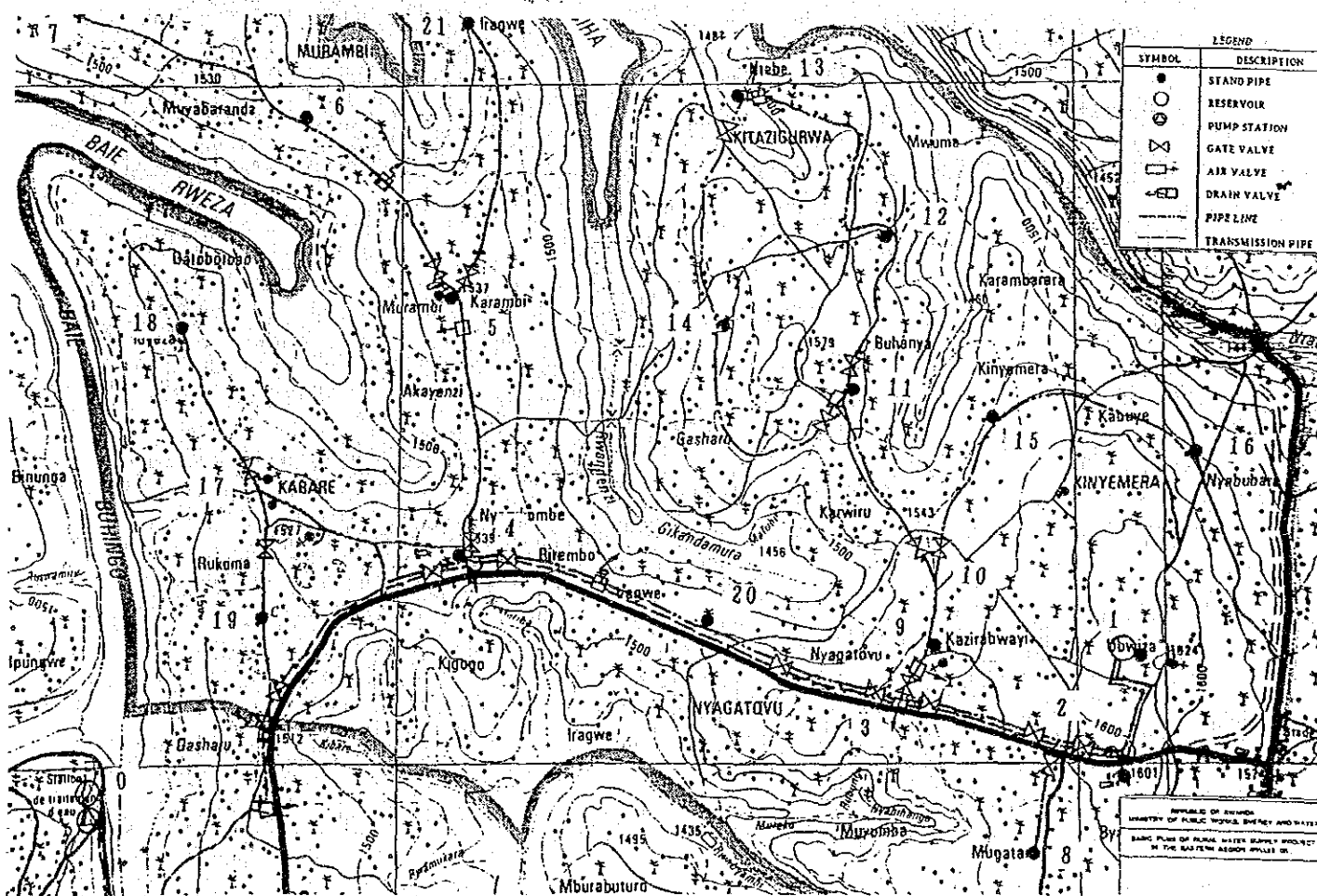


**X : HYDRAULIC CALCULATION OF
SYSTEM 1 AND SYSTEM 2**

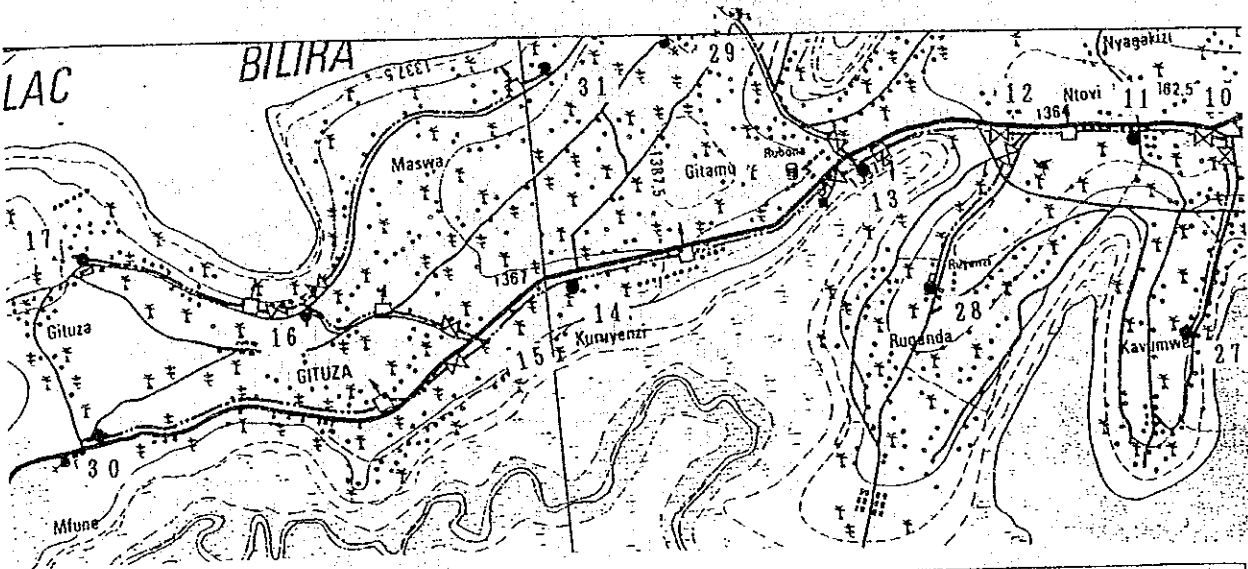
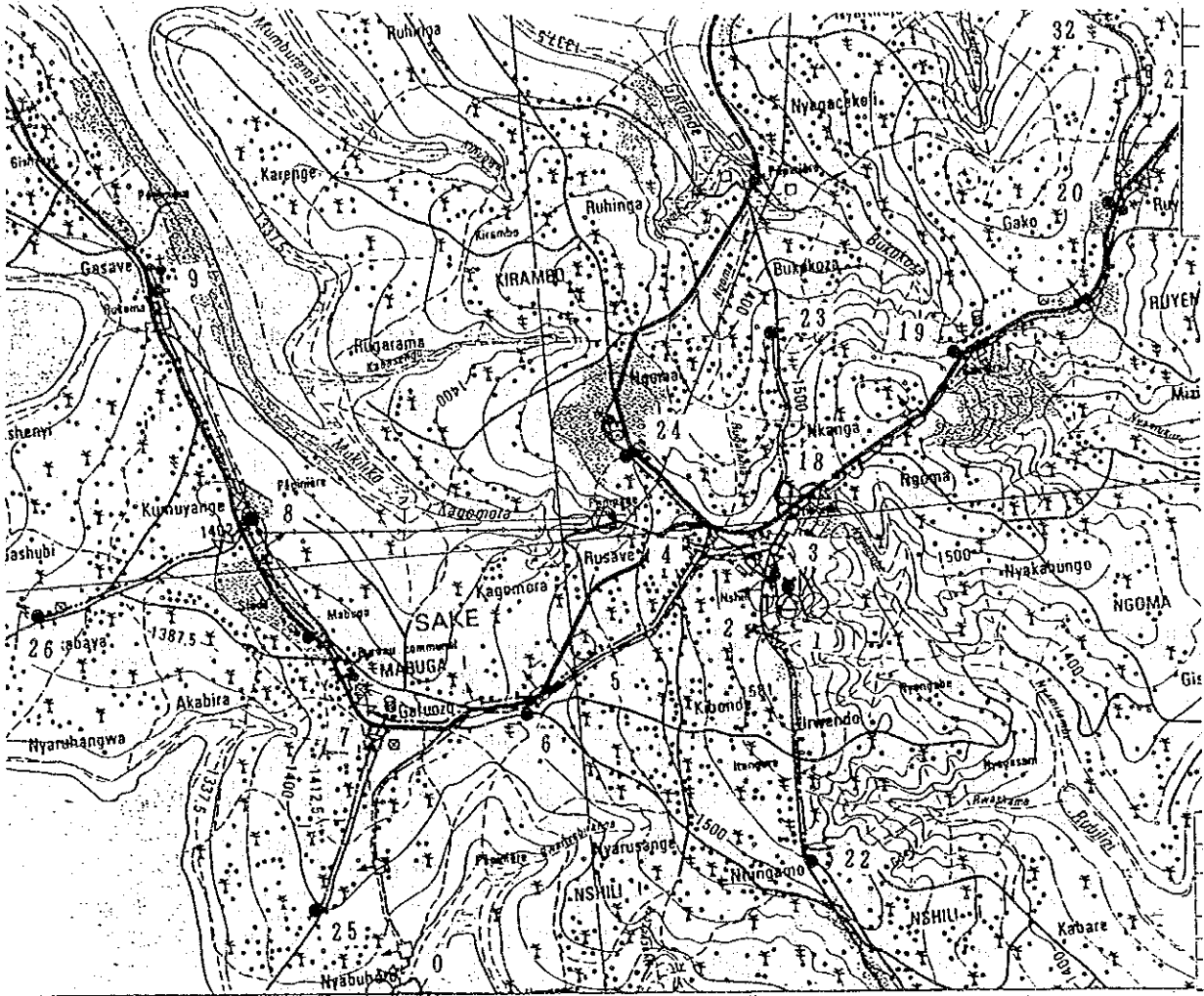
MUHAZI Discharge (m³/s) Q = 0.00689 596.0 m³/day
 Stand Pipe Unit NO. 16

Start Point	G.L. (m)	Total head (m)	End Point	G.L. (m)	Distance (m)	Discharge (m ³ /s)	Pipe Dia. (m)	Head Loss (m)	Total Head of E.P.	Pressure head (m)	Remark
1	1,620.0	1,610.0	2	1,600.0	1,000	0.0069	150	1.844	1,608.2	8.2	
2	1,600.0	1,608.2	3	1,570.0	1,500	0.0060	150	2.160	1,606.0	36.0	
3	1,570.0	1,606.0	20	1,560.0	1,300	0.0034	100	4.789	1,601.2	41.2	
20	1,560.0	1,601.2	4	1,560.0	1,500	0.0030	100	4.317	1,596.9	36.9	
4	1,560.0	1,596.9	5	1,550.0	1,800	0.0017	75	7.467	1,589.4	39.4	
5	1,550.0	1,589.4	6	1,530.0	1,500	0.0009	75	1.726	1,587.7	57.7	
6	1,530.0	1,587.7	7	1,540.0	1,400	0.0004	75	0.447	1,587.2	47.2	
5	1,550.0	1,589.4	21	1,520.0	1,800	0.0004	50	4.139	1,585.3	65.3	
2	1,600.0	1,608.2	8	1,600.0	800	0.0004	75	0.255	1,607.9	7.9	
3	1,570.0	1,606.0	9	1,570.0	500	0.0030	100	1.439	1,604.6	34.6	
9	1,570.0	1,604.6	10	1,560.0	500	0.0026	75	4.392	1,600.2	40.2	
10	1,560.0	1,600.2	11	1,570.0	1,800	0.0017	75	7.467	1,592.7	22.7	
11	1,570.0	1,592.7	12	1,540.0	1,100	0.0009	50	9.119	1,583.6	43.6	
12	1,540.0	1,583.6	13	1,530.0	1,400	0.0004	50	3.219	1,580.4	50.4	
11	1,570.0	1,592.7	14	1,550.0	1,300	0.0004	50	2.989	1,589.7	39.7	
10	1,560.0	1,600.2	15	1,560.0	1,700	0.0009	75	1.956	1,598.2	38.2	
15	1,560.0	1,598.2	16	1,560.0	1,700	0.0004	50	3.909	1,594.3	34.3	
4	1,560.0	1,596.9	17	1,540.0	1,500	0.0004	75	0.479	1,596.4	56.4	
17	1,540.0	1,596.4	18	1,530.0	1,600	0.0004	50	3.679	1,592.7	62.7	
18	1,530.0	1,592.7	19	1,550.0	700	0.0004	75	0.223	1,592.5	42.5	
14	1,550.0	1,589.7	13	1,550.0	1,100	0.0004	50	2.529	1,587.2	37.2	



SAKE Discharge (m³/s) Q= 0.01031 891.1 m³/day
Stand Pipe Unit NO. 26

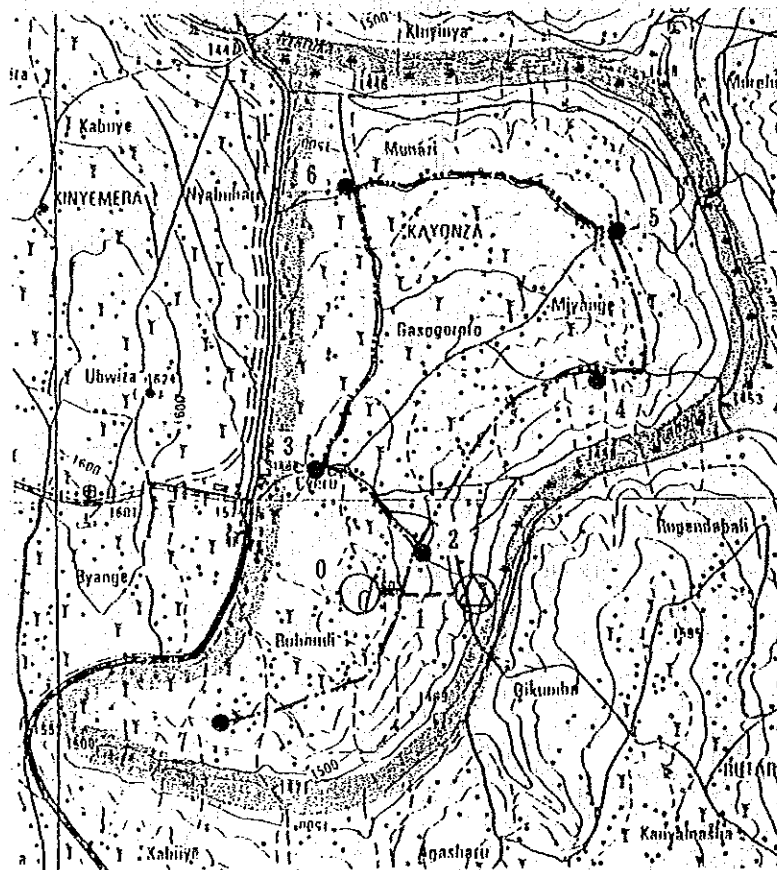
Start Point	G. L. (m)	Total Head (m)	End Point	G. L. (m)	Distance (m)	Discharge (m ³ /s)	Pipe Dia. (m)	Head Loss (m)	Total Head of E.P.	Pressure Head (m)	Remark
1	1,580.0	1,580.0	2	1,570.0	200	0.0103	150	0.776	1,579.2	9.2	
2	1,570.0	1,579.2	3	1,560.0	500	0.0099	150	1.804	1,577.4	17.4	
3	1,560.0	1,577.4	4	1,530.0	500	0.0083	150	1.307	1,576.1	46.1	
4	1,530.0	1,576.1	5	1,480.0	800	0.0083	150	2.091	1,574.0	94.0	
5	1,480.0	1,480.0	6	1,440.0	1,200	0.0079	100	20.644	1,459.4	19.4	
6	1,440.0	1,459.4	7	1,430.0	1,500	0.0063	100	17.077	1,442.3	12.3	
7	1,430.0	1,442.3	8	1,410.0	1,700	0.0052	100	13.181	1,429.1	19.1	
8	1,410.0	1,429.1	9	1,380.0	2,500	0.0044	100	14.230	1,414.9	34.9	
9	1,380.0	1,414.9	10	1,370.0	3,800	0.0040	100	18.134	1,396.7	26.7	
10	1,370.0	1,396.7	11	1,370.0	1,100	0.0036	100	4.320	1,392.4	22.4	
11	1,370.0	1,392.4	12	1,370.0	1,000	0.0036	100	3.927	1,388.5	18.5	
12	1,370.0	1,388.5	13	1,370.0	1,200	0.0032	100	3.790	1,384.7	14.7	
13	1,370.0	1,384.7	14	1,360.0	2,500	0.0020	75	13.433	1,371.3	11.3	
14	1,360.0	1,371.3	15	1,360.0	1,000	0.0016	75	3.556	1,367.7	7.7	
15	1,360.0	1,367.7	16	1,350.0	1,100	0.0012	75	2.297	1,365.4	15.4	
16	1,350.0	1,365.4	17	1,350.0	1,600	0.0004	50	3.154	1,362.3	12.3	
16	1,350.0	1,365.4	31	1,350.0	2,300	0.0004	50	4.534	1,360.9	10.9	
15	1,360.0	1,367.7	30	1,350.0	2,700	0.0004	50	5.322	1,362.4	12.4	
13	1,370.0	1,384.7	29	1,370.0	1,000	0.0004	50	1.971	1,382.7	12.7	
12	1,370.0	1,388.5	28	1,380.0	1,100	0.0004	50	2.168	1,386.3	6.3	
10	1,370.0	1,396.7	27	1,390.0	600	0.0004	50	1.183	1,395.6	5.6	
8	1,410.0	1,429.1	26	1,390.0	1,300	0.0004	50	2.562	1,426.5	36.5	
7	1,430.0	1,442.3	25	1,400.0	1,400	0.0004	50	2.760	1,439.5	39.5	
4	1,530.0	1,576.1	24	1,510.0	1,000	0.0004	50	1.971	1,574.1	64.1	
2	1,570.0	1,579.2	22	1,530.0	1,800	0.0004	50	3.548	1,575.7	45.7	
3	1,560.0	1,577.4	18	1,510.0	1,700	0.0020	75	9.135	1,568.3	58.3	
18	1,510.0	1,568.3	19	1,530.0	1,500	0.0016	75	5.334	1,563.0	33.0	
19	1,530.0	1,563.0	20	1,520.0	1,800	0.0012	75	3.759	1,559.2	39.2	
20	1,520.0	1,559.2	21	1,510.0	1,100	0.0004	50	2.168	1,557.0	47.0	
20	1,520.0	1,559.2	32	1,510.0	900	0.0004	50	1.774	1,557.4	47.4	
18	1,510.0	1,568.3	23	1,520.0	1,100	0.0004	50	2.168	1,566.1	46.1	



LEGEND	
SYMBOL	DESCRIPTION
●	STAND PIPE
○	RESERVOIR
⊗	PUMP STATION
---	PIPE LINE
---	TRANSMISSION PIPE
---	BORDER

KAYONZA-1 Discharge (m³/s) Q= 0.00133 115.4 m³/day
Stand Pipe Unit NO. 6

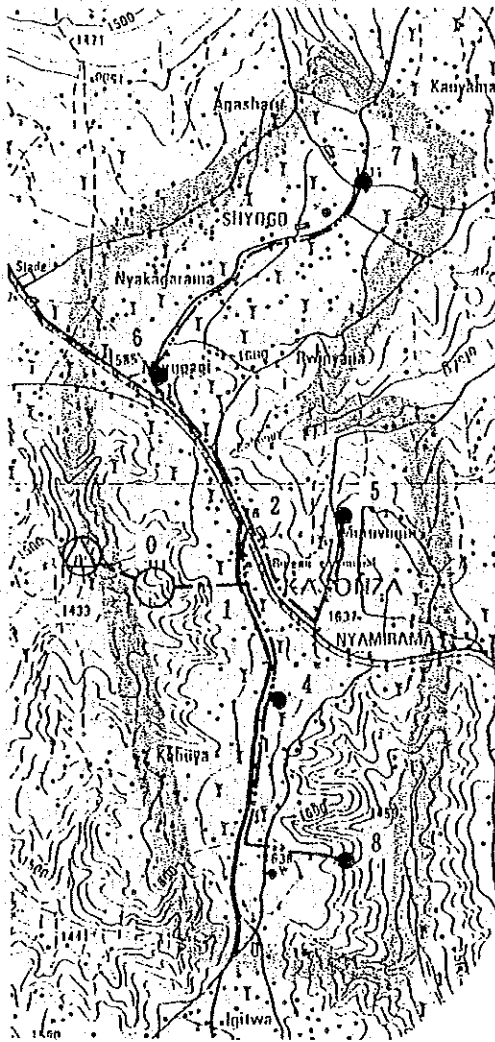
Start Point	G.L. (m)	Total Head (m)	End Point	G.L. (m)	Distance (m)	Discharge (m ³ /s)	Pipe Dia. (m)	Head Loss (m)	Total Head of E.P. (m)	Pressure head (m)	Remark
0	1,600.0	1,600.0	1	1,590.0	120	0.0013	75	0.310	1,599.7	9.7	
1	1,590.0	1,599.7	2	1,570.0	300	0.0011	75	0.554	1,599.1	29.1	
2	1,570.0	1,599.1	3	1,580.0	800	0.0004	50	1.952	1,597.2	17.2	
3	1,580.0	1,597.2	6	1,540.0	2,100	0.0002	30	17.107	1,580.1	40.1	
2	1,570.0	1,599.1	4	1,580.0	1,700	0.0004	50	4.149	1,595.0	15.0	
4	1,580.0	1,595.0	5	1,570.0	1,200	0.0002	30	9.776	1,585.2	15.2	
1	1,590.0	1,599.7	7	1,560.0	1,700	0.0002	30	13.849	1,585.8	25.8	
5	1,570.0	1,585.2	6	1,540.0	1,900	0.0002	30	15.478	1,569.7	29.7	



LEGEND	
SYMBOL	DESCRIPTION
●	STAND PIPE
○	RESERVOIR
⊗	PUMP STATION
---	PIPE LINE
---	TRANSMISSION PIPE
-----	BORDER

KAYONZA-2 Discharge (m³/s) Q= 0.00106 92.3 m³/day
 Stand Pipe Unit NO. 5

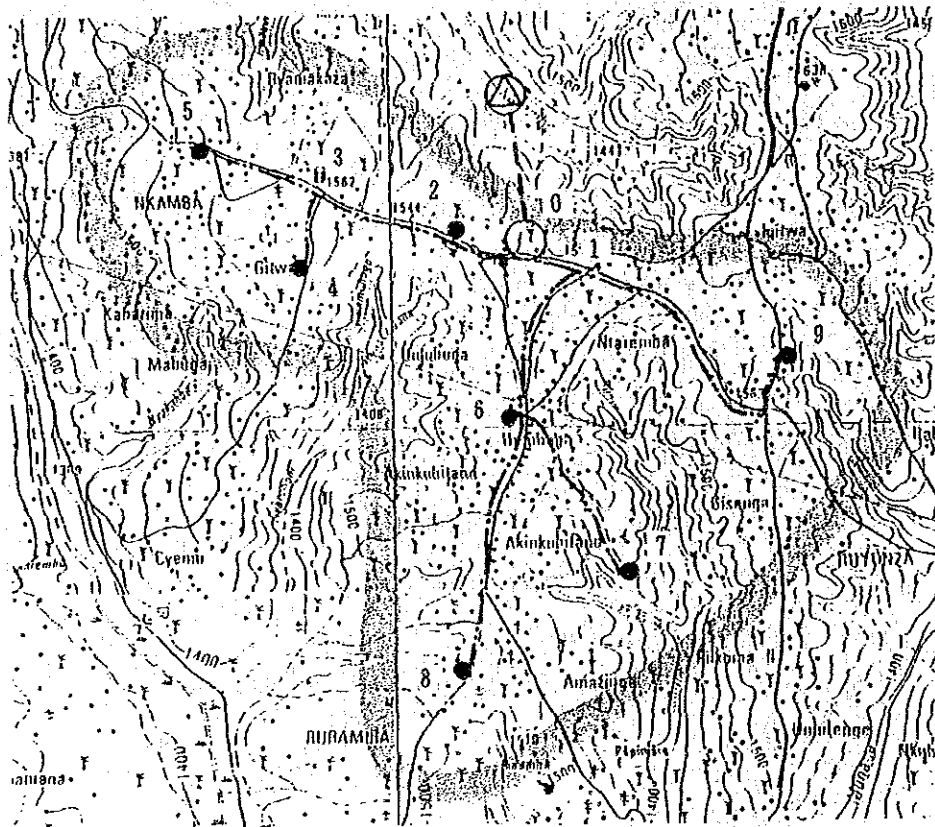
Start Point	G.L. (m)	Total Head (m)	End Point	G.L. (m)	Distance (m)	Discharge (m ³ /s)	Pipe Dia. (m)	Head Loss (m)	Total Head of E.P.	Pressure Head (m)	Remark
0	1,625.0	1,625.0	1	1,610.0	500	0.0011	50	6.161	1,618.8	8.8	
1	1,610.0	1,618.8	2	1,600.0	500	0.0006	50	2.395	1,616.4	16.4	
2	1,600.0	1,616.4	5	1,590.0	1,750	0.0002	30	13.214	1,603.2	13.2	
2	1,600.0	1,616.4	6	1,590.0	1,300	0.0004	50	2.941	1,613.5	23.5	
6	1,590.0	1,613.5	7	1,590.0	2,100	0.0002	30	15.856	1,597.6	7.6	
1	1,610.0	1,618.8	4	1,600.0	900	0.0002	30	6.796	1,612.0	12.0	
4	1,600.0	1,612.0	8	1,575.0	1,000	0.0002	30	7.551	1,604.5	29.5	



LEGEND	
SYMBOL	DESCRIPTION
●	STAND PIPE
○	RESERVOIR
△	PUMP STATION
---	PIPE LINE
---	TRANSMISSION PIPE
---	BORDER

KABARONDO Discharge (m³/s) Q= 0.00177 153.3 m³/day
 Stand Pipe Unit NO. 7

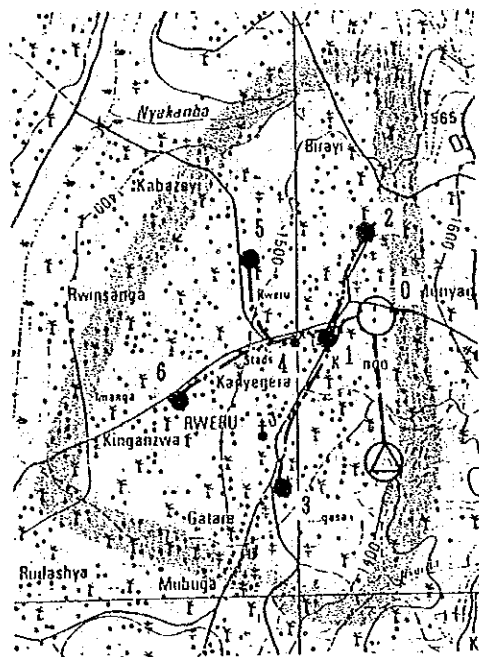
Start Point	G.L. (m)	Total Head (m)	End Point	G.L. (m)	Distance (m)	Discharge (m ³ /s)	Pipe Dia. (m)	Head Loss (m)	Total Head of E.P.	Pressure head (m)	Remark
0	1,580.0	1,580.0	1	1,570.0	30	0.0010	75	0.047	1,580.0	10.0	
1	1,570.0	1,580.0	9	1,550.0	1,400	0.0003	30	14.501	1,565.5	15.5	
1	1,570.0	1,580.0	6	1,570.0	1,150	0.0005	50	3.568	1,576.4	6.4	
6	1,570.0	1,576.4	7	1,500.0	1,100	0.0003	30	11.394	1,565.0	65.0	
6	1,570.0	1,576.4	8	1,510.0	1,500	0.0003	30	15.537	1,560.8	50.8	
0	1,580.0	1,580.0	2	1,550.0	550	0.0008	50	3.613	1,576.4	26.4	
2	1,550.0	1,576.4	3	1,550.0	400	0.0005	30	14.936	1,561.5	11.5	
3	1,550.0	1,561.5	4	1,550.0	300	0.0003	30	3.107	1,558.3	8.3	
3	1,550.0	1,561.5	5	1,540.0	350	0.0003	30	3.625	1,557.8	17.8	



LEGEND	
SYMBOL	DESCRIPTION
●	STAND PIPE
○	RESERVOIR
⊙	PUMP STATION
---	PIPE LINE
---	TRANSMISSION PIPE
---	BORDER

RUTONDE Discharge (m³/s) Q= 0.00107 92.8 m³/day
 Stand Pipe Unit NO. 5

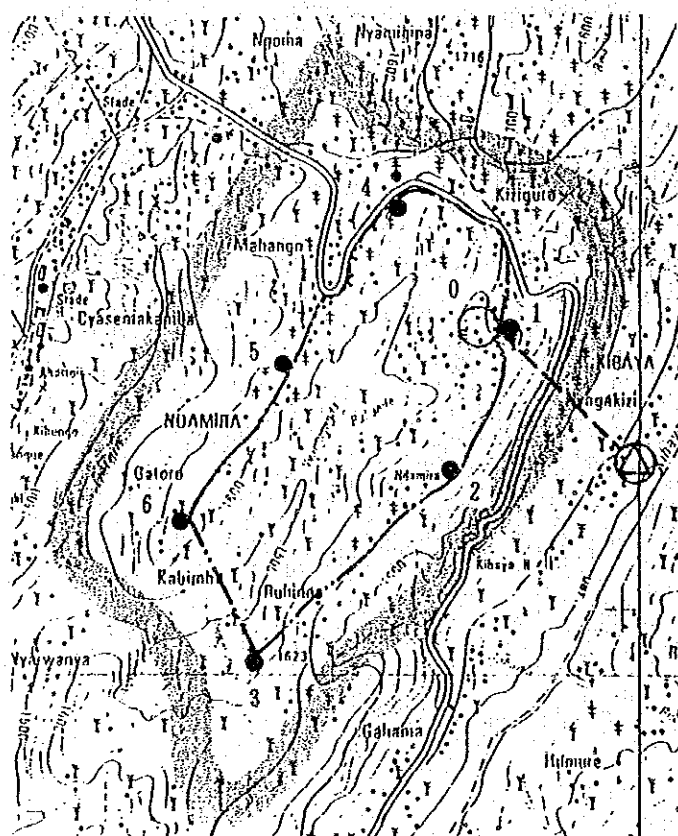
Start Point	G. L. (m)	Total Head (m)	End Point	G. L. (m)	Distance (m)	Discharge (m ³ /s)	Pipe Dia. (m)	Head Loss (m)	Total Head of E. P.	Pressure Head (m)	Remark
0	1,540.0	1,540.0	1	1,530.0	130	0.0011	50	1.618	1,538.4	8.4	
1	1,530.0	1,538.4	2	1,520.0	800	0.0002	30	6.101	1,532.3	12.3	
1	1,530.0	1,538.4	3	1,510.0	1,150	0.0002	30	8.770	1,529.6	19.6	
1	1,530.0	1,538.4	4	1,510.0	500	0.0004	30	13.747	1,524.6	14.6	
4	1,510.0	1,524.6	5	1,490.0	500	0.0002	30	3.813	1,520.8	30.8	
4	1,510.0	1,524.6	6	1,475.0	650	0.0002	30	4.957	1,519.7	44.7	



LEGEND	
SYMBOL	DESCRIPTION
●	STAND PIPE
○	RESERVOIR
△	PUMP STATION
— · — · —	PIPE LINE
— — —	TRANSMISSION PIPE
— — — — —	BORDER

BIRENGA Discharge (m3/s) Q= 0.00103 89.5 m3/day
 Stand Pipe Unit NO. 6

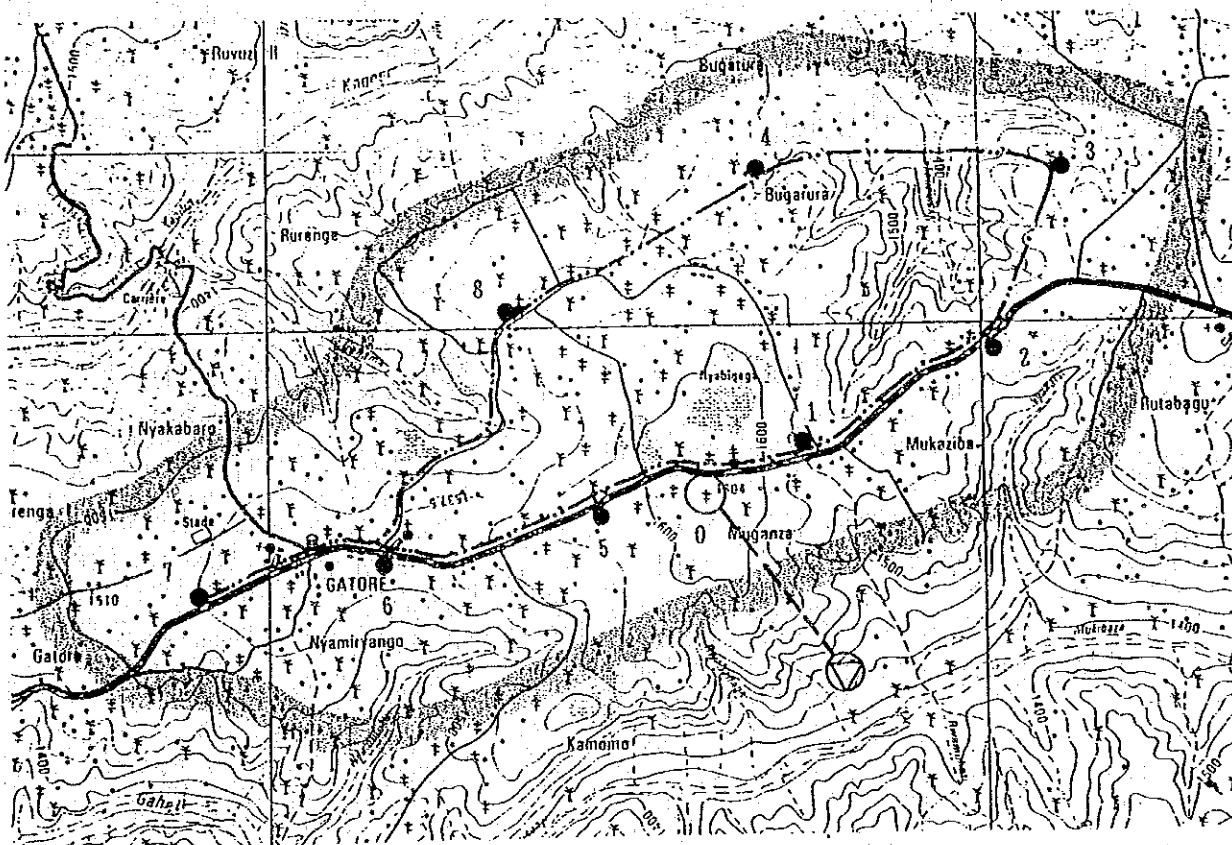
Start Point	G.L. (m)	Total Head(m)	End Point	G.L. (m)	Distance (m)	Discharge (m3/s)	Pipe Dia. (m)	Head Loss (m)	Total Head of E.P.	Pressure lead (m)	Remark
0	1,605.0	1,605.0	1	1,590.0	100	0.0010	50	1.164	1,603.8	13.8	
1	1,590.0	1,603.8	2	1,570.0	1,200	0.0003	30	22.021	1,581.8	11.8	
2	1,570.0	1,581.8	3	1,560.0	1,800	0.0002	30	9.163	1,572.7	12.7	
1	1,590.0	1,603.8	4	1,590.0	1,100	0.0005	50	3.552	1,600.3	10.3	
4	1,590.0	1,600.3	5	1,550.0	1,300	0.0003	30	23.856	1,576.4	26.4	
5	1,550.0	1,576.4	6	1,530.0	1,300	0.0002	30	6.617	1,569.8	39.8	
6	1,530.0	1,569.8	3	1,560.0	800	0.0002	30	4.072	1,565.7	5.7	



LEGEND	
SYMBOL	DESCRIPTION
●	STAND PIPE
○	RESERVOIR
⊗	PUMP STATION
----	PIPE LINE
---	TRANSMISSION PIPE
=====	BORDER

RUSUMO-1 Discharge (m³/s) Q= 0.00227 196.8 m³/day
Stand Pipe Unit NO. 8

Start Point	G.L. (m)	Total Head (m)	End Point	G.L. (m)	Distance (m)	Discharge (m ³ /s)	Pipe Dia. (m)	Head Loss (m)	Total Head of E.P.	Pressure Head (m)	Remark
0	1,600.0	1,600.0	1	1,570.0	650	0.0009	75	0.735	1,599.3	29.3	
1	1,570.0	1,599.3	2	1,570.0	1,550	0.0006	50	5.964	1,593.3	23.3	
2	1,570.0	1,593.3	3	1,570.0	1,350	0.0003	30	17.339	1,576.0	6.0	
0	1,600.0	1,600.0	5	1,580.0	800	0.0014	75	2.328	1,597.7	17.7	
5	1,580.0	1,597.7	6	1,550.0	1,550	0.0011	50	21.499	1,576.2	26.2	
6	1,550.0	1,576.2	8	1,540.0	1,150	0.0006	50	4.425	1,571.7	31.7	
8	1,540.0	1,571.7	4	1,540.0	2,050	0.0003	30	26.329	1,545.4	5.4	
6	1,550.0	1,576.2	7	1,530.0	2,100	0.0003	30	26.972	1,549.2	19.2	
3	1,570.0	1,576.0	4	1,540.0	1,900	0.0003	30	24.403	1,551.6	11.6	



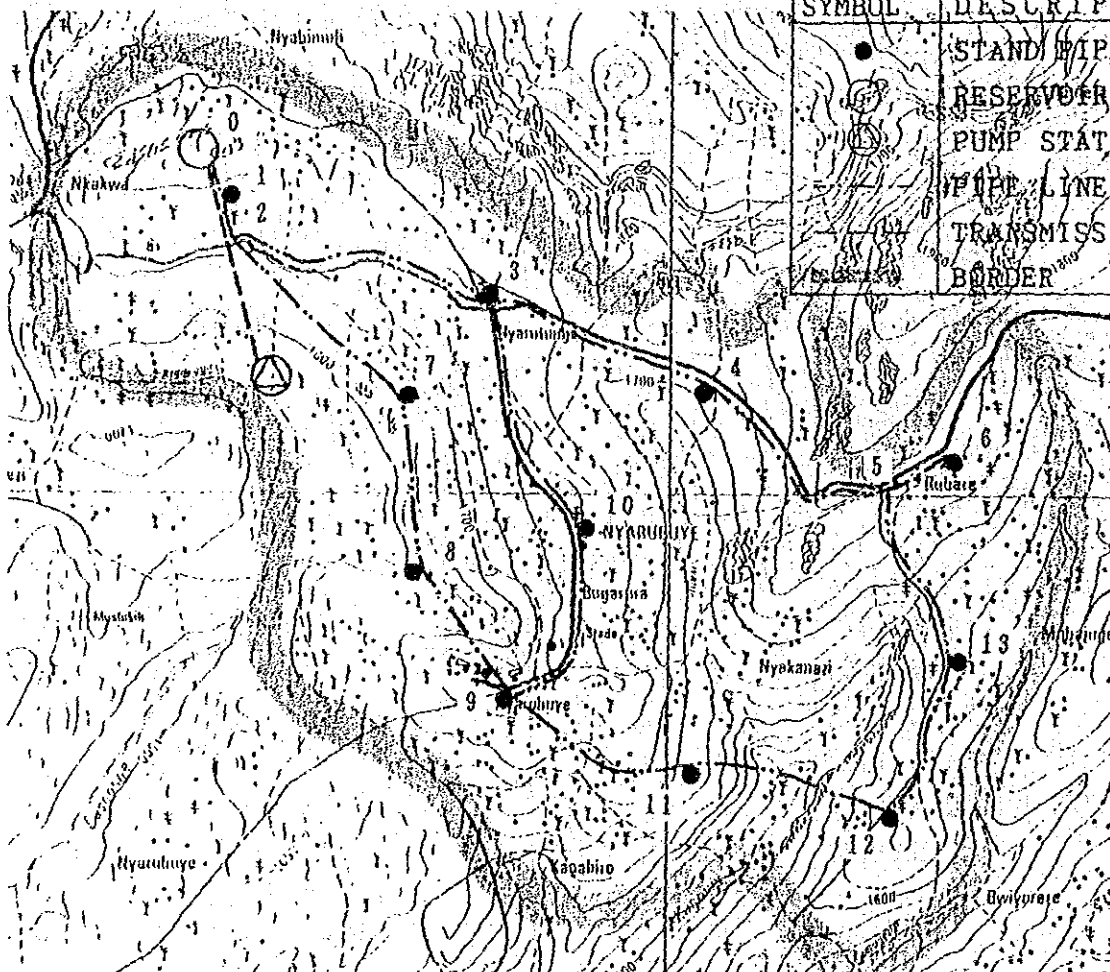
LEGEND	
SYMBOL	DESCRIPTION
●	STAND PIPE
○	RESERVOIR
⊕	PUMP STATION
---	PIPE LINE
---	TRANSMISSION PIPE
---	BORDER

RUSUMO-2 Discharge (m³/s) Q= 0.00264 228.9 m³/day
Stand Pipe Unit NO. 11

Start Point	G.L. (m)	Total Head(m)	End Point	G.L. (m)	Distance (m)	Discharge (m ³ /s)	Pipe Dia. (m)	Head Loss (m)	Total Head of S.P.	Pressure lead (m)	Remark
0	1,755.0	1,755.0	1	1,740.0	250	0.0026	100	0.565	1,754.4	14.4	
1	1,740.0	1,754.4	2	1,740.0	300	0.0024	100	0.569	1,753.9	13.9	
2	1,740.0	1,753.9	3	1,740.0	1,400	0.0019	75	7.130	1,746.7	6.7	
3	1,740.0	1,746.7	4	1,720.0	1,600	0.0010	50	16.284	1,730.5	10.5	
4	1,730.0	1,730.5	5	1,710.0	1,000	0.0007	50	5.977	1,724.5	14.5	
5	1,710.0	1,724.5	6	1,710.0	500	0.0002	50	0.392	1,724.1	14.1	
5	1,710.0	1,724.5	13	1,700.0	1,800	0.0005	50	5.082	1,719.4	19.4	
13	1,700.0	1,719.4	12	1,670.0	1,200	0.0002	50	0.940	1,718.5	48.5	
2	1,740.0	1,753.9	7	1,670.0	1,500	0.0005	30	50.959	1,702.9	32.9	
7	1,670.0	1,702.9	8	1,680.0	1,100	0.0002	30	10.366	1,692.5	12.5	
3	1,740.0	1,746.7	10	1,740.0	1,300	0.0007	75	1.079	1,745.7	5.7	
10	1,740.0	1,745.7	9	1,730.0	1,100	0.0005	50	3.105	1,742.6	12.6	
9	1,730.0	1,742.6	11	1,680.0	1,500	0.0005	30	50.959	1,691.6	11.6	
9	1,730.0	1,742.6	8	1,700.0	2,050	0.0002	30	19.319	1,723.2	23.2	
11	1,680.0	1,691.6	12	1,670.0	1,600	0.0002	30	15.078	1,676.5	6.5	

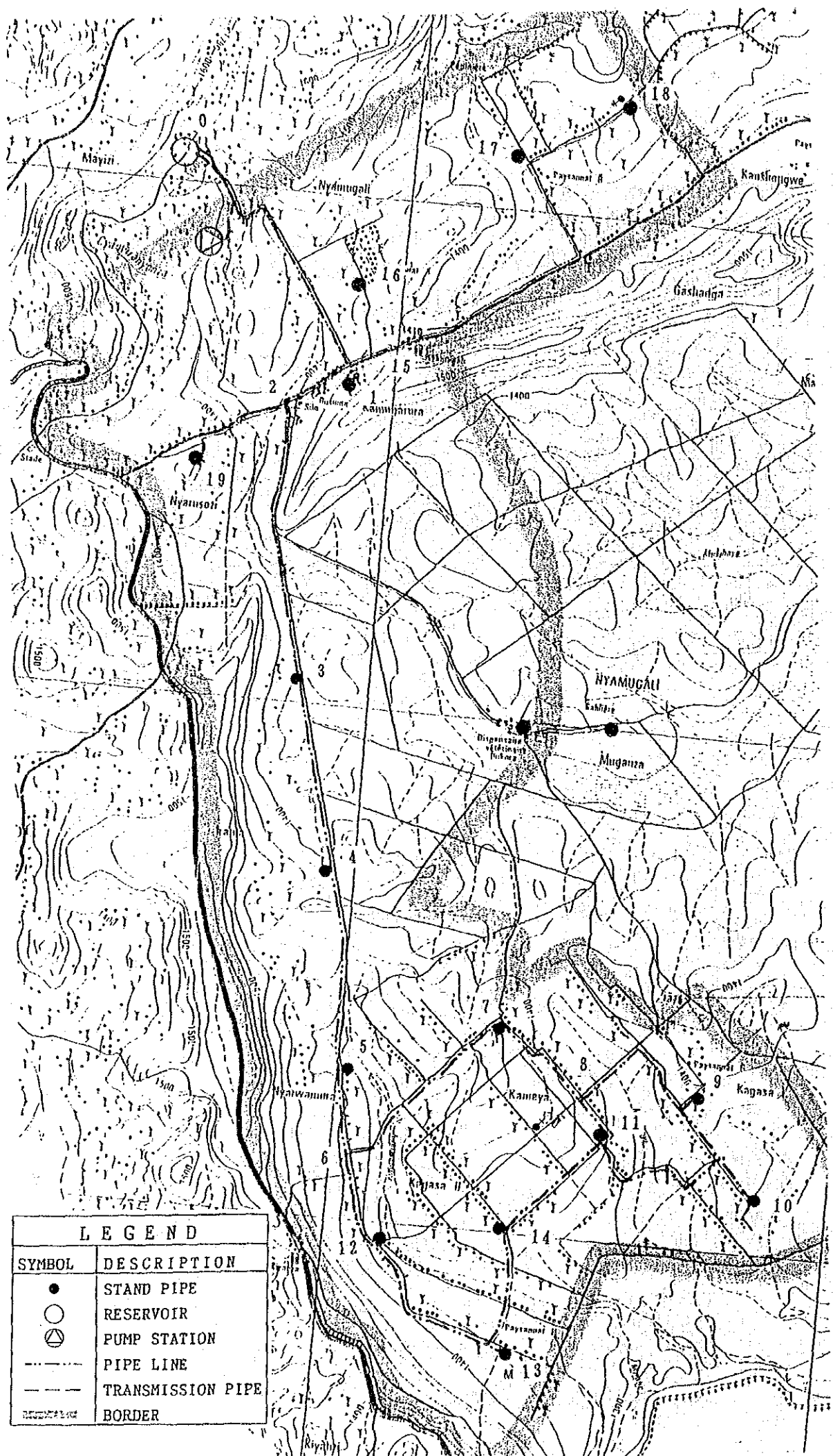
LEGEND

SYMBOL	DESCRIPTION
●	STAND PIPE
○	RESERVOIR
⊙	PUMP STATION
—	PIPE LINE
---	TRANSMISSION PIPE
---	BORDER



RUSUMO-3 Discharge (m³/s) Q= 0.00226 196.1 m³/day
 Stand Pipe Unit NO. 15

Start Point	G.L. (m)	Total Head(m)	End Point	G.L. (m)	Distance (m)	Discharge (m ³ /s)	Pipe Dia. (m)	Head Loss (m)	Total Head of E.P.	Pressure lead (m)	Remark
0	1,550.0	1,550.0	1	1,450.0	2,700	0.0026	100	5.782	1,544.2	94.2	
1	1,450.0	1,544.2	2	1,450.0	500	0.0020	100	0.652	1,543.6	93.6	
2	1,450.0	1,543.6	3	1,450.0	2,800	0.0018	100	3.148	1,540.4	90.4	
3	1,450.0	1,540.4	4	1,440.0	700	0.0014	75	1.876	1,538.5	98.5	
4	1,440.0	1,538.5	5	1,425.0	3,300	0.0012	50	51.239	1,487.3	62.3	
5	1,425.0	1,487.3	6	1,430.0	800	0.0012	50	12.422	1,474.9	44.9	
6	1,430.0	1,474.9	7	1,400.0	2,200	0.0006	50	9.475	1,465.4	65.4	
7	1,400.0	1,465.4	8	1,420.0	1,000	0.0006	50	4.307	1,461.1	41.1	
8	1,420.0	1,461.1	9	1,400.0	1,600	0.0003	50	1.912	1,459.2	59.2	
9	1,400.0	1,459.2	10	1,450.0	900	0.0002	30	3.589	1,455.6	5.6	
8	1,420.0	1,461.1	11	1,420.0	300	0.0002	30	1.196	1,459.9	39.9	
10	1,450.0	1,455.6	11	1,420.0	1,500	0.0002	30	5.982	1,449.6	29.6	
6	1,430.0	1,474.9	12	1,450.0	1,400	0.0005	50	3.541	1,471.3	21.3	
12	1,450.0	1,471.3	13	1,425.0	1,500	0.0003	30	21.566	1,449.8	24.8	
13	1,425.0	1,449.8	14	1,400.0	950	0.0002	30	3.789	1,446.0	46.0	
14	1,400.0	1,446.0	11	1,420.0	1,500	0.0002	30	5.982	1,440.0	20.0	



LEGEND	
SYMBOL	DESCRIPTION
●	STAND PIPE
○	RESERVOIR
△	PUMP STATION
---	PIPE LINE
---	TRANSMISSION PIPE
---	BORDER

