ORGANIZATION, OPERATIONS AND MAINTENANCE OF THE IRRIGATION SYSTEM IN THE BRUMDEC PROJECT

IICA/JAMAICA
MISCELLANEOUS PUBLICATION NO. 308
SERIAL # ISSN-0534-5391

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by

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November 1981

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1. Introduction

Intensive agriculture could be developed in the Black River Upper Morass Area using the land and water resources available, and also the existing network of drains and the water diversion structures in the South Elim River. Additional sources of water are the flows from the North Elim River, the Foster River, Black River and the drainage water, if the drain flow is properly managed. The utilization of the surface water resources as supplementary irrigation have to take into consideration, the cropping pattern and the effective rainfall. From the water management point of view, we can distinguish two types of soils in the area: organic soils with a high water retention capacity and also high water transmission, and the mineral soil (clay, clay loam) with less water holding capacity and less water transmisivity than the peat soil. The topography is a constraint in the land capability for agriculture under irrigation. The soil and water conservation in the area requires a combination of the drainage and irrigation practices to control the water levels in both ground and drains. To do this, a retention structure should be placed in the drains to wet the peat soil by subsurface flow. In the mineral soils, and depending on the topography, surface irrigations and conservation practices are needed.

2. The Water Resources of the Area

The sources of the water in the BRUMDEC Project are: the direct effective rainfall in the agricultural area, and the stream flows in the rivers and drains that have been mentioned above.

2.1 The Effective Rainfall

There are no records of rainfall data for the Black River Upper Morass agricultural area. In the past for the feasibility studies the data for the Santa Cruz station have been used. In this report, we are presenting the results of processing the rainfall data for Holland Station which is the nearest station to the area, with 20 years of monthly precipitation data.

At the beginning of August 1981, a recording rain gauge was installed at Elim, (so in the future rainfall intensity could be computed).

Effective rainfall could be defined as that part of the total monthly precipitation that is available for crop production; it means that effective rainfall takes care of the moisture for land preparation, for the consumptive use and for salt leaching requirements.

The following method has been used to find the monthly effective rainfall under the assumption that the data for Holland are valid for the Black River Upper Morass area.

2.1.1. From the original daily data, compute the total monthly precipitation for the period 1961 - 1981 (Table 1).

2.1.2 Make a frequency analysis of the monthly records for every month.

2.1.2.1 Rank the monthly precipitation data in decreasing order (The biggest one will be number one, and the smallest one will be number N; Tables 2a and 2b).

2.1.2.2 Using the Hazen formula compute the plotting position:

$$Fa = \frac{100\ (2m - 1)}{2N}$$

where:

Fa = Frequency in percentage

m = rank order of the data; (m = 1 for the first one; m = N for the last one)

N = The total number of data for the month; In this case N = 21 for the month of January, February, March, April, May, June and July; and N = 20 for the month of August, September, October, November and December.

2.1.2.3 Plot the actual value of precipitation with its respective frequency value (Fa) in a log-normal probability paper. It is assumed that monthly precipitation data follows a log normal probability distribution.

2.1.2.4 Select the values of monthly precipitation for every month that have a probability of occurrence of 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90 and 95 percentage of occurrence (Table 3)

2.1.3 Compute the potential evapotranspiration. The potential evapotranspiration has been defined as the amount of water that a crop covering the soil surface completely, growing under a permanent supply of moisture, needs during its vegetative period to produce a commercial yield. It depends on the climatic factors. To compute the potential evapotranspiration, the modified Blaney and Criddle formula will be used.

$$EVP = K_T f = K_T . T . P.$$

where:

EVP = potential evapotranspiration

K_T = temperature factor; $K_T = 0.0173T - 0.314$ in the English system

T = mean monthly temperature in degree Farenheit

P = monthly percentage of the sunshine hours of the year. It is a function of the geographical position of the area.

Table 4 shows the computed potential evapotranspiration values for BRUMDEC's area.

For a given value of monthly rainfall, the effective rainfall increases as the potential evapotranspiration increases.

From the irrigation point of view, the water requirements depend on the potential evapotranspiration, on the type of crop, on the efficiency of water use, and on the effective rainfall.

2.1.4 Using the values of rainfall for the 75 percentage of probability of occurrence, the corresponding monthly potential evapotranspiration and Table 5, find the monthly effective rainfall (Table 6). (The values of the last variable should be used to compare the water needs with the natural water availability to obtain the water requirements for the crops growing in the mineral soils).

2.2 Streamflow Analysis

To compute the monthly surface water availability in BRUMDEC's area, the following daily streamflows have been obtained and processed by the method of flow duration analysis:

Black River at Newton	1966 - 1977; 1979 - 1980
North Elim River	1967 - 1980
South Elim River	1967 - 1980
Foster River	1967 - 1978

The results of the availability of the daily streamflow, computed for the twelve (12) months of the year for every stream are presented in Appendix I.

2.2.1 Black River Daily Streamflows

This is the main source of surface water. However, the topographic features of the area imposes an economical constraint in the water utilization. Tables 7a and 7b show the monthly streamflows and their probability of occurrence. It can be seen that the abundant period is from May to December and the low water period is from January to April (Table 11 shows the .75 probability of occurrence of the monthly streamflows). A topographical map with counterlines every 0.15 m (0.5 ft) will indicate the suitable points for the water diversions.

2.2.2 North Elim River Daily Streamflows

This stream conveys the water into BRUMDEC's area after receiving the flow from the distillery. The total dissolved solids will not affect tolerant crops such as rice. Tables 8a and 8b show the monthly streamflows and their probability of occurrence. The biggest flows occur from May to December. Even the discharge is lowest from January to April.

There is a permanent flow from the North Elim River that could be used for irrigation in BRUMDEC's land. (In Table 11, the 0.75 probability of occurrence of the monthly streamflows are shown).

2.2.3 South Elim River Daily Streamflows

The South Elim River is the only source of surface water that has been used for irrigation. At the present time, there are three main water intakes on the stream and many secondary diversions. The Elim School of Agriculture pumps water from this river to operate its sprinkler irrigation system. The recorder stream gauge has been placed downstream of the three main water intakes, so the flows that are registered do not take into account the amount of water already diverted for irrigation. According to what has been observed in the field, the discharge in South Elim River could be increased to a minimum of 1 CMS (35.3 CFS). Tables 9a and 9b show the monthly flows and their probability. The abundant period is from July to November. In Table 11, the 0.75 probability of occurrence of the monthly streamflow is presented. For the irrigation of BRUMDEC's area, this is the first source of surface water that can be managed because its topographical position is suitable, and also the existing diversion structures are already in place.

2.2.4 Foster River Daily Streamflow

Foster River is the smallest stream of the surface water in the area. It could assure the supplementary water for 100 acres. The water should be diverted upstream the afflux of the drainage water. Tables 10a and 10b show the available flows with their respective probability occurrence on Table 11, the flows for the 75% of probability of occurrence have been selected.

2.2.5 Comments on the daily streamflow data.

The data have been adjusted to a log-normal probability distribution, the Black River streamflow data fit very well to this distribution. For the data of the other rivers a discrete adjustment to the log-normal probability distribution has been done for the interpolation of data. In general the graphs show a very steep slope which means that their watersheds have a strong run-off potential. This fact is also verified by the isolated peak flows of short duration occurring each month. (See Appendices 1 and 2). From the results, it is seen that the 75% probability of occurrence of the Black River daily flows can provide the supplementary water for the irrigation of BRUMDEC land. Since the South Elim flows diverted for irrigation are not measured, it is not possible at the present time, to know exactly the exact total flow available from the three other sources. However, it could be estimated at 1.500 cubic meter per second (53 CFS). This flow if properly managed could supply the supplementary irrigation for 4,000 acres.

2.2.6 Management of the drainage water for irrigation.

Most of the drainage water comes from run-off, blue holes and surface streams. The drainage water could be used for irrigation of crops provided that the electrical conductivity is below the critical level for the particular crop. For example, in September 1981, the highest sample value of electrical conductivity recorded was 645 micromhos; at that level the water could be used to irrigate rice. It could be pumped into the agricultural land, or it could be stored in the drains and wet the land by sub-surface flow.

3. Quality of the Surface Water

The testing of the surface water shows the following results:

River	Total dissolved solids parts per million	Electrical conductivity - micromohos	Date
Black River	180	260	04-09-81
North Elim	495	710	08-09-81
South Elim	300	430	22-08-81
Foster	250	355	03-09-81

The water could be classified as C-2, which means that it could be used for tolerant crops. To avoid a build-up of salts in the irrigated soil, a leaching practice has to take place by improving the internal drainage condition in the mineral soil.

4. Diversion of Water to the Project Area from the Rivers

Water has been taken from the South Elim River to irrigate rice and sugar cane in the project area. From the first intake, 16 cubic feet per second (470 l/s) are diverted. From the second one, 6 cubic feet per second (170 l/s) are taken. From the third, 10.6 cubic feet per second (300 l/s) are diverted. There are some other non-structural water diversions from the Elim River. Up to now, water has not been used for irrigation to the area from the other rivers. According to the elevation of the project land, the second available source of water is the Black River. Two main points could be selected to divert water, both of them are downstream Newton Bridge; the first one is upstream the waterfall, and the second is at the meander, which is the nearest point from Black River to the project land. The water needs to be passed through the east dyke. The third possibility is Foster River. The water intake in this river has to be placed upstream from the gauging station. Water from Black River should irrigate the peat soil while water from Elim and Foster Rivers would irrigate the mineral soils.

It is possible to increase the water flow in the South Elim River by proper maintenance of the channel.

The improvements required in the South Elim River are:

1. To remove weeds.
2. To eliminate meanders.
3. To build a wall with a control gate in the first intake.
4. To build a retaining wall on the right side of the second intake.
5. To maintain the conveyance channels giving them a suitable capacity (remove weeds, re-shape cross sections, paint and oil gates).

According to the water availability in the South Elim River, and taking into consideration the non-structural intakes, the three structural water intakes can have a capacity of 15 cubic feet per second (425 l/s) each.

The first diversion has this capacity, but it needs maintenance; some reaches of the lined canal need replacement.

It is necessary to give to the second and third diversions, the capacity to convey 15 cfs (425 l/s). These canals could be designed and constructed for maximum hydraulic efficiency with a side slope of 1.5 to 1; n = 0.025 and a longitudinal slope of 0.0005.

5. Organization of the Irrigation System in the BRUMDEC Project

The administration of the irrigation system could be divided according to the source of surface water as follows:

- sub-administration of Black River
- sub-administration of North Elim River
- sub-administration of South Elim River
- sub-administration of Foster River

Every sub-administration will be handled by an irrigation operator, who reports to the Superintendent of Roads, Irrigation and Drainage.

In every sub-administration, the following information will be needed:

1. The amount of land to be irrigated by the water user.
2. The annual crop pattern, specifying dates of seeding and harvesting, and also the area devoted to every crop.
3. The type of irrigation used.
4. The availability of irrigation structures (channels, gates, reservoirs etc.).

5.1 The Sub-Administration of the South Elim River

To have an appropriate use of the water from this source, a flow meter should be constructed upstream the first water intake. All the water users should be registered and be required to put a gate and a flow meter at their outlets. Water should be allocated based on the crop water needs and on the water availability. During the critical periods, a turn system should be established for the most efficient use of water.

At the present time, it is necessary to design the irrigation infrastructure, (dams, gates, retention walls to prevent flooding, re-shaping channel cross section, flow meters, bridges, culverts, spillways, drops, etc.), to improve the water use.

The experience that we would gain with the management of this river will help us to work with the others.

5.2 Responsibilities of an Irrigation Operator

- Supervise the allocation of water according to the flow availability and the crop needs.
- Compute the flow to be allocated to every water user, according to its crop pattern and the area devoted to each crop.

- Advise and supervise on the installation of flow meter and gates, and on the improvement of efficiency of water conveyance and water application.
- Keep the irrigation infrastructure working as designed.
- Prepare the annual works to be carried out in the sub-administration, giving details of the requirements of material, labour and technical assistance for the operation of the irrigation system.
- Prepare the annual budget for the operations, maintenance, replacement and administration of the irrigation water in the river.
- Coordinate work with the drainage operator for the optimum use of the available water resources.
- Keep records of the daily streamflows with special consideration to both the instantaneous peak flows and the low flows and their duration, to establish the flood control structures and the policy of water distribution during the period of water shortage.
- Master the use of irrigation tools such as pumps, pipes, siphons with a very good knowledge of the hydraulic of its functioning.
- Coordinate with the Agronomists to find out the crop water requirements for the crops growing in the sub-administration.
- Conduct field demonstrations to show the farmers the benefits of the use of the irrigation tools in improving the water application efficiency.
- Prepare the annual maintenance programme of the river and main canals.

5.3 Responsibilities of the Superintendent of Roads, Irrigation and Drainage

- Obtain the optimum use of the available water resources in the area: effective rainfall, surface water, and drainage water.
- Prepare the annual operation and maintenance programme to assure the distribution of irrigation water.
- Supervise the working conditions of the heavy equipment necessary for the operation of the roads, irrigation and drainage infrastructure such as drag-lines, tractors, backhoes, graders, pumps, etc.
- Prepare the annual budget for the operation, maintenance, replacement and administration of the roads, irrigation and drainage of the project.
- Evaluate the performance of the roads, drains, canals, pumps, water control structures, observation wells and internal drains.
- Prepare the chronogram of activities in coordination with the agricultural programme, and take into account the weather conditions and the available equipment.
- Compute and keep records of efficiency of machines, fuel and lubricants' consumption, work effectively done per hour for every piece of equipment.
- Keep up-to-date information on new findings for the improving of irrigation efficiency, and also on more efficient and more economical equipment for the optimum management of the land and water resources of the project.
- Train the drainage, irrigation and pumping operators to assure the proper management of the water resources.
- Keep records and analyze the precipitation information so as to compute the rainfall intensity, its frequency and duration.

- Design the internal drainage, irrigation and roads for the rural development of the area.
- Planning the operation of a very well equipped and very well managed workshop, with a stock of all the spare parts for the BRUMDEC equipment.
- Prepare a programme for the land levelling in the BRUMDEC project to improve the water application efficiency.
- Prepare the necessary data to run a linear programme to optimize the use of land and water resources of the BRUMDEC project.
- Advise the BRUMDEC Managing Director in matters relating to roads, irrigation and drainage.

6. Conclusions

The observation of the field conditions and the interpretation of the results on precipitation, streamflow and water quality leads us to the following conclusions:

1. The total annual effective rainfall for the area is 980 mm (38.6 inches) or 9,800 cubic meters per hectare.
2. The rainfall shortage period extends from December to March.
3. The humid period extends from July to October.
4. The crop pattern should take into consideration the effective rainfall to reduce the irrigation water requirements without affecting the productivity and the production.
5. To assure good water management, a water control structure should be placed to moisten the soil by sub-surface flow, reducing both the drainage flows and pumping needs.
6. The flows from South and North Elim and Foster Rivers will amount to 1.5 CMS (53 CFS) that will supply a permanent complementary irrigation water for almost 4,000 acres witha 75% of probability, provided the required irrigation infrastructure is in place.

7. The quality of irrigation water could affect the crop productivity, and the crop production if there is not good internal drainage to leach out the salts.

8. The South Elim River needs improvement of the hydraulic working conditions to increase the flow rate.

9. For the optimum use of the available discharge in the South Elim River, it is necessary to provide it with the required irrigation infrastructure to assure a rational distribution of the flow.

7. Recommendations

1. For the planning of the irrigation system, a survey map is needed. This map should show:

- contour lines for every 0.5 ft. difference in elevation.
- the positions of the constructed roads, bridges and buildings, dykes, drains, rivers (Black, South and North Elim and Foster), and
- the boundaries of BRUMDEC land.

2. Planning of the use of the flows in the South Elim River should be carried out as soon as possible beginning with a survey map, with the registration of all the water users, and identifying the area already irrigated. The required irrigation infrastructure to assure the optimum management of the available water should then be designed.

3. Based on the effective rainfall, and on the available surface and drainage water, establish the crop pattern for an intensive agriculture programme.

4. Construct the water control structure to be placed in the drains to moisten the peat soils by sub-surface irrigation.

5. Plan the over-all land and water resources in the area relating the surface water levels in the drains, the depth of the water table and the required depth of the crops. The information provided by the observation wells in this matter is highly valuable.

6. Deep ploughing has to be done in the mineral soil to improve the drainage conditions to facilitate the leaching out of salts brought into the soil by the irrigation water.

7. Monitor monthly the quality of the irrigation and drainage waters to plan the crops to be grown in a given area; monitor also the leaching requirements.

8. Based on the head and on the flow-rate needed select the pumps with the highest efficiency to pump the water from the biggest drains such as 2D, 1D or AD into smallest drains such as 2D-3 or 1D-1, to raise the surface water level to irrigate the peat soil.

9. In those areas where the land levelling will show that the cost of earth movement will exceed the marginal cost, the irrigation and water conservation method called 'contour furrow' should be practiced.

10. BRUMDEC should request from the water authority the right to take, for irrigation, the following flows:

- South Elim River up to 1.0 CMS (35.3 CFS)
- North Elim River up to 0.5 CMS (17.6 CFS)
- Foster River up to 0.2 CMS (7.0 CFS)
- Black River up to 3.0 CMS (106.0 CFS)

11. BRUMDEC should have an engineering office equipped with engineering tools such as:

- Two (2) design tables
- One (1) engineering level with its tripod
- One (1) Theodolite
- Two (2) staffs, fourteen (14) feet in length
- Six (6) range poles
- Two (2) sets of triangles, twelve (12) inches in length
- Two (2) scalemeters
- Two (2) templates
- Pencils, china ink, drawing paper, eraser, pencil sharpener, tees, tapes, etc.
- One (1) set of section 15, Irrigation and one (1) set of section 16, Drainage, both of the National Engineering Handbook, Soil Conservation Service, U.S.A.

- One (1) copy of standard No. 3, Canals and Related Structures, U.S.A. Bureau of Reclamation

12. The irrigation canals should be designed using the criteria of hydraulic efficiency together with a longitudinal slope 0.0005, a roughness coefficient n = 0.025 and a side slope 1.5 to 1.

13. For every type of soil in the area, the basic irrigation information should be obtained by carrying out the actual field tests or measurements. It will be necessary to know the basic infiltration rate, the wilting point, the field capacity, the lower limit of the soil moisture content as an index for irrigation, the length of furrow, and the length of the basin.

Table 1

TOTAL MONTHLY PRECIPITATION (1961-1981)

Inches/Month

Longitude 77° 48' 42"
Latitude 18° 06' 06"

STATION HOLLAND
Altitude 80 Feet (24.39 M)

	Jany	Feby	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1961	2.52	1.39	10.96	5.21	13.62	3.52	10.12	8.49	8.41	12.03	3.81	2.33
1962	2.15	2.82	2.02	11.38	10.92	5.24	9.55	6.81	8.17	10.98	3.07	3.43
1963	1.16	3.44	6.75	2.34	12.61	10.63	5.82	7.69	7.63	14.61	7.56	2.89
1964	1.49	1.72	1.22	14.83	11.67	6.25	3.14	7.34	5.62	6.50	5.62	3.47
1965	3.70	0.19	2.61	4.61	13.82	1.95	7.96	10.70	10.30	6.42	4.55	1.68
1966	4.03	1.82	5.17	5.45	9.56	13.12	6.27	2.26	7.34	7,49	2.83	1.83
1967	2.63	6.78	5.58	13.64	8.77	7.77	2.16	4.56	5.86	15.41	5.02	1.34
1968	0.58	2.34	2.43	3.13	6.42	5.21	5.95	8.96	4.59	13.58	4.37	1.15
1969	4.29	0.0	1.07	8.42	12.77	1.88	2.93	11.79	11.41	10.40	2.85	1.75
1970	4.57	0.0	0.30	3.10	12.97	14.45	10.77	5.86	12.48	11.06	3.04	1.88
1971	2.29	3.16	3.57	3.58	16.55	6.02	12.60	8.11	5.47	14.36	2.26	1.43
1972	5.59	2.82	7.05	14.64	5.76	4.97	7.31	11.74	11.61	9.55	6.79	2.65
1973	2.65	1.72	4.44	7.61	8.01	5.84	8.08	7.88	11.71	16.60	2.31	0.89
1974	2.36	3.53	4.98	11.61	7.23	2.44	7.36	12.47	10.83	12.45	5.96	3.06
1975	0.31	1.39	0.74	3.09	12.71	3.96	12.65	13.89	7.20	10.44	2.18	0.51
1976	0.45	3.23	4.22	2.16	4.81	2.48	5.83	7.63	8.61	5.58	1.77	2.61
1977	1.14	1.15	0.00	6.86	14.12	2.67	7.29	12.76	9.35	12.05	2.25	6.06
1978	6.93	4.17	1.63	8.02	18.91	10.38	8.18	8.51	6.51	14.12	2.01	0.76
1979	0.40	8.63	4.16	7.84	5.41	15.50	3.34	8.46	11.80	9.25	5.73	3.28
1980	2.45	2.01	1.51	3.08	6.29	1.50	5.16	6.68	8.79	8.55	3.41	4.01
1981	0.86	6.30	11.80	12.71	12.92	2.50	6.08	-	-	-	-	-
Av.	2.50	2.79	3.87	7.30	10.75	6.11	7.07	8.63	8.69	11.07	3.87	2.35

Table 2a

FREQUENCY OF MONTHLY PRECIPITATION (1961-1981) in MM

Longitude 77° 48' 42" — Station Holland

Latitude 18° 06' 06" — Altitude 80 Feet (24.39 Meters)

Order	Frequency (N=21)	Jany	Feby	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Frequency N=20
1	2.38	176	219.2	299.72	376.68	480.31	393.70	321.31	352.81	316.99	412.64	192.02	153.92	2.50
2	7.14	142	172.21	278.38	371.86	420.37	367.03	320.04	324.10	299.72	391.41	172.47	101.85	7.50
3	11.90	116	160	179.07	346.46	358.65	333.25	273.56	316.74	297.43	371.09	151.38	88.14	12.50
4.	16.67	109	105.92	171.45	322.83	351.03	270.00	257.05	299.47	294.89	364.74	145.54	87.12	17.50
5	21.43	102.36	89.66	141.73	294.89	345.95	266.19	242.57	298.20	289.81	358.65	142.75	83.81	22.50
6	26.19	94	87.38	131.32	289.05	329.44	197.36	207.77	271.78	275.08	344.93	127.05	77.72	27.50
7	30.95	67.31	82.04	126.49	213.87	328.17	158.75	205.23	227.58	263.91	316.23	115.57	73.41	32.50
8	35.71	66.8	80.26	112.78	203.71	324.36	152.91	202.18	216.15	237.49	306.07	111.00	67.31	37.50
9	40.48	64	71.63	107.19	199.14	322.83	148.34	186.94	215.65	223.27	305.56	96.77	66.29	42.50
10.	45.24	63.5	71.63	105.66	193.29	320.29	133.10	185.67	214.88	218.69	280.92	86.61	59.18	47.50
11	50.00	62.23	59.44	90.68	174.24	296.42	132.33	185.17	205.99	213.61	278.89	77.88	47.75	52.50
12	54.76	60	51.05	66.29	138.43	277.37	126.24	159.26	200.15	207.52	265.18	77.22	46.48	57.50
13	59.52	58.17	46.23	61.72	132.33	242.82	100.58	154.43	195.33	193.80	264.16	72.39	44.45	62.50
14	64.29	54.61	43.69	51.31	117.10	222.76	89.41	151.13	193.80	186.44	242.57	71.88	42.67	67.50
15	69.05	37.85	43.69	41.40	90.93	203.45	67.82	148.08	186.44	182.88	234.95	58.67	36.32	72.50
16	73.81	29.46	35.31	38.35	79.50	183.64	63.50	147.83	173.25	165.35	217.17	57.40	34.04	77.50
17	78.57	28.96	35.31	30.99	78.74	163.07	62.99	131.06	169.67	148.84	190.25	57.15	29.21	82.50
18	83.33	21.84	29.21	27.18	78.49	159.77	61.98	84.84	148.84	142.75	165.10	55.37	22.61	87.50
19	88.10	14.73	4.83	18.80	78.23	146.30	49.63	79.76	115.82	138.94	163.07	51.05	19.30	92.50
20	92.86	11.43	0.00	7.62	59.44	137.41	47.75	74.42	57.40	116.59	141.73	44.96	12.95	97.5
21	97.62	7.87	0.00	0.00	54.86	122.17	38.10	54.86	—	—	—	—	—	—

Table 2b

FREQUENCY ANALYSIS OF MONTHLY PRECIPITATION (1961 - 1981) IN INCHES

Longitude 77° 48' 42"
Latitude 18° 06' 06"

Station Holland
Altitude 80 Feet (24.39 M)

Fa=100((2m-1)/2N)

Order	Frequency(N=21)	Jany	Feby	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Frequency N=20
1	2.38	6.93	8.63	11.80	14.83	18.91	15.50	12.65	13.89	12.48	16.60	7.56	6.06	2.50
2	7.14	5.59	6.78	10.96	14.64	16.55	14.45	12.60	12.76	11.80	15.41	6.79	4.01	7.50
3	11.90	4.57	6.30	7.05	13.64	14.12	13.12	10.77	12.47	11.71	14.61	5.96	3.47	12.50
4	16.67	4.29	4.17	6.75	12.71	13.82	10.63	10.12	11.79	11.61	14.36	5.73	3.43	17.50
5	21.43	4.03	3.53	5.58	11.61	13.62	10.48	9.55	11.74	11.41	14.12	5.62	3.28	22.50
6	26.19	3.70	3.44	5.17	11.38	12.97	7.77	8.18	10.70	10.83	13.58	5.02	3.06	27.50
7	30.95	2.65	3.23	4.98	8.42	12.92	6.25	8.08	8.96	10.39	12.45	4.55	2.89	32.50
8	35.71	2.63	3.16	4.44	8.02	12.77	6.02	7.96	8.51	9.35	12.05	4.37	2.65	37.50
9	40.48	2.52	2.82	4.22	7.84	12.71	5.84	7.36	8.49	8.79	12.03	3.81	2.61	42.50
10	45.24	2.50	2.82	4.16	7.61	12.61	5.24	7.31	8.46	8.61	11.06	3.41	2.33	47.50
11	50.00	2.45	2.34	3.57	6.86	11.67	5.21	7.29	8.11	8.41	10.98	3.07	1.88	52.50
12	54.76	2.36	2.01	2.61	5.45	10.92	4.97	6.27	7.88	8.17	10.44	3.04	1.83	57.50
13	59.52	2.29	1.82	2.43	5.21	9.56	3.96	6.08	7.69	7.63	10.40	2.85	1.75	62.50
14	64.29	2.15	1.72	2.02	4.61	8.77	3.52	5.95	7.63	7.34	9.55	2.83	1.68	67.50
15	69.05	1.49	1.72	1.63	3.58	8.01	2.67	5.83	7.34	7.20	9.25	2.31	1.43	72.50
16	73.81	1.16	1.39	1.51	3.13	7.23	2.50	5.82	6.81	6.51	8.55	2.26	1.34	77.50
17	78.57	1.14	1.39	1.22	3.10	6.42	2.48	5.16	6.68	5.86	7.49	2.25	1.15	82.50
18	83.33	0.86	1.15	1.07	3.09	6.29	2.44	3.34	5.86	5.62	6.50	2.18	0.89	87.50
19	88.10	0.58	0.19	0.74	3.08	5.76	1.95	3.14	4.56	5.47	6.42	2.01	0.76	92.50
20	92.86	0.45	0.00	0.30	2.34	5.41	1.88	2.93	2.26	4.59	5.58	1.77	0.51	97.50
21	97.62	0.31	0.00	0.00	2.16	4.81	1.50	2.16						

Table 3

MONTHLY PRECIPITATION FOR A GIVEN PROBABILITY IN MM

Latitude 18°06' 06"
Longitude 77° 48' 42"

Station Holland
Altitude 80 Feet (24.39 meters)

Probability	Jany	Feby	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
2	270	240	360	500	510	602	440	392	452	540	220	195
5	190	170	260	395	432	440	365	340	392	460	185	150
10	142	145	195	320	395	330	310	313	345	410	162	120
15	113	118	160	280	363	275	275	290	317	375	144	103
20	100	105	140	250	340	238	251	275	296	350	132	90
25	87	93	123	230	321	210	231	262	280	332	120	81
30	77	84	110	210	308	185	216	250	267	315	116	72
35	69	76	100	195	292	167	203	240	255	300	108	65
40	62	70	90	180	284	152	190	230	240	288	104	62
45	56	64	81	168	275	137	180	222	230	276	97	57
50	50	59	73	155	260	126	170	214	220	266	92	52
55	46	53	66	145	248	114	160	207	210	255	87	48
60	41	47	60	135	240	104	150	198	200	240	83	44
65	37	45	54	127	227	94	142	190	191	232	79	39
70	33	41	49	118	217	86	134	183	183	220	76	37
75	29	37	44	108	207	76	126	176	174	210	69	34
80	26	33	39	100	195	67	116	168	163	198	65	31
85	22	28	33	89	182	58	106	158	152	184	60	27
90	18	24	28	78	167	48	94	147	138	170	54	23
95	14	19	21	63	148	37	80	133	118	150	46	18

Table 4 MONTHLY POTENTIAL EVAPOTRANSPIRATION COMPUTED USING THE BLANEY AND CRADDLE METHOD

	Temperature °F T	Percentage of sunshine P	TP/100	K_T	Potential Evapotranspiration EVP inches	mm
January	75.8	7.88	5.97	0.9973	5.9539	151
February	75.0	8.90	6.68	0.9835	6.5698	167
March	76.2	8.14	6.20	1.0043	6.2267	158
April	78.0	8.80	6.86	1.0354	7.1028	180
May	78.6	8.80	6.92	1.0458	7.2368	184
June	80.4	9.24	7.43	1.0769	8.0015	203
July	80.5	9.18	7.39	1.0787	7.912	202
August	81.0	8.06	6.53	1.0873	7.1001	180
September	80.8	8.57	6.92	1.0838	7.5002	191
October	84.5	7.93	6.70	1.1479	7.6906	195
November	78.4	7.99	6.26	1.0423	6.5249	166
December	77.0	7.05	5.43	1.0181	5.5283	140

Table 5

AVERAGE MONTHLY EFFECTIVE RAINFALL AS RELATED TO MONTHLY RAINFALL AND POTENTIAL EVAPOTRANSPIRATION

MM

Monthly Rainfall MM	Monthly Potential Evapotranspiration in MM 25	50	75	100	125	150	175	200	225	250	275	300	325	350
12.5	7.5	8	8.7	9	9.2	10	10.5	11.2	11.7	12.5	12.5	12.5	12.5	12.5
25	15	16.2	17.5	18	18.5	19.7	20.5	22.0	24.5	25	25.0	25.0	25.0	25.0
37.5	22.5	24	26.2	27.5	28.2	39	30.5	33	36.2	37.5	37.5	37.5	37.5	37.5
50	25	32.2	34.5	35.7	36.7	48.5	40.5	43.7	47.	50	50	50	50	50
62.5	41.7	39.7	42.5	44.5	46	57.5	50.5	53.7	57.5	62.5	62.5	62.5	62.5	62.5
75		46.2	49.7	52.7	55	66	63.7	67.5	73.7	75	75	75	75	75
87.5		50	56.7	60.2	63.7	74.2	69.7	73.7	77.7	84.5	87.5	87.5	87.5	87.5
100		80.7	63.7	67.7	72	82.5	78.7	83	87.7	95	100	100	100	100
112.5			70.5	75	80.2	90.5	87.2	92.7	98	105	111	112	112	112
125			75	81.5	87.7	98.7	95.7	102	108	115	121	125	125	125
137.5			122	88.7	95.2	106	104	111	118	126	132	137	137	137
150				95.2	102	113	112	120	127	136	143	150	150	150
162.5				100	109	120	120	128	135	145	153	160	162	162
175				160	115	126	127	135	143	154	164	170	175	175
187.5					121	133	134	142	151	161	170	179	185	187
200					125	144	140	148	158	168	178	188	196	200
225					197	150	151	160	171	182				
250						240	161	170	183	194				
275							171	181	194	205				
300							175	190	203	215				
325							287	198	213	224				
350								200	220	232				
375								331	225	240				
400								372	247					
425									250					
450									412					

TABLE 6 EFFECTIVE MONTHLY RAINFALL FOR THE BLACK RIVER UPPER MORASS PROJECT

	Monthly rainfall		Monthly Potential evapotranspiration		Effective rainfall	
	mm	inches	mm	inches	mm	inches
January	29	1.14	151	5.94	23	0.91
February	37	1.46	167	6.57	30	1.18
March	44	1.73	158	6.22	35	1.38
April	108	4.25	180	7.09	85	3.35
May	207	8.15	184	7.24	146	5.75
June	76	2.99	203	7.99	65	2.56
July	126	4.96	202	7.95	103	4.07
August	176	6.93	180	7.09	130	5.12
September	174	6.85	191	7.51	131	5.16
October	210	8.27	195	7.68	151	5.94
November	69	2.72	166	6.54	55	2.16
December	34	1.34	140	5.51	26	1.02
TOTAL	1,290	50.79	2,117	83.33	980	38.59

Percentage of rainfall use = 100 (980/1,290) = 76

TABLE 7a

MONTHLY STREAMFLOWS AND THEIR PROBABILITY OF OCCURRENCE IN CMS
PERIOD 1966 - 1980 BLACK RIVER AT NEWTON

Probability	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	9.065	6.317	8.782	20.960	37.960	35.411	23.796	26.204	27.762	42.493	32.578	14.448
10	8.017	5.751	6.856	15.014	29.462	28.895	19.320	22.663	25.496	35.477	27.762	13.598
15	7.365	5.496	6.176	12.040	24.363	24.816	16.997	19.830	23.230	33.145	25.213	11.898
20	7.082	5.298	5.609	10.198	21.247	20.680	15.298	17.847	21.530	30.028	22.380	11.331
25	6.799	5.043	5.184	8.895	18.697	17.564	14.023	16.147	20.113	28.187	20.680	10.907
30	6.572	4.759	4.816	7.790	16.431	16.147	13.031	15.298	18.697	26.629	19.264	10.482
35	6.346	4.533	4.533	6.912	15.071	14.731	12.181	14.448	17.564	24.929	17.564	10.057
40	6.147	4.363	4.249	6.176	13.739	13.598	11.445	13.739	16.714	23.796	17.281	9.632
45	5.949	4.136	4.023	5.524	12.465	12.606	10.623	13.031	15.581	22.663	16.572	9.348
50	5.779	3.966	3.796	4.958	11.473	11.615	9.972	12.465	14.873	21.530	16.147	9.065
55	5.581	3.903	3.569	4.448	10.425	10.765	9.348	11.615	14.448	20.397	15.298	8.782
60	5.411	3.824	3.456	4.051	9.490	9.972	8.782	10.765	13.881	19.264	14.873	8.499
65	5.241	3.768	3.314	3.711	8.725	9.292	8.215	9.915	13.314	18.414	14.306	8.215
70	5.099	3.711	3.230	3.400	7.875	8.640	7.507	9.632	12.890	17.564	13.881	7.932
75	4.901	3.626	3.060	3.003	6.969	7.790	6.657	8.782	12.181	16.572	13.314	7.649
80	4.703	3.513	2.946	2.663	6.289	7.082	5.949	8.102	11.671	15.298	12.748	7.365
85	4.476	3.456	2.776	2.125	5.439	6.289	5.099	7.309	11.048	14.306	12.181	6.856
90	4.221	3.314	2.606	1.926	4.533	5.439	4.249	6.459	10.340	13.031	11.615	6.516

TABLE 7b

MONTHLY STREAMFLOWS AND THEIR PROBABILITY OF OCCURRENCE IN G.F.S
PERIOD 1966 - 1980 BLACK RIVER AT NEWTON

Probability	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	320	223	310	720	1,340	1,250	840	925	980	1,500	1,150	510
10	283	203	242	530	1,040	1,020	682	800	900	1,270	980	480
15	260	194	218	425	860	876	600	700	820	1,170	890	420
20	250	187	198	360	750	730	540	630	760	1,060	790	400
25	240	178	183	314	660	620	495	570	710	995	730	385
30	232	168	170	275	580	570	460	540	660	940	680	370
35	224	160	160	244	532	520	430	510	620	880	620	355
40	217	154	150	218	485	480	404	485	590	840	610	340
45	210	146	142	195	440	445	375	460	550	800	585	330
50	204	140	134	175	405	410	352	440	525	760	570	320
55	197	138	126	157	368	380	330	410	510	720	540	310
60	191	135	122	143	335	352	310	380	490	680	525	300
65	185	133	117	131	308	328	290	350	470	650	505	290
70	180	131	114	120	278	305	265	340	455	620	490	280
75	173	128	108	106	246	275	235	310	430	585	470	270
80	166	124	104	94	222	250	210	286	412	540	450	260
85	158	122	98	75	192	222	180	258	390	505	430	242
90	149	117	92	68	160	192	150	228	365	460	410	230
95	134	111	85	54	124	154	114	190	330	395	370	192

TABLE 8a

MONTHLY STREAMFLOWS AND THEIR PROBABILITY OF OCCURRENCE IN CMS
PERIOD 1967 - 1980 NORTH ELIM RIVER

Probability	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	1.445	0.850	0.992	2.068	2.550	2.380	1.303	1.473	1.983	2.550	2.663	1.388
10	1.218	0.765	0.850	1.643	1.983	1.870	1.147	1.303	1.742	2.125	2.181	1.232
15	1.105	0.680	0.773	1.360	1.671	1.722	1.048	1.162	1.516	1.870	1.870	1.119
20	0.992	0.652	0.714	1.167	1.473	1.473	0.992	1.048	1.388	1.700	1.700	1.020
25	0.907	0.609	0.657	1.034	1.303	1.303	0.935	0.949	1.289	1.558	1.558	0.958
30	0.850	0.595	0.623	0.929	1.162	1.176	0.884	0.892	1.218	1.445	1.445	0.895
35	0.793	0.567	0.589	0.836	1.077	1.091	0.850	0.836	1.147	1.346	1.475	0.850
40	0.765	0.538	0.561	0.765	0.992	0.992	0.807	0.779	1.077	1.247	1.275	0.793
45	0.680	0.510	0.524	0.686	0.878	0.921	0.779	0.737	1.020	1.176	1.190	0.765
50	0.652	0.496	0.501	0.601	0.822	0.878	0.751	0.680	0.963	1.105	1.133	0.722
55	0.595	0.482	0.476	0.567	0.751	0.782	0.720	0.637	0.921	1.034	1.034	0.680
60	0.567	0.453	0.453	0.518	0.652	0.737	0.680	0.601	0.864	0.963	0.992	0.652
65	0.538	0.439	0.425	0.467	0.618	0.666	0.652	0.561	0.813	0.907	0.935	0.612
70	0.482	0.425	0.402	0.425	0.567	0.618	0.623	0.524	0.765	0.850	0.878	0.581
75	0.453	0.397	0.382	0.382	0.504	0.561	0.595	0.487	0.714	0.779	0.807	0.541
80	0.425	0.382	0.368	0.340	0.453	0.510	0.567	0.465	0.666	0.708	0.737	0.510
85	0.382	0.363	0.329	0.289	0.397	0.453	0.538	0.397	0.618	0.649	0.674	0.465
90	0.340	0.329	0.298	0.238	0.340	0.482	0.482	0.363	0.552	0.567	0.595	0.425
95	0.278	0.295	0.255	0.181	0.261	0.326	0.425	0.317	0.467	0.467	0.501	0.363

TABLE 8b

MONTHLY STREAMFLOWS AND THEIR PROBABILITY OF OCCURRENCE IN CFS
PERIOD 1967 - 1980 NORTH ELIM RIVER

Probability	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	51.0	30.0	35.0	73.0	90.0	84.0	46.0	52.0	70.0	90.0	94.0	49.0
10	43.0	27.0	30.0	58.0	70.0	66.0	40.5	46.0	61.5	75.0	77.0	43.5
15	39.0	24.0	27.3	48.0	59.0	60.8	37.0	41.0	53.5	66.0	66.0	39.5
20	35.0	23.0	25.2	41.2	52.0	52.0	35.0	37.0	49.0	60.0	60.0	36.0
25	32.0	21.5	23.2	36.5	46.0	46.0	33.0	33.5	45.5	55.0	55.0	33.8
30	30.0	21.0	22.0	32.8	41.0	41.5	31.2	31.5	43.0	51.0	51.0	31.6
35	28.0	20.0	20.8	29.5	38.0	38.5	30.0	29.5	40.5	47.5	47.5	30.0
40	27.0	19.0	19.8	27.0	35.0	35.0	28.5	27.5	38.0	44.0	45.0	28.0
45	24.0	18.0	18.5	24.2	31.0	32.5	27.5	26.0	36.0	41.5	42.0	27.0
50	23.0	17.5	17.7	21.2	29.0	31.0	26.5	24.0	34.0	39.0	40.0	25.5
55	21.0	17.0	16.8	20.0	26.5	27.6	25.4	22.5	32.5	36.5	36.5	24.0
60	20.0	16.0	16.0	18.3	23.0	26.0	24.0	21.2	30.5	34.0	35.0	23.0
65	19.0	15.5	15.0	16.5	21.8	23.5	23.0	19.8	28.7	32.0	33.0	21.6
70	17.0	15.0	14.2	15.0	20.0	21.8	22.0	18.5	27.0	30.0	31.0	20.5
75	16.0	14.0	13.5	13.5	17.8	19.8	21.0	17.2	25.2	27.5	28.5	19.1
80	15.0	13.5	13.0	12.0	16.0	18.0	20.0	16.4	23.5	25.0	26.0	18.0
85	13.5	12.8	11.6	10.2	14.0	16.0	19.0	14.0	21.8	22.9	23.8	16.4
90	12.0	11.6	10.5	8.4	12.0	13.6	17.0	12.8	19.5	20.0	21.0	15.0
95	9.8	10.4	9.0	6.4	9.2	11.5	15.0	11.2	16.5	16.5	17.7	12.8

TABLE 9a

MONTHLY STREAMFLOWS AND THEIR PROBABILITY OF OCCURRENCE IN CMS
PERIOD 1967 - 1980 NORTH ELIM RIVER

Probability	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	1.02	0.82	0.88	1.70	1.87	1.33	1.13	1.64	1.39	1.53	1.70	1.16
10	0.91	0.79	0.76	1.27	1.70	1.13	0.98	1.43	1.25	1.39	1.47	1.02
15	0.82	0.76	0.70	1.06	1.50	1.05	0.88	1.30	1.16	1.30	1.35	0.94
20	0.77	0.75	0.63	0.92	1.33	0.97	0.82	1.18	1.10	1.23	1.25	0.88
25	0.74	0.66	0.59	0.81	1.27	0.92	0.77	1.09	1.05	1.18	1.17	0.84
30	0.69	0.58	0.55	0.76	1.10	0.88	0.72	1.02	1.00	1.13	1.10	0.79
35	0.66	0.51	0.52	0.66	1.03	0.83	0.68	0.96	0.96	1.08	1.05	0.76
40	0.63	0.46	0.47	0.59	0.93	0.76	0.65	0.92	0.93	1.05	0.95	0.74
45	0.61	0.41	0.41	0.54	0.87	0.68	0.61	0.86	0.90	1.01	0.95	0.65
50	0.58	0.40	0.36	0.49	0.80	0.62	0.58	0.81	0.86	0.96	0.88	0.61
55	0.52	0.34	0.31	0.45	0.75	0.55	0.55	0.76	0.79	0.86	0.76	0.55
60	0.46	0.31	0.27	0.41	0.68	0.50	0.52	0.73	0.72	0.79	0.66	0.46
65	0.41	0.27	0.25	0.37	0.48	0.45	0.50	0.68	0.64	0.70	0.58	0.44
70	0.37	0.24	0.22	0.34	0.38	0.41	0.44	0.64	0.58	0.63	0.50	0.39
75	0.32	0.22	0.17	0.30	0.33	0.36	0.39	0.61	0.51	0.56	0.42	0.34
80	0.28	0.19	0.14	0.27	0.24	0.32	0.33	0.57	0.45	0.49	0.36	0.29
85	0.24	0.16	0.10	0.22	0.17	0.27	0.27	0.24	0.38	0.42	0.28	0.22
90	0.18	0.13	0.09	0.19	0.12	0.22	0.22	0.09	0.32	0.34	0.23	0.20
95	0.14	0.10	0.06	0.15	0.05	0.17	0.16	0.03	0.24	0.26	0.14	0.14

TABLE 9b

MONTHLY STREAMFLOWS AND THEIR PROBABILITY OF OCCURRENCE IN CFS
PERIOD 1967 - 1980 SOUTH ELIM RIVER

Probability	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	36.0	29.0	31.2	60.0	66.0	47.0	40.0	58.0	49.0	54.0	60.0	41.0
10	32.0	27.8	27.0	45.0	60.0	40.0	34.6	50.5	44.0	49.0	52.0	36.0
15	29.0	27.0	24.0	37.5	53.0	37.0	31.2	46.0	41.0	46.0	47.5	33.1
20	27.3	26.5	22.2	32.5	47.0	34.2	29.0	41.5	39.0	43.5	44.0	31.2
25	26.0	23.2	20.8	28.5	45.0	32.5	27.1	38.6	37.0	41.5	41.2	29.5
30	24.5	20.4	19.4	26.0	39.0	31.0	25.5	36.0	35.4	40.0	39.0	28.0
35	23.3	18.0	18.4	23.2	36.2	29.2	24.0	34.0	34.0	38.0	37.0	27.0
40	22.3	16.3	16.5	21.0	33.0	26.8	23.0	32.6	32.8	37.0	33.5	26.0
45	21.5	14.6	14.6	19.0	30.6	24.0	21.7	30.2	31.6	35.6	33.6	23.0
50	20.5	13.4	12.7	17.3	28.2	21.8	20.6	28.5	30.5	34.0	31.0	21.6
55	18.0	11.9	11.0	15.8	26.4	19.4	19.4	27.0	28.0	30.5	26.8	19.3
60	16.2	10.8	9.6	14.5	24.0	17.6	18.5	25.8	25.5	28.0	23.2	16.2
65	14.5	9.6	8.8	13.2	17.0	15.9	17.5	24.0	22.6	24.8	20.3	15.4
70	13.0	8.4	7.6	11.9	13.5	14.4	15.5	22.5	20.6	22.4	17.8	13.7
75	11.2	7.6	6.0	10.6	11.3	12.7	13.6	21.6	18.0	19.8	14.9	12.0
80	9.8	6.6	5.1	9.4	8.4	11.2	11.6	20.0	15.8	17.2	12.6	10.4
85	8.3	5.6	3.6	7.9	5.9	9.6	9.6	8.6	13.5	14.8	10.0	7.9
90	6.7	4.5	3.2	6.8	4.2	7.8	7.7	3.0	11.2	12.0	8.0	7.0
95	4.9	3.4	2.2	5.4	1.9	5.9	5.6	1.0	8.3	9.2	5.1	5.1

TABLE 10a

MONTHLY STREAMFLOWS AND THEIR PROBABILITY OF OCCURRENCE IN CMS
PERIOD 1967 - 1978 FOSTER RIVER

Probability	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	0.215	0.181	0.227	1.218	1.813	0.822	0.215	0.510	1.133	1.671	1.247	0.292
10	0.164	0.147	0.170	0.793	1.020	0.465	0.181	0.382	1.048	1.167	0.595	0.173
15	0.137	0.128	0.142	0.524	0.765	0.326	0.159	0.298	0.552	0.977	0.397	0.128
20	0.119	0.106	0.125	0.357	0.567	0.266	0.145	0.247	0.431	0.793	0.340	0.116
25	0.105	0.092	0.102	0.249	0.411	0.224	0.130	0.210	0.363	0.623	0.298	0.105
30	0.094	0.079	0.088	0.190	0.312	0.190	0.122	0.181	0.312	0.544	0.266	0.096
35	0.111	0.070	0.077	0.150	0.215	0.164	0.113	0.159	0.272	0.433	0.241	0.088
40	0.077	0.062	0.065	0.119	0.193	0.145	0.102	0.139	0.241	0.385	0.218	0.082
45	0.069	0.055	0.057	0.094	0.153	0.128	0.094	0.125	0.210	0.340	0.198	0.077
50	0.063	0.050	0.050	0.075	0.125	0.111	0.085	0.111	0.187	0.306	0.181	0.071
55	0.057	0.045	0.043	0.060	0.094	0.098	0.077	0.096	0.164	0.269	0.164	0.065
60	0.052	0.040	0.037	0.048	0.077	0.086	0.068	0.085	0.147	0.241	0.150	0.060
65	0.047	0.035	0.033	0.034	0.060	0.075	0.062	0.075	0.128	0.213	0.136	0.057
70	0.043	0.032	0.028	0.031	0.045	0.065	0.057	0.065	0.113	0.188	0.128	0.051
75	0.038	0.028	0.024	0.023	0.040	0.055	0.045	0.057	0.096	0.164	0.108	0.045
80	0.033	0.025	0.020	0.018	0.027	0.047	0.043	0.049	0.082	0.142	0.096	0.043
85	0.028	0.020	0.016	0.013	0.019	0.038	0.037	0.040	0.068	0.118	0.084	0.037
90	0.024	0.016	0.003	0.008	0.013	0.043	0.031	0.032	0.054	0.094	0.071	0.034
95	0.018	0.012	0.009	0.004	0.007	0.020	0.023	0.023	0.037	0.067	0.054	0.028

TABLE 10b

MONTHLY STREAMFLOWS AND THEIR PROBABILITY OF OCCURRANCE IN CMS
PERIOD 1967 - 1978 FOSTER RIVER

Probability	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	7.60	6.40	8.00	43.00	64.00	29.00	7.6	18.00	40.00	59.00	44.00	10.30
10	5.80	5.20	6.00	28.00	36.00	16.40	6.4	13.50	27.00	41.20	21.00	6.10
15	4.85	4.50	5.00	18.50	27.00	11.50	5.6	10.50	19.50	34.50	14.00	4.50
20	4.20	3.75	4.40	12.60	20.00	9.40	5.1	8.70	15.20	28.00	12.00	4.10
25	3.70	3.25	3.60	8.80	14.50	7.90	4.6	7.40	12.80	22.00	10.50	3.70
30	3.30	2.80	3.10	6.70	11.00	6.70	4.3	6.40	11.00	19.20	9.40	3.40
35	2.90	2.46	2.70	5.30	7.60	5.80	4.0	5.60	9.60	15.30	8.50	3.10
40	2.70	2.20	2.30	4.20	6.80	5.10	3.6	4.90	8.50	13.60	7.70	2.90
45	2.44	1.95	2.00	3.30	5.40	4.50	3.3	4.40	7.40	12.00	7.00	2.70
50	2.22	1.78	1.75	2.65	4.40	3.90	3.0	3.90	6.60	10.80	6.40	2.50
55	2.00	1.58	1.50	2.10	3.30	3.45	2.7	3.40	5.80	9.50	5.80	2.30
60	1.85	1.40	1.32	1.70	2.70	3.05	2.4	3.00	5.20	8.50	5.30	2.10
65	1.65	1.25	1.15	1.21	2.10	2.65	2.2	2.65	4.50	7.50	4.80	2.00
70	1.50	1.12	1.00	1.08	1.60	2.30	2.0	2.30	4.00	6.62	4.50	1.80
75	1.33	1.00	0.86	0.80	1.40	1.95	1.6	2.00	3.40	5.80	3.80	1.60
80	1.18	0.88	0.72	0.64	0.96	1.65	1.5	1.72	2.90	5.00	3.40	1.50
85	1.00	0.71	0.58	0.45	0.68	1.35	1.3	1.41	2.40	4.15	2.95	1.30
90	0.83	0.58	0.45	0.29	0.44	1.50	1.1	1.14	1.90	3.31	2.50	1.20
95	0.63	0.42	0.30	0.15	0.23	0.72	0.8	0.80	1.30	2.38	1.90	1.00

TABLE 11 MONTHLY STREAMFLOWS FOR 0.75 FREQUENCY OF OCCURRENCE FOR THE BRUMDEC PROJECT

	Black River		North Elim		South Elim		Foster	
	CMS	CFS	CMS	CFS	CMS	CFS	CMS	CFS
January	4.901	173	0.453	16.0	0.32	11.2	0.038	1.33
February	3.626	128	0.397	14.0	0.22	7.6	0.028	1.00
March	3.060	108	0.382	13.5	0.17	6.0	0.024	0.86
April	3.003	106	0.382	13.5	0.30	10.6	0.023	0.80
May	6.969	246	0.504	17.8	0.33	11.3	0.040	1.40
June	7.790	275	0.561	19.8	0.36	12.7	0.055	1.95
July	6.657	235	0.595	21.0	0.39	13.6	0.045	1.60
August	8.782	310	0.487	17.2	0.61	21.6	0.057	2.00
September	12.181	430	0.714	25.2	0.51	18.0	0.096	3.40
October	16.572	585	0.779	27.5	0.56	19.8	0.164	5.80
November	13.314	470	0.807	28.5	0.42	14.9	0.108	3.80
December	7.649	270	0.541	19.1	0.34	12.0	0.045	1.60

APPENDIX I

FLOW DURATION TABLES

FOR

RIVERS

BLACK, NORTH & SOUTH ELIM, FOSTER

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH JANUARY
MAX. 68 CFS

RIVER NORTH ELIM
MIN 13 CFS
PERIOD 1967 - 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
13.01-15.50		9	28							26	22				85	434	100.00
15.51-18.00	13	14	3				9	6		5	9				59	349	80.41
18.01-20.00	6	6			1		2	2					8		25	290	66.82
20.01-22.50	6	2			1		3	1					6	6	25	265	61.06
22.51-25.00	6			6	2	27	15	2	29				6	4	97	240	55.30
25.51-27.50				11	1	2	2		2				6	8	32	143	32.95
27.51-30.00				13	2	2							5	13	35	111	25.58
30.01-32.50				1	2							3			6	76	17.51
32.51-35.00					1			7				10			18	70	16.13
35.01-37.50								7				4			11	52	11.98
37.51-40.00					1			2				4			7	41	9.45
40.01-42.50								2				1			3	34	7.83
42.51-45.00					1			2				1			4	31	7.14
45.01-47.50												1			1	27	6.22
47.51-50.00												-				26	5.99
50.01-52.50												1			1	26	5.99
52.51-55.00					1										1	25	5.76
55.01-57.50																24	5.53
57.51-60.00					1							1			2	24	5.53
60.01-62.50					1							2			3	22	5.07
62.51-65.00												1			1	19	4.38
65.01-67.50																18	4.15
67.51-70.00					1										1	18	4.15
70.01-72.50					1										1	17	3.92
72.51-75.00					1										1	16	3.69
75.01-77.50					1										1	15	3.46
77.51-80.00					3										3	14	3.23
80.01-82.51					3							2			5	11	2.53
82.51-85.00					2										2	6	1.38
85.01-87.50					3										3	4	0.92
87.51-90.00					1										1	1	0.23

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH FEBRUARY — RIVER NORTH ELIM

MAX. 47 CFS — MIN. 6.1 CFS

PERIOD 1967-1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
6.000-7.35					4										4	396	100.00
7.351-8.70					2										2	392	98.99
8.701-10.05					4										4	390	98.44
10.051-11.40					1					12					13	386	97.47
11.401-12.75					1					6	5				12	373	94.19
12.751-14.10		10	28		3		23			3	23				90	361	91.16
14.101-15.45	3	19			3		5			5					35	271	68.43
15.451-16.80	25				6			3		3			1		38	236	59.60
16.801-18.15				11	3			6					1		21	198	50.00
18.151-19.50				4	1			2					9	4	20	177	44.70
19.501-20.85				2		2		2					6	19	31	157	39.65
20.851-22.20				3		5							4	3	15	126	31.82
22.201-23.55				4		6		5	28			5	1	1	50	111	28.03
23.551-24.90				4		15		2					1		22	61	15.40
24.901-26.25						1		2				1		1	5	39	9.85
26.251-27.60												11	1		12	34	8.59
27.601-28.95												3	2		5	22	5.56
28.951-30.30								2				4	2		8	17	4.29
30.301-31.65																9	2.27
31.651-33.00								2							2	9	2.27
33.001-34.35												1			1	7	1.77
34.351-35.70																6	1.52
35.701-37.05								2							2	6	1.52
37.051-38.40												1			1	4	1.01
38.401-39.75																3	0.76
39.751-41.10												1			1	3	0.76
41.101-42.45																2	0.51
42.451-43.80																2	0.51
43.801-45.15												1			1	2	0.51
45.151-46.50																1	0.25
46.501-47.85														1	1	1	0.25

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH MARCH | RIVER NORTH ELIM

MAX. 60.4 CFS | MIN 9.5 CFS

PERIOD 1967 - 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
9.501-11.20	1		20				1			28	7				57	434	100.00
11.201-12.90	10	7					6			3	7				33	377	86.87
12.901-14.60	5	24	11	5			21				16		1		83	344	79.26
14.601-16.30	5			4			3				1		5	10	28	261	60.14
16.301-18.00	5			9	1							3	8	13	39	233	53.69
18.001-19.70				12	1							1	6		20	194	44.70
19.701-21.40	1			1	4	6		14					5		31	174	40.09
21.401-23.10	1				7	5		4	1				1		19	143	32.95
23.101-24.80					5	2		3	30			4			44	124	28.57
24.801-26.50	2				4	3		4				12	1		26	80	18.43
26.501-28.20	1				5	6		4							16	54	12.44
28.201-29.90					1	2							1		4	38	8.76
29.901-31.60					3	5		2				4	1		15	34	7.83
31.601-33.30												5			5	19	4.38
33.301-35.00												2			2	14	3.23
35.001-36.70																12	2.76
36.701-38.40																12	2.76
38.401-40.10																12	2.76
40.101-41.80																12	2.76
41.801-43.50						1									1	12	2.76
43.501-45.20													1		1	11	2.53
45.201-46.90														6	6	10	2.30
46.901-48.60														2	2	4	0.92
48.601-50.30																2	0.46
50.301-52.00																2	0.46
52.001-53.70																2	0.46
53.701-55.40						1									1	2	0.46
55.401-57.10																1	0.25
57.101-58.80																1	0.25
58.801-60.50													1		1	1	0.25

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH: APRIL

MAX

RIVER: NORTH ELIM

MIN.

PERIOD 1967 - 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
5.01-10		9	3	10							7				29	420	100.00
10.01-15		21	7	12	1		25			30	3		16	4	119	391	93.10
15.01-20			8	2	8		4	4			2		6	11	45	272	64.76
20.01-25	1		3	2	9	8	1	2	30		1	13	1	15	86	227	54.05
25.01-30	3		1	1	11	2		6			4	7	2		37	141	33.57
30.01-35	3		1		1			1			1	3	3		13	104	24.76
35.01-40	6		3			2		1			5		1		18	91	21.67
40.01-45	3		1	1				3			4	1			13	73	17.38
45.01-50								1			3	1	1		6	60	14.29
50.01-55	3		1			1		1				1			7	54	12.86
55.01-60	1		2			2		1							6	47	11.19
60.01-65	1					2		1							4	41	9.76
65.01-70	2			1		3		2							8	37	8.81
70.01-75						5		2				1			8	29	6.90
75.01-80	1					1		1				1			4	21	5.00
80.01-85				1											1	17	4.05
85.01-90	1					1		2							4	16	3.81
90.01-95																12	2.86
95.01-100	2										1				3	12	2.86
100.01-105																9	2.14
105.01-110								1							1	9	2.14
110.01-115						1						1			2	8	1.90
115.01-120								1							1	6	1.43
120.01-125																5	1.19
125.01-130	1					1									2	5	1.19
130.01-135						1									1	3	0.71
135.01-140																2	0.48
140.01-145																2	0.48
145.01-150	1														1	2	0.48
150.01-155																1	0.24
155.01-160	1														1	1	0.24

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH MAY
MAX. 143 CFS

RIVER NORTH ELIM
MIN. 2.6 CFS
PERIOD 1967- 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
2.01-6.70				7											7	434	100.00
6.71-11.40		25		2						25				4	56	427	98.39
11.41-16.10		5	1	2	1					5				17	31	371	85.48
16.11-20.80		1	5	1	1		1			1			12	5	27	340	78.34
20.81-25.50			7	1	2	2	14		23				10		59	313	72.12
25.51-30.20			2			9	4	13	2			4	3	1	38	254	58.53
30.21-34.90	11			2	1	3		9			1	5	1		33	216	49.77
34.91-39.60			1	1	1	8	1	2	1		2	3	3		23	183	39.86
39.61-44.30	6			3	4	6	2	1	2		3	2	2		31	160	36.87
4.31-49.00	5		1	3	2		2		1		3	1			18	129	29.72
9.01-53.70	2		2	2	1	1	2	1	1		6	3			21	111	25.58
3.71-58.40	1		1	2	2	1	2	5	1		6	2		2	25	90	20.74
8.41-63.10	1		1	2	1	1	1				4	2		1	14	65	14.98
3.11-67.80	2		2		1						5			1	11	51	11.75
7.81-72.50			2	1	1										4	40	9.22
2.51-77.20			2		1		1								4	36	8.29
7.21-81.90	1		1												2	32	7.37
1.91-86.60	1		1	1	1		1				1	2			8	30	6.91
6.60-91.30			1	1											2	22	5.07
1.31-96.00					2										2	20	4.61
6.01-100.70			1												1	18	4.15
00.71-105.40	1				1										2	17	3.92
05.41-110.10					1							2			3	15	3.46
10.11-114.80					3							2			5	12	2.76
14.81-119.50					1							2			3	7	1.61
19.51-124.20					1										1	4	0.92
24.20-128.90												1			1	3	0.69
28.90-133.60																2	0.46
33.61-138.30																2	0.46
38.31-143.00					2										2	2	0.46

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH JUNE RIVER NORTH ELIM

MAX 118 CFS MIN. 9

PERIOD 1967-1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
9.01-12.5		28								30					58	420	100.00
12.51-16.0		1	4					17							22	362	86.19
16.01-19.5			8					5							13	340	80.95
19.51-23.0			12			24	4	2	11						53	327	77.86
23.01-26.5		1	1	3		6	7	5	19					19	61	274	65.24
26.51-30.0	3			1			3	1						5	13	213	50.71
30.01-33.5	1						5				4			1	11	200	47.62
33.51-37.0	4		3				1				16		1	1	26	189	45.00
37.01-40.5	6			2						7					15	163	38.81
40.51-44.0	4			4			1					4	1	1	15	148	35.24
44.01-47.5	6		1	2			2				1	5	1		18	133	31.67
47.51-51.0	1											4	4		9	115	27.38
51.01-54.5	2			1	12		2					5	5	1	28	106	25.24
54.51-58.0				1	5		2					1	4	1	14	78	18.57
58.01-61.5			1		1		1					1	2		6	64	15.24
61.51-65.0				2			1				1	4	2	1	11	58	13.81
65.01-68.5	1			2								3	1		7	47	11.19
68.51-72.0	2			1							1		1		5	40	9.52
72.01-75.5				1									3		4	35	8.33
75.51-79.0				1	1							1	2		5	31	7.38
79.01-82.5				1									2		3	26	6.19
82.51-86.0				2			1					1	1		5	23	5.48
86.01-89.5				1	1							1			3	18	4.29
89.51-93.0				2											2	15	3.57
93.01-96.5																13	3.10
96.51-100.0					4										4	13	3.10
100.01-103.5				1	1										2	9	2.14
103.51-107.0					2										2	7	1.67
107.01-110.5					2										2	5	1.19
110.51-114.0				1	1										2	3	0.71
114.01-117.5																1	0.24
117.51-121.0				1											1	1	0.24

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH July

RIVER: NORTH ELIM

MAX. 84 CFS

MIN. 7.5 CFS

PERIOD 1967-1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
9.01-11.5		15								29					44	434	100.00
11.51-14.0		8		5						2					15	390	89.86
14.01-16.5				2				6							8	375	86.41
16.51-19.0		3		3		1		1							8	367	84.56
19.01-21.5	1			3		27		1						8	40	359	82.72
21.51-24.0	21	2	3	3		1		23	31				2		86	319	73.50
24.01-26.5	6	1	6	2			8						2		23	233	53.69
26.51-29.0	3	2	9	2	6	1	12						2	3	40	208	47.93
29.01-31.5			4	3	2		2				6	10	8	6	41	168	38.71
31.51-34.0			5	2	1		1				5	6	1	1	22	127	31.57
34.01-36.5			4	1	2		1				7		2	9	26	105	24.19
36.51-39.0				3	1	1	2				12	7	1	2	29	79	18.20
39.01-41.5					3						1	6	2	2	14	50	11.52
41.51-44.0					2							1	5		8	36	8.29
44.01-46.5					4							1	2		7	28	6.45
46.51-49.0					3		1								4	21	4.84
49.01-51.5					3		2						1		6	17	3.92
51.51-54.0					4								2		6	11	2.53
54.01-56.5							1						1		2	5	1.15
56.51-59.0																3	0.69
59.01-61.5																3	0.69
61.51-64.0																3	0.69
64.01-66.5				1											1	3	0.69
66.51-69.0							1								1	2	0.46
69.01-71.5																1	0.23
71.51-74.0																1	0.23
74.01-76.5																1	0.23
76.51-79.0																1	0.23
79.01-81.5																1	0.23
81.51-84.0				1											1	1	0.23

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH AUGUST

MAX. 73 CFS

RIVER NORTH ELIM

MIN. 7.2

PERIOD 1967-1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
7.20-9.40										13			2		15	434	100.00
9.41-11.60		12								13					25	419	96.54
11.61-13.80		2							16	1					19	394	90.78
13.81-16.00		1							9		1		2	1	14	375	86.41
16.01-18.20	18	4				6				3	1		3	16	51	361	83.18
18.21-20.40	4	4				16				1			4	14	43	310	71.43
20.41-22.60	8	1	5			4			4		1		7		30	267	61.52
22.61-24.80	1		6		6			24	2		4	2			45	237	54.61
24.81-27.00		1	5		1	2		5			8	4			26	192	44.24
27.01-29.20		1	2			2		2			3	17			27	166	38.25
29.21-31.40						1					8	7	1		17	139	32.03
31.41-33.60		1	5								5	1	1		13	122	28.11
33.61-35.80		1	2	1									3		7	109	25.12
35.81-38.00		1	4	4			3						1		13	102	23.50
38.01-40.20				3			6						3		12	89	20.51
40.21-42.40				2			3						1		6	77	17.74
42.41-44.60				2			5						1		8	71	16.36
44.61-46.80				2			3								5	63	14.52
46.81-49.00				7	1		1						1		10	58	13.36
49.01-51.20			2		2		1						1		6	48	11.06
51.21-53.40				2			1								3	42	9.68
53.41-55.60				2	5		1								8	39	8.99
55.61-57.80					2										2	31	7.14
57.81-60.00				2	3		3								8	29	6.68
60.01-62.20					6										6	21	4.84
62.21-64.40					1		2								3	15	3.46
64.41-66.60				2	2										4	12	2.76
66.61-68.80		1			2										3	8	1.84
68.81-71.00		1					1								2	5	1.15
71.21-73.20				2			1								3	3	0.69

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH SEPTEMBER | RIVER NORTH ELIM
MAX. 135 CFS | MIN. 14 CFS
PERIOD 1967-1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
13.01-18	8	21							4	4				1	38	420	100.00
18.01-22	12	1							4	2	1	1	1	24	46	382	90.95
22.01-26	7	4			1				11	8	8	16	2	2	59	336	80.00
26.01-30	2	1			1	2			7	13	12	2		2	42	277	65.95
30.01-34					1	4		7	2	3	3	3	6		29	235	55.95
34.01-38	1	1	3		1	3		4	1		2	5	10	1	32	206	49.05
38.01-42		1	12		1	1	9	2	1		1		3		31	174	41.43
42.01-46		1	4		3	1	11	2			1	1	3		27	143	34.05
46.01-50			2		8	4	3	5				1	1		24	116	27.62
50.01-54			1	4	5	2		4				1	2		19	92	21.90
54.01-58			1	8		1	6	4					1		22	73	17.38
58.01-62			4	5	1	1		2							12	51	12.14
62.01-66			2	4	2	2					2				12	39	9.29
66.01-70				3	2								1		6	27	6.43
70.01-74				4	1	1									6	21	5.00
74.01-78			1	1	1	1	1								5	15	3.57
78.01-82					1	2									3	10	2.38
82.01-86						1									1	7	1.67
86.01-90				1	1										2	6	1.43
90.01-94																4	0.95
94.01-98																4	0.95
98.01-102																4	0.95
102.01-106																4	0.95
106.01-110																4	0.95
110.01-114						1									1	4	0.95
114.01-118																3	0.71
118.01-122						1									1	3	0.71
122.01-126						1									1	2	0.48
126.01-130																1	0.24
130.01-134																1	0.24
134.01-138						1									1	1	0.24

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH OCTOBER

MAX. 112 CFS

RIVER NORTH ELIM

MIN. 13 CFS

PERIOD 1967-1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
13.01-16.3	1	11			7							2			21	431	100.00
16.31-19.6		1			7									8	16	410	95.13
19.61-22.9	2	4			6				9					16	37	394	91.42
22.91-26.2	2	3	3		3				5		5			2	23	357	82.83
26.21-29.5	2	4	6						6	1	4	1		3	27	334	77.49
29.51-32.8	3	1	5					3	7	6	17	2	4		48	307	71.23
32.81-36.1	6	2	5					14	3	6	5		5		46	259	60.09
36.11-39.4	3		1		1			5		7		3	2		22	213	49.42
39.41-42.7	1		2				3	5		4		3	5		23	191	44.32
42.71-46.0		1					8	3				1	5		18	168	38.98
46.01-49.3	1		2				2	1				4	4		14	150	34.80
49.31-52.6		1				1	6			1		4	3		16	136	31.55
52.61-55.9	1		2		1	6	3		1	1		2	1		18	120	27.84
55.91-59.2	1		2			13	2					4	2	1	25	102	23.67
59.21-62.5						4	1			2		3		1	11	77	17.87
62.51-65.8			1				1			3					5	66	15.31
65.81-69.1	1			2		1									4	61	14.15
69.10-72.4			1	2			1								4	57	13.23
72.41-75.7		1		3		1									5	53	12.30
75.71-79.0			1	4											5	48	11.14
79.01-82.3				3		1									4	43	9.98
82.31-85.6	1	1		3	1										6	39	9.05
85.61-88.9				6	1	1	1								9	33	7.66
88.91-92.2	1			3	1	2						1			8	24	5.57
92.21-95.5	1			2											3	16	3.71
95.51-98.8	2			2	1	1									6	13	3.02
98.81-102.1				1											1	7	1.62
102.11-105.4	1	1			1							1			4	6	1.39
105.41-108.7																2	0.46
108.71-112.0	1				1										2	2	0.46

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH NOVEMBER RIVER NORTH ELIM

MAX. 158 CFS MIN. 3.4 CFS

PERIOD 1967-1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
3.401-8.55													4		4	420	100.00
8.551-13.70																416	99.05
13.701-18.85										13			12		25	416	99.05
18.851-24.00		8					1		14	12			9		44	391	93.10
24.001-29.15	3	6	4					7	10	5	8		3	14	60	347	82.62
29.151-34.30	6	2	8					11	6		10	2	2	4	51	287	66.33
34.301-39.45	2	1	13		8			10			12	3		8	57	236	56.19
39.451-44.60	3	1	4		3	22	7	2				8		1	51	179	42.62
44.601-49.75	1				1	2	6					10		2	22	128	30.48
49.751-54.90	2	1	1		6	1	9					3		1	24	106	25.24
54.901-60.05	2	2			3	3	7					1			18	82	19.52
60.051-65.20	2	1			3	2						1			9	64	15.24
65.201-70.35	1				2										3	55	13.10
70.351-75.50	1			1	2							1			5	52	12.38
75.501-80.65		1		4	2										7	47	11.19
80.651-85.80		2		3								1			6	40	9.52
85.801-90.95	3	1		3											7	34	8.09
90.951-96.10	1	1		5											7	27	6.43
96.101-101.25		3		6											9	20	4.76
101.251-106.40																11	2.62
106.401-111.55	1			4											5	11	2.62
111.551-116.70	1														1	6	1.43
116.701-121.85	1			1											2	5	1.19
121.851-127.00																3	0.71
127.001-132.15				1											1	3	0.71
132.151-137.30																2	0.48
137.301-142.45				1											1	2	0.48
142.451-147.60															-	1	0.24
147.601-152.75																1	0.24
152.751-157.90																1	0.24
157.901-163.05				1											1	1	0.24

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH DECEMBER RIVER NORTH ELIM

MAX 70 CFS MIN. 12 CFS

PERIOD 1967 - 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
11.300-13.15	1														1	434	100.00
13.151-15.00																433	99.77
15.001-16.85	3	9							2	12				12	38	433	99.77
16.851-17.70	1	4							5	17				16	43	395	91.01
17.701-20.55	1	8			1				24	2			10	3	49	352	81.11
20.551-22.40	3	4	3		3	1		2					10		26	303	69.82
22.401-24.25	14	4	17		8	19		10					1		73	277	63.82
24.251-26.10	5	2	8		10	1		9				4			39	204	47.00
26.101-27.95			3					8				10	2		23	165	38.00
27.951-29.30	3				4			2				6	4		19	142	32.72
29.801-31.65						1						10	3		14	123	28.34
31.651-33.50					2						11	1	1		15	109	25.12
33.501-35.35					3						16				19	94	21.66
35.351-37.20						2					2				4	75	17.28
37.201-39.05						3	6				1				10	71	16.36
39.051-40.90							2								2	61	14.06
40.901-42.75						3	9				1				13	59	13.59
42.751-44.60						1	10								11	46	10.60
44.601-46.45							2								2	35	8.06
46.451-48.30							1								1	33	7.60
48.301-50.15				1			1								2	32	7.37
50.151-52.00				7											7	30	6.91
52.001-53.85																23	5.30
53.851-55.70				4											4	23	5.30
55.701-57.55				3											3	19	4.38
57.551-59.40				6											6	16	3.69
59.401-61.25				2											2	10	2.30
61.251-63.10				1											1	8	1.84
63.101-64.95																7	1.61
64.951-66.80				1											1	7	1.61
66.801-68.65				2											2	6	1.38
68.651-70.52				4											4	4	0.92

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH: JANUARY RIVER SOUTH ELIM

MAX. 51.6 CFS MIN. 4.7 CFS

PERIOD 1967-1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
4.771-6.37										1	31			1	33	434	100.00
6.371-7.97					9					5				8	22	401	92.40
7.971-9.57									5	25				13	43	379	87.33
9.571-11.17			5						2				1	5	13	336	77.42
11.171-12.77			1										12	4	17	323	74.42
12.771-14.37			4			6			1				7		18	306	70.51
14.371-15.97			5			18							4		27	288	66.36
15.971-17.57			5		3	7							7		22	261	60.14
17.571-19.17			5						5			3			13	239	55.07
19.171-20.77			1				3		3			4			11	226	52.07
20.771-22.37			3				18		11			7			39	215	49.54
22.371-23.97			2				8		4			3			17	176	40.55
23.971-25.57	10			4	1		2					3			20	159	36.64
25.571-27.17	14	7		8	6							2			37	139	32.03
27.171-28.77	3	3		9	2							1			18	102	23.50
28.771-30.37	4	12		5	2							1			24	84	19.35
30.371-31.97		7		2				6							15	60	13.82
31.971-33.57		2		1	3			8				1			15	45	10.37
33.571-35.17					1			4							5	30	6.91
35.171-36.77				1	1			3							5	25	5.76
36.771-38.37					2			7				1			10	20	4.61
38.371-39.97					1			3				2			6	10	2.30
39.971-41.57				1								1			2	4	0.92
41.571-43.17																2	0.46
43.171-44.77																2	0.46
44.771-46.37																2	0.46
46.371-47.97																2	0.46
47.971-49.57																2	0.46
49.571-51.17																2	0.46
51.171-52.77												2			2	2	0.46

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH FEBRUARY RIVER SOUTH ELIM
MAX 33.3 CFS MIN. 3.5 CFS

PERIOD 1967 - 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
3.51-4.40										13					13	396	100.00
4.41-5.30										15	4			2	21	383	96.72
5.31-6.20					4				14		5			10	33	362	91.41
6.21-7.10			1		20				5		3			14	43	329	83.03
7.11-8.00			8						5		6			3	22	286	72.22
8.01-8.90			2						4		2				8	264	66.67
8.91-9.80			1		1										2	256	64.65
9.81-10.70			6								6				12	254	64.14
10.71-11.60			1								2		5		8	242	61.11
11.61-12.50			3										11		14	234	59.09
12.51-13.40			1			2						8	9		20	222	55.56
13.41-14.30			1			15						2	3		21	200	50.51
14.31-15.20						4						1			5	179	45.20
15.21-16.10			1			4						1			6	174	43.94
16.11-17.00				1		3						4			8	168	42.42
17.01-17.90												4			4	160	40.40
17.91-18.80			1	1		1						3			6	156	39.39
18.81-19.70			1	6	1		21					1			30	150	37.88
19.71-20.60			1	2	2		6					1			12	120	30.30
20.61-21.50							1					1			2	108	27.27
21.51-22.40																106	26.77
22.41-23.30	17														17	106	26.77
23.31-24.20	11			1											12	89	22.47
24.21-25.10		3										1			4	77	19.44
25.11-26.00		4		6											10	73	18.43
26.01-26.90																63	15.91
26.91-27.80		12		4								1			17	63	15.91
27.81-28.70		5		7				3							15	46	11.62
28.71-29.60		3						7							10	31	7.83
29.61-30.50		2						8							10	21	5.30
30.51-31.40								8							8	11	2.78
31.41-32.30								2							2	3	0.76
32.31-33.20																1	0.25
33.21-34.10								1							1	1	0.25

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH: MARCH RIVER SOUTH ELIM
MAX. 47.8 CFS MIN. 3.0 CFS

PERIOD 1967 - 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
3.01-4.50										19	20			2	41	434	100.00
4.51-6.00									31	12	8			15	66	393	90.55
6.01-7.50											2	10	7	12	31	327	75.35
7.51-9.00			10	4							1	1	12	2	30	296	68.20
9.01-10.50			3	20								7	7		37	266	61.29
10.51-12.00			1									6	1		8	229	52.76
12.01-13.50					1							1	4		6	221	50.92
13.51-15.00			7		11							1			19	215	49.54
15.01-16.50			1		5							1			7	196	45.16
16.51-18.00			1	7	11	2	3					1			25	189	43.55
18.01-19.50			2		1		8					2			13	164	37.79
19.51-21.00			6		2	8	16								32	151	34.79
21.01-22.50	15					6	4					1			26	119	27.42
22.51-24.00	16					3									19	93	21.43
24.01-25.50		5				2									7	74	17.05
25.51-27.00		20				1									21	67	15.44
27.01-28.50		6													6	46	10.60
28.51-30.00						3		3							6	40	9.22
30.01-31.50						1		3							4	34	7.83
31.51-33.00								5							5	30	6.91
33.01-34.50						1		6							7	25	5.76
34.51-36.00						1		6							7	18	4.15
36.01-37.50								2							2	11	2.53
37.51-39.00								1							1	9	2.07
39.01-40.50								2							2	8	1.84
40.51-42.00						1		1							2	6	1.38
42.01-43.50						1									1	4	0.92
43.51-45.02						1		1							2	3	0.69
45.01-46.50																1	0.23
46.51-48.00								1							1	1	0.23

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH APRIL RIVER SOUTH ELIM

MAX. 156 CFS MIN. 2.8 CFS

PERIOD 1967 - 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
2.80-7.9				3					30	30	10	15	22	18	128	420	100.00
7.91-13.0				7	7		4				1	5	8	10	42	292	69.52
13.01-18.1	1		2		21	1	7				5	2		2	41	250	59.52
18.11-23.2	11	3	1	13	1	7	19				8				63	209	49.76
23.21-28.3	1	24	2	4	1			1			4				37	146	34.76
28.31-33.4	3	1	9					12			2	3			30	109	25.95
33.41-38.5	3	2	5	2				5							17	79	18.81
38.51-43.6			5	1		1		2							9	62	14.76
43.61-48.7			2												2	53	12.62
48.71-53.8	7		2			1		2				1			13	51	12.14
53.81-58.9	3							5				1			9	38	9.05
58.91-64.0			2			2		1				1			6	29	6.90
64.01-69.1						8						2			10	23	5.48
69.11-74.2	1					4									5	13	3.10
74.21-79.3						4									4	8	1.90
79.31-84.4						2									2	4	0.95
84.41-89.5																2	0.48
89.51-94.6																2	0.48
94.61-99.7																2	0.48
99.71-104.8																2	0.48
104.81-109.9																2	0.48
109.91-115.0								1							1	2	0.48
115.01-120.1																1	0.24
120.11-125.2																1	0.24
125.21-130.3																1	0.24
130.31-135.4																1	0.24
135.41-140.5																1	0.24
140.51-145.6																1	0.24
145.61-150.7																1	0.24
150.71-155.8																1	0.24
155.81-160.9								1							1	1	0.24

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH MAY RIVER SOUTH ELIM

MAX. 10.3 CFS MIN. 2.4 CFS

PERIOD 1967- 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
2.4-5.75					2				13	31					46	434	100.00
5.76-9.10									15				25	12	52	388	89.40
9.11-12.45									2				4	12	18	336	77.42
12.46-15.80							5		1			7	2	2	17	318	73.27
15.81-19.15		2		3	1		2					7			15	301	69.35
19.16-22.50		3		2	1		13							2	21	286	65.90
22.51-25.85		25		2	1		4					5			37	265	61.06
25.86-29.20		1		4	4		1	3			1	2		3	19	228	52.53
29.21-32.55				2	3		1	9			12	2			29	209	48.16
32.56-35.90				3				9			6				18	180	41.47
35.91-39.25			3	4	6	4		3			5	1			26	162.	37.33
39.26-42.60			2	5		4	1	1			3	1			17	136	31.34
42.61-45.95			4	4		2	1	2			3	1			17	119	27.42
45.96-49.30	10		2	1	5			2			1				21	102	23.50
49.31-52.65	4		1	1				2							8	81	18.66
52.66-56.00	3					10									13	73	16.82
56.01-59.35	1		9		2	4	1								17	60	13.82
59.36-62.70	4		3		1	2						2			12	43	9.91
62.71-66.05	6		2		1	4									13	31	7.14
66.06-69.40	1		1			1									3	18	4.15
69.41-72.75			3		3										6	15	3.46
72.76-76.10			1									1			2	9	2.07
76.11-79.45	1						2								3	7	1.61
79.46-82.80					1										1	4	0.92
82.81-86.15																3	0.69
86.16-89.50																3	0.69
89.51-92.85																3	0.69
92.86-96.20	1											1			2	3	0.69
96.21-99.55																1	0.23
99.56-102.90																1	0.23
102.91-106.25												1			1	1	0.23

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH JUNE RIVER SOUTH ELIM

MAX. 108 CFS MIN. 2.5 CFS

PERIOD 1967-1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
2.50-6.0									28	30					58	420	100.00
6.01-9.5									2						2	362	86.43
9.51-13.0				2										5	7	360	85.71
13.01-16.5				3									1	13	17	353	84.05
16.51-20.0		2				5					13			6	26	336	80.00
20.01-23.5		18		1			3	7			3	5	4	4	45	310	73.81
23.51-27.0		10		1	1	5	2	8				9	7	1	44	265	63.10
27.01-30.5				1		2	1	6			1	8	6	1	26	221	52.62
30.51-34.0	3			1	6	8	5	8			8	5	4		48	195	46.43
34.01-37.5	1				2	7	8	1			5	3	3		30	147	35.00
37.51-41.0				2	3	3	6						2		16	117	27.86
41.01-44.5				1									1		2	101	24.05
44.51-48.0				9			2						1		12	99	23.57
48.01-51.5			8	2	10										20	87	20.71
51.51-55.0	3		11	1	6		1						1		23	67	15.95
55.01-58.5	6		8	1	1										16	44	10.48
58.51-62.0	7		2	1	1		1								12	28	6.67
62.01-65.5	3		1	2											6	16	3.81
65.51-69.0	2			1											3	10	2.38
69.01-72.5																7	1.67
72.51-76.0	2			1			1								4	7	1.67
76.01-79.5																3	0.71
79.51-83.0																3	0.71
83.01-86.5	1														1	3	0.71
86.51-90.0																2	0.48
90.01-93.5																2	0.48
93.51-97.0	1														1	2	0.48
97.01-100.5																1	0.24
100.51-104.0																1	0.24
104.01-107.5																1	0.24
107.51-111.0	1														1	1	0.24

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH JULY RIVER SOUTH ELIM

MAX. 54 CFS MIN. 2.3 CFS

PERIOD 1967 - 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
2.31-3.5										31					31	434	100.00
3.51-5.2																403	92.86
5.21-6.9					4				1						5	403	92.86
6.91-8.6					1				1						2	398	91.71
8.61-10.3									1		2			19	22	396	91.24
10.31-12.0				1	9				9		7			11	37	374	86.18
12.01-13.7					1						3	3		1	8	337	77.65
13.71-15.4									13		3	2			18	329	75.81
15.41-17.1		2				5			6		8	5			26	311	71.66
17.11-18.8		3				6		3			7	1	2		22	285	65.67
18.81-20.5		6				13		9				5	6		39	263	60.60
20.51-22.2		2				3		6			1	6	4		22	224	51.61
22.21-23.9		6				1		7				4	3		21	202	46.54
23.91-25.6		7			7	1	6	4				1	4		30	181	41.71
25.61-27.3		2		3	3	1	7	2				1	4		23	151	34.79
27.31-29.0		1		4	3		7						5		20	128	29.49
29.01-30.7		1			1	1	4						2		9	108	24.88
30.71-32.4	10		1	7	2		3					1			24	99	22.81
32.41-34.1	8	1	3	2			2					1	1		18	75	17.28
34.11-35.8	7		3	2			2					1			15	57	13.13
35.81-37.5	4		3	2											9	42	9.68
37.51-39.2	1		4	1											6	33	7.60
39.21-40.9	1		2												3	27	6.22
40.91-42.6			11	3											14	24	5.53
42.61-44.3			1	5											6	10	2.30
44.31-46.0			1												1	4	0.92
46.01-47.7				1											1	3	0.69
47.71-49.4																2	0.46
49.41-51.1																2	0.46
51.11-52.8																2	0.46
52.81-54.5			2												2	2	0.46

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH AUGUST

RIVER SOUTH ELIM

MIN. 2.8 CFS

MAX. 71 CFS

PERIOD 1967 - 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
2.81-5.10										24					24	434	100.00
5.11-7.40					8					2				1	11	410	94.47
7.41-9.70					1				1	3	13			9	27	399	91.94
9.71-12.00									4	2	2	1		17	26	372	85.71
12.01-14.30									17		8	9			34	346	79.72
14.31-16.60					2				3		5	11	4	3	28	312	71.89
16.61-18.90					2	2		1	6		3	7		1	22	284	65.44
18.91-21.20					3	13		8				1	5		30	262	60.37
21.21-23.50		9				1	1	14					11		36	232	53.46
23.51-25.80		2				1	1	4				1	4		13	196	45.16
25.81-28.10	7	1				2	4	2				1			17	183	42.17
28.11-30.40	10			7	1	1	2	1					1		23	166	38.25
30.41-32.70	10		4	9		2	5	1					1		32	143	32.95
32.71-35.00	4		6	8		4	10						2		34	111	25.58
35.01-37.30		1	1	2		2	5						1		12	77	17.74
37.31-39.60			1	4		2	2						2		11	65	14.98
39.61-41.90			3	1		1	1								6	54	12.44
41.91-44.20		4	8		1										13	48	11.06
44.21-46.50		2	5		10										17	35	8.06
46.51-48.80		5	2		1										8	18	4.15
48.81-51.10		2													2	10	2.30
51.11-53.40					1										1	8	1.84
53.41-55.70			1												1	7	1.61
55.71-58.00		2			1										3	6	1.38
58.01-60.30		1													1	3	0.69
60.31-62.60																2	0.46
62.61-64.90		1													1	2	0.46
64.91-67.20																1	0.23
67.21-69.50																1	0.23
69.51-71.80		1													1	1	0.23

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH SEPTEMBER RIVER: SOUTH ELIM

MAX. 70 CFS MIN. 5.5 CFS

PERIOD 1967 - 1980

Class Interva.	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
5.50-7.7										16					16	420	100.00
7.71-9.9										9				1	10	404	96.19
9.91-12.1										2	5		2	11	20	394	93.81
12.11-14.3									7	2	5		3	5	22	374	89.05
14.31-16.5									6		9	16	2	10	43	352	83.81
16.51-18.7					2				2	1	2	3	4	1	15	309	73.57
18.71-20.9		1						1	1		4	3	1		11	294	70.00
20.91-23.1						4		1	1		1		2	2	11	283	67.38
23.11-25.3	3					1		1	5		1		4		15	272	64.76
25.31-27.5	2				1	3		2			1		1		10	257	61.19
27.51-29.7					3	2	4	3	3				2		17	247	58.81
29.71-31.9					3	4	5	6	1			1	1		21	230	54.76
31.91-34.1	1			9	1	3	10	3	1			3	2		33	209	49.76
34.11-36.3		3	3	10	1	5	4	3	3			1	2		35	176	41.90
36.31-38.5	7	19	3	5	1	2	2	4				1	2		46	141	33.57
38.51-40.7	4	2	5	3	6	1	1	4			2	1			29	95	22.62
40.71-42.9	7	3	9		2		2						1		24	66	15.71
42.91-45.1	3	2	5	2	1	2	1	1				1	1		19	42	10.00
45.11-47.3			1	1	2	3									7	23	5.48
47.31-49.5	1				1										2	16	3.81
49.51-51.7			1		1										2	14	3.33
51.71-53.9			2		1										3	12	2.86
53.91-56.1					2										2	9	2.14
56.11-58.3	1						1								2	7	1.67
58.31-60.5					1			1							2	5	1.19
60.51-62.7																3	0.71
62.71-64.9					1										1	3	0.71
64.91-67.1																2	0.48
67.11-69.3	1														1	2	0.48
69.31-71.5			1												1	1	0.24

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH OCTOBER RIVER SOUTH ELIM

MAX. 96 CFS MIN. 11.10 CFS

PERIOD 1967 - 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
11.11-14.0								4	3	5	3			22	37	434	100.00
14.01-16.9								7	16	18	1			4	46	397	91.47
16.91-19.8					3			8	9	5			1	1	27	351	80.88
19.81-22.7					6			6	2	2	9		4	4	33	324	74.65
22.71-25.6					4			3	1	1	8	1	3		21	291	67.05
25.61-28.5					5			1			4	2	9		21	270	62.21
28.51-31.4					2		2				1	3	7		15	249	57.37
31.41-34.3				3	3	1	4				1	5			17	234	53.92
34.31-37.2	4	7		4		3	6				1	14	1		40	217	50.00
37.21-40.1	4	15	11	2	6	3	1	1			2	4	2		51	177	40.78
40.11-43.0	3	7	10	6	2	1	1				1	1	2		34	126	29.03
43.01-45.9	4		7	2		3	2					1	1		20	92	21.20
45.91-48.8	1	2		2		14	2	1					1		23	72	16.59
48.81-51.7	1		1	9		4	4								19	49	11.29
51.71-54.6	6		2	2		2	1								13	30	6.91
54.61-57.5	1			1			2								4	17	3.92
57.51-60.4	4						2								6	13	3.00
60.41-63.3																7	1.61
63.31-66.2	1						1								2	7	1.61
66.21-69.1															1	5	1.15
69.11-72.0																4	0.92
72.01-74.9	1						1								2	4	0.92
74.91-77.8																2	0.46
77.81-80.7																2	0.46
80.71-83.6																2	0.46
83.61-86.5																2	0.46
86.51-89.4																2	0.46
89.41-92.3																2	0.46
92.31-95.2							1								1	2	0.46
95.21-98.1							1								1	1	0.23

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH NOVEMBER RIVER SOUTH ELIM

MAX. 146 CFS MIN. 6.0 CFS

PERIOD 1967 - 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
6.0-10.6														11	11	420	100.00
10.61-15.2								23	23	26			4	19	95	409	97.38
15.21-19.8								7	7	4	13		10		41	314	74.76
19.81-24.4											9	8	8		25	273	65.00
24.41-29.0					7						6	6	6		25	248	59.05
29.01-33.6		1	7		13						2	5	1		29	223	53.10
33.61-38.2	5	3	10	7	9	7						6	1		48	194	46.19
38.21-42.8	7	12	9	9	1	5						3			46	146	34.76
42.81-47.4	8	3	4	10		6	7								38	100	23.81
47.41-52.0	6	1		4		8	1					1			21	62	14.76
52.01-56.6	1					4	15								20	41	9.76
56.61-61.2	1	2					7					1			11	21	5.00
61.21-65.8																10	2.38
65.81-70.4																10	2.38
70.41-75.0																10	2.38
75.01-79.6																10	2.38
79.61-84.2		1													1	10	2.38
84.21-88.8																9	2.14
88.81-93.4																9	2.14
93.41-98.0																9	2.14
98.01-102.6																9	2.14
102.61-107.2																9	2.14
107.21-111.8																9	2.14
111.81-116.4	2	1													3	9	2.14
116.41-121.0		1													1	6	1.43
121.01-125.6																5	1.19
125.61-130.2		1													1	5	1.19
130.21-134.8		1													1	4	0.95
134.81-139.4															-	3	0.71
139.41-144.0		3													3	3	0.71

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH DECEMBER RIVER:SOUTH ELIM

MAX. 67 CFS MIN. 3.5 CFS

PERIOD 1967 - 1980

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
3.5-5.6														28	28	434	100.00
5.61-7.7		2								12				3	17	406	93.55
7.71-9.8									12	5			26		43	389	89.63
9.81-11.9		1						1	15	7					24	346	79.72
11.91-14.0		1			1			3	4	7					16	322	74.19
14.01-16.1					10			4							14	306	70.51
16.11-18.2					11			3				16	4		34	292	67.28
18.21-20.3		5			1			7			17	9	1		40	258	59.45
20.31-22.4		2						9			12	5			28	218	50.23
22.41-24.5					4			1			1	1			7	190	43.78
24.51-26.6		2	2	4	2	5		1			1				17	183	42.17
26.61-28.7		2	8	5	2	11		2							30	166	38.25
28.71-30.8		9	7	4		9									29	136	31.34
30.81-32.9	10	4	4	6		2									26	107	24.65
32.91-35.0	11	1	2	12		4									30	81	18.66
35.01-37.1	6	2	8				3								19	51	11.75
37.11-39.2	1						7								8	32	7.37
39.21-41.3	1						5								6	24	5.53
41.31-43.4							1								1	18	4.15
43.41-45.5							3								3	17	3.92
45.51-47.6							8								8	14	3.23
47.61-49.7	1														1	6	1.38
49.71-51.8							2								2	5	1.15
51.81-53.9																3	0.69
53.91-56.0							1								1	3	0.69
56.01-58.1							1								1	2	0.46
58.01-60.2																1	0.23
60.21-62.3																1	0.23
62.31-64.4																1	0.23
64.41-66.5																1	0.23
66.51-68.6	1														1	1	0.23

DURATION ANALYSIS OF DAILY STREAM FLOW

MONTH JANUARY RIVER: FOSTER

MAX. 68 CFS MIN. 0.1 CFS

PERIOD 1967 - 1978

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	Sum	%
0.1-2.30	26	31	3	25		9	24	15	31	12	31		207	372	100
2.31-4.50	5		24	2		19	7	4		15		21	97	165	44.4
4.51-6.70			2	2	25	2		12				1	44	68	18.3
6.71-8.90			1		3	1						2	7	24	6.5
8.91-11.10			1		1								2	17	4.6
11.11-13.30												1	1	15	4.0
13.31-15.50										1		1	2	14	3.8
15.51-17.70					2					1			3	12	3.2
17.71-19.90												1	1	9	2.4
19.91-22.10				2									2	8	2.2
22.11-24.30														6	1.6
24.31-26.50												1	1	6	1.6
26.51-28.70														5	1.3
28.71-30.90												1	1	5	1.3
30.91-33.10														4	1.1
33.11-35.30												1	1	4	1.1
35.31-37.5														3	0.8
37.51-39.70												1	1	3	0.8
39.71-41.90														2	0.5
41.91-44.10														2	0.5
44.11-46.30														2	0.5
46.31-48.50														2	0.5
48.51-50.70														2	0.5
50.71-52.90														2	0.5
52.91-55.10														2	0.5
55.11-57.30														2	0.5
57.31-59.50														2	0.5
59.51-61.70														2	0.5
61.71-63.90														2	0.5
63.91-66.10										1			1	2	0.5
66.11-68.30										1			1	1	0.3

DURATION ANALYSIS OF DAILY STREAM FLOW

MONTH FEBRUARY RIVER FOSTER

MAX 38 MIN. 0.14 CFS

PERIOD 1967 -1978

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	Sum	%
0.1-1.35	10	14	4	16			26		28	13	23		134	339	100
1.351-2.60	17	11	24	9		1	2			9	5	16	94	205	60.5
2.601-3.85	1	4		1		11				5		8	30	111	32.7
3.851-5.10				2	26	8		2		2		4	44	81	23.9
5.101-6.35					2	4		14					20	37	10.9
6.351-7.60						1		7					8	17	5.0
7.601-8.85						1		1					2	9	2.7
8.851-10.10						1							1	7	2.1
10.101-11.35								1					1	6	1.8
11.351-12.60								1					1	5	1.5
12.601-13.85								2					1	4	1.2
13.851-15.10						1							2	2	0.6
15.101-16.35													1	1	0.3
16.351-17.60														1	0.3
17.601-18.85														1	0.3
18.851-20.10														1	0.3
20.101-21.35														1	0.3
21.351-22.60														1	0.3
22.601-23.85														1	0.3
23.851-25.10														1	0.3
25.101-26.35														1	0.3
26.351-27.60														1	0.3
27.601-28.85														1	0.3
28.851-30.10														1	0.3
30.101-31.35														1	0.3
31.351-32.60														1	0.3
32.601-33.85														1	0.3
33.85-35.10														1	0.3
35.101-36.35														1	0.3
36.351-37.60														1	0.3
37.601-38.85						1							1	1	0.3

DURATION ANALYSIS OF DAILY STREAM FLOW

MONTH MARCH RIVER: FOSTER

MAX. 45 CFS MIN. 0.09 CFS

PERIOD 1967 -1978

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	Sum	%
0.09-1.5	19	31	13				31		31	20	5	22	172	372	100
1.51-3.0	3		17	12		3				11	24	5	75	200	53.8
3.01-4.5	3		1	12	25	2		1			2	4	50	125	33.6
4.51-6.0	4			4	6	9		15					38	75	20.2
6.01-7.5				3		3		11					17	37	10.0
7.51-9.0								4					4	20	5.4
9.01-10.5						3							3	16	4.3
10.51-12.0														13	3.5
12.01-13.5	1												1	13	3.5
13.51-15.0	1					1							2	12	3.2
15.01-16.5						1							1	10	2.7
16.51-18.0														9	2.4
18.01-19.5						3							3	9	2.4
19.51-21.0														6	1.6
21.01-22.5						2							2	6	1.6
22.51-24.0														4	1.1
24.01-25.5														4	1.1
25.51-27.0						1							1	4	1.1
27.01-28.5														3	0.8
28.51-30.0														3	0.8
30.01-31.5						1							1	3	0.8
31.51-33.0						1							1	2	0.5
33.01-34.5														1	0.3
34.51-36.0														1	0.3
36.01-37.5														1	0.3
37.51-39.0														1	0.3
39.01-40.5														1	0.3
40.51-42.0														1	0.3
42.01-43.5														1	0.3
43.51-45.0						1							1	1	0.3

DURATION ANALYSIS OF DAILY STREAMFLOW

MONTH APRIL RIVER FOSTER

MAX. 104 MIN. 0 CFS

PERIOD 1967 - 1978

Class Interv 1	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	Sum	%
0-3.40	6	28	21	24	7	8	24	1	30	20	9	22	200	360	100.0
3.41-6.80	5		1	2	19	4	2	9		10	1	1	54	160	44.4
6.81-10.20	3	2	2	1	4	4	1	7					24	106	29.4
10.21-13.60	1		1	1		1	2	4				1	11	82	22.8
13.61-17.00	2		2			4		1			3	1	13	71	19.7
17.01-20.40						2					1		3	58	16.1
20.41-23.80	1						1	3			3		8	55	15.3
23.81-27.20			2	1		1					2	1	7	47	13.1
27.21-30.60			1			1		1			3	2	8	40	11.1
30.61-34.00	1					1		1			2		5	32	8.9
34.01-37.40						1					3		4	27	7.5
37.41-40.80				1		1		1					3	23	6.4
40.81-44.20												1	1	20	5.6
44.21-47.60	1							1			1		3	19	5.3
47.61-51.00						1							1	16	4.4
51.01-54.40	1										1		2	15	4.2
54.41-57.80	1					1							2	13	3.6
57.81-61.20	2												2	11	3.1
61.21-64.60												1	1	9	2.5
64.61-68.00	1												1	8	2.2
68.01-71.40														7	1.9
71.41-74.80														7	1.9
74.81-78.20	1												1	7	1.9
78.21-81.60	2												2	6	1.7
81.61-85.00														4	1.1
85.01-88.40	1												1	4	1.1
88.41-91.80											1		1	3	0.8
91.81-95.20								1					1	2	0.6
95.21-98.60														1	0.3
98.61-102.00														1	0.3
102.00-105.41	1												1	1	0.3

DURATION ANALYSIS OF DAILY STREAM FLOW

MONTH: MAY RIVER: FOSTER

MAX. 180 CFS MIN. 0.53 CFS

PERIOD 1967 - 1978

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	Sum	%
0.5-6.50	24	31	10	16	8	20	23	30	24	29		18	233	372	100.00
6.51-12.50	3		6	5	2	7	3	1	4	2		3	36	139	37.4
12.51-18.50	1		2	4	2	2	1				11	3	26	103	27.7
18.51-24.50			5	1	2	1			1		6	2	18	77	20.7
24.51-30.50	1		1	1		1			1		3	3	11	59	15.9
30.51-36.50			2	2	1		1		1		2	2	11	48	12.9
36.51-42.50			2		2						4		8	37	10.0
42.51-48.50	1		2				1						4	29	7.8
48.51-54.50				1			1						2	25	6.7
54.51-60.50											2		2	23	6.2
60.51-66.50					1						2		3	21	5.7
66.51-72.50			1		3								4	18	4.8
72.51-78.50	1			1									2	14	3.8
78.51-84.50					3								3	12	3.2
84.51-90.50														9	2.4
90.51-96.50														9	2.4
96.51-102.50														9	2.4
102.51-108.50					1								1	9	2.4
108.51-114.50					1								1	8	2.2
114.51-120.50											1		1	7	1.9
120.51-126.50							1						1	6	1.6
126.51-132.50					1								1	5	1.3
132.51-138.50														4	1.1
138.51-144.50					1								1	4	1.1
144.51-150.50														3	0.8
150.51-156.50														3	0.8
156.51-162.50														3	0.8
162.51-168.50														3	0.8
168.51-174.50					1								1	3	0.8
174.51-180.50					2								2	2	0.5

DURATION ANALYSIS OF DAILY STREAM FLOW

MONTH JUNE RIVER FOSTER

MAX. 82 CFS MIN. 0.2 CFS

PERIOD 1967 - 1978

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	Sum	%
0.2-2.8	18	23				30	11	20	9	18		3	132	355	100.00
2.81-5.4	4	2	21	14			2	10	8	8	6	25	100	223	62.8
5.41-8.0			3	5	1		10		9	1	4	1	34	123	34.7
8.01-10.6	1		1	3	4		5		3	1	14	1	33	89	25.1
10.61-13.2			2		2		1		1		4		10	56	15.8
13.21-15.8				2	5					1	1		9	46	13.0
15.81-18.4				2	2					1			5	37	10.4
18.41-21.0			1	1	3		1						6	32	9.0
21.01-23.6	1				1						1		3	26	7.3
23.61-26.2	1			1	1								3	23	6.5
26.21-28.8	1				1								2	20	5.6
28.81-31.4					1								1	18	5.1
31.41-34.0				1	1								2	17	4.8
34.01-36.6														15	4.2
36.61-39.2			1		1								2	15	4.2
39.21-41.8					1								1	13	3.7
41.81-44.4														12	3.4
44.41-47.0					1								1	12	3.4
47.01-49.6				1	1								2	11	3.1
49.61-52.2			1										1	9	2.5
52.21-54.8	1				1								2	8	2.3
54.81-57.4														6	1.7
57.41-60.0	1												1	6	1.7
60.01-62.6					1								1	5	1.4
62.61-65.2	1												1	4	1.1
65.21-67.8														3	0.9
67.81-70.4														3	0.9
70.41-73.0					1								1	3	0.9
73.01-75.6														2	0.6
75.61-78.6														2	0.6
78.61-80.8														2	0.6
80.81-83.4	1				1								2	2	0.6

DURATION ANALYSIS OF DAILY STREAM FLOW

MONTH JULY RIVER FOSTER

MAX. 33 CFS MIN. 0.1 CFS

PERIOD 1967 - 1978

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	Sum	%
0.1-1.2	16			1		2	2			8		15	44	341	100.00
1.21-2.3	12			21		14	26	12	8			8	101	297	87.1
2.31-3.4	1		1	8		1		8	23	1	3		46	196	57.5
3.41-4.5	1		25		1	2		4		3	20	1	57	150	44.0
4.51-5.6			3		7	6	2	4		6	8	1	37	93	27.3
5.61-6.7	1		2		18	1	1	3		3			29	56	16.4
6.71-7.8					5	2				3		2	12	27	7.9
7.81-8.9										5		1	6	15	4.4
8.91-9.9										2		1	3	9	2.6
9.91-10.1												1	1	6	1.8
10.11-11.2												1	1	5	1.5
11.21-12.3						1							1	4	1.2
12.31-13.4														3	0.9
13.41-14.5						1							1	3	0.9
14.51-15.6														2	0.6
15.61-16.7														2	0.6
16.71-17.8														2	0.6
17.81-18.9														2	0.6
18.91-20.0														2	0.6
20.01-21.1														2	0.6
21.11-22.2														2	0.6
22.21-23.3														2	0.6
23.31-24.4														2	0.6
24.41-25.5														2	0.6
25.51-26.6														2	0.6
26.61-27.7														2	0.6
27.71-28.8														2	0.6
28.81-29.9														2	0.6
29.91-31.0				1									1	2	0.6
31.01-32.1														1	0.3
32.11-33.2						1							1	1	0.3

DURATION ANALYSIS OF DAILY STREAM FLOW

MONTH AUGUST RIVER FOSTER

MAX. 30 CFS MIN. 0.9 CFS

PERIOD 1967-1978

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	Sum	%
0.9-1.9	29			3			15			9		4	60	367	100.00
1.91-2.9	2	2		18		13	4	14	6	7	10	4	80	307	83.65
2.91-3.9		6		3		1	3	6	4	4	16	5	48	227	61.85
3.91-4.9		2	7	2		1	1	4	1	2	5	2	27	179	48.77
4.91-5.9		2	11	1	3		1	4	5			3	30	152	41.42
5.91-6.9		2	4		4	3		2	4			2	21	122	33.24
6.91-7.9		2	1		1	3	1	1	5			1	15	101	27.52
7.91-8.9		1	4	2	1	3	2						13	86	23.43
8.91-9.9		2	2		4	2	1			1		3	15	73	19.89
9.91-10.9					1	1			1			1	4	58	15.80
10.91-11.9		3				1	1		2			2	9	54	14.71
11.91-12.9		1	1		2	1	1						6	45	12.26
12.91-13.9					1	1			2			1	5	39	10.63
13.91-14.9					4	1						1	6	34	9.26
14.91-15.		2			3				1	2			8	28	7.63
15.91-16.9				1	1							1	3	20	5.45
16.91-17.9							1						1	17	4.63
17.91-18.9			1									1	2	16	4.36
18.91-19.9					3								3	14	3.81
19.91-20.9										2			2	11	3.00
20.91-21.9		1			1					2			4	9	2.45
21.91-22.9										1			1	5	1.36
22.91-23.9				1									1	4	1.09
23.91-24.9					1								1	3	0.82
24.91-25.9										1			1	2	0.54
25.91-26.9														1	0.27
26.91-27.9														1	0.27
27.91-28.9														1	0.27
28.91-29.9														1	0.27
29.91-30.9					1								1	1	0.27

DURATION ANALYSIS OF DAILY STREAM FLOW

MONTH SEPTEMBER RIVER: FOSTER

MAX. 140 CFS MIN. 0.70 CFS

PERIOD 1967 - 1978

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	Sum	%
0.7-5.3	19		12	17	9		20	9		14	21	18	139	333	100.00
5.31-9.9	3	3	3	9	13	13	8	13	7	3	4	2	81	194	58.26
9.91-14.5	2		3	4	4	6		5	8	3	3	4	42	113	33.93
14.51-19.1			4		1	2	1	2	3	5	1		19	71	21.32
19.11-23.7	1		1				1	1	5			2	11	52	15.62
23.71-28.3					1	1			4	1		3	10	41	12.31
28.31-32.9			1			2			1	1			5	31	9.31
32.91-37.5	1		2		1	1				2			7	26	7.81
37.51-42.1	1		1			2			1	1	1		7	19	5.71
42.11-46.7	2		1										3	12	3.60
46.71-51.3														9	2.70
51.31-55.9					1	1						1	3	9	2.70
55.91-60.5														6	1.80
60.51-65.1	1					1							2	6	1.80
65.11-69.7						1							1	4	1.20
69.71-74.3														3	0.90
74.31-78.9														3	0.90
78.91-83.5														3	0.90
83.51-88.1			1						1				2	3	0.90
88.11-92.7														1	0.30
92.71-97.3														1	0.30
97.31-101.9														1	0.30
101.91-106.5														1	0.30
106.51-111.1														1	0.30
111.11-115.7														1	0.30
115.71-120.3														1	0.30
120.31-124.9														1	0.30
124.91-129.5														1	0.30
129.51-134.1														1	0.30
134.11-138.7														1	0.30
138.71-143.3			1										1	1	0.30

DURATION ANALYSIS OF DAILY STREAM FLOW

MONTH OCTOBER RIVER FOSTER

MAX. 106 CFS MIN. 1.4 CFS

PERIOD 1967 - 1978

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	Sum	%
1.4-4.90	17	10	1	8	4		15	1	9		5		70	367	100.00
4.91-8.40	1	6	12	5	17		1	17	8		10	8	85	297	80.93
8.41-11.90	1	6	5	5	1	3		6	3		6	12	48	212	57.77
11.91-15.40	1	3	1	2		5	9	1	3	4	1	6	36	164	44.69
15.41-18.90	1		1	2	1	3	2	2	3	2	1	3	21	128	34.88
18.91-22.40		1	1	1		2	2	1	4	3		1	16	107	29.16
22.41-25.90	1					2		3	1		2		9	91	24.80
25.91-29.40			1	1		3	2			3	2		12	82	22.34
29.41-32.90			2	1	1	2				2			8	70	19.07
32.91-36.40			2	2		3				4		1	12	62	16.89
36.41-39.90	1		2			1				9			13	50	13.62
39.91-43.40	1					1				3			5	37	10.08
43.41-46.90			1		1								2	32	8.72
46.91-50.40				3		1					1		5	30	8.17
50.41-53.90				1						1			2	25	6.81
53.91-57.40	1		2			1							4	23	6.27
57.41-60.90						1					2		3	19	5.18
60.91-64.40						1							1	16	4.36
64.41-67.90	1				1								2	15	4.09
67.91-71.40	1					1					1		3	13	3.54
71.41-74.90					1								1	10	2.72
74.91-78.40	1					1							2	9	2.45
78.41-81.90	1				2								3	7	1.91
81.91-85.40														4	1.09
85.41-88.90	1												1	4	1.09
88.91-92.40														3	0.82
92.41-95.90					1								1	3	0.82
95.91-99.40					1								1	2	0.54
99.41-102.90														1	0.27
102.91-106.40	1												1	1	0.27

DURATION ANALYSIS OF DAILY STREAM FLOW

MONTH NOVEMBER RIVER: FOSTER

MAX. 129 CFS MIN. 0.89 CFS

PERIOD 1967 - 1978

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	Sum	%
0.89-5.00	17	16	24	4		7	16	14	2	23	11		134	360	100.00
5.01-9.20	1	8	6	8	16	10	4	15	9	6	14	15	112	226	62.78
9.21-13.40		2		9	11	3	10	1	8	1	3	7	55	114	31.67
13.41-17.60		3			1	2			10			4	20	59	16.39
17.61-21.80				2	1	2							5	39	10.83
21.81-26.00	2	1		2	1	1			1		1	1	10	34	9.44
26.01-30.20				1									1	24	6.67
30.21-34.40						2							2	23	6.39
34.41-38.60	1											1	2	21	5.83
38.61-42.80														19	5.28
42.81-47.00	2			1									3	19	5.28
47.01-51.20				1		1					1		3	16	4.44
51.21-55.40	1			1									2	13	3.61
55.41-59.60	1											1	2	11	3.06
59.61-63.80						1							1	9	2.50
63.81-68.00				1									1	8	2.22
68.01-72.20														7	1.94
72.21-76.40														7	1.94
76.41-80.60	2												2	7	1.94
80.61-84.80	1												1	5	1.39
84.81-89.00						1							1	4	1.11
89.01-93.20														3	0.83
93.21-97.40														3	0.83
97.41-101.60														3	0.83
101.61-105.80	1											1	2	3	0.83
105.81-110.00														1	0.28
110.01-114.20														1	0.28
114.21-118.40														1	0.28
118.41-122.60														1	0.28
122.61-126.80														1	0.28
126.81-131.00	1												1	1	0.28

DURATION ANALYSIS OF DAILY STREAM FLOW

MONTH DECEMBER RIVER FOSTER

MAX. 26 CFS MIN. 9.6 CFS

PERIOD 1967-1978

Class Interval	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	Total	Sum	%
0.6-1.4	26				12		27		11	9			85	372	100.00
1.41-2.2	4	10	5		4	7	2		12	22			66	287	77.15
2.21-3.0	1	17	11			18	1	5	8			1	62	221	59.41
3.01-3.8		1	13		5	3	1	15			13	4	55	159	42.74
3.81-4.6		1	2		3	3		8			17	13	47	104	27.96
4.61-5.4					3			2			1	11	17	57	15.32
5.41-6.2					2							2	4	40	10.75
6.21-7.0		1		1	1								3	36	9.68
7.01-7.8		1		3				1					5	33	8.87
7.81-8.6				3									3	28	7.53
8.61-9.4														25	6.72
9.41-10.2				6	1								7	25	6.72
10.21-11.0				3									3	18	4.84
11.01-11.8														15	4.03
11.81-12.6				1									1	15	4.03
12.61-13.4				7									7	14	3.76
13.41-14.2				6									6	7	1.88
14.21-15.0														1	0.27
15.01-15.8														1	0.27
15.81-16.6														1	0.27
16.61-17.4														1	0.27
17.41-18.2														1	0.27
18.21-19.0														1	0.27
19.01-19.8														1	0.27
19.81-20.6														1	0.27
20.61-21.4														1	0.27
21.41-22.2														1	0.27
22.21-23.0														1	0.27
23.01-23.8														1	0.27
23.81-24.6														1	0.27
24.61-25.4														1	0.27
25.41-26.2				1									1	1	0.27

Duration Analysis of Daily Steamflow

Month - January
Max. 895 CFS

River: Black River at Newton
Min. 114 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
114-141				1	6							21				28	434	100.0
141.1-168		1	9	8	1					14		10		8	3	55	406	83.6
168.1-195	2	9	5	8	3		16	9		10	4			13	4	83	351	80.9
195.1-222	3	15	11	10	1	4	3	11		6	21			6	16	107	268	61.8
222.1-249	15	5	6	3	6	7	11	9	2	1	6			4	7	82	161	37.1
249.1-276	9				5	7	1	2	7						1	32	79	18.2
276.1-303					4	6			5							15	47	10.8
303.1-330				1	1	3			7							12	32	7.4
330.1-357	1				2	1			5							9	20	4.6
357.1-384						1			4							5	11	2.5
384.1-411						1			5							2	6	1.4
411.1-438					1	1										2	6	0.9
438.1-465	1															1	2	0.5
465.1-492																-	1	0.3
492.1-519																-	1	0.3
519.1-546																-	1	0.3
546.1-573																-	1	0.3
573.1.600																-	1	0.3
600.1-627																-	1	0.3
627.1-654																-	1	0.3
654.1-681																-	1	0.3
681.1-708																-	1	0.3
70[illegible].1-735																-	1	0.3
735.1-762																-	1	0.3
762.1-789																-	1	0.3
789.1-816																		
816.1-843																-	1	0.3

Duration Analysis of Daily Steamflow

Month - February
Max. 307 CFS

River: Black River at Newton
Min. 91.8 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
91.96.5												2				2	396	100.0
96.51-102				1								1				2	349	99.5
102.01-107.5				4			1					1				6	392	99.0
107.51-113			2	3							5	5				17	386	97.5
113.01-118.5			2					3			1	10				16	369	93.2
118.51-124	7		2	6				4			6	6				31	353	89.1
124.01-129.5	2		4	7				3		3	2				6	27	322	81.3
129.51-135	4		1	6			1	3		11	4			3	11	44	295	74.5
135.01-140.5	2		9	1			4	3		9		1		1	6	36	251	63.4
140.51-146		6	3				2	2		3	2			8	5	31	215	54.3
146.01-151.5	3	1	3				3	2		1	1			5	1	20	184	46.5
151.51-157	2	4	1					1			1			6		15	164	41.4
157.01-162.5	2	3	2		4		1	1		1				3		17	149	37.6
162.51-168		3			3		3	2			1					12	132	33.3
168.01-173.5	2	2			1		1	1						1		8	120	30.3
173.51-179	2	5			2		2				1					12	112	28.3
179.01-184.5	1				2	3	3	1	2							12	100	25.3
184.51-190	1	2			3	3	1		5		1					16	88	22.2
190.01-195.5		1			1	6			2		2					12	72	18.2
195.51-201					1	9	1		1							12	60	15.2
201.01-206.5					4	4			4							12	48	12.1
206.51-212					1	2			1		1	1				5	36	9.1
212.01-217.5					3		1		4		1					9	31	7.8
217.51-223					3	1		1	1							6	22	5.6
223.01-228.5									1							1	16	4.0
228.51-234		1							5							6	15	3.8
234.01-239.5							1		1							2	9	2.3
239.51-245							1		1							2	7	1.8
245.01-250.5								1								1	5	1.3
250.51-256														1		1	4	1.0
256.01-261.5							1									1	3	0.8
261.51-266																-	2	0.5
266.01-271.5							1									1	2	0.5
271.51-307							1									1	1	0.3

Duration Analysis of Daily Steamflow

Month - March
Max. 784 CFS

River: Black River at Newton
Min. 63.8 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
63.-86	1											27				28	434	100.0
86.1-109	5	1	29	27						1	10	4			15	92	406	93.6
109.1-132	12	14	2	2				1		18	12			16	16	93	314	72.4
132.1-155	7	6			19		3	5		7	3			9		59	221	51.0
155.1-178	2	2			12	12	5	4		3	6			1		47	162	37.3
178.1-201	2			1		14	7	9	6	2				1		42	115	26.5
201.1-224	1					4	7	2	8					2		24	73	16.8
224.1-247		1		1			2	1	8							13	49	11.3
247.1-270		1				1	1	2	2							7	36	8.3
270.1-293								1								1	29	6.7
293.1-316		1					1	5	1							8	28	6.5
316.1-339		2					1		1							4	20	4.6
339.1-362							1	1	1							3	16	3.7
362.1-385							1		1					1		3	13	3.0
385.1-408		1							1							2	10	2.3
408.1-431	1						2									3	8	1.8
431.1-454									1							1	5	1.2
454.1-477		1							1							2	4	0.9
477.1-500																-	2	0.5
500.1-523																-	2	0.5
523.1-546																-	2	0.2
546.1-569																-	2	0.5
569.1-592																-	2	0.5
592.1-615																-	2	0.5
615.1-638		1														1	2	0.5
638.1-661																-	1	0.3
661.1-684																-	1	0.3
684.1-707																-	1	0.3
707.1-730																-	1	0.3
730.1-753														1		1	1	0.3

Duration of Analysis of Daily Steamflow

Month - April
Max. 1270 CFS

River: Black River at Newton
Min. 48 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
48-89	9		13	2						9	25	8		7	1	74	420	100.0
89.1-130	3		13	3				8		21	5	2		11	11	77	346	82.4
130.1-171	1		1	1	18	3	4	15						4	7	54	269	64.1
171.1-212	8		1	1	7	22	2	4	11			2		2	4	64	215	51.2
212.1-253	1			5	1	1		1	6			3		1	2	21	151	36.0
253.1-294	3	1		1	1	1	2		3						1	13	130	31.0
294.1-335	1	5	1	5	1		1		2			3			1	20	117	27.9
335.1-376	1	6	1	2	1		3	1								15	97	23.1
376.1-417	1	2		1			1	1	1			2			1	10	82	19.5
417.1-458	1	6		3	1	1	1		2							15	72	17.1
458.1-499		3		1		1						3		1		9	57	13.6
499.1-540		1		1					2						1	5	48	11.4
540.1-581		1		1			1							1	1	5	43	10.2
581.1-622	1	2					2					1		1		7	38	9.1
622.1-663		1		2			1									4	31	7.4
663.1-704							1					1				2	27	6.4
704.1-745							3							1		4	25	6.0
745.1-786		2							1			1				4	21	5.0
786.1-827				1		1			2							4	17	4.1
827.1-868																-	13	3.1
868.1-909							5									5	13	3.1
909.1-950							1					1				2	8	1.9
950.1-991																-	6	1.4
991.1-1032												1				1	6	1.6
1032.1-1073							1									1	5	1.2
1073.1-1114																-	4	1.0
1114.1-1155																-	4	1.0
1155.1-1196																-	4	1.0
1196.1-1237																-	4	1.0
1237.1-1278							1							1		2	4	1.0
1278.1-1319																-	2	0.5
1319.1-1360																-	2	0.5
1360.1-1401																-	2	0.5
1401.1-1442												1				1	2	0.5
1442.1-1483																-	1	0.3
1483.1-1524												1				1	1	0.3

Duration Analysis of Daily Streamflow

Month May
Max. 3090 CFS

River - Black River at Newton
Min. 63 CFS
Period 1966- 1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
63-163			25							4	25			1	1	56	434	100.0
163.1-263	4		3		3	7		9	21	8	3			8	7	73	378	87.1
263.1-363	6	3	1		4	2		8	8	6	3			4	10	55	305	70.3
363.1-463	3	7	1	5	4	3	10	9	2	5				6	4	59	250	57.6
463.1-563	4	6	1	2	6	2	9	3		1		4		8	2	48	191	44.0
563.1-663	4	6		8	5	1	3	1		2		2		2	1	35	143	33.0
663.1-763	2	4		1	3		2	1	3	3		2				18	108	24.9
763.1-863	2	3			1	1				1		1		2	2	13	90	20.7
863.1-963	1	2		1	2	4	5					12			1	28	77	17.7
963.1-1063	1			1	1	4	1					2			3	13	49	11.3
1063.1-1163	2											2				4	36	8.3
1163.1-1263				1	1	1	1			1		3				8	32	7.4
1263.1-1363	1			1	1	3										6	24	5.5
1363.1-1463				1								2				3	18	4.2
1463.1-1563																-	15	3.5
1563.1-1663	1			3												4	15	3.5
1663.1-1763				1								1				2	11	2.5
1763.1-1863				1												1	9	2.1
1863.1-1963				1		2										3	8	1.8
1963.1-2063																-	5	1.2
2063.1-2163				1		1										2	5	1.2
2163.1-2263																-	3	0.7
2363.1-2463																-	3	0.7
2463.1-2563				1												1	3	0.7
2563.1-2663																-	2	0.5
2663.1-2763																-	2	0.5
2763.1-2863				1												1	2	0.5
2863.1-2963																-	1	0.2
2963.1-3063																-	1	0.2
3063.1-3163				1												1	1	0.2

Duration Analysis of Daily Streamflow

Month June
Max. 2850 CFS

River: Black River at Newton
Min. 88 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
88-180			29				4				26					59	420	100.0
180.1-272							11	1	15	10	4				4	45	361	86.0
272.1-364		5	1				15	7	13	15		3			11	70	316	75.2
364.1-456	15	13				3		7	2	3		9			4	56	246	58.6
456.1-548	11	4		8	5	12		5				6		1	1	53	190	45.2
548.1-640		5		5	5	5		3		1		6		1	5	36	137	32.6
640.1-732		3		2	2	1		3				1			1	16	101	24.1
732.1-824	1			2	2	1		3				1			1	11	85	20.2
824.1-916				6	1	1						1		3	1	13	74	17.6
916.1-1008				1	3	1						1		9	1	17	61	14.5
1008.1-1100				1	1	2				1		2		4		11	44	10.5
1100.1-1192				1	3			1						5		10	33	7.9
1192.1-1284				1	3									3		7	23	5.5
1284.1-1376						1	1							1		3	16	3.8
1376.1-1468																-	13	3.1
1468.1-1560				1	1											2	13	3.1
1560.1-1652				1	1									2		4	11	2.6
1652.1-1744							1									1	7	1.7
1744.1-1836				1		1										2	6	1.4
1836.1-1928														1		1	4	1.0
1928.1-2020																-	3	0.7
2020.1-2112																-	3	0.7
2112.1-2204																-	3	0.7
2204.1-2296																-	3	0.7
2296.1-2388																-	3	0.7
2388.1-2480	1															1	3	0.7
2480.1-2572																-	2	0.5
2572.1-2664																-	2	0.5
2264.1-2756	1															1	2	0.5
2756.1-2848																-	1	0.2
2848.1-2940	1															1	1	0.2

Duration Analysis of Daily Streamflow

Month July
Max. 2160 CFS

River: Black River of Newton
Min. 82.1 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
82-151			13						1		31					45	434	100.0
151.1-220			11				4	9	13	7					6	50	389	89.6
220.1-289			1			7	14	11	2	3					20	58	339	78.1
289.1-358		22	2			15	7	3	1	8		8			4	70	281	64.8
358.1-427		5	1	21	9	7	5	4	5	4		8				69	211	48.6
427.1-496		2	2	10	4	2		1	6	4		6			1	38	142	32.7
496.1-565		2	1		12		1		1	2		2		6		27	104	24.0
565.1-634	2				3				1	2		2		9		19	77	17.4
634.1-703	8							1				2		5		16	58	13.4
703.1-772	2				1			1				1		3		8	42	9.7
772.1-841	1							1				1		4		7	34	7.8
841.1-910	3				1				1	1		1		4		11	27	6.2
910.1-1048	4				1											5	12	2.8
1048.1-1117	1															1	7	1.6
1117.1-1185	2															2	6	1.4
1185.1-1255	1															1	4	0.9
1255.1-1324																-	3	0.7
1324.1-1393	1															1	3	0.7
1393.1-1462																-	2	0.5
1462.1-1531																-	2	0.5
1521.1-1600	1															1	2	0.5
1600.1-1669																-	1	0.3
1669.1.1738																-	1	0.3
1738.1-1807																-	1	0.3
1807.1-1876																-	1	0.3
1876.1-1945																-	1	0.3
1945.1-2014																-	1	0.3
2014.1-2083																-	1	0.3
2083.1-2152																-	1	0.3
2152.1-2221	1															1	1	0.3

Duration Analysis of Daily Streamflow

Month August
Max. 1540 CFS

River: Black River at Newton
Min. 97.9 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
97-145											9					9	434	100.0
145.1-193			4								8				2	14	425	97.9
193.1-241		16	5				5				4				2	32	411	94.7
241.1-289		11	2	1		4	5			2					9	34	379	87.3
289.1-337		1	2	7		3			8	2	2	3			3	31	345	79.5
337.1-385		1	5	4	5	2	1		8	4	2	7			4	43	314	72.4
385.1-433	3	1	5	4	2	3			5	1		8		7	4	43	271	62.4
433.1-481	11	1	5	5	4	3		1	3	4		4		4	4	49	228	52.5
481.1-529	5			5	8	3	3	5	3	2		1		3		38	179	41.2
529.1-577	7		2	2	3	2	4	7	1	1		3		1		33	141	32.5
577.1-625	4			1	1			4	1	2		2				15	108	24.9
625.1-673	1			1	2	5	2	2		2	1			1	1	18	93	21.4
673.1-721					3	1	1	3		2		1		3	1	15	75	17.3
721.1-769					2		2	2		1	2					9	60	13.8
769.1-817				1			1		2	2				1	1	8	51	11.8
817.1-865							2	2		3		1		4		12	43	9.9
865.1-913						1	2			1		1		1		6	31	7.1
913.1-961					1	1				1	1			4		8	25	5.8
961.1-1009			1				1	1		1				1		5	17	3.9
1009.1-1057																	12	2.8
1057.1-1105							1	2			2					5	12	2.8
1105.1-1153							1	1								2	7	1.6
1153.1-1201														1		1	5	1.2
1201.1-1249						2										2	4	0.9
1249.1-1297						1										1	2	0.5
1297.1-1345																	1	0.2
1345.1-1393																	1	0.2
1393.1-1441																	1	0.2
1441.1-1489																	1	0.2
1489.1-1537																	1	0.2
1537.1-1585								1								1	1	0.2

Duration of Analysis of Daily Steamflow

Month - April
Max. 1270 CFS

River: Black River at Newton
Min. 48 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
48-89	9		13	2						9	25	8		7	1	74	420	100.0
89.1-130	3		13	3				8		21	5	2		11	11	77	346	82.4
130.1-171	1		1	1	18	3	4	15						4	7	54	269	64.1
171.1-212	8		1	1	7	22	2	4	11			2		2	4	64	215	51.2
212.1-253	1			5	1	1		1	6			3		1	2	21	151	36.0
253.1-294	3	1		1	1	1	2		3						1	13	130	31.0
294.1-335	1	5	1	5	1		1		2			3			1	20	117	27.9
335.1-376	1	6	1	2	1		3	1								15	97	23.1
376.1-417	1	2		1			1	1	1			2			1	10	82	19.5
417.1-458	1	6		3	1	1	1		2							15	72	17.1
458.1-499		3		1		1						3		1		9	57	13.6
499.1-540		1		1					2						1	5	48	11.4
540.1-581		1		1			1							1	1	5	43	10.2
581.1-622	1	2					2					1		1		7	38	9.1
622.1-663		1		2			1									4	31	7.4
663.1-704							1					1				2	27	6.4
704.1-745							3							1		4	25	6.0
745.1-786		2							1			1				4	21	5.0
786.1-827				1		1			2							4	17	4.1
827.1-868																-	13	3.1
868.1-909							5									5	13	3.1
909.1-950							1					1				2	8	1.9
950.1-991																-	6	1.4
991.1-1032												1				1	6	1.6
1032.1-1073							1									1	5	1.2
1073.1-1114																-	4	1.0
1114.1-1155																-	4	1.0
1155.1-1196																-	4	1.0
1196.1-1237																-	4	1.0
1237.1-1278							1							1		2	4	1.0
1278.1-1319																-	2	0.5
1319.1-1360																-	2	0.5
1360.1-1401																-	2	0.5
1401.1-1442												1				1	2	0.5
1442.1-1483																-	1	0.3
1483.1-1524												1				1	1	0.3

Duration Analysis of Daily Streamflow

Month May
Max. 3090 CFS

River - Black River at Newton
Min. 63 CFS
Period 1966- 1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
63-163			25							4	25			1	1	56	434	100.0
163.1-263	4		3		3	7		9	21	8	3			8	7	73	378	87.1
263.1-363	6	3	1		4	2		8	8	6	3			4	10	55	305	70.3
363.1-463	3	7	1	5	4	3	10	9	2	5				6	4	59	250	57.6
463.1-563	4	6	1	2	6	2	9	3		1		4		8	2	48	191	44.0
563.1-663	4	6		8	5	1	3	1		2		2		2	1	35	143	33.0
663.1-763	2	4		1	3		2	1	3	3		2				18	108	24.9
763.1-863	2	3			1	1				1		1		2	2	13	90	20.7
863.1-963	1	2		1	2	4	5					12			1	28	77	17.7
963.1-1063	1			1	1	4	1					2			3	13	49	11.3
1063.1-1163	2											2				4	36	8.3
1163.1-1263				1	1	1	1			1		3				8	32	7.4
1263.1-1363	1			1	1	3										6	24	5.5
1363.1-1463				1								2				3	18	4.2
1463.1-1563																-	15	3.5
1563.1-1663	1			3												4	15	3.5
1663.1-1763				1								1				2	11	2.5
1763.1-1863				1												1	9	2.1
1863.1-1963				1		2										3	8	1.8
1963.1-2063																-	5	1.2
2063.1-2163				1		1										2	5	1.2
2163.1-2263																-	3	0.7
2363.1-2463																-	3	0.7
2463.1-2563				1												1	3	0.7
2563.1-2663																-	2	0.5
2663.1-2763																-	2	0.5
2763.1-2863				1												1	2	0.5
2863.1-2963																-	1	0.2
2963.1-3063																-	1	0.2
3063.1-3163				1												1	1	0.2

Duration Analysis of Daily Streamflow

Month June
Max. 2850 CFS

River: Black River at Newton
Min. 88 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
88-180			29				4				26					59	420	100.0
180.1-272							11	1	15	10	4				4	45	361	86.0
272.1-364		5	1				15	7	13	15		3			11	70	316	75.2
364.1-456	15	13				3		7	2	3		9			4	56	246	58.6
456.1-548	11	4		8	5	12		5				6		1	1	53	190	45.2
548.1-640		5		5	5	5		3		1		6		1	5	36	137	32.6
640.1-732		3		2	2	1		3				1			1	16	101	24.1
732.1-824	1			2	2	1		3				1			1	11	85	20.2
824.1-916				6	1	1						1		3	1	13	74	17.6
916.1-1008				1	3	1						1		9	1	17	61	14.5
1008.1-1100				1	1	2				1		2		4		11	44	10.5
1100.1-1192				1	3			1						5		10	33	7.9
1192.1-1284				1	3									3		7	23	5.5
1284.1-1376						1	1							1		3	16	3.8
1376.1-1468																-	13	3.1
1468.1-1560				1	1											2	13	3.1
1560.1-1652				1	1									2		4	11	2.6
1652.1-1744							1									1	7	1.7
1744.1-1836				1		1										2	6	1.4
1836.1-1928														1		1	4	1.0
1928.1-2020																-	3	0.7
2020.1-2112																-	3	0.7
2112.1-2204																-	3	0.7
2204.1-2296																-	3	0.7
2296.1-2388																-	3	0.7
2388.1-2480	1															1	3	0.7
2480.1-2572																-	2	0.5
2572.1-2664																-	2	0.5
2264.1-2756	1															1	2	0.5
2756.1-2848																-	1	0.2
2848.1-2940	1															1	1	0.2

Duration Analysis of Daily Streamflow

Month July
Max. 2160 CFS

River: Black River of Newton
Min. 82.1 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
82-151			13						1		31					45	434	100.0
151.1-220			11				4	9	13	7					6	50	389	89.6
220.1-289			1			7	14	11	2	3					20	58	339	78.1
289.1-358		22	2			15	7	3	1	8		8			4	70	281	64.8
358.1-427		5	1	21	9	7	5	4	5	4		8				69	211	48.6
427.1-496		2	2	10	4	2		1	6	4		6			1	38	142	32.7
496.1-565		2	1		12		1		1	2		2		6		27	104	24.0
565.1-634	2				3				1	2		2		9		19	77	17.4
634.1-703	8							1				2		5		16	58	13.4
703.1-772	2				1			1				1		3		8	42	9.7
772.1-841	1							1				1		4		7	34	7.8
841.1-910	3				1				1	1		1		4		11	27	6.2
910.1-1048	4				1											5	12	2.8
1048.1-1117	1															1	7	1.6
1117.1-1185	2															2	6	1.4
1185.1-1255	1															1	4	0.9
1255.1-1324																-	3	0.7
1324.1-1393	1															1	3	0.7
1393.1-1462																-	2	0.5
1462.1-1531																-	2	0.5
1521.1-1600	1															1	2	0.5
1600.1-1669																-	1	0.3
1669.1.1738																-	1	0.3
1738.1-1807																-	1	0.3
1807.1-1876																-	1	0.3
1876.1-1945																-	1	0.3
1945.1-2014																-	1	0.3
2014.1-2083																-	1	0.3
2083.1-2152																-	1	0.3
2152.1-2221	1															1	1	0.3

Duration Analysis of Daily Streamflow

Month August
Max. 1540 CFS

River: Black River at Newton
Min. 97.9 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
97-145											9					9	434	100.0
145.1-193			4								8				2	14	425	97.9
193.1-241		16	5				5				4				2	32	411	94.7
241.1-289		11	2	1		4	5			2					9	34	379	87.3
289.1-337		1	2	7		3			8	2	2	3			3	31	345	79.5
337.1-385		1	5	4	5	2	1		8	4	2	7			4	43	314	72.4
385.1-433	3	1	5	4	2	3			5	1		8		7	4	43	271	62.4
433.1-481	11	1	5	5	4	3		1	3	4		4		4	4	49	228	52.5
481.1-529	5			5	8	3	3	5	3	2		1		3		38	179	41.2
529.1-577	7		2	2	3	2	4	7	1	1		3		1		33	141	32.5
577.1-625	4			1	1			4	1	2		2				15	108	24.9
625.1-673	1			1	2	5	2	2		2	1			1	1	18	93	21.4
673.1-721					3	1	1	3		2		1		3	1	15	75	17.3
721.1-769					2		2	2		1	2					9	60	13.8
769.1-817				1			1		2	2				1	1	8	51	11.8
817.1-865							2	2		3		1		4		12	43	9.9
865.1-913						1	2			1		1		1		6	31	7.1
913.1-961					1	1				1	1			4		8	25	5.8
961.1-1009			1				1	1		1				1		5	17	3.9
1009.1-1057																	12	2.8
1057.1-1105							1	2			2					5	12	2.8
1105.1-1153							1	1								2	7	1.6
1153.1-1201														1		1	5	1.2
1201.1-1249						2										2	4	0.9
1249.1-1297						1										1	2	0.5
1297.1-1345																	1	0.2
1345.1-1393																	1	0.2
1393.1-1441																	1	0.2
1441.1-1489																	1	0.2
1489.1-1537																	1	0.2
1537.1-1585								1								1	1	0.2

Duration Analysis of Daily Streamflow

Month May
Max. 3090 CFS

River - Black River at Newton
Min. 63 CFS
Period 1966- 1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
63-163			25							4	25			1	1	56	434	100.0
163.1-263	4		3		3	7		9	21	8	3			8	7	73	378	87.1
263.1-363	6	3	1		4	2		8	8	6	3			4	10	55	305	70.3
363.1-463	3	7	1	5	4	3	10	9	2	5				6	4	59	250	57.6
463.1-563	4	6	1	2	6	2	9	3		1		4		8	2	48	191	44.0
563.1-663	4	6		8	5	1	3	1		2		2		2	1	35	143	33.0
663.1-763	2	4		1	3		2	1	3	3		2				18	108	24.9
763.1-863	2	3			1	1				1		1		2	2	13	90	20.7
863.1-963	1	2		1	2	4	5					12			1	28	77	17.7
963.1-1063	1			1	1	4	1					2			3	13	49	11.3
1063.1-1163	2											2				4	36	8.3
1163.1-1263				1	1	1	1			1		3				8	32	7.4
1263.1-1363	1			1	1	3										6	24	5.5
1363.1-1463				1								2				3	18	4.2
1463.1-1563																-	15	3.5
1563.1-1663	1			3												4	15	3.5
1663.1-1763				1								1				2	11	2.5
1763.1-1863				1												1	9	2.1
1863.1-1963				1		2										3	8	1.8
1963.1-2063																-	5	1.2
2063.1-2163				1		1										2	5	1.2
2163.1-2263																-	3	0.7
2363.1-2463																-	3	0.7
2463.1-2563				1												1	3	0.7
2563.1-2663																-	2	0.5
2663.1-2763																-	2	0.5
2763.1-2863				1												1	2	0.5
2863.1-2963																-	1	0.2
2963.1-3063																-	1	0.2
3063.1-3163				1												1	1	0.2

Duration Analysis of Daily Streamflow

Month June
Max. 2850 CFS

River: Black River at Newton
Min. 88 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
88-180			29				4				26					59	420	100.0
180.1-272							11	1	15	10	4				4	45	361	86.0
272.1-364		5	1				15	7	13	15		3			11	70	316	75.2
364.1-456	15	13				3		7	2	3		9			4	56	246	58.6
456.1-548	11	4		8	5	12		5				6		1	1	53	190	45.2
548.1-640		5		5	5	5		3		1		6		1	5	36	137	32.6
640.1-732		3		2	2	1		3				1			1	16	101	24.1
732.1-824	1			2	2	1		3				1			1	11	85	20.2
824.1-916				6	1	1						1		3	1	13	74	17.6
916.1-1008				1	3	1						1		9	1	17	61	14.5
1008.1-1100				1	1	2				1		2		4		11	44	10.5
1100.1-1192				1	3			1						5		10	33	7.9
1192.1-1284				1	3									3		7	23	5.5
1284.1-1376						1	1							1		3	16	3.8
1376.1-1468																-	13	3.1
1468.1-1560				1	1											2	13	3.1
1560.1-1652				1	1									2		4	11	2.6
1652.1-1744							1									1	7	1.7
1744.1-1836				1		1										2	6	1.4
1836.1-1928														1		1	4	1.0
1928.1-2020																-	3	0.7
2020.1-2112																-	3	0.7
2112.1-2204																-	3	0.7
2204.1-2296																-	3	0.7
2296.1-2388																-	3	0.7
2388.1-2480	1															1	3	0.7
2480.1-2572																-	2	0.5
2572.1-2664																-	2	0.5
2264.1-2756	1															1	2	0.5
2756.1-2848																-	1	0.2
2848.1-2940	1															1	1	0.2

Duration Analysis of Daily Streamflow

Month July
Max. 2160 CFS

River: Black River of Newton
Min. 82.1 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
82-151			13						1		31					45	434	100.0
151.1-220			11				4	9	13	7					6	50	389	89.6
220.1-289			1			7	14	11	2	3					20	58	339	78.1
289.1-358		22	2			15	7	3	1	8		8			4	70	281	64.8
358.1-427		5	1	21	9	7	5	4	5	4		8				69	211	48.6
427.1-496		2	2	10	4	2		1	6	4		6			1	38	142	32.7
496.1-565		2	1		12		1		1	2		2		6		27	104	24.0
565.1-634	2				3				1	2		2		9		19	77	17.4
634.1-703	8							1				2		5		16	58	13.4
703.1-772	2				1			1				1		3		8	42	9.7
772.1-841	1							1				1		4		7	34	7.8
841.1-910	3				1				1	1		1		4		11	27	6.2
910.1-1048	4				1											5	12	2.8
1048.1-1117	1															1	7	1.6
1117.1-1185	2															2	6	1.4
1185.1-1255	1															1	4	0.9
1255.1-1324																-	3	0.7
1324.1-1393	1															1	3	0.7
1393.1-1462																-	2	0.5
1462.1-1531																-	2	0.5
1521.1-1600	1															1	2	0.5
1600.1-1669																-	1	0.3
1669.1.1738																-	1	0.3
1738.1-1807																-	1	0.3
1807.1-1876																-	1	0.3
1876.1-1945																-	1	0.3
1945.1-2014																-	1	0.3
2014.1-2083																-	1	0.3
2083.1-2152																-	1	0.3
2152.1-2221	1															1	1	0.3

Duration Analysis of Daily Streamflow

Month August
Max. 1540 CFS

River: Black River at Newton
Min. 97.9 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
97-145											9					9	434	100.0
145.1-193			4								8				2	14	425	97.9
193.1-241		16	5				5				4				2	32	411	94.7
241.1-289		11	2	1		4	5			2					9	34	379	87.3
289.1-337		1	2	7		3			8	2	2	3			3	31	345	79.5
337.1-385		1	5	4	5	2	1		8	4	2	7			4	43	314	72.4
385.1-433	3	1	5	4	2	3			5	1		8		7	4	43	271	62.4
433.1-481	11	1	5	5	4	3		1	3	4		4		4	4	49	228	52.5
481.1-529	5			5	8	3	3	5	3	2		1		3		38	179	41.2
529.1-577	7		2	2	3	2	4	7	1	1		3		1		33	141	32.5
577.1-625	4			1	1			4	1	2		2				15	108	24.9
625.1-673	1			1	2	5	2	2		2	1			1	1	18	93	21.4
673.1-721					3	1	1	3		2		1		3	1	15	75	17.3
721.1-769					2		2	2		1	2					9	60	13.8
769.1-817				1			1		2	2				1	1	8	51	11.8
817.1-865							2	2		3		1		4		12	43	9.9
865.1-913						1	2			1		1		1		6	31	7.1
913.1-961					1	1				1	1			4		8	25	5.8
961.1-1009			1				1	1		1				1		5	17	3.9
1009.1-1057																	12	2.8
1057.1-1105							1	2			2					5	12	2.8
1105.1-1153							1	1								2	7	1.6
1153.1-1201														1		1	5	1.2
1201.1-1249						2										2	4	0.9
1249.1-1297						1										1	2	0.5
1297.1-1345																	1	0.2
1345.1-1393																	1	0.2
1393.1-1441																	1	0.2
1441.1-1489																	1	0.2
1489.1-1537																	1	0.2
1537.1-1585								1								1	1	0.2

Duration Analysis of Daily Streamflow

Month September
Max. 1380 CFS

River - Black River at Newton
Min. 285 CFS
Period 1966 - 1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
285-321		4		2							3				8	17	420	100.0
321.1-357		5	3	4							1				3	16	403	96.0
357.1-393	1	7	5	5	1	1	1	1				2			5	29	387	92.1
393.1-429	8	3	2	3	2	5	2	2				3			5	35	358	85.2
429.1-465	5	3	6	1	3	4	3	6	2		4	4		2	3	46	323	76.9
465.1-501	3	1	3		3	3	4	5		5		3		3	3	36	277	66.0
501.1-537	3	2	7		4	5	4	5	1	4	3	2		2		42	241	57.4
537.1-573	2				3	2	1	1	5	3	3	3		2	1	26	199	47.4
573.1-609	1	2			3	3		2	1	2	2			3		19	173	41.2
609.1-645	2				2	2		1	3	1	1	3		3	1	19	154	36.7
645.1-681	3	2	1		2	2	1	1	2	3	2	3		1		23	135	32.1
681.1-717	1				1	1		2	1			3				9	112	27.7
717.1-753		1		1	3			1	2	1				3		12	103	24.5
753.1-789	1			1			4	1	1	2	2			1		13	91	21.7
789.1-825				1	1		1	1	2	1	2	1		1	1	12	78	18.6
825.1-861				2		1	2		1	1	3			3		13	66	15.7
861.1-897			2	3			2		4	1	2					14	53	12.6
897.1-933				2	1		2		4	1	2			2		14	39	9.3
933.1-969				1	1			1						2		5	25	6.0
969.1-1005										1		2				3	20	4.8
1005.1-1045			1	1		1	1			2						6	17	4.1
1045.1-1077				1			1			1				1		4	11	2.6
1077.1-1113									1					1		2	7	1.7
1113.1-1149				1								1				2	5	1.2
1149.1-1185										1						1	3	0,7
1185.1-1221																	2	0.5
1221.1-1257							1									1	2	0.5
1257.1-1293																	1	0.2
1293.1-1329																	1	0.2
1329.1-1365																	1	0.2
1365.1-1401				1												1	1	0.2

Duration Analysis of Daily Streamflow

Month October
Max. 4000 CFS

River - Black River at Newton
Min. 297 CFS
Period 1966 - 1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
297-420	9	3	4			10				2						48	434	100.0
420.1-543	1	7	8	5		7		3	3	12	1	1		3	14	65	406	93.6
543.1-666	5	3	5	6	1	5	6	5	1	4	7	4		9	13	74	341	78.6
666.1-789	10	1	7	3	11	4	2	3	9	3	5	2		9	3	72	267	61.5
789.1-912	5	3	3	4	9	4	5	4	9	3	4	4		5	1	63	195	44.9
912.1-1035		2	2	4	7	1	2	1	8	3	6	3		1		40	132	30.4
1035.1-1158		6	2	2	1		2		1	3	4	8		1		30	92	21.2
1158.1-1281		3		4	1		6				2	8		2		26	62	14.3
1281.1-1404	1	2		1	1		4				1	1				11	36	8.3
1404.1-1527		1					1			1	1					4	25	5.8
1527.1-1650							2								1	3	21	4.8
1650.1-1773				2			1	3								6	18	4.2
1773.1-1896								3								3	12	2.8
1896.1-2019								1								1	9	2.1
2019.1-2142								3								3	8	1.8
2142.1-2265																	5	1.2
2265.1-2388																	5	1.2
2388.1-2511								1								1	5	1.2
2511.1-2634																	4	0.9
2634.1-2757								1								1	4	0.9
2757.1-2880																	3	0.7
2880.1-3003																	3	0.7
3003.1-3126																	3	0.7
3126.1-3249																	3	0.7
3249.1-3372																	3	0.7
3372.1-3495																	3	0.7
3495.1-3618								1								1	3	0.7
3618.1-3741								1								1	2	0.5
3741.1-3864																	1	0.2
3864.1-3987																	1	0.2
3987.1-4110								1								1	1	0.2

Duration Analysis of Daily Streamflow

Month - November
Max. 1980 CFS

River: Black River at Newton
Min. 283 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
283-339											9					9	420	100.0
339.1-395							6				6			1	9	22	411	97.9
395.1-451	5		3	10		4	3			2	11	2		8	9	57	389	92.6
451.1-507	10	2	3	9		7	2		2	7	4	6		4	5	61	332	79.1
507.1-563	5	5	4	4	2	4	10	2	2	6		12		8	1	65	271	64.5
563.1-619	1	4	9	2	4	3	4	4	1	4		3		3	3	45	206	49.1
619.1-675	1	2	3	1	2	1	3	5	1	4				3	1	27	161	38.3
675.1-731	1	2	4	1	1	6	1	3	7			1		2	1	30	134	31.9
731.1-787	1		1	3	1	1		2	9	3		2			1	24	104	24.8
787.1-843	1	2			1	1	1	1	5			1				13	80	19.1
843.1-899		2	2		3	2			1	1		1		1		13	67	16.0
899.1-955	1	1	1		5	1		1		1						12	54	12.9
955.1-1011	2	1			4			1		1						9	42	12.9
1011.1-1067	1				1				1	1		1				5	33	7.9
1067.1-1123	1	3			1											5	28	6.7
1123.1-1179		2				1		2								5	23	5.5
1179.1-1235								1	1							2	18	4.3
1235.1-1291								3								3	16	3.8
1291.1-1347		1						1								2	13	3.1
1347.1-1403					1			1								2	11	2.6
1403.1-1459		2														2	9	2.1
1459.1-1515		1			1			1								3	7	1.7
1515.1-1571								1								1	4	1.0
1571.1-1627																-	3	0.7
1627.1-1683																-	3	0.7
1683.1-1739																-	3	0.7
1739.1-1795					1											1	3	0.7
1795.1-1851								1								1	2	1.5
1851.1-1907																-	1	0.2
1907.1-1963																-	1	0.2
1963.1-2019					1											1	1	0.2

Duration Analysis of Daily Streamflow

Month December
Max. 752 CFS

River: Black River at Newton
Min. 143 CFS
Period 1966-1980

Class Interval	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Total	Sum	%
143-163				7												7	433	100.0
163.1-193				4							8					12	426	98.4
183.1-203				2						1	5			1		9	414	95.6
203.1-223				1					3	1	5			2		12	405	93.5
223.1-243		1	4	1		4			5	6	2			6	3	32	393	90.8
243.1-263	5	1	4	1		4			5	4	4			5	2	35	361	84.4
263.1-283	6	2	1	1		3	8		2	3	3			3	6	38	326	75.6
283.1-303	3	5	5	1		2	6		3	3	1			3	8	40	288	66.5
303.1-323	4	3	2	1		3	11		2	1	2	5		3	4	41	248	57.3
323.1-343	3	2	4	2		2			2	4		4		2	5	30	207	47.8
343.1-363	3	2	2	1	1	3	3		1	3		5		3	3	30	177	40.9
363.1-383	5	3	4	2	4	6	1	3	1	1	1	4		2		37	147	34.0
383.1-403	2	2	3	7	3			2	2	2		3				26	110	25.5
403.1-423		2	2		2	2		3		2		6				19	84	19.4
423.1-443		1			3	1	1	2	1			2				11	65	15.0
443.1-463		1			2			5				1				9	54	12.5
463.1-483		2			3	1		3								9	45	10.4
483.1-503		2			7			5	1							15	36	8.3
503.1-523		1			2			2				1				6	21	4.9
523.1-543		1			4		1	4								10	15	3.5
543.1-563								2								2	5	1.2
563.1-583																-	3	0.7
583.1-603									1							1	3	0.7
603.1-623																-	2	0.5
623.1-643									1							1	1	0.5
643.1-663																-	1	0.3
663.1-683																-	1	0.3
683.1-703																-	1	0.3
703.1-723																-	1	0.3
723.1-743																-	1	0.3
743.1-763									1							1	1	0.3

APPENDIX II

EFFECTIVE RAINFALL GRAPHS

FOR

HOLLAND METEOROLOGICAL STATION

AND

FLOW DURATION GRAPHS

FOR

RIVERS

BLACK, NORTH & SOUTH ELIM, FOSTER

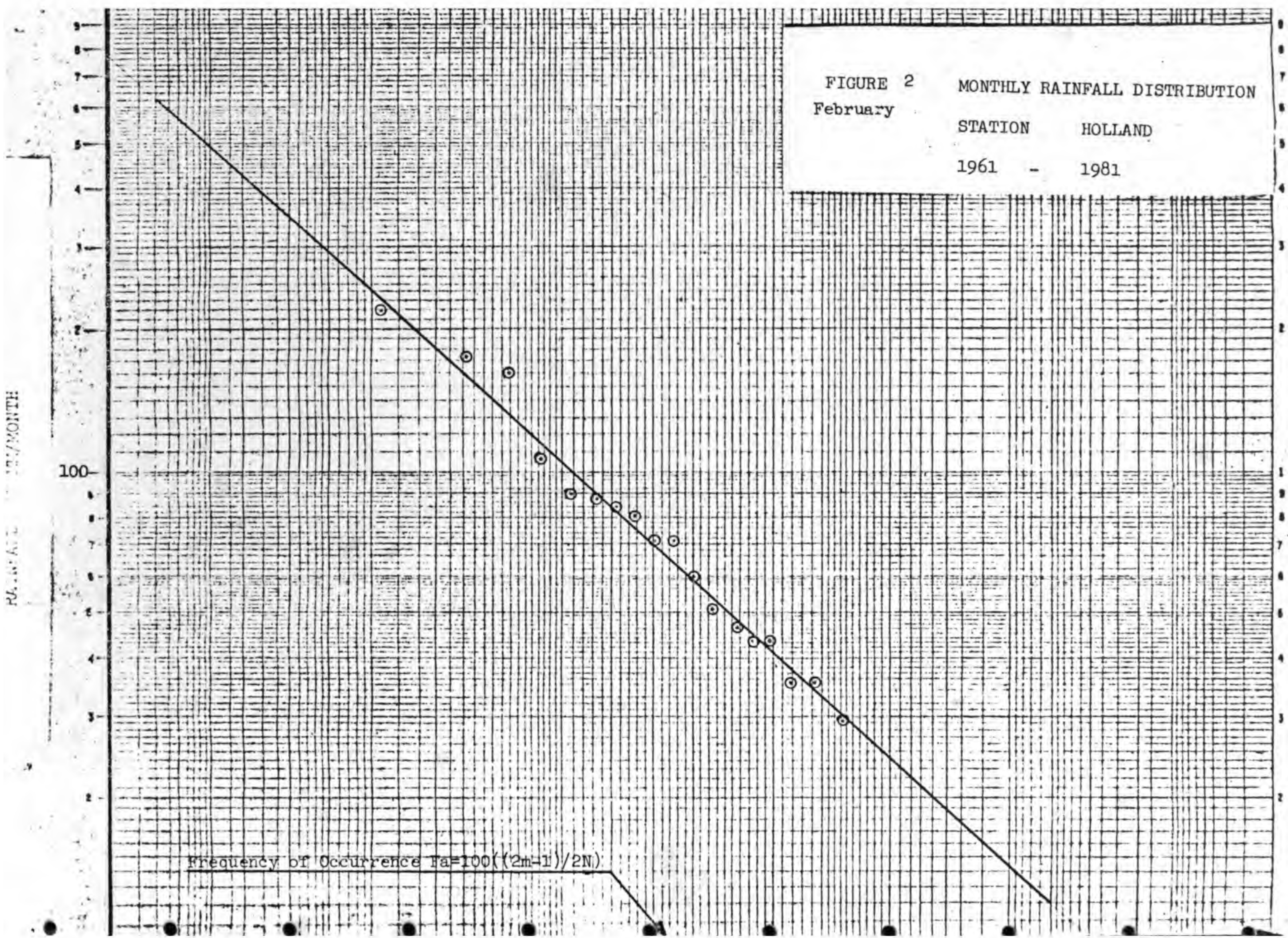


FIGURE 2 February

MONTHLY RAINFALL DISTRIBUTION

STATION HOLLAND

1961 - 1981

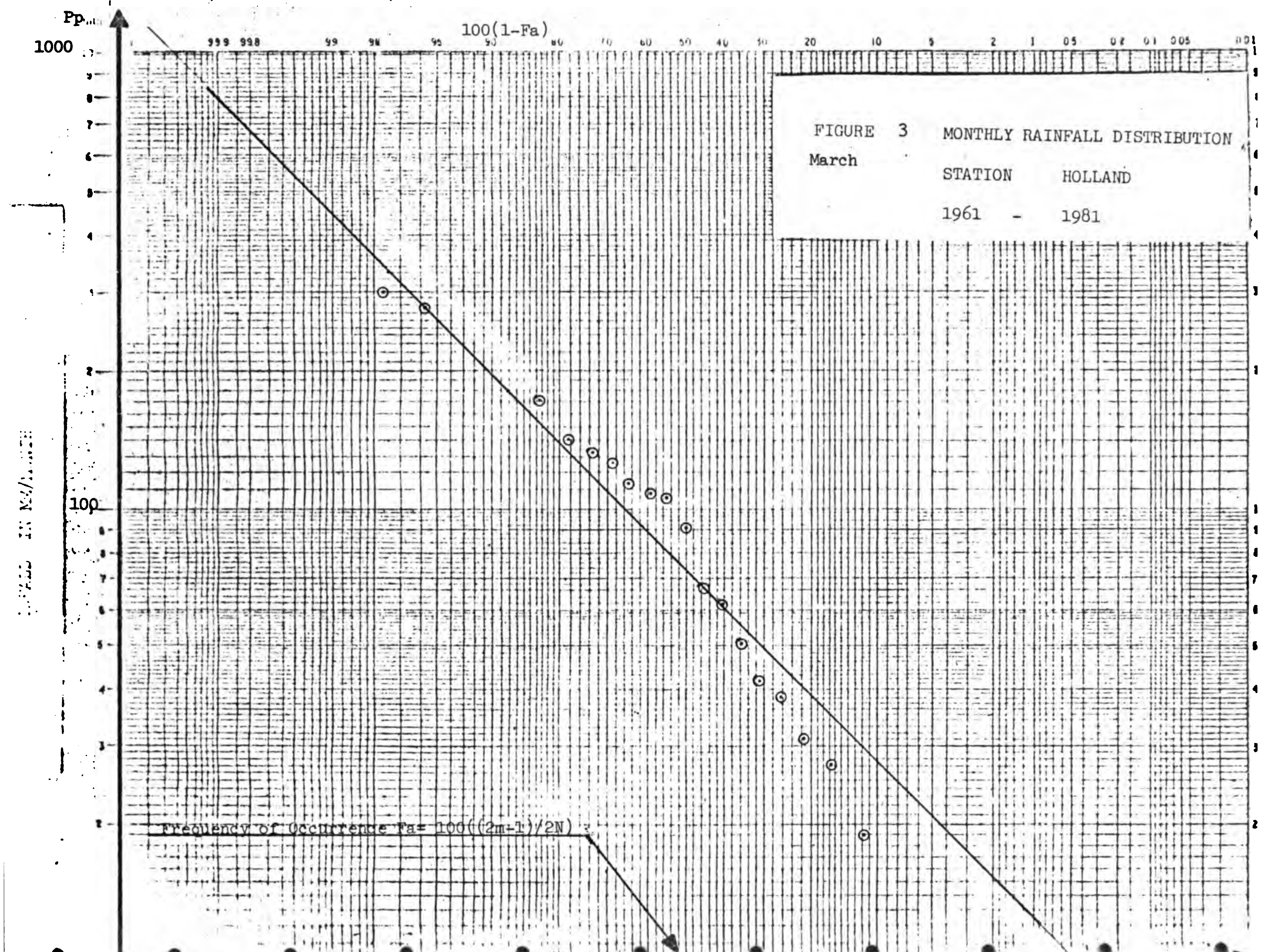
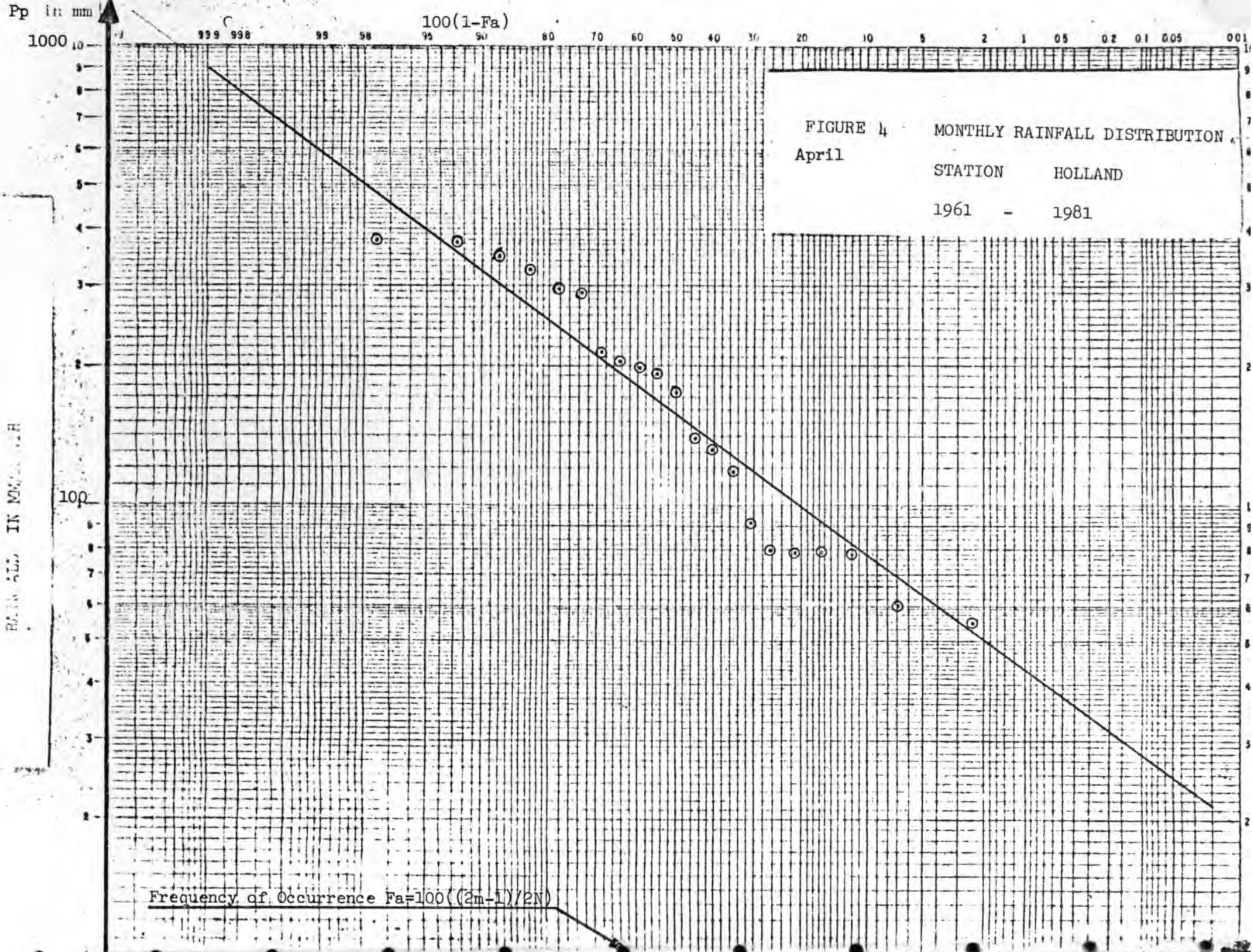


FIGURE 3 MONTHLY RAINFALL DISTRIBUTION
March
STATION HOLLAND
1961 - 1981
100(1-Fa)
Pp
1000
100
Frequency of Occurrence Fa= 100((2m-1)/2N)



Pp in mm
1000
100
100(1-Fa)
RAINFALL IN MM/MONTH
Frequency of Occurrence Fa=100((2m-1)/2N)
FIGURE 4
April
MONTHLY RAINFALL DISTRIBUTION
STATION HOLLAND
1961 - 1981

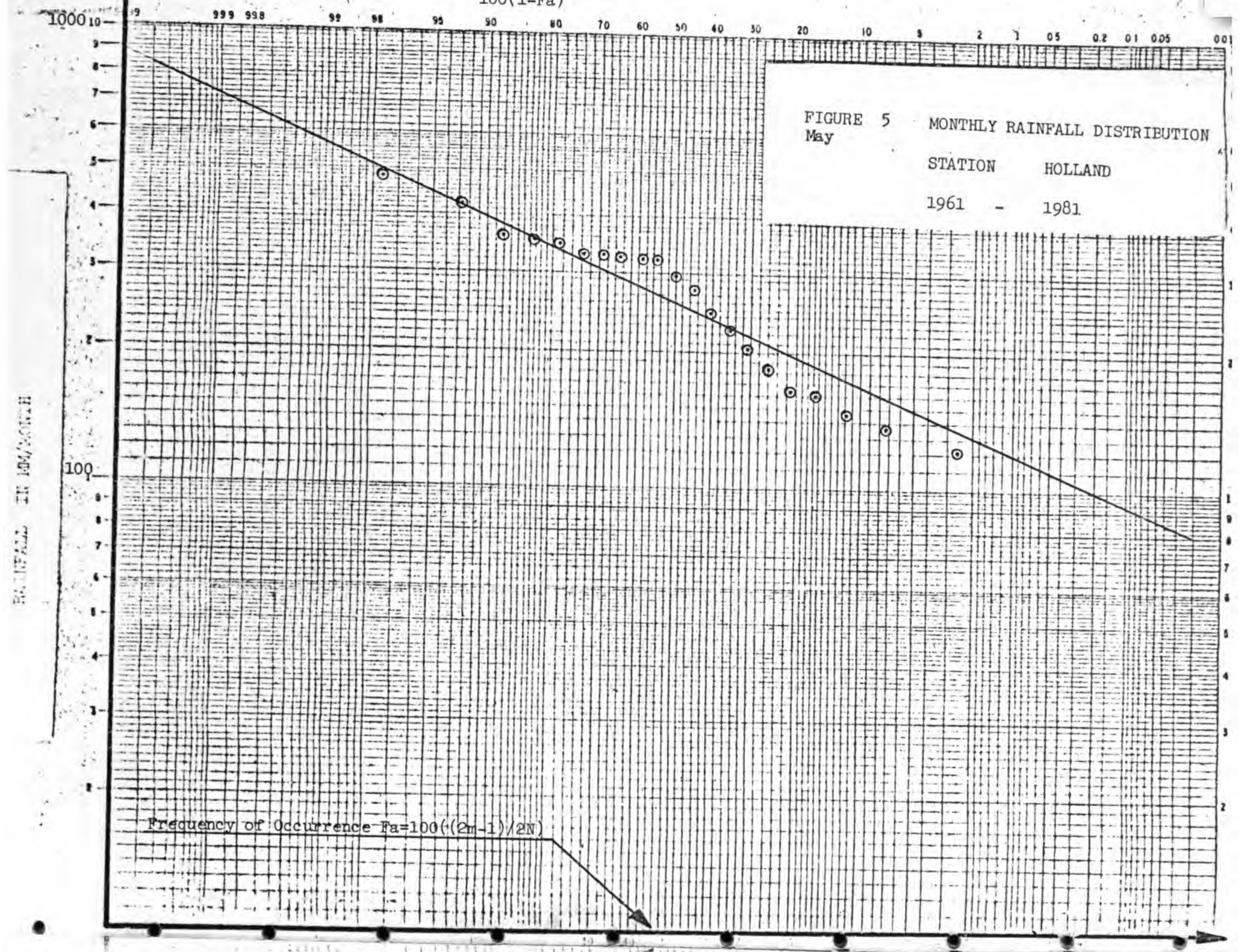
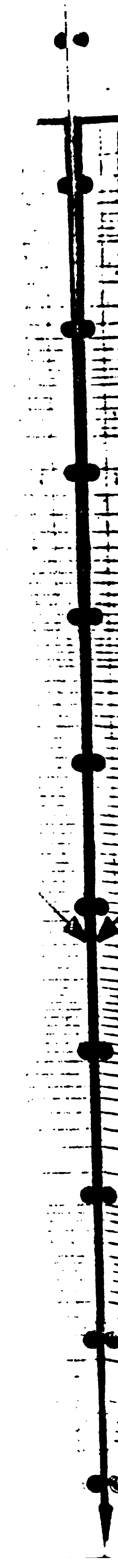
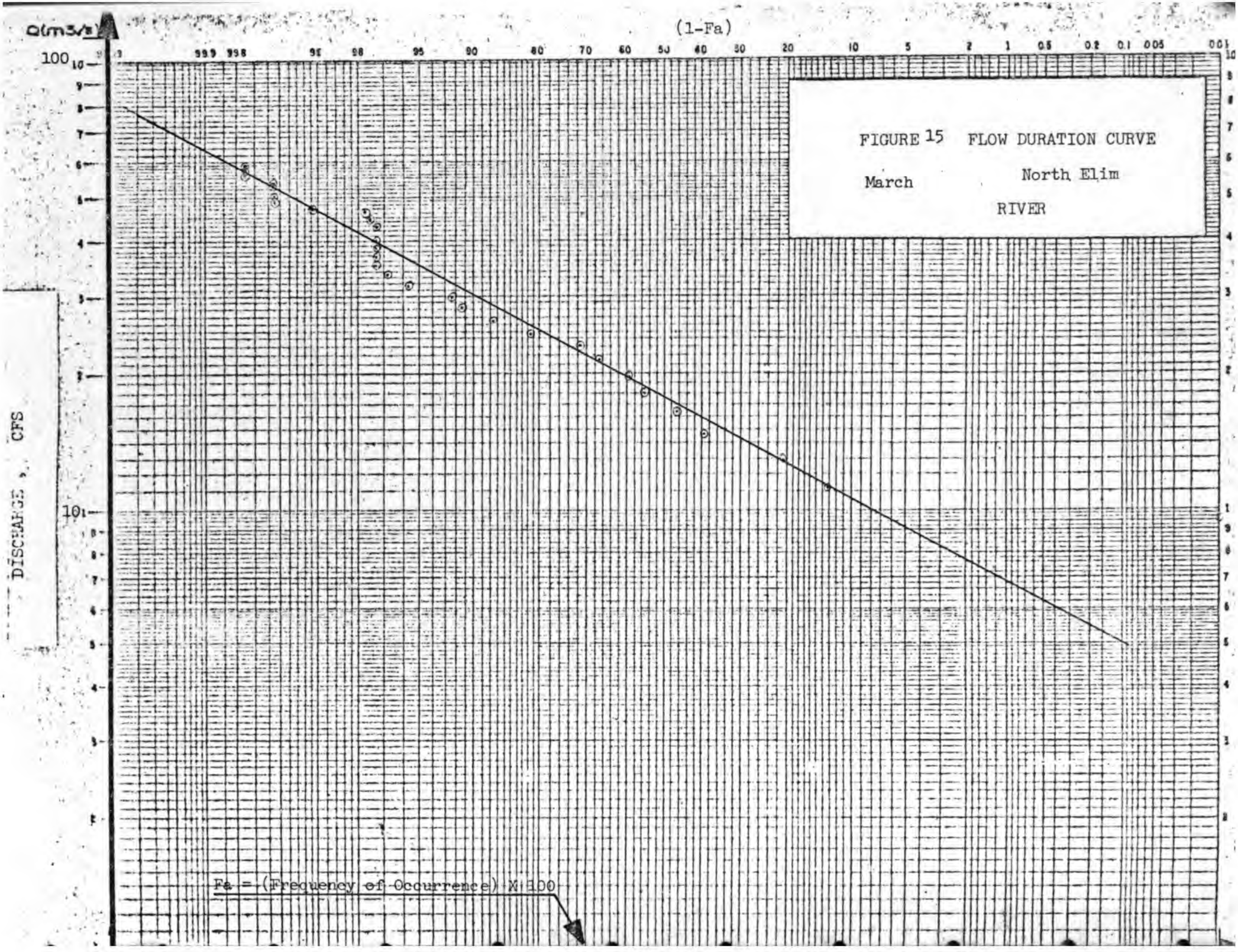


FIGURE 5 MONTHLY RAINFALL DISTRIBUTION
May
STATION HOLLAND
1961 - 1981





Q(m3/s)
(1-Fa)
DISCHARGE , CFS
FIGURE 15 FLOW DURATION CURVE
March North Elim
RIVER
Fa = (Frequency of Occurrence) X 100

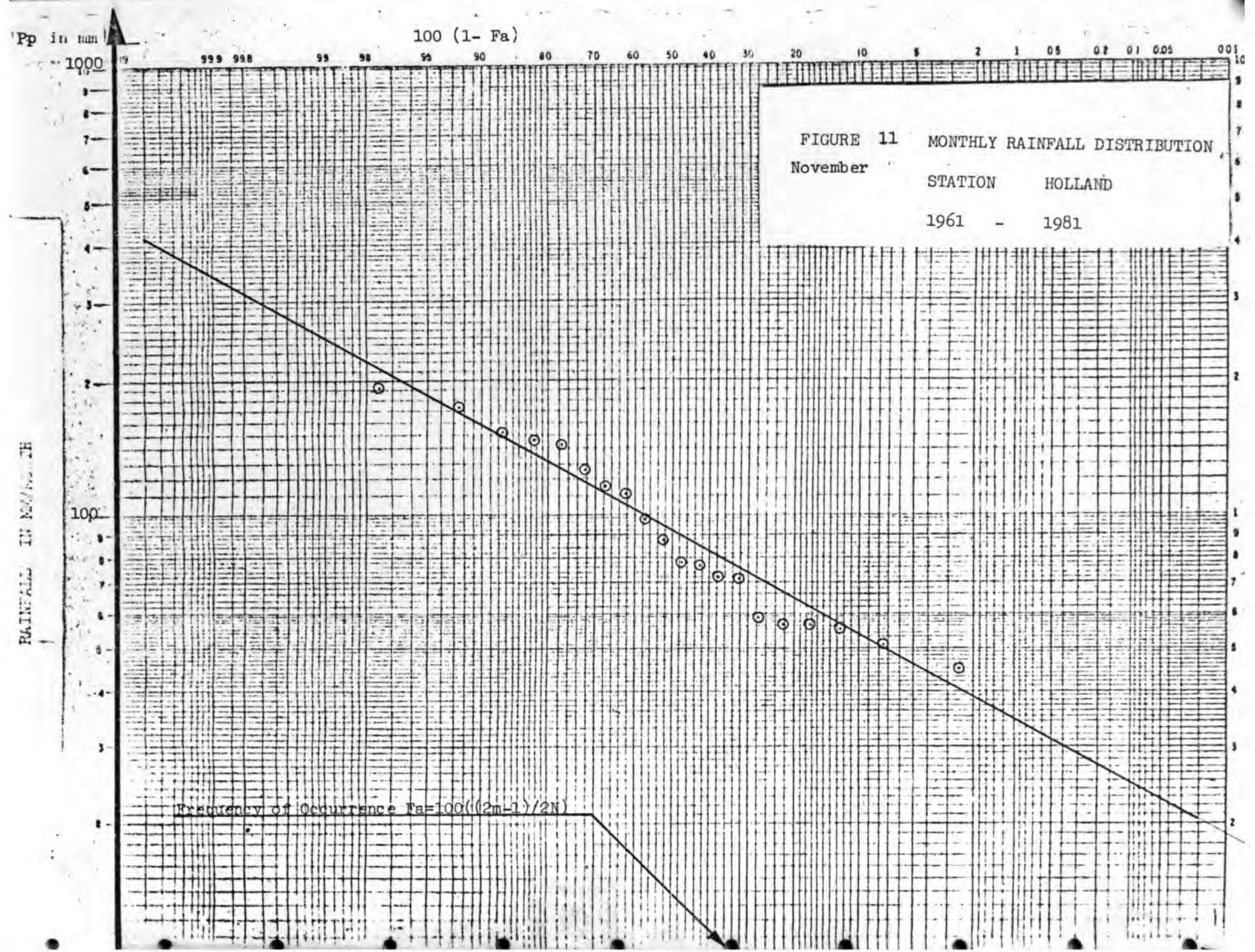
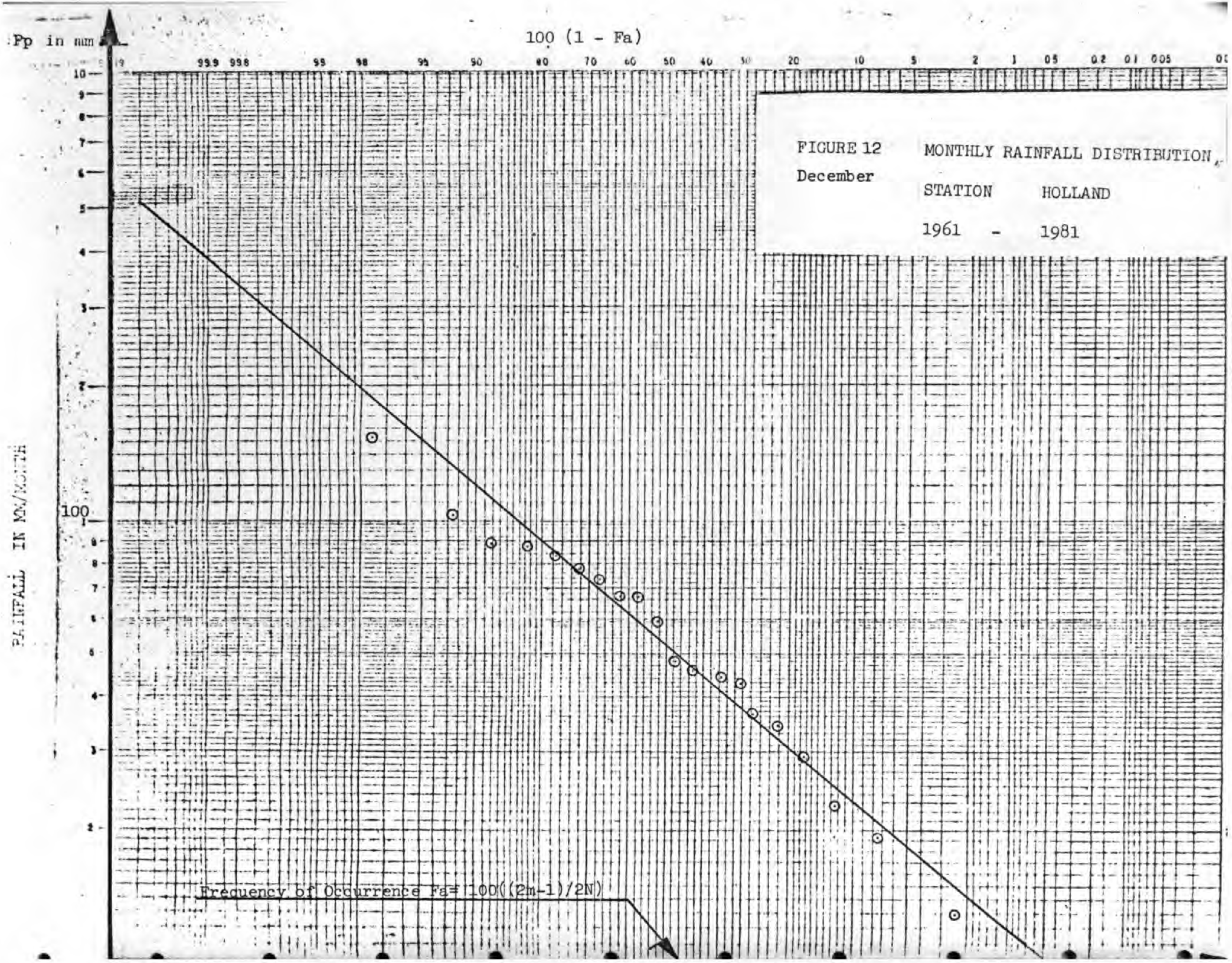
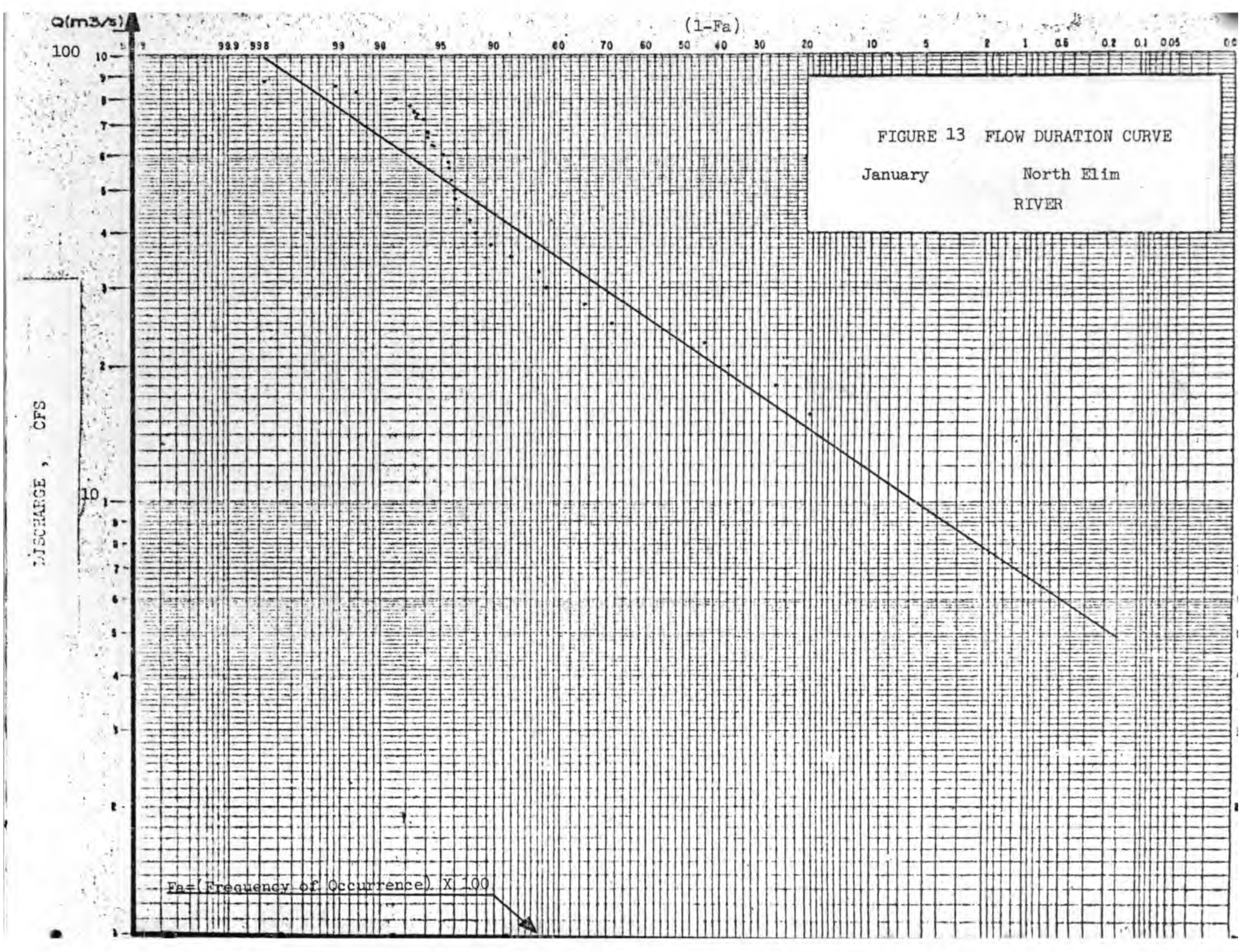
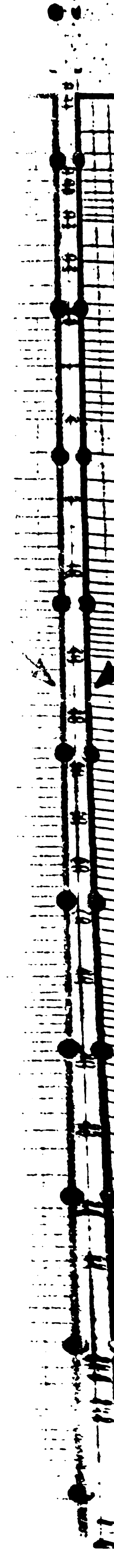

Pp in mm
100 (1- Fa)
FIGURE 11 MONTHLY RAINFALL DISTRIBUTION
November
STATION HOLLAND
1961 - 1981
1000
100
Frequency of Occurrence Fa=100((2m-1)/2N)

FIGURE 12 MONTHLY RAINFALL DISTRIBUTION,
December STATION HOLLAND
1961 - 1981





Q(m3/s)
100
10
DISCHARGE , CFS
(1-Fa)
99.9 99.8
99
98
95
90
80
70
60
50
40
30
20
10
5
2
1
0.5
0.2
0.1 0.05
FIGURE 13 FLOW DURATION CURVE
January North Elim
RIVER
Fa=(Frequency of Occurrence) X 100



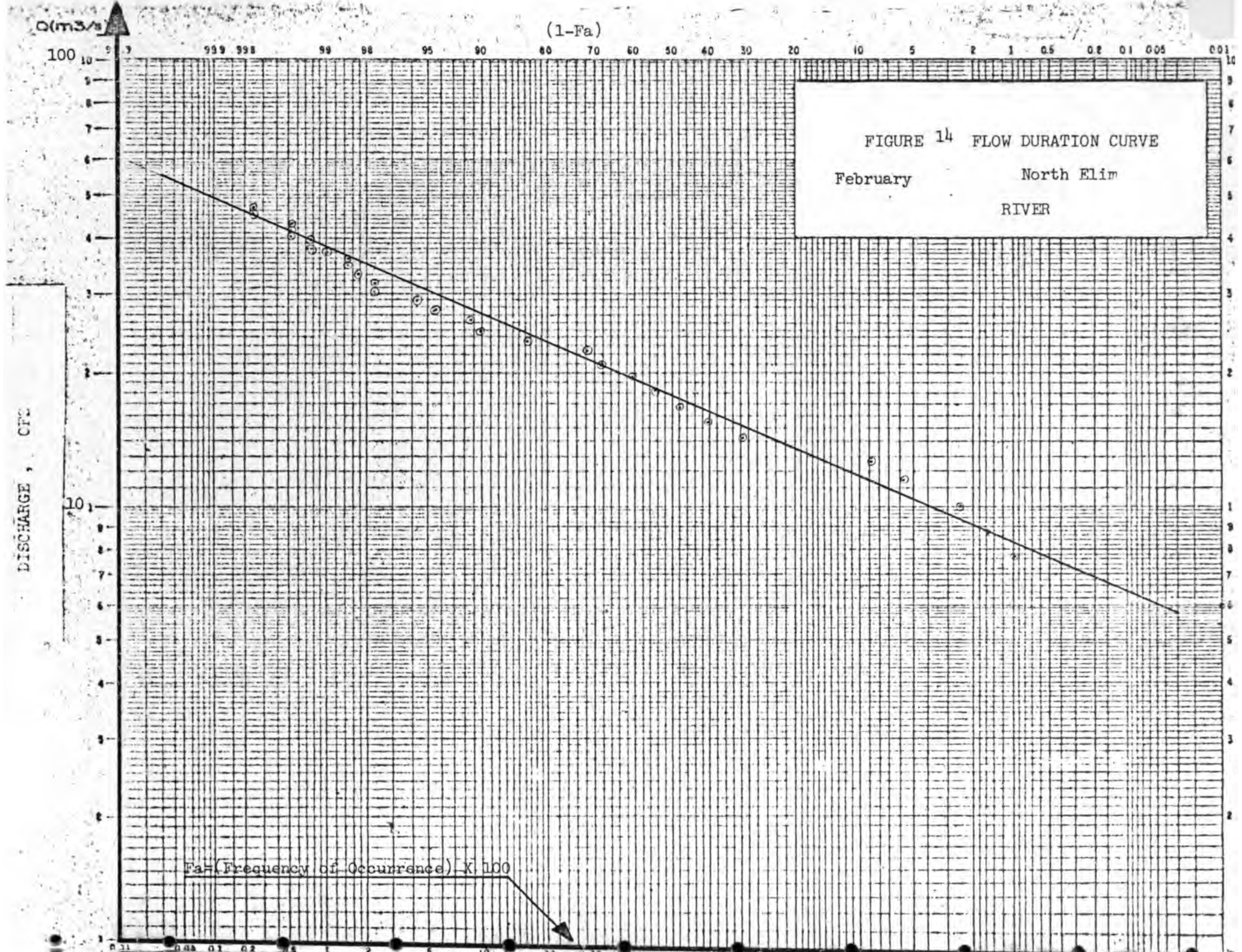
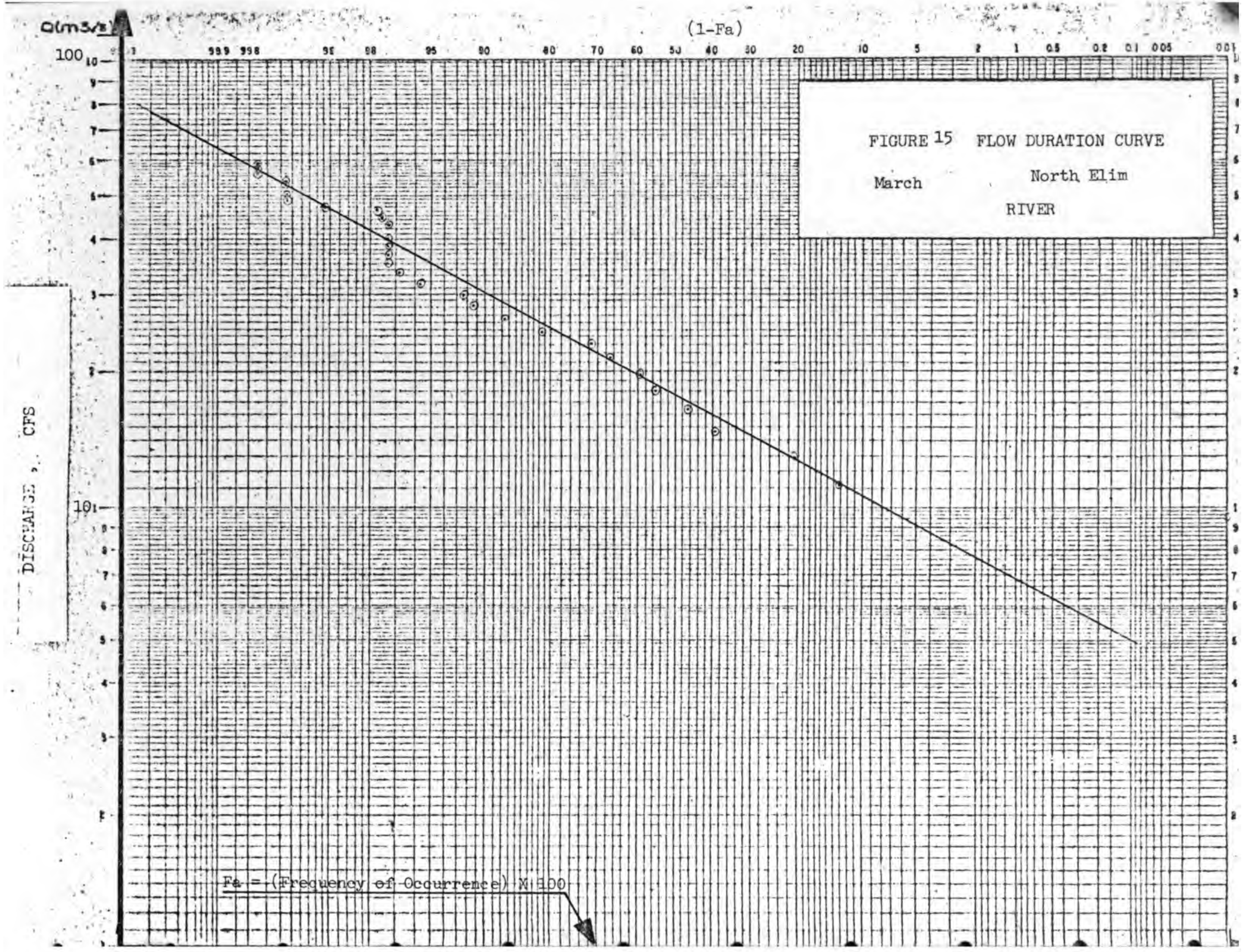


FIGURE 14 FLOW DURATION CURVE
February
North Elim
RIVER
(1-Fa)
Q(m3/s)
100
10
DISCHARGE , CFS
Fa=(Frequency of Occurrence) X 100


Q(m3/s)
(1-Fa)
DISCHARGE , CFS
Fa = (Frequency of Occurrence) X 100
FIGURE 15 FLOW DURATION CURVE
March
North Elim
RIVER

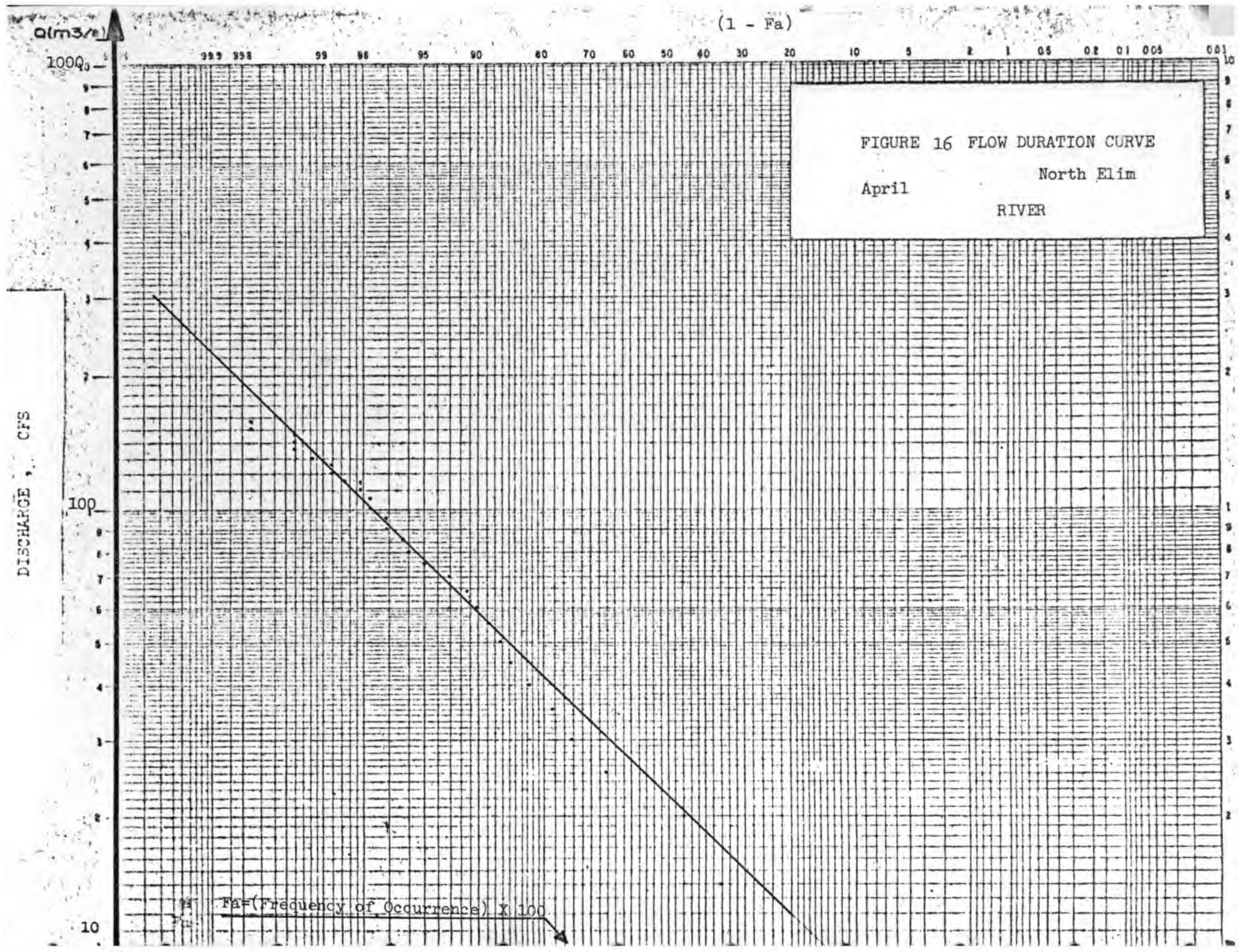


FIGURE 16 FLOW DURATION CURVE

North Elim RIVER

April

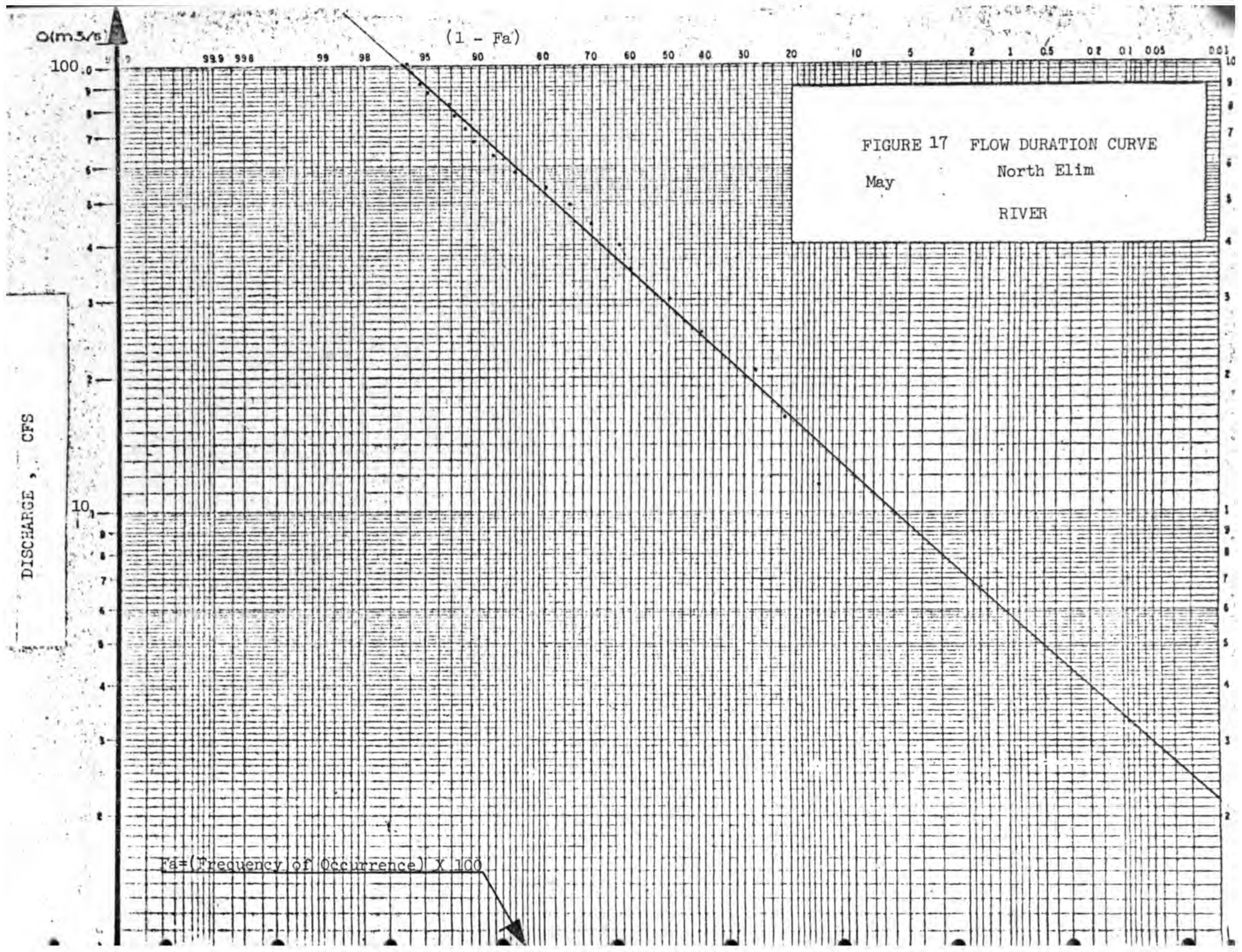
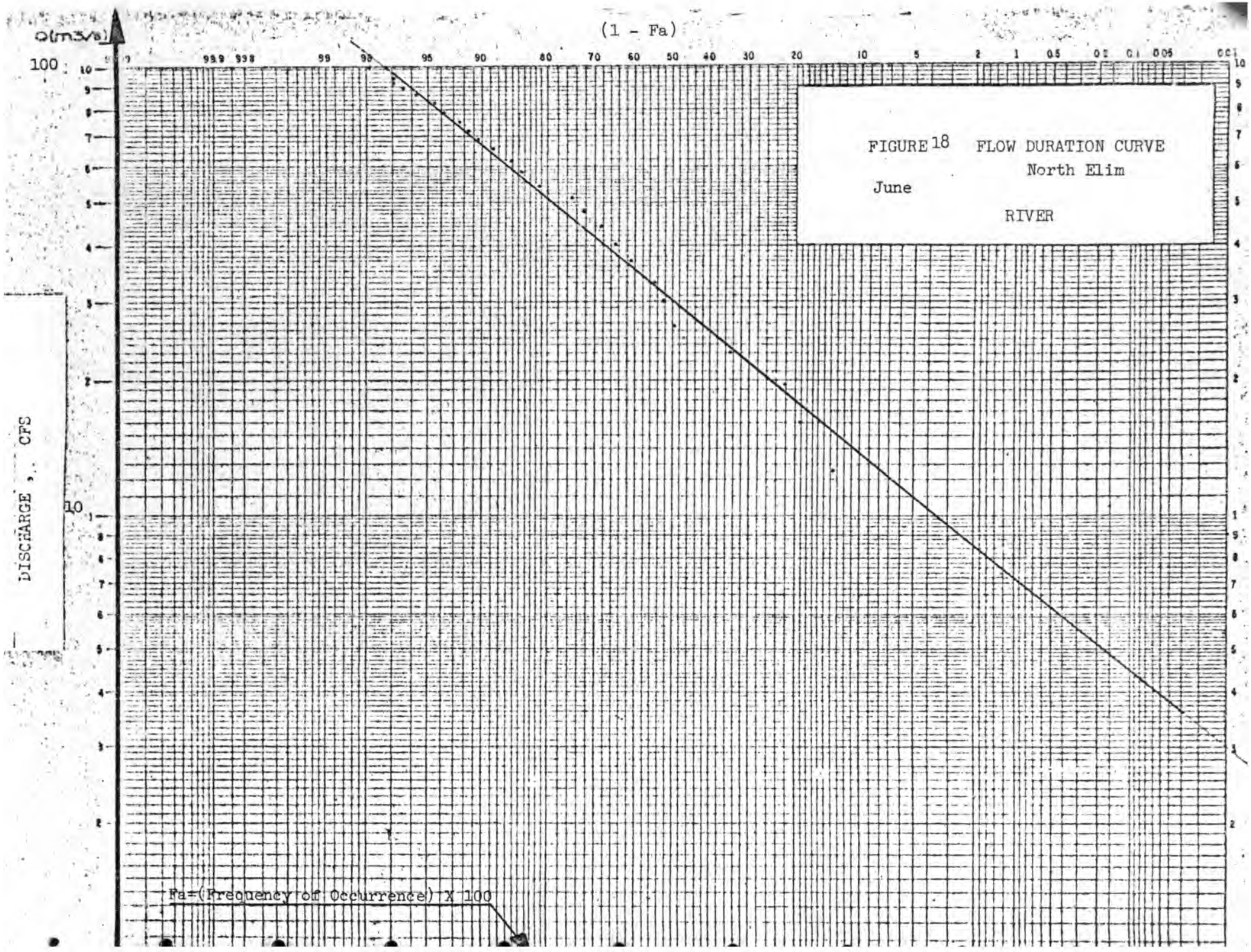


FIGURE 17 FLOW DURATION CURVE
May
North Elim
RIVER



(1 - Fa)
Q(m3/s)
100
10
DISCHARGE , CFS
99.9
99.8
99
98
95
90
80
70
60
50
40
30
20
10
5
2
1
0.5
0.2
0.1
0.05
0.01
FIGURE 18 FLOW DURATION CURVE
North Elim
June
RIVER
Fa=(Frequency of Occurrence) X 100

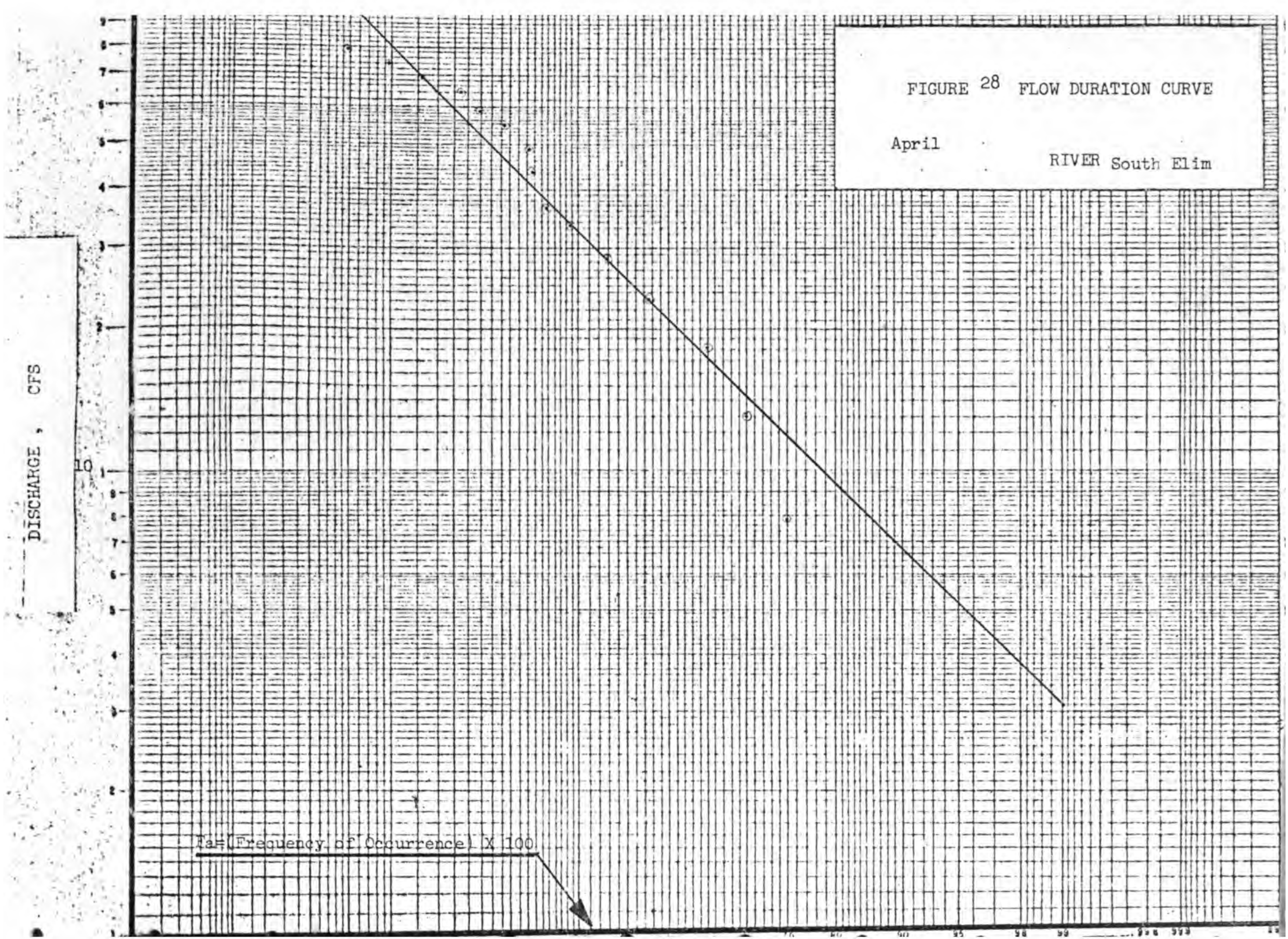


FIGURE 28 FLOW DURATION CURVE

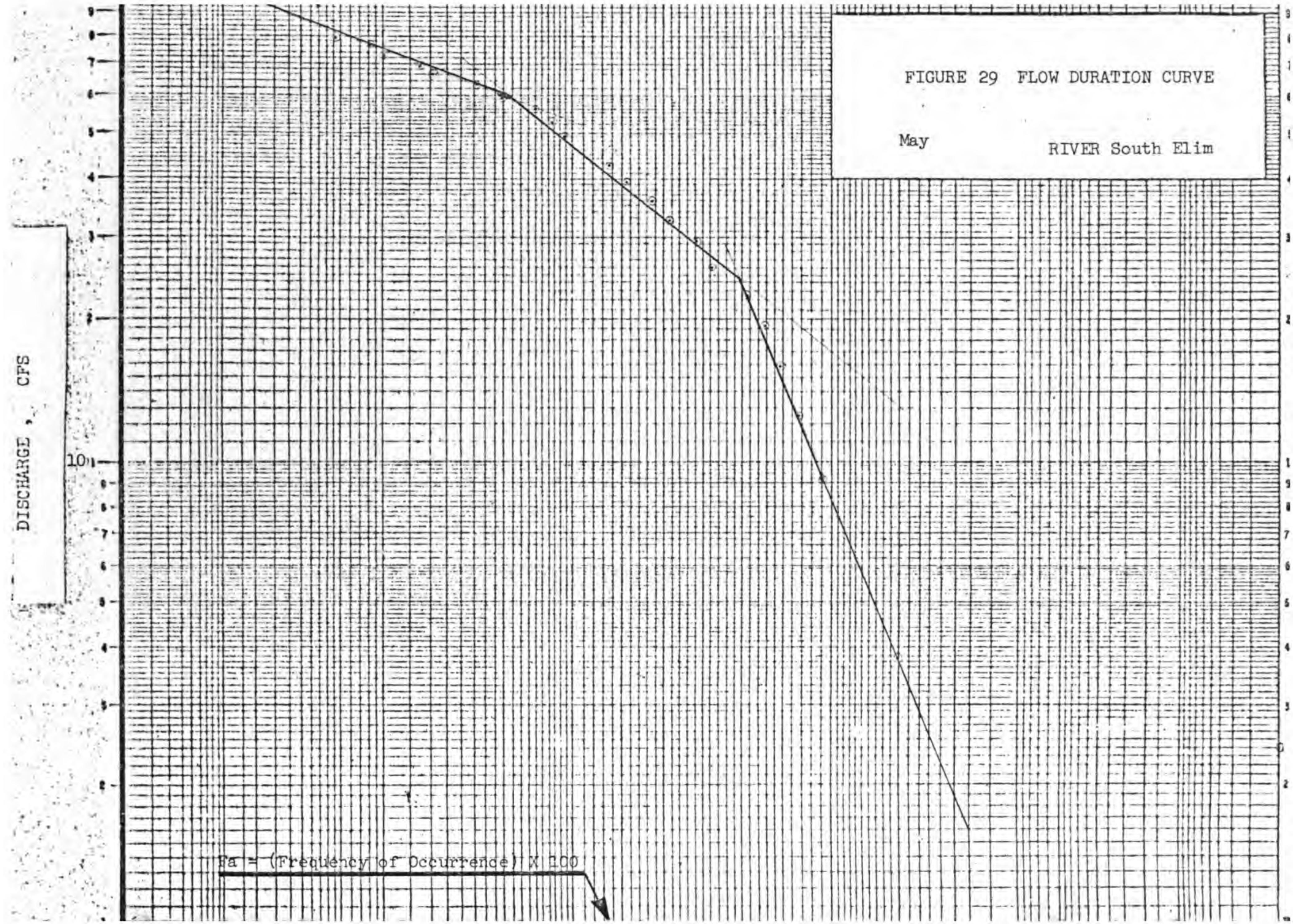


FIGURE 29 FLOW DURATION CURVE

May RIVER South Elim

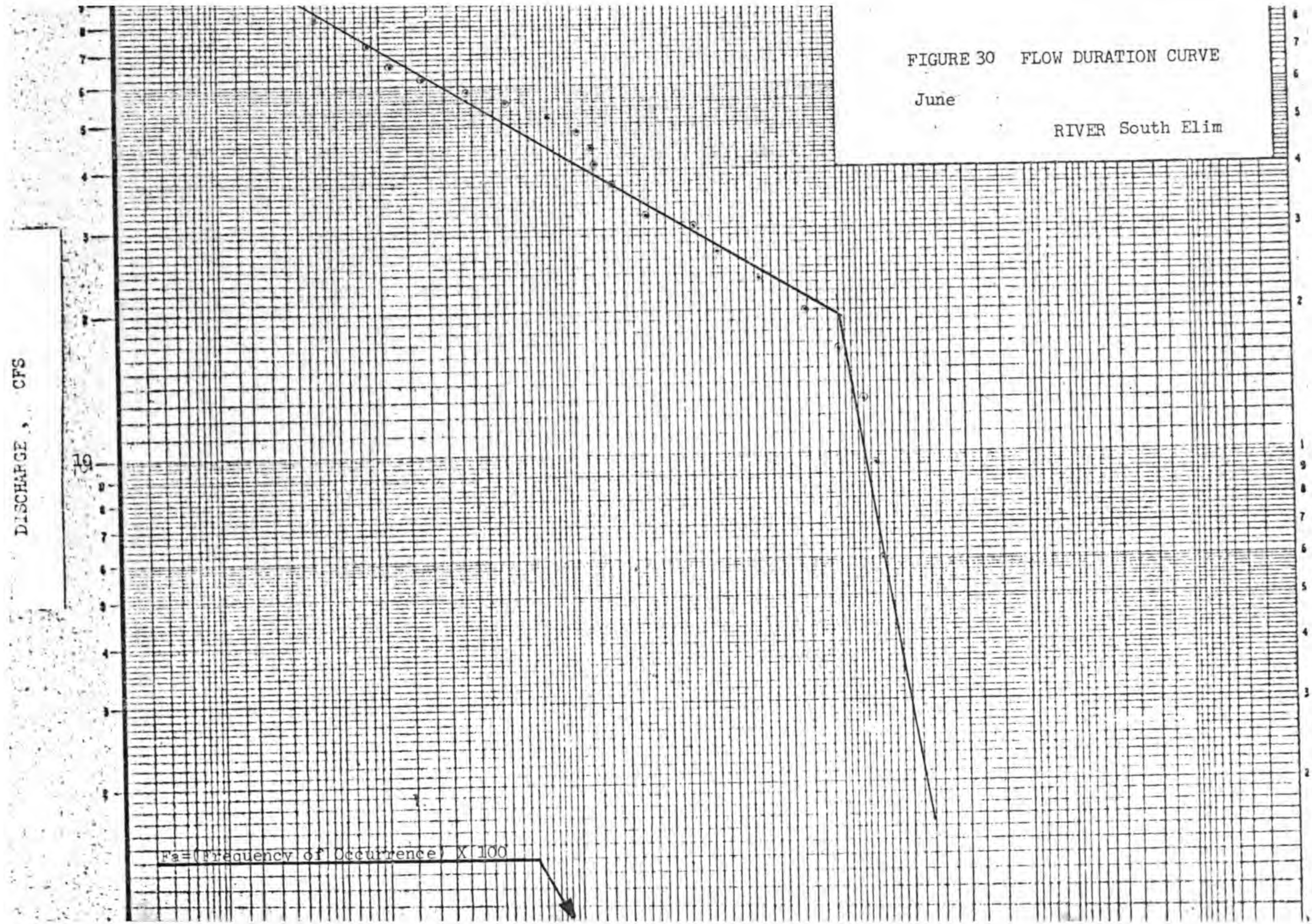


FIGURE 30 FLOW DURATION CURVE

June

RIVER South Elim

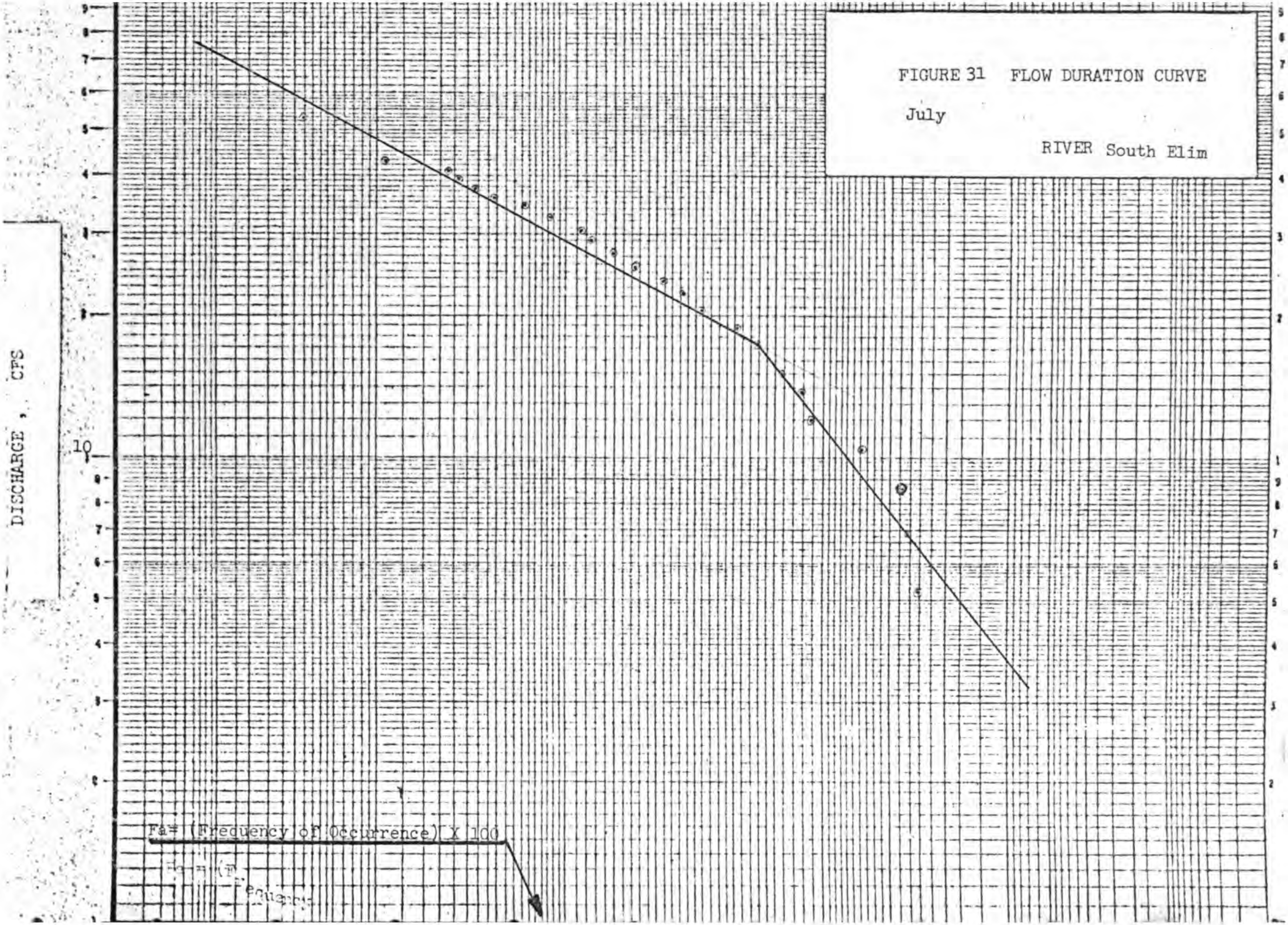


FIGURE 31 FLOW DURATION CURVE

July

RIVER South Elim

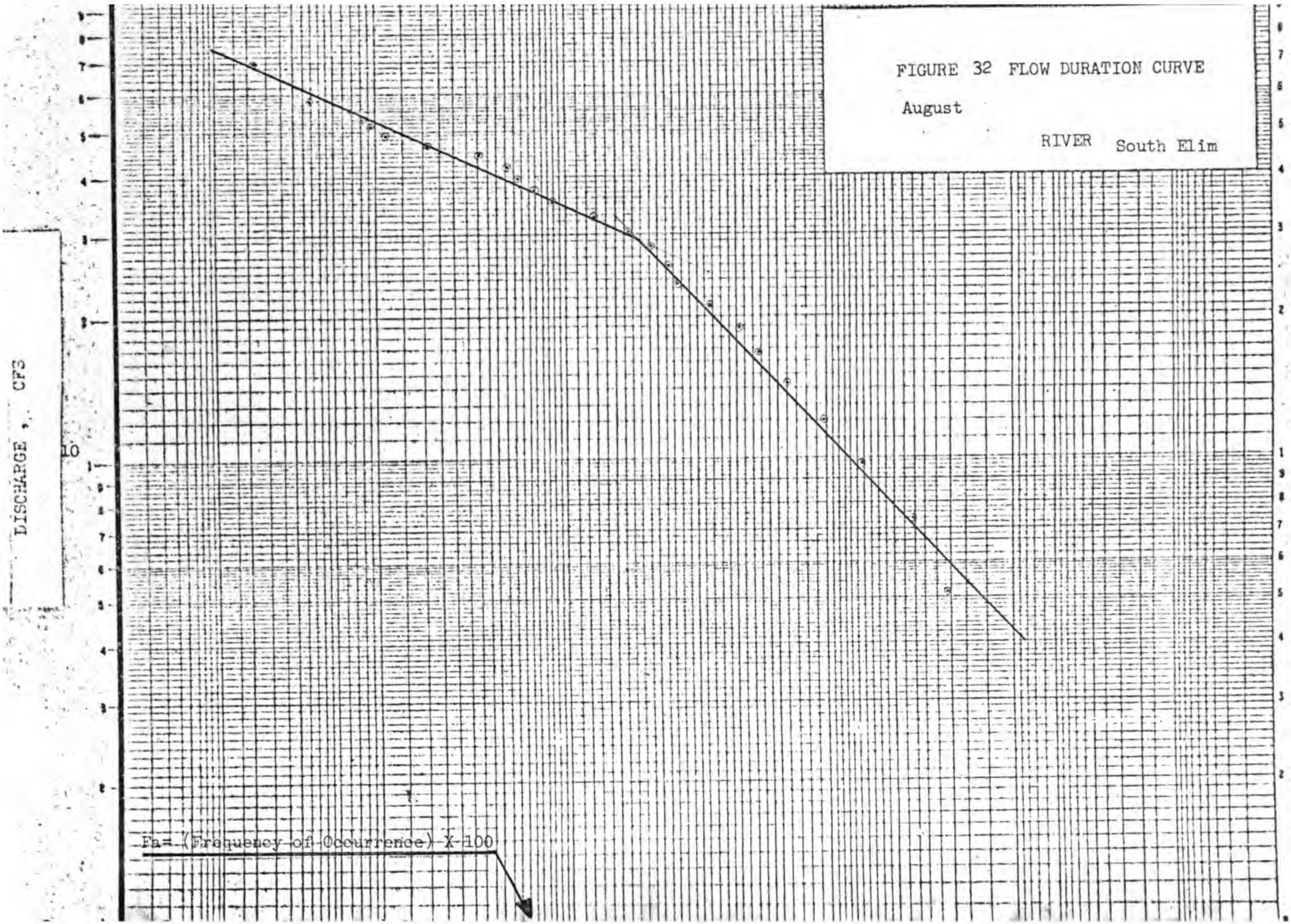


FIGURE 32 FLOW DURATION CURVE

August

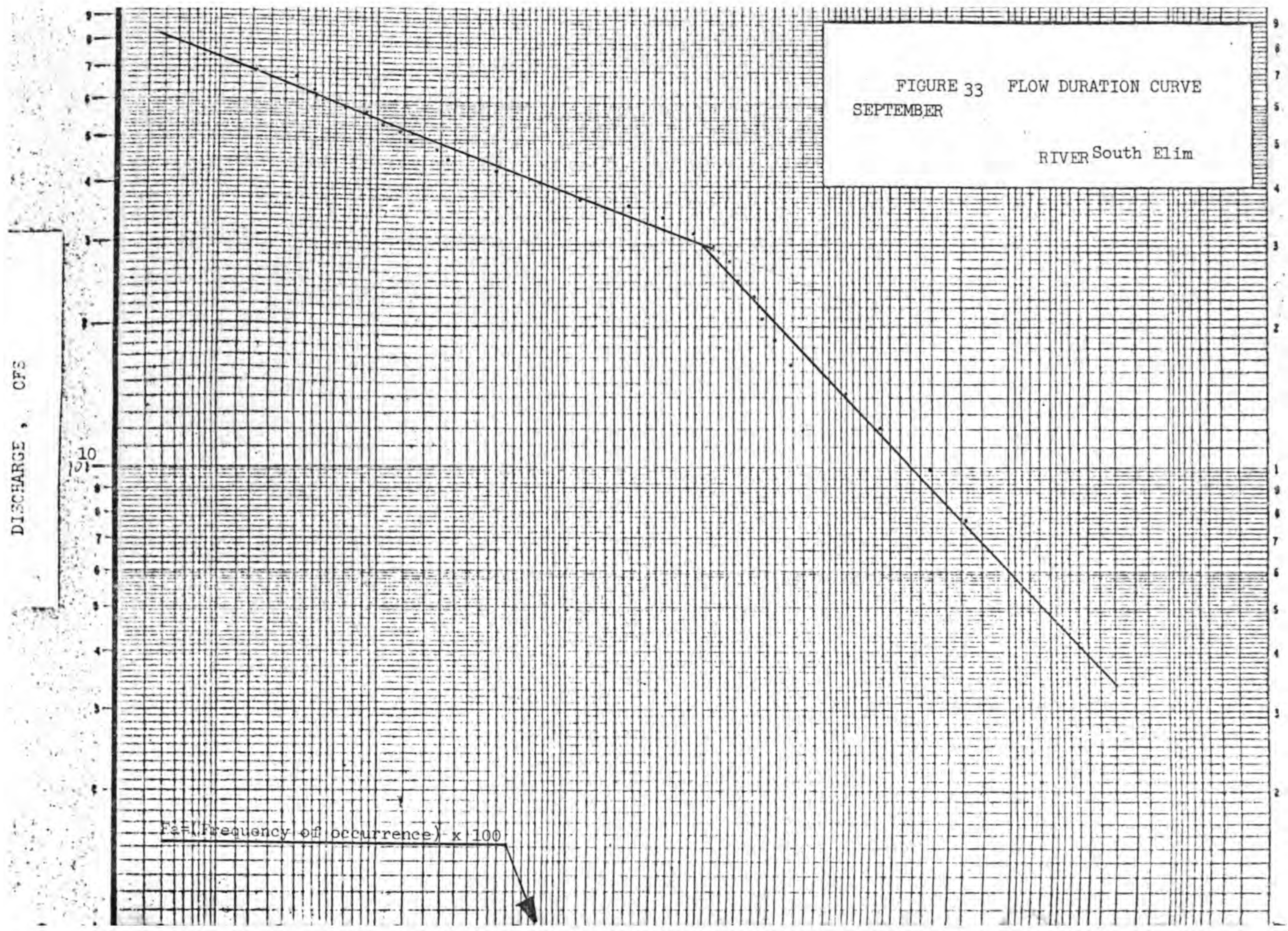


FIGURE 33 FLOW DURATION CURVE
SEPTEMBER
RIVER South Elim

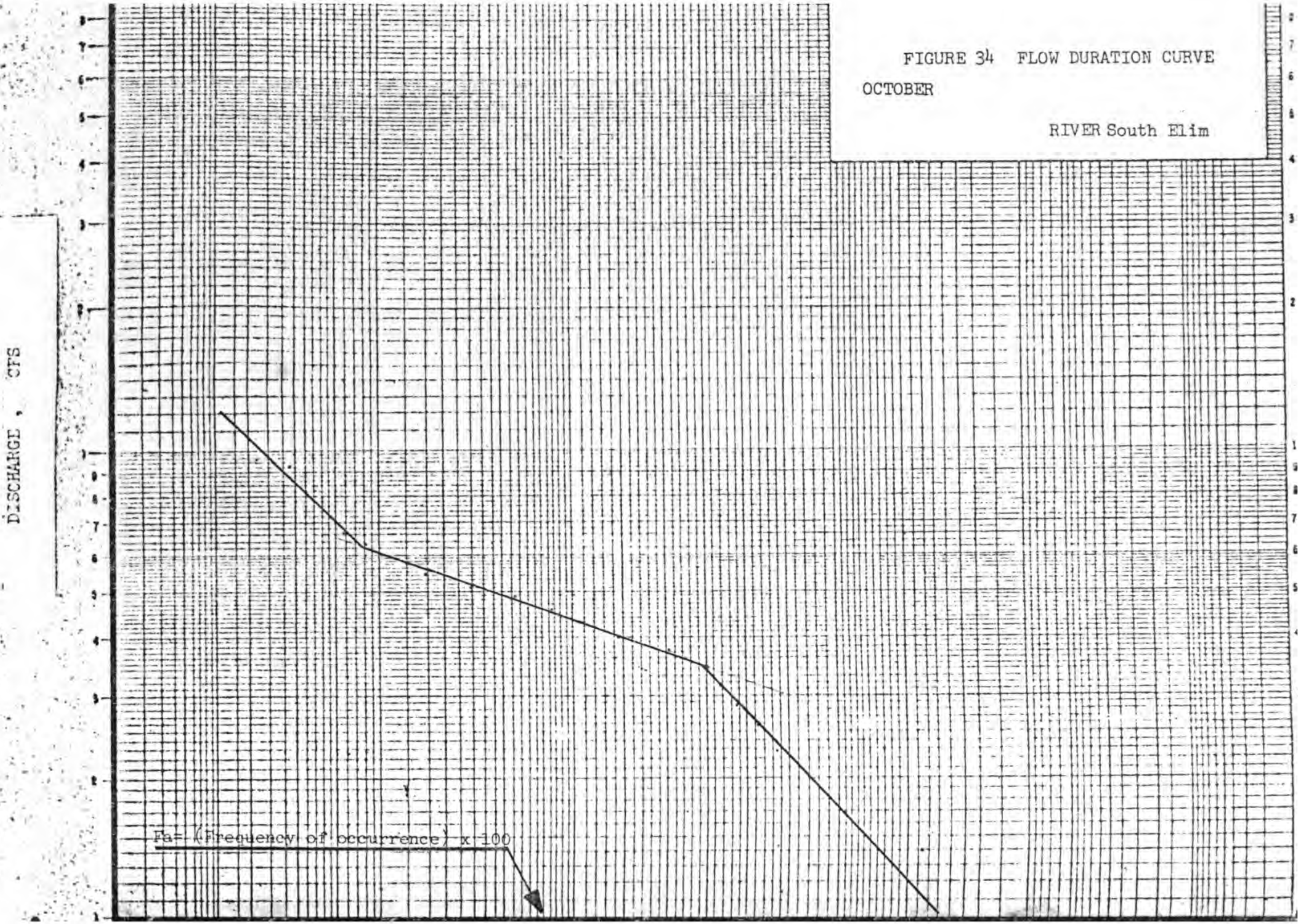


FIGURE 34 FLOW DURATION CURVE

OCTOBER

RIVER South Elim

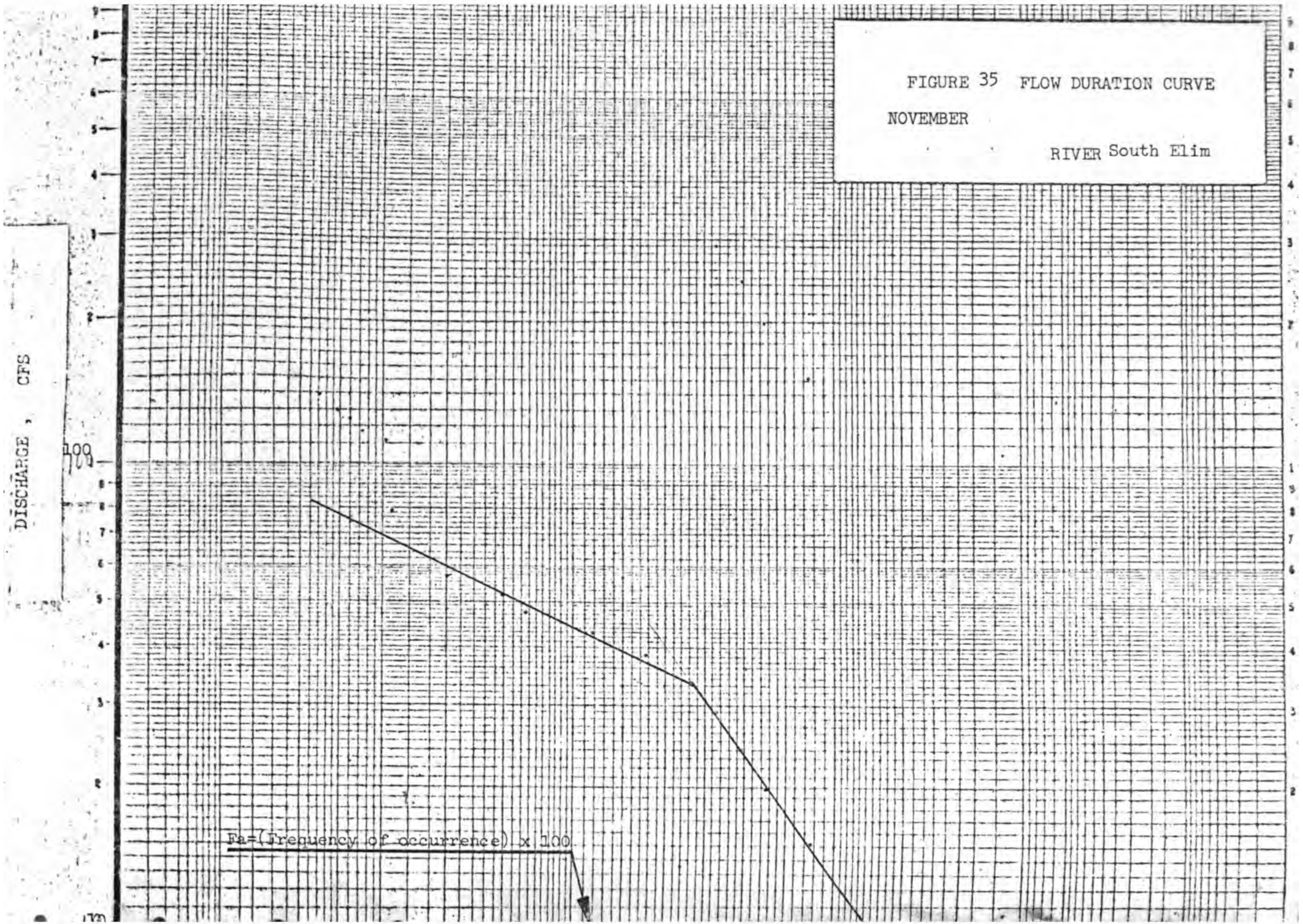


FIGURE 35 FLOW DURATION CURVE
NOVEMBER
RIVER South Elim
DISCHARGE , CFS
100
Fa=(Frequency of occurrence) x 100

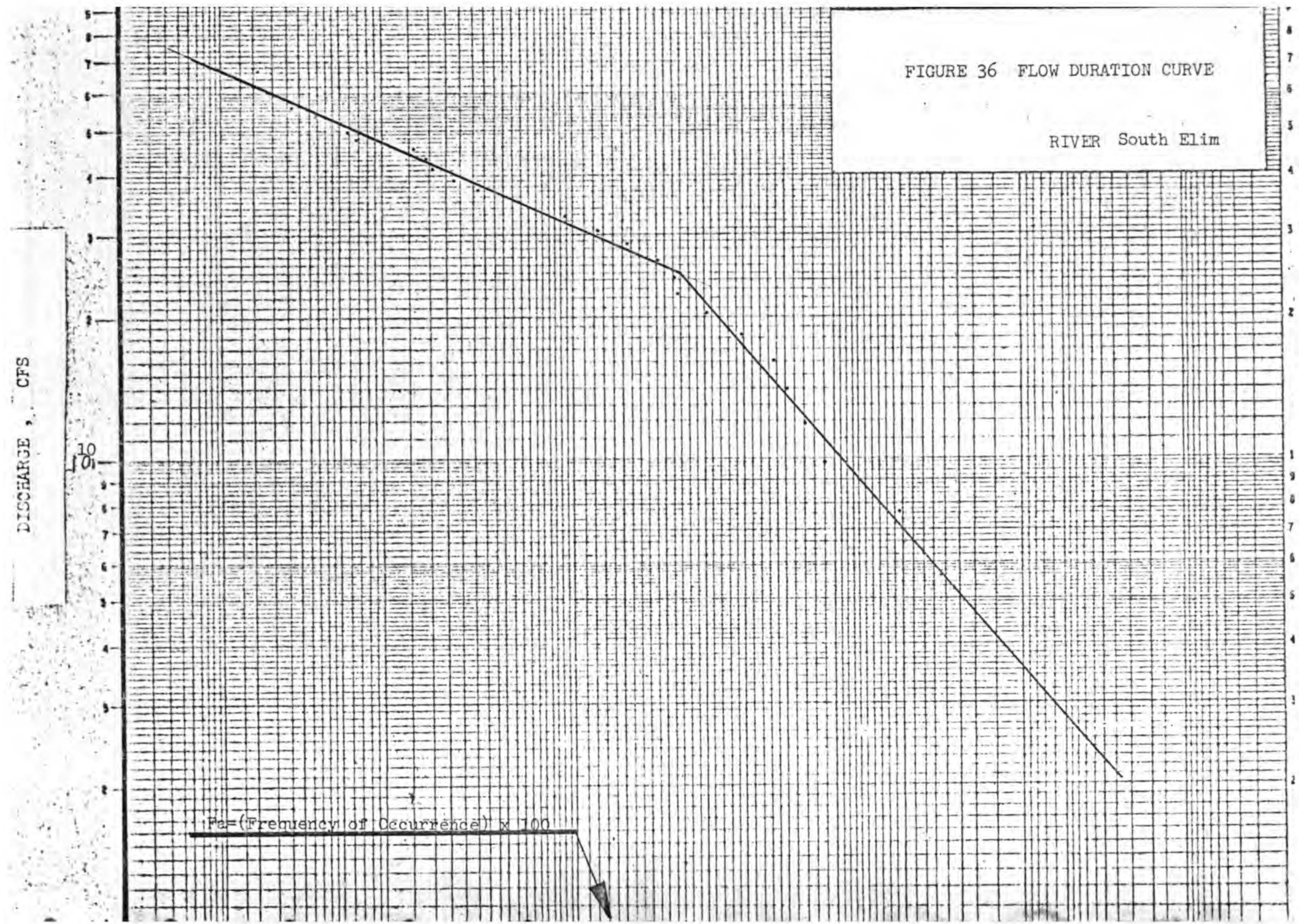


FIGURE 36 FLOW DURATION CURVE

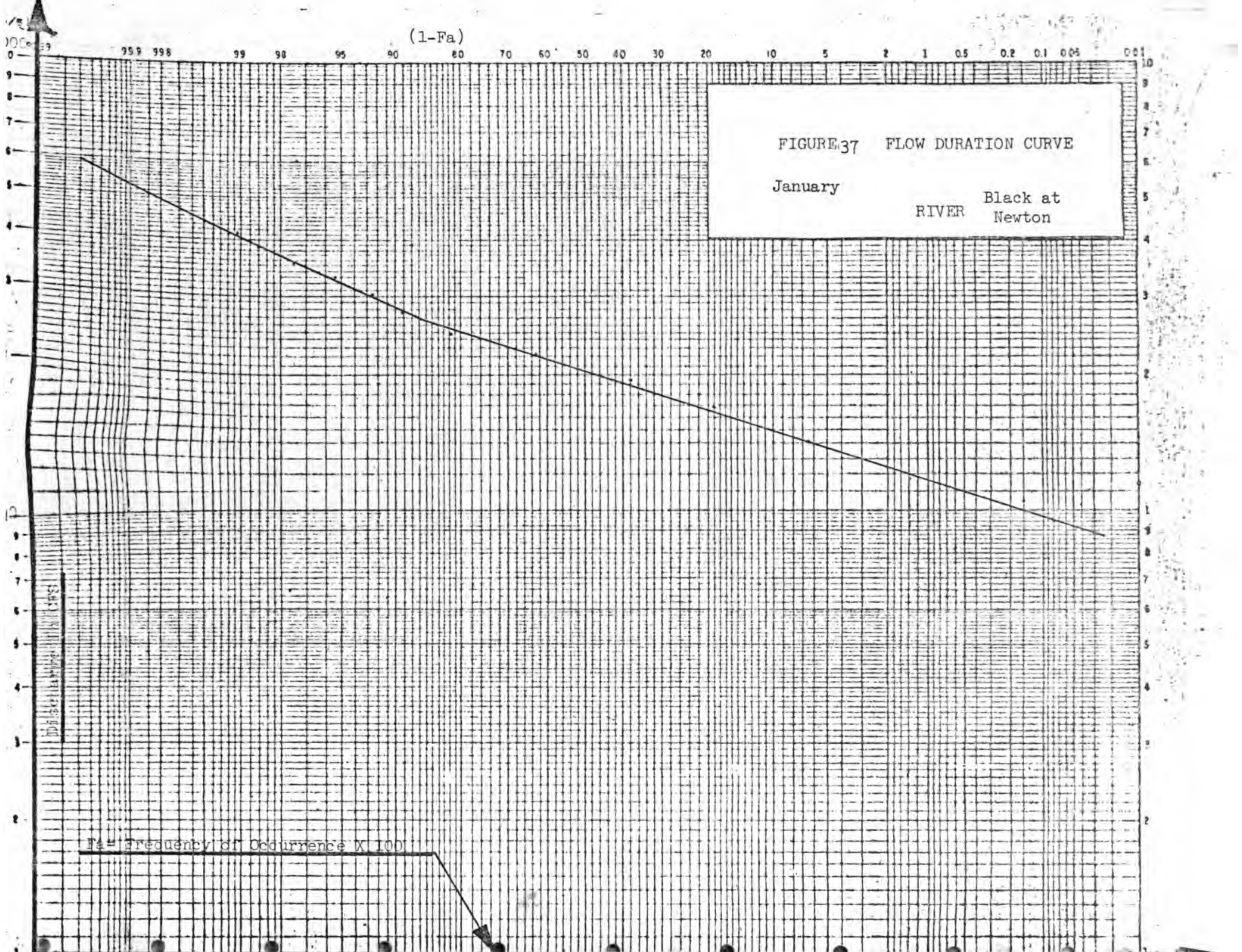
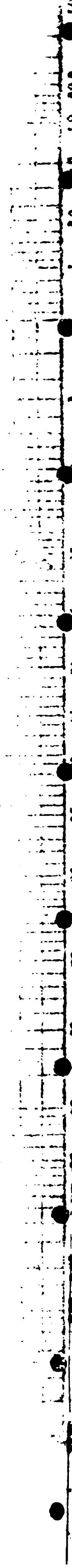
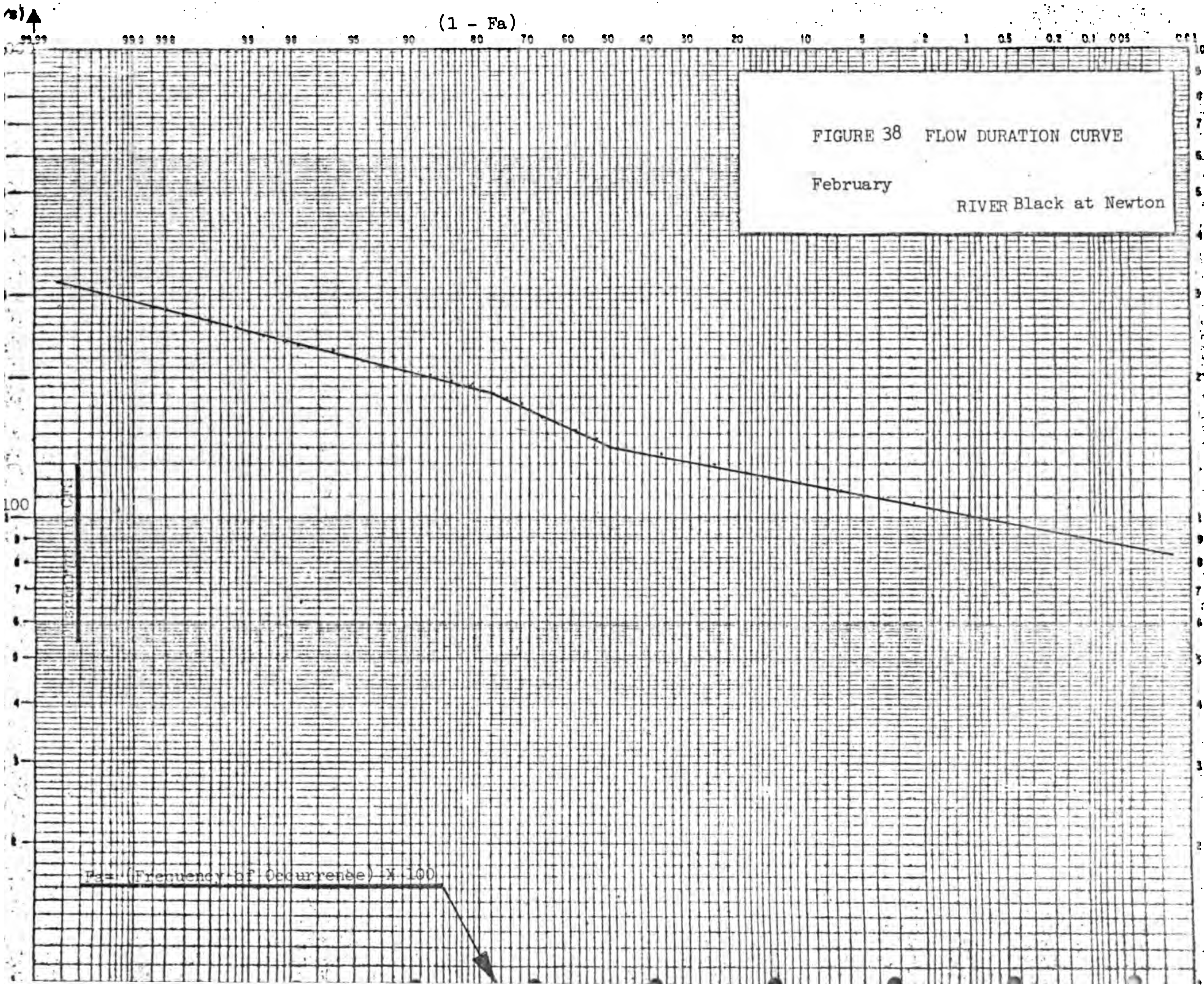


FIGURE 37 FLOW DURATION CURVE

January

RIVER Black at Newton





(1 - Fa)
FIGURE 38 FLOW DURATION CURVE
February
RIVER Black at Newton
100
Fa= (Frequency of Occurrence) X 100

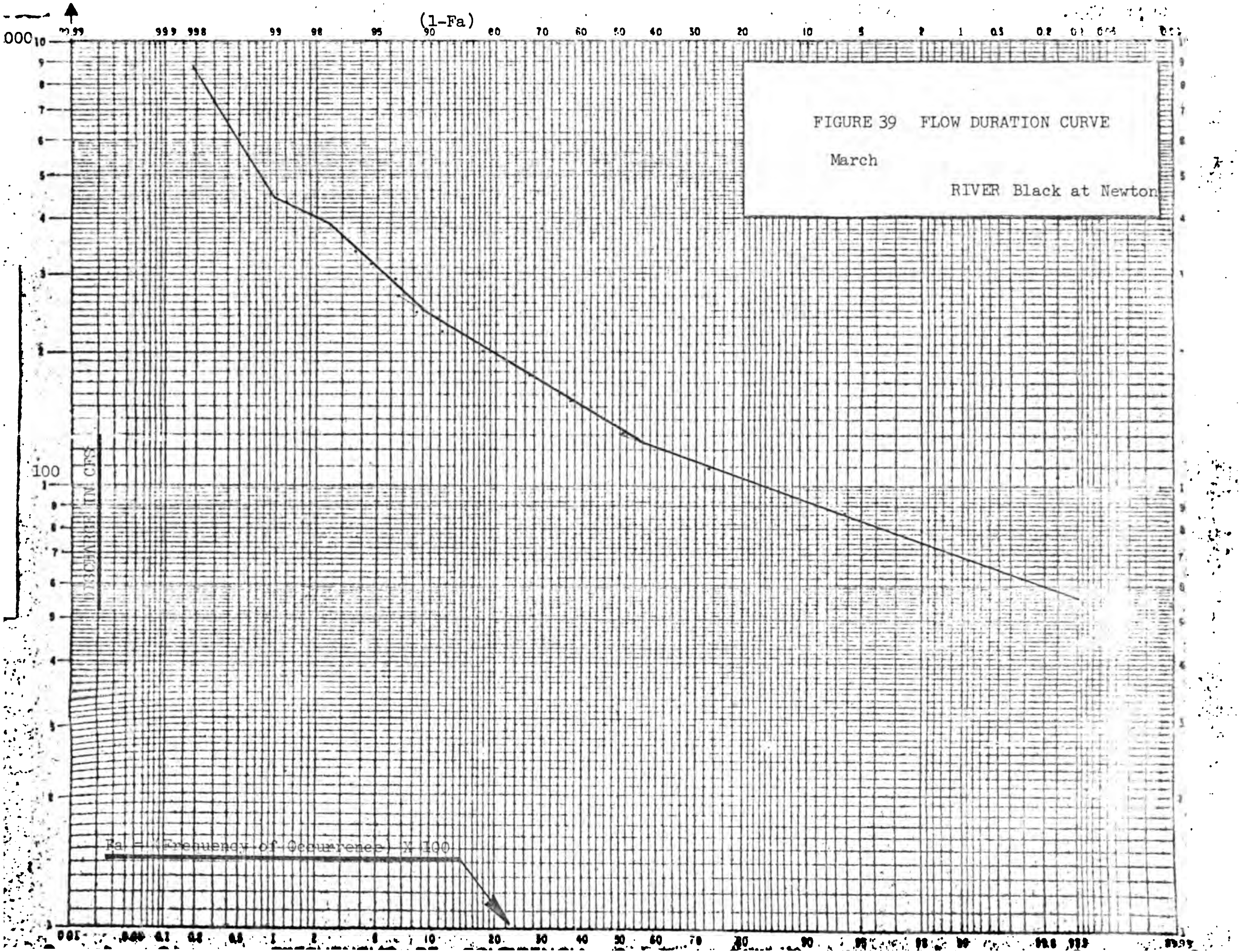


FIGURE 39 FLOW DURATION CURVE

March

RIVER Black at Newton

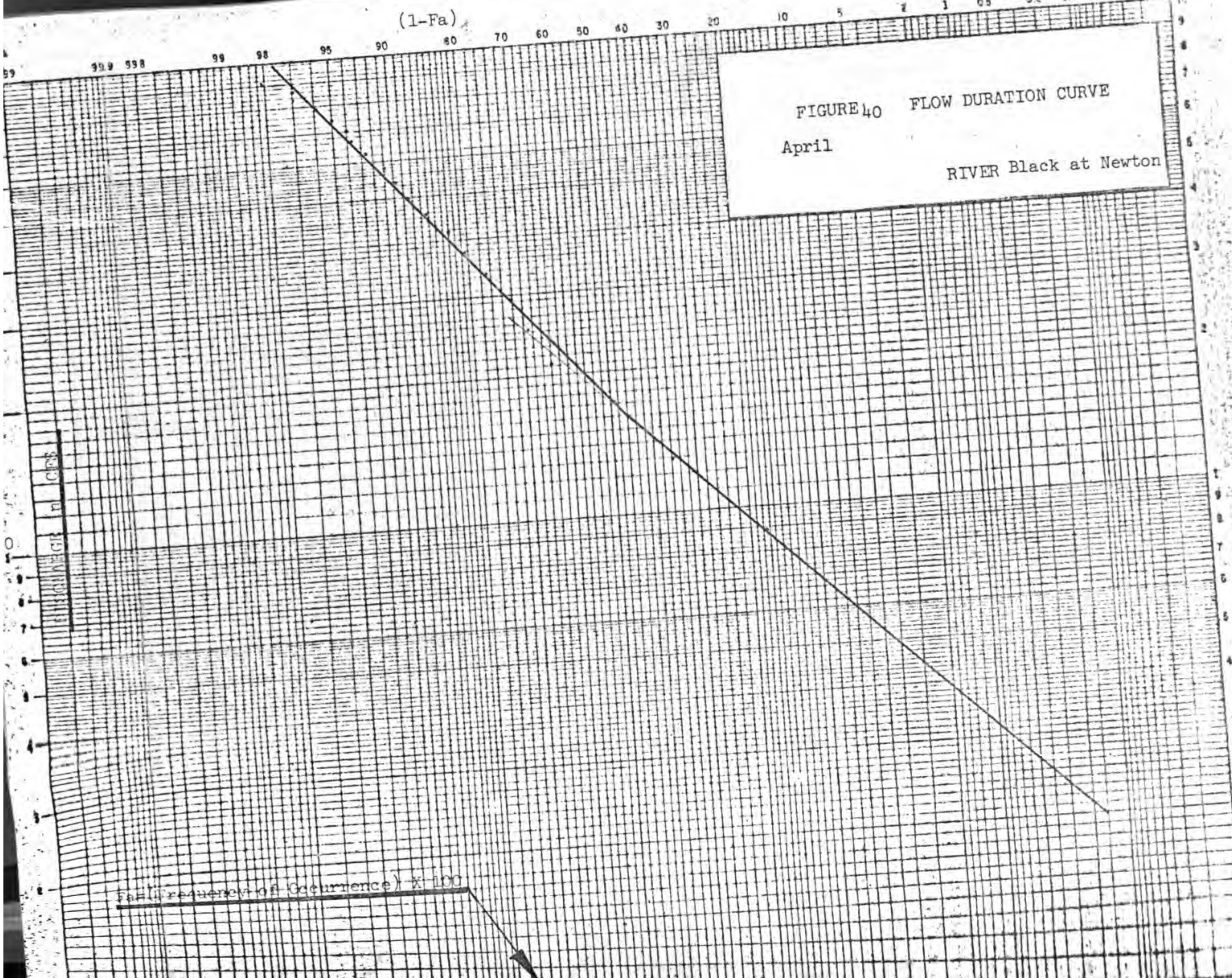
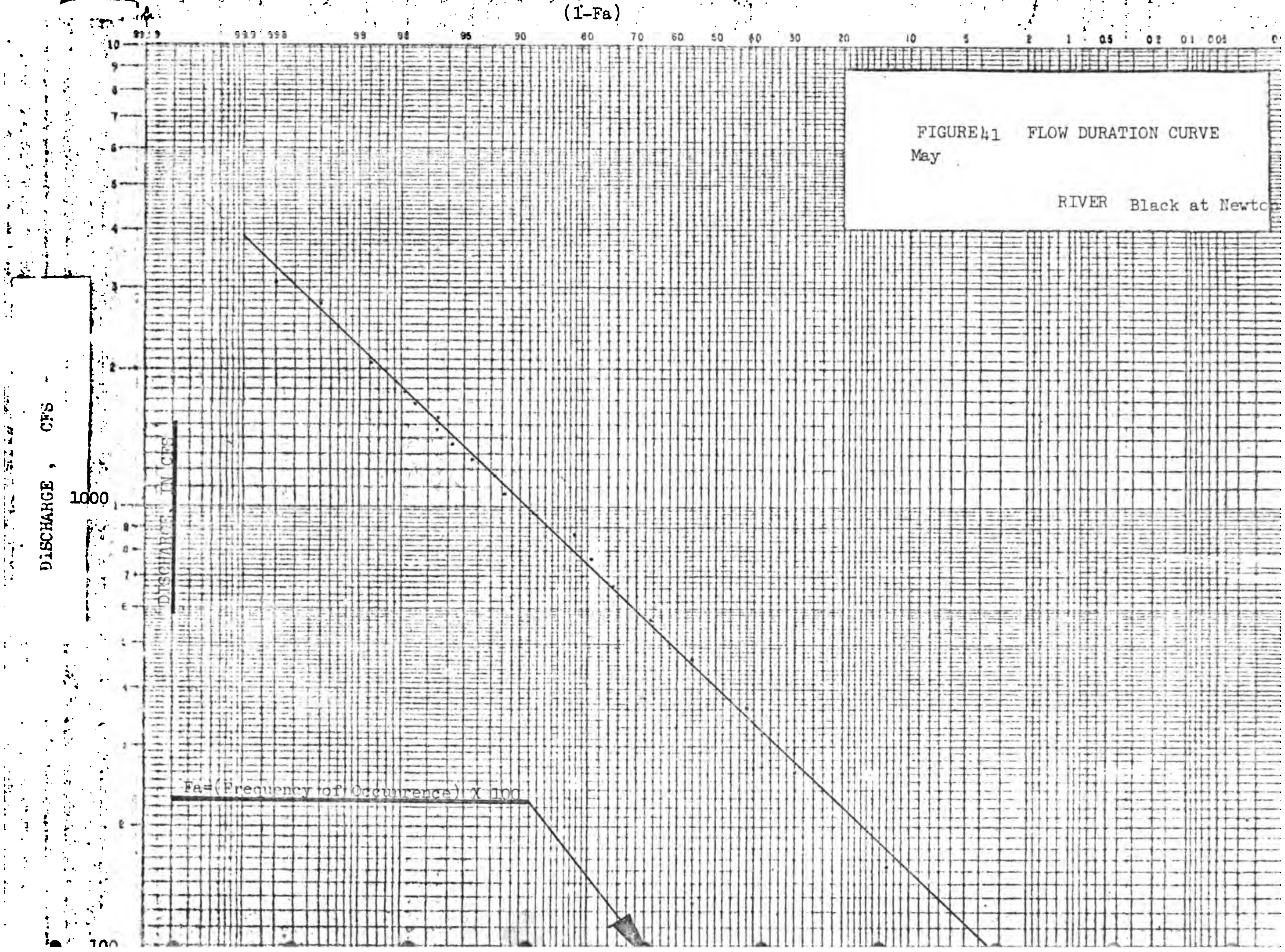


FIGURE 40 FLOW DURATION CURVE

April



(1-Fa)
DISCHARGE , CFS
1000
100
DISCHARGE, IN CFS
Fa=(Frequency of Occurrence) X 100
FIGURE 41 FLOW DURATION CURVE
May
RIVER Black at Newtc

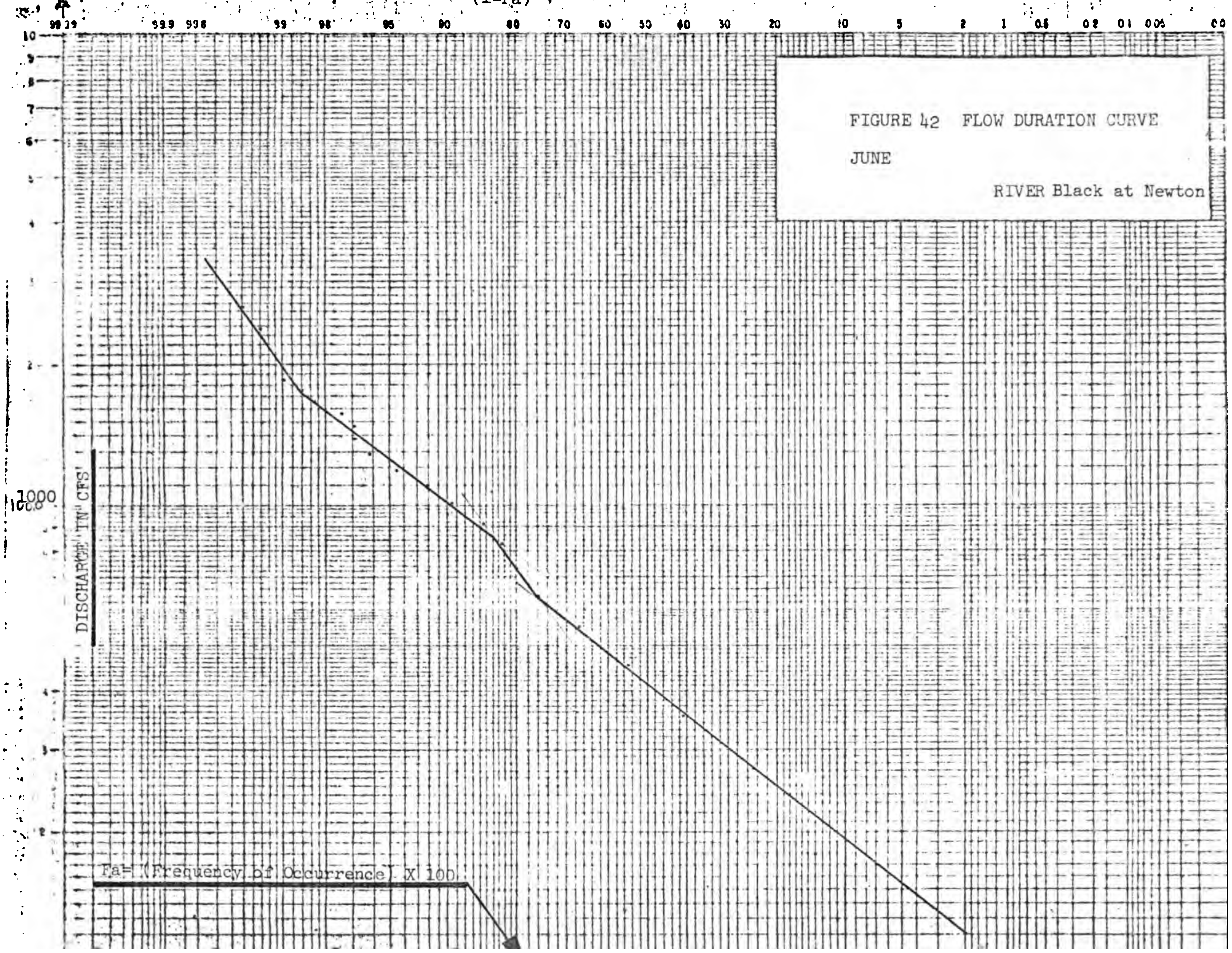


FIGURE 42 FLOW DURATION CURVE

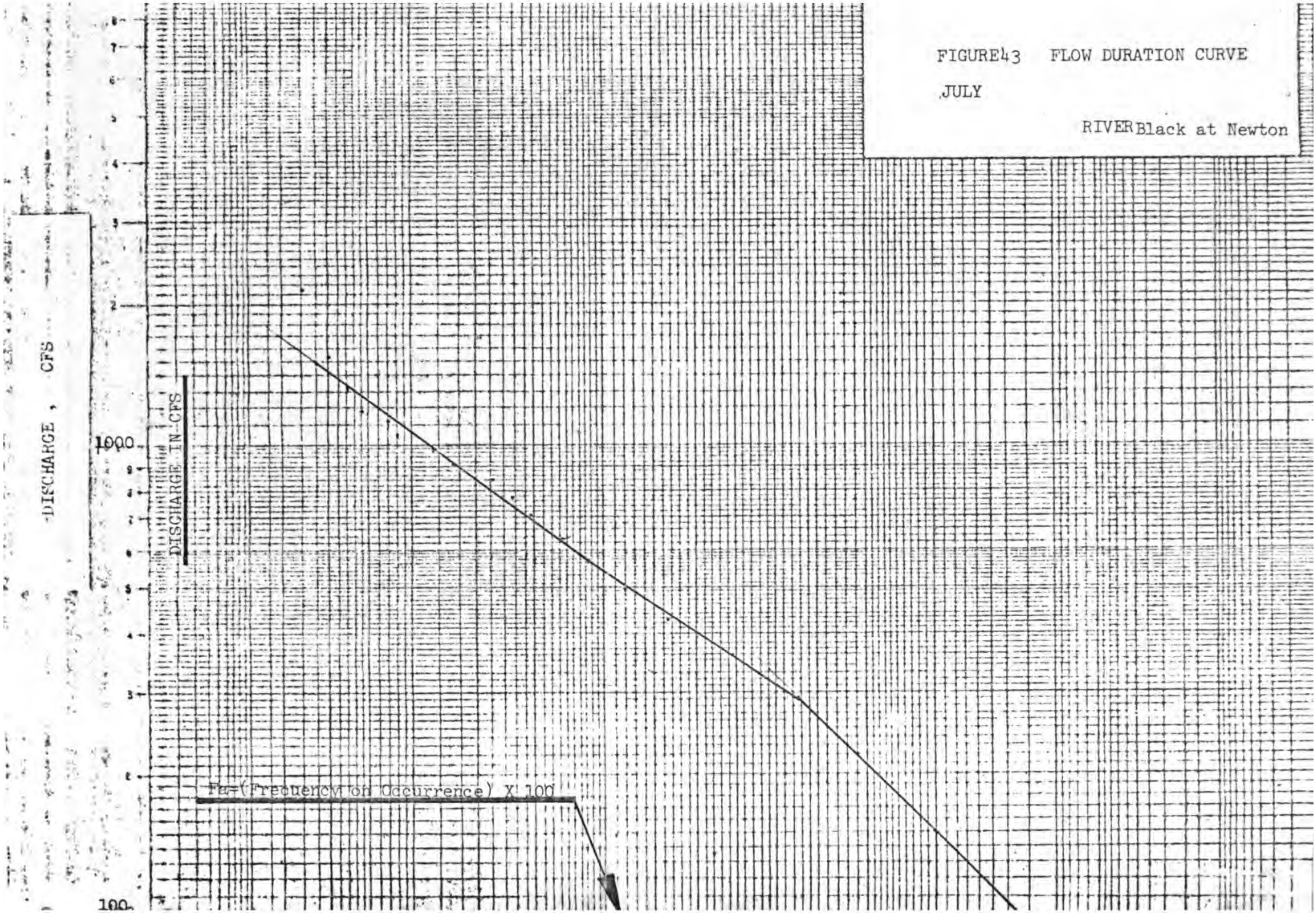
JUNE

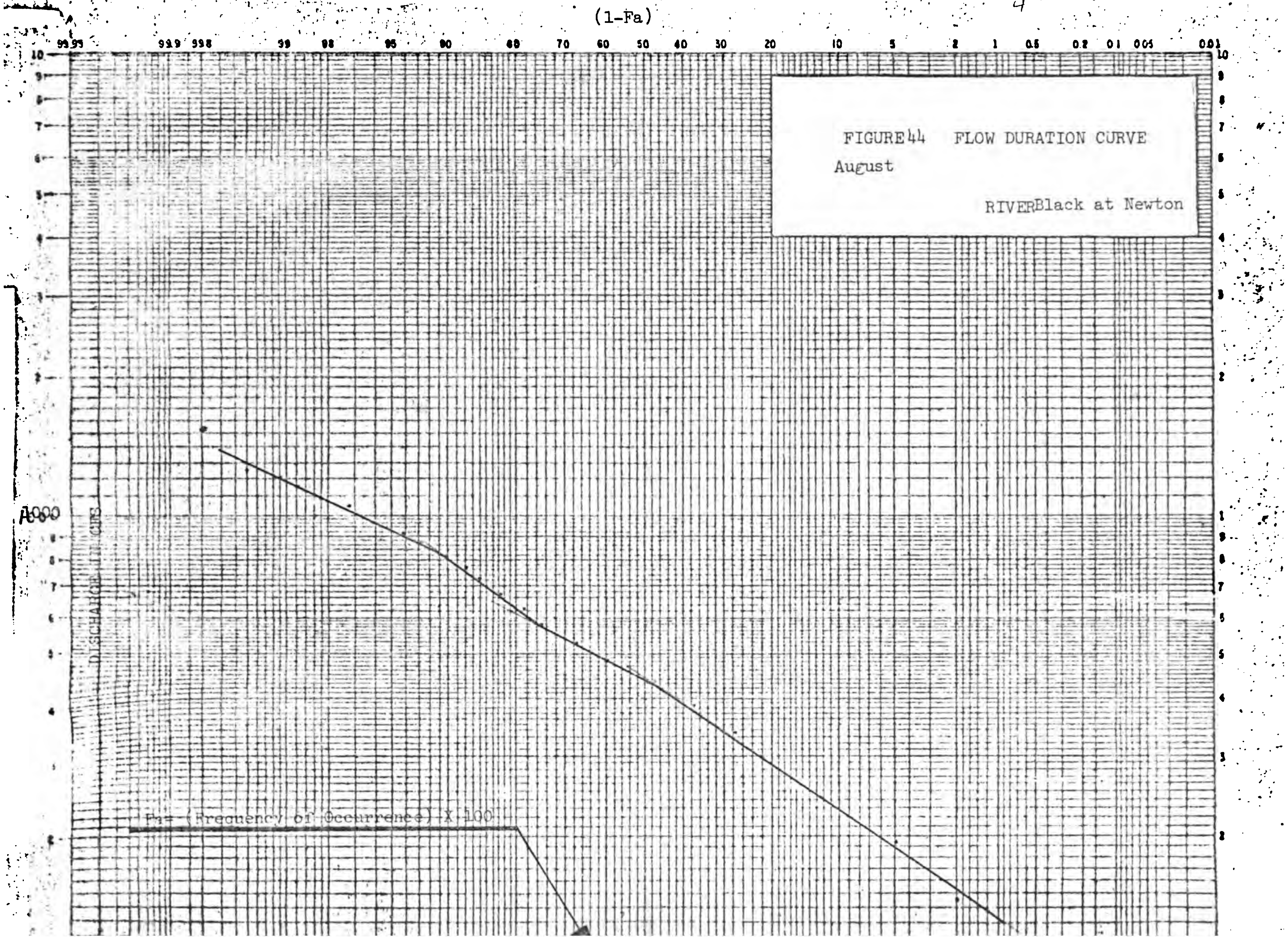
RIVER Black at Newton

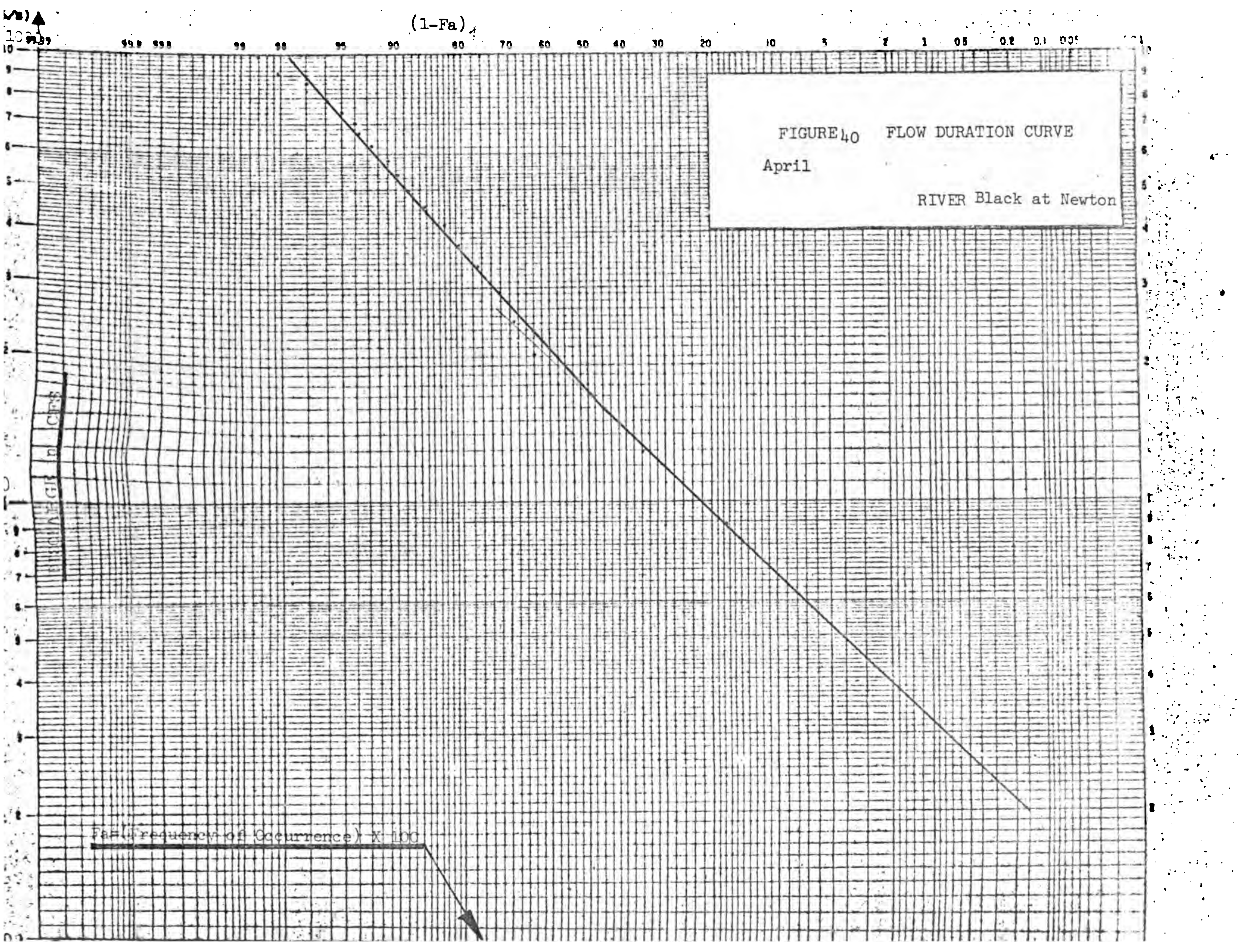
FIGURE 43 FLOW DURATION CURVE

JULY

RIVER Black at Newton




4
(1-Fa)
99.95
99.9
99.8
99
98
95
90
80
70
60
50
40
30
20
10
5
2
1
0.5
0.2
0.1
0.05
0.01
FIGURE44 FLOW DURATION CURVE
August
RIVERBlack at Newton
1000
DISCHARGE IN CFS
Fa= (Frequency of Occurrence) X 100



(1-Fa)
FIGURE 40 FLOW DURATION CURVE
April
RIVER Black at Newton
DISCHARGE in CFS
Fa=(Frequency of Occurrence) X 100

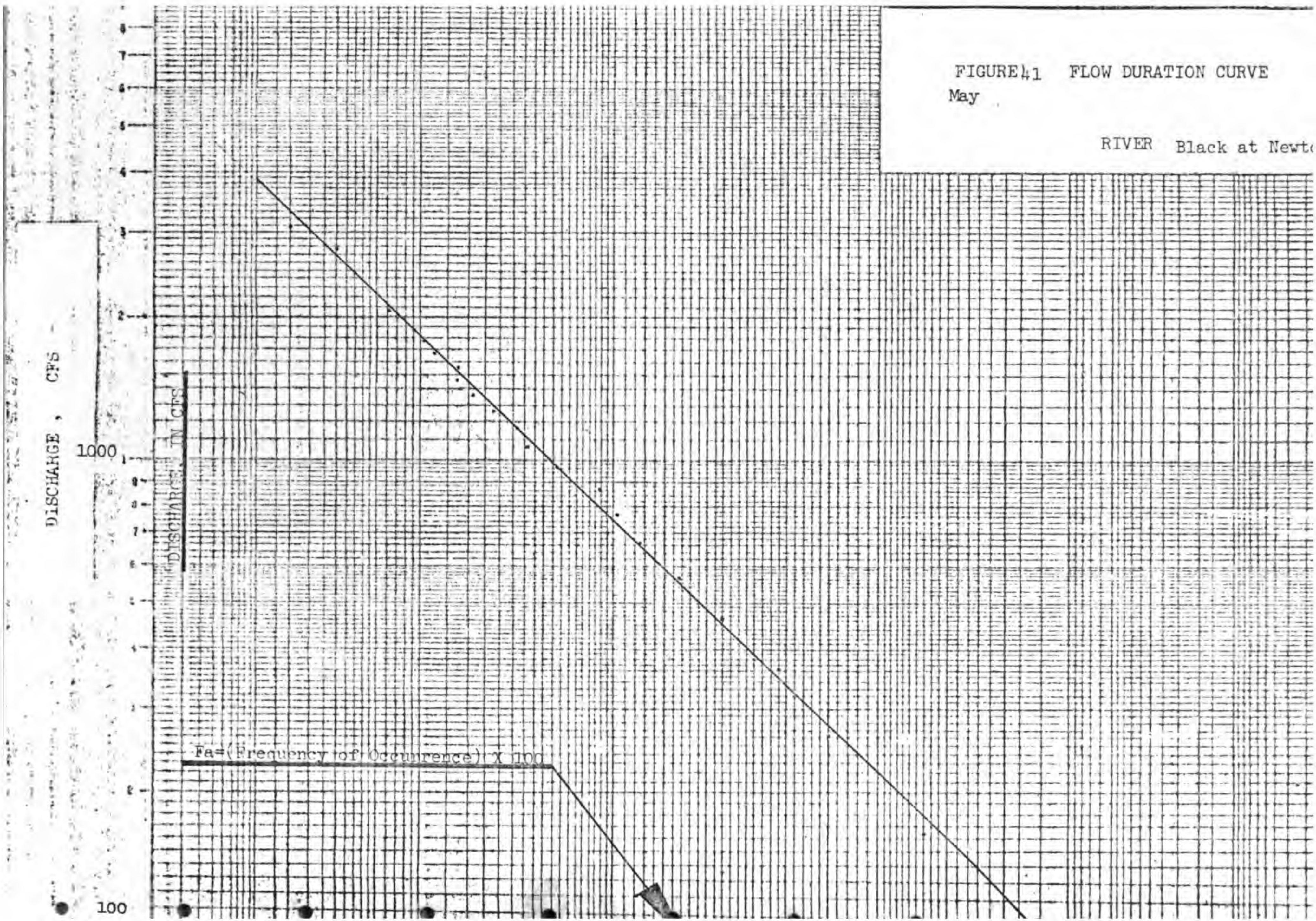
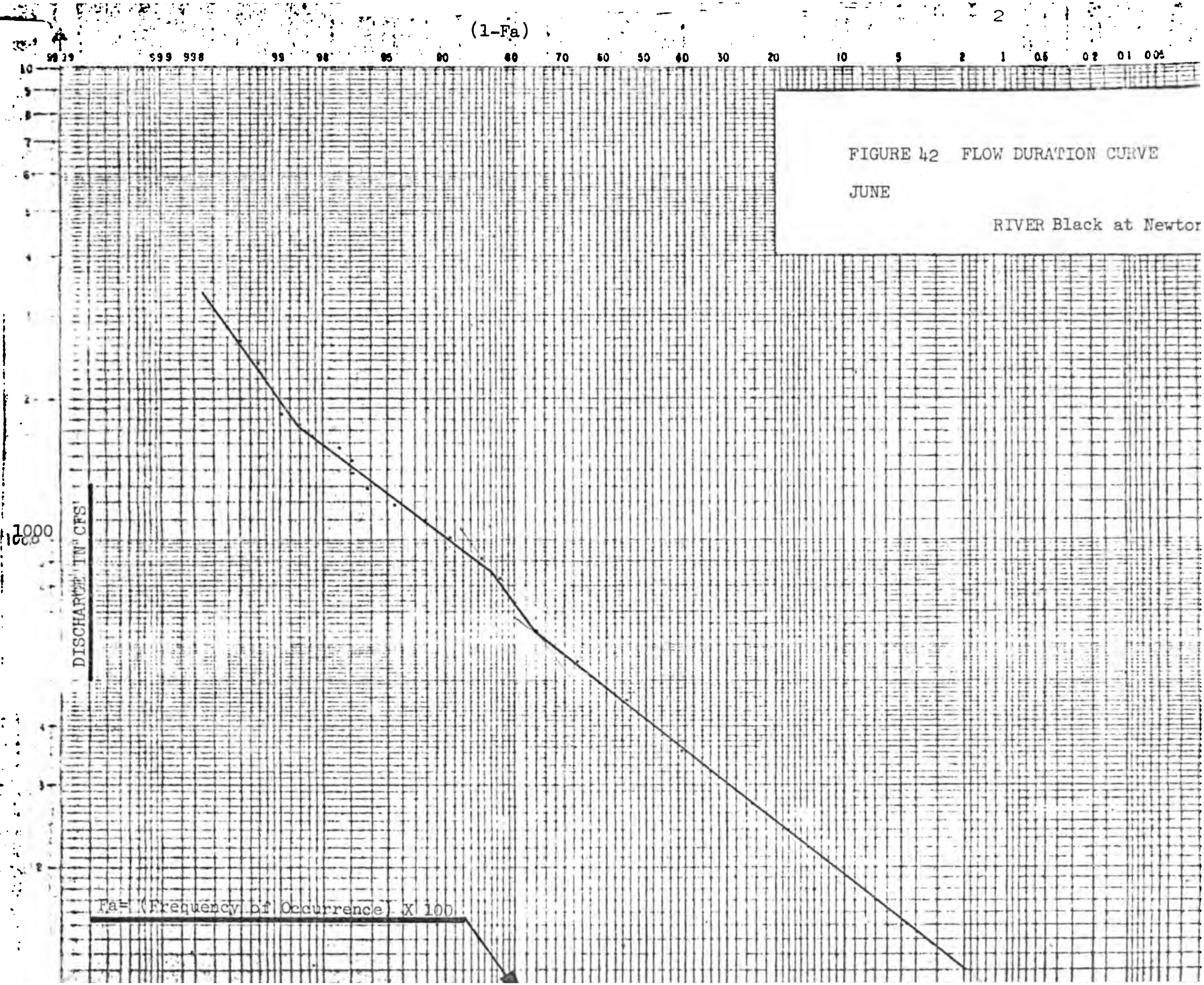
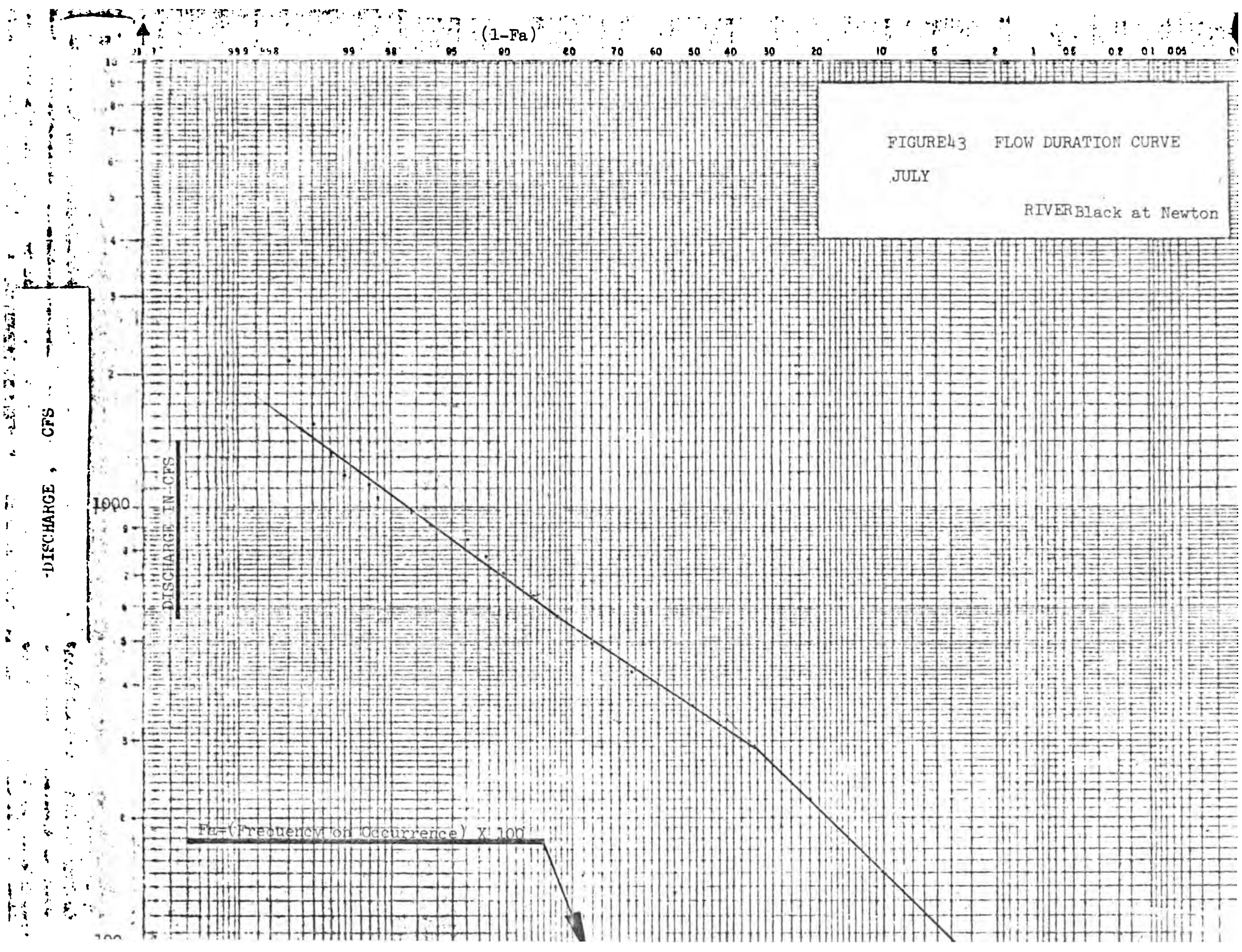


FIGURE 41 FLOW DURATION CURVE
May
RIVER Black at Newt
DISCHARGE , CFS
DISCHARGE, IN CFS
1000
100
Fa=(Frequency of Occurrence) X 100


(1-Fa)
DISCHARGE IN CFS
1000
Fa= (Frequency of Occurrence) X 100
FIGURE 42 FLOW DURATION CURVE
JUNE
RIVER Black at Newton



(1-Fa)
DISCHARGE , CFS
DISCHARGE IN CFS
1000
Fa=(Frequency on Occurrence) X 100
FIGURE43 FLOW DURATION CURVE
JULY
RIVER Black at Newton

(1-Fa)

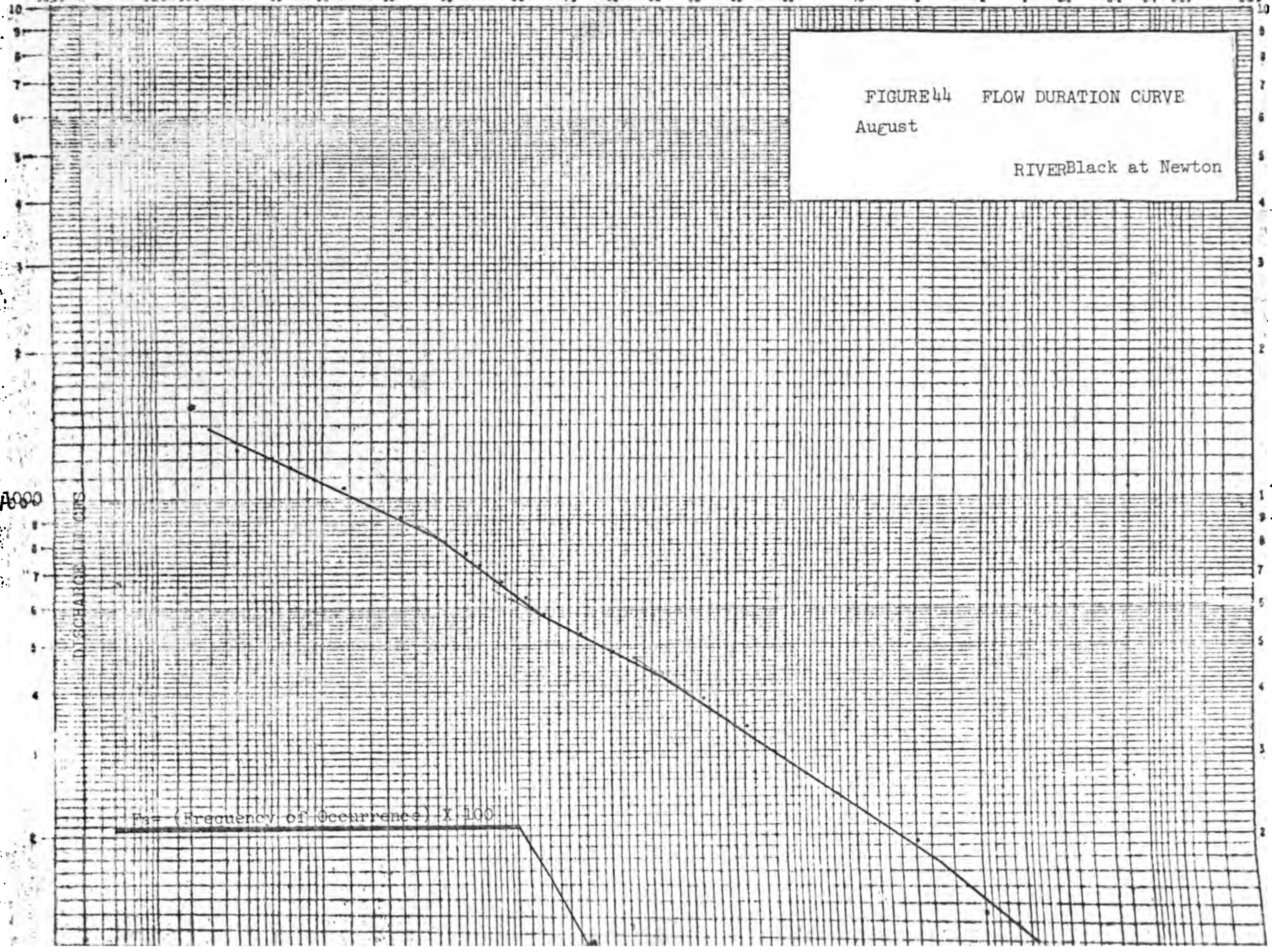


FIGURE 44 FLOW DURATION CURVE
August
RIVER Black at Newton
DISCHARGE IN CFS
1000
Fa= (Frequency of Occurrence) X 100

FRECUENCIA DE OCURRENCIA

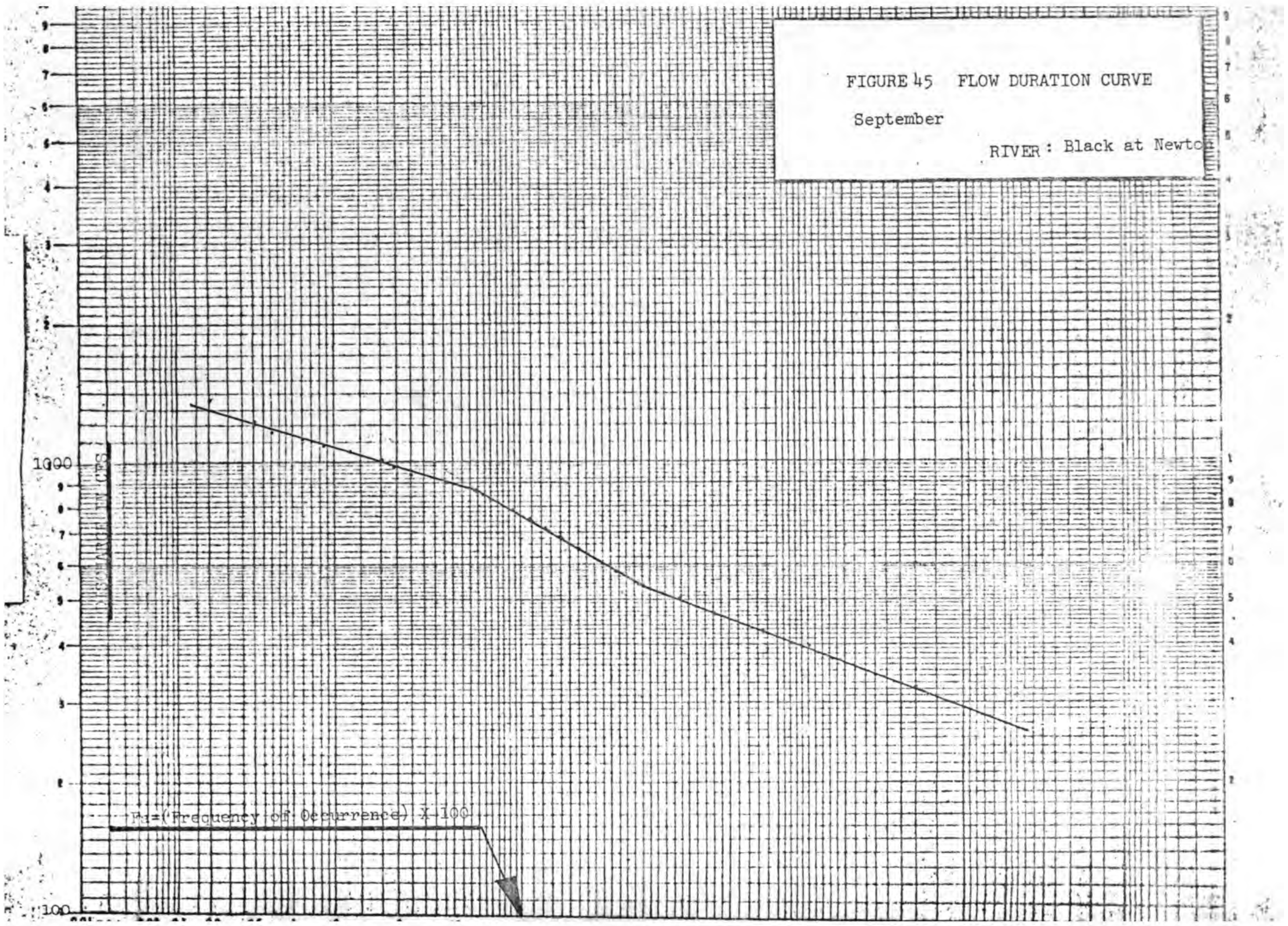


FIGURE 45 FLOW DURATION CURVE

September

RIVER : Black at Newton

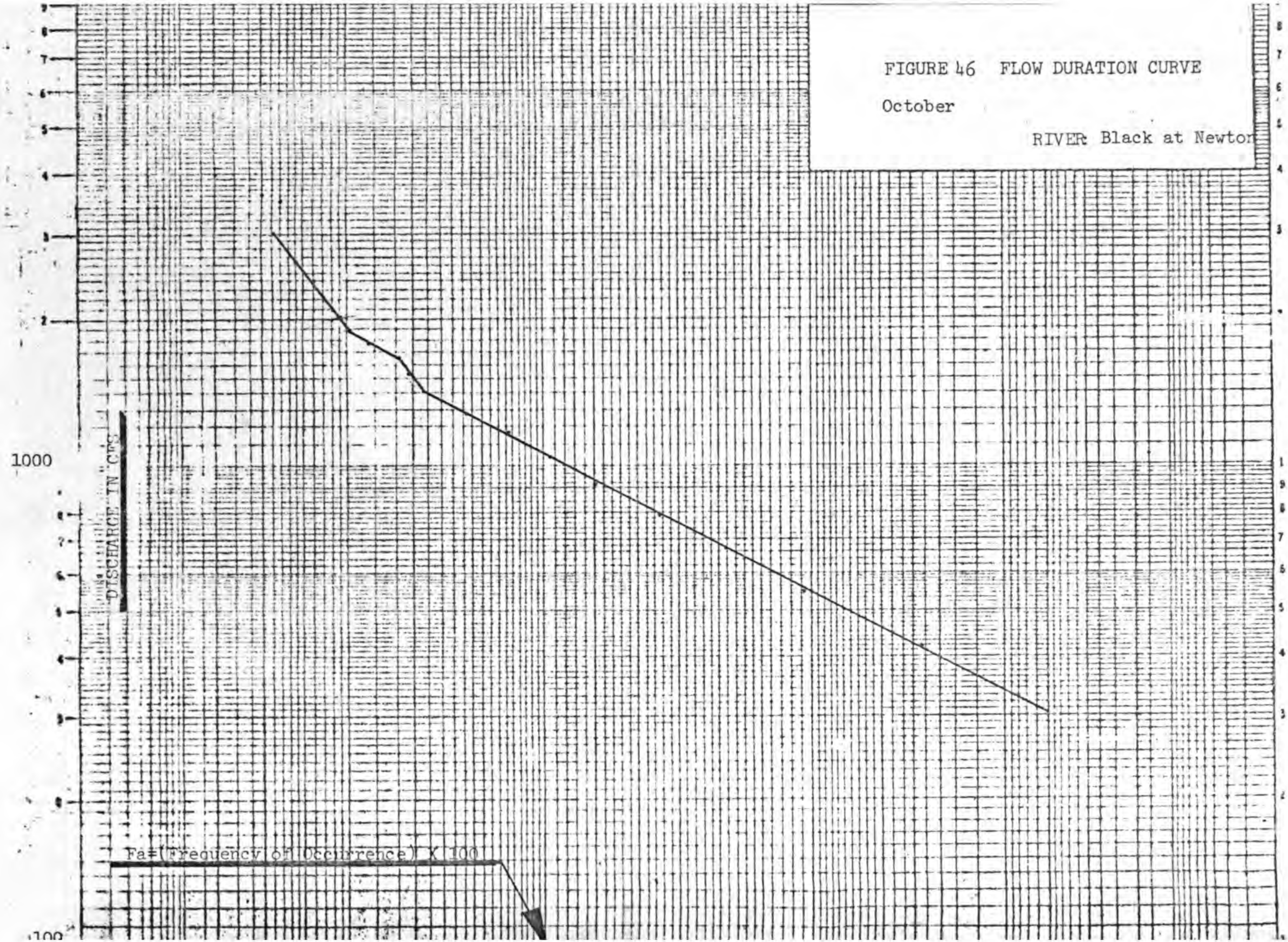
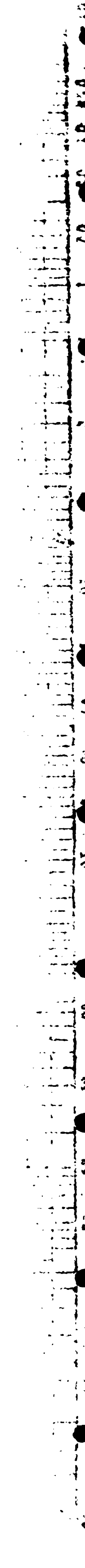


FIGURE 46 FLOW DURATION CURVE

October

RIVER Black at Newton



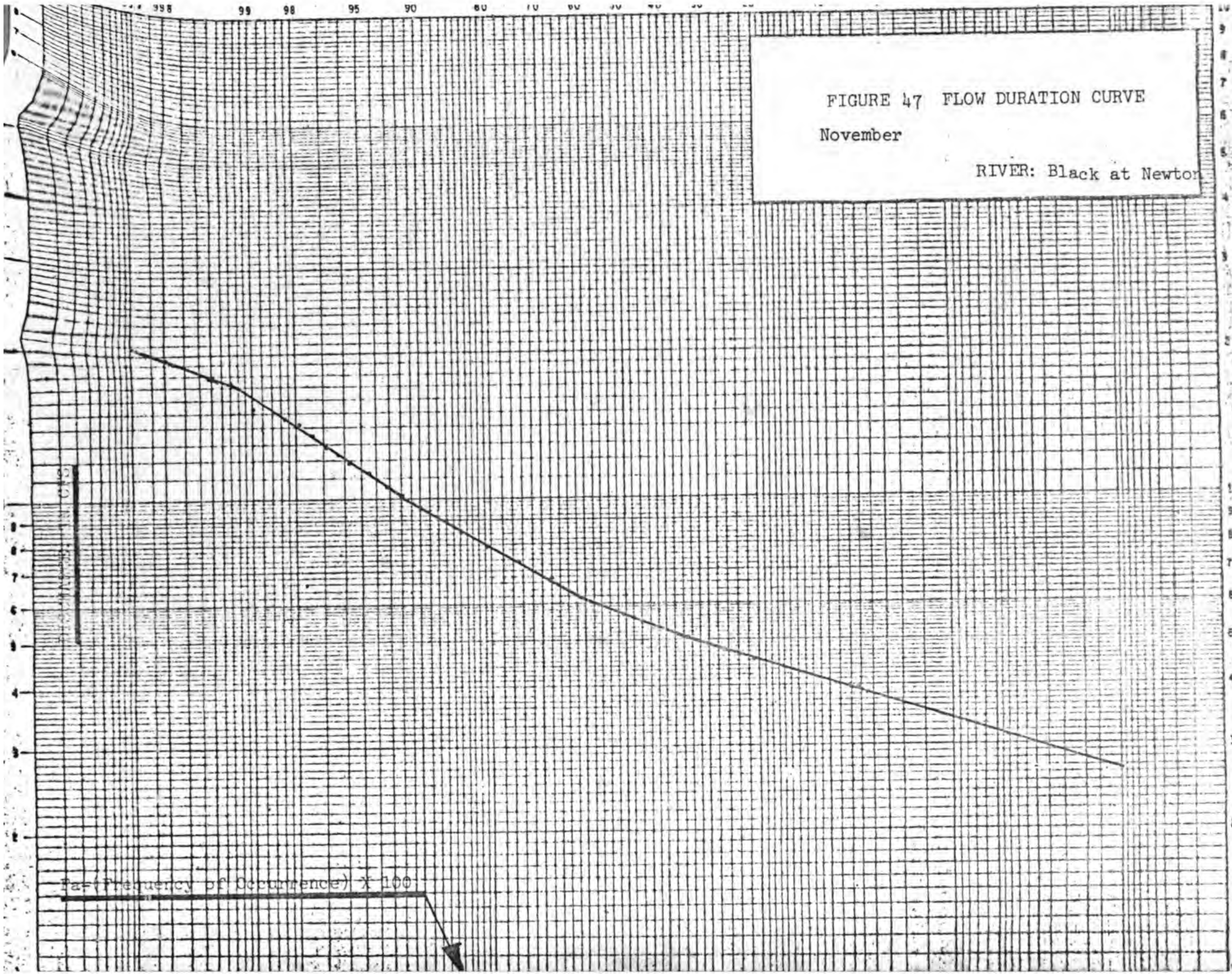


FIGURE 47 FLOW DURATION CURVE

November

RIVER: Black at Newton

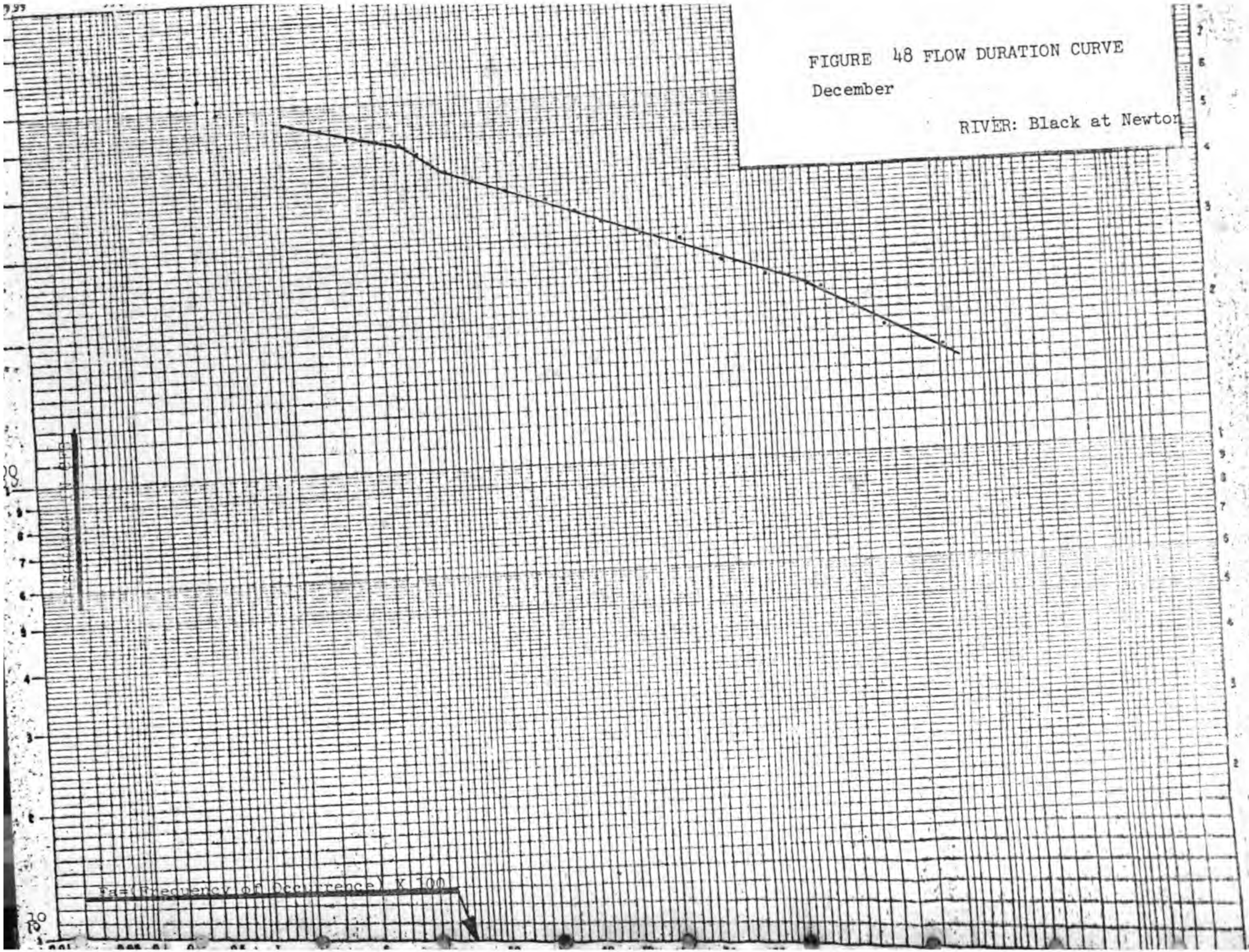


FIGURE 48 FLOW DURATION CURVE
December

RIVER: Black at Newton

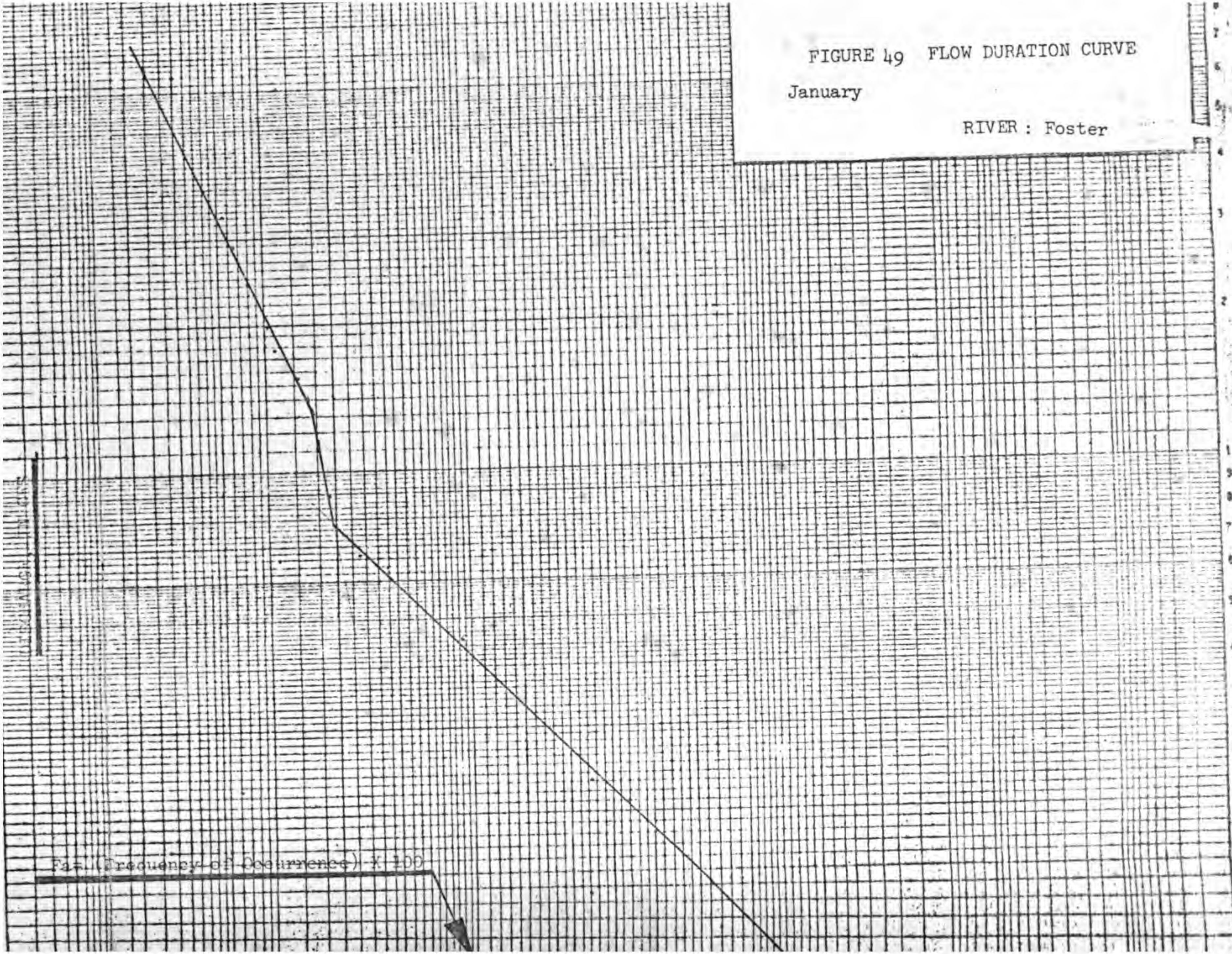


FIGURE 49 FLOW DURATION CURVE

January

RIVER : Foster

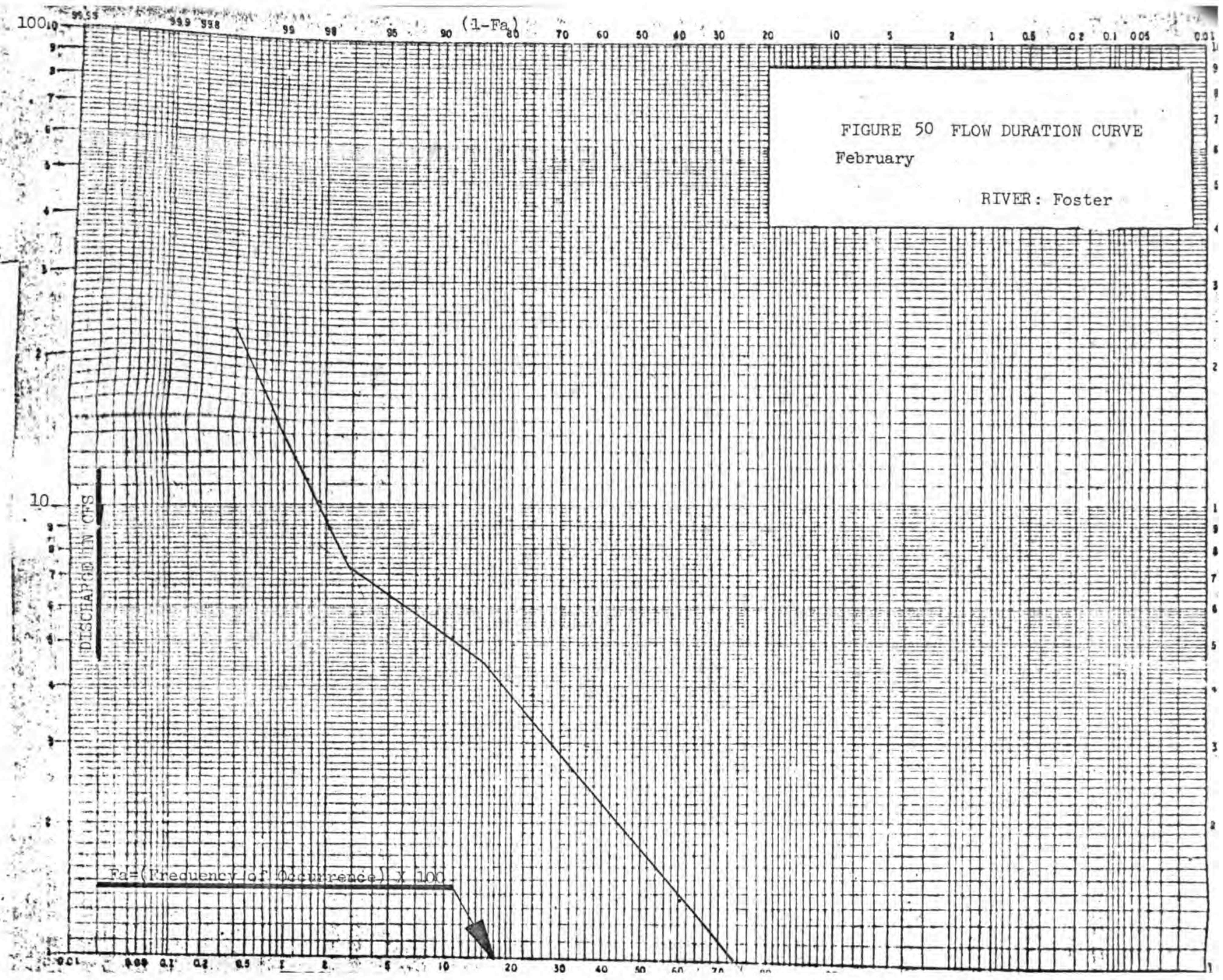


FIGURE 50 FLOW DURATION CURVE
February

RIVER: Foster

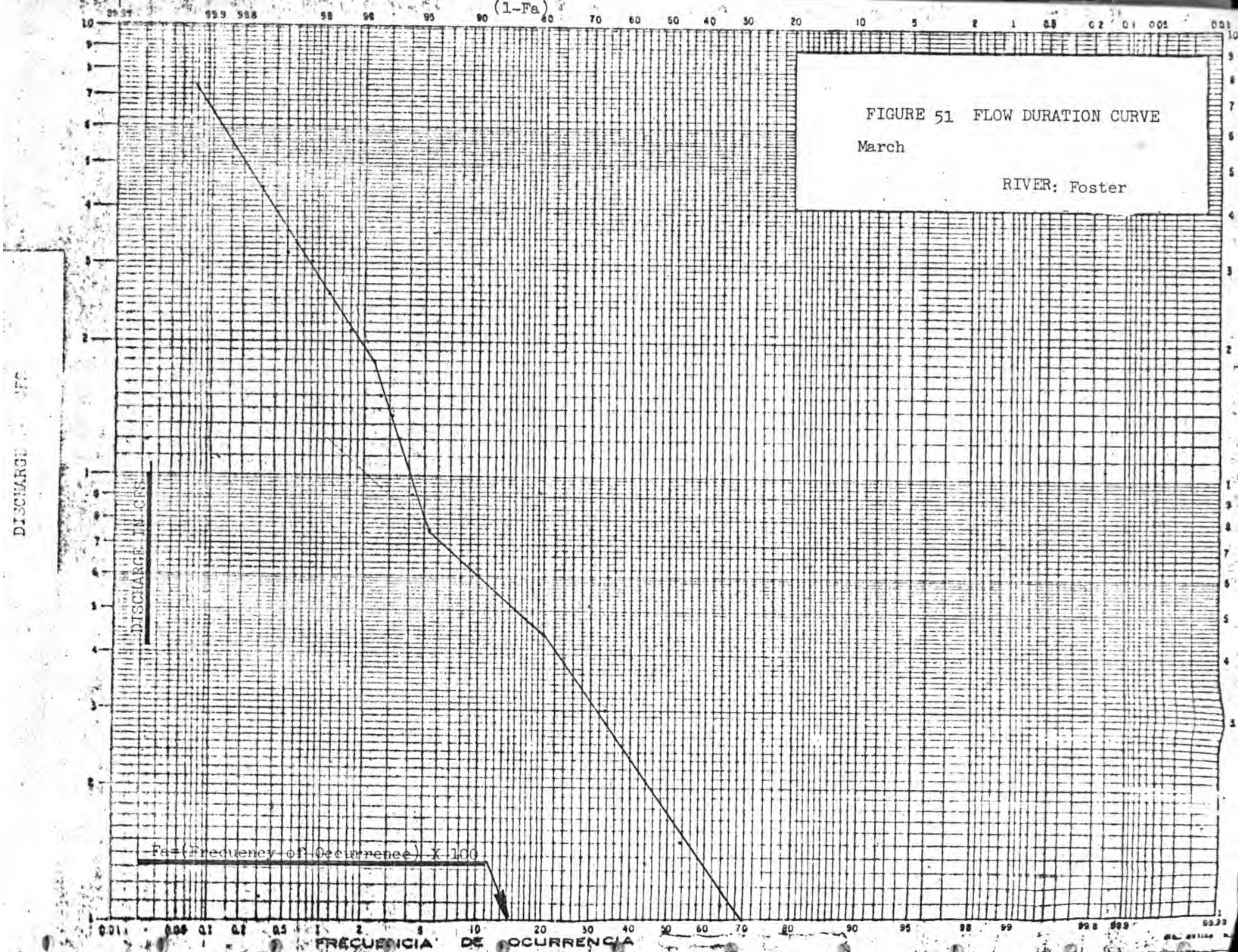


FIGURE 51 FLOW DURATION CURVE
March
RIVER: Foster
DISCHARGE IN CFS
(1-Fa)
Fa=(Frequency of Occurrence) X 100
FRECUENCIA DE OCURRENCIA

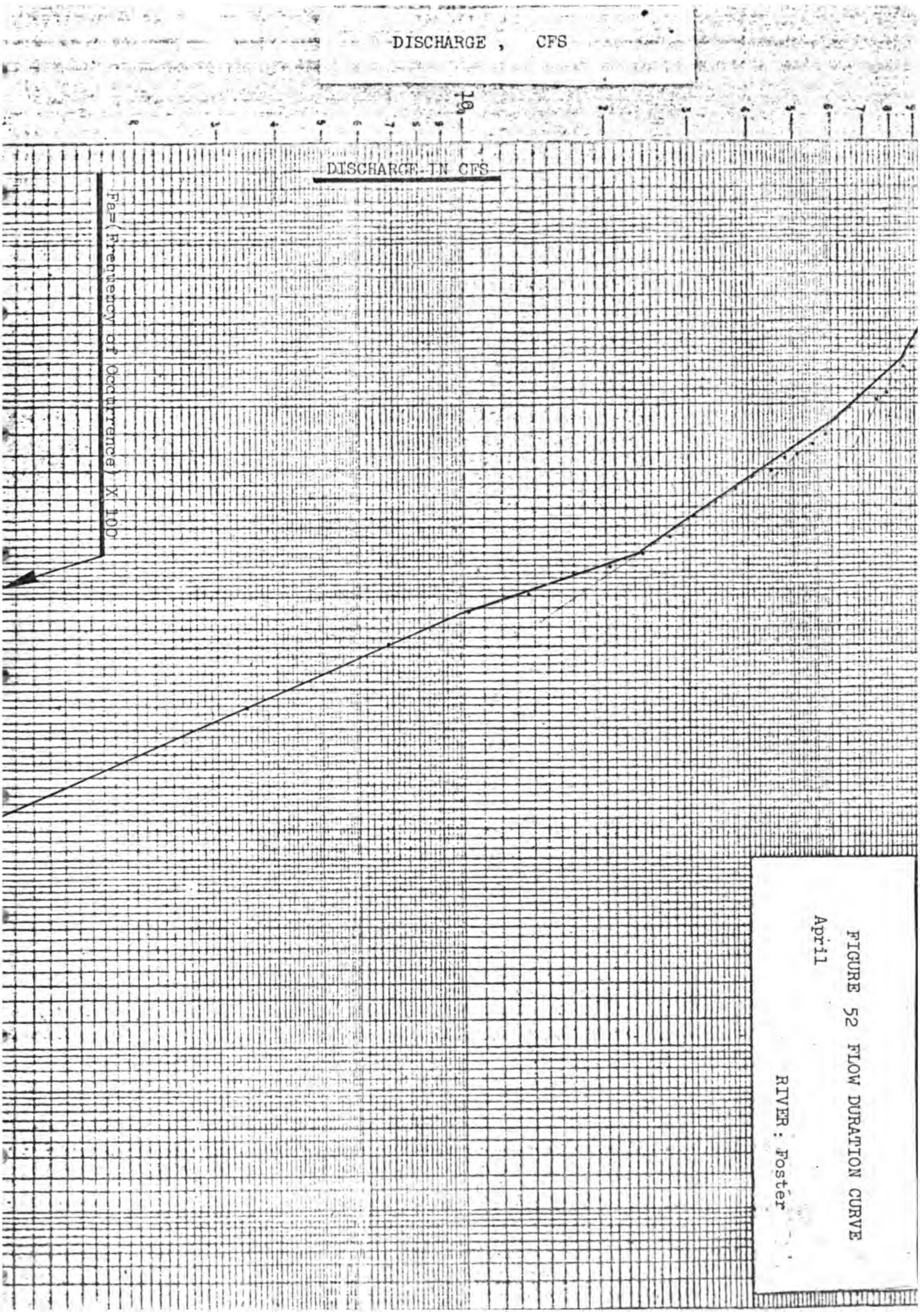


FIGURE 52 FLOW DURATION CURVE
April
RIVER: Foster

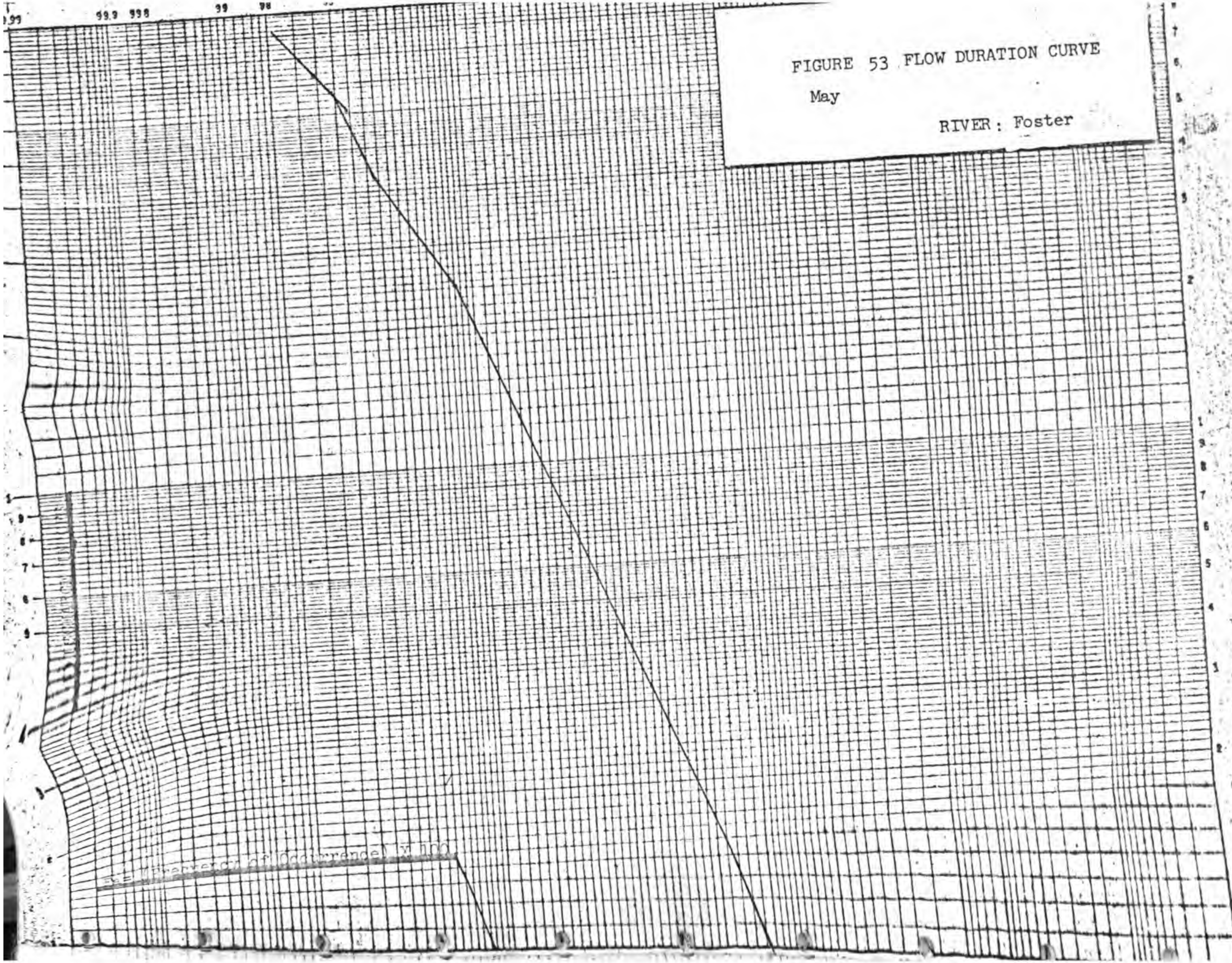


FIGURE 53 FLOW DURATION CURVE

May

RIVER: Foster

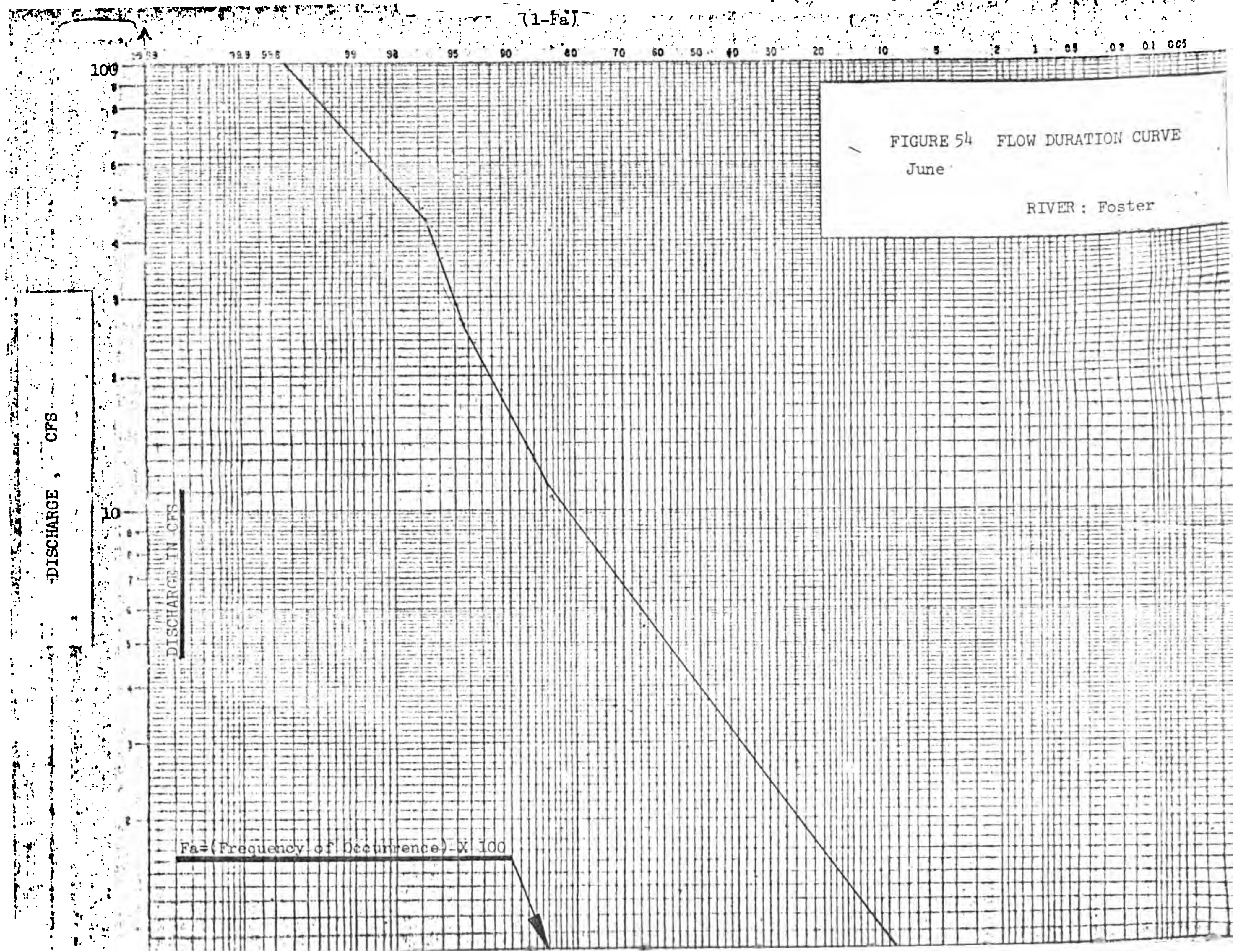


FIGURE 54 FLOW DURATION CURVE
June
RIVER : Foster

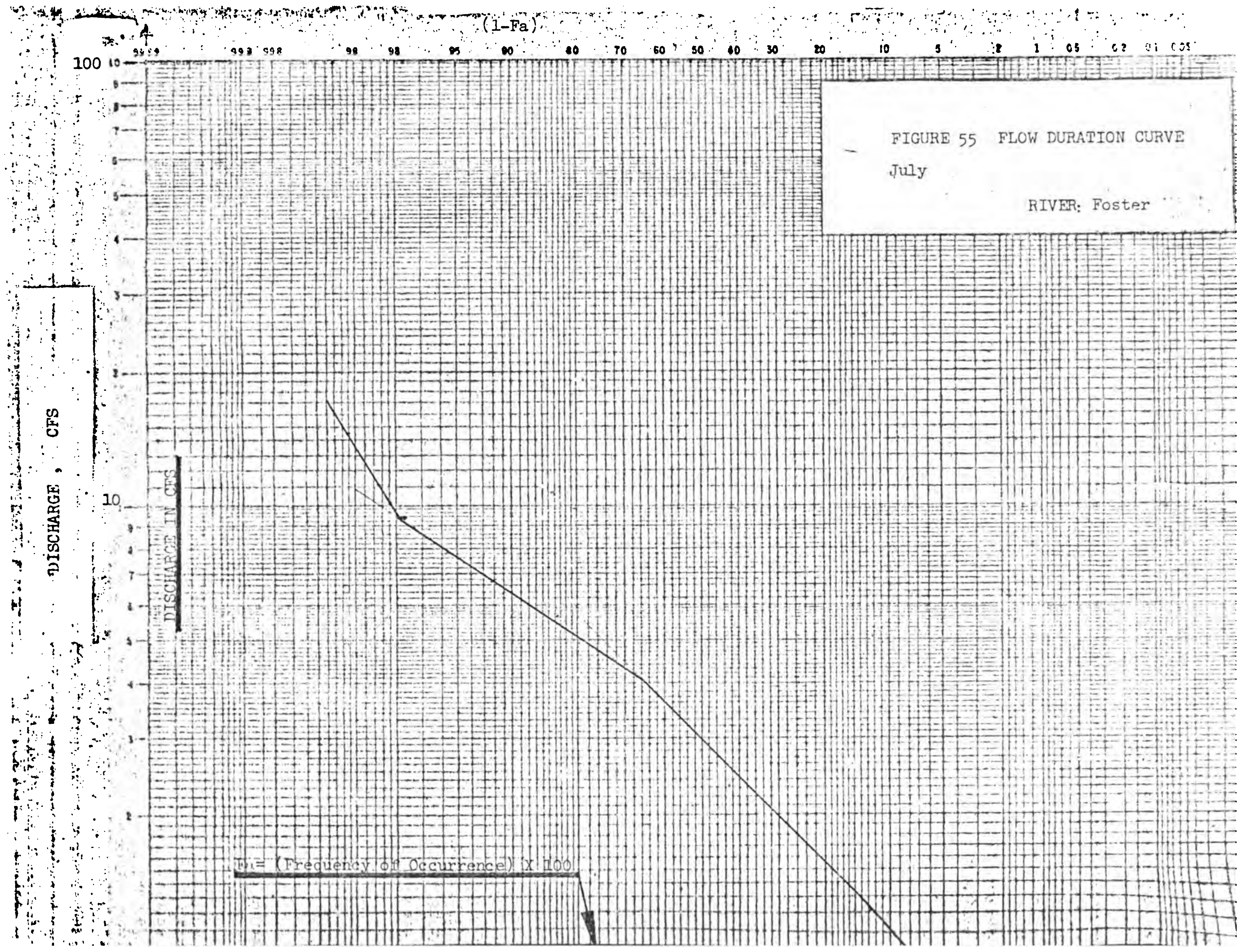
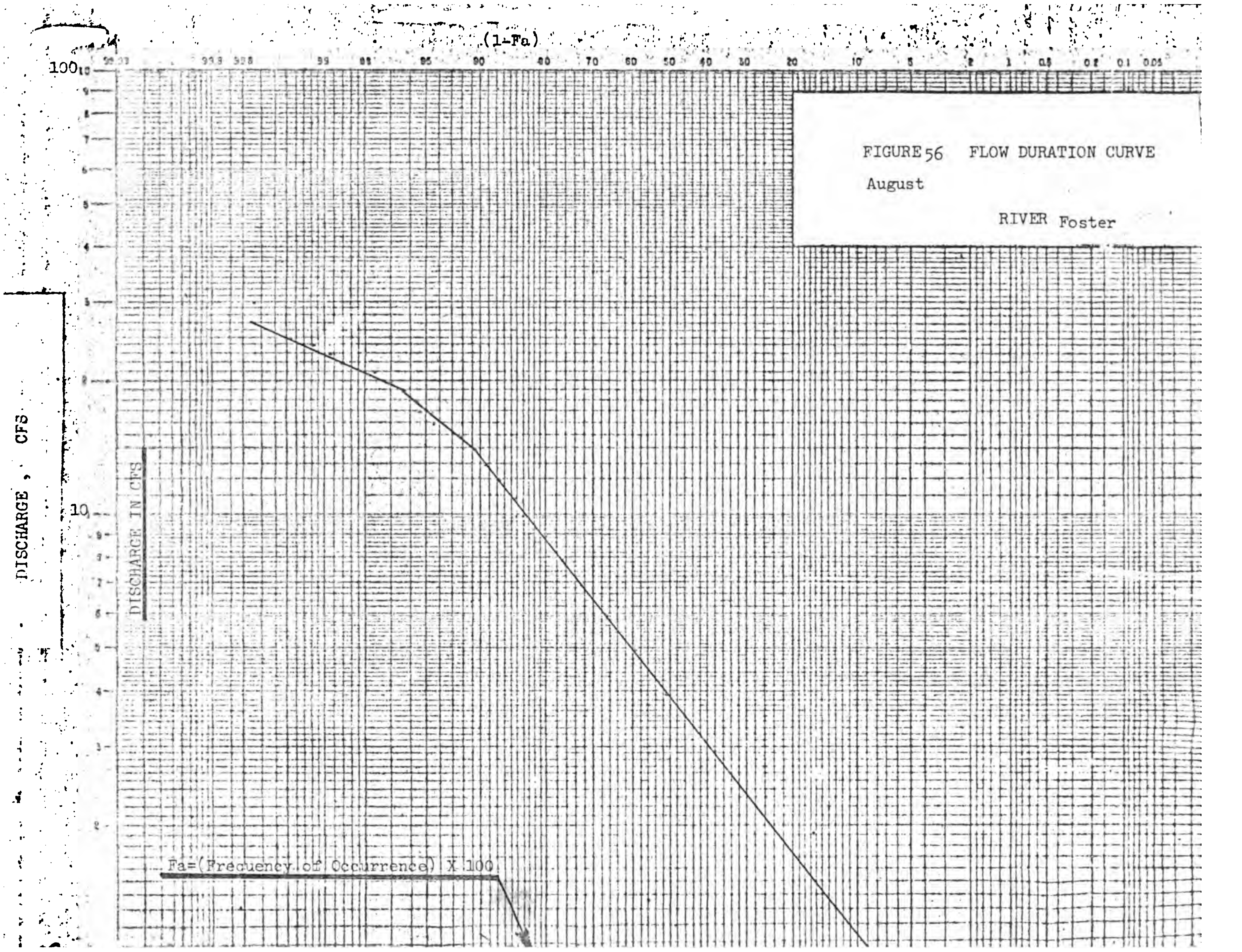


FIGURE 55 FLOW DURATION CURVE

July

RIVER: Foster



DISCHARGE , CFS
(1-Fa)
DISCHARGE IN CFS
Fa=(Frecuency of Occurrence) X 100
100
10
FIGURE 56 FLOW DURATION CURVE
August
RIVER Foster

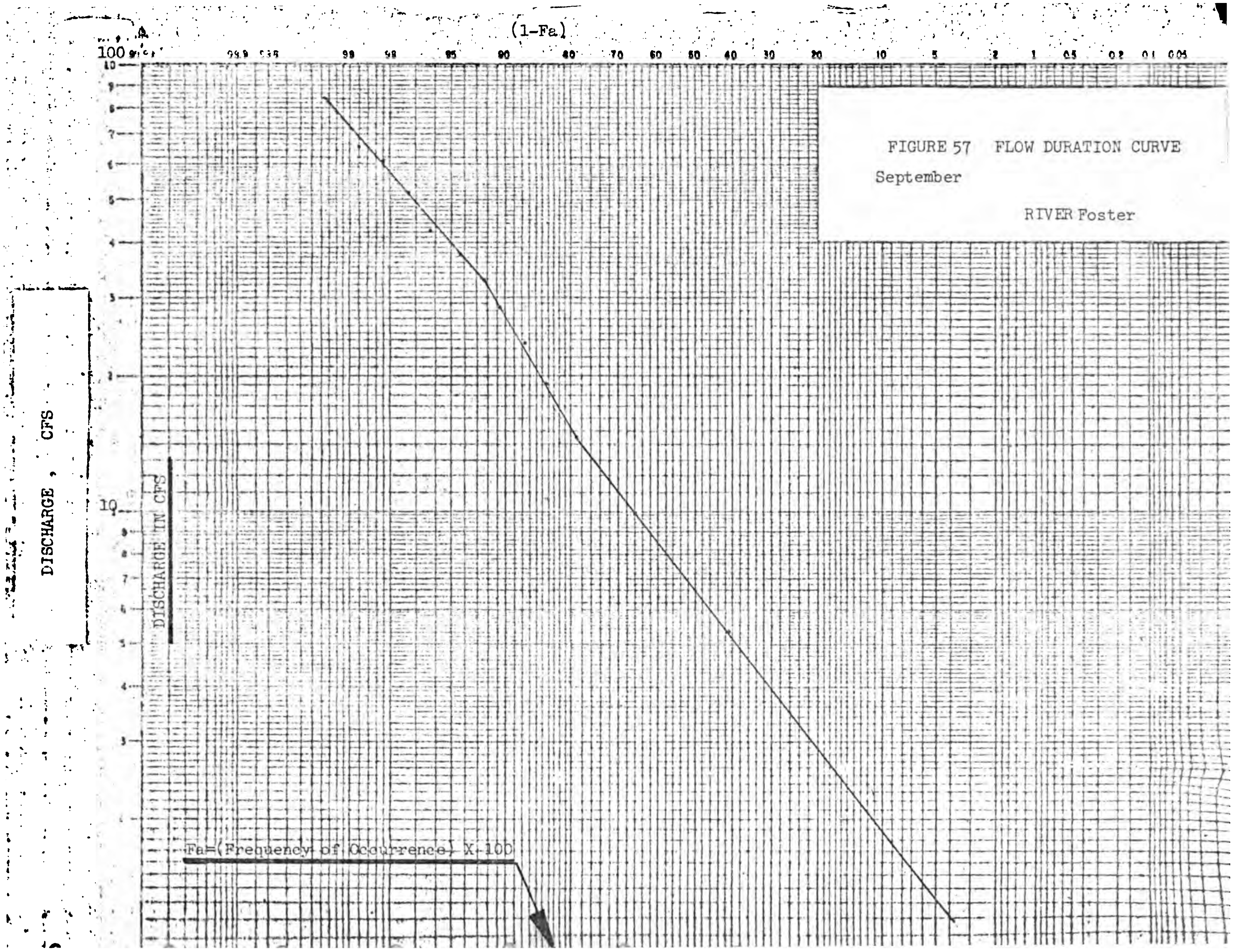


FIGURE 57 FLOW DURATION CURVE

September

RIVER Foster

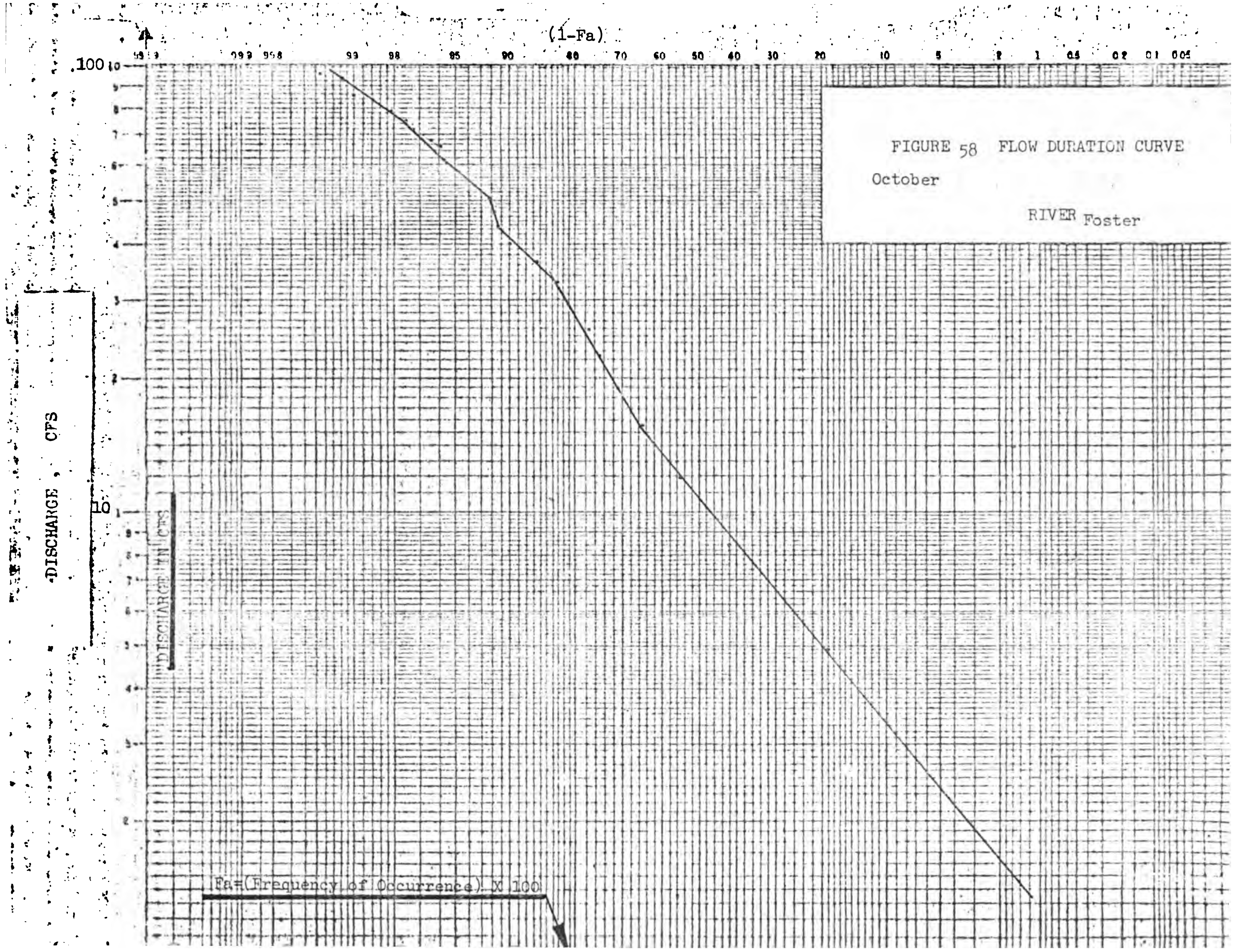


FIGURE 58 FLOW DURATION CURVE
October
RIVER Foster

DISCHARGE , CFS

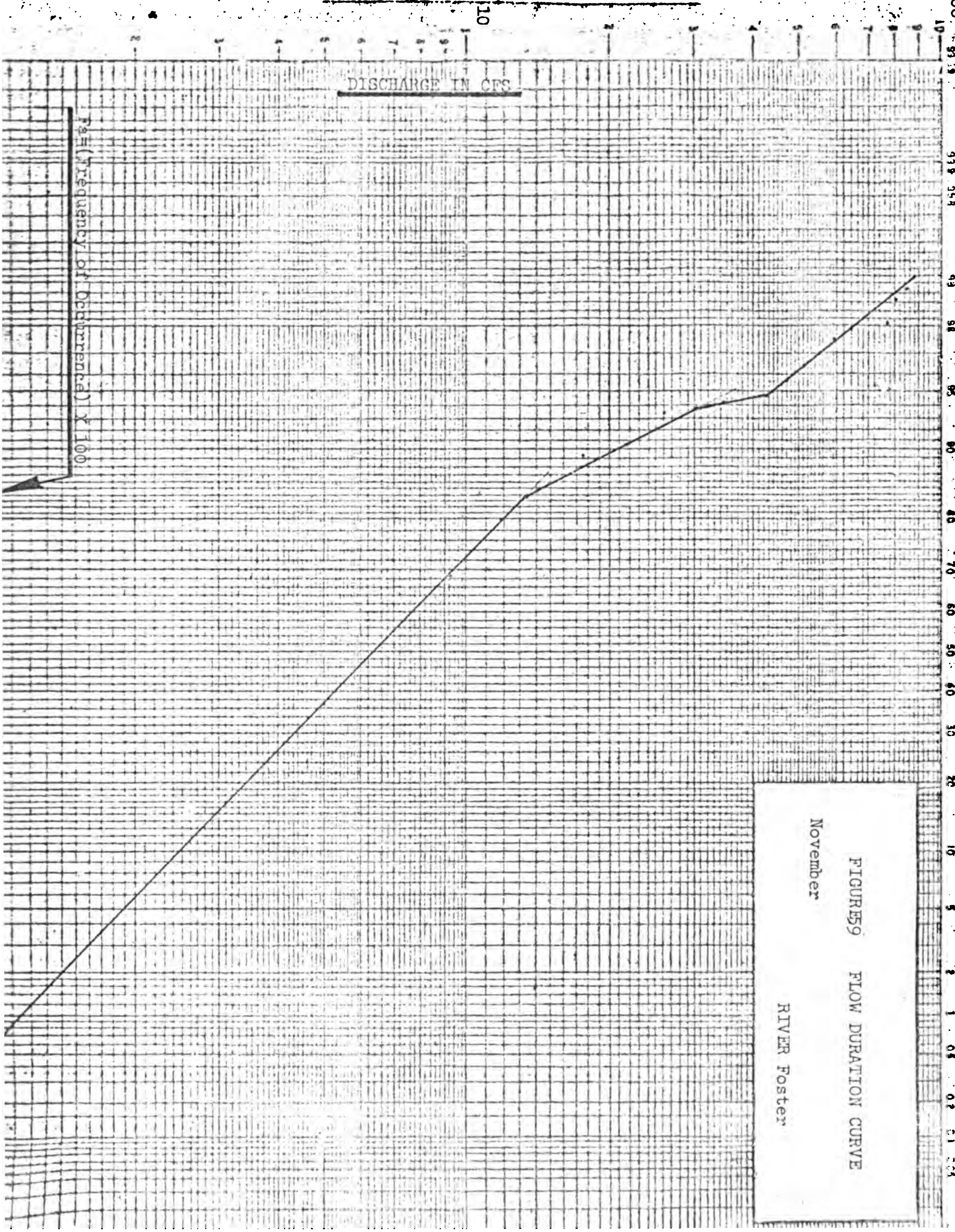


FIGURE59 FLOW DURATION CURVE
November
RIVER Foster

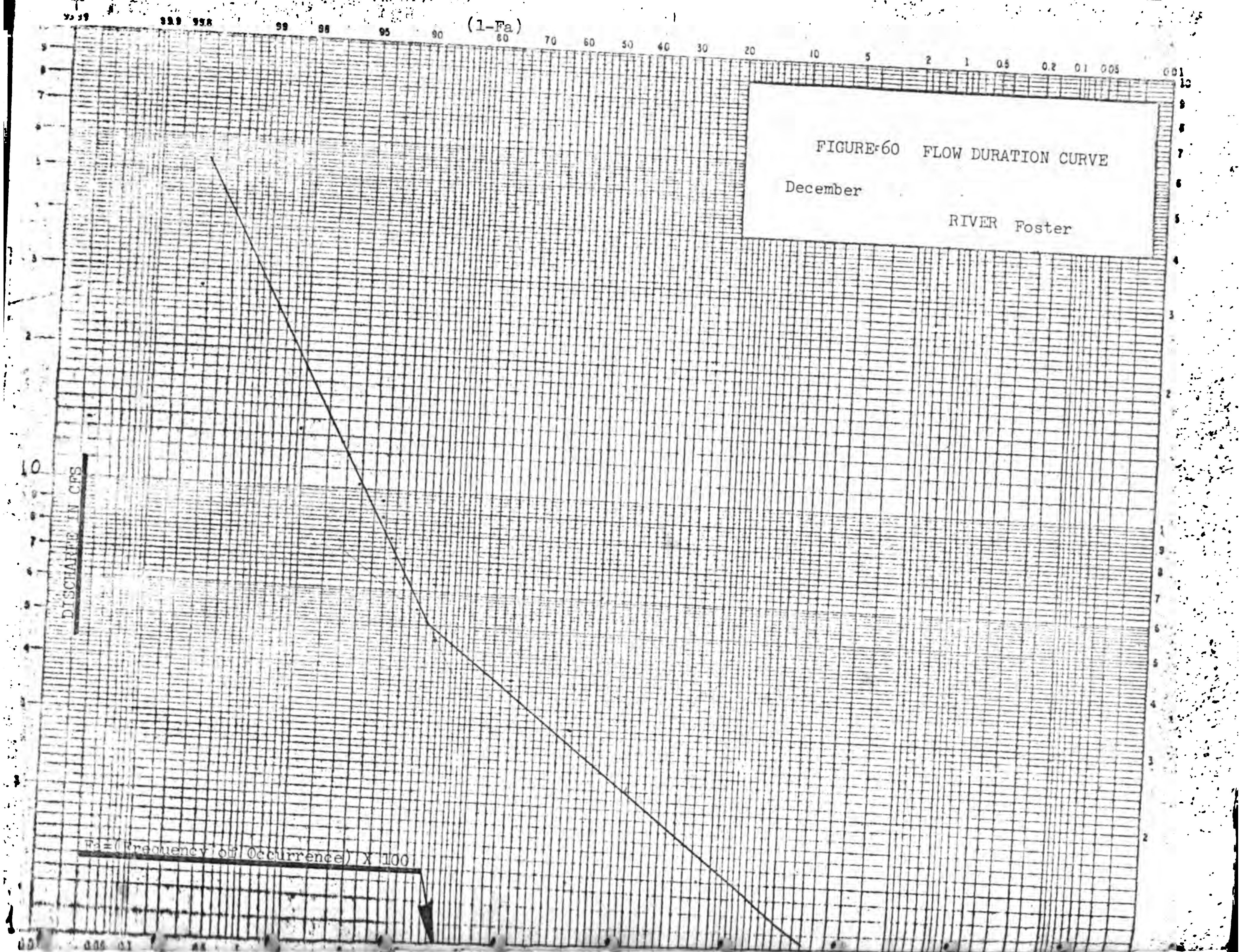
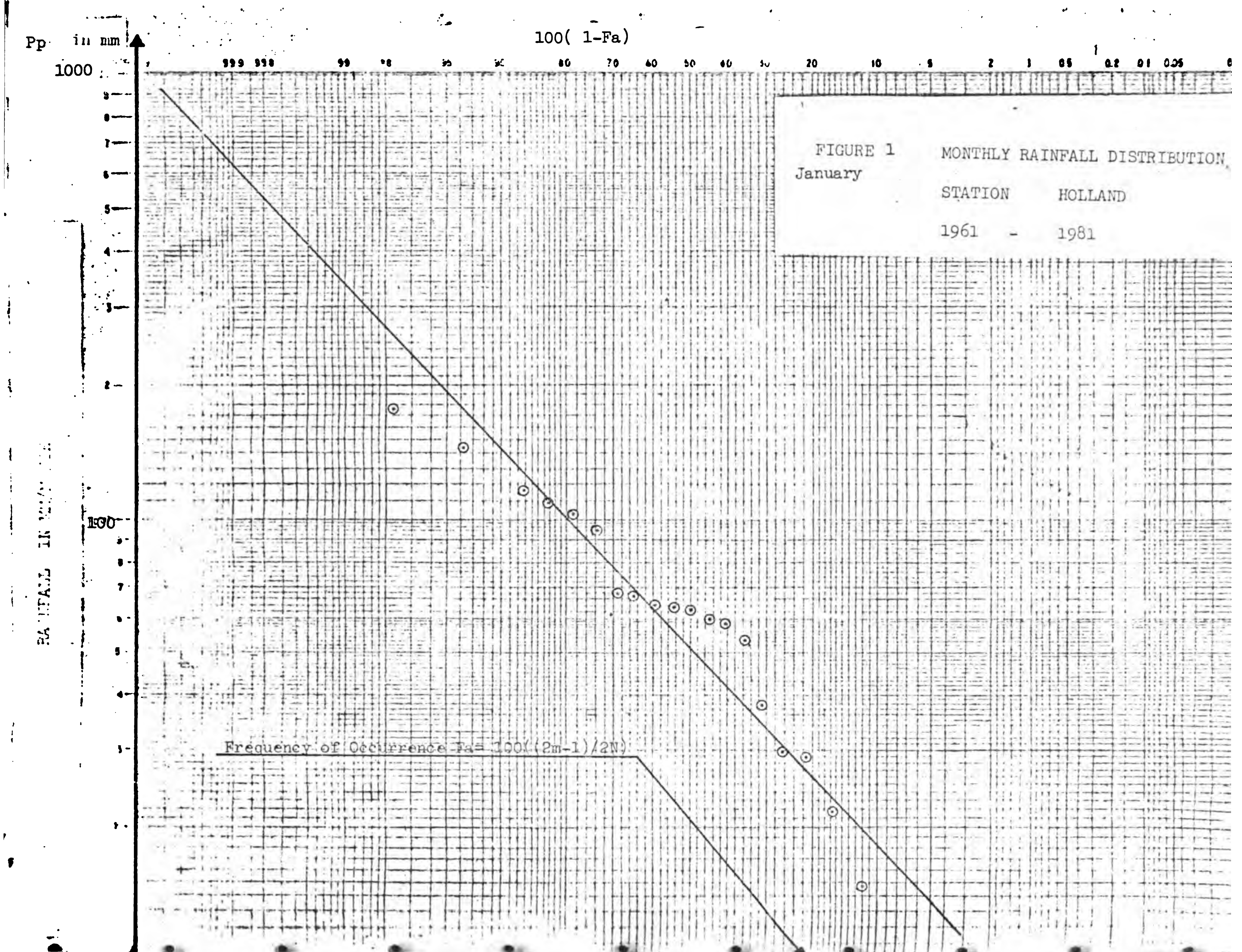


FIGURE 60 FLOW DURATION CURVE

December

RIVER Foster



Pp in mm
1000
100
100(1-Fa)
Frequency of Occurrence Fa= 100((2m-1)/2N)
FIGURE 1
January
MONTHLY RAINFALL DISTRIBUTION
STATION HOLLAND
1961 - 1981

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No. IV - 8 [illegible]

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No. IV - 20	P. Aitken, A. Wahab, I. E. Johnson, Bo-Myeong Woo, "IICA Evaluation of the First Phase FSB Allsides Project", (Internal Document of Work), November 1980
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