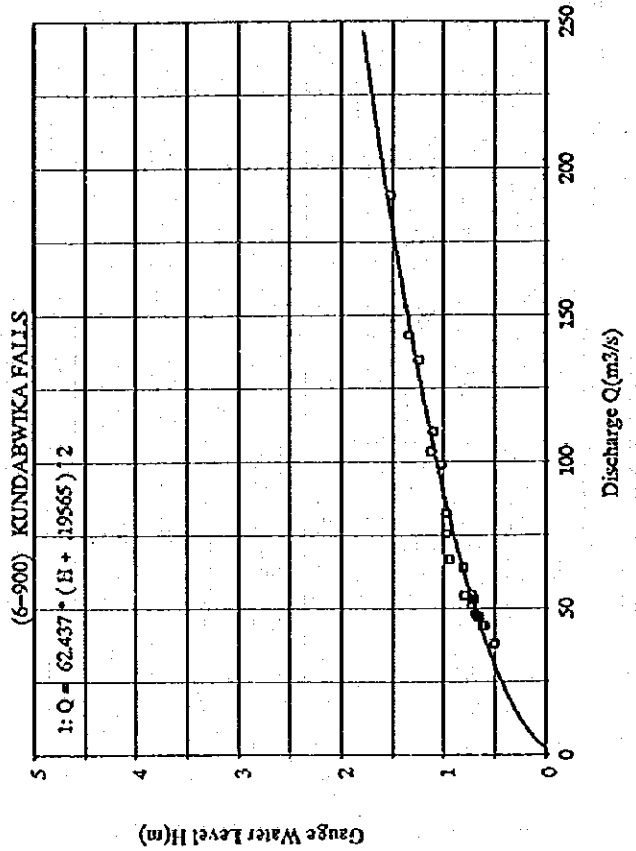
H-Q^{0.5} CURVE



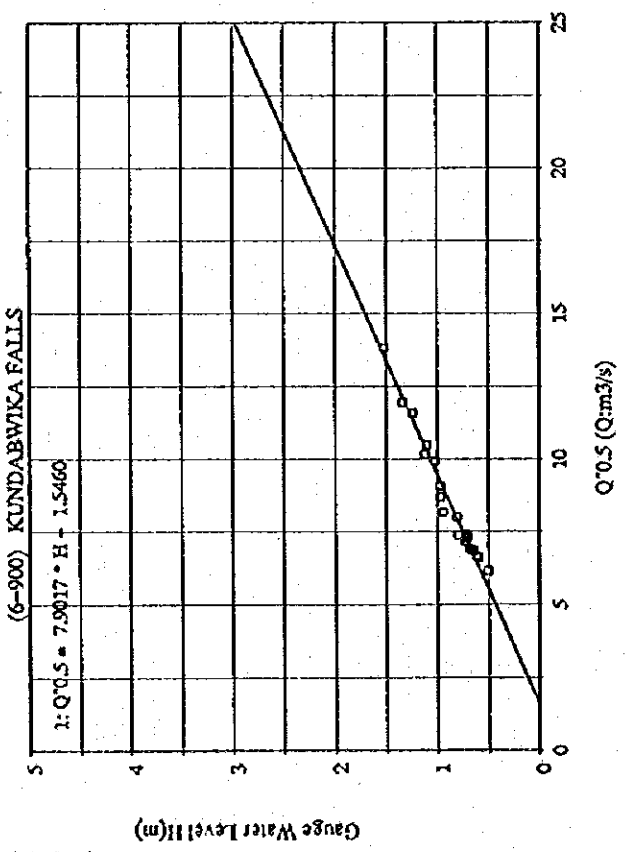
FREQUENCY OF FLOW MEASUREMENT

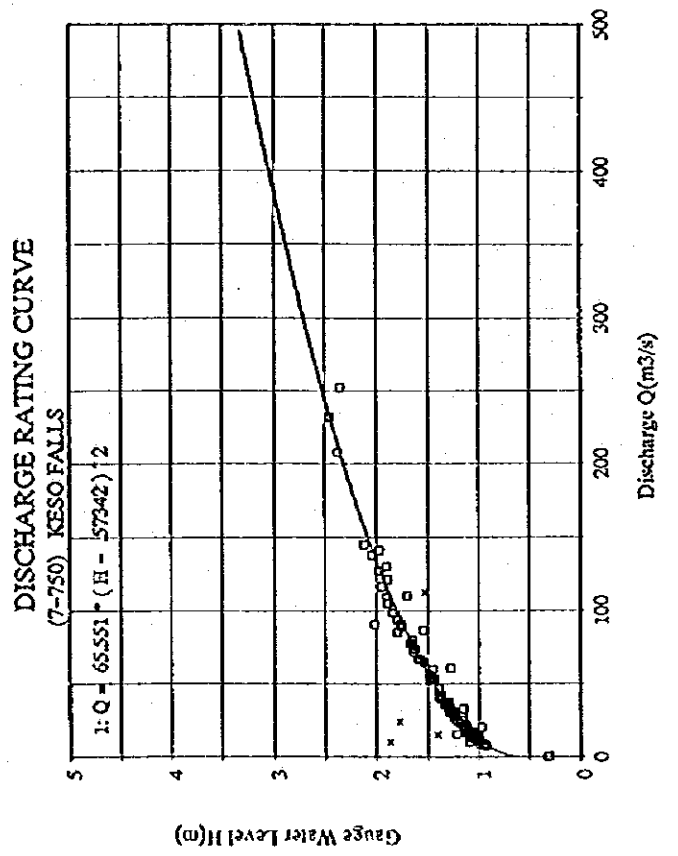
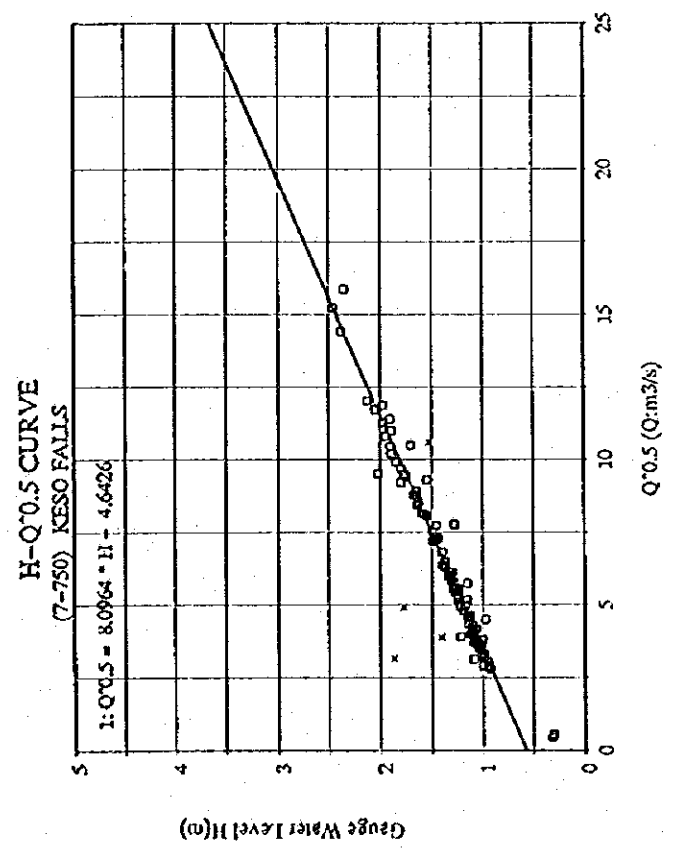
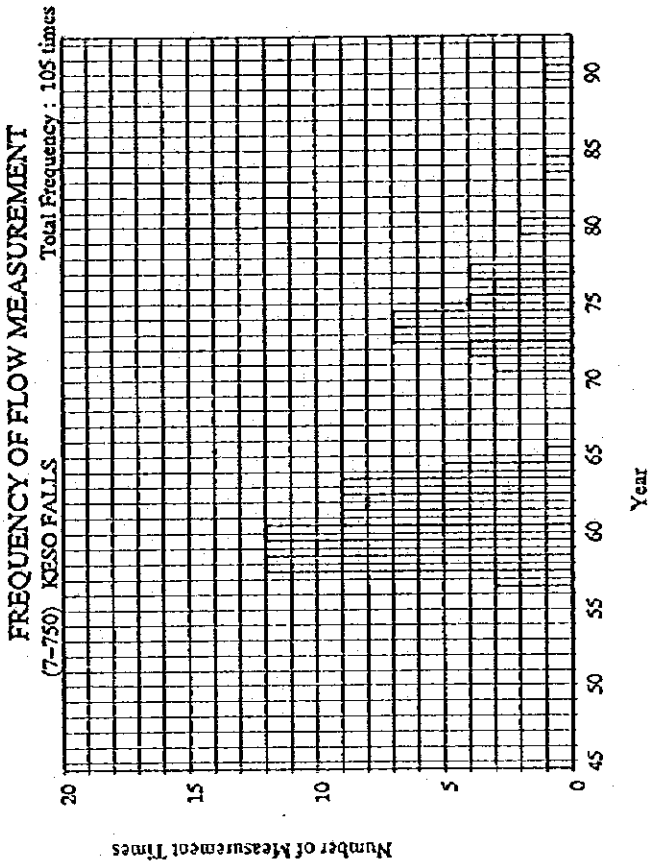


DISCHARGE RATING CURVE



H-Q^{0.5} CURVE





Appendix - 3 Monthly Mean Discharge and Flow Regime at Hydrometric Station

Complementary Equations

Some daily discharges at most hydrometric stations were complemented using the equation in the next Table. The complementary equations were calculated using the database system which was presented in this Study. Then the monthly discharges at the station with the sign "Adopted", which are described in following pages, are the discharges after complemented.

Complementary Equation

Objective Station (Y)	Explanatory Station (X)	Complementary Equation	Number of Data (N), Correlation Coefficient (r)	Notes
Zambezi P.H. (1-150)	Lukulu (2-030)	$Y=1.433X-450.88$	N=15,015, r=0.968	Adopted
Lukulu (2-030)	Zambezi P.H. (1-150)	$Y=0.654X+343.51$	N=15,015, r=0.968	Adopted
Kabompo Boma (1-650)	Watopa Pontoon (1-950)	$Y=0.817X+ 19.06$	N=11,611, r=0.957	Adopted
Watopa Pontoon (1-950)	Kabompo Boma (1-650)	$Y=1.121X- 1.14$	N=11,611, r=0.957	Adopted
Kalabo (2-250)	Zambezi P.H. (1-150)	$Y=9.733X+ 10.35$	N=12,504, r=0.771	Not Adopted
Kalabo (2-250)	Kabompo Boma (1-650)	$Y=0.366X- 0.90$	N=11,664, r=0.592	Not Adopted
Senanga (2-400)	Lukulu (2-030)	$Y=1.093X+169.57$	N=14,878, r=0.870	Not Adopted
Senanga (2-400)	Victoria Fall Big Tree	$Y=0.570X+254.88$	N=14,847, r=0.934	Not Adopted
Smith's Bridge (4-130)	Raglam Farm (4-050)	$Y=1.721X+ 13.60$	N=11,580, r=0.960	Adopted
Raglam Farm was adopted because of many data not observed at Mupalamatu.				
Mpatamatu (4-200)	Machiya Ferry (4-280)	$Y=0.615X+ 7.20$	N= 9,309, r=0.966	Adopted
Machiya Ferry has enough data and a little no-observed data.				
Chilenga (4-350)	Machiya Ferry (4-280)	$Y=1.310X+ 0.45$	N=10,690, r=0.976	Adopted
Lubungu (4-450)	Kafue H. Br. (4-669)	$Y=0.576X+ 12.53$	N= 6,260, r=0.965	Adopted
Chipumpa Pontn. (4-560)	Machiya Ferry (4-280)	$Y=0.708X- 8.31$	N=10,305, r=0.836	Adopted
Chipumpa Pontn. (4-560)	Chilenga (4-350)	$Y=0.513X- 38.26$	N= 9,820, r=0.808	Not Adopted
Kafue H. Br. (4-669)	Lubungu (4-450)	$Y=1.614X+ 1.45$	N= 6,260, r=0.965	Adopted
Mfuwe1 (5-650)	Luangwa Rd.Br. (5-940)	$Y=0.366X+ 95.92$	N= 5,228, r=0.876	Adopted
Mfuwe3 (5-650)	Ndevu Camp (5-800)	$Y=0.689X+ 32.98$	N= 1,680, r=0.950	Adopted
Ndevu Camp (5-800)	Mfuwe (5-650)	$Y=1.339X+ 18.63$	N= 2,776, r=0.907	Not Adopted
Kasama-L. Rd.Br. (6-350)	Chambeshi O.P. (6-289)	$Y=0.194X+ 36.75$	N= 7,768, r=0.771	Adopted
Chembe Ferry (6-670)	Kashiba (6-785)	$Y=0.757X- 53.48$	N= 8,060, r=0.979	Adopted
Kashiba (6-785)	Chembe Ferry (6-670)	$Y=1.267X+104.67$	N= 8,060, r=0.979	Adopted
Kundabwika Falls (6-900)	Keso Falls (7-750)	$Y=1.138X+ 59.94$	N= 6,893, r=0.844	Adopted
Keso Falls (7-750)	Kundabwika Falls (6-900)	$Y=0.626X- 19.71$	N= 6,893, r=0.844	Adopted

1946 1993

Flow Resume Table by Station
(1-150)ZAMBEZI PUMP HOUSE

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min.	Average	Total
1946	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	3852	N.A.	N.A.	N.A.	N.A.	81	1255	50191
1947	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	3114	N.A.	N.A.	N.A.	N.A.	54	834	45061
1948	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	550	N.A.	N.A.	N.A.	N.A.	70	217	8241
1949	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	4302	1115	134	N.A.	N.A.	55	1151	295829
1950	50	62	113	403	3211	1875	1803	578	297	142	96	66	4097	1302	223	90	48	48	767	279991
1951	61	87	232	909	2613	2488	1803	1011	381	215	135	88	4097	1302	223	90	55	55	591	216336
1952	49	83	111	299	1424	2701	812	403	199	130	88	63	3053	745	191	93	48	46	618	225662
1953	53	53	141	410	1089	2762	2415	965	304	170	105	67	3009	807	178	93	50	48	637	232679
1954	45	50	104	390	892	2134	2000	606	270	161	103	68	3620	807	200	81	50	48	557	203193
1955	55	60	101	246	1451	1703	3120	2702	366	324	116	121	2435	871	205	110	53	53	889	325346
1956	81	88	163	246	1738	3908	1916	572	288	183	116	76	4842	558	223	103	67	62	776	283208
1957	69	87	175	1278	3951	3318	1188	472	253	168	118	85	4178	1050	214	93	65	57	911	392275
1958	63	89	154	233	631	2807	1328	508	244	157	108	73	3408	476	183	100	60	57	508	185300
1959	50	61	108	319	1011	3452	2355	876	362	192	118	78	4302	834	209	90	46	44	747	273581
1960	57	74	118	289	859	3495	3740	1249	474	257	162	106	4455	911	252	113	55	53	905	330299
1961	79	102	335	1115	2406	3738	3310	1189	449	252	171	117	4406	1649	352	145	75	73	1096	399974
1962	85	101	348	1923	3106	3886	2601	894	380	223	152	102	4281	2074	352	127	84	81	1138	415319
1963	83	134	341	712	1527	1845	1220	441	240	161	115	87	2271	834	257	120	81	78	572	209355
1964	67	89	149	681	1993	2520	1391	542	264	165	110	80	2733	871	205	97	62	60	662	241775
1965	70	71	179	319	847	2576	2609	996	363	189	120	80	3897	989	191	87	67	57	662	241750
1966	71	82	102	258	917	2200	2609	996	363	189	120	80	3897	989	191	87	67	57	662	241750
1967	62	99	665	3523	3951	3554	2355	1047	437	282	177	124	4842	2717	410	145	60	57	1347	493164
1968	89	107	321	788	3284	4428	3664	1034	453	282	192	132	5360	1257	370	161	81	78	1216	443764
1969	127	191	476	1294	3575	4628	3332	625	313	209	150	103	4322	1056	325	162	94	87	984	389325
1970	90	110	259	768	2201	2402	1160	766	341	213	142	106	2988	1036	290	127	87	84	704	256981
1971	82	106	159	339	392	907	1408	860	354	191	125	84	1661	507	229	117	74	74	417	152466
1972	78	98	141	381	619	1344	1172	515	232	145	96	66	1430	507	184	96	61	57	406	148114
1973	57	72	136	520	1609	1370	1817	735	304	167	107	75	2236	1002	197	85	57	56	572	208888
1974	57	69	277	1564	1791	2739	2004	811	368	171	131	87	3427	1531	290	107	57	57	836	305286
1975	64	66	132	269	1643	2957	3023	1408	510	256	154	100	3275	1379	242	103	62	59	877	321104
1976	130	130	181	393	1358	1834	2477	1070	408	235	152	102	3079	1194	269	141	94	39	700	255448
1977	79	72	165	617	810	2258	3938	1656	500	253	155	113	4206	883	310	108	82	67	882	339850
1978	85	162	450	944	2064	3088	2776	826	375	230	158	113	3730	1151	343	161	84	81	931	339850
1979	86	130	638	2132	1798	2289	1959	1083	417	213	146	102	2929	1726	341	139	84	78	914	334594
1980	79	107	172	267	666	1501	2405	675	282	168	116	85	3523	570	202	107	74	70	540	197266
1981	64	68	108	218	422	1208	819	462	233	153	107	73	1836	391	161	91	61	57	328	119644
1982	67	94	244	351	586	639	547	304	167	113	80	57	731	395	174	85	54	49	269	98113
1983	46	61	103	357	1468	1804	1066	426	193	113	76	55	2356	635	150	67	45	42	477	174474
1984	47	66	131	262	616	1508	1609	631	254	143	90	61	1947	568	186	79	47	46	450	164155
1985	47	53	69	154	554	1490	2396	622	229	136	91	63	3800	570	139	63	45	43	489	178636
1986	66	66	429	659	1263	1884	1216	496	256	161	110	76	2833	754	280	117	58	51	569	207618
1987	71	62	98	179	803	1577	1275	605	259	153	98	75	2434	632	145	78	60	60	436	159593
1988	59	93	171	613	1386	2108	3065	1482	497	254	155	103	3445	1172	289	119	57	55	826	301647
1989	85	81	99	381	497	381	733	545	241	150	104	72	973	383	166	86	67	62	266	96921
1990	60	60	120	479	2070	1472	1162	450	196	117	83	63	2444	762	149	73	57	53	517	188630
1991	54	76	148	450	846	617	623	327	188	115	81	58	1115	526	159	78	50	48	296	108408
1992	44	56	82	149	703	1798	2423	755	260	34	N.A.	N.A.	2942	606	98	42	0	0	611	190502
Average	70	90	211	661	1547	2313	1934	815	328	188	124	85	3153	957	234	105	63	60	703	238141

177058
213627
234741

46 494
54 589
59 646

54 54
62 62
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80 80
97 97
105 105

175 175
215 215
233 233

661 661
842 842
910 910

2389 2389
2623 2623
2853 2853

70 70
81 81
85 85

99 99
116 116
122 122

138 138
169 169
179 179

257 257
307 307
314 314

634 634
768 768
763 763

1557 1557
1857 1857
1851 1851

1474 1474
1731 1731
2000 2000

1020 1020
1148 1148
1409 1409

353 353
540 540
662 662

145 145
198 198
225 225

58 76
67 87
72 94

Ave(10)
Ave(20)
Ave(30)

1950 1993
Flow Resume Table by Station
(1-650)KABOMPO.BOMA

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	O(.95)	O(.185)	O(.275)	O(.355)	Min.	Average	Total
1950	41	54	83	205	359	389	329	192	108	85	71	56	496	244	95	62	39	32	163	59495
1951	45	76	227	428	478	812	334	203	135	113	92	73	905	386	140	85	42	39	251	91933
1952	51	91	104	154	267	404	559	266	134	101	83	62	638	244	116	85	47	42	189	68883
1953	47	51	143	186	187	298	264	96	66	57	46	38	396	189	71	51	36	32	123	44897
1954	27	42	84	140	222	337	286	168	89	66	49	39	376	189	85	24	24	24	128	48896
1955	33	48	99	230	339	352	586	399	176	119	91	71	638	295	134	80	32	39	211	77235
1956	53	75	180	236	449	540	401	179	122	101	81	61	612	252	128	30	47	39	205	74743
1957	53	60	94	261	296	261	163	84	59	50	43	38	418	197	62	51	36	36	121	44092
1958	31	65	88	182	295	342	200	109	93	56	44	34	396	182	80	51	30	27	125	45743
1959	25	35	66	139	201	488	375	150	93	70	55	39	720	244	85	47	24	24	145	52896
1960	31	51	71	188	304	686	731	343	142	109	88	70	1054	244	111	122	47	27	285	82226
1961	49	71	195	337	388	646	819	232	168	152	127	99	1003	386	182	105	58	58	289	104095
1962	71	102	408	514	559	610	485	176	136	113	92	69	735	485	155	95	62	58	226	105530
1963	70	82	334	289	433	538	347	164	126	104	84	59	520	326	155	105	62	58	225	82712
1964	55	76	155	281	433	484	334	251	111	95	80	67	693	252	116	75	54	54	195	71127
1965	57	77	144	190	297	615	583	258	145	121	89	69	638	197	100	77	62	213	77804	
1966	67	75	84	89	177	400	562	258	154	121	89	69	638	197	100	77	62	246	90043	
1967	53	102	253	362	445	661	418	200	138	125	110	92	796	343	151	106	62	47	246	90043
1968	68	91	275	512	917	1093	1180	434	254	202	168	132	1507	586	260	155	51	51	440	160717
1969	129	166	280	417	976	904	413	241	176	148	122	92	1219	376	182	134	85	80	335	122162
1970	82	116	265	436	701	589	365	226	165	136	111	90	808	376	182	105	75	75	354	98910
1971	66	96	155	226	194	340	253	189	111	89	73	61	418	212	128	75	58	54	154	56501
1972	53	60	85	167	182	275	200	105	74	62	52	39	326	155	75	54	39	36	117	41084
1973	38	48	78	134	214	256	258	130	84	70	56	40	346	175	82	51	36	32	117	42546
1974	30	40	112	342	393	592	386	189	117	94	79	60	706	336	111	71	30	30	202	73657
1975	45	44	88	194	299	548	654	409	196	149	117	96	833	302	155	95	39	236	236	86251
1976	106	106	181	340	416	506	534	275	175	140	114	84	599	389	175	111	75	247	247	90058
1977	66	68	194	276	398	632	1081	477	232	181	146	115	1371	496	228	155	80	58	372	117102
1978	84	151	288	474	543	1034	885	347	223	185	151	112	1238	489	235	138	85	80	301	135779
1979	93	156	412	426	474	565	556	318	204	169	138	106	612	489	235	138	85	80	301	110190
1980	87	88	123	286	415	693	645	276	153	43	24	14	970	399	197	71	11	246	89918	
1981	63	95	125	205	361	449	287	177	130	107	87	68	493	235	126	85	67	178	64850	
1982	69	88	124	234	338	319	450	235	143	112	94	72	561	272	173	93	57	200	72899	
1983	62	71	121	210	203	262	186	97	72	61	51	41	295	192	85	58	40	119	43734	
1984	45	58	86	154	296	351	422	235	140	93	77	59	504	249	102	69	37	167	60931	
1985	44	53	78	154	310	501	431	216	139	105	88	67	647	258	113	68	42	181	65897	
1986	44	44	214	301	569	673	371	236	156	114	99	83	716	298	194	107	65	253	92356	
1987	77	167	105	189	301	388	414	360	308	260	157	94	436	349	225	100	60	229	83653	
1988	65	89	143	200	301	245	314	158	80	80	65	48	359	222	116	72	42	149	54527	
1989	42	45	78	151	312	199	333	192	106	77	64	48	443	185	96	51	41	136	49551	
1990	44	38	84	232	438	424	342	143	102	88	77	55	573	230	96	60	28	171	62267	
1991	53	82	104	146	161	161	189	N.A.	N.A.	N.A.	N.A.	N.A.	214	158	61	N.A.	47	131	27987	

1992 Ave(10) Ave(20) Ave(30) N.A. N.A. N.A. 81 75 83 88 130 206 541 933 406 281 248 91 79 1135 302 163 82 N.A. 73 309 90315 75922 63122 75723 79345

1957 1993
Flow Resume Table by Station
C1-950\WATOPA PONTOON

Year	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	O(95)	O(185)	O(275)	O(355)	Min.	Average	Total
1957	104	292	331	292	182	93	65	55	47	46	468	220	68	56	43	39	135	49163
1958	104	207	379	571	250	117	76	64	56	47	666	205	82	58	42	39	164	60017
1959	77	151	237	571	290	166	102	111	68	55	815	272	92	58	37	35	176	64488
1960	84	189	410	866	820	275	146	113	89	72	1076	489	120	79	45	42	263	96115
1961	205	414	584	953	932	412	209	154	124	94	1084	733	193	116	58	58	342	124974
1962	515	773	826	962	569	253	174	143	111	87	1144	733	188	107	70	73	381	138967
1963	398	396	676	652	407	183	135	115	97	79	897	432	154	103	76	70	278	101727
1964	161	354	578	593	374	171	128	104	87	75	677	339	132	86	67	64	229	83729
1965	143	222	400	826	486	225	143	114	95	80	1012	272	141	92	61	58	239	87250
1966	90	119	291	482	588	260	144	118	101	78	735	272	116	80	61	59	200	72825
1967	106	408	522	786	488	221	145	130	111	89	952	387	153	110	62	56	271	99262
1968	93	575	1018	1315	1418	506	279	211	168	131	1822	668	275	147	65	62	582	183087
1969	127	619	1007	866	465	252	177	146	114	91	1172	599	191	137	86	82	361	131672
1970	112	527	812	719	412	233	159	131	107	88	917	417	178	103	79	79	301	109976
1971	95	235	197	391	282	193	129	105	86	70	505	217	130	86	67	64	167	61062
1972	88	159	170	277	190	106	77	68	61	51	476	153	78	64	50	45	115	41846
1973	57	158	279	322	281	134	87	75	66	52	476	181	86	61	47	45	136	49611
1974	47	105	512	504	504	192	113	89	77	63	924	432	107	70	39	39	242	88387
1975	89	203	408	755	872	510	206	149	117	91	1079	407	150	83	50	48	291	106606
1976	98	358	520	651	606	290	165	131	106	83	679	468	160	103	79	76	271	98987
1977	74	343	542	859	1139	581	253	184	147	111	1330	543	226	124	67	65	373	136190
1978	146	558	642	991	1016	394	232	185	148	117	1382	599	238	145	82	82	399	145773
1979	153	511	557	643	601	339	197	155	127	108	689	561	232	128	96	89	328	120176
1980	121	306	500	833	721	292	179	145	121	96	1032	373	188	117	89	82	300	109649
1981	81	228	419	527	303	193	127	105	88	74	581	264	128	86	70	64	195	71084
1982	95	245	366	377	431	197	132	113	97	81	585	270	147	95	63	62	203	74199
1983	131	202	286	285	207	116	80	74	64	52	345	191	114	75	51	47	138	50506
1984	62	199	409	418	512	185	112	99	83	66	639	238	110	75	47	45	192	70100
1985	60	146	389	603	525	232	133	110	95	72	740	285	114	73	51	50	207	75534
1986	80	271	620	590	344	167	132	113	93	69	713	270	154	103	64	45	234	35463
1987	65	184	368	576	470	163	115	98	82	66	832	253	105	75	63	57	195	71298
1988	77	225	445	301	444	161	102	90	76	58	540	261	98	71	52	51	176	64082
1989	54	142	344	231	369	197	107	87	75	59	478	191	96	61	52	51	149	54204
1990	50	308	586	444	378	149	127	113	76	60	666	299	121	66	47	46	200	73105
1991	77	158	206	173	209	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	29773
1992	89	308	229	559	525	245	125	102	88	74	711	234	108	77	N.A.	50	140	67979
Average	68	308	480	612	522	240	144	117	96	77	807	345	141	91	N.A.	65	233	86025
Ave(10)	62	197	383	408	408	180	115	99	81	64	590	239	109	75	53	51	186	64204
Ave(20)	68	265	429	546	528	249	143	117	96	76	733	325	137	89	62	58	230	82135
Ave(30)	71	297	475	594	522	244	146	119	98	79	790	340	143	93	64	60	242	87171

Ave(20) 281 313 441 692 1065 1637 2060 1851 1178 652 431 334 2240 1372 604 351 267 258 901 322772
 Ave(30) 306 339 486 771 1211 1853 2173 1855 1205 589 461 357 2372 1452 664 384 291 279 963 347748

1959 1992
 Flow Resume Table by Station
 (4-050)RAGLAN FARM

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min.	Average	Total
1959	1.3	1.2	2.4	7.0	28.5	85.5	84.9	23.8	11.6	6.8	4.2	2.0	103.2	23.5	6.8	2.0	1.2	22.0	8040.3	
1960	1.3	1.3	4.8	26.4	67.4	89.7	90.3	54.7	22.9	12.0	7.1	3.4	102.8	59.6	15.3	2.8	1.4	31.5	11501.2	
1961	1.6	1.4	16.0	63.0	107.0	171.9	168.9	105.2	48.8	27.6	18.0	10.4	201.5	104.4	31.9	10.7	1.4	61.5	22460.8	
1962	4.8	3.5	45.8	96.9	122.4	134.0	105.6	55.5	27.8	27.4	13.2	7.4	140.7	97.9	28.5	9.5	2.7	52.6	19213.9	
1963	4.0	3.7	18.2	39.8	70.4	86.9	60.4	22.3	11.4	9.1	6.4	4.0	93.5	43.7	14.1	6.6	3.0	28.3	10366.9	
1964	2.1	1.5	6.9	24.8	57.0	65.2	53.8	21.0	9.6	7.8	4.9	2.8	71.1	37.8	8.4	3.9	1.4	21.2	7746.3	
1965	1.6	1.5	6.9	16.9	42.8	83.9	54.7	22.2	11.8	7.5	4.6	2.8	90.9	27.1	9.3	3.2	1.4	21.2	7772.0	
1966	1.6	1.3	2.2	6.6	22.5	59.7	128.5	53.1	21.4	12.8	8.9	5.6	146.2	31.5	10.2	3.3	1.2	27.8	10132.9	
1967	2.0	1.7	15.4	42.1	70.3	71.6	56.5	25.2	14.1	9.4	6.0	3.9	81.0	49.6	14.3	5.2	2.4	26.6	9747.4	
1968	5.6	4.2	13.6	64.1	141.0	152.5	149.0	94.1	38.0	21.8	15.3	9.1	172.5	109.4	27.4	8.5	1.4	57.9	21148.0	
1969	5.6	5.7	24.0	64.1	112.6	120.9	66.5	30.6	16.7	11.6	8.5	5.2	145.3	61.3	15.8	7.7	4.6	39.0	14241.0	
1970	5.7	5.1	35.9	98.1	144.7	171.9	114.1	58.9	28.7	18.8	12.9	8.8	191.4	101.3	27.7	10.9	2.3	57.8	21110.3	
1971	5.7	5.1	18.7	53.1	56.9	97.5	115.0	58.2	29.2	17.9	12.2	8.8	134.1	56.7	24.3	10.0	4.4	40.0	14648.1	
1972	3.8	3.2	5.1	10.8	20.9	29.8	25.4	12.5	5.6	3.6	2.8	2.1	34.1	16.4	5.0	3.5	2.0	10.4	3809.4	
1973	1.6	2.2	2.6	13.3	24.6	53.8	62.8	29.0	16.5	8.6	5.2	3.2	73.1	24.6	9.5	2.8	1.6	1.4	18.5	6765.9
1974	1.9	1.5	6.4	27.2	31.8	92.7	105.6	47.1	23.0	11.7	7.3	4.0	121.2	34.1	14.9	3.9	1.4	29.9	10931.4	
1975	3.4	3.0	8.9	51.1	80.7	112.6	145.9	104.7	46.1	25.0	16.7	9.8	157.8	85.9	29.4	8.5	1.4	50.3	18397.6	
1976	2.0	2.0	8.9	33.2	70.0	134.7	118.7	58.1	28.5	15.0	10.3	5.8	157.8	64.0	17.0	6.6	2.0	40.6	14807.7	
1977	4.6	3.5	23.5	68.0	150.1	193.8	193.2	112.5	55.0	34.2	23.5	11.4	257.4	124.6	43.3	12.8	1.3	71.8	26218.0	
1978	6.1	5.5	41.8	71.5	117.1	166.1	181.9	104.4	50.7	33.7	23.9	12.6	211.3	105.5	44.0	20.5	3.3	68.1	24870.1	
1979	5.4	4.2	55.6	75.3	98.4	115.6	127.2	86.3	44.9	30.3	22.2	10.3	193.6	88.4	48.7	20.7	5.6	55.6	20700.0	
1980	5.4	4.2	12.5	33.5	58.8	98.0	103.6	49.8	26.8	14.3	9.5	5.8	121.7	51.7	21.0	6.8	3.7	35.0	12775.2	
1981	2.9	1.8	4.6	16.1	66.4	66.3	47.4	35.2	15.0	8.0	4.9	2.8	77.4	42.3	7.9	3.7	1.6	22.3	8147.5	
1982	2.5	3.1	30.8	48.3	96.5	82.9	48.2	25.3	11.1	6.2	4.0	2.5	111.4	45.9	15.3	3.5	1.5	29.8	10876.4	
1983	1.5	1.3	15.9	36.7	60.0	79.9	45.6	14.9	6.2	4.3	3.4	2.3	89.1	34.4	5.3	2.3	1.1	21.7	7945.0	
1984	1.7	2.1	6.4	32.3	72.1	76.4	85.4	47.9	21.2	12.0	7.2	3.9	92.0	56.1	18.5	4.1	1.4	31.0	11323.6	
1985	4.0	3.5	18.9	42.9	80.3	107.5	116.1	66.9	36.7	22.2	12.8	6.5	144.8	67.1	19.7	6.3	1.4	41.4	15123.4	
1986	4.0	3.7	6.4	20.9	65.1	92.6	80.2	40.9	20.0	12.3	8.8	4.8	115.1	54.7	19.2	9.3	3.3	36.8	13449.8	
1987	2.4	2.2	6.4	30.2	65.7	69.5	72.4	33.3	13.4	8.2	5.2	2.8	111.8	44.4	8.5	3.3	1.7	26.7	9762.1	
1988	1.7	1.5	6.4	20.9	23.1	47.9	47.1	45.1	18.6	9.5	6.0	3.0	93.1	51.1	11.8	3.6	1.5	28.5	10418.7	
1989	1.7	1.5	2.3	13.3	61.9	68.7	62.3	32.4	13.8	5.9	3.5	1.9	52.5	23.8	6.8	2.2	1.4	16.3	5854.0	
1990	1.3	1.6	3.9	14.4	20.3	16.7	62.3	31.1	12.1	6.5	4.3	2.3	73.1	41.5	7.1	2.1	1.0	22.1	8081.2	
1991	1.6	1.6	3.9	14.4	20.3	16.7	62.3	31.1	12.1	6.5	4.3	2.3	73.1	41.5	7.1	2.1	1.0	22.1	8081.2	
Average	2.8	3.8	14.8	39.5	74.4	100.5	93.9	50.2	23.7	14.2	9.5	5.3	122.3	58.1	18.3	6.6	2.2	1.9	35.8	13077.7
Ave(10)	2.0	2.7	9.7	27.5	64.2	77.0	66.1	34.7	15.6	8.9	6.1	3.3	90.7	43.4	11.6	3.8	1.7	1.6	26.3	9562.2
Ave(20)	2.7	3.7	13.3	38.8	67.8	91.7	88.6	49.3	23.4	13.7	9.6	5.1	113.1	53.6	17.8	6.4	1.9	1.9	33.3	12152.3
Ave(30)	2.9	3.9	15.1	39.4	73.2	96.2	89.3	47.6	22.6	13.7	9.5	5.3	117.6	56.3	17.9	6.4	2.3	2.0	34.6	12639.1

1959 1992
 Flow Resume Table by Station
 (4-120)WAMBASHI

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min. Average	Total
1959	N.A.	0.7	1.6	2.9	15.4	22.4	3.7	4.1	2.9	2.0	1.8	1.3	41.3	5.2	2.3	1.3	0.8	0.7	1941.2
1960	1.0	0.8	1.4	5.4	17.9	20.6	8.4	6.7	3.9	3.0	2.3	1.8	30.9	5.2	3.3	1.6	0.8	0.7	2378.5
1961	1.3	2.8	3.8	13.7	25.5	35.0	32.0	16.9	9.6	7.5	5.3	3.5	59.2	20.2	8.6	4.8	1.2	1.1	4941.1
1962	2.2	4.4	8.3	25.5	29.1	26.0	15.7	11.2	6.2	5.2	4.0	2.9	42.3	18.2	6.9	3.2	1.4	1.3	4218.1
1963	2.0	4.3	8.9	8.9	12.2	10.6	6.9	3.3	2.2	2.2	1.8	1.4	25.9	6.5	3.4	2.6	1.4	0.9	2004.3
1964	1.0	1.4	2.2	4.7	9.9	11.7	6.9	3.3	2.2	2.2	1.8	1.4	20.6	7.3	4.5	1.6	0.8	0.8	1759.5
1965	1.1	1.8	3.5	4.7	9.9	11.7	6.9	3.3	2.2	2.2	1.8	1.4	30.6	5.0	2.4	1.6	0.8	0.8	1686.8
1966	1.0	1.4	2.2	4.7	9.9	11.7	6.9	3.3	2.2	2.2	1.8	1.4	26.4	8.0	3.9	2.5	1.0	0.8	1586.6
1967	1.3	2.2	4.7	8.3	14.6	17.4	8.2	4.4	2.6	2.4	2.2	1.6	30.0	5.5	2.4	2.3	1.0	1.0	2566.2
1968	1.3	2.2	4.7	8.3	14.6	17.4	8.2	4.4	2.6	2.4	2.2	1.6	36.3	9.0	3.5	2.5	1.0	1.0	4244.2
1969	2.3	3.3	6.3	12.8	24.0	25.6	15.1	11.4	6.9	5.3	4.2	2.8	30.6	18.2	6.5	3.0	1.3	1.3	2588.2
1970	1.5	2.5	5.3	13.4	25.8	23.9	12.5	8.9	4.7	3.9	2.8	2.0	33.7	9.4	5.4	2.6	1.3	1.3	4244.2
1971	1.7	2.5	5.3	13.4	25.8	23.9	12.5	8.9	4.7	3.9	2.8	2.0	33.7	12.5	4.8	3.0	1.3	1.1	3911.2
1972	1.7	2.5	5.3	13.4	25.8	23.9	12.5	8.9	4.7	3.9	2.8	2.0	33.7	12.5	4.8	3.0	1.3	1.1	3051.9
1973	0.9	1.1	2.2	4.7	11.0	12.9	5.8	3.5	2.2	2.0	1.4	1.0	16.8	3.7	1.9	1.1	0.8	0.8	1199.9
1974	1.6	1.8	3.7	7.7	18.2	29.0	17.6	13.2	5.7	4.0	3.5	2.4	43.6	15.5	3.0	2.4	0.8	0.8	1904.5
1975	3.0	2.9	4.7	12.0	23.2	34.9	37.6	19.4	10.4	7.3	5.8	4.0	56.9	19.8	3.4	3.0	1.4	1.4	3591.9
1976	1.2	1.3	2.5	6.3	14.5	28.0	14.0	15.4	7.5	3.2	2.5	1.5	34.3	10.9	4.9	4.0	1.0	1.0	4958.6
1977	2.8	1.3	2.5	18.4	30.5	49.8	39.8	15.4	9.1	7.8	5.4	3.8	91.3	22.4	6.7	4.9	1.0	1.0	5741.3
1978	2.6	3.5	10.6	10.6	24.2	32.1	28.4	11.7	7.5	4.9	2.8	2.1	44.9	20.4	3.3	3.3	2.1	2.1	4781.2
1979	1.7	1.6	3.3	6.1	11.2	22.9	18.9	7.5	5.0	2.1	1.1	0.9	32.9	11.8	6.3	2.9	1.3	1.3	3027.6
1980	1.2	1.1	2.3	4.0	8.2	11.3	5.7	4.0	2.2	1.0	0.6	0.4	24.4	7.8	3.2	1.4	1.0	1.0	2229.5
1981	1.2	1.1	2.3	4.0	8.2	11.3	5.7	4.0	2.2	1.0	0.6	0.4	24.4	7.8	3.2	1.4	1.0	1.0	2141.7
1982	0.8	0.9	1.9	4.2	8.2	17.5	11.7	4.3	2.4	1.0	0.6	0.4	15.7	6.5	3.1	1.3	0.8	0.8	1496.5
1983	3.7	1.3	1.2	17.5	26.2	33.7	26.7	15.4	9.3	7.2	5.2	3.9	51.8	20.6	4.8	2.0	1.3	1.2	3485.8
1984	1.3	1.4	2.7	9.7	15.8	17.7	11.9	7.5	4.9	3.2	2.0	1.5	32.0	10.5	5.1	2.2	0.9	0.7	4921.8
1985	1.2	1.4	2.7	9.7	15.8	17.7	11.9	7.5	4.9	3.2	2.0	1.5	32.0	10.5	5.1	2.2	0.9	0.7	2759.0
1986	0.9	0.8	1.3	4.4	11.0	18.8	13.8	4.3	2.6	1.2	0.9	0.7	20.5	7.1	2.8	1.7	0.8	0.7	2041.9
1987	1.2	1.4	2.7	9.7	15.8	17.7	11.9	7.5	4.9	3.2	2.0	1.5	32.0	10.5	5.1	2.2	0.9	0.7	2189.6
1988	0.8	0.8	1.3	4.4	11.0	18.8	13.8	4.3	2.6	1.2	0.9	0.7	20.5	7.1	2.8	1.7	0.8	0.7	1334.1
1989	1.4	1.3	2.5	4.4	11.0	18.8	13.8	4.3	2.6	1.2	0.9	0.7	20.5	7.1	2.8	1.7	0.8	0.7	1954.5
1990	1.5	1.3	2.5	4.4	11.0	18.8	13.8	4.3	2.6	1.2	0.9	0.7	20.5	7.1	2.8	1.7	0.8	0.7	1098.3
1991	1.6	1.3	2.5	4.4	11.0	18.8	13.8	4.3	2.6	1.2	0.9	0.7	20.5	7.1	2.8	1.7	0.8	0.7	2859.4
Average	1.5	1.3	2.5	4.4	11.0	18.8	13.8	4.3	2.6	1.2	0.9	0.7	20.5	7.1	2.8	1.7	0.8	0.7	2342.3
Ave(10)	1.6	1.3	2.5	4.4	11.0	18.8	13.8	4.3	2.6	1.2	0.9	0.7	20.5	7.1	2.8	1.7	0.8	0.7	2784.7
Ave(20)	1.5	1.3	2.5	4.4	11.0	18.8	13.8	4.3	2.6	1.2	0.9	0.7	20.5	7.1	2.8	1.7	0.8	0.7	2778.0
Ave(30)	1.5	1.3	2.5	4.4	11.0	18.8	13.8	4.3	2.6	1.2	0.9	0.7	20.5	7.1	2.8	1.7	0.8	0.7	2778.0

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min. Average	Total
1959	11.1	2.8	8.1	17.2	76.2	142.0	105.0	39.2	18.4	11.9	8.2	5.2	223.8	41.4	15.7	6.8	2.3	2.2	13520.4
1960	3.6	4.0	14.4	46.6	134.3	160.3	137.3	77.0	37.8	22.9	14.7	8.6	197.6	87.1	28.4	8.3	3.0	2.7	19919.7
1961	5.0	19.7	61.6	129.3	218.9	289.7	272.0	163.7	88.7	58.4	41.5	27.1	356.6	184.6	58.6	31.8	4.6	4.2	41442.0
1962	15.4	17.1	91.3	191.4	218.1	218.1	161.3	93.9	57.5	42.3	30.9	20.5	266.7	168.6	58.6	24.8	12.5	9.5	34972.9
1963	12.9	27.1	42.2	92.1	147.2	132.3	87.0	41.3	25.9	20.5	15.4	10.5	208.9	83.9	32.6	17.3	10.1	8.1	18840.8
1964	6.8	9.6	18.7	70.7	116.5	126.8	87.7	40.8	23.3	18.0	12.9	8.2	160.9	77.1	20.8	11.6	5.9	5.4	16267.6
1965	6.3	7.6	15.6	29.9	84.2	142.3	85.5	39.5	22.6	14.9	10.4	7.5	172.5	47.8	19.7	8.9	5.8	5.2	14140.1

1959 1992
Flow Resume Table by Station
(4-130)SMITH'S BRIDGE

Year	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	Average	Ave(10)	Ave(20)	Ave(30)	
4.8	4.8	5.2	5.8	6.4	7.1	7.8	8.4	9.1	9.8	10.5	11.2	11.9	12.6	13.3	14.0	14.7	15.4	16.1	16.8	17.5	18.2	18.9	19.6	20.3	21.0	21.7	22.4	23.1	23.8	24.5	25.2
9.0	9.0	9.5	10.1	10.7	11.3	11.9	12.5	13.1	13.7	14.3	14.9	15.5	16.1	16.7	17.3	17.9	18.5	19.1	19.7	20.3	20.9	21.5	22.1	22.7	23.3	23.9	24.5	25.1	25.7	26.3	26.9
14.0	14.0	14.4	15.0	15.6	16.2	16.8	17.4	18.0	18.6	19.2	19.8	20.4	21.0	21.6	22.2	22.8	23.4	24.0	24.6	25.2	25.8	26.4	27.0	27.6	28.2	28.8	29.4	30.0	30.6	31.2	31.8
66.4	66.4	68.4	70.4	72.4	74.4	76.4	78.4	80.4	82.4	84.4	86.4	88.4	90.4	92.4	94.4	96.4	98.4	100.4	102.4	104.4	106.4	108.4	110.4	112.4	114.4	116.4	118.4	120.4	122.4	124.4	126.4
25.5	25.5	26.5	27.5	28.5	29.5	30.5	31.5	32.5	33.5	34.5	35.5	36.5	37.5	38.5	39.5	40.5	41.5	42.5	43.5	44.5	45.5	46.5	47.5	48.5	49.5	50.5	51.5	52.5	53.5	54.5	55.5
92.1	92.1	93.1	94.1	95.1	96.1	97.1	98.1	99.1	100.1	101.1	102.1	103.1	104.1	105.1	106.1	107.1	108.1	109.1	110.1	111.1	112.1	113.1	114.1	115.1	116.1	117.1	118.1	119.1	120.1	121.1	122.1
180.0	180.0	181.0	182.0	183.0	184.0	185.0	186.0	187.0	188.0	189.0	190.0	191.0	192.0	193.0	194.0	195.0	196.0	197.0	198.0	199.0	200.0	201.0	202.0	203.0	204.0	205.0	206.0	207.0	208.0	209.0	210.0
37.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0	63.0	64.0	65.0	66.0	67.0
72.7	72.7	73.7	74.7	75.7	76.7	77.7	78.7	79.7	80.7	81.7	82.7	83.7	84.7	85.7	86.7	87.7	88.7	89.7	90.7	91.7	92.7	93.7	94.7	95.7	96.7	97.7	98.7	99.7	100.7	101.7	102.7
16.3	16.3	17.3	18.3	19.3	20.3	21.3	22.3	23.3	24.3	25.3	26.3	27.3	28.3	29.3	30.3	31.3	32.3	33.3	34.3	35.3	36.3	37.3	38.3	39.3	40.3	41.3	42.3	43.3	44.3	45.3	46.3
11.0	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5	18.0	18.5	19.0	19.5	20.0	20.5	21.0	21.5	22.0	22.5	23.0	23.5	24.0	24.5	25.0	25.5	26.0
205.1	205.1	206.1	207.1	208.1	209.1	210.1	211.1	212.1	213.1	214.1	215.1	216.1	217.1	218.1	219.1	220.1	221.1	222.1	223.1	224.1	225.1	226.1	227.1	228.1	229.1	230.1	231.1	232.1	233.1	234.1	235.1
62.5	62.5	63.5	64.5	65.5	66.5	67.5	68.5	69.5	70.5	71.5	72.5	73.5	74.5	75.5	76.5	77.5	78.5	79.5	80.5	81.5	82.5	83.5	84.5	85.5	86.5	87.5	88.5	89.5	90.5	91.5	92.5
23.8	23.8	24.3	24.8	25.3	25.8	26.3	26.8	27.3	27.8	28.3	28.8	29.3	29.8	30.3	30.8	31.3	31.8	32.3	32.8	33.3	33.8	34.3	34.8	35.3	35.8	36.3	36.8	37.3	37.8	38.3	38.8
10.5	10.5	10.8	11.1	11.4	11.7	12.0	12.3	12.6	12.9	13.2	13.5	13.8	14.1	14.4	14.7	15.0	15.3	15.6	15.9	16.2	16.5	16.8	17.1	17.4	17.7	18.0	18.3	18.6	18.9	19.2	19.5
4.1	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.3	6.5	6.7	6.9	7.1	7.3	7.5	7.7	7.9	8.1	8.3	8.5	8.7	8.9	9.1	9.3	9.5	9.7	9.9	10.1
3.9	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9
50.1	50.1	51.1	52.1	53.1	54.1	55.1	56.1	57.1	58.1	59.1	60.1	61.1	62.1	63.1	64.1	65.1	66.1	67.1	68.1	69.1	70.1	71.1	72.1	73.1	74.1	75.1	76.1	77.1	78.1	79.1	80.1
18290.9	18290.9	18310.8	18330.7	18350.6	18370.5	18390.4	18410.3	18430.2	18450.1	18470.0	18490.0	18510.0	18530.0	18550.0	18570.0	18590.0	18610.0	18630.0	18650.0	18670.0	18690.0	18710.0	18730.0	18750.0	18770.0	18790.0	18810.0	18830.0	18850.0	18870.0	18890.0

1950 1995
Flow Resume Table by Station
C4-200/MPATANATU

Year	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min.	Average	Total					
N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	
15.9	15.9	16.9	17.9	18.9	19.9	20.9	21.9	22.9	23.9	24.9	25.9	26.9	27.9	28.9	29.9	30.9	31.9	32.9	33.9	34.9	35.9	36.9	37.9	38.9	39.9	40.9	41.9	42.9	43.9	44.9	45.9	46.9	47.9	48.9	49.9	50.9	
32.1	32.1	33.1	34.1	35.1	36.1	37.1	38.1	39.1	40.1	41.1	42.1	43.1	44.1	45.1	46.1	47.1	48.1	49.1	50.1	51.1	52.1	53.1	54.1	55.1	56.1	57.1	58.1	59.1	60.1	61.1	62.1	63.1	64.1	65.1	66.1	67.1	
55.1	55.1	56.1	57.1	58.1	59.1	60.1	61.1	62.1	63.1	64.1	65.1	66.1	67.1	68.1	69.1	70.1	71.1	72.1	73.1	74.1	75.1	76.1	77.1	78.1	79.1	80.1	81.1	82.1	83.1	84.1	85.1	86.1	87.1	88.1	89.1	90.1	
30.6	30.6	31.6	32.6	33.6	34.6	35.6	36.6	37.6	38.6	39.6	40.6	41.6	42.6	43.6	44.6	45.6	46.6	47.6	48.6	49.6	50.6	51.6	52.6	53.6	54.6	55.6	56.6	57.6	58.6	59.6	60.6	61.6	62.6	63.6	64.6	65.6	
107.2	107.2	108.2	109.2	110.2	111.2	112.2	113.2	114.2	115.2	116.2	117.2	118.2	119.2	120.2	121.2	122.2	123.2	124.2	125.2	126.2	127.2	128.2	129.2	130.2	131.2	132.2	133.2	134.2	135.2	136.2	137.2	138.2	139.2	140.2	141.2	142.2	
77.1	77.1	78.1	79.1	80.1	81.1	82.1	83.1	84.1	85.1	86.1	87.1	88.1	89.1	90.1	91.1	92.1	93.1	94.1	95.1	96.1	97.1	98.1	99.1	100.1	101.1	102.1	103.1	104.1	105.1	106.1	107.1	108.1	109.1	110.1	111.1	112.1	
19.7	19.7	20.7	21.7	22.7	23.7	24.7	25.7	26.7	27.7	28.7	29.7	30.7	31.7	32.7	33.7	34.7	35.7	36.7	37.7	38.7	39.7	40.7	41.7	42.7	43.7	44.7	45.7	46.7	47.7	48.7	49.7	50.7	51.7	52.7	53.7	54.7	
15.9	15.9	16.9	17.9	18.9	19.9	20.9	21.9	22.9	23.9	24.9	25.9	26.9	27.9	28.9	29.9	30.9	31.9	32.9	33.9	34.9	35.9	36.9	37.9	38.9	39.9	40.9	41.9	42.9	43.9	44.9	45.9	46.9	47.9	48.9	49.9	50.9	
8.3	8.3	8.8	9.3	9.8	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8	14.3	14.8	15.3	15.8	16.3	16.8	17.3	17.8	18.3	18.8	19.3	19.8	20.3	20.8	21.3	21.8	22.3	22.8	23.3	23.8	24.3	24.8	25.3	25.8	
21.1	21.1	21.6	22.1	22.6	23.1	23.6	24.1	24.6	25.1	25.6	26.1	26.6	27.1	27.6	28.1	28.6	29.1	29.6	30.1	30.6	31.1	31.6	32.1	32.6	33.1	33.6	34.1	34.6	35.1	35.6	36.1	36.6	37.1	37.6	38.1	38.6	
34.4	34.4	35.4	36.4	37.4	38.4	39.4	40.4	41.4	42.4	43.4	44.4	45.4	46.4	47.4	48.4	49.4	50.4	51.4	52.4	53.4	54.4	55.4	56.4	57.4	58.4	59.4	60.4	61.4	62.4	63.4	64.4	65.4	66.4	67.4	68.4	69.4	70.4
106.2	106.2	107.2	108.2	109.2	110.2	111.2	112.2	113.2	114.2	115.2	116.2	117.2	118.2	119.2	120.2	121.2	122.2	123.2	124.2	125.2	126.2	127.2	128.2	129.2	130.2	131.2	132.2	133.2	134.2	135.2	136.2	137.2	138.2	139.2	140.2	141.2	142.2
34.4	34.4	35.4	36.4	37.4	38.4	39.4	40.4	41.4	42.4	43.4	44.4	45.4	46.4	47.4	48.4	49.4	50.4	51.4	52.4	53.4	54.4	55.4	56.4	57.4	58.4	59.4	60.4	61.4	62.4	63.4	64.4	65.4	66.4	67.4	68.4	69.4	70.4
19.7	19.7	20.7	21.7	22.7	23.7	24.7	25.7	26.7	27.7	28.7	29.7	30.7	31.7	32.7	33.7	34.7	35.7	36.7	37.7	38.7	39.7	40.7	41.7	42.7	43.7	44.7	45.7	46.7	47.7	48.7	49.7	50.7	51.7	52.7	53.7	54.7	
6.5	6.5	6.8	7.1	7.4	7.7	8.0	8.3	8.6	8.9	9.2	9.5	9.8	10.1	10.4	10.7	11.0	11.3	11.6	11.9	12.2	12.5	12.8	13.1	13.4	13.7	14.0	14.3	14.6	14.9	15.2	15.5	15.8	16.1	16.4	16.7	17.0	17.3
22.9	22.9	23.9	24.9	25.9	26.9	27.9	28.9	29.9	30.9	31.9	32.9	33.9	34.9	35.9	36.9	37.9	38.9	39.9	40.9	41.9	42.9	43.9	44.9	45.9	46.9	47.9	48.9	49.9	50.9	51.9	52.9	53.9	54.9	55.9	56.9	57.9	58.9
137.0	137.0	138.0	139.0	140.0	141.0	142.0	143.0	144.0	145.0	146.0	147.0	148.0	149.0	150.0	151.0	152.0	153.0	154.0	155.0	156.0	157.0	158.0															

1965	12.6	17.5	36.6	44.8	125.0	210.0	94.8	46.8	29.9	21.9	16.7	13.9	13.9	16.4	32.5	55.1	293.2	293.2	11.8	10.8	55.4	20228.8
1966	10.6	11.5	21.4	50.7	95.6	197.8	211.3	89.3	42.3	28.3	22.9	16.1	10.1	16.4	31.8	76.8	262.1	262.1	10.1	9.9	66.2	24169.3
1967	15.1	25.0	44.1	136.3	155.7	169.8	211.3	49.1	32.4	26.3	20.9	16.1	14.8	20.5	35.7	90.9	261.2	261.2	14.8	13.1	66.2	23862.7
1968	12.0	16.0	21.8	43.1	43.1	210.2	348.2	192.6	39.1	61.0	45.3	29.3	15.8	30.6	82.2	253.3	490.1	490.1	15.8	13.3	87.5	31940.2
1969	22.3	27.8	56.6	168.5	289.3	353.2	105.9	57.8	39.5	29.7	23.5	19.3	12.3	25.4	39.4	134.9	324.0	324.0	12.3	11.6	134.1	48935.1
1970	12.8	19.0	119.0	362.7	362.7	221.1	196.5	106.6	59.4	45.9	31.9	24.0	16.4	29.2	69.3	217.3	406.6	406.6	16.4	14.9	88.1	32250.7
1971	17.2	17.2	56.3	79.6	71.8	92.8	165.9	81.7	19.5	16.4	13.9	11.7	11.0	16.2	54.7	41.1	274.7	274.7	11.0	10.3	72.8	12443.1
1972	11.5	20.9	29.4	78.6	169.9	203.3	152.9	29.7	47.4	33.6	29.7	21.3	9.4	22.5	38.0	96.7	269.3	269.3	9.4	8.8	99.9	36473.0
1973	11.4	11.9	59.0	184.7	153.6	298.5	232.2	102.6	57.4	39.3	29.7	23.9	11.6	35.0	51.1	161.6	393.4	393.4	11.6	11.6	135.5	49593.8
1974	15.0	15.0	40.2	131.3	230.2	342.3	387.2	210.7	105.8	69.3	49.4	35.9	20.5	29.7	79.3	203.7	482.8	482.8	20.5	19.0	102.8	37512.4
1975	24.7	25.7	89.5	98.8	189.2	358.7	228.6	107.0	60.6	43.7	34.2	23.7	14.1	29.7	53.2	152.6	394.5	394.5	14.1	12.9	178.7	65239.4
1976	16.1	17.1	89.5	208.1	390.1	475.1	431.9	225.9	123.5	83.8	58.9	42.2	27.1	47.6	107.2	282.0	568.8	568.8	27.1	24.5	159.6	58243.4
1977	30.0	30.0	129.9	191.8	250.6	391.8	371.1	279.5	108.5	74.6	57.0	41.9	30.0	42.9	90.9	191.4	478.0	478.0	30.0	25.1	123.4	45176.2
1978	34.6	42.9	141.6	169.6	276.5	336.4	258.1	146.6	82.6	59.4	44.3	30.9	22.0	42.9	60.6	158.8	468.4	468.4	22.0	20.0	109.2	39866.2
1979	31.4	31.4	57.1	65.3	179.3	122.1	83.1	62.4	36.1	25.8	21.4	17.4	14.5	24.5	31.5	77.3	240.4	240.4	14.5	13.9	56.8	20739.3
1980	18.5	17.4	79.7	106.7	258.5	169.4	98.1	56.7	36.7	28.8	23.5	17.5	13.1	24.5	41.5	94.1	355.3	355.3	13.1	11.8	59.7	21862.1
1981	14.4	23.0	41.3	127.0	129.5	188.4	97.0	40.2	28.8	29.7	19.2	14.8	12.5	29.4	28.6	92.5	227.9	227.9	12.5	11.4	120.4	43947.8
1982	13.2	20.2	41.3	133.4	348.5	259.8	207.5	111.0	61.9	43.3	33.4	25.8	18.3	38.0	42.7	210.8	419.9	419.9	18.3	18.0	140.2	51190.5
1983	19.8	26.6	68.8	138.9	342.9	371.3	306.4	181.0	97.6	64.9	48.4	35.2	23.3	31.4	51.6	112.1	238.7	238.7	23.3	21.5	78.5	28668.6
1984	29.8	48.1	58.9	30.7	170.4	288.2	156.4	66.2	44.5	34.9	28.4	24.0	17.8	27.4	35.7	84.8	263.7	263.7	17.8	16.6	77.2	32638.2
1985	21.7	17.6	30.2	143.5	226.9	216.6	198.9	67.9	57.4	43.7	33.8	25.1	18.0	19.1	47.8	154.1	263.7	263.7	18.0	18.3	50.0	18260.7
1986	19.7	20.4	37.2	87.0	127.4	98.9	78.7	56.8	34.2	26.5	14.2	11.4	8.3	16.4	32.5	125.6	142.4	142.4	8.3	7.7	32.3	11806.6
1987	20.6	19.7	37.2	145.6	248.8	193.7	144.4	70.1	39.1	26.5	20.8	15.7	11.0	13.9	21.9	45.8	140.8	140.8	11.0	10.3	77.9	28448.2
1988	13.9	9.4	38.4	68.5	63.0	55.7	56.4	26.5	16.8	13.2	10.8	8.3	9.6	16.4	32.5	125.6	142.4	142.4	9.6	9.6	32.3	40969.8
1989	13.3	14.5	25.2	95.4	231.3	242.9	300.7	139.7	50.2	45.1	35.2	28.0	13.7	26.4	50.8	170.6	381.4	381.4	13.7	12.3	112.2	33027.3
1990	16.3	21.0	48.1	115.7	205.7	215.2	183.1	94.8	48.2	38.7	29.0	21.9	13.5	25.4	50.8	136.3	290.7	290.7	13.5	13.7	90.6	30604.7
1991	17.6	17.6	57.3	115.7	205.7	215.2	177.2	82.7	48.2	34.7	27.0	21.9	14.7	24.7	45.0	130.8	290.7	290.7	14.7	14.8	83.8	35647.3
1992	19.4	22.5	57.7	126.6	214.9	257.0	211.3	108.6	60.4	42.8	32.5	24.7	16.1	28.7	55.8	148.0	345.2	345.2	16.1	14.8	97.6	35647.3
Ave(10)	18.1	22.5	57.7	128.7	213.9	244.4	190.6	97.7	54.9	39.4	30.0	22.5	15.1	26.9	51.9	138.8	330.2	330.2	15.1	13.9	92.7	33841.6

1962-1993
Flow Resume Table by Station
(4-280)MACHIYA FERRY

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(275)	Q(355)	Min.	Average	Total
1962	32.6	36.3	184.6	489.7	595.4	664.8	435.5	212.0	116.5	87.2	64.0	44.1	698.7	54.5	25.2	21.3	245.0	89427.3
1963	30.5	46.7	104.1	180.6	406.0	356.4	162.6	74.7	51.7	43.1	35.4	26.4	494.8	37.2	25.5	22.2	125.6	45967.2
1964	13.6	23.0	43.6	218.2	291.4	262.0	149.0	67.0	45.5	37.8	30.5	22.9	323.6	27.2	17.1	16.3	99.7	36377.2
1965	17.6	19.7	43.3	57.2	172.6	298.4	153.8	69.4	45.2	34.9	26.2	20.1	343.3	23.9	15.8	14.5	79.3	28956.1
1966	14.7	12.3	21.9	64.7	124.8	279.5	309.4	138.2	57.4	40.6	32.6	24.6	293.9	22.9	13.0	12.8	93.1	33993.5
1967	18.7	15.2	53.6	150.7	256.8	228.2	156.7	68.0	45.0	37.9	30.8	23.6	714.9	27.9	18.0	16.8	89.4	32707.5
1968	16.7	16.2	75.0	285.3	606.8	627.6	614.6	333.2	142.7	91.3	71.6	49.5	433.7	48.2	13.8	13.3	241.7	88202.3
1969	33.5	43.6	107.3	285.4	385.0	355.0	162.1	82.6	54.4	42.6	34.7	36.3	542.5	36.4	22.6	20.0	133.0	48581.3
1970	19.9	31.5	151.9	357.7	512.2	526.9	362.0	151.9	80.3	64.2	49.0	33.9	437.5	43.6	19.1	18.3	193.9	70763.7
1971	28.6	34.4	68.0	183.7	199.1	300.9	295.0	160.6	85.6	59.0	45.0	33.9	337.0	40.2	24.9	22.9	124.1	45431.1
1972	25.3	22.9	50.2	89.3	89.3	141.9	71.5	40.1	27.0	22.9	19.8	16.4	185.8	22.6	16.1	14.5	46.2	16853.4
1973	14.0	19.5	30.3	112.4	272.9	359.2	268.8	123.7	69.8	48.6	35.6	26.5	414.2	27.6	13.0	12.3	114.0	41615.6
1974	18.5	15.8	72.7	291.3	244.1	396.5	389.2	157.0	78.0	54.9	42.4	31.7	496.3	35.2	14.8	14.3	148.8	54304.4

Year	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Average	Ave(10)	Ave(20)	Ave(30)				
Dec.	39.2	18.2	22.2	35.4	57.4	116.6	175.5	204.3	70.9	282.4	434.9	613.3	400.4	166.6	58.5	69.8	50.9	681.0	290.4	103.7	48.2	17.4	16.1	195.7	71827.1	
Nov.	28.3	34.6	36.1	25.1	645.7	645.7	360.6	316.1	317.2	254.4	253.6	121.8	94.9	58.7	42.4	34.8	27.6	376.6	107.9	108.7	33.6	23.5	22.2	102.1	32440.5	
Oct.	24.5	22.2	35.4	303.0	339.5	41.6	274.5	200.7	200.7	313.8	294.3	145.1	81.8	53.3	29.4	34.5	27.7	388.5	130.0	58.1	33.6	23.5	22.2	102.1	32440.5	
Sept.	70.8	28.3	24.5	116.6	175.5	204.3	70.9	282.4	434.9	613.3	400.4	166.6	58.5	69.8	50.9	681.0	290.4	103.7	48.2	17.4	16.1	195.7	71827.1	195.7		
Aug.	71.3	34.6	36.1	25.1	645.7	645.7	360.6	316.1	317.2	254.4	253.6	121.8	94.9	58.7	42.4	34.8	27.6	376.6	107.9	108.7	33.6	23.5	22.2	102.1	32440.5	
July.	71.3	34.6	36.1	25.1	645.7	645.7	360.6	316.1	317.2	254.4	253.6	121.8	94.9	58.7	42.4	34.8	27.6	376.6	107.9	108.7	33.6	23.5	22.2	102.1	32440.5	
June.	71.3	34.6	36.1	25.1	645.7	645.7	360.6	316.1	317.2	254.4	253.6	121.8	94.9	58.7	42.4	34.8	27.6	376.6	107.9	108.7	33.6	23.5	22.2	102.1	32440.5	
May.	71.3	34.6	36.1	25.1	645.7	645.7	360.6	316.1	317.2	254.4	253.6	121.8	94.9	58.7	42.4	34.8	27.6	376.6	107.9	108.7	33.6	23.5	22.2	102.1	32440.5	
April.	71.3	34.6	36.1	25.1	645.7	645.7	360.6	316.1	317.2	254.4	253.6	121.8	94.9	58.7	42.4	34.8	27.6	376.6	107.9	108.7	33.6	23.5	22.2	102.1	32440.5	
March.	71.3	34.6	36.1	25.1	645.7	645.7	360.6	316.1	317.2	254.4	253.6	121.8	94.9	58.7	42.4	34.8	27.6	376.6	107.9	108.7	33.6	23.5	22.2	102.1	32440.5	
February.	71.3	34.6	36.1	25.1	645.7	645.7	360.6	316.1	317.2	254.4	253.6	121.8	94.9	58.7	42.4	34.8	27.6	376.6	107.9	108.7	33.6	23.5	22.2	102.1	32440.5	
January.	71.3	34.6	36.1	25.1	645.7	645.7	360.6	316.1	317.2	254.4	253.6	121.8	94.9	58.7	42.4	34.8	27.6	376.6	107.9	108.7	33.6	23.5	22.2	102.1	32440.5	
Maximum.	681.0	290.4	103.7	48.2	17.4	16.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1
Minimum.	16.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	195.7	71827.1	

Year	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	Total
Dec.	197.8	140.3	146.4	49.2	21.9	65.9	76.9	104.9	152.0	75.4	31.7	35.0	35.0	32.7	65.6	119.8	177.8	208.2	74.9	53.8	106.1	38.1	14283.6	
Nov.	43.4	56.1	24.8	21.9	15.7	27.4	18.4	55.2	31.6	37.0	25.6	20.2	20.2	15.9	37.0	37.0	37.0	48.7	48.7	48.7	48.7	48.7	14283.6	
Oct.	45.2	40.6	23.4	21.3	17.7	21.3	19.2	41.0	24.1	31.8	28.8	16.3	14.5	20.1	36.1	27.8	59.5	57.6	45.5	26.7	21.9	21.9	129377.6	
Sept.	64.7	32.6	27.3	23.7	27.9	26.0	65.6	43.5	39.8	18.7	22.9	27.8	22.9	55.7	44.0	44.0	44.0	45.8	45.8	45.8	45.8	45.8	65002.2	
Aug.	103.2	43.9	35.7	30.0	37.3	34.0	102.4	63.1	82.1	21.8	40.0	63.1	40.0	88.8	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6	48974.9
July.	184.6	59.0	45.5	38.5	51.3	43.9	145.0	56.7	89.0	82.1	25.2	89.0	25.2	137.1	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	48974.9
June.	192.9	75.1	60.5	56.9	85.5	56.4	242.3	78.9	127.1	124.2	30.0	104.5	202.5	269.8	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6	133.6	37555.6
May.	348.5	125.7	108.9	114.5	255.0	112.0	547.2	137.4	242.1	254.8	53.9	202.5	245.9	634.7	294.6	294.6	294.6	294.6	294.6	294.6	294.6	294.6	294.6	43845.1
April.	726.7	289.1	248.6	279.5	428.1	236.5	884.2	269.3	535.0	404.6	115.6	397.0	559.4	790.1	625.7	625.7	625.7	625.7	625.7	625.7	625.7	625.7	625.7	41003.1
March.	968.7	570.8	399.4	335.3	294.2	283.6	854.8	499.3	666.0	392.6	194.2	599.9	599.8	599.8	599.8	599.8	599.8	599.8	599.8	599.8	599.8	599.8	599.8	11956.8
February.	796.0	484.5	399.0	192.0	144.9	300.5	695.7	461.8	618.0	261.2	100.7	328.5	283.3	283.3	273.3	273.3	273.3	273.3	273.3	273.3	273.3	273.3	273.3	64286.2
January.	652.9	222.9	220.5	78.5	67.1	145.9	324.3	355.4	365.2	230.5	63.2	141.0	509.0	147.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	89071.5
Maximum.	265.9	981.9	696.0	443.2	390.4	452.5	918.4	549.0	800.5	416.4	76.3	622.2	422.3	860.6	742.4	742.4	742.4	742.4	742.4	742.4	742.4	742.4	742.4	89071.5
Minimum.	61.3	30.2	26.8	20.5	18.3	15.2	15.7	25.6	22.5	22.5	17.0	14.8	12.5	14.5	26.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	21496.5

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep.	Max.	Q(95)	O(185)	Q(275)	O(355)	Min. Average	Total	
1984	18.7	23.4	102.3	322.2	520.1	586.1	506.7	268.1	139.7	84.2	58.3	40.3	653.6	379.1	118.4	40.9	17.0	16.0	220.6	80507.3
1985	26.3	29.0	66.2	202.2	382.2	596.1	653.5	510.3	216.8	122.8	87.4	55.2	680.8	416.4	148.6	51.9	23.7	8.3	24.4	89352.4
1986	32.7	31.0	110.5	156.7	300.4	394.9	282.9	145.0	70.2	52.3	41.7	30.5	434.3	221.2	85.4	46.2	28.8	24.3	244.8	51236.7
1987	39.8	31.7	110.5	156.7	300.4	394.9	282.9	145.0	70.2	52.3	41.7	30.5	434.3	221.2	85.4	46.2	28.8	24.3	244.8	51236.7
1988	25.0	22.7	41.4	129.2	226.9	491.7	402.9	172.0	107.5	50.4	38.2	31.3	562.6	229.6	50.1	32.3	22.2	17.2	141.7	51871.8
1989	25.0	22.7	41.4	129.2	226.9	491.7	402.9	172.0	107.5	50.4	38.2	31.3	562.6	229.6	50.1	32.3	22.2	17.2	141.7	51871.8
1990	17.0	14.7	24.1	136.8	326.8	325.2	292.3	115.9	59.8	65.8	48.5	20.8	258.8	219.3	53.3	25.2	19.6	20.5	164.9	60206.0
1991	26.9	26.6	46.7	83.0	102.3	71.2	97.6	44.8	70.1	45.1	35.2	23.9	381.9	219.3	49.2	22.2	14.3	14.0	120.7	44062.3
Average	29.4	33.0	82.0	219.2	371.2	509.7	467.1	270.2	126.5	86.5	62.4	41.7	589.5	294.5	100.6	45.8	24.7	24.5	188.0	17320.6
Ave(10)	24.9	28.3	61.9	155.5	300.0	381.1	337.9	190.3	87.5	56.5	42.4	30.4	542.6	231.5	72.1	33.6	20.6	19.4	140.4	51279.4
Ave(20)	29.7	32.3	74.6	187.9	325.6	482.9	467.1	281.7	129.8	81.3	59.2	40.5	581.4	282.5	99.6	45.1	25.0	23.5	181.8	66397.9
Ave(30)	29.3	32.8	80.8	214.0	362.2	495.1	454.8	262.7	123.2	79.4	57.8	39.7	584.9	294.4	98.3	45.1	24.5	23.0	184.9	67326.2

1950-1992
Flow Resume Table by Station
(4-450)LUBUNGU

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep.	Max.	Q(95)	O(185)	Q(275)	O(355)	Min. Average	Total	
1950	9.0	14.8	48.9	381.5	808.9	846.6	566.0	323.1	156.1	28.2	21.4	16.0	44.8	18.0	N.A.	N.A.	10.3	24.4	2707.5	
1951	35.9	43.6	53.0	139.7	245.6	415.9	431.8	267.7	112.6	100.0	74.5	53.8	910.9	530.8	110.8	52.8	30.9	8.3	280.0	102471.6
1952	23.6	18.1	50.6	148.5	265.0	355.7	299.3	136.5	61.8	47.0	56.2	36.4	462.0	256.2	56.2	48.7	16.6	24.3	258.3	57947.2
1953	14.1	14.4	44.2	118.7	271.8	428.9	423.4	221.0	93.8	61.4	44.0	32.0	454.7	236.5	70.7	33.5	10.3	9.3	121.4	44294.9
1954	21.5	19.8	46.8	154.6	382.0	617.1	704.9	610.8	407.3	191.6	109.3	72.1	870.4	499.6	169.9	62.3	18.0	16.6	276.8	53419.8
1955	45.0	43.0	140.5	400.6	612.1	677.7	721.8	541.8	274.0	151.0	106.9	73.1	870.4	499.6	169.9	62.3	18.0	16.6	276.8	101315.0
1956	47.8	35.4	44.3	158.4	309.4	359.9	162.1	72.4	47.0	38.2	31.7	24.5	522.8	141.5	47.9	35.5	22.6	20.9	109.3	117251.4
1957	19.4	18.3	29.0	57.4	93.3	375.7	288.7	76.5	38.5	28.9	22.3	19.8	469.4	67.9	34.8	19.4	16.6	7.3	86.5	40053.5
1958	12.2	10.1	24.6	92.6	162.1	356.1	384.2	160.0	57.3	39.6	29.0	19.8	395.8	133.4	47.1	19.4	16.6	7.3	110.4	31573.2
1959	13.4	13.1	20.8	79.1	260.8	569.1	582.0	392.1	155.5	82.5	57.0	38.9	676.5	330.5	79.7	30.9	11.4	10.3	188.0	40395.2
1960	23.7	32.4	108.8	255.8	552.3	714.9	888.6	698.2	437.8	214.2	140.1	94.9	931.8	607.1	220.9	92.3	19.4	18.0	345.8	68626.6
1961	59.4	51.4	243.9	635.5	903.8	1074.8	862.8	544.6	261.4	175.9	130.8	90.0	1256.0	694.7	100.2	100.2	42.6	42.6	416.7	126213.5
1962	61.4	74.4	163.0	230.4	437.7	593.5	381.4	150.2	92.0	75.2	61.6	45.4	703.6	263.7	231.3	100.2	37.5	37.5	203.4	152083.9
1963	30.2	29.2	53.5	84.9	185.5	352.1	291.4	120.0	70.9	56.0	45.8	33.8	482.0	247.2	62.3	37.5	25.9	24.3	147.7	53896.8
1964	23.1	23.4	52.2	99.0	150.5	285.4	236.2	117.5	62.7	59.5	45.2	33.7	395.8	157.0	62.3	31.5	13.1	12.2	109.8	40072.7
1965	18.1	13.4	64.0	69.0	150.5	302.2	404.5	282.1	95.1	59.5	45.2	33.7	423.6	167.0	57.0	29.0	13.1	12.2	124.3	45359.9
1966	20.2	22.2	64.0	123.4	275.4	485.0	374.3	117.5	62.7	50.3	40.6	30.5	518.2	172.9	61.4	35.5	13.1	13.4	110.9	40590.7
1967	20.2	16.3	63.0	327.7	547.5	611.8	537.0	351.0	194.6	186.4	134.6	95.1	587.6	377.8	202.6	67.9	33.9	30.9	361.3	131865.3
1968	66.2	76.9	152.6	431.3	596.1	503.0	337.0	157.6	94.6	72.1	52.5	40.0	667.6	466.9	129.4	59.7	24.8	22.6	247.6	76393.2
1969	38.6	32.1	77.0	250.6	417.8	496.9	394.2	285.4	127.3	84.2	63.8	46.9	667.6	466.9	129.4	59.7	24.8	22.6	247.6	90367.6
1970	33.5	28.0	32.2	63.8	94.6	180.8	119.5	68.4	37.7	30.3	24.6	18.5	196.2	81.7	35.5	27.8	16.1	16.1	60.7	61285.6
1971	13.9	19.4	41.1	158.9	417.8	496.9	443.5	230.9	117.1	84.2	63.8	46.9	667.6	466.9	129.4	59.7	24.8	22.6	247.6	22169.9
1972	33.5	28.0	32.2	63.8	94.6	180.8	119.5	68.4	37.7	30.3	24.6	18.5	196.2	81.7	35.5	27.8	16.1	16.1	60.7	61285.6
1973	13.9	19.4	41.1	158.9	417.8	496.9	443.5	230.9	117.1	84.2	63.8	46.9	667.6	466.9	129.4	59.7	24.8	22.6	247.6	22169.9
1974	31.9	22.1	51.3	183.1	375.0	543.5	732.9	608.8	375.5	171.1	113.1	78.8	658.7	466.9	167.0	70.7	44.9	15.6	227.7	63549.2
1975	56.5	46.9	66.3	136.5	254.7	471.0	541.9	367.0	145.5	94.3	73.2	53.1	1069.1	708.2	107.1	50.6	20.9	43.3	191.6	99936.6
1976	34.1	27.0	113.0	448.9	684.6	1208.9	1356.9	868.2	517.4	281.1	190.8	138.6	1677.6	708.2	107.1	50.6	20.9	43.3	191.6	69931.2
1977	100.2	126.3	200.5	410.0	484.9	689.4	905.4	678.9	384.4	201.6	144.3	93.6	963.4	533.4	258.1	132.1	25.9	24.8	481.3	177858.9
1978	67.2	78.0	213.5	381.2	444.6	589.4	589.4	488.0	254.9	147.2	111.8	78.2	579.2	452.3	418.9	96.8	51.0	61.4	367.2	102187.6
1979	55.5	58.3	75.8	215.6	282.5	402.7	234.6	149.6	90.9	62.1	48.4	37.5	454.7	154.0	67.0	48.7	34.8	49.5	279.2	99342.8
1980	49.9	31.7	60.0	97.8	282.5	402.7	234.6	149.6	90.9	62.1	48.4	37.5	454.7	154.0	67.0	48.7	34.8	49.5	279.2	99342.8
1982	28.6	36.9	99.1	138.5	258.7	368.0	256.9	120.7	70.0	51.6	41.3	32.2	386.8	158.3	73.6	38.2	27.1	12.4	124.4	45404.7

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min.	Average	Total
1983	26.0	22.3	43.6	160.6	219.4	280.1	280.2	128.5	59.2	44.6	35.5	36.2	326.4	205.9	52.0	32.8	22.0	19.9	110.9	40584.5
1984	38.1	42.8	89.6	284.4	500.0	503.1	485.2	313.2	142.9	89.7	64.3	46.7	652.9	373.3	117.4	50.6	36.2	33.9	214.7	78383.5
1985	30.9	46.2	67.2	172.1	371.4	465.6	513.5	481.1	269.9	131.8	93.6	64.0	579.2	407.3	138.8	62.3	28.4	27.1	224.4	81917.4
1986	47.6	73.5	102.5	121.7	279.6	302.5	295.7	150.9	76.8	58.3	48.2	34.9	362.8	182.1	85.9	53.6	32.8	27.8	131.6	48035.9
1987	25.0	17.9	37.6	79.1	265.4	422.3	411.9	209.5	81.5	56.2	42.5	30.7	502.2	224.4	57.9	31.5	17.0	16.5	139.3	50992.7
1988	21.0	21.1	38.3	108.5	337.8	345.1	345.1	275.5	112.8	71.3	54.4	38.2	450.0	293.4	72.6	19.4	18.5	148.7	54257.8	
1989	27.8	37.9	53.4	121.8	223.3	213.7	171.4	116.3	66.0	42.1	30.1	22.3	273.0	145.6	57.8	34.1	20.9	19.4	93.0	33939.9
1990	13.9	18.2	23.0	115.0	292.5	330.5	239.3	137.1	73.7	47.0	37.3	28.5	345.2	186.0	49.5	25.9	17.0	17.0	112.2	40951.9
1991	20.3	19.8	39.9	73.6	92.8	72.4	100.8	55.5	38.0	40.0	36.0	31.0	115.7	72.0	40.4	30.2	18.0	18.0	51.5	18948.7
Average	34.1	35.8	78.9	214.4	379.4	505.8	480.7	310.8	160.7	93.8	68.1	48.7	601.8	317.4	111.0	54.3	26.9	24.2	195.8	71373.7
Ave(10)	28.4	33.7	59.4	137.5	284.1	330.3	313.2	198.8	99.1	63.2	48.3	36.4	599.4	323.8	74.6	39.7	24.1	22.5	135.1	49331.8
Ave(20)	37.5	40.0	77.7	194.7	338.5	457.0	460.9	311.7	163.4	96.3	70.6	51.3	578.7	304.7	112.3	56.2	31.1	28.8	190.6	69626.6
Ave(30)	37.2	39.6	86.1	222.1	376.8	483.4	463.9	299.6	154.2	94.3	70.0	50.7	597.6	316.8	112.2	56.4	29.9	27.3	197.0	71963.1

1953 1993
Flow Resume Table by Station
(4-560)CHIFUNPA PONTOON

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min.	Average	Total	
1953	N.A.	N.A.	N.A.	N.A.	124.5	130.7	95.6	44.9	34.7	30.1	26.2	21.9	412.9	53.9	33.6	22.3	16.3	15.1	62.3	22786.8	
1954	18.0	17.1	N.A.	78.6	274.1	476.4	287.4	87.4	54.0	45.2	36.8	28.9	599.9	97.3	93.2	28.5	18.1	17.2	115.8	42264.9	
1955	N.A.	N.A.	N.A.	133.8	428.0	566.4	643.0	167.7	93.9	72.6	57.7	42.0	1098.3	192.6	98.2	45.2	22.3	21.3	193.6	70677.2	
1956	N.A.	N.A.	N.A.	510.6	535.6	644.2	204.2	102.5	77.3	65.8	51.9	39.1	789.5	366.1	79.9	47.3	25.2	23.7	213.6	77978.1	
1957	N.A.	N.A.	N.A.	113.7	313.3	153.8	73.2	45.6	39.5	35.6	29.8	24.0	531.3	106.7	45.2	31.8	23.7	20.8	82.3	30119.1	
1958	N.A.	N.A.	N.A.	95.4	209.2	109.6	54.6	33.3	29.5	26.8	24.3	20.6	286.2	66.6	30.1	22.3	18.1	18.1	55.6	20276.4	
1959	16.9	17.8	27.5	46.9	130.7	255.8	137.0	36.2	29.6	27.0	24.3	20.6	189.8	49.5	30.7	22.3	16.3	15.1	46.7	17035.7	
1960	19.0	22.6	30.0	78.6	428.0	476.4	287.4	87.4	54.0	45.2	36.8	28.9	599.9	97.3	93.2	28.5	18.1	17.2	115.8	42264.9	
1961	23.0	32.0	87.3	133.8	428.0	566.4	643.0	167.7	93.9	72.6	57.7	42.0	1098.3	192.6	98.2	45.2	22.3	21.3	193.6	70677.2	
1962	29.7	36.7	281.2	510.6	535.6	644.2	204.2	102.5	77.3	65.8	51.9	39.1	789.5	366.1	79.9	47.3	25.2	23.7	213.6	77978.1	
1963	29.4	45.5	94.4	113.7	313.3	153.8	73.2	45.6	39.5	35.6	29.8	24.0	531.3	106.7	45.2	31.8	23.7	20.8	82.3	30119.1	
1964	19.0	21.3	35.2	95.4	209.2	109.6	54.6	33.3	29.5	26.8	24.3	20.6	286.2	66.6	30.1	22.3	18.1	18.1	55.6	20276.4	
1965	16.7	16.7	20.4	31.3	95.6	158.4	137.0	51.5	35.3	30.9	28.1	23.2	257.4	56.2	30.7	22.3	15.5	15.1	53.4	19498.0	
1966	18.8	25.0	41.9	86.0	105.9	130.2	61.8	43.4	34.7	35.2	30.8	24.9	210.2	60.9	36.0	28.5	18.5	17.2	53.1	19437.7	
1967	20.5	23.7	84.2	269.9	648.3	775.8	684.9	133.8	86.7	70.3	55.9	41.9	1454.8	302.1	83.6	46.6	18.1	16.8	238.3	86985.9	
1968	34.3	46.0	117.1	201.9	464.1	256.7	121.7	77.4	57.0	48.2	38.9	28.6	517.2	167.8	58.5	42.5	26.8	24.2	122.2	44601.6	
1969	24.0	30.9	81.9	196.1	212.2	215.7	117.4	71.4	53.8	47.1	38.2	31.0	287.4	127.8	56.2	36.5	22.3	22.3	92.7	33839.6	
1970	23.8	30.4	40.2	82.8	62.3	130.0	101.9	57.5	39.0	33.7	28.7	24.2	185.1	70.9	38.5	28.5	21.3	20.3	54.6	19966.7	
1971	18.9	17.6	21.4	38.0	42.4	46.7	25.4	17.3	14.9	15.2	14.0	12.2	75.3	26.8	17.6	15.1	11.1	11.1	23.6	8610.3	
1972	11.0	12.9	18.9	49.2	100.9	127.8	62.5	33.1	25.1	22.5	19.6	16.2	199.9	57.0	23.3	16.3	10.4	10.8	41.3	15069.4	
1973	12.5	14.4	33.2	155.6	168.5	224.3	133.5	52.1	38.4	31.8	27.1	21.9	318.5	139.7	37.2	24.7	11.1	10.8	76.4	27871.3	
1974	16.6	24.3	37.2	84.4	103.6	258.2	156.7	70.5	48.5	40.8	35.1	26.4	434.1	95.2	56.2	31.2	14.0	13.6	104.4	38203.7	
1975	27.4	34.2	55.7	211.4	405.0	719.4	855.0	293.6	129.3	90.3	68.1	50.9	1742.8	320.4	112.1	53.9	22.8	22.3	76.0	27739.3	
1976	24.2	18.2	83.1	195.7	246.9	403.1	459.0	192.6	83.4	55.7	48.1	37.2	325.9	225.0	93.2	66.6	32.4	16.3	244.2	89138.1	
1977	37.5	60.7	119.7	160.5	230.4	292.8	292.8	196.6	83.4	55.7	56.2	41.3	325.9	225.0	93.2	66.6	32.4	16.3	169.0	61697.3	
1978	45.4	33.6	55.7	89.4	167.6	578.6	198.2	103.7	69.1	58.7	48.1	37.2	866.5	114.2	65.0	30.7	34.8	137.1	50181.1		
1979	33.6	34.2	30.6	57.9	149.1	94.1	59.3	46.7	33.7	30.4	29.2	22.7	211.5	57.7	32.4	28.5	21.3	19.9	49.9	48865.8	
1980	27.6	24.1	69.4	49.5	75.9	53.5	42.1	35.2	28.9	20.4	23.9	20.8	125.5	49.5	30.7	22.3	18.5	18.5	40.3	18197.8	
1981	19.8	20.3	83.5	104.1	75.9	96.4	64.2	35.2	28.9	27.1	23.9	19.6	648.7	69.2	29.0	22.3	17.2	17.2	49.9	14721.8	
1982	3.5	8.2	85.5	209.2	329.7	305.4	246.6	116.2	53.6	35.1	23.7	15.0	401.7	223.3	51.6	17.2	2.3	2.0	49.9	18277.5	
1983																					43067.5

1985	8.4	11.4	44.2	129.7	287.8	341.5	343.9	215.7	90.7	53.4	37.9	23.9	394.8	225.0	70.1	25.5	7.9	6.8	131.3	47910.0
1986	25.1	36.6	41.3	65.9	181.6	142.7	84.8	62.5	43.4	34.7	31.3	23.9	227.0	76.2	41.2	33.0	22.8	21.3	63.7	23260.1
1987	21.5	17.0	33.5	30.7	175.2	376.2	158.0	55.8	43.4	36.4	30.9	25.2	646.1	95.2	39.8	26.8	18.5	17.2	87.9	32155.7
1988	21.0	21.0	33.5	45.7	193.2	376.2	98.0	52.7	39.5	34.8	30.0	24.5	230.1	70.1	37.9	27.9	21.3	20.8	58.8	21475.8
1989	21.0	20.8	29.7	45.7	103.6	75.6	98.4	58.1	38.5	32.2	28.5	23.5	219.3	59.3	34.8	24.3	19.9	19.4	50.5	18421.1
1990	20.9	18.0	25.6	35.8	51.9	143.6	93.4	48.7	36.3	31.4	27.6	23.0	337.2	87.4	33.0	23.3	17.0	16.3	63.9	23330.9
1991	20.9	18.0	35.0	47.2	59.2	39.3	63.1	48.7	29.0	25.5	22.8	19.5	79.9	41.2	29.6	23.3	19.0	17.9	34.4	12604.1
1992	16.1	17.9	26.9	69.1	136.5	402.9	293.3	78.2	46.7	40.2	32.6	15.9	691.4	80.8	42.5	21.3	19.5	12.5	97.8	35698.8
Average	22.0	25.8	62.4	118.9	211.5	82.2	196.0	76.0	51.5	41.9	38.6	21.4	442.1	119.9	49.2	31.3	16.2	15.1	101.1	31903.2
Ave(10)	17.8	20.7	43.9	90.6	175.5	201.8	158.5	94.7	45.0	35.1	28.9	21.4	387.6	102.8	41.0	24.4	16.2	15.1	75.6	27620.3
Ave(20)	21.7	24.3	54.2	103.4	178.1	252.6	208.7	94.7	54.3	42.5	35.5	26.8	448.4	121.9	50.8	30.6	19.1	17.5	90.9	33194.5
Ave(30)	21.9	25.6	55.4	107.4	193.5	238.6	188.1	82.0	50.2	40.6	34.1	26.2	431.1	115.8	48.1	30.3	19.2	17.7	88.0	32142.1

1963	100.6	121.5	264.6	386.2	836.2	959.5	617.1	244.0	149.9	122.8	100.9	74.8	1137.2	427.1	163.2	111.1	73.8	62.0	329.8	120705.2
1964	50.2	48.6	91.8	373.4	707.9	660.4	447.0	195.1	116.0	91.8	75.4	56.1	747.2	400.5	102.0	62.0	43.3	40.7	239.8	87535.5
1965	30.7	39.3	87.8	138.6	301.0	569.9	471.9	205.2	111.7	81.5	62.1	45.4	640.4	210.3	102.0	52.3	32.8	30.5	178.7	65218.6
1966	38.9	49.0	104.7	200.4	437.3	463.8	371.6	189.6	102.8	83.3	68.3	51.8	585.3	271.0	93.5	48.3	22.6	21.1	202.1	73751.4
1967	34.5	27.8	122.2	582.3	1085.2	1530.3	1661.4	1010.9	552.6	299.8	216.0	154.8	2863.8	1013.4	323.3	140.1	37.0	32.8	179.2	65556.5
1968	109.5	128.1	247.8	730.5	966.0	811.8	533.3	256.9	156.6	222.8	93.7	65.9	1392.8	604.4	157.0	112.5	61.0	51.3	346.0	220521.8
1969	63.4	68.7	126.8	388.7	963.7	968.3	870.0	442.0	204.5	155.7	122.1	92.0	1078.1	739.3	212.0	104.9	42.4	39.7	400.7	146238.5
1970	55.6	46.6	53.4	104.5	154.1	280.4	139.4	111.8	61.8	50.8	41.1	44.3	685.3	445.2	161.4	98.5	56.5	35.2	266.8	97643.5
1971	37.6	46.6	101.9	323.2	1030.4	770.9	573.5	301.3	170.7	121.4	95.9	73.1	1643.6	423.0	136.1	75.7	35.8	33.1	238.9	36203.1
1972	50.9	43.0	205.4	801.9	685.9	1021.7	722.6	427.5	190.4	131.8	105.4	83.9	1252.3	698.7	179.0	126.2	39.8	38.4	371.2	109084.0
1973	62.0	49.8	119.8	351.3	819.1	1039.5	1279.0	865.9	506.1	248.0	175.0	97.6	2019.9	788.4	247.8	109.9	48.2	46.6	467.0	135439.6
1974	105.3	56.2	198.0	757.0	1328.9	2075.6	2332.4	1484.5	875.9	466.0	309.4	218.7	2888.8	1237.2	516.0	208.8	86.6	82.5	287.8	105034.7
1975	69.4	197.4	326.1	591.1	739.1	1234.7	1619.4	942.3	531.0	313.7	236.7	171.9	1971.8	701.0	388.4	208.8	141.0	135.1	586.3	307864.3
1976	152.1	154.4	381.8	553.0	779.7	978.0	816.8	652.3	361.4	231.7	184.6	138.4	1313.8	656.3	347.3	208.8	126.2	116.7	442.0	161760.5
1977	130.5	115.8	154.7	372.7	832.0	1474.2	1058.1	227.5	151.3	215.6	171.7	132.9	1713.9	656.3	241.0	138.6	100.9	98.7	462.9	168963.8
1978	99.8	82.0	113.2	185.2	539.4	458.8	354.8	177.6	115.2	92.5	97.0	80.8	881.9	254.5	123.7	98.7	78.5	71.3	216.2	78930.3
1979	68.1	83.2	200.1	224.7	397.4	458.8	332.9	332.9	105.7	80.0	67.9	55.8	492.1	247.8	131.1	73.1	54.4	48.2	189.8	69277.6
1980	68.1	52.6	133.6	383.7	835.3	655.3	656.9	327.2	197.4	135.0	104.8	82.1	1321.6	487.3	170.4	80.5	54.4	37.1	302.4	110372.2
1981	57.6	58.5	94.8	276.8	570.6	707.5	733.1	520.8	346.4	180.6	89.8	70.0	607.7	268.2	133.6	96.7	66.0	59.0	205.8	75121.6
1982	55.4	41.0	84.7	189.4	463.4	503.1	375.4	307.1	142.2	106.1	86.4	68.0	1298.0	363.7	109.9	71.3	49.8	37.1	223.1	89211.8
1983	53.0	55.1	70.9	182.2	423.0	498.5	505.0	328.9	175.9	113.5	91.0	71.9	661.8	218.4	118.7	57.5	42.4	41.1	150.6	58637.2
1984	37.9	30.4	48.8	234.1	483.0	480.1	392.2	216.2	118.2	86.7	72.5	56.9	597.2	316.2	92.6	54.4	28.5	27.4	186.1	67923.3
1985	45.5	50.1	68.3	178.3	625.8	1057.0	853.2	491.5	205.9	131.1	100.8	32.0	1376.8	463.8	138.6	67.8	30.7	20.8	316.0	15338.2
1986	23.0	28.8	45.3	178.3	618.4	764.2	704.4	426.2	229.6	147.2	113.7	86.4	1104.1	468.8	174.7	96.2	55.7	50.2	307.9	12442.0
1987	67.4	56.2	98.7	213.6	498.9	560.0	497.5	303.8	159.7	106.5	85.5	66.8	822.7	343.8	124.8	72.0	40.2	35.2	223.2	81515.5
1988	70.3	74.0	144.4	326.1	623.3	797.9	740.3	461.1	251.7	157.8	121.1	93.2	1163.1	477.1	186.4	101.2	60.2	55.2	319.9	116824.7

1963-1993
Flow Resume Table by Station
(4-669)XAFUE-HOOK BRIDGE

Ave(30) 65.9 69.8 141.5 338.4 618.7 774.0 709.4 428.4 228.8 146.7 113.2 86.1 1113.2 468.6 173.5 95.2 54.6 49.2 308.1 112538.6

1983 1981

Flow Regime Table by Station
(8-650)MFUWET (TILL 82 1/2)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min. Average	Total	
1983	118	99	39	592	745	497	269	96	151	138	129	120	1110	277	139	118	18	6	90680	
1981	114	111	99	636	946	323	124	194	165	147	135	125	1527	211	145	119	47	21	93363	
1982	118	116	153	263	517	544	192	146	127	118	110	104	1663	212	128	116	103	102	75663	
Ave(10)	2	5	51	136	238	612	342	79	37	27	19	11	1413	134	35	14	2	1	47803	
Ave(20)	5	11	142	326	498	600	201	130	57	41	22	22	1034	227	65	20	4	4	62441	
Ave(30)	16	51	238	347	1189	525	532	254	156	121	96	74	1692	390	158	79	16	16	107143	
1983	57	51	178	421	890	597	420	278	166	91	68	52	1243	401	250	59	47	45	268	
1981	47	43	494	561	609	885	609	385	283	243	210	182	1942	598	295	191	43	38	428	
1982	158	154	447	431	427	640	321	212	146	122	101	81	1027	329	171	130	79	70	251	
Ave(10)	67	68	156	324	568	884	447	255	185	157	134	120	1400	337	177	119	65	62	279	
Ave(20)	129	148	256	537	1178	1162	967	488	329	264	218	177	2177	563	297	177	125	119	483	
Ave(30)	151	137	325	571	1516	1173	501	314	240	222	176	159	2016	458	244	176	134	123	136254	
1983	131	117	254	700	1044	1325	1024	461	240	280	230	189	2016	633	313	200	119	102	506	
1981	158	158	206	534	623	864	506	287	218	185	158	128	1506	465	209	154	123	116	333	
1982	119	126	336	837	1296	1985	696	135	140	102	105	56	2888	648	134	109	60	59	488	
Ave(10)	55	60	485	481	687	1069	703	346	194	145	107	79	1400	628	195	94	50	48	366	
Ave(20)	62	64	186	383	440	984	875	617	270	157	105	56	2130	542	200	80	49	39	350	
Ave(30)	24	25	215	331	844	652	253	116	66	44	29	18	1594	280	70	27	16	14	214	
Average	89	88	225	475	770	962	513	275	189	151	124	102	1594	415	180	115	64	57	320	
Ave(10)	105	104	264	513	762	1074	629	323	213	168	134	107	1760	488	201	127	82	75	364	
Ave(20)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Ave(30)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

1981 1983

Flow Regime Table by Station
(8-650)MFUWET (82 1/19-83 3/11)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min. Average	Total	
1981	6	4	20	176	409	258	130	64	28	18	12	7	671	120	23	9	3	3	33650	
1983	4	8	81	102	307	174	98	42	26	19	15	9	921	89	30	13	1	1	92	
Average	6	4	20	176	408	258	130	64	28	18	12	7	671	120	23	9	3	3	72	
Ave(10)	5	6	51	139	357	216	114	53	27	19	13	8	796	105	27	11	2	2	92	
Ave(20)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	82
Ave(30)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

1983 1983

Flow Regime Table by Station
(8-650)MFUWET (FROM 84 1/21)

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min. Average	Total
1983	2	1	149	650	706	595	164	48	18	8	4	3	1193	243	16	3	1	1	194
1984	2	32	320	414	1149	784	485	151	62	32	13	5	1966	405	79	13	2	2	282

1985	3	22	198	1163	1957	1061	864	295	139	108	90	75	2384	654	160	79	3	488	178232	
1986	66	23	275	541	1733	596	298	105	59	33	15	6	1289	377	70	27	4	227	82638	
1987	4	3	9	312	1112	1284	467	136	57	27	11	4	2303	283	36	4	2	283	103417	
1988	3	5	64	594	1590	1465	1091	293	105	55	20	14	2800	809	84	18	3	434	158365	
1989	5	10	155	994	N.A.	N.A.	283	117	55	33	21	11	2082	150	34	8	4	204	66251	
1990	5	4	7	518	518	410	607	156	70	40	24	13	885	312	44	11	3	181	66033	
1991	9	9	73	377	347	101	79	34	15	8	5	4	818	96	17	8	3	78	28394	
1992	5	15	169	963	219	1154	503	133	81	29	13	5	1769	410	65	13	4	296	108118	
Average	11	12	139	526	937	787	482	148	64	38	24	15	1747	370	60	19	3	283	95271	
Ave(10)	10	13	142	592	993	828	485	147	66	37	23	14	1749	374	61	18	3	267	96556	
Ave(20)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Ave(30)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

1963	22	18	229	321	1375	914	240	128	52	29	20	15	4600	254	53	20	14	28	198	
1964	17	14	42	476	1182	605	263	165	68	42	26	15	2257	248	51	17	12	14	99822	
1965	9	20	233	283	1354	440	263	105	58	39	28	17	5322	254	66	24	8	237	36446	
1966	6	6	152	716	678	704	196	65	46	31	19	12	1439	270	45	16	6	230	83866	
1967	42	42	367	621	1961	1091	680	203	122	81	53	32	3683	548	130	45	5	219	80296	
1968	22	66	230	1542	2825	1400	1144	380	177	127	82	61	4600	902	184	79	19	428	156241	
1969	48	61	351	710	844	642	1144	109	58	46	34	25	1451	392	63	47	24	657	239846	
1970	22	20	58	432	N.A.	1307	497	161	85	51	34	17	3277	225	62	24	10	265	36553	
1971	13	17	77	667	2246	1894	1384	N.A.	N.A.	N.A.	N.A.	N.A.	4016	748	17	N.A.	N.A.	303	107840	
1972	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	825	194170	
1973	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1974	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1975	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1976	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1977	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1978	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1979	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1980	22	17	42	476	1182	605	263	165	68	42	26	15	2257	248	51	17	12	273	99822	
1981	9	20	233	283	1354	440	263	105	58	39	28	17	5322	254	66	24	8	237	36446	
1982	6	6	152	716	678	704	196	65	46	31	19	12	1439	270	45	16	6	230	83866	
1983	42	42	367	621	1961	1091	680	203	122	81	53	32	3683	548	130	45	5	219	80296	
1984	22	66	230	1542	2825	1400	1144	380	177	127	82	61	4600	902	184	79	19	428	156241	
1985	48	61	351	710	844	642	1144	109	58	46	34	25	1451	392	63	47	24	657	239846	
1986	22	20	58	432	N.A.	1307	497	161	85	51	34	17	3277	225	62	24	10	265	36553	
1987	13	17	77	667	2246	1894	1384	N.A.	N.A.	N.A.	N.A.	N.A.	4016	748	17	N.A.	N.A.	303	107840	
1988	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	825	194170	
1989	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1990	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1991	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1992	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Average	20	29	193	641	1558	1000	550	165	83	56	37	24	3088	427	75	34	12	347	114528	
Ave(10)	22	35	206	781	1711	1173	697	184	98	67	44	29	3078	514	84	42	13	450	145624	
Ave(20)	20	29	193	641	1558	1000	550	165	83	56	37	24	3088	427	75	34	12	347	114528	

1963-1993
Flow Regime Table by Station
(5-800)NDEVU CAMP

Ave(30) 20 29 193 641 1558 1000 550 165 83 56 37 24 3068 427 75 34 12 12 347 114528

1947 1993

Flow Regime Table by Station
(5-940) LUANGWA ROAD BRIDGE

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Max.	O(95)	O(185)	O(275)	O(355)	Min. Average	Total
1947	N.A.	N.A.	419	1347	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	2997	N.A.	N.A.	N.A.	N.A.	182	54750
1948	N.A.	N.A.	109	120	82	N.A.	132	N.A.	N.A.	N.A.	N.A.	N.A.	964	124	70	N.A.	N.A.	151	32614
1949	N.A.	N.A.	184	1819	368	N.A.	1600	N.A.	N.A.	N.A.	N.A.	N.A.	4116	1212	118	N.A.	N.A.	1262	270074
1950	N.A.	N.A.	90	293	156	N.A.	395	N.A.	N.A.	N.A.	N.A.	N.A.	1606	261	81	N.A.	N.A.	55	91530
1951	N.A.	N.A.	545	1753	N.A.	N.A.	653	N.A.	N.A.	N.A.	N.A.	N.A.	6091	757	104	53	N.A.	396	287871
1952	N.A.	N.A.	61	474	139	N.A.	393	N.A.	N.A.	N.A.	N.A.	N.A.	2531	399	76	41	N.A.	308	195187
1953	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1174	N.A.	N.A.	N.A.	N.A.	191	72699
1954	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	43	N.A.	N.A.	N.A.	N.A.	40	599
1955	N.A.	N.A.	134	1101	1179	N.A.	3828	N.A.	N.A.	N.A.	N.A.	N.A.	5436	1643	292	113	N.A.	1116	408329
1956	N.A.	N.A.	406	1264	457	N.A.	1006	N.A.	N.A.	N.A.	N.A.	N.A.	5332	974	253	109	50	793	289557
1957	N.A.	N.A.	283	1047	75	N.A.	276	N.A.	N.A.	N.A.	N.A.	N.A.	7676	412	52	19	8	608	221831
1958	N.A.	N.A.	288	485	26	N.A.	153	N.A.	N.A.	N.A.	N.A.	N.A.	5981	292	13	7	5	427	158857
1959	N.A.	N.A.	250	402	165	N.A.	409	N.A.	N.A.	N.A.	N.A.	N.A.	2054	409	84	22	5	305	111485
1960	N.A.	N.A.	58	644	269	N.A.	722	N.A.	N.A.	N.A.	N.A.	N.A.	2962	520	124	46	11	428	156346
1961	N.A.	N.A.	740	2906	3102	N.A.	1672	N.A.	N.A.	N.A.	N.A.	N.A.	5367	1922	253	99	24	1118	408120
1962	N.A.	N.A.	727	1572	468	N.A.	1269	N.A.	N.A.	N.A.	N.A.	N.A.	4688	1312	292	113	37	878	320611
1963	N.A.	N.A.	340	1883	1095	N.A.	474	N.A.	N.A.	N.A.	N.A.	N.A.	4688	698	175	94	53	633	231754
1964	N.A.	N.A.	137	1476	267	N.A.	714	N.A.	N.A.	N.A.	N.A.	N.A.	3907	855	163	84	32	562	205311
1965	N.A.	N.A.	157	455	137	N.A.	261	N.A.	N.A.	N.A.	N.A.	N.A.	4279	316	88	56	19	304	111003
1966	N.A.	N.A.	189	557	285	N.A.	906	N.A.	N.A.	N.A.	N.A.	N.A.	2379	535	151	74	13	382	139594
1967	N.A.	N.A.	257	691	262	N.A.	422	N.A.	N.A.	N.A.	N.A.	N.A.	2480	431	171	88	54	391	143194
1968	N.A.	N.A.	205	936	267	N.A.	1344	N.A.	N.A.	N.A.	N.A.	N.A.	2844	1169	233	93	58	619	225787
1969	N.A.	N.A.	547	1021	230	N.A.	446	N.A.	N.A.	N.A.	N.A.	N.A.	3224	633	151	81	42	466	170245
1970	N.A.	N.A.	955	1699	321	N.A.	646	N.A.	N.A.	N.A.	N.A.	N.A.	4197	974	233	99	60	771	281539
1971	N.A.	N.A.	242	812	282	N.A.	519	N.A.	N.A.	N.A.	N.A.	N.A.	1773	384	169	104	63	323	117869
1972	N.A.	N.A.	139	350	281	N.A.	545	N.A.	N.A.	N.A.	N.A.	N.A.	2112	384	169	93	73	323	117869
1973	N.A.	N.A.	296	1141	565	N.A.	1924	N.A.	N.A.	N.A.	N.A.	N.A.	6177	1064	229	80	52	860	314020
1974	N.A.	N.A.	517	1067	413	N.A.	850	N.A.	N.A.	N.A.	N.A.	N.A.	3441	749	311	19	5	547	199614
1975	N.A.	N.A.	302	1044	702	N.A.	2198	N.A.	N.A.	N.A.	N.A.	N.A.	5241	1064	369	9	3	844	308992
1976	N.A.	N.A.	192	962	329	N.A.	738	N.A.	N.A.	N.A.	N.A.	N.A.	3359	805	157	73	3	485	177078
1977	N.A.	N.A.	313	1907	517	N.A.	2052	N.A.	N.A.	N.A.	N.A.	N.A.	7622	1637	251	64	35	1147	418478
1978	N.A.	N.A.	1061	1052	609	N.A.	1375	N.A.	N.A.	N.A.	N.A.	N.A.	3206	1069	412	138	15	730	266462
1979	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1944	N.A.	N.A.	N.A.	N.A.	N.A.	3810	591	61	N.A.	N.A.	874	161758
1980	N.A.	N.A.	454	797	341	N.A.	501	N.A.	N.A.	N.A.	N.A.	N.A.	5552	637	157	74	53	560	204356
1981	N.A.	N.A.	54	782	233	N.A.	368	N.A.	N.A.	N.A.	N.A.	N.A.	4136	375	85	44	30	48	145947
1982	N.A.	N.A.	336	555	149	N.A.	336	N.A.	N.A.	N.A.	N.A.	N.A.	5717	360	105	43	25	357	130276
1983	N.A.	N.A.	336	924	186	N.A.	403	N.A.	N.A.	N.A.	N.A.	N.A.	1853	513	112	47	19	344	125941
1984	N.A.	N.A.	668	1353	337	N.A.	970	N.A.	N.A.	N.A.	N.A.	N.A.	5401	974	215	105	40	701	255711
1985	N.A.	N.A.	N.A.	3449	579	N.A.	1580	N.A.	N.A.	N.A.	N.A.	N.A.	5150	810	253	120	N.A.	795	266289
1986	N.A.	N.A.	673	1265	253	N.A.	754	N.A.	N.A.	N.A.	N.A.	N.A.	3005	719	186	118	91	471	171747
1987	N.A.	N.A.	201	808	269	N.A.	754	N.A.	N.A.	N.A.	N.A.	N.A.	4906	492	157	87	66	587	214858
1988	N.A.	N.A.	135	1169	473	N.A.	1796	N.A.	N.A.	N.A.	N.A.	N.A.	5670	1387	212	81	47	827	301885
1989	N.A.	N.A.	1264	4971	1047	N.A.	2186	N.A.	N.A.	N.A.	N.A.	N.A.	7912	2221	192	88	40	1537	561126
1990	N.A.	N.A.	77	994	300	N.A.	793	N.A.	N.A.	N.A.	N.A.	N.A.	2199	575	149	97	45	376	137345

1991	146	145	306	790	511	419	403	286	227	181	112	39	1494	378	217	149	38	35	297	108650
1992	30	52	1711	3365	2024	3394	5696	1813	552	361	260	181	10002	2559	510	222	26	12	1616	590011
Average	51	61	353	1194	2020	1816	963	358	195	132	93	66	3910	789	175	77	35	36	609	203363
Ave(10)	65	74	561	1909	2082	1887	1508	554	242	115	130	92	4759	1063	220	111	46	43	755	273356
Ave(20)	55	68	481	1494	2042	2124	1368	495	235	154	106	72	4793	949	217	87	35	34	713	253024
Ave(30)	56	67	424	1320	1917	1865	1121	420	214	146	104	73	4258	849	202	87	39	36	639	227278

1991	146	145	306	790	511	419	403	286	227	181	112	39	1494	378	217	149	38	35	297	108650	
1992	30	52	1711	3365	2024	3394	5696	1813	552	361	260	181	10002	2559	510	222	26	12	1616	590011	
1952	N.A.	N.A.	N.A.	N.A.	71	85	70	54	40	N.A.	N.A.	N.A.	N.A.	57	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	9599
1953	20	18	33	77	101	151	92	65	41	31	26	23	193	83	38	32	18	17	56	20522	
1954	19	20	33	53	173	313	253	133	73	49	36	29	347	146	46	34	17	17	98	35828	
1955	22	23	37	79	352	582	653	N.A.	N.A.	N.A.	N.A.	N.A.	719	326	23	N.A.	N.A.	18	270	61557	
1956	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	373	235	114	54	29	18	473	72	N.A.	N.A.	N.A.	15	137	24995	
1957	46	35	46	91	183	258	258	162	89	61	49	39	302	161	69	43	32	30	109	39790	
1958	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1959	26	27	49	72	150	422	473	246	121	77	59	47	568	190	73	48	24	24	147	53845	
1960	37	32	33	51	106	153	185	476	72	53	42	34	200	108	50	36	29	29	76	27636	
1961	28	34	204	800	934	1151	984	421	247	148	105	76	1326	818	216	80	26	429	156680		
1962	60	57	108	329	595	818	851	421	211	134	97	72	1097	496	153	81	55	51	311	113394	
1963	55	89	208	570	913	1017	825	404	207	140	108	80	1071	645	200	105	53	48	383	140070	
1964	60	52	74	207	369	547	431	225	114	82	64	52	618	262	96	61	51	46	189	68871	
1965	42	41	67	168	204	266	275	176	95	68	53	42	302	196	81	46	39	38	124	45400	
1966	34	33	44	71	103	184	245	198	109	69	52	41	261	128	69	41	31	30	98	35378	
1967	32	35	114	322	486	725	699	484	284	147	91	65	812	463	187	73	30	30	290	105970	
1968	48	41	85	198	333	439	446	264	129	83	61	46	792	287	107	52	39	39	180	65130	
1969	37	34	52	116	343	551	668	327	145	89	67	50	838	304	87	50	33	32	205	74853	
1970	38	37	107	189	387	686	501	185	138	91	69	52	339	293	125	58	35	34	212	77401	
1971	40	43	68	141	191	296	276	185	98	65	49	38	312	172	80	48	28	33	124	45295	
1972	31	30	58	99	127	258	281	206	106	67	51	39	312	157	71	42	28	27	113	41070	
1973	31	30	39	75	133	200	282	223	164	104	68	49	364	175	82	44	28	27	116	42402	
1974	36	33	52	134	210	387	526	259	140	87	64	49	636	212	93	48	31	30	165	60205	
1975	38	32	47	104	209	365	526	367	185	111	76	57	600	256	106	55	31	30	176	64413	
1976	43	36	45	87	144	203	201	370	74	51	39	30	1045	301	55	39	29	27	89	32458	
1977	25	27	50	96	263	670	336	370	172	103	73	53	1045	301	96	51	24	22	227	82947	
1978	40	43	30	152	439	891	902	662	335	190	122	84	1031	527	159	81	37	37	327	119469	
1979	65	64	130	281	478	600	683	427	223	133	133	68	760	448	176	82	56	52	265	97063	
1980	56	54	94	185	279	473	484	264	147	107	74	55	616	248	124	62	50	45	189	68809	
1981	40	33	41	56	96	209	248	196	107	64	46	33	248	132	48	41	32	30	97	35380	
1982	28	34	132	324	434	516	363	213	110	75	58	45	547	331	56	52	27	26	195	71040	
1983	34	30	45	186	364	474	418	231	110	73	53	53	506	274	85	38	31	27	171	62474	
1984	29	35	71	113	251	544	606	377	177	105	73	53	729	280	106	55	26	24	202	73822	
1985	39	38	91	208	571	702	594	363	198	124	88	64	780	417	148	69	34	33	254	82852	
1986	49	53	125	245	418	671	548	311	178	115	84	62	719	321	150	67	48	45	237	86571	
1987	52	41	45	100	313	365	379	232	116	75	55	40	465	245	108	50	31	28	151	55120	
1988	32	33	45	97	210	332	319	455	219	124	83	58	583	286	106	49	31	28	183	66704	
1989	41	37	79	173	236	290	325	223	145	86	59	44	351	221	106	50	35	32	144	52604	
1990	33	26	32	89	166	261	342	326	169	92	62	44	418	209	90	37	25	24	136	49760	

1991	1992	Average	Ave(10)	Ave(20)	Ave(30)	34	36	62	147	219	254	258	163	101	64	46	37	333	195	83	40	33	31	118	43162
N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	
38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	
67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	67	
69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	

1963 1993
Flow Resume Table by Station
(6-350)KASAMA-LUWINDU ROAD BRIDG

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	O(95)	O(185)	O(275)	O(355)	Min.	Average	Total
1963	48	54	77	147	214	234	197	115	77	64	58	52	244	182	76	57	47	46	111	40606
1964	48	47	51	77	108	143	120	80	59	53	49	47	157	88	55	49	47	46	73	26772
1965	45	45	50	69	77	89	90	71	55	50	47	45	95	75	52	46	44	44	61	22216
1966	43	43	45	51	57	72	84	75	58	50	47	45	87	62	50	45	43	43	56	20377
1967	43	44	59	99	131	177	172	131	92	65	54	49	194	127	51	51	43	43	93	34003
1968	46	45	53	75	101	122	123	88	62	53	49	46	136	92	57	47	44	44	72	26157
1969	44	43	47	59	103	143	166	100	63	43	37	31	190	96	49	43	30	30	80	26691
1970	29	39	87	98	141	195	115	72	58	51	44	37	270	100	55	43	28	25	80	29317
1971	35	39	77	109	114	124	109	74	52	45	38	31	179	100	55	39	30	25	71	25816
1972	28	33	69	104	93	140	92	57	47	43	39	30	190	85	48	35	27	28	64	23463
1973	27	31	45	69	84	99	110	89	53	46	39	31	170	77	50	37	25	23	61	22100
1974	26	27	58	96	88	158	103	67	51	44	39	33	263	87	51	37	24	25	66	23994
1975	27	28	55	82	79	159	128	76	58	51	43	35	185	92	57	38	23	23	72	26401
1976	30	31	38	77	79	73	92	48	37	33	28	23	140	66	37	30	23	21	49	17862
1977	21	28	68	89	122	198	129	70	56	50	42	34	260	99	57	38	20	19	76	27560
1978	30	30	69	89	176	210	176	107	77	66	55	45	338	124	73	53	28	27	95	34801
1979	42	53	101	133	179	150	159	86	68	59	51	42	274	118	72	51	38	37	88	32387
1980	48	47	55	72	91	129	131	88	65	57	51	47	156	85	61	49	46	45	73	26750
1981	30	29	42	62	78	85	99	55	39	35	31	26	159	67	39	31	24	24	51	18535
1982	24	46	140	189	157	118	95	63	51	47	43	35	262	124	55	41	23	23	84	30539
1983	32	30	66	163	158	159	100	61	53	47	39	32	219	121	52	35	29	25	78	28588
1984	29	52	73	84	134	157	150	75	60	52	44	37	258	97	63	43	27	25	78	28620
1985	31	45	83	90	163	159	119	74	59	51	45	36	231	103	66	43	31	29	79	28840
1986	36	46	122	88	172	145	114	67	56	51	45	37	275	109	59	45	34	33	81	29575
1987	36	29	46	80	114	127	78	49	41	36	31	26	203	72	42	32	25	23	58	21108
1988	23	34	48	76	91	87	143	60	49	41	35	28	202	67	48	35	23	23	59	21695
1989	26	31	82	95	105	95	108	66	50	42	37	31	148	88	53	36	24	21	64	23272
1990	25	23	33	88	110	125	146	65	52	45	39	31	260	91	46	31	22	20	65	23674
1991	33	37	70	106	113	163	110	77	56	50	43	36	224	96	57	42	29	27	74	27245
1992	31	41	51	62	94	138	106	57	56	50	43	36	212	72	39	31	26	26	72	17509
Average	34	39	66	94	118	139	123	76	57	49	43	36	206	96	56	41	30	30	73	26516
Ave(10)	30	37	67	93	125	135	117	65	53	46	40	33	223	92	53	38	27	25	71	25013
Ave(20)	30	37	67	95	119	137	120	70	54	48	41	34	222	93	54	39	26	26	71	25553
Ave(30)	34	39	65	93	117	139	122	75	57	49	43	36	206	95	55	41	30	30	73	26216

1957 1993
Flow Resume Table by Station

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	O(95)	O(185)	O(275)	O(355)	Min.	Average	Total
1957	281	167	126	232	373	702	629	402	290	210	148	111	800	373	257	150	109	92	305	111436
1958	80	70	73	115	187	485	590	433	286	115	115	77	656	334	132	78	65	55	225	82007
1959	64	61	65	197	403	865	1031	700	483	349	218	118	1096	600	233	90	53	379	138698	
1960	71	58	59	110	321	702	904	630	438	317	197	117	996	499	225	81	54	326	119167	
1961	70	66	273	891	2172	3261	3709	2625	1807	1219	803	498	4224	2289	1034	393	59	1438	524918	
1962	263	143	226	946	1845	2643	2497	1977	1438	1001	653	401	3006	1895	937	334	138	1164	424981	
1963	217	170	263	872	2631	2918	2312	1729	1190	727	503	240	3178	1895	710	263	157	1134	415045	
1964	148	102	107	344	1078	1846	1436	993	624	353	197	131	1986	953	325	138	97	610	222619	
1965	86	86	114	191	395	998	811	596	413	250	158	89	1160	505	212	102	65	360	131362	
1966	47	27	28	69	203	610	811	657	478	332	158	132	859	518	188	49	21	301	109754	
1967	91	86	137	326	746	1531	1328	919	804	633	510	332	1836	900	546	177	82	626	229155	
1968	179	105	157	506	1329	2368	2020	1296	890	625	474	276	2466	1219	228	228	97	848	309686	
1969	140	118	153	264	615	962	897	741	600	465	293	171	1073	696	363	163	115	450	164343	
1970	131	107	218	599	1430	2087	1457	1057	758	520	311	176	2381	1142	554	177	128	737	268955	
1971	140	107	149	348	593	1178	1318	852	586	392	230	140	1586	710	363	146	109	502	183686	
1972	138	101	93	141	546	778	678	546	403	291	366	112	800	461	183	120	85	304	111103	
1973	79	74	94	277	554	763	837	727	579	365	365	234	947	629	435	115	69	427	155763	
1974	125	83	115	366	537	845	952	724	586	520	366	231	1056	617	435	173	82	449	163825	
1975	117	86	121	264	643	1070	1948	1468	475	312	218	306	2199	1017	506	177	82	483	247270	
1976	192	139	172	317	643	1289	1137	719	475	312	218	199	1512	617	292	190	138	483	176303	
1977	102	92	162	394	936	2199	2575	2020	1367	987	586	241	3092	1525	542	255	146	949	354405	
1978	150	174	206	318	609	1954	1895	1716	1423	913	545	297	2912	1305	756	397	208	909	346432	
1979	342	269	492	714	981	1603	1895	1716	1236	849	528	291	2183	1336	756	397	249	909	332736	
1980	167	166	228	456	752	1958	1225	908	617	497	372	242	2829	814	461	238	152	632	230680	
1981	122	76	84	123	333	427	350	287	214	148	93	55	493	270	139	86	49	192	69972	
1982	N.A.	55	N.A.	N.A.	N.A.	763	694	575	416	306	187	95	802	614	330	88	42	35	356	130212
1983	79	55	62	352	703	1070	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	84	N.A.	N.A.	N.A.	N.A.	41	55	3382
1984	65	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1985	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1986	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1987	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	389	258	147	89	796	344	120	N.A.	N.A.	65	268	72426
1988	52	41	42	153	439	483	554	457	355	292	214	142	773	42	271	143	101	119	16282	
1989	118	108	136	242	439	286	231	191	149	107	159	110	558	436	131	92	9	294	107192	
1990	98	66	83	83	242	266	310	248	190	N.A.	N.A.	N.A.	355	198	101	N.A.	N.A.	144	52492	
1991	31	65	86	165	247	266	310	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	237	N.A.	N.A.	N.A.	59	124	50380
1992	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1313	963	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	189268
Average	130	102	140	339	743	1301	1070	906	682	493	324	195	1592	813	402	173	95	84	526	
Ave(10)	82	63	70	189	400	450	447	407	300	241	177	109	526	312	191	108	51	48	203	61167
Ave(20)	126	103	140	291	559	1070	1190	906	642	493	329	195	1307	680	375	178	101	83	444	156860
Ave(30)	129	104	141	321	711	1264	1248	922	655	479	316	188	1470	768	385	168	99	87	499	179056

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	O(95)	O(185)	O(275)	O(355)	Min.	Average	Total
1955	57	43	54	195	2460	3370	3105	2238	1616	1221	940	693	3808	2235	1114	394	209	184	1440	525522
1956	217	217	262	942	2460	3370	3105	2238	1616	1221	940	693	3808	2235	1114	394	209	184	1440	525522
1957	308	491	272	431	551	904	849	549	400	287	201	142	1050	546	406	267	135	112	450	164152

1955-1992
Flow Resume Table by Station
(6-785)KASHIBA

1958	97	77	87	133	201	569	625	458	289	191	121	78	686	348	143	91	71	62	244	89029	
1959	57	48	61	149	410	1218	1277	886	588	419	271	155	1522	722	271	91	48	44	461	168815	
1960	95	71	71	160	622	1260	1517	979	654	470	103	182	1780	812	358	105	65	59	531	193634	
1961	119	133	646	1632	2787	4042	4380	3234	2393	1746	1253	919	4821	2867	1675	872	105	98	1933	705626	
1962	631	447	551	1490	2427	3007	3216	2434	1863	1371	1036	744	3731	2419	1361	686	432	417	1596	582366	
1963	498	433	707	1596	3125	3408	2802	2152	1563	1134	814	551	3664	2392	1196	615	401	394	1559	570694	
1964	370	270	256	553	1410	2304	1913	1300	928	608	377	250	2419	1286	562	304	234	204	874	319105	
1965	175	146	228	418	685	1422	1404	932	650	435	280	188	1720	792	424	194	143	143	579	211402	
1966	132	106	108	161	280	752	1097	796	550	381	248	165	1265	588	256	136	98	93	398	145316	
1967	118	113	217	514	973	2014	1635	1200	978	800	592	432	2401	1103	741	265	104	100	794	290782	
1968	246	173	238	710	1868	3003	2818	1809	1248	948	671	432	3290	1727	831	361	165	157	794	222208	
1969	290	235	277	484	1278	1662	1325	1048	853	650	443	278	1874	1065	778	300	229	220	1175	468037	
1970	189	143	349	932	2158	2924	2088	1448	1098	822	551	347	3332	1579	848	333	127	177	1081	267037	
1971	232	198	256	638	859	1595	1799	1216	873	622	398	258	2100	1017	635	256	189	180	744	394393	
1972	183	153	185	350	395	959	1062	764	525	355	338	166	2100	1017	635	256	189	180	744	272431	
1973	125	108	123	280	689	1119	1252	1031	601	512	422	268	1408	766	501	143	105	102	543	162258	
1974	165	128	142	495	637	1239	1327	1016	773	594	416	270	1645	831	554	197	121	102	543	198138	
1975	171	124	140	326	842	1700	2711	1964	1323	1015	771	550	3054	1340	554	199	118	110	600	218860	
1976	321	218	229	474	968	1773	1572	1020	698	483	316	221	2067	962	439	261	204	189	688	354371	
1977	170	145	210	519	1302	2536	3341	2819	1813	1312	947	621	3764	2075	1020	333	145	142	1310	251503	
1978	389	331	607	981	1901	3365	3851	3031	2340	1702	795	481	4071	2620	1072	478	326	316	1645	600346	
1979	538	445	728	1009	1348	2475	2763	2545	1756	1305	960	584	3075	1921	1137	690	420	368	1371	501910	
1980	316	315	393	683	1057	2586	1657	1255	887	734	576	411	3689	1136	689	406	297	295	905	330505	
1981	231	171	181	233	510	635	533	450	354	266	193	143	722	427	254	184	136	123	324	118181	
1982	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1983	175	143	152	535	999	1079	987	830	620	474	317	196	1130	882	506	187	126	117	541	197823	
1984	156	131	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	181	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	8775	197823
1985	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1986	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1987	N.A.	N.A.	177	252	560	N.A.	N.A.	812	584	412	265	188	1091	525	229	N.A.	N.A.	N.A.	N.A.	N.A.	
1988	139	125	126	273	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1091	126	N.A.	N.A.	N.A.	N.A.	157	425	114715
1989	226	213	250	390	651	708	302	674	539	456	353	259	808	647	429	260	204	191	228	31186	
1990	200	157	302	302	739	763	827	572	457	363	281	216	952	601	339	200	150	149	459	167354	
1991	177	157	184	289	397	423	481	399	321	N.A.	N.A.	N.A.	540	383	204	200	149	149	417	152261	
Ave(10)	238	190	264	570	1156	1883	1873	1382	994	736	512	345	2121	1157	655	310	181	163	779	279839	
Ave(20)	179	154	175	340	669	743	774	657	504	426	304	215	833	527	341	216	160	144	361	108286	
Ave(30)	230	191	249	462	866	1526	1655	1279	906	713	489	327	1793	990	566	285	192	171	666	233651	
	253	205	276	573	1122	1819	1794	1341	968	740	511	341	2084	1147	636	311	201	183	772	276089	

1963 1992
Flow Resume Table by Station
(6-900)KUNDABRIKA FALLS

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	O(95)	O(185)	O(275)	O(355)	Min.	Average	Total
1963	88.5	105.2	181.2	351.4	329.2	453.5	292.1	163.9	128.4	111.9	101.8	92.8	798.8	303.5	135.6	104.0	85.8	83.3	199.8	79120.6
1964	86.2	89.2	94.9	110.0	130.9	187.4	189.7	125.3	102.4	91.1	83.4	80.1	363.4	127.0	97.3	85.8	80.7	78.5	114.1	41639.4
1965	77.9	79.3	90.6	121.0	158.3	331.0	295.8	151.2	122.7	104.5	94.0	85.7	610.6	146.6	110.9	85.8	76.3	76.3	142.5	52016.0
1966	82.0	82.9	89.7	100.5	112.4	153.3	211.3	153.4	111.9	97.4	87.4	82.3	267.3	120.0	97.3	85.0	80.0	79.2	113.6	41470.3
1967	78.2	83.1	157.2	237.1	342.4	529.1	337.5	218.4	150.1	122.0	105.8	96.1	725.7	254.9	148.3	100.5	77.1	75.7	204.4	74817.4
1968	83.8	88.9	104.3	118.4	167.5	231.6	295.3	149.8	115.1	100.8	89.9	83.9	360.5	151.5	108.7	90.2	82.4	81.6	130.2	47507.6
1969	81.2	84.1	97.7	125.1	222.2	301.0	243.2	143.4	114.0	100.5	90.6	84.1	384.9	158.2	106.3	86.7	80.7	80.0	140.0	51108.4

1970	56.2	66.6	144.7	189.9	213.3	255.4	294.7	145.8	109.6	98.0	78.4	60.6	290.3	192.6	111.5	72.4	52.5	50.1	135.1	49296.7
1971	51.0	61.7	107.1	187.5	191.8	256.2	215.4	138.7	95.5	77.2	62.3	51.6	298.3	181.4	103.9	61.9	46.9	42.7	123.1	45278.2
1972	48.4	60.1	123.2	197.2	192.4	278.4	233.6	134.1	99.1	82.1	68.3	53.8	309.4	191.7	90.3	64.5	44.8	43.7	130.6	47686.0
1973	46.9	61.7	123.5	114.3	134.7	187.9	227.3	165.6	108.2	82.3	64.9	48.5	303.8	143.6	89.3	64.5	41.6	38.6	110.2	40217.9
1974	40.5	43.4	70.3	122.9	132.2	192.8	152.4	116.7	75.6	59.6	49.4	38.0	241.4	128.8	71.1	46.9	34.8	27.8	91.0	33201.0
1975	31.9	32.8	42.0	131.5	160.5	212.9	209.5	159.4	109.0	95.1	85.7	34.4	231.7	167.2	96.3	80.0	28.6	30.2	119.6	43781.5
1976	77.6	76.8	82.0	146.6	164.7	200.0	201.0	188.4	121.5	83.6	51.7	34.4	395.3	173.4	89.3	76.4	33.0	20.8	118.8	43347.3
1977	28.1	45.3	105.7	155.5	205.5	303.0	279.5	154.0	105.3	84.7	69.1	53.3	338.2	183.9	103.3	61.9	25.4	39.5	121.1	48159.6
1978	47.0	78.0	181.3	227.0	354.6	382.3	460.5	270.0	188.2	124.6	N.A.	53.3	538.2	301.0	149.4	63.2	N.A.	20.8	227.1	69040.4
1979	N.A.	N.A.	159.4	178.9	247.3	308.5	355.1	204.6	133.7	111.4	91.8	75.1	443.8	239.0	137.9	80.7	N.A.	67.1	187.1	57077.2
1980	74.4	86.3	137.9	92.5	120.3	147.0	257.7	152.6	111.1	98.1	75.7	61.4	447.1	181.7	114.9	82.2	59.5	53.6	149.1	54074.4
1981	53.3	51.9	76.4	271.2	290.2	328.7	287.4	161.2	76.0	60.2	48.2	31.4	196.9	114.9	76.4	52.5	35.3	35.8	87.0	31762.3
1982	39.3	60.9	166.3	271.2	211.3	252.3	212.1	128.0	113.9	93.4	79.2	61.5	340.7	243.8	125.2	75.0	38.6	33.0	155.0	56586.6
1983	55.9	54.5	87.9	201.2	213.3	328.7	214.5	124.9	102.0	85.0	68.6	53.2	481.1	192.6	97.1	64.5	46.9	44.8	132.2	48395.3
1984	45.6	52.2	89.7	138.1	182.7	260.3	245.1	153.5	89.2	71.5	56.9	44.5	323.4	183.9	87.9	56.0	39.5	36.7	112.4	41026.6
1985	36.5	55.0	91.2	141.7	194.5	260.3	255.6	139.0	102.1	80.7	65.7	51.4	355.4	208.2	108.2	71.1	49.0	45.9	146.2	44883.9
1986	50.7	55.4	95.2	194.0	238.0	305.4	255.6	139.0	104.3	87.2	73.0	58.1	343.6	153.2	80.7	56.0	38.6	29.4	109.7	53375.9
1987	60.0	55.4	91.0	151.1	168.9	245.8	210.0	105.0	77.5	63.5	50.4	39.3	388.9	145.5	83.6	58.4	32.1	33.0	110.4	40312.7
1988	34.6	46.4	67.1	137.6	162.2	159.4	329.7	137.0	94.5	76.5	66.3	58.1	417.5	190.4	106.5	64.5	40.6	34.8	135.2	49349.2
1989	47.7	43.0	56.6	115.5	182.4	201.8	308.0	132.8	111.9	90.1	72.6	49.2	447.1	149.4	79.3	53.6	41.6	38.6	113.7	41513.7
1990	43.4	47.2	67.1	185.0	191.7	217.6	205.6	169.6	94.5	76.5	62.8	58.1	368.9	145.5	83.6	56.0	32.1	29.4	110.4	49349.2
1991	54.4	57.3	110.6	193.9	201.4	221.8	257.4	133.5	119.4	100.7	N.A.	61.9	266.6	190.4	113.6	56.0	N.A.	42.7	143.1	43647.2
Average	57.7	65.4	110.6	167.0	201.4	240.8	258.9	141.4	108.5	89.5	73.8	61.9	391.6	180.9	103.6	71.6	51.1	48.8	135.5	46577.9
Ave(10)	47.3	54.2	105.2	172.9	202.9	240.8	258.9	141.4	101.0	82.5	66.2	52.4	371.4	181.1	97.8	61.6	40.2	37.5	128.1	45921.9
Ave(20)	48.5	56.8	107.0	166.4	199.5	244.2	259.8	153.6	105.4	85.1	66.7	53.0	356.5	181.3	100.4	64.4	39.1	38.0	131.6	46378.4
Ave(30)	N.A.	N.A.	N.A.	166.4	199.5	244.2	259.8	153.6	105.4	85.1	66.7	53.0	356.5	181.3	100.4	64.4	39.1	38.0	131.6	N.A.

1957 1992
Flow Resume Table by Station
(7-750)KESO FALLS

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Max.	O(95)	O(185)	O(275)	O(355)	Min.	Average	Total
1957	17.8	16.1	22.5	53.1	53.1	104.8	125.5	75.5	36.0	24.8	17.3	12.7	291.0	51.7	30.1	18.2	12.5	10.9	46.5	16985.4
1958	10.0	9.4	20.8	39.0	48.6	90.1	80.4	42.1	24.7	16.0	11.7	8.2	113.7	44.8	22.7	10.9	7.5	6.3	33.3	12162.3
1959	7.9	9.8	22.9	46.0	102.2	219.4	200.0	64.7	43.1	33.2	22.9	16.7	624.7	76.1	35.6	18.2	7.5	6.3	65.5	23981.2
1960	13.2	14.0	18.4	28.0	75.9	121.3	112.6	64.2	36.6	25.7	18.5	13.4	152.8	62.7	25.0	14.4	10.9	10.9	44.9	16394.2
1961	10.9	19.8	119.1	370.6	325.0	429.3	291.4	144.8	72.5	51.7	40.0	32.2	725.4	258.8	76.1	35.6	10.9	10.9	156.5	57114.2
1962	28.7	30.3	62.8	191.5	202.7	314.4	224.9	106.9	65.4	49.5	38.6	28.9	454.2	177.8	62.7	32.8	27.5	27.5	111.6	40745.5
1963	25.1	39.8	106.5	256.0	236.6	345.8	203.9	91.3	60.1	45.7	36.7	28.9	649.1	214.0	66.5	38.7	22.7	20.5	122.9	44963.4
1964	23.1	25.7	30.7	44.0	62.4	112.0	114.0	57.4	37.3	27.4	20.6	17.6	266.6	58.9	32.8	22.7	18.2	16.3	47.6	17358.9
1965	15.8	17.0	26.9	53.6	86.4	238.1	207.2	80.2	37.3	39.2	30.0	22.7	483.8	76.1	44.8	22.7	14.4	14.4	72.5	26474.4
1966	19.4	20.2	26.1	35.6	46.1	82.0	132.9	82.1	55.1	32.9	24.1	19.6	182.2	76.1	32.8	22.0	17.6	16.9	47.1	17208.5
1967	16.1	25.4	33.9	55.6	248.1	412.2	243.9	139.2	79.2	54.5	40.3	31.7	584.9	171.3	77.6	35.6	13.8	13.8	126.9	46454.2
1968	25.4	25.4	38.9	51.3	94.5	150.8	146.1	79.3	48.5	35.9	26.3	21.0	264.0	80.4	42.8	18.2	19.7	19.0	61.7	22514.3
1969	18.6	21.2	33.1	57.2	142.5	211.8	166.8	88.6	56.7	40.6	30.6	23.8	425.2	119.0	50.5	23.5	18.2	15.7	70.3	25676.4
1970	17.3	22.4	52.6	122.5	145.3	251.8	165.7	88.7	56.7	40.6	30.6	23.8	425.2	119.0	50.5	23.5	18.2	15.7	84.6	30887.7
1971	17.4	22.0	52.5	122.5	148.2	251.8	165.7	88.7	56.7	40.6	30.6	23.8	425.2	119.0	50.5	23.5	18.2	15.7	85.0	31098.7
1972	20.6	25.0	42.0	93.2	108.3	146.0	104.8	88.7	56.7	40.6	30.6	23.8	425.2	119.0	50.5	23.5	18.2	15.7	85.0	21650.9
1973	17.2	21.4	52.0	122.5	148.2	251.8	165.7	88.7	56.7	40.6	30.6	23.8	425.2	119.0	50.5	23.5	18.2	15.7	85.0	13175.4
1974	14.8	16.4	24.7	45.4	44.3	43.2	69.8	69.2	36.3	30.8	24.7	17.7	204.1	86.3	39.7	26.6	19.7	18.2	36.1	15475.8
1975	14.0	13.8	24.7	45.4	50.4	100.1	96.0	61.4	37.8	26.4	20.0	16.1	202.4	51.7	30.1	18.2	14.4	13.2	42.4	16905.8

1976	15.5	14.8	19.3	28.0	45.8	53.2	82.9	54.3	33.7	22.6	17.0	13.1	115.4	46.0	23.5	16.3	12.5	11.9	33.2	12125.4
1977	11.2	16.2	35.7	75.4	133.3	186.3	171.8	76.1	47.3	35.5	26.8	20.2	389.3	97.1	41.7	22.7	10.4	9.0	69.3	25307.9
1978	17.1	24.1	42.8	64.0	121.6	233.3	233.3	133.4	68.6	49.0	N.A.	N.A.	487.3	139.2	55.1	18.2	N.A.	15.1	113.6	34525.0
1979	N.A.	N.A.	63.9	108.4	173.3	113.0	161.9	94.0	59.4	44.9	32.9	23.0	218.7	107.0	60.9	26.6	N.A.	18.2	82.0	25002.4
1980	20.6	22.1	34.1	45.3	135.0	173.3	141.5	75.8	41.3	30.4	22.9	17.9	260.1	87.5	38.7	22.7	16.9	15.1	62.9	22943.3
1981	15.2	18.5	23.3	25.7	37.1	50.3	45.9	49.5	31.2	20.6	15.2	11.5	58.9	39.7	23.5	16.3	10.9	10.4	28.6	10443.0
1982	10.6	10.6	105.0	228.2	230.4	127.4	108.9	58.0	42.8	31.6	25.7	19.5	333.9	120.8	49.4	22.7	9.9	9.4	83.3	30393.7
1983	21.9	17.5	27.0	44.0	116.6	189.9	102.6	56.8	37.2	27.1	20.2	15.6	370.4	64.0	31.9	21.2	14.4	13.8	56.2	20561.6
1984	12.7	17.2	26.4	37.8	67.9	125.1	149.4	66.8	40.9	27.8	20.0	15.8	370.4	61.4	32.8	18.2	11.9	10.9	50.5	18415.3
1985	12.2	16.7	30.0	49.5	87.1	104.1	103.4	61.8	52.0	27.1	19.8	14.9	139.2	71.9	33.7	18.2	11.4	10.9	46.9	17103.4
1986	14.1	19.2	54.2	96.9	165.7	217.7	172.3	85.2	52.4	39.3	29.6	22.5	285.5	105.3	48.4	24.2	13.2	12.5	80.2	29278.2
1987	21.8	20.2	25.9	38.7	67.1	96.4	124.4	53.7	35.7	25.8	20.0	15.9	216.4	58.9	28.4	21.2	15.7	13.8	45.3	16583.6
1988	14.4	18.7	27.6	53.2	93.0	111.8	368.9	100.9	62.0	28.1	21.8	15.8	721.1	86.3	35.6	20.5	13.2	12.5	75.8	27661.3
1989	10.1	9.8	47.1	96.1	80.9	114.1	137.0	75.8	51.4	41.0	31.6	23.4	243.3	87.8	49.4	25.7	5.7	2.1	59.7	21800.6
1990	16.6	12.9	19.0	47.8	94.4	106.6	173.1	63.4	40.1	28.3	19.5	11.1	260.0	93.4	29.9	16.8	10.3	8.3	52.3	19096.2
1991	19.5	21.1	39.9	101.6	109.9	129.1	111.1	88.9	52.2	35.8	N.A.	N.A.	159.0	105.3	47.1	20.5	N.A.	14.4	70.7	21578.1
Ave(10)	16.6	19.0	41.6	84.5	116.0	171.0	154.7	77.5	47.2	33.8	25.1	19.3	321.5	92.4	41.4	22.6	14.2	13.3	67.7	24366.7
Ave(20)	15.8	16.4	40.2	79.4	111.3	132.2	155.1	72.1	45.4	31.7	22.9	17.2	294.5	79.8	38.1	20.8	11.7	10.9	62.1	22247.2
Ave(30)	17.5	20.0	41.7	81.3	114.9	165.9	152.0	78.4	48.2	34.5	25.6	19.7	305.6	91.7	42.2	23.1	15.0	14.1	59.7	24113.6

1924 1994
Flow Resume Table by Station
(9-005)VICTORIA FALL BIG TREE ZRA

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min.	Average	Total	
1924	N.A.	138	259	618	1382	1753	3146	2884	1798	932	409	256	3453	1759	717	252	N.A.	122	1231	411312	
1925	194	185	341	564	810	1716	4190	3197	1870	941	490	317	4498	1728	647	323	174	168	1234	450271	
1926	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1927	209	253	368	686	954	1702	2423	2410	1651	707	396	288	2497	1580	553	312	198	192	1003	366935	
1928	307	279	390	558	877	1060	1522	1737	783	458	346	274	1944	966	490	315	259	231	715	260837	
1929	216	241	474	694	874	1082	1285	1815	2032	1044	568	401	2422	1236	753	407	204	204	893	376047	
1930	303	331	367	582	794	1095	2487	3147	2062	1052	581	394	3393	1401	672	377	246	231	1093	399003	
1931	300	331	616	925	1259	2307	3469	2338	1533	809	517	381	3759	1606	824	421	282	282	1230	450078	
1932	287	228	353	675	947	1276	1823	1485	768	483	332	242	1959	1066	510	304	224	224	788	289362	
1933	197	205	391	758	1143	2361	4635	2939	1863	884	507	353	5429	1905	753	359	179	168	1340	408268	
1934	259	257	515	768	1143	2361	4635	2939	1540	776	487	364	3328	1815	738	392	217	189	1119	468268	
1935	289	235	352	600	911	1406	2370	2142	1539	658	428	304	2899	1381	601	312	229	204	966	333635	
1936	243	248	368	641	1355	3025	3345	2668	2145	1054	594	410	3637	2563	763	380	231	231	1340	489072	
1937	310	294	454	724	1006	1354	2635	2303	1414	685	450	397	3302	1345	665	359	282	259	994	382630	
1938	276	281	472	806	1191	2459	2653	1943	1070	567	423	329	3019	1377	663	377	259	252	1037	378643	
1939	272	320	458	941	1296	2247	4578	3340	2108	1137	640	426	5032	2074	942	482	262	252	1488	544747	
1940	317	392	458	720	1309	2047	3105	2319	1382	676	448	426	3393	1716	654	406	314	306	1122	409556	
1941	255	256	353	558	760	1106	1750	2174	1173	538	380	279	2422	1098	540	309	231	231	798	291352	
1942	217	251	330	541	723	1025	1772	2007	1598	752	455	324	2029	1186	589	310	217	182	832	303721	
1943	230	213	378	770	1307	2201	2545	2486	1569	663	411	292	2725	1951	647	317	198	186	1087	397792	
1944	224	237	423	642	961	1940	3538	2549	1576	732	473	332	3856	1511	647	350	217	211	1134	413825	
1945	250	249	404	749	1212	1321	1623	1864	1388	629	396	286	1944	1302	637	321	231	217	861	314252	
1946	226	218	373	657	928	1680	3951	3686	2331	1279	668	458	4590	1944	805	423	217	217	1371	500375	
1947	349	326	428	749	1201	4565	5323	3842	2434	1415	731	476	6083	2616	962	455	323	315	1820	666030	
1948	356	409	487	537	635	869	1043	1056	620	431	344	289	1136	733	513	377	252	236	585	213564	

1986 1994

Flow Resume Table by Station

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min.	Average	Total
1986	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	809	727	979	N.A.	N.A.	N.A.	N.A.	575	777	52867
1987	770	792	845	803	975	821	626	703	684	758	751	735	1193	823	742	660	516	447	753	274188
1988	824	826	828	1374	1008	892	1159	1201	1344	1374	1352	1261	1583	1291	1029	822	N.A.	553	1089	316283
1989	1288	1378	1316	1168	1066	1090	997	961	832	830	847	887	1578	1207	1009	853	N.A.	528	1055	362937
1990	853	808	878	808	859	878	936	938	1002	1004	909	916	1364	998	907	807	534	384	909	325386
1991	927	868	974	1016	947	1058	876	913	1041	1057	994	820	1414	1038	956	549	340	420	947	338125
1992	639	562	550	515	480	533	467	484	540	558	500	651	1179	621	549	471	340	142	549	200305
1993	747	729	705	752	713	651	640	686	686	698	894	857	983	997	742	539	N.A.	346	690	209783
Average	872	900	832	863	889	879	844	867	907	930	894	857	1327	997	865	742	485	436	866	275724
Ave(10)	854	875	814	847	864	846	814	826	876	897	894	857	1284	961	838	713	485	424	844	267482
Ave(20)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Ave(30)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

1977 1994

Flow Resume Table by Station

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min.	Average	Total
1977	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	264	385	1199	299	N.A.	N.A.	N.A.	49	530	68844
1978	381	396	342	877	865	850	1386	843	543	250	205	208	1553	833	396	264	121	51	593	216387
1979	225	226	520	896	772	931	521	486	274	173	162	126	1031	727	301	184	103	64	443	162051
1980	197	165	147	216	918	1466	987	557	279	195	163	146	1802	590	202	151	146	93	450	164149
1981	148	226	166	166	416	481	185	163	137	132	212	214	714	221	166	150	121	75	219	79995
1982	195	145	145	151	216	297	115	135	176	222	203	183	314	213	179	144	103	88	183	66633
1983	159	136	174	191	188	285	218	221	195	170	135	133	340	206	181	149	129	88	184	67272
1984	192	189	188	195	245	279	480	375	173	135	168	211	594	270	196	188	132	91	235	85907
1985	175	143	117	123	298	588	532	567	306	154	135	132	954	415	161	133	116	116	273	99759
1986	142	155	293	205	216	344	356	219	141	129	125	121	456	224	184	130	121	119	204	74415
1987	116	109	105	115	217	645	582	303	97	129	164	184	1472	245	135	108	82	81	230	84333
1988	170	157	121	97	409	391	411	321	151	133	129	175	697	189	154	128	94	94	216	79003
1989	119	114	108	161	428	214	159	155	133	124	159	177	626	177	151	120	106	105	171	62345
1990	173	153	153	110	106	110	304	199	161	155	156	233	406	171	154	123	100	80	168	61246
1991	203	197	190	160	151	120	123	130	121	120	120	120	237	190	131	120	102	102	148	53544
1992	121	138	123	103	107	274	755	432	162	83	104	124	923	225	123	107	65	64	210	76788
1993	163	155	142	221	843	458	296	N.A.	N.A.	N.A.	N.A.	N.A.	1037	205	148	N.A.	N.A.	86	300	70573
Average	181	177	193	253	370	485	474	340	249	172	163	176	832	325	188	147	109	85	278	93917
Ave(10)	157	151	154	151	302	342	400	300	161	130	140	159	740	231	154	129	102	94	216	74792
Ave(20)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Ave(30)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

1971 1994

Flow Resume Table by Station

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Max.	Q(95)	Q(185)	Q(275)	Q(355)	Min.	Average	Total
1971	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	312	N.A.	N.A.	N.A.	285	334	40091

1972	N.A.	80	83	106	94	99	84	60	49	32	45	127	95	81	56	15	6	76	27053
1973	378	359	623	488	650	868	868	650	484	243	149	968	579	390	341	N.A.	129	503	169980
1974	149	147	580	235	791	873	873	791	614	359	166	909	693	275	155	129	119	417	152345
1975	137	147	309	157	1195	1236	1236	1195	947	624	317	1275	959	212	155	126	84	525	192239
1976	318	146	142	153	298	142	136	298	339	331	331	404	320	162	139	110	78	207	75502
1977	337	186	508	631	1298	1344	1344	1298	1140	949	718	1437	1253	762	325	104	22	795	290196
1978	399	467	563	462	717	619	641	717	801	641	525	843	632	563	382	274	244	535	195390
1979	297	260	747	417	619	782	759	655	551	324	212	803	677	390	263	179	144	471	172238
1980	154	153	1008	687	1014	1155	1155	1014	812	486	242	1318	1032	516	164	143	119	619	225755
1981	161	167	263	217	209	214	209	209	175	175	175	308	210	175	165	151	137	190	69315
1982	174	178	168	171	170	167	167	170	167	163	165	192	174	169	165	150	131	169	61507
1983	158	156	187	172	156	167	167	156	156	155	138	200	171	162	153	136	119	163	59816
1984	139	145	145	150	214	180	210	214	197	195	168	230	196	157	143	132	118	169	61730
1985	204	195	215	257	383	377	377	383	400	348	219	447	369	242	203	181	146	275	100487
1986	178	192	183	170	185	177	181	185	142	117	104	365	187	177	155	97	85	175	63821
1987	113	130	172	126	218	176	150	218	240	168	160	265	185	177	132	103	94	165	60501
1988	158	145	608	619	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	184	872	164	140	N.A.	N.A.	101	276	58171
1989	56	33	448	448	228	223	223	228	148	151	145	501	164	150	104	38	0	182	66501
1990	140	133	131	117	144	129	129	144	145	188	174	188	147	137	132	102	93	140	51165
1991	171	180	179	174	91	98	98	91	89	83	88	225	177	124	91	81	72	134	48927
1992	97	105	115	120	248	246	260	248	315	243	156	530	255	124	110	92	84	180	65766
1993	133	141	143	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	190	132	N.A.	N.A.	N.A.	71	138	16961
Average	186	170	290	290	460	460	460	443	396	298	218	581	204	253	177	123	110	305	104929
Ave(10)	139	141	243	243	203	203	203	214	410	184	155	382	204	161	134	103	86	183	59403
Ave(20)	174	163	289	289	464	464	464	457	410	316	231	576	408	255	174	129	103	296	104414
Ave(30)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

 SADC Hydrological Assistance Project
 Annual summary of daily data - Flow

Station number :	390930	Name :	Lake Kariba, Total Discharge	Latitude :	16:31:13	Longitude :	28:45:33	Altitude :	-							
Basin number :	390	Area	663800.	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual Mean
1961/62	354.7	358.8	351.0	701.9	372.0	377.1	2839.5	757.9	412.8	395.8	392.0	393.5	640.5			
1962/63	392.0	401.2	384.6	1922.8	2393.4	3326.6	3908.2	2314.8	416.7	399.5	410.7	405.1	1382.6			
1963/64	2561.2	4799.4	4535.3	4469.1	3296.6	806.5	474.5	466.7	482.3	496.6	489.1	478.4	1943.2			
1964/65	455.5	474.5	466.7	470.4	1326.9	492.8	493.8	884.9	517.0	522.7	533.9	532.4	592.7			
1965/66	519.0	490.0	3177.3	3341.6	558.0	511.5	459.1	2572.4	536.3	3378.9	2139.3	976.1	1573.4			
1966/67	481.6	509.3	580.2	537.6	983.8	1956.4	1905.9	1482.2	625.0	619.8	627.2	574.8	902.1			
1967/68	571.2	582.6	567.5	1336.6	3891.3	4902.2	4359.6	642.2	671.3	660.8	675.8	590.3	1609.3			
1968/69	619.8	598.0	1721.2	3483.4	3087.8	2098.3	3020.8	3782.1	2963.0	3095.1	3210.9	2133.6	2487.0			
1969/70	2150.5	2071.8	649.6	1489.7	3054.7	3363.9	3379.6	2172.9	733.0	705.7	731.8	729.2	1759.2			
1970/71	743.0	709.9	772.8	959.5	2199.1	3259.4	3013.1	760.3	733.0	743.0	746.7	756.2	1277.0			

1971/72	765.4	756.2	750.5	728.0	1999.5	2505.2	609.6	593.6	679.0	683.2	716.8	725.3	956.6
1972/73	713.1	729.2	735.5	731.8	620.0	627.2	659.7	633.2	756.2	769.1	769.1	783.2	715.4
1973/74	791.5	790.9	787.8	627.2	673.8	2942.1	3553.6	4330.9	690.6	638.4	698.2	702.2	1450.1
1974/75	731.8	725.3	720.6	1553.2	6667.5	6395.6	5790.9	694.4	702.2	687.0	709.4	706.0	2138.8
1975/76	713.1	709.9	694.4	694.4	794.2	1093.9	4529.3	3692.5	3923.6	3125.0	817.7	771.6	1794.6
1976/77	735.5	844.9	795.3	825.1	768.8	817.7	2569.4	2352.1	1296.3	907.3	985.7	918.2	1151.7
1977/78	903.5	914.3	937.1	1549.4	4855.2	5682.5	5478.4	5432.4	3942.9	3935.2	1045.4	902.8	2951.9
1978/79	862.5	882.5	832.6	866.2	2415.6	2415.6	2388.1	2497.8	2530.9	2277.5	944.6	922.1	1583.6
1979/80	896.1	929.8	925.9	3259.4	1528.6	1000.6	2376.5	2307.4	1030.1	1082.7	1049.1	1037.8	1473.6
1980/81	1030.5	999.2	925.9	903.5	1145.0	3935.2	2500.0	2579.9	2615.7	1067.8	1082.7	1064.8	1656.8
1981/82	1030.5	1018.5	1011.8	1004.3	967.3	847.5	798.6	862.5	933.6	1049.1	1015.5	1080.3	968.4
1982/83	1030.5	1018.5	955.8	1030.5	1021.0	1056.6	1018.5	1026.7	1099.5	1052.9	1045.4	1022.4	1031.5
1983/84	1004.3	1026.2	955.8	882.3	858.1	828.8	871.9	1011.8	1049.4	978.2	1004.3	1118.8	966.7
1984/85	1153.7	1095.7	1041.7	989.4	975.5	1030.5	852.8	813.9	856.5	933.4	911.0	1014.7	972.6
1985/86	952.1	983.8	952.1	914.7	859.8	881.1	841.0	858.7	868.1	967.0	903.5	933.6	910.1
1986/87	933.4	887.3	948.3	974.5	859.8	743.0	694.4	739.3	817.9	821.4	858.7	787.0	839.0
1987/88	772.8	790.9	653.4	806.5	973.8	813.9	632.7	701.9	679.0	757.9	754.2	740.7	755.8
1988/89	784.0	829.5	832.6	825.1	1000.3	896.1	1161.3	1194.7	1311.7	1332.9	1291.8	1230.7	1057.2
1989/90	1288.0	1377.7	1316.0	1168.5	1066.2	1089.7	997.4	961.0	892.5	829.6	846.6	866.7	1055.2
1990/91	821.2	873.8	808.3	852.6	859.1	877.7	935.9	1002.4	1003.5	1003.5	908.8	915.6	807.9
1991/92	926.5	867.7	846.5	1015.9	914.6	1058.4	875.7	912.8	1040.7	1056.8	994.3	819.8	944.8
1992/93	639.4	561.9	549.8	514.6	508.1	532.9	467.3	484.4	550.4	569.5	599.5	651.4	552.7
1993/94	748.8	741.1	718.1	752.1	716.0	651.3	640.0	582.0	685.7	697.7	777.4	728.6	703.2
Mean	881.1	953.1	1003.0	1278.5	1618.2	1812.7	1975.7	1579.0	1151.1	1158.8	929.9	851.0	1263.7
Median	784.0	829.5	808.3	914.7	983.8	1030.5	1018.5	937.8	817.9	829.6	846.6	787.0	
Maximum	2561.2	4799.4	4536.3	4469.1	6667.5	6395.6	5790.9	5432.4	3942.9	3935.2	3210.9	2183.6	
Minimum	354.7	358.8	351.0	470.4	377.1	459.1	456.7	412.8	412.8	395.8	392.0	393.5	
St. dev.	438.8	757.9	800.2	960.1	1404.9	1591.1	1573.8	1254.6	937.2	910.4	511.8	315.2	
CV	.50	.80	.80	.75	.87	.88	.80	.79	.81	.79	.55	.37	