INTERIM COMPILATION OF STREAM GAUGING DATA TO DECEMBER 1976

FOR THE ALBERTA OIL SANDS ENVIRONMENTAL RESEARCH PROGRAM

by

K. D. Loeppky and M. O. Spitzer
Water Survey of Canada
Environment Canada
Calgary, Alberta

for

ALBERTA OIL SANDS ENVIRONMENTAL RESEARCH PROGRAM

Project HY 1.1

December 1977

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ABSTRACT

This report contains hydrometric data for the Alberta Oil Sands Environmental Research Program (AOSERP) study area to December, 1976. All available daily discharge data are contained within Appendices of this report. The report also contains annual hydrographs of discharge data, water level information for gauged lakes, stage-discharge curves for each stream gauging station, and where enough data are available, plots of cross-sections, discharge-velocity and discharge-area curves. Some information on water temperature is also included.

1. INTRODUCTION

Water Survey of Canada has been active in the Fort McMurray region since 1957 with the establishment of gauging stations on the Athabasca River below Fort McMurray and on the Clearwater River at Draper. In 1965 a third gauging station, Hangingstone River at Fort McMurray, was installed. In anticipation of industrial development, Water Survey of Canada, in cooperation with Alberta Environment, continued to expand the hydrometric network such that by 1975, a total of 15 gauging stations were being operated in the area.

The Alberta Oil Sands Environmental Research Program was initiated in 1975. Prior to the signing of the Canada-Alberta Agreement, the Alberta Oil Sands Hydrological Research Task Force[1] and Intercontinental Engineering of Alberta Ltd., in a report prepared for Alberta Environment[2], identified a deficiency in available hydrometric data. To rectify this deficiency, it was recommended that an additional 15 gauging stations be installed in the area. The Hydrology Technical Research Committee agreed with these recommendations and as a result, the 15 additional gauging stations were constructed in 1975. The Hydrology Technical Research Committee still felt that the gauging station network was deficient especially on small drainage basins. To overcome this deficiency, it was felt that 3 additional stations were required. These were constructed in 1976. The construction of the Syncrude Canada Ltd. plant destroyed the Beaver River near Fort MacKay gauging station site. This station was discontinued in 1975.

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[1] Alberta Conservation and Utilization Committee, Alberta Oil Sands Hydrological Research Task Force Report, March 1974.

[2] Intercontinental Engineering of Alberta Ltd., An Environmental Study of the Athabasca Tar Sands, March, 1973.

This brings the total number of gauging stations in the area to 32. Two of these stations, Birch River below Alice Creek and Clearwater River above Christina River, are actually located outside the AOSERP boundaries but the data from these sites are considered to be of value to the research program. Since 1975, AOSERP has funded the operation of the gauging stations located within the research program boundaries while Water Survey of Canada through the cost-sharing agreement funds the operation of the other two.

The purpose of this report is to compile, and make readily available, all the hydrometric data collected to December, 1976. Since hydrometric data are supportive to many of the studies in the area, this report will be a vehicle for easy access to hydrometric information. Information collected after December, 1976 will be available from the Program Management Office or from application to the District Engineer, Water Survey of Canada, Calgary. It will also be provided in future reports of this nature.

The Appendix contains water temperature graphs, descriptions of each gauging station, tabulated daily discharge information, graphed daily discharge information and relationships of stage to discharge, discharge to mean velocity, and discharge to area. It also contains a plot of the stream bed configuration (cross-section) at each gauging station site.

2. DATA COLLECTION

Standard stream gauging techniques have been and continue to be used in the Fort McMurray region. The largest difference between Water Survey's normal operations and those in the Fort McMurray region is the method of access to the gauging station sites. Most of the gauging stations in the Fort McMurray area are quite remote and access to these is gained either by helicopter or by boat. Only four gauging stations are accessible by motor vehicle.

Nearly all the stream gauging stations are instrumented with Stacom manometers linked to Stevens A-71 recorders. This system produces water levels on a continuous basis. There are two exceptions, the "Poplar Creek near Fort McMurray" station is an in-bank well installation with a float activated Stevens A-71 recorder, while the "Hangingstone River at Fort McMurray" station is manually operated. That is, a local resident is hired to read a wire-weight gauge on a once a day basis.

There are four lake gauging stations: Gregoire Lake and Namur Lake, have observers hired to take daily readings; Eaglenest Lake is instrumented with a Stacom-manometer-Stevens recording system; while the level of Gardiner Lake (Upper), is taken only when a hydrometric technician is in the area.

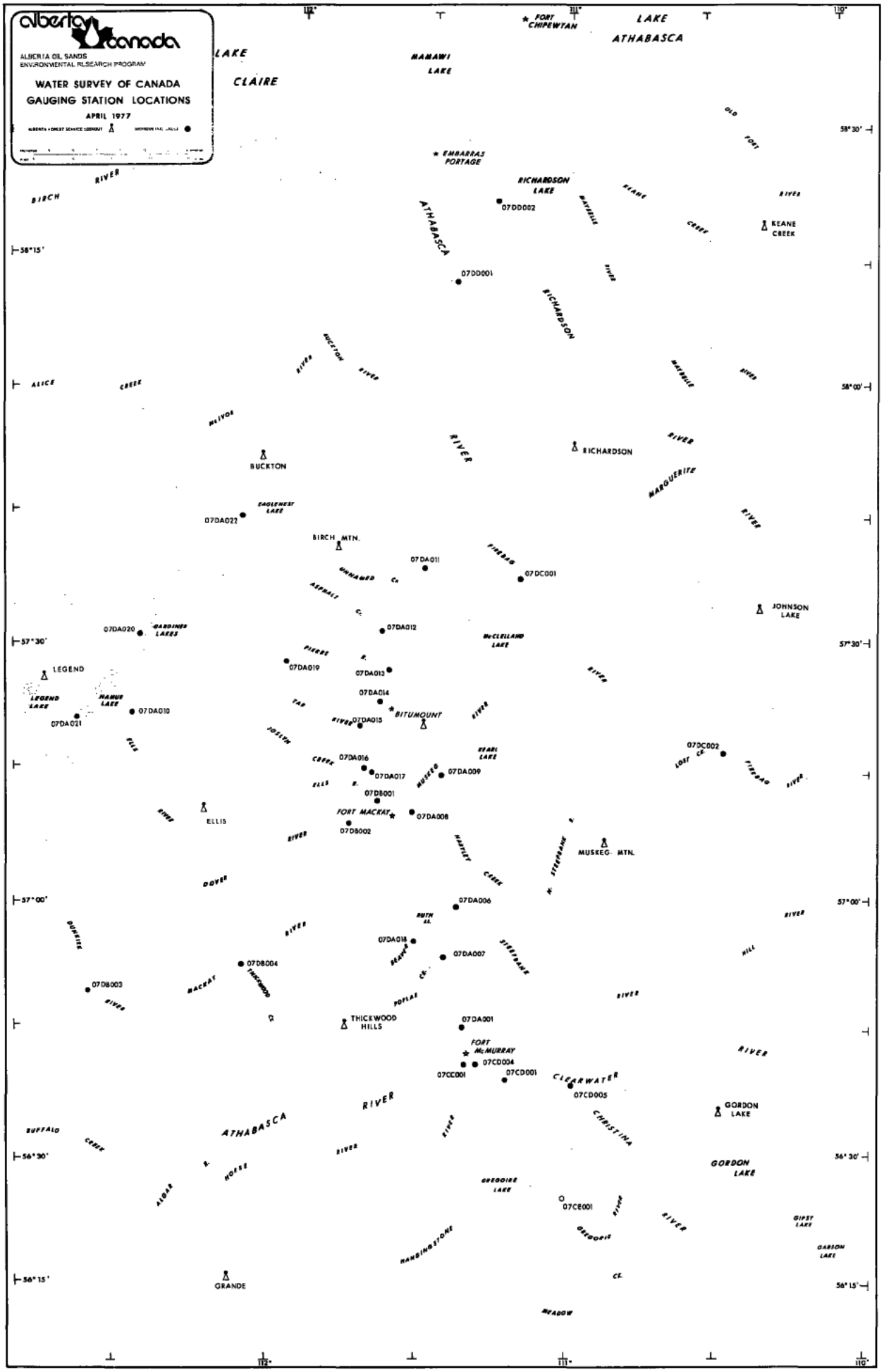
Table 1 lists the gauging stations which have been operated in the Fort McMurray region and gives details as to drainage area and period of record. The location of the gauging stations currently operated within the AOSERP boundaries are shown on the map (Figure 1) and are plotted by gauging station number.

Normally, streamflow discharge measurements are made at approximately monthly intervals at each stream gauging station. These measurements are taken to define the stage-discharge relationship and/or to measure the

TABLE 1. LIST OF WATER SURVEY OF CANADA GAUGING STATIONS

STATION NUMBER	STATION NAME	DRAINAGE AREA Miles^2	DRAINAGE AREA km^2	GAUGE	YEAR STATION EST.
07DA012	ASPHALT CREEK NEAR FORT MACKAY	57.5	149	R	1975
07DD001	ATHABASCA RIVER AT EMBARRAS AIRPORT	59,800	155,000	R	1959
07DA001	ATHABASCA RIVER BELOW MCMURRAY	51,300	133,000	R	1957
07DA018	BEAVER RIVER ABOVE SYNCRUDE	68	176	R	1975
07DA005	BEAVER RIVER NEAR FORT MACKAY	168	435	D	1961
07KE001	BIRCH RIVER BELOW ALICE CREEK	3,860	10,000	R	1967
07DA014	CALUMET RIVER NEAR FORT MACKAY	69.8	181	R	1975
07CD005	CLEARWATER RIVER ABOVE CHRISTINA RIVER	6,630	17,200	R	1966
07CD001	CLEARWATER RIVER AT DRAPER	11,800	30,600	R	1957
07DB002	DOVER RIVER NEAR THE MOUTH	369	956	R	1975
07DB003	DUNKIRK RIVER NEAR FORT MACKAY	611	1,580	R	1975
07DA022	EAGLENEST LAKE NEAR OUTLET			M	1976
07DA010	ELLS RIVER BELOW GARDINER LAKES	527	1,360	R	1975
07DA017	ELLS RIVER NEAR THE MOUTH	956	2,476	R	1975
07DC001	FIREBAG RIVER NEAR THE MOUTH	2,330	6,030	R	1971
07DA020	GARDINER LAKE (UPPER)IN BIRCH MOUNTAINS			M	1976
07CE001	GREGOIRE LAKE NEAR FORT MCMURRAY			M	1969
07CD004	HANGINGSTONE RIVER AT MCMURRAY	353	914	M	1965
07DA009	HARTLEY CREEK NEAR FORT MACKAY	142	368	R	1975
07CC001	HORSE RIVER AT ABASANDS PARK	842	2,180	R	1976
07DA016	JOSLYN CREEK NEAR FORT MACKAY	95.7	248	R	1975
07DC002	LOST CREEK NEAR THE MOUTH	23.1	59.8	R	1976
07DB001	MACKAY RIVER NEAR FORT MACKAY	2,020	5,230	R	1972
07DA008	MUSKEG RIVER NEAR FORT MACKAY	562	1,460	R	1974
07DA021	NAMUR LAKE AT BIRCH MOUNTAIN LODGE			M	1976
07DA013	PIERRE RIVER NEAR FORT MACKAY	50.2	130	R	1975
07DA007	POPLAR CREEK NEAR FORT MCMURRAY	58.3	151	R	1972
07DA002	RICHARDSON RIVER NEAR THE MOUTH	1,140	2,950	R	1970
07DA006	STEEPBANK RIVER NEAR FORT MCMURRAY	530	1,370	R	1972
07DA015	TAR RIVER NEAR FORT MACKAY	121	313	R	1975
07DA019	TAR RIVER (UPPER) NEAR FORT MACKAY	37.6	97.4	R	1976
07DB004	THICKWOOD CREEK NEAR FORT MACKAY	65.5	170	R	1976
07DA011	UNNAMED CREEK NEAR FORT MACKAY	108	280	R	1975

D - DISCONTINUED M - MANUAL R - RECORDING


alberta canada
ALBERTA OIL SANDS
ENVIRONMENTAL RESEARCH PROGRAM
WATER SURVEY OF CANADA
GAUGING STATION LOCATIONS
APRIL 1977
LAKE CLAIRE
MAMAWI LAKE
FORT CHIPEWYAN
LAKE ATHABASCA
EMBARRAS PORTAGE
RICHARDSON LAKE
07DD002
07DD001
KEANE CREEK
BIRCH RIVER
ATHABASCA RIVER
RICHARDSON RIVER
MARGUERITE RIVER
BUCKTON
RICHARDSON
JOHNSON LAKE
BIRCH MTN.
07DA022
07DA011
07DC001
07DA012
07DA020
GARDINER LAKES
McCLELLAND LAKE
LEGEND
07DA019
07DA013
07DA014
07DA021
07DA010
BITUMOUNT
07DA015
07DC002
07DA016
07DA017
07DA009
07DB001
FORT MACKAY
07DA008
07DB002
ELLIS
MUSKEG MTN.
07DA006
07DA018
07DA007
07DB004
07DB003
THICKWOOD HILLS
07DA001
FORT McMURRAY
07CC001
07CD004
07CD001
07CD005
CLEARWATER RIVER
GORDON LAKE
BUFFALO CREEK
ATHABASCA RIVER
GREGOIRE LAKE
07CE001
GIPSY LAKE
GARSON LAKE
HANGINGSTONE CR.
GRANDE
MEADOW
58°30'
58°00'
57°30'
57°00'
56°30'
56°15'
112°
111°
110°

deviations from the established stage-discharge curves. It has been found through many years of experience that monthly measurement programs provide the optimum balance between expenditure and discharge data accuracy. Of course during the spring runoff period streamflow discharge measurements are made as often as possible because during ice cover or ice break-up conditions the stage-discharge relationships are not valid and the only way to define the flow is to measure it as frequently as possible. Therefore during ice affected periods, daily mean discharges are reliable estimates only. These estimates are based on current meter discharge measurements, weather conditions, flows in other streams and in part on water levels. During and immediately after storm events, measurements are made more frequently in order to define the upper end of the stage-discharge relationships and also to determine whether an inordinate amount of scour or deposition occurs during the high flow periods.

Some of the factors which can affect the stage-discharge relationship at a gauging station site include scouring or deposition, bank sloughing, vegetative growth, beaver activity, man's activities and any other induced changes to the stream bank or bed. One of the major problems in obtaining reliable data on the smaller streams in the AOSERP study area is beaver activity. Their continual building of dams causes substantial changes to the stage-discharge relationships and in fact can alter the flow characteristics of some of the smaller streams.

Stream gauging is done primarily to provide a record of streamflow discharges. However in achieving this goal several other types of data are collected as by-products, including water temperatures, channel cross-sections and velocities. Normally only daily discharges are published in the annual water supply papers but the additional data are also of considerable value and are

included in this report in graphical form.

The existing gauging station network is under continuous review as to its adequacy or inadequacy with respect to hydrometric coverage of the AOSERP study area. However, it is necessary to collect several years of data at each station before any worthwhile recommendations as to network changes can be made. Data simulation cannot effectively be carried out unless high, low and medium runoff years have been monitored. In some cases, flows at a particular site can be adequately reproduced from other gauging stations and/or from hydrometeorological data. In this case the gauging station can be discontinued without creating a serious gap in the hydrometric network.

It is Water Survey of Canada's intention to operate the existing network through 1979 before any major recommendations are made regarding the "fine tuning" of the gauging station network. Hopefully by that time sufficient data will be available to identify redundant gauging stations, if any, and possible network gaps.

3. DATA PRESENTATION

All data are included in the Appendix of this report. This Appendix is organized in alphabetical order of gauging stations, with all the hydrometric data for a particular station being placed together. The exception to this is water temperature information which can be found at the beginning of the Appendix.

Water temperature data have been treated collectively rather than on an individual gauging station basis. For the study area, gauging stations of similar drainage area exhibit similar water temperature characteristics. Since the water temperatures are only spot readings (taken every time a discharge measurement is made) the information is useful only to indicate water temperature trends. Four plots are included in the Appendix. One plot contains all the available 1976 water temperature data while the other three contain 1976 water temperature data for stations having drainage areas over 1,000 square miles (2,590 km^2), for 100 to 1000 square miles (259 to 2,590 km^2) and for less than 100 square miles (259 km^2). Each plot is framed by plotting the 1976 10 day mean maximum and 10 day mean minimum air temperatures for Fort McMurray. Spot water temperatures for individual locations and/or for years other than 1976 can be obtained upon application to the District Engineer, Water Survey of Canada, Calgary.

A description of the gauging station precedes the compilation of hydrometric data for that particular station. This description includes the location of the station, the drainage area to the gauging station, the period of available record, a site description including equipment, and general comments about the gauging station.

Following the station description is a plot of the latest stage-discharge relationship with individual discharge measurements plotted on the graph to give some

indication of scatter (accuracy). In some cases the rating curves are as yet not well defined; especially at higher flows as some sites have not experienced high water since station installation.

Plotted on the same page as the stage-discharge curve is a cross-section of the stream. This is a plot of the stream soundings taken while performing a high water streamflow discharge measurement. In most cases the cross-section of the stream is at the site of a permanent measuring structure such as cableway or bridge or at a fixed boat measuring section. In some cases more than one cross-section has been plotted for the same site. These additional plots were made to indicate the presence of stream bed movement.

Following the stage-discharge and cross-section plots are plots of relationships between discharge and mean velocity and discharge and cross-sectional area. These plots are valid only for the streamflow discharge measurement locations. In many cases low water discharge measurements are made by wading at sites other than those at which high water discharge measurements are made (from cableway, bridge or boat). Thus the lower portion of the discharge-velocity and discharge-area curves often indicate considerable scatter. At some stream gauging stations insufficient discharge measurements have been made to give a fair indication of the discharge-velocity and discharge-area curves.

The last section for each stream gauging station contains the prints of daily discharge data. Each year's data are printed on a page. Immediately below these data is a hydrograph for that year giving a visual interpretation of the discharge data.

4. REFERENCES

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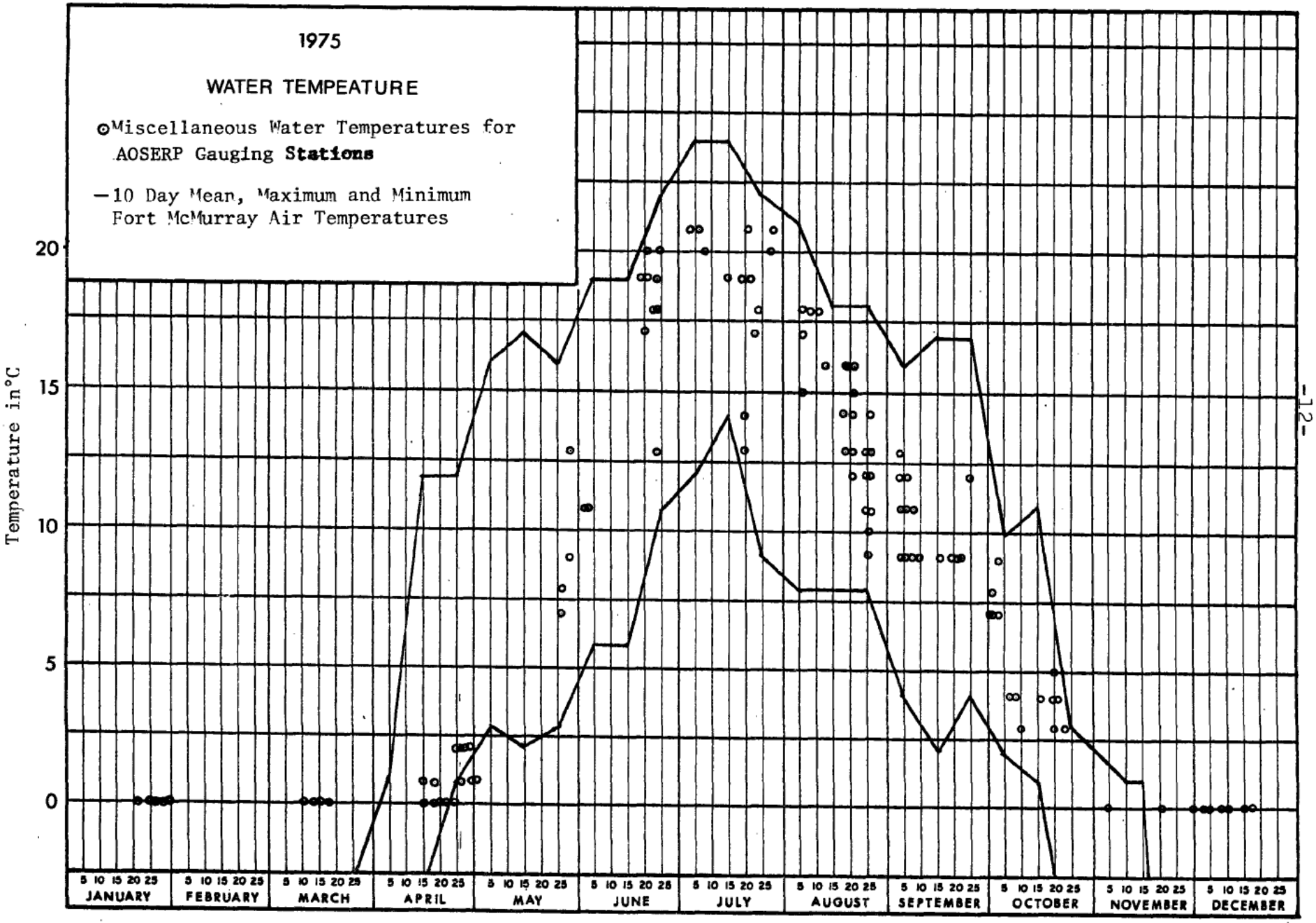
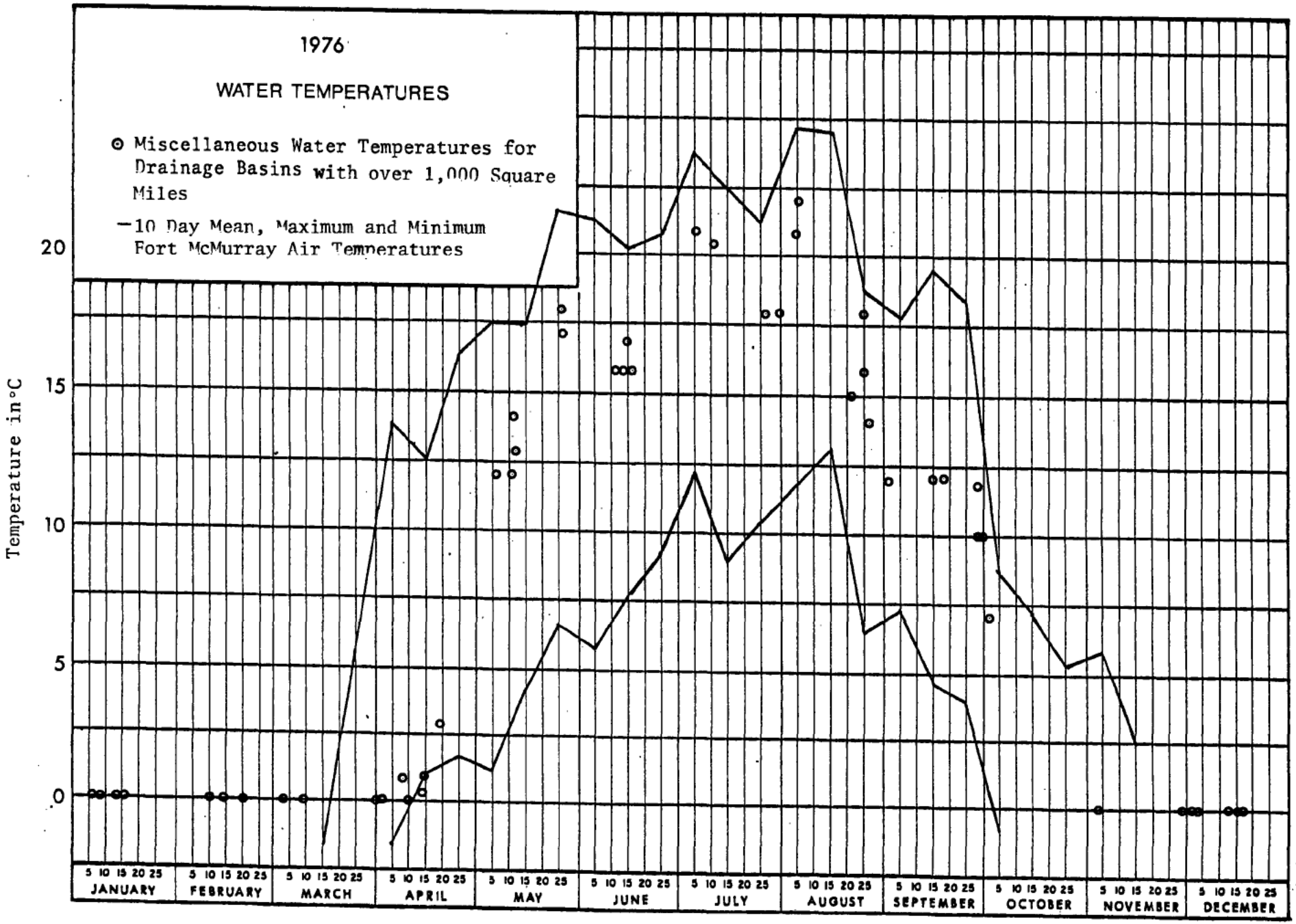
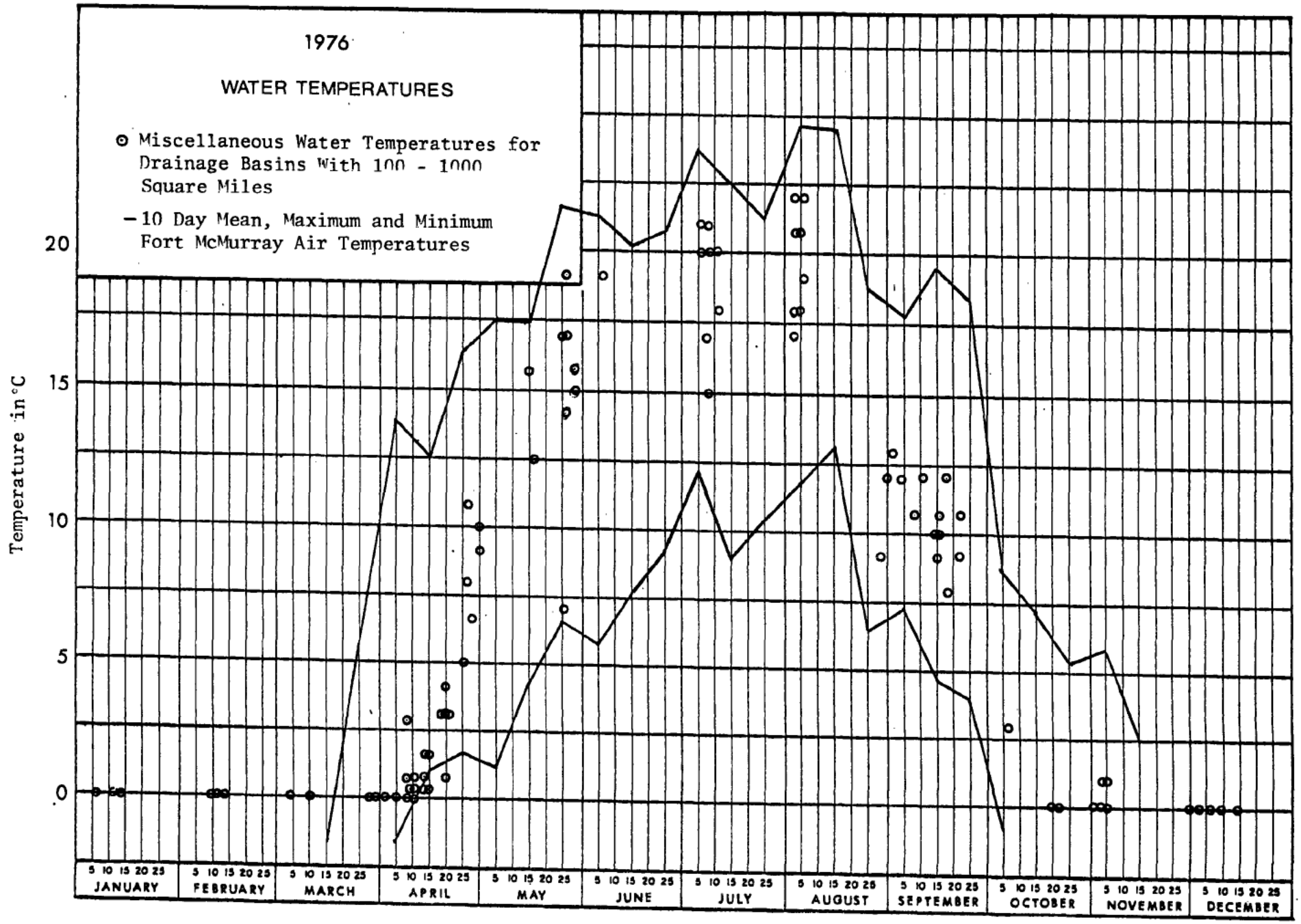
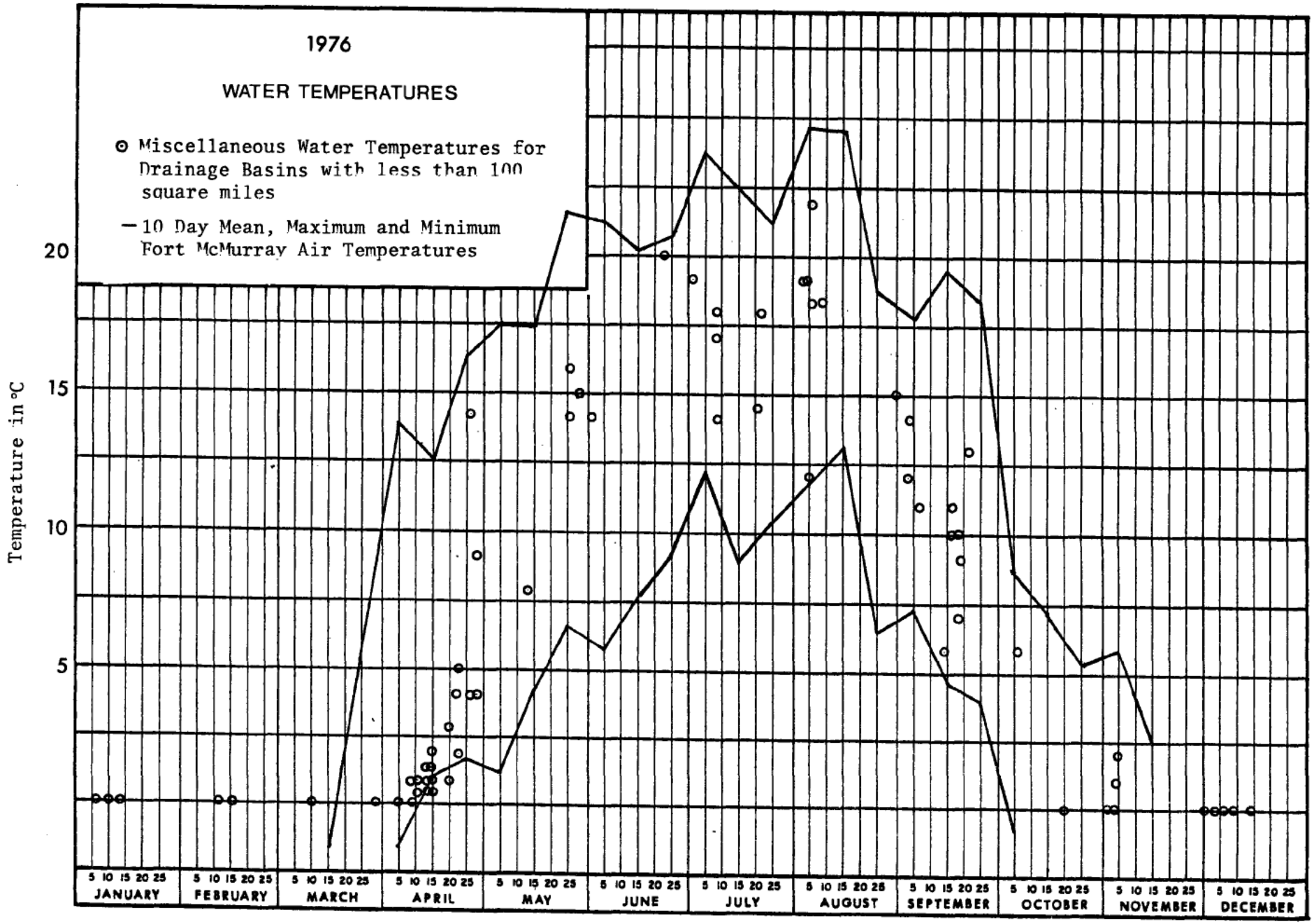
5. APPENDIX

5.1 WATER TEMPERATURES




1976
WATER TEMPERATURES
⊙ Miscellaneous Water Temperatures for Drainage Basins with over 1,000 Square Miles
—10 Day Mean, Maximum and Minimum Fort McMurray Air Temperatures
Temperature in °C
20
15
10
5
0
5 10 15 20 25
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER


1976
WATER TEMPERATURES
⊙ Miscellaneous Water Temperatures for Drainage Basins With 100 - 1000 Square Miles
— 10 Day Mean, Maximum and Minimum Fort McMurray Air Temperatures
Temperature in °C
20
15
10
5
0
5 10 15 20 25
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER


1976
WATER TEMPERATURES
⊙ Miscellaneous Water Temperatures for Drainage Basins with less than 100 square miles
— 10 Day Mean, Maximum and Minimum Fort McMurray Air Temperatures
Temperature in °C
20
15
10
5
5 10 15 20 25
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER

5.2 ASPHALT CREEK NEAR FORT MacKAY

STATION NAME: Asphalt Creek near Fort MacKay

STATION NUMBER: 07DA012

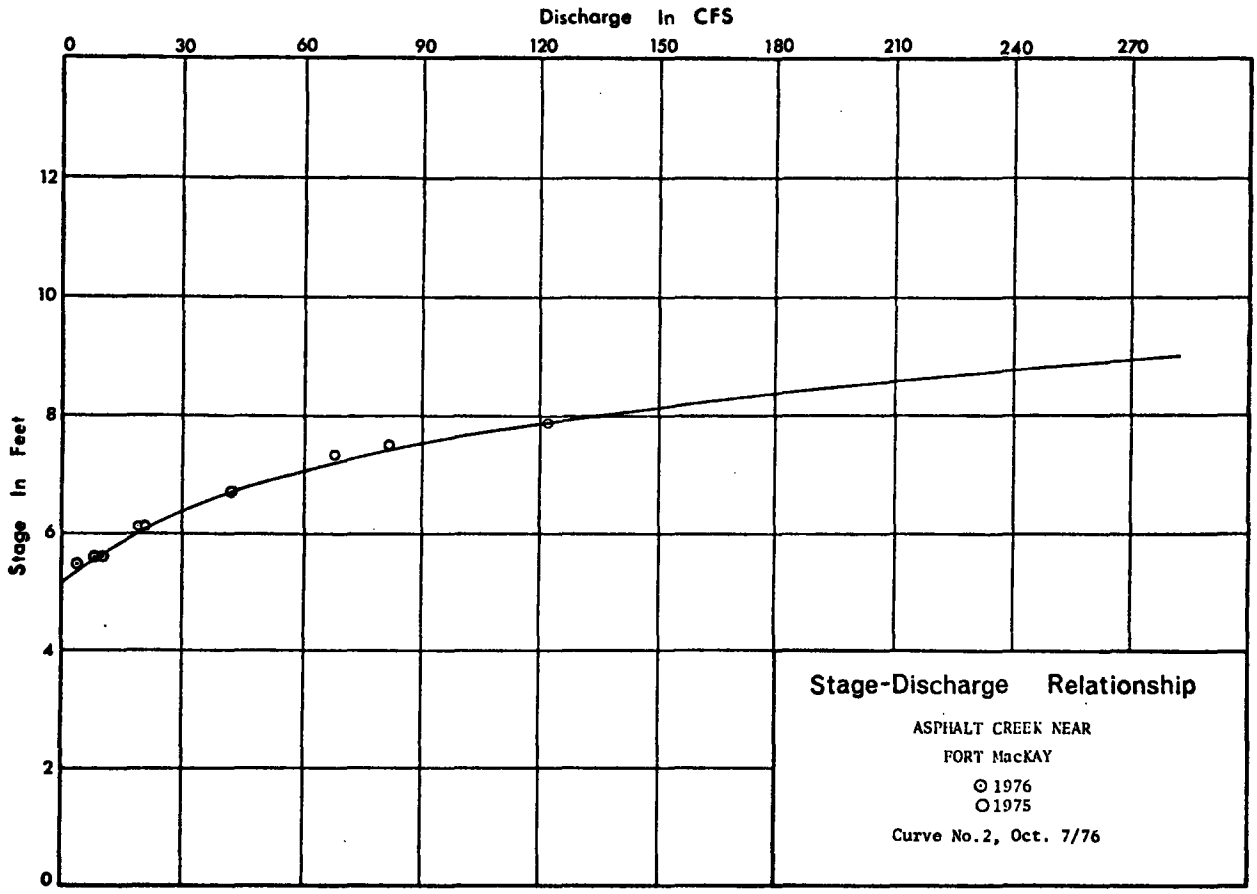
LOCATION: Latitude: 57°32'20" Longitude: 111°40'36"
NW26-98-11-W4

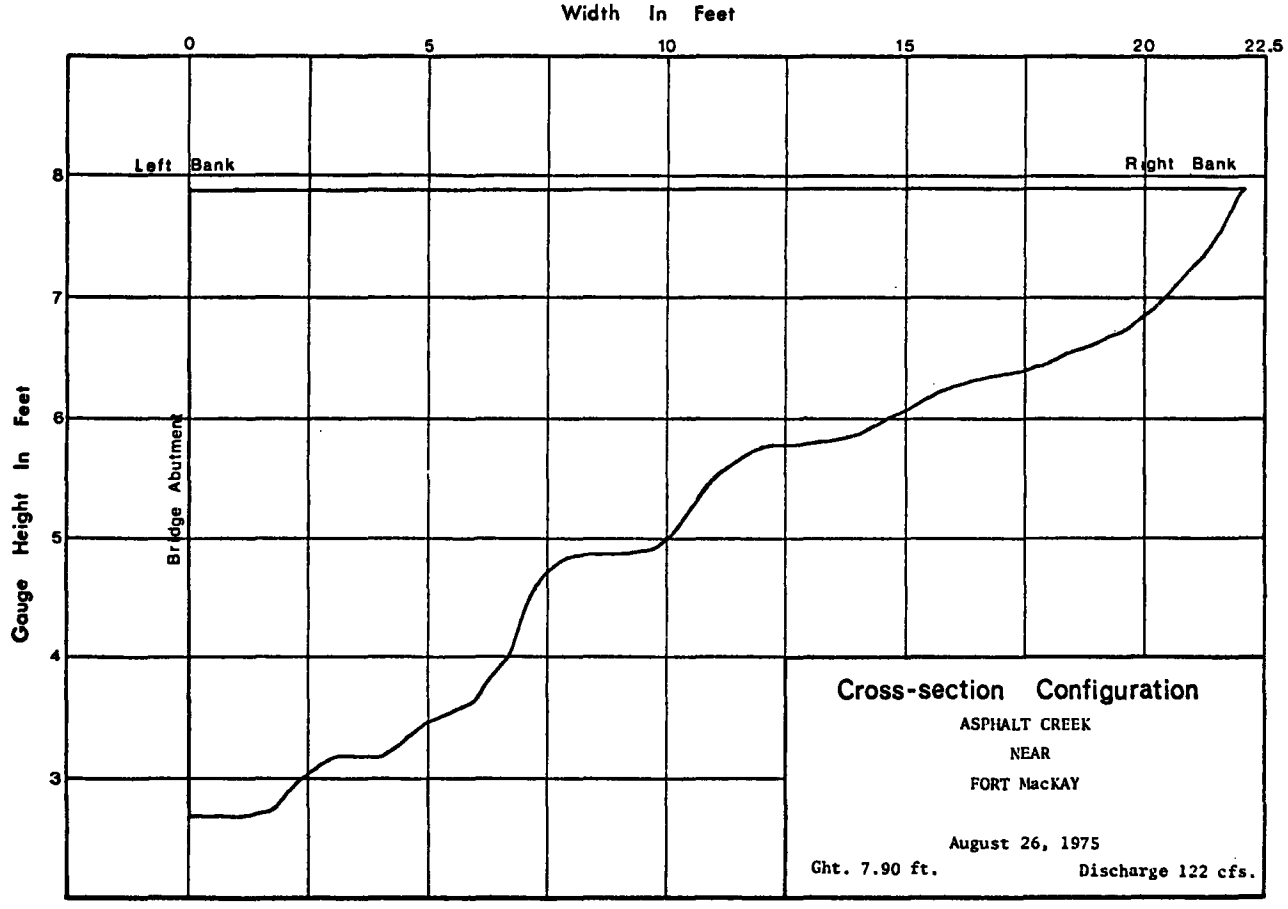
DRAINAGE AREA: 57.5 square miles (149 km^2)

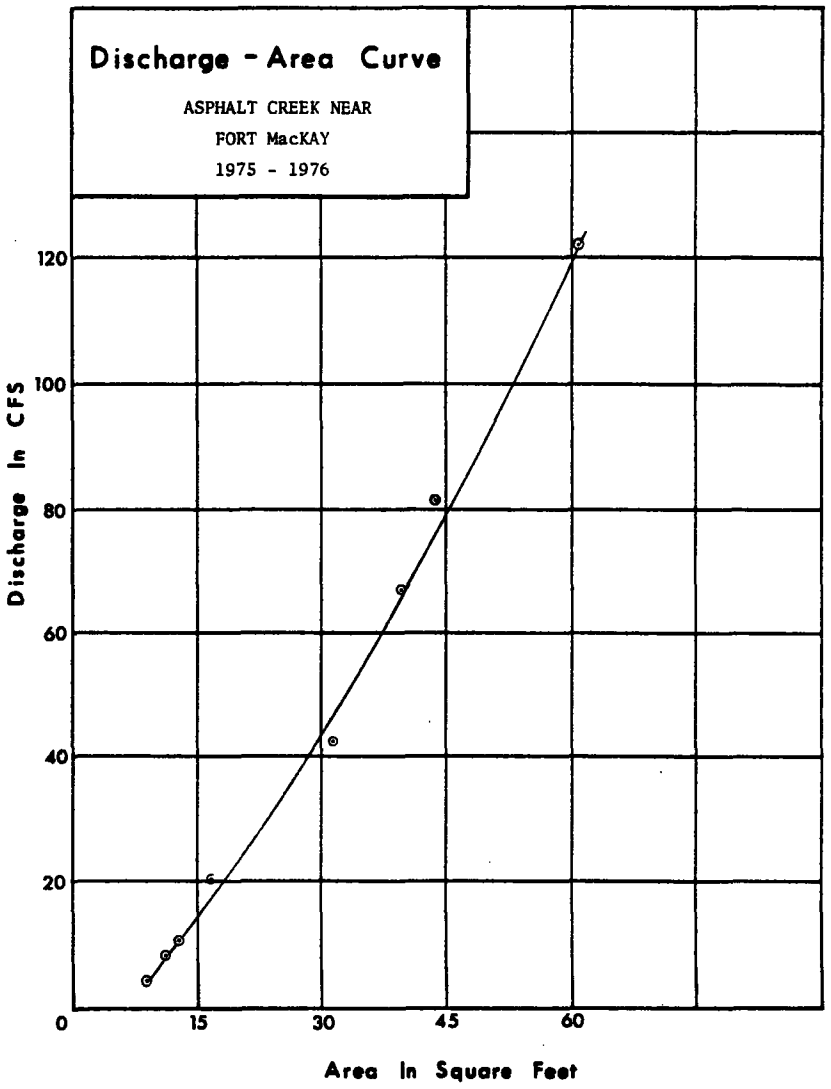
PERIOD OF RECORD: The station was established on July 10, 1975. Intermittent record was collected for the balance of 1975. Complete discharge data is available for 1976.

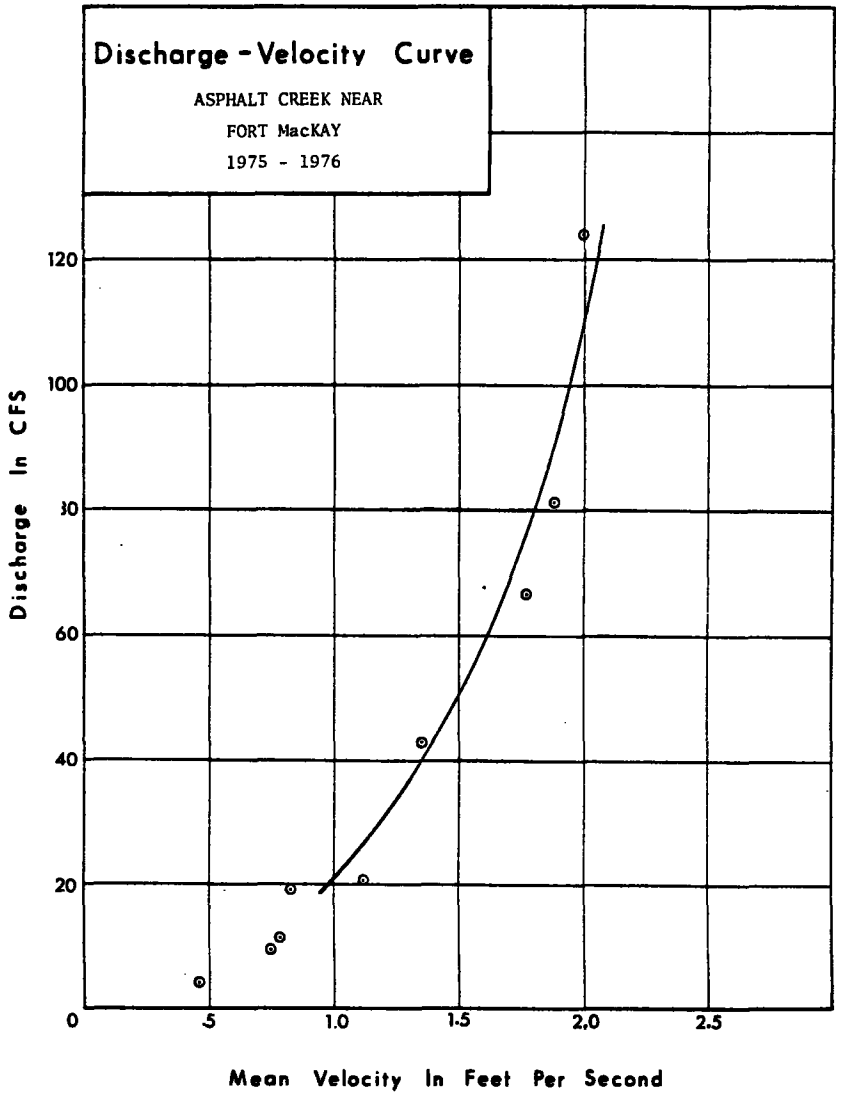
SITE DESCRIPTION: This site is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. The gauge is located on the right bank 30 air miles (48 km) north of Fort MacKay, immediately downstream of a Forestry bridge. Open water discharge measurements are made by wading near the gauge or from the Forestry bridge.

GENERAL: This station has escaped any beaver activity at the gauge site but the flows no doubt are tempered by beaver dams above the gauge. Zero flow has been observed both winters.


Discharge In CFS
0
30
60
90
120
150
180
210
240
270
Stage In Feet
0
2
4
6
8
10
12
Stage-Discharge Relationship
ASPHALT CREEK NEAR
FORT MacKAY
⊙ 1976
○ 1975
Curve No.2, Oct. 7/76


Width In Feet
0
5
10
15
20
22.5
Gauge Height In Feet
3
4
5
6
7
8
Left Bank
Right Bank
Bridge Abutment
Cross-section Configuration
ASPHALT CREEK
NEAR
FORT MacKAY
August 26, 1975
Ght. 7.90 ft.
Discharge 122 cfs.


Discharge - Area Curve
ASPHALT CREEK NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS
0
20
40
60
80
100
120
15
30
45
60
Area In Square Feet


Discharge - Velocity Curve
ASPHALT CREEK NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS
0
20
40
60
80
100
120
.5
1.0
1.5
2.0
2.5
Mean Velocity In Feet Per Second

WATER SURVEY OF CANADA — ASPHALT CREEK NEAR FORT MACKAY — STATION NO. 07DA012
MAY 14 1976 PAGE 284
CALGARY, ALTA.

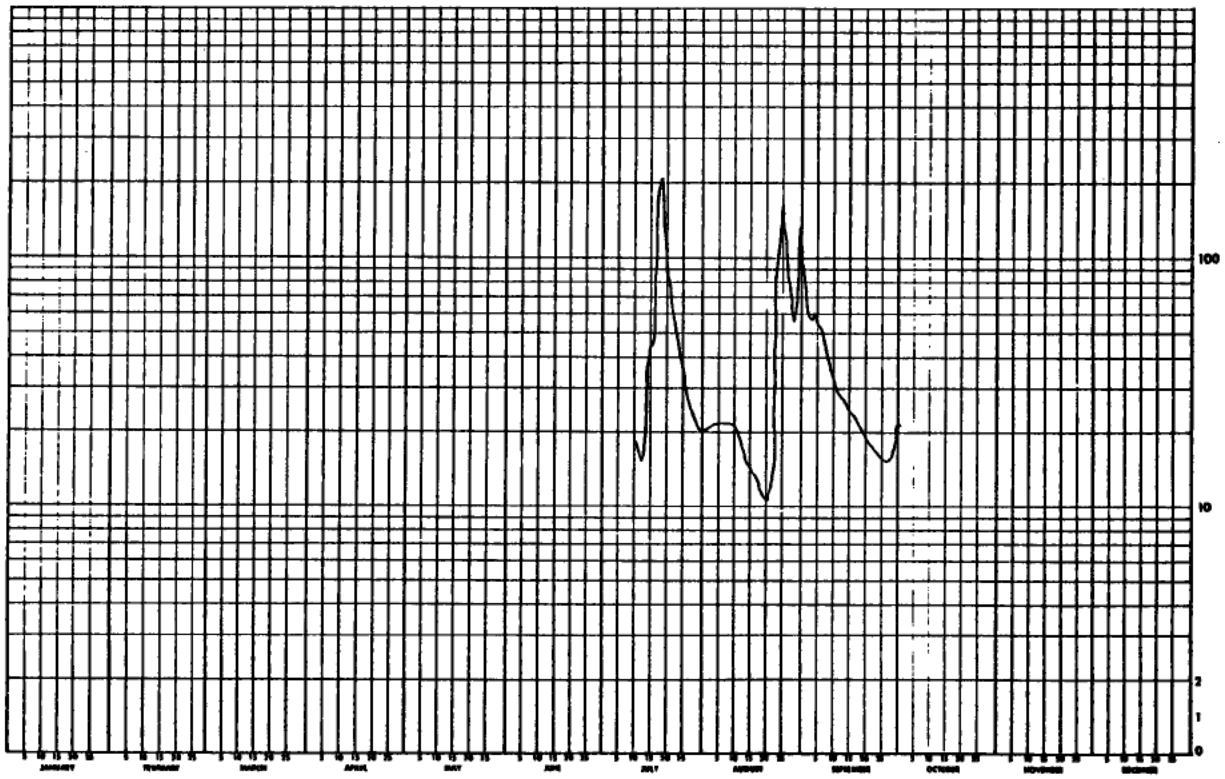
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	20.3 E	74.1	20.6 A	---	---	1
2	---	---	---	---	---	---	---	20.6 E	58.2	---	---	---	2
3	---	---	---	---	---	---	---	21.0 E	56.1	---	---	---	3
4	---	---	---	---	---	---	---	21.2 E	58.9	---	---	---	4
5	---	---	---	---	---	---	---	21.5 E	53.4	---	---	---	5
6	---	---	---	---	---	---	---	21.7 E	51.9	---	---	---	6
7	---	---	---	---	---	---	---	21.9	45.3	---	---	---	7
8	---	---	---	---	---	---	---	21.7 E	39.0	---	---	---	8
9	---	---	---	---	---	---	---	21.6 E	33.6	---	---	---	9
10	---	---	---	---	---	---	19.2 A	21.5 A	30.8	---	---	---	10
11	---	---	---	---	---	---	17.3	20.3	28.8	---	---	---	11
12	---	---	---	---	---	---	15.2	18.1	28.3	---	---	---	12
13	---	---	---	---	---	---	16.6	15.5	25.9	---	---	---	13
14	---	---	---	---	---	---	33.3	14.8	24.7	---	---	---	14
15	---	---	---	---	---	---	44.0	14.6	23.9	---	---	---	15
16	---	---	---	---	---	---	45.7	13.9	23.5	---	---	---	16
17	---	---	---	---	---	---	166	13.1	21.7	---	---	---	17
18	---	---	---	---	---	---	285	11.7	20.8	---	---	---	18
19	---	---	---	---	---	---	136	11.2	19.4	---	---	---	19
20	---	---	---	---	---	---	87.1	10.4	18.7	---	---	---	20
21	---	---	---	---	---	---	70.9	11.5	17.9	---	3.5 B	---	21
22	---	---	---	---	---	---	56.5	14.1	17.2	---	---	---	22
23	---	---	---	---	---	---	49.2	98.0	16.4	---	---	---	23
24	---	---	---	---	---	---	41.0	112	15.6	---	---	---	24
25	---	---	---	---	---	---	33.5	163	15.2	---	---	---	25
26	---	---	---	---	---	---	29.1	113	15.2	---	---	---	26
27	---	---	---	---	---	---	25.6	78.6	15.2	---	---	---	27
28	---	---	---	---	---	---	21.8	54.4	16.1	---	---	---	28
29	---		---	---	---	---	20.2	64.7	20.9	---	---	---	29
30	---		---	---	---	---	20.8	129	21.6	---	---	---	30
31	---		---		---		19.2 A	111		---		---	31
TOTAL	---	---	---	---	---	---	---	1303.9	908.5	---	---	---	TOTAL
MEAN	---	---	---	---	---	---	---	42.1	30.3	---	---	---	MEAN
AC-FT	---	---	---	---	---	---	---	2590	1800	---	---	---	AC-FT
MAX	---	---	---	---	---	---	---	163	74.1	---	---	---	MAX
MIN	---	---	---	---	---	---	---	18.4	15.2	---	---	---	MIN

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 32 20 N
LONG 111 40 36 W

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA
DEC 23 1976 PAGE 8
CALGARY, ALTA.

ASPHALT CREEK NEAR FORT MACKAY

STATION NO. 07DA012

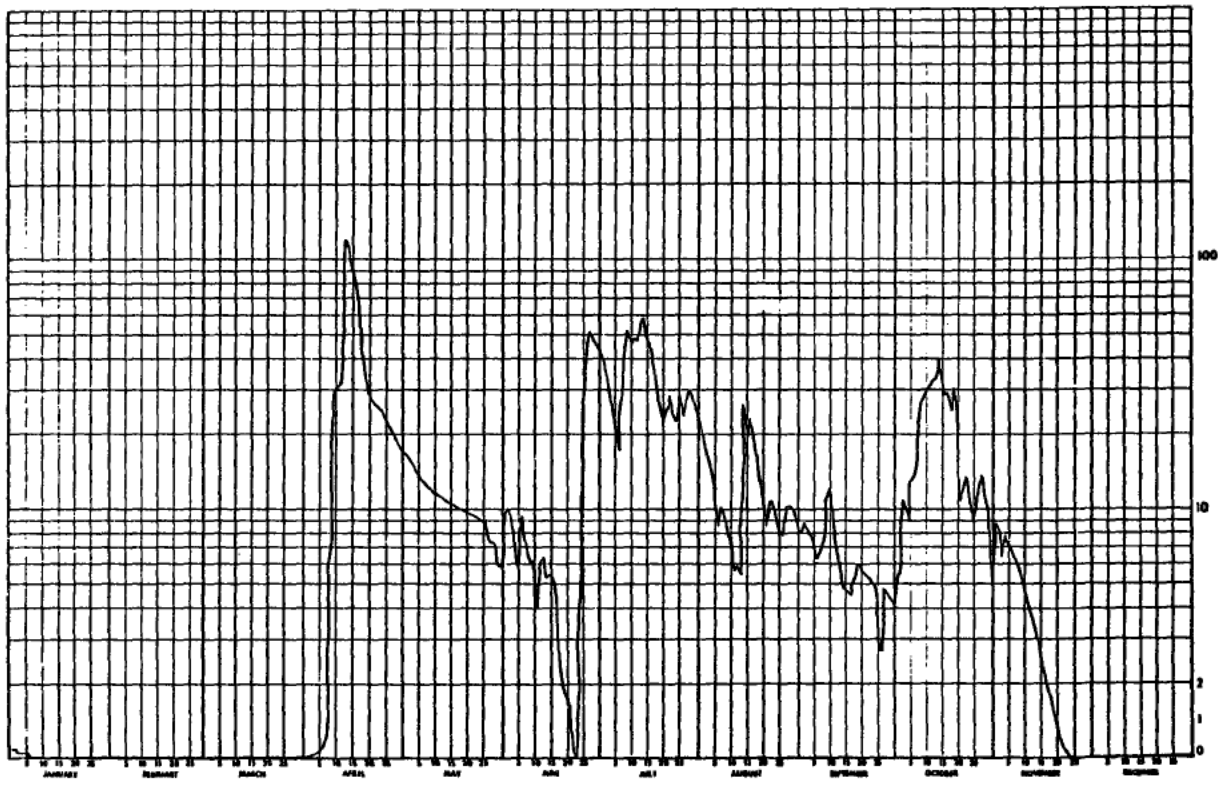
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	.20 B	0 B	0 B	0 B	17.0 E	9.9	39.7	21.5	8.0	5.0	8.8 B	0 B	1
2	.20 B	0 B	0 B	0 B	16.0 E	10.3	37.1	18.5	8.8	5.6	8.5 B	0 B	2
3	.10 B	0 B	0 B	.10 B	15.0 E	8.8	30.7	15.8	8.3	10.8	6.5 B	0 B	3
4	.10 B	0 B	0 B	.10 B	14.5 E	6.8	26.6	12.9	7.7	8.9	7.8 B	0 B	4
5	.10 B	0 B	0 B	.20 B	14.0 E	5.9	22.8	10.7	6.6	13.1	7.3 B	0 B	5
6	.10 B	0 B	0 B	.30 B	13.5 E	9.2	17.3	8.8	6.3	12.7	7.0 B	0 B	6
7	0 B	0 B	0 B	.60 B	13.0 E	7.8	27.3	10.2	6.9	13.8	6.2 B	0 B	7
8	0 B	0 B	0 B	5.0 B	12.5 E	6.7	48.7	8.7	7.3	25.2	5.5 B	0 B	8
9	0 B	0 B	0 B	29.0 B	12.0 E	6.0	51.1	8.0	11.6	27.4	5.0 B	0 B	9
10	0 B	0 B	0 B	30.0 B	11.8 E	6.2	46.5	7.0	12.1	29.2	4.4 B	0 B	10
11	0 B	0 B	0 B	30.6 B	11.3 E	8.0	48.0	5.7	8.1	31.3	4.0 B	0 B	11
12	0 B	0 B	0 B	37.0 B	11.0 E	6.2	46.9	5.9	6.3	32.4	3.7 B	0 B	12
13	0 B	0 B	0 B	127 B	10.8 E	6.3	55.5	5.5	5.4	32.9 B	3.2 B	0 B	13
14	0 B	0 B	0 B	99.0 B	10.6 E	5.3	57.3	26.1	4.8	38.5 B	2.8 B	0 B	14
15	0 B	0 B	0 B	92.7 B	10.4 E	5.5	49.2	20.2	4.7	34.7 B	2.4 B	0 B	15
16	0 B	0 B	0 B	80.0 B	10.2 E	5.1	44.7	23.5	4.7	28.5 B	2.1 B	0 B	16
17	0 B	0 B	0 B	62.0 B	10.0 E	3.4	38.9	19.2	4.5	29.2 B	1.7 B	0 B	17
18	0 B	0 B	0 B	42.0 B	9.9 E	2.5	32.5	14.0	5.3	25.0 B	1.2 B	0 B	18
19	0 B	0 B	0 B	33.0 B	9.8 E	1.7	26.0	12.8	6.0	30.7 B	.90 B	0 B	19
20	0 B	0 B	0 B	28.6 B	9.7 E	1.5	22.9	11.1	5.6	16.3 B	.60 B	0 B	20
21	0 B	0 B	0 B	27.0 B	9.5 E	.99	25.0	8.7	5.5	10.8 B	.30 B	0 B	21
22	0 B	0 B	0 B	26.0 B	9.3 E	.19	28.2	10.5	5.4	12.2 B	.10 B	0 B	22
23	0 B	0 B	0 B	25.7 B	9.2 E	0	25.5	10.8	5.0	13.6 B	0 B	0 B	23
24	0 B	0 B	0 B	24.0 B	9.0 E	5.5	22.7	9.3	5.0	11.2 B	0 B	0 B	24
25	0 B	0 B	0 B	23.0 B	8.9 E	28.3	28.6	8.1	3.1	8.8 B	0 B	0 B	25
26	0 B	0 B	0 B	22.0 B	8.9 A	38.0	24.3	7.7	2.7	9.7 B	0 B	0 B	26
27	0 B	0 B	0 B	19.9 B	7.6	52.0	26.4	9.4	4.7	12.6 B	0 B	0 B	27
28	0 B	0 B	0 B	19.0 E	7.3	49.8	29.8	10.4	4.6	13.7 B	0 B	0 B	28
29	0 B	0 B	0 B	18.0 E	7.3	44.5	28.6	10.2	4.5	10.9 B	0 B	0 B	29
30	0 B		0 B	17.5 E	5.9	45.8	25.8	9.3	4.1	7.4 B	0 B	0 B	30
31	0 B		0 B		5.8		23.7	8.0		5.3 B		0 B	31
TOTAL	.80	0	0	919.30	331.5	304.18	1054.3	368.5	163.6	567.4	90.80	0	TOTAL
MEAN	.03	0	0	30.6	10.7	12.8	34.0	11.9	6.1	18.3	3.0	0	MEAN
AC-FT	1.6	0	0	1820	658	762	2090	731	364	1130	179	0	AC-FT
MAX	.20	0	0	127	17.0	52.0	57.3	26.1	12.1	38.5	8.8	0	MAX
MIN	0	0	0	0	5.8	0	17.3	5.5	2.7	5.0	0	0	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 10.7 CFS
TOTAL DISCHARGE, 7740 AC-FT
MAXIMUM DAILY DISCHARGE, 127 CFS ON APR 13
MINIMUM DAILY DISCHARGE, 0 CFS ON JAN 7

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

MAXIMUM INSTANTANEOUS DISCHARGE, CFS AT ON *NOT DETERMINED*



5.3 ATHABASCA RIVER AT EMBARRAS AIRPORT

STATION NAME: Athabasca River at Embarras Airport

STATION NUMBER: 07DD001

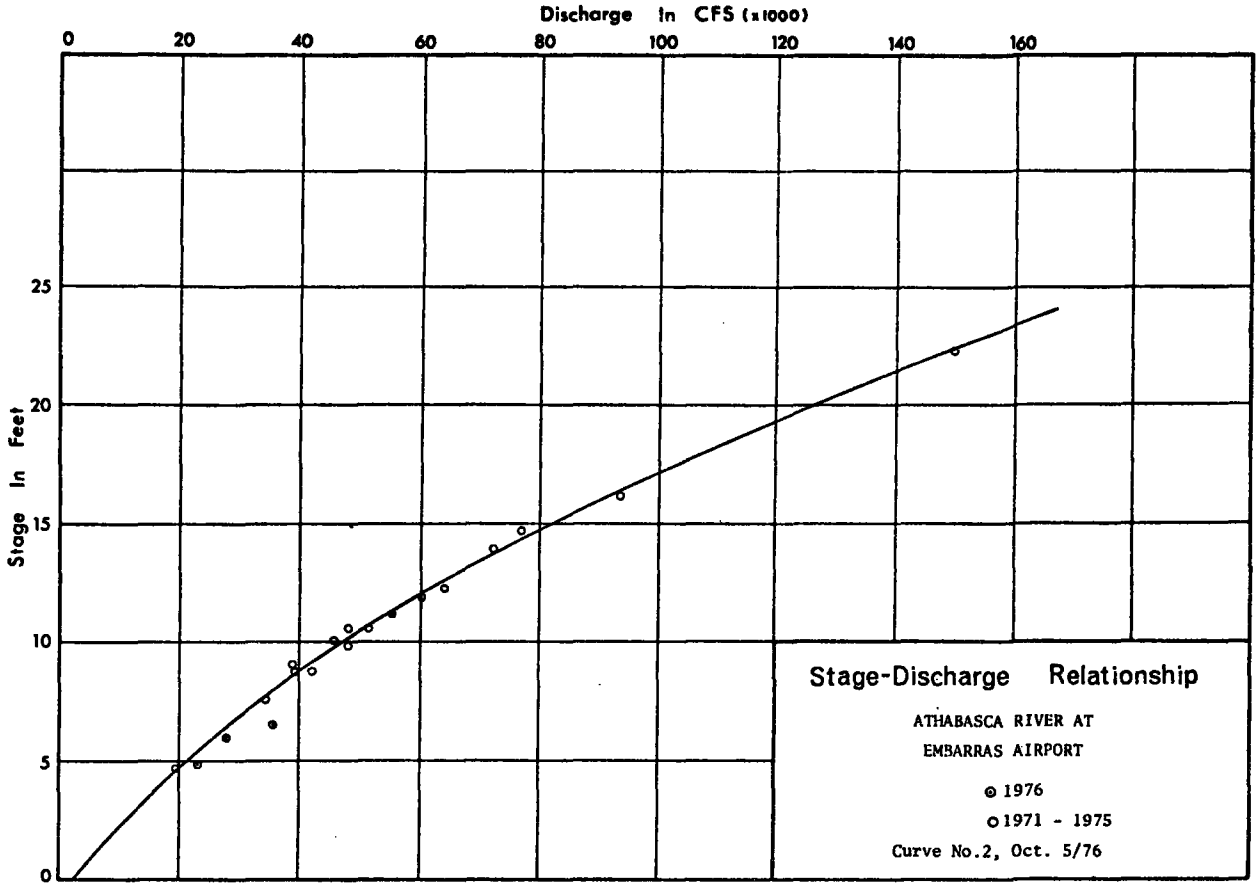
LOCATION: Latitude: 58°12'18" Longitude: 111°23'24"
NE15-106-09-W4

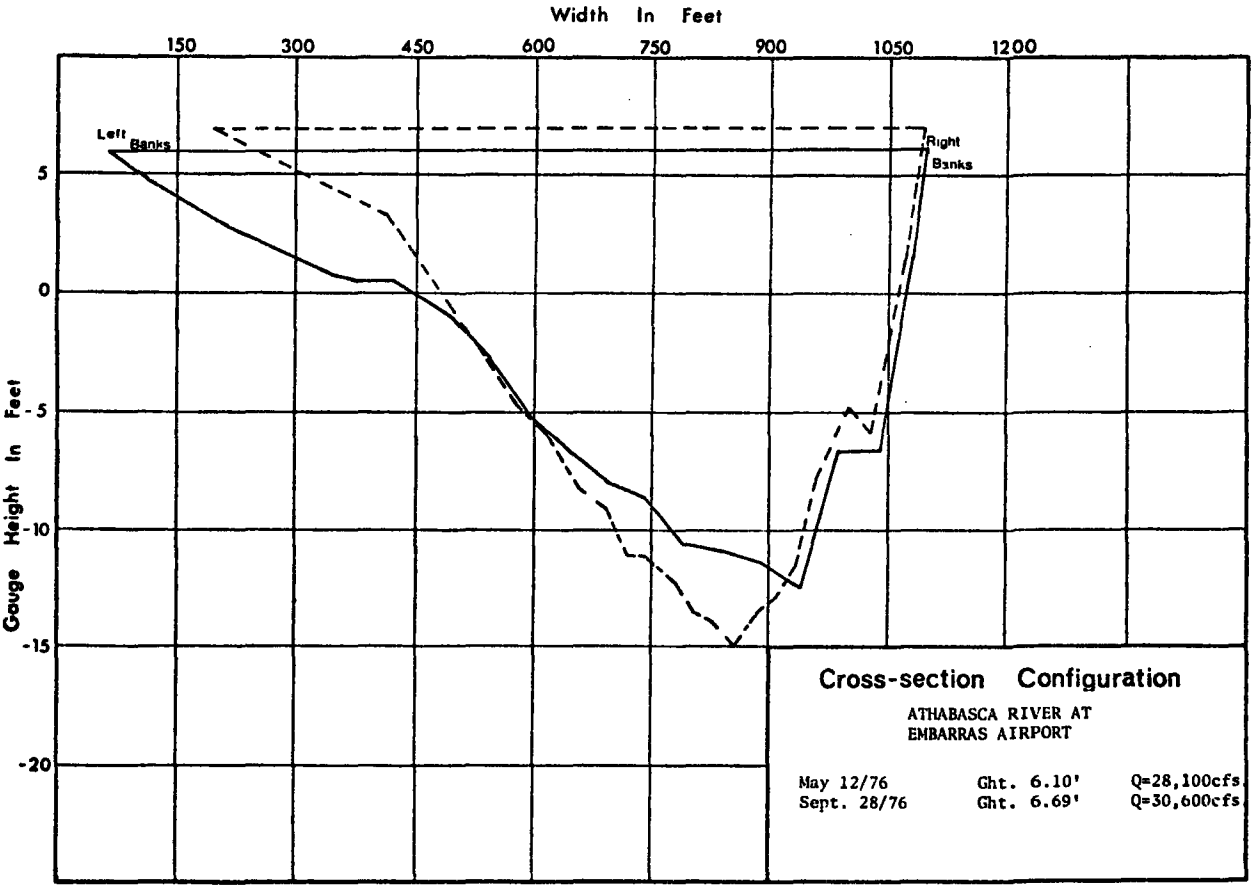
DRAINAGE AREA: 59,800 square miles (155,000 km^2)

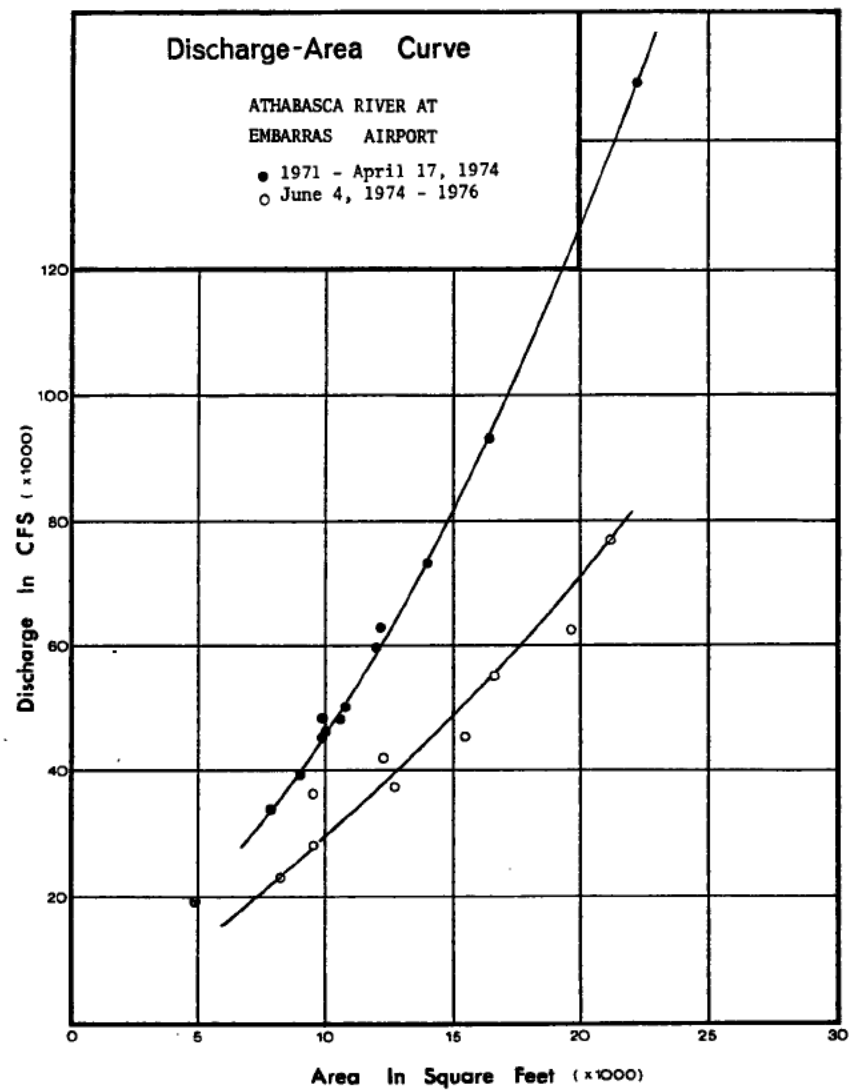
PERIOD OF RECORD: Discharge records are available on a more or less continuous basis from May,1971 to November 5, 1976.

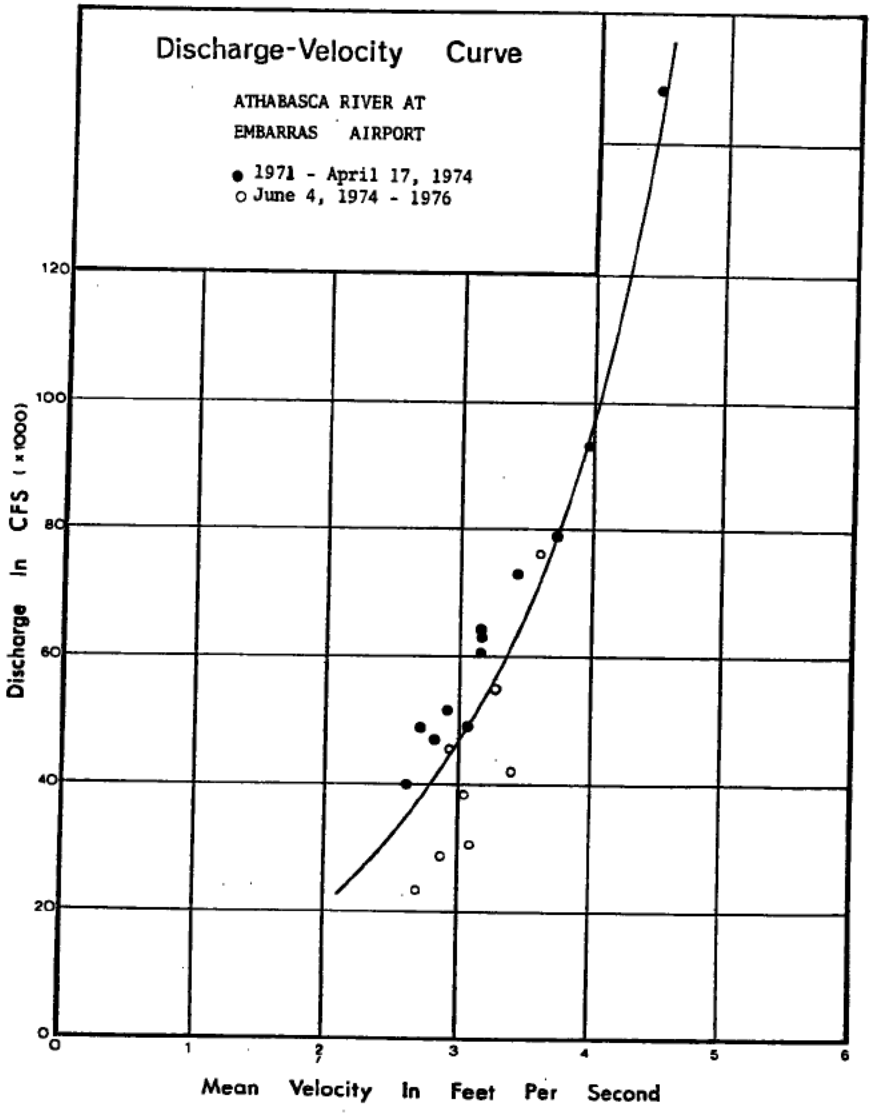
SITE DESCRIPTION: The gauge is located on a high sand bank on the right side of the river close to a sawmill power house. This is indicated as mile 119 on the Athabasca River navigation charts. The station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. The open water discharge measurements prior to June 1974 were made at mile 123; since then they have been made several hundred feet (30 - 100 km) above the gauge.

GENERAL: The stage-discharge curve has been well defined throughout the range of stage and appears to be quite stable especially at higher stages.
Two cross-sections have been plotted based on discharge measurements of May 12, 1976 and September 28, 1976. There is a significant difference in the cross-section configurations, probably due to the high flows of early September, 1976.
The discharge-area and discharge-velocity curves depict, utilizing different symbols, the conditions at both measuring sections.


Discharge In CFS (x1000)
0
20
40
60
80
100
120
140
160
Stage In Feet
25
20
15
10
5
0
Stage-Discharge Relationship
ATHABASCA RIVER AT
EMBARRAS AIRPORT
⊙ 1976
○ 1971 - 1975
Curve No.2, Oct. 5/76


Width In Feet
150
300
450
600
750
900
1050
1200
Gauge Height In Feet
5
0
-5
-10
-15
-20
Left Banks
Right Banks
Cross-section Configuration
ATHABASCA RIVER AT
EMBARRAS AIRPORT
May 12/76 Ght. 6.10' Q=28,100cfs
Sept. 28/76 Ght. 6.69' Q=30,600cfs


Discharge-Area Curve
ATHABASCA RIVER AT
EMBARRAS AIRPORT
● 1971 - April 17, 1974
○ June 4, 1974 - 1976
Discharge In CFS (x1000)
Area In Square Feet (x1000)
0
5
10
15
20
25
30
20
40
60
80
100
120


Discharge-Velocity Curve
ATHABASCA RIVER AT
EMBARRAS AIRPORT
● 1971 - April 17, 1974
○ June 4, 1974 - 1976
Discharge In CFS (x1000)
Mean Velocity In Feet Per Second
0
1
2
3
4
5
6
20
40
60
80
100
120

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ATHABASCA RIVER AT EMBARRAS AIRPORT

STATION NO. 8700001

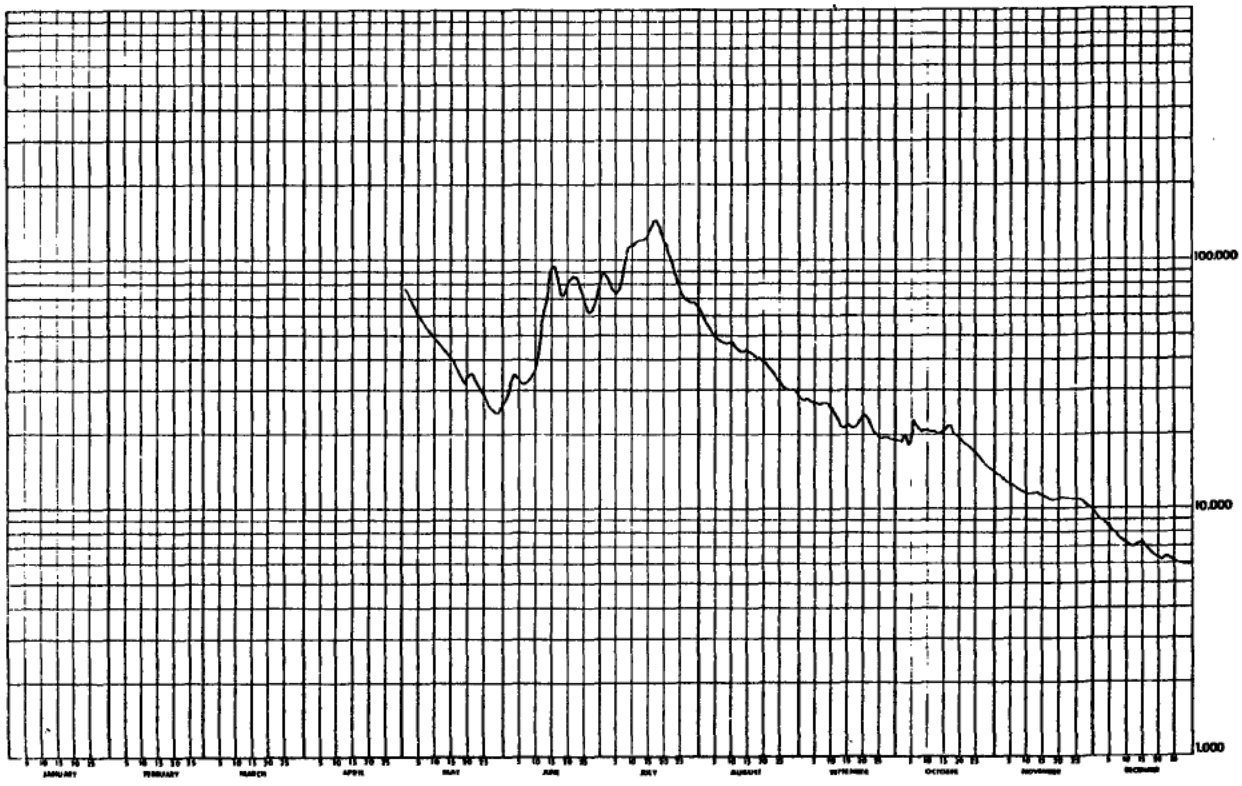
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1971

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	76600 E	27900	87800	59800	27500	18600	13800 B	9530 B	1
2	---	---	---	---	72200 E	29800	87800	55700	27200	18700	13500 B	9230 B	2
3	---	---	---	---	68300 E	31800	82500	53500	27700	20000	13300 B	8900 B	3
4	---	---	---	---	63100 E	33500	75600	51900	27300	21800	13000 B	8620 B	4
5	---	---	---	---	60500 E	33300	72900	49400	26600	22600	12700 B	8330 B	5
6	---	---	---	---	57300 E	32200	74700	47800	26400	22200	12300 B	8000 B	6
7	---	---	---	---	55200 A	32300	83600	47800	26400	21500	12000 B	7800 B	7
8	---	---	---	---	52500	32800	103000	46700	26600	23800	11800 B	7530 B	8
9	---	---	---	---	50100	33600	114000	46200	26400	26500	11600 B	7330 B	9
10	---	---	---	---	49400	35800	114000	46100	25300	29500	11500 B	7100 B	10
11	---	---	---	---	47100	41700	114000	45000	23700	28400	11400 B	7000 B	11
12	---	---	---	---	45500	57000	119000	43700	22400	28300	11400 B	7130 B	12
13	---	---	---	---	43700	64700	121000	43300	21300	26000	11500 B	7300 B	13
14	---	---	---	---	41900	78800	120000	43300	21100	20200	11400 B	7430 B	14
15	---	---	---	---	40300	91300	125000	44000	22000	20800	11300 B	7230 B	15
16	---	---	---	---	39600	92700	138000	43000	21900	21500	11100 B	7030 B	16
17	---	---	---	---	36600	82100	148000	41400	21600	21200	11000 B	6880 B	17
18	---	---	---	---	34400	73500	146000	40300	22500	20200	10900 B	6780 B	18
19	---	---	---	---	32700	73900	135000	39900	22500	19300	10800 B	6600 B	19
20	---	---	---	---	32900	81200	121000	39400	23900	18800	10900 B	6430 B	20
21	---	---	---	---	35400	82800	109000	38600	24000	18300	11000 B	6300 B	21
22	---	---	---	---	34600	85400	100000	37400	22600	17900	11100 B	6300 B	22
23	---	---	---	---	32400	83500	91100	36100	21300	17500	11200 B	6200 B	23
24	---	---	---	---	30100	75900	82800	34800	20001	17100	11100 B	6100 B	24
25	---	---	---	---	28100	68000	76600	33400	19300	16800	11000 B	6000 B	25
26	---	---	---	---	26600	63500	72700	32000	19100	16200	10800 B	6000 B	26
27	---	---	---	---	25500	61800	69700	30600	19100	15500	10600 B	5930 B	27
28	---	---	---	---	24600	63400	67800	29700	19100	15000	10300 B	5900 B	28
29	---		---	---	24500	71500	67200	29700	19100	14700	10000 B	5800 B	29
30	---		---	---	24900	82500	67600	29500	18900	14400 B	9800 B	5830 B	30
31	---		---		26100		64900	29100		14000 B		5900 B	31
TOTAL	---	---	---	---	1310700	1800200	3052500	1268300	692800	587300	344100	217930	TOTAL
MEAN	---	---	---	---	42300	60000	98500	41600	23100	18900	11500	7030	MEAN
AC-FT	---	---	---	---	2600000	3570000	6050000	2560000	1370000	1160000	683000	432000	AC-FT
MAX	---	---	---	---	76600	93300	148000	59800	27700	22600	13800	9500	MAX
MIN	---	---	---	---	24500	27900	64900	29100	18900	14000	9800	5800	MIN

SUMMARY FOR THE YEAR 1971

MAXIMUM DAILY DISCHARGE, 148000 CFS ON JUL 17

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



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ATHABASCA RIVER AT EMBARRAS AIRPORT

STATION NO. 07CD001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1972

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	4740 B	4800 B	5770 B	9330 B	26200 B	82500	116000	34900	22600	17900	19500 E	6620 B	1
2	4920 B	4740 B	5890 B	9440 B	37300 B	48300	115000	41000	22000	17600	19400 E	5950 B	2
3	5140 B	4640 B	6000 B	9550 B	49600 B	45900	105000	40600	21500	17500	19300 E	5270 B	3
4	5160 B	4530 B	6120 B	9670 B	61330 B	45600	92600	40100	21200	17100	19200 E	4800 B	4
5	5130 B	4530 B	6230 B	9780 B	72900 B	48800	85800	39100	21000	17000	19000 B	4730 B	5
6	5070 B	4680 B	6350 B	9900 B	84600 B	54100	80800	38100	21100	16800	18600 B	5070 B	6
7	4920 B	4650 B	6460 B	10500 B	96300 B	58800	72200	37100	22000	17000	18300 B	5370 B	7
8	4830 B	4930 B	6580 B	16130 B	108000 E	58600	64000	36300	22200	17800	18100 B	5550 B	8
9	4730 B	4920 B	6690 B	10200 B	162600 E	53300	57700	35400	20500	20100	17500 B	5670 B	9
10	4750 B	4930 B	6810 B	10430 B	96900 E	47600	54000	34400	19000	22600	17000 B	5640 B	10
11	4730 B	4930 B	6920 B	10500 B	91400 E	43900	52100	33600	18200	23500	16800 B	5400 B	11
12	4820 B	4930 B	7030 B	10600 B	85600 E	42000	51600	33000	17700	23100	16000 B	5460 B	12
13	4920 B	4930 B	7150 B	10700 B	80300 E	43100	51900	32500	17700	22200	15900 B	6090 B	13
14	5010 B	4480 B	7260 B	11330 B	74700 E	46200	54400	32300	19100	22100	15000 B	6990 B	14
15	5130 B	4450 B	7380 B	12000 B	69200 E	49800	58200	33400	20400	21800	14500 B	7410 B	15
16	5190 B	4430 B	7490 B	12700 B	63600 A	56600	58200	35600	20100	23100	14000 B	7500 B	16
17	5230 B	4430 B	7610 B	13100 B	62100	75200	55600	37400	19300	24400	13500 B	7380 B	17
18	5170 B	4400 B	7720 B	13600 B	60200	90000	50500	37700	18900	24100	13000 B	7290 B	18
19	5230 B	4210 B	7840 B	15100 B	59900	92800	46900	36100	18800	22500	12500 B	7170 B	19
20	5250 B	4030 B	7950 B	17900 B	63100	87400	44700	33700	18400	22200	12000 B	6990 B	20
21	5190 B	4740 B	8070 B	20930 B	59300	81400	43900	31500	18200	22200	11500 B	7080 B	21
22	5220 B	4800 B	8180 B	22800 B	59400	79000	42900	29600	17800	21300	11000 B	7200 B	22
23	5130 B	4970 B	8290 B	24000 B	64700	78700	41300	28300	17800	20300	10700 B	7380 B	23
24	5140 B	5090 B	8410 B	26400 B	74400	74600	40100	27900	18000	19800	10300 B	7740 B	24
25	5130 B	5200 B	8520 B	28300 B	73200	68400	39200	28300	18200	19600	10000 B	8290 B	25
26	5140 B	5320 B	8640 B	26100 B	67800	63800	39300	27400	18200	19300 A	9650 B	8710 B	26
27	5070 B	5430 B	8750 B	26110 B	65100	62400	38200	25800	18100	19400 E	9310 B	8990 B	27
28	4950 B	5550 B	8870 B	26200 B	65600	65500	36300	24200	18200	19500 E	8630 B	9170 B	28
29	4830 B	5660 B	8980 B	26200 B	65000	68100	35100	23300	18200	19600 E	7960 B	9340 B	29
30	4830 B		9160 B	26200 B	61400	67800	34300	23200	18000	19700 E	7290 B	9480 B	30
31	4890 B		9210 B		57000		35900	23300		19700 E		9480 B	31
TOTAL	150118	137660	232270	477070	2156500	1870800	1787100	1015100	582400	631000	425040	215210	TOTAL
MEAN	5040	4750	7490	15900	69600	62400	57600	32700	19400	20400	14200	6940	MEAN
AC-FT	313300	273000	461100	946800	4280000	3710000	3540000	2010000	1160000	1250000	843000	427000	AC-FT
MAX	5370	5660	9210	26400	108000	92800	115000	41000	22600	24400	19500	9480	MAX
MIN	4730	4330	5770	9330	26200	42000	34300	23200	17700	16800	7290	4730	MIN

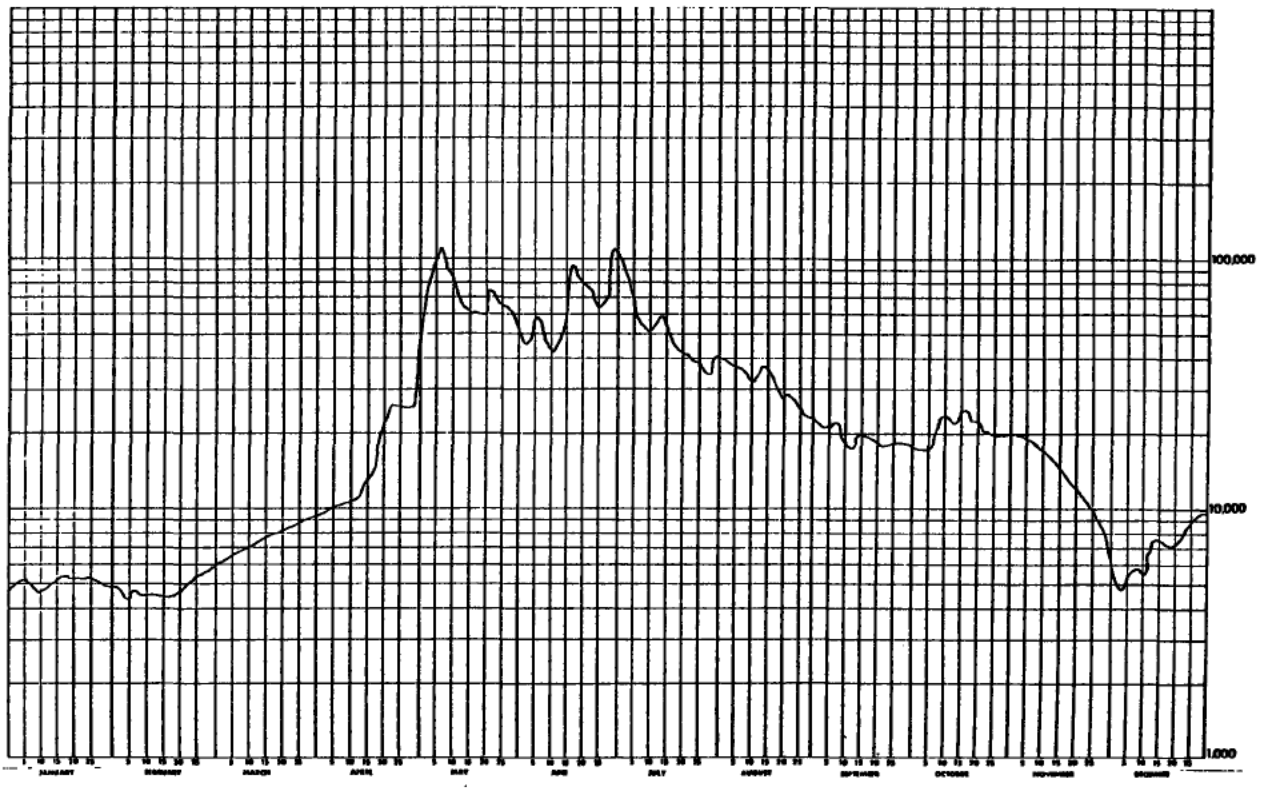
SUMMARY FOR THE YEAR 1972

MEAN DISCHARGE, 26500 CFS
TOTAL DISCHARGE, 19250000 AC-FT
MAXIMUM DAILY DISCHARGE, 115000 CFS ON JUL 2
MINIMUM DAILY DISCHARGE, 4330 CFS ON FEB 5

TYPE OF GAUGE - RECORDING
LOCATION - LAT 58 12 15 N
LONG 111 23 32 W

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



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ATHABASCA RIVER AT EMBARRAS AIRPORT

STATION NO. 8700801

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1973

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	9410 B	7840 B	6000 B	7080 B	40300	54300	89500	39500	32300	25100 E	29700	12400 B	1
2	9590 B	7840 B	6000 B	7320 B	37700	63200	85100	40300	31600	25100 E	30000	12300 B	2
3	9760 B	7440 B	6090 B	7500 B	36700	70900	76900	35700	30900	25200 E	29400	12200 B	3
4	9970 B	7840 B	6190 B	7710 B	36900	72800	70500	35100	30200	25200 E	28700	12200 B	4
5	10100 B	7840 B	6180 B	7980 B	38200	70800	66500	36000	29600	25200 E	23000 B	12100 B	5
6	9900 B	7800 B	6210 B	8290 B	38300	69400	62900	36500	28600	25300 E	20800 B	12000 B	6
7	9660 B	7740 B	6210 B	8540 B	37400	69000	59700	39900	27500	25300 A	17800 B	12000 B	7
8	9340 B	7710 B	6210 B	8960 B	36700	66500	56600	52700	26600	27500	15800 B	11900 B	8
9	9130 B	7590 B	6210 B	9240 B	36800	65500	53900	64700	25800	29200 A	15700 B	11800 B	9
10	8960 B	7500 B	6210 B	9550 B	39500	66700	51800	69000	26400 E	29600 E	15600 B	11600 B	10
11	8820 B	7410 B	6210 B	10000 B	44100	66800	51400	69800	27100 E	30000 E	15600 B	11700 B	11
12	8670 B	7350 B	6240 B	10600 B	47200	67000	53400	70600	27700 E	30400 E	15500 B	11600 B	12
13	8220 B	7350 B	6240 B	11300 B	48600	67500	55000	70500	28400 E	30800 E	15400 B	11600 B	13
14	8080 B	7150 B	6240 B	12400 B	48400	68500	54400	67900	29000 E	31200 E	15100 B	11500 B	14
15	7980 B	7290 B	6270 B	13900 B	47700	66300	52900	63000	29700 E	31600 A	14900 B	11400 B	15
16	7990 B	7140 B	6390 B	16000 B	45900	63100	50700	59400	30300 E	31100	14600 B	11400 B	16
17	7940 B	7020 B	6420 B	17600 B	43100	67500	48600	55600	31000 E	30500	14300 B	11300 B	17
18	7800 B	6900 B	6490 B	18500 B	40600	82400	48100	53400	31600	29600	14000 B	11200 B	18
19	7620 B	6750 B	6510 B	19000 B	38500	90400	48600	50300	32100	29900	13800 B	11200 B	19
20	7470 B	6540 B	6510 B	21100 B	36700	92800	47100	47700	32100	28400	13500 B	11100 B	20
21	7500 B	6330 B	6510 B	27300 B	36300	95100	44600	45400	31700	27900	13300 B	11000 B	21
22	7470 B	6240 B	6510 B	29300 B	37900	94300	42800	43900	30500	27330	13100 B	11000 B	22
23	7440 B	6150 B	6510 B	36400 B	42600	88500	42800	43200	28700	26800	13000 B	10900 B	23
24	7440 B	6210 B	6510 B	37000 B	50100	81000	43800	43000	27500	26200	12900 B	10500 B	24
25	7440 B	6150 B	6510 B	36100 B	54900	74700	42200	42200	26800	26100	12900 B	10100 B	25
26	7500 B	6090 B	6600 B	36700 B	56500	70000	40500	43600	26200	26000	12800 B	10700 B	26
27	7560 B	6000 B	6690 B	36300 B	55500	66500	39700	38300	25900 A	26500	12700 B	10500 B	27
28	7590 B	6000 B	6690 B	37700 B	51600	64600	39700	36100	25100 A	27000	12600 B	10500 B	28
29	7620 B		6750 B	38700 E	47900	67900	40600	34500	25000 A	28000	12500 B	10500 B	29
30	7740 B		6840 B	39300 E	44900	82600	41000	33500	25000 E	28900	12400 B	10400 B	30
31	7940 B		6900 B		45800		40900	32900		29400		10400 B	31
TOTAL	259380	197670	194000	583770	1342900	2186600	1641400	1493200	860900	865300	497800	352400	TOTAL
MEAN	8370	7070	6390	19500	43300	72900	52900	48200	28700	27900	16600	11400	MEAN
AC-FT	514200	392000	393000	1160000	2660000	4340000	3260000	2960000	1710000	1720000	987000	699000	AC-FT
MAX	10100	7840	6900	39300	56500	95100	89500	70600	32300	31600	30800	12600	MAX
MIN	7440	6000	6000	7080	36300	54300	39700	32900	25000	25100	12400	10400	MIN

SUMMARY FOR THE YEAR 1973

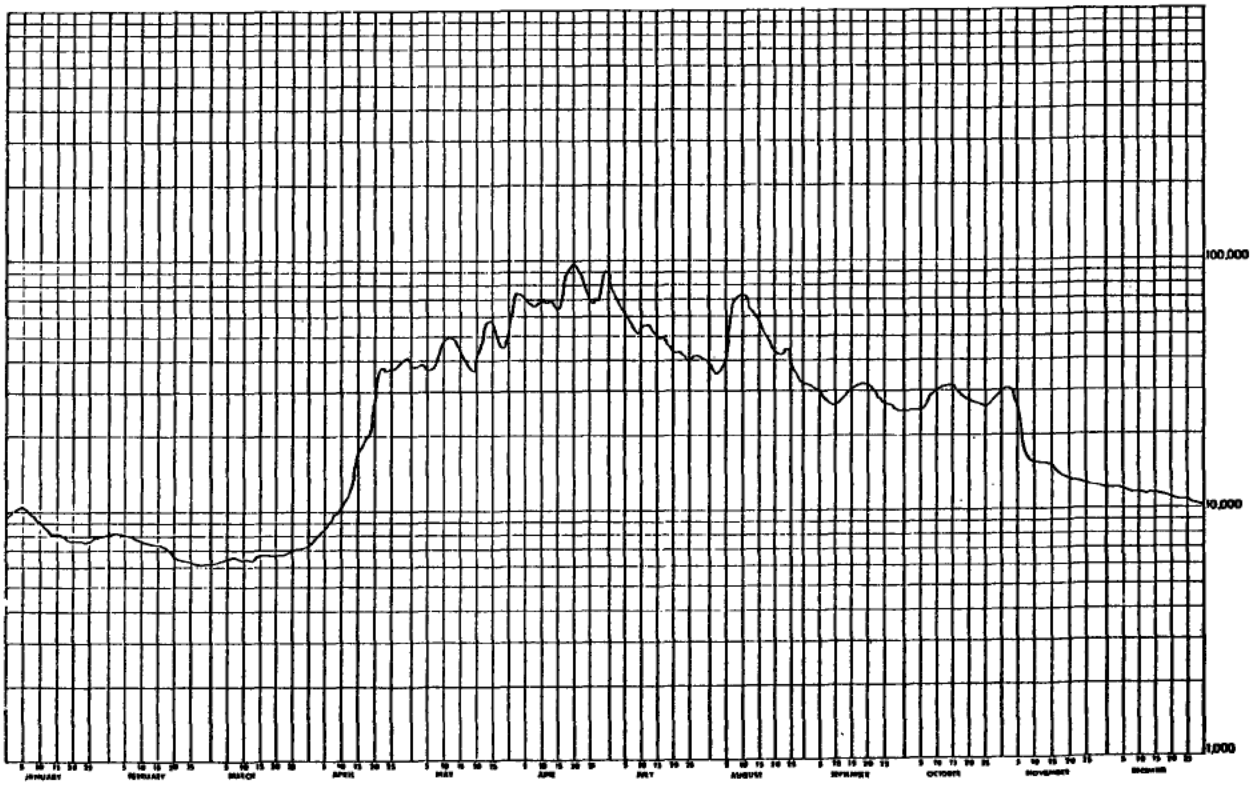
MEAN DISCHARGE, 28700 CFS
TOTAL DISCHARGE, 20809000 AC-FT
MAXIMUM DAILY DISCHARGE, 95100 CFS ON JUN 21
MINIMUM DAILY DISCHARGE, 6000 CFS ON FEB 27

MAXIMUM INSTANTANEOUS DISCHARGE
95700 CFS AT 1800 MST ON JUN 21

TYPE OF GAUGE - RECORDING
LOCATION - LAT 58 12 19 N
LONG 111 23 32 N

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



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DEC 12 1975 PAGE 11
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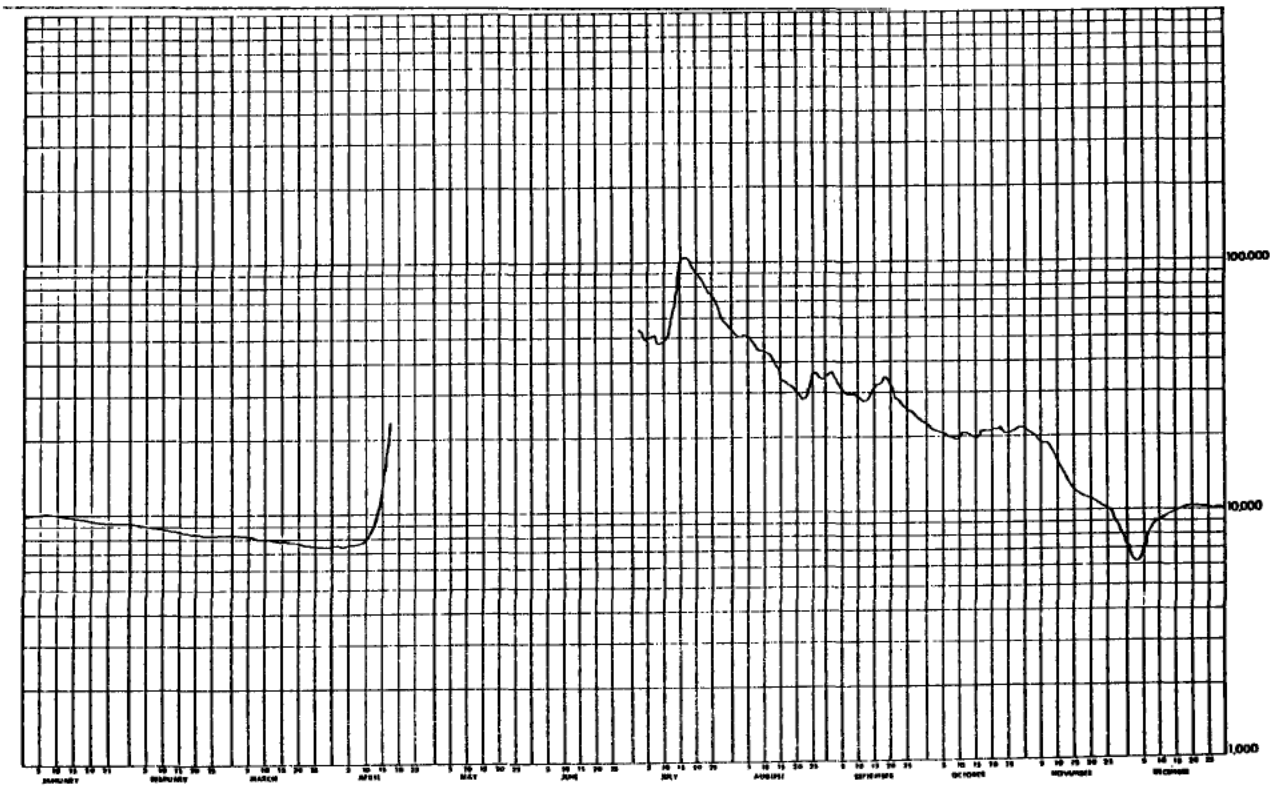
ATHABASCA RIVER AT EMBARRAS AIRPORT

STATION NO. 07DD001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1974

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	9730 B	8940 B	8180 B	7330 B	---	---	---	53500	36400	22100	20600	7800	1
2	9800 B	8890 B	8170 B	7340 B	---	---	---	52800	35500	21300	20100	6700	2
3	9830 B	8860 B	8180 B	7380 B	---	---	---	51700	34500	21200	19600	6100	3
4	9870 B	8820 B	8180 B	7410 B	---	---	---	50000	32400	21000	19100	6100	4
5	9800 B	8760 B	8170 B	7390 B	---	---	53200	49700	31300	21000	18400	6200	5
6	9800 B	8750 B	8170 B	7400 B	---	---	49300	50100	29900	20600	18600	6700	6
7	9870 B	8710 B	8140 B	7420 B	---	---	47600	50000	29000	20200	18200	7800	7
8	9940 B	8670 B	8050 B	7440 B	---	---	50000	48000	29100	19700	16800	8300	8
9	9980 B	8640 B	7930 B	7470 B	---	---	50200	45600	29200	19400	16300	8600	9
10	9890 B	8600 B	7850 B	7550 B	---	---	48200	43800	28600	19300	15600	8878	10
11	9830 B	8560 B	7820 B	7630 B	---	---	46700	42900	27800	19500	14200	9000	11
12	9750 B	8520 B	7820 B	8090 B	---	---	47700	43200	27300	20500	13800 B	9200	12
13	9630 B	8490 B	7840 B	8700 B	---	---	48700	42900	27600	20600	12600 B	9400	13
14	9590 B	8450 B	7820 B	9390 B	---	---	52700	41600	29200	20100	12200	9500	14
15	9560 B	8410 B	7810 B	10200 B	---	---	61700	39300	31200	19700	11900	9700	15
16	9520 B	8380 B	7800 B	11400 B	---	---	73800	36100	32100	19600	11700	9800	16
17	9480 B	8340 B	7800 B	13100 B	---	---	90600	33700	32700	19700	11400	10000	17
18	9450 B	8300 B	7770 B	16100 B	---	---	102000	32800	33900	20500	11300	10100	18
19	9410 B	8270 B	7710 B	22500 B	---	---	101000	32600	33300	21100	11100	10200	19
20	9370 B	8230 B	7680 B	---	---	---	94200	31900	31300	21100	10900	10200	20
21	9340 B	8210 B	7620 B	---	---	---	90100	30800	29300	21000	10800	10300	21
22	9300 B	8200 B	7590 B	---	---	---	89300	29700	27700	21000	10600	10300	22
23	9260 B	8160 B	7550 B	---	---	---	87200	28600	26800	21400	10400	10300	23
24	9220 B	8130 B	7420 B	---	---	---	82000	28200	26100	20900	10200	10200	24
25	9190 B	8140 B	7370 B	---	---	---	77100	28300	25400	20300	10100	10200	25
26	9150 B	8140 B	7340 B	---	---	---	75300	30400	25000	20300	9700	10200	26
27	9110 B	8150 B	7310 B	---	---	---	72700	33900	24700	20600	9400	10100	27
28	9080 B	8170 B	7330 B	---	---	---	67600	35600	23700	21100	8800	10100	28
29	9040 B		7330 B	---	---	---	62100	34900	22800	21700	8200	10000	29
30	9000 B		7320 B	---	---	---	57900	33800	22300	21800	7800	9900	30
31	8970 B		7340 B		---		55200	34000		21300		9900	31
TOTAL	294760	236900	240370	---	---	---	---	1220400	875100	639600	400400	281170	TOTAL
MEAN	9510	8460	7750	---	---	---	---	39400	29200	20600	13300	9070	MEAN
AC-FT	585000	470000	477000	---	---	---	---	2420000	1740000	1270000	794000	558000	AC-FT
MAX	9980	8930	8180	---	---	---	---	53500	35500	22100	20600	10300	MAX
MIN	8970	8130	7310	---	---	---	---	28200	22300	19300	7800	6100	MIN

B-ICE CONDITIONS



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ATHABASCA RIVER AT EMBARRAS AIRPORT — STATION NO. 07DD001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	9800 B	7000 B	7200 B	8000 B	48000 B	38000	72100	49600	53000	29500	20000	8100 B	1
2	9500 B	7000 B	7200 B	8100 B	49300	37200	84900	48600	57400	29700	19500 B	8000 B	2
3	9400 B	7000 B	7200 B	8100 B	50000 E	36000	94500	48000	60200	29500	19000 B	8000 B	3
4	9200 B	7000 B	7300 B	8100 B	49000 E	34300	95300	46700	63800	29100	19000 B	8000 B	4
5	9100 B	7000 B	7300 B	8200 B	47000 E	32900	90200	51300	68500	28600	19000 B	8100 B	5
6	9000 B	7000 B	7400 B	8200 B	45000 E	32900	84400	51200	79700	27800	18500 B	8200 B	6
7	8900 B	7000 B	7400 B	8300 B	44000 E	34300	79600	48800	69600	27100	18500 B	8300 B	7
8	8400 B	7000 B	7400 B	8300 B	43000 E	36600	76100	45900	66500	27500	18500 B	8400 B	8
9	8700 B	7000 B	7400 B	8400 B	42000 E	39100	73000	43800	62800	28200	18000 B	8500 B	9
10	8600 B	6900 B	7500 B	8400 B	43000 E	43200	70100	43000	59300	28300	18000 B	8600 B	10
11	9500 B	7000 B	7500 B	8500 B	44000 E	45400	67900	42500	56300	28100	17500 B	8600 B	11
12	9300 B	7000 B	7600 B	8500 B	45000 E	45100	65800	40800	53200	27900	17500 B	8900 B	12
13	9200 B	7000 B	7600 B	8600 B	46000 E	43800	63900	39300	50300	26200	17500 B	9100 B	13
14	9100 B	7000 B	7600 B	8600 B	47000 E	42500	61700	38900	47600	28300	17000 B	9300 B	14
15	8100 B	7000 B	7600 B	8700 B	49000 E	40900	60600	37600	45200	28100	17000 B	9500 B	15
16	8000 B	7000 B	7600 B	9000 B	51000 E	39200	61900	35500	43000	27300	16500 B	9800 B	16
17	7900 B	7000 B	7600 B	10000 B	49000 E	37500	64700	33600	41100	26500	16000 B	10000 B	17
18	7800 B	7000 B	7700 B	11000 B	47000 E	36300	69100	32000	39700	25800	15500 B	10200 B	18
19	7700 B	7000 B	7700 B	12000 B	46000 E	37100	77000	30600	38200	25200	15000 B	10400 B	19
20	7600 B	7000 B	7700 B	14000 B	45600 A	39600	82500	29700	36400	24800	14500 B	10600 B	20
21	7500 B	7000 B	7600 B	15000 B	43000 E	41300 A	85300	29000	34600	24500	14000 B	10800 B	21
22	7500 B	7000 B	7800 B	17000 B	41000 E	41800	85800	28400	33200	24300	13500 B	11000 B	22
23	7400 B	7000 B	7800 B	20000 B	38000 E	41200	84000	28500	32000	24100	12000 B	11100 B	23
24	7300 B	7000 B	7800 B	23000 B	37000 E	40400	80100	29300	31000	24000	11000 B	11200 B	24
25	7200 B	7100 B	7900 B	26000 B	36000 E	40800	74560	31700	30600	23800	10000 B	11200 B	25
26	7200 B	7100 B	7900 B	28000 B	36000 E	42000	68600	35400	30200	23200	9500 B	11300 B	26
27	7100 B	7100 B	7900 B	32300 B	37000 E	42700	63300	38900	29500	22700	9000 B	11200 B	27
28	7100 B	7100 B	7900 B	35000 B	37300 A	45100	58500	40760	28800	22300	8600 B	11100 B	28
29	7000 B		8000 B	40900 B	34300	49800	54900	42400	28700	21500	8500 B	11000 B	29
30	7000 B		8000 B	45000 B	38500	56700	53100	46100	29100	20500	8300 B	11300 B	30
31	7000 B		8000 B		38700		51350	49700		20200		10900 B	31
TOTAL	250500	196300	236300	462000	1350700	1215700	2254900	1239700	1390700	807100	456600	300600	TOTAL
MEAN	8080	7010	7620	15400	43600	40500	72700	40000	46400	26000	15200	9700	MEAN
AC-FT	497000	389000	469000	916000	2680000	2410000	4470000	2460000	2760000	1600000	906000	596000	AC-FT
MAX	9800	7100	8000	45000	51000	58700	95300	51300	79700	29700	20000	11300	MAX
MIN	7000	6900	7200	8000	36000	32900	51350	28400	28700	20200	8300	6900	MIN

SUMMARY FOR THE YEAR 1975

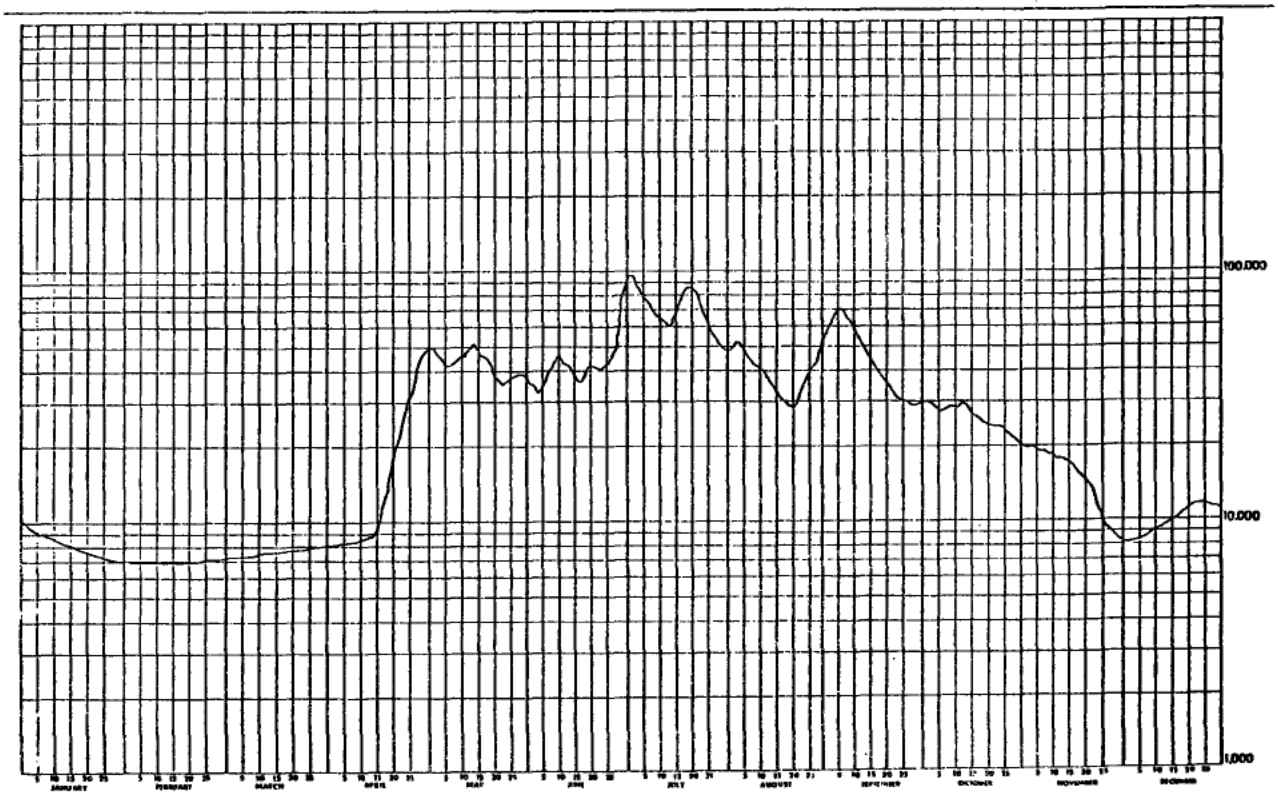
MEAN DISCHARGE, 27890 CFS
TOTAL DISCHARGE, 20200000 AC-FT
MAXIMUM DAILY DISCHARGE, 95300 CFS ON JUL 4
MINIMUM DAILY DISCHARGE, 6900 CFS ON FEB 18

TYPE OF GAUGE - RECORDING
LOCATION - LAT 58 12 13 N
LONG 111 23 24 W

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW

MAXIMUM INSTANTANEOUS DISCHARGE
96500 CFS AT 2400 MST ON JUL 3



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JAN 13 1977 PAGE 9
CALGARY, ALTA.

ATHABASCA RIVER AT EMBARRAS AIRPORT

STATION NO. 07DD001

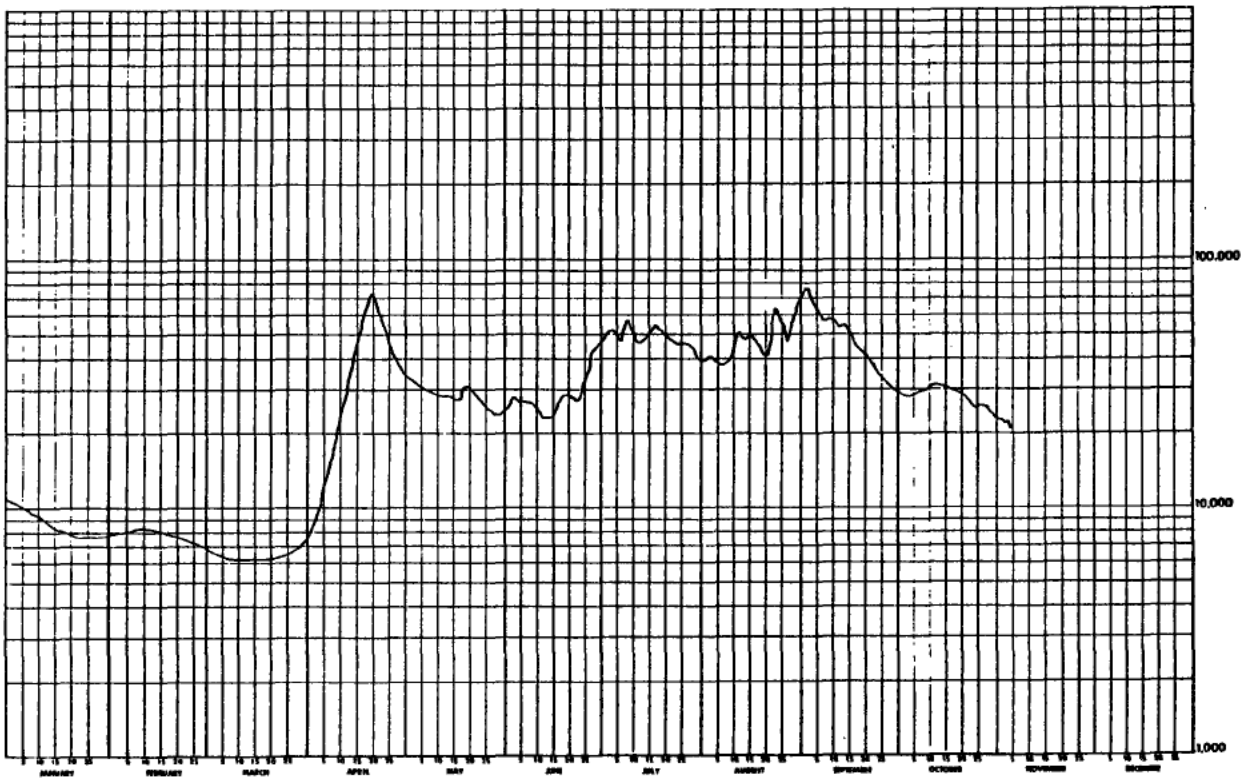
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	10700 A	7800 A	6700 B	7900 B	34000 E	25300	49500	39600	74400	28600	22400		1
2	10500 B	7850 B	6600 B	8500 A	33000 E	27100	51500	41000	76000	27900	22500		2
3	10300 A	7900 A	6500 B	9500 B	32500 E	27800	52600	41400	72100	27900	21900		3
4	10100 B	7950 B	6400 B	10900 B	32000 E	26800	51500	40700	67000	28200	22300		4
5	10000 A	8000 A	6400 B	12000 B	31500 E	26500	49000	38900	62800	28600	20900		5
6	9900 B	8100 A	6300 B	14000 B	30500 E	27000	47500	38100	59000	28800			6
7	9800 B	8200 A	6200 A	16000 A	30000 E	26700	52200	38700	56300	28900			7
8	9440 B	8200 A	6100 B	18000 B	29500 E	26300	57700	39100	55200	29000			8
9	9300 A	8200 B	6070 B	21000 B	29000 E	26100	55300	40300	56100	29700			9
10	9000 B	8220 B	6100 B	23000 B	29000 E	25000	50500	44400	56100	30700			10
11	8900 A	8200 A	6100 B	27500 B	27900 A	24000	46800	49700	54200	31000			11
12	8800 B	8200 B	6100 B	30000 B	28000	23200	46500	50600	52600	31100			12
13	8600 B	8100 A	6200 B	35000 B	28400	22700	47500	48900	54000	30900			13
14	8400 A	8000 B	6200 B	39000 B	28400	23000	48400	47700	53800	30500			14
15	8300 B	8000 B	6200 B	42000 B	28000	23500	50900	48900	51200	30300			15
16	8200 B	7900 A	6200 B	50000 B	27500	24000	53800	49200	48000	30000			16
17	8100 A	7900 B	6200 B	56000 B	27900	25700	54200	48000	45300	29700			17
18	8000 A	7800 B	6300 B	65000 A	29500	27400	52700	45600	43700	29500			18
19	7900 B	7700 A	6300 A	69000 B	31200	28600	51200	42800	42700	28900			19
20	7850 B	7700 B	6300 B	76000 B	31300	28600	49800	41000	41300	28900			20
21	7800 B	7600 B	6400 B	70000 B	29900	27700	49100	41300	39800	28400			21
22	7750 A	7500 B	6400 B	66000 E	28700	26900	48200	48300	38000	27400			22
23	7700 B	7400 B	6500 B	55700	27600	27000	46600	43300	36300	26400			23
24	7650 A	7300 A	6500 B	52000 E	26400	29000	46000	42700	34700	25400			24
25	7600 B	7200 B	6600 A	47000 E	25700	32400	46700	56000	33300	25400			25
26	7600 B	7100 A	6600 B	43000 E	25300	36300	46400	50200	32300	25700			26
27	7600 A	7000 B	6700 B	40000 E	24700	41600	45000	47000	31500	26000			27
28	7650 B	6900 B	6800 B	38000 E	24200	44100	43900	50200	30600	25100			28
29	7700 B	6800 B	7000 B	36000 E	23900	44800	42600	59500	29800	24400			29
30	7750 B		7200 B	35000 E	23800	46600	40500	63400	29100	23600			30
31	7800 B		7390 B		24000		39000	68100		22900			31
TOTAL	266590	224720	199560	1113000	883300	871700	1513100	1484600	1457200	869800			TOTAL
MEAN	8590	7750	6440	37100	28500	29100	48800	47900	48600	28100			MEAN
AC-FT	528000	446000	396000	2210000	1750000	1730000	3000000	2940000	2890000	1730000			AC-FT
MAX	10700	8220	7390	76000	34000	46600	57700	68100	76000	31100			MAX
MIN	7600	6800	6070	7900	23800	22700	39000	38100	29100	22900			MIN

SUMMARY FOR THE MONTHS JAN TO OCT
MEAN DISCHARGE, 29100 CFS
TOTAL DISCHARGE, 17600000 AC-FT
MAXIMUM DAILY DISCHARGE, 76000 CFS ON APR 20
MINIMUM DAILY DISCHARGE, 6070 CFS ON MAR 9

MAXIMUM INSTANTANEOUS DISCHARGE, CFS AT ON NOT DETERMINED

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



5.4 ATHABASCA RIVER BELOW McMURRAY

STATION NAME: Athabasca River below McMurray

STATION NUMBER: 07DA001

LOCATION: Latitude: 56°46'50" Longitude: 111°24'00"

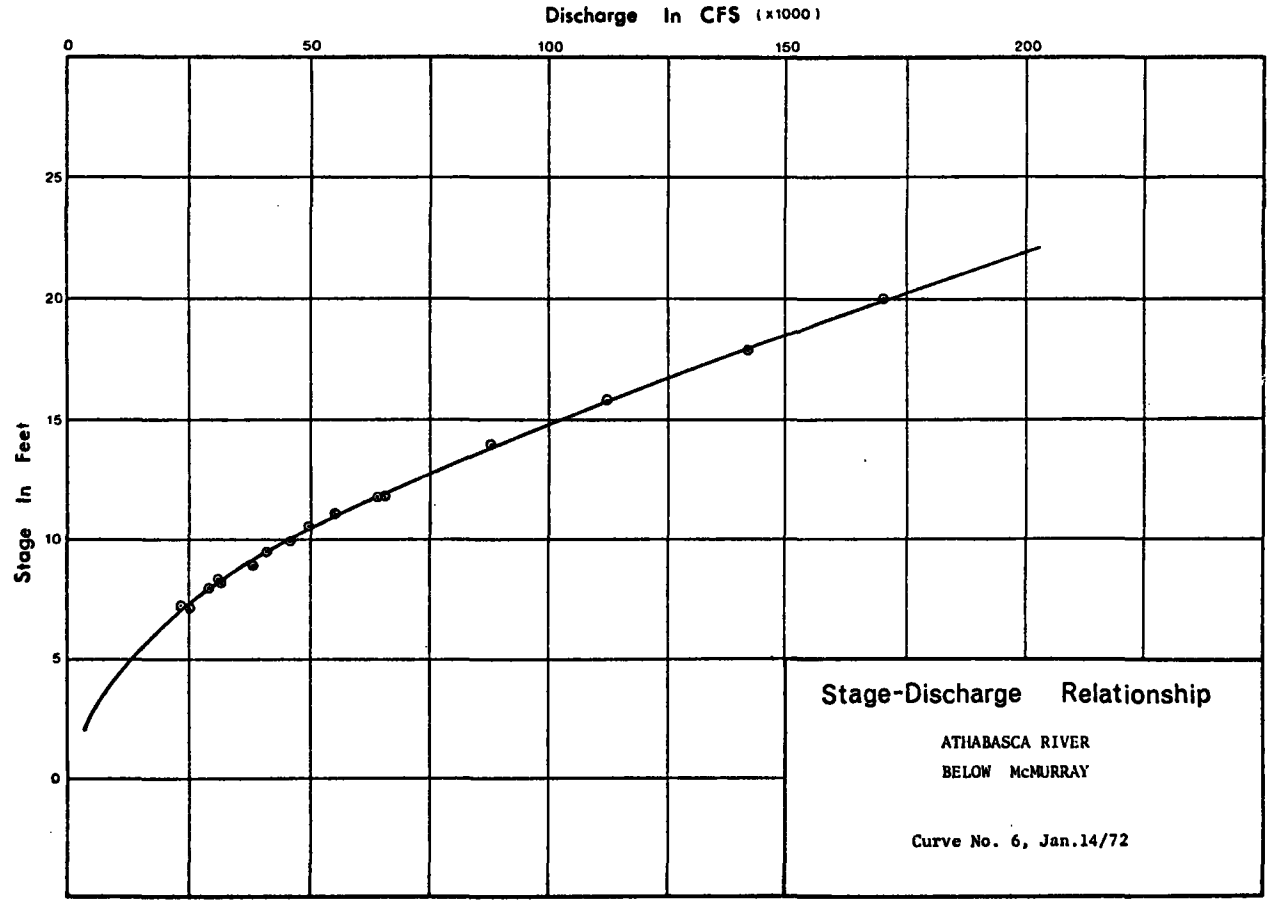
NW05-90-09-W4

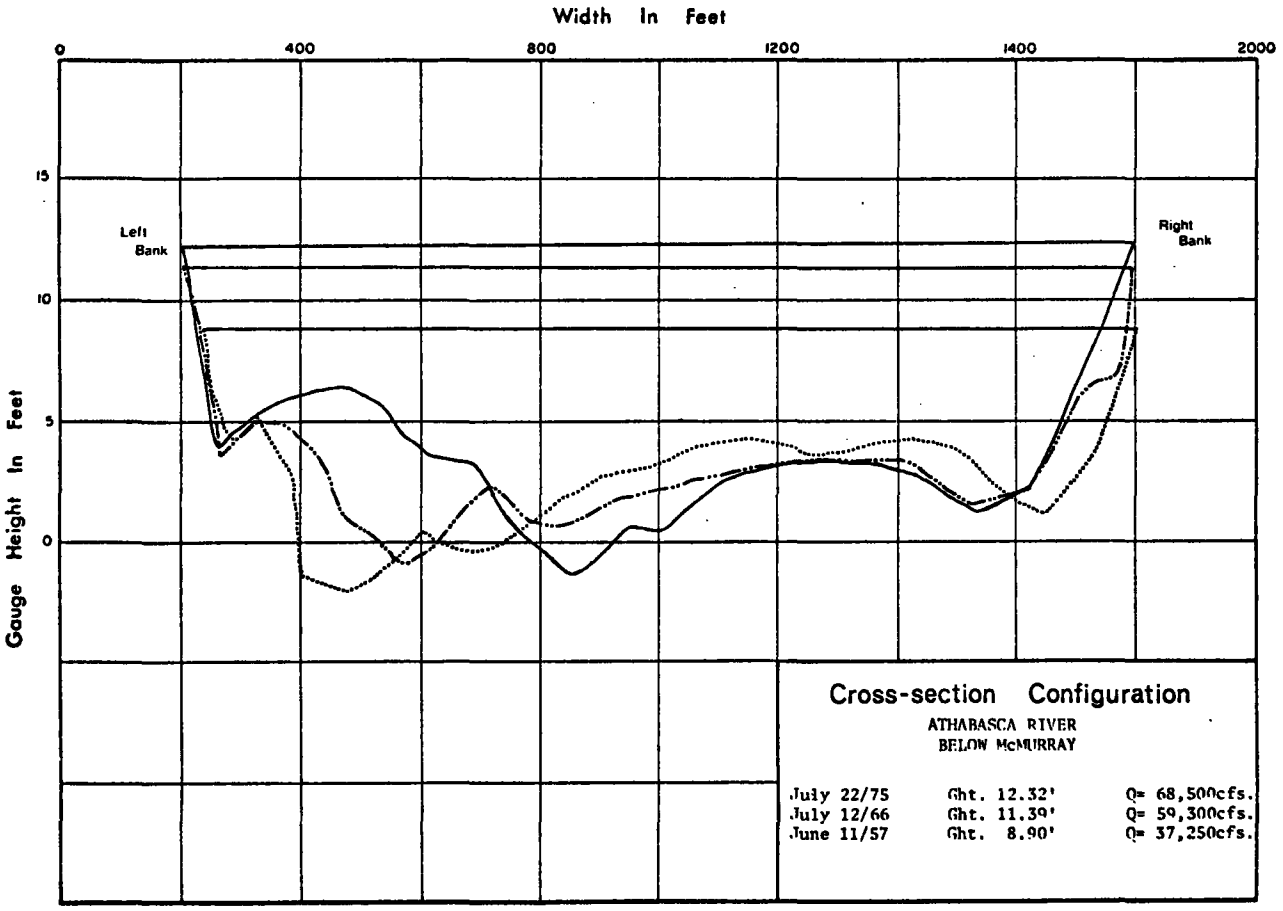
DRAINAGE AREA: 51,300 square miles (133,000 km^2)

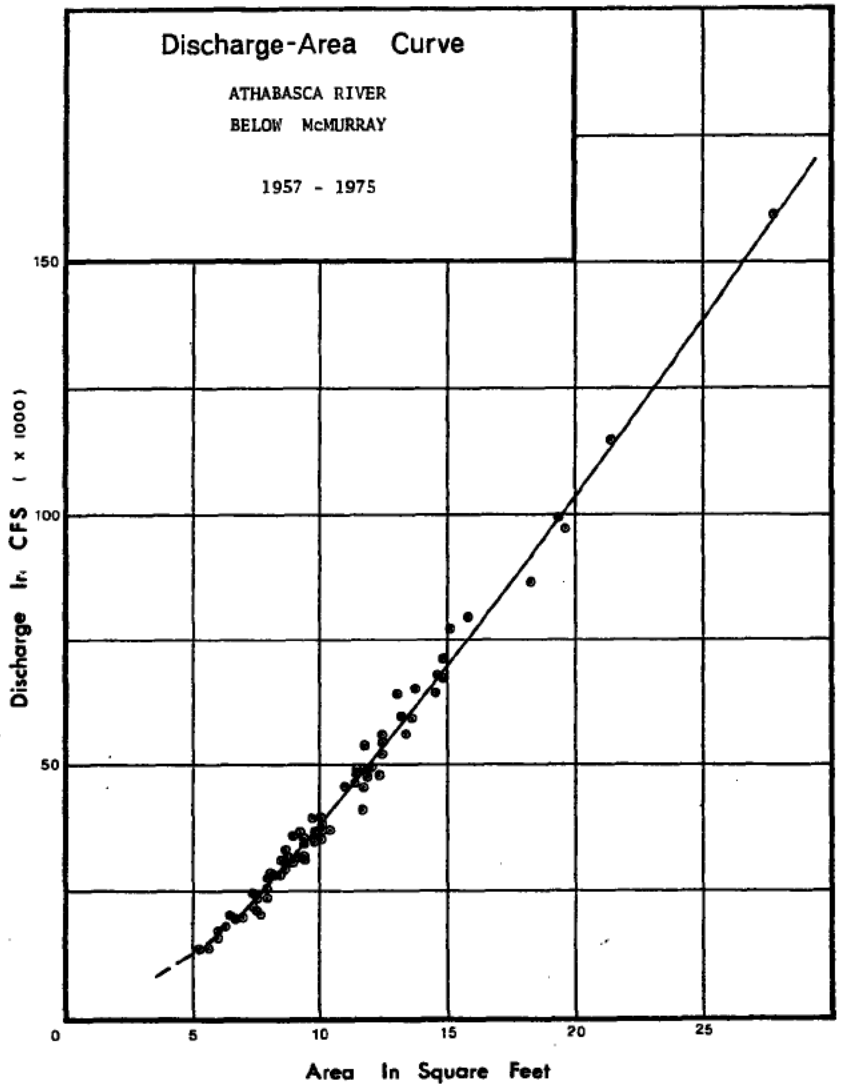
PERIOD OF RECORD: Discharge data is available from October,1957 to December,1976.

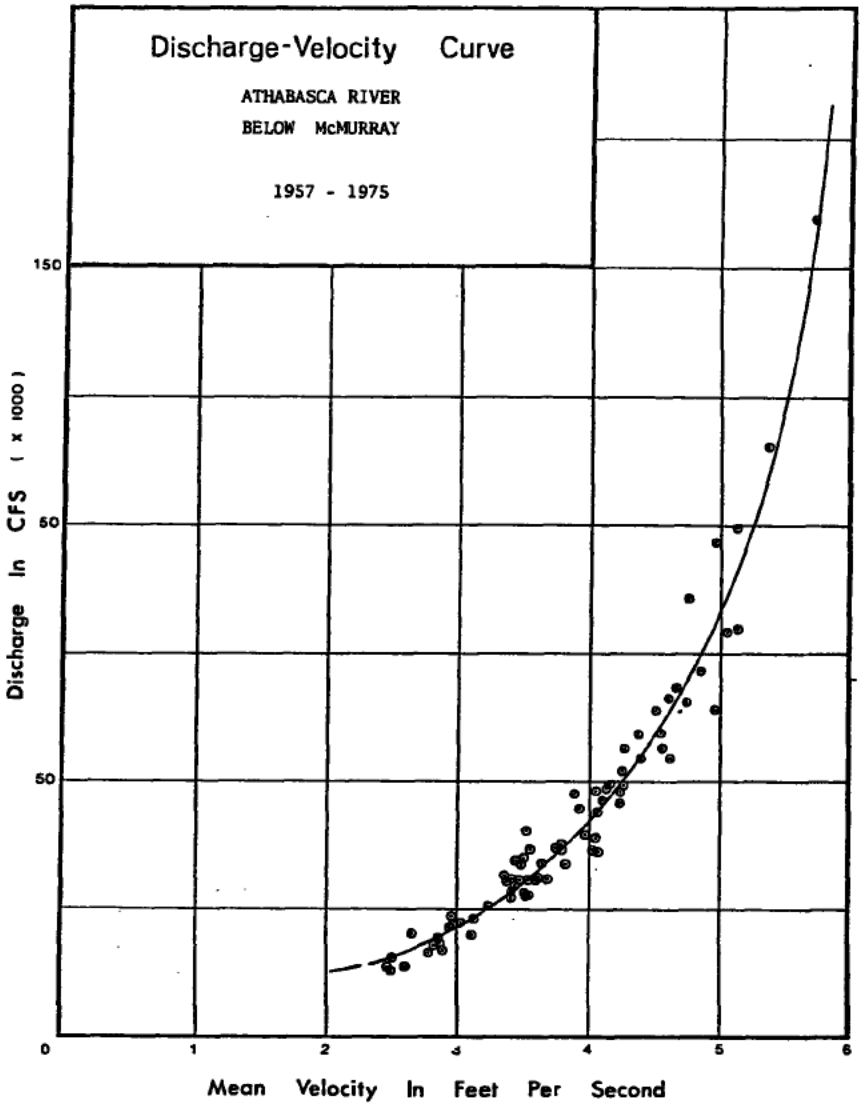
SITE DESCRIPTION: The gauge is located on the right bank on top of a limestone cliff, about 600 feet (180 m) above Clark Creek at mile 6.5 on the Athabasca River as indicated by navigation charts. It is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water measurements are made by boat about one-half mile (0.8 km) below gauge.

GENERAL: The plotted cross-sections show that the channel configuration has changed somewhat through the years, particularly on the left side but, surprisingly enough, the stage-discharge relationship has remained quite stable. There are many periods of estimated record for this gauging station particularly prior to 1967. The estimates are based on discharge record for upstream gauging stations. The daily mean discharges during these estimated periods may be in considerable error but the total volume of runoff for the estimated period should be reliable.


Discharge In CFS (x1000)
0
50
100
150
200
Stage In Feet
25
20
15
10
5
0
Stage-Discharge Relationship
ATHABASCA RIVER
BELOW McMURRAY
Curve No. 6, Jan.14/72


Width In Feet
0
400
800
1200
1400
2000
Gauge Height In Feet
15
10
5
0
Left Bank
Right Bank
Cross-section Configuration
ATHABASCA RIVER
BELOW McMURRAY
July 22/75 Ght. 12.32' Q= 68,500cfs.
July 12/66 Ght. 11.39' Q= 59,300cfs.
June 11/57 Ght. 8.90' Q= 37,250cfs.


Discharge-Area Curve
ATHABASCA RIVER
BELOW McMURRAY
1957 - 1975
Discharge In CFS (x 1000)
150
100
50
0
5
10
15
20
25
Area In Square Feet


Discharge-Velocity Curve
ATHABASCA RIVER
BELOW McMURRAY
1957 - 1975
Discharge In CFS (x 1000)
150
50
0
1
2
3
4
5
6
Mean Velocity In Feet Per Second

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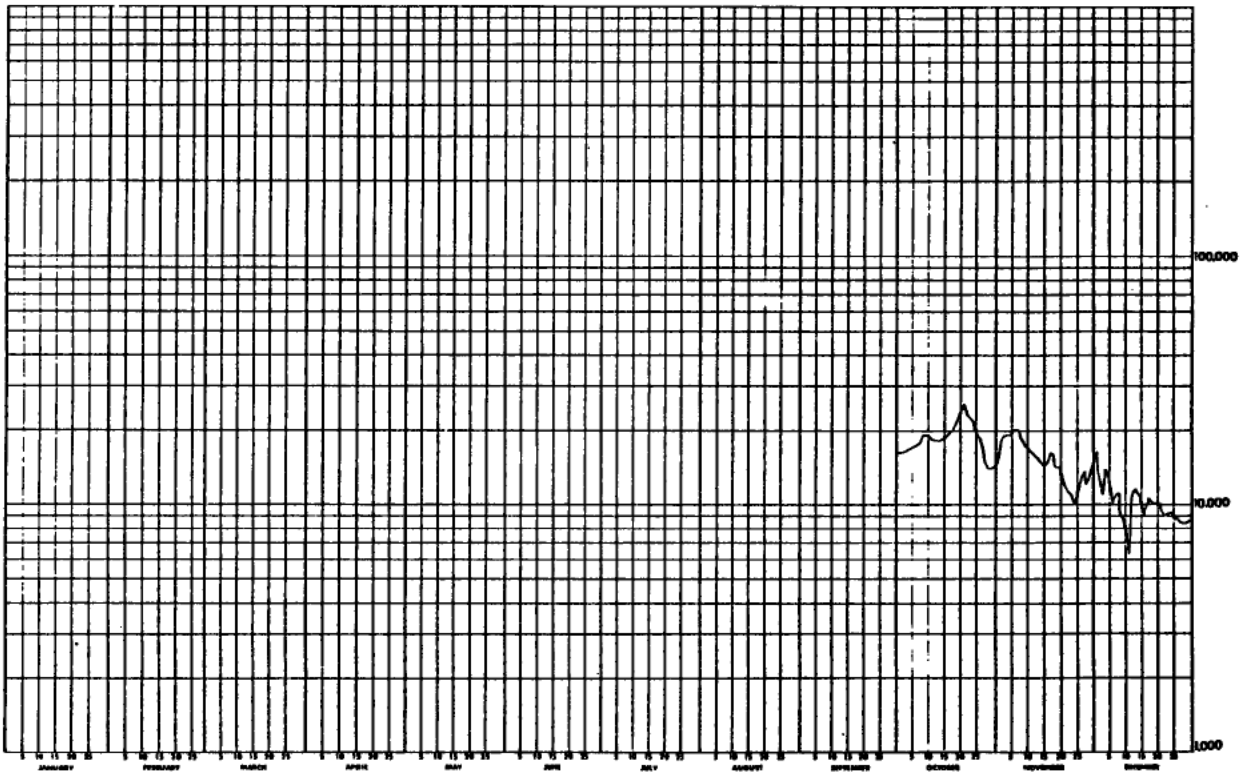
ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1957

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	---	---	16500	17000 B	16400 B	1
2	---	---	---	---	---	---	---	---	---	16500	18700 B	13600 B	2
3	---	---	---	---	---	---	---	---	---	16500	19000 B	11100 B	3
4	---	---	---	---	---	---	---	---	---	16800	19100 B	13900 B	4
5	---	---	---	---	---	---	---	---	---	17200	19300 B	12200 B	5
6	---	---	---	---	---	---	---	---	---	17500	20300 B	10600 B	6
7	---	---	---	---	---	---	---	---	---	17700	20200 B	10800 B	7
8	---	---	---	---	---	---	---	---	---	18900	19000 B	11000 B	8
9	---	---	---	---	---	---	---	---	---	19100	18100 B	8900 B	9
10	---	---	---	---	---	---	---	---	---	19200	17100 B	8600 B	10
11	---	---	---	---	---	---	---	---	---	18500	16600 B	6320 B	11
12	---	---	---	---	---	---	---	---	---	18000	16300 B	10300 B	12
13	---	---	---	---	---	---	---	---	---	18000	15700 B	11600 B	13
14	---	---	---	---	---	---	---	---	---	18400	15500 B	11400 B	14
15	---	---	---	---	---	---	---	---	---	18700	14500 B	10500 B	15
16	---	---	---	---	---	---	---	---	---	19200	14800 B	9000 B	16
17	---	---	---	---	---	---	---	---	---	19800	16300 B	10000 B	17
18	---	---	---	---	---	---	---	---	---	20700	15400 B	10500 B	18
19	---	---	---	---	---	---	---	---	---	22100	14000 B	10000 B	19
20	---	---	---	---	---	---	---	---	---	24200	14200 B	10000 B	20
21	---	---	---	---	---	---	---	---	---	25700	12800 B	9800 B	21
22	---	---	---	---	---	---	---	---	---	24300 B	11700 B	9000 B	22
23	---	---	---	---	---	---	---	---	---	23000 B	11400 B	9100 B	23
24	---	---	---	---	---	---	---	---	---	22000 B	10300 B	9300 B	24
25	---	---	---	---	---	---	---	---	---	20200 B	10400 B	8700 B	25
26	---	---	---	---	---	---	---	---	---	19000 B	12500 B	8600 B	26
27	---	---	---	---	---	---	---	---	---	17600 B	13300 B	8700 B	27
28	---	---	---	---	---	---	---	---	---	14600 B	11900 B	8500 B	28
29	---		---	---	---	---	---	---	---	13900 B	13600 B	8400 B	29
30	---		---	---	---	---	---	---	---	13900 B	14900 B	8600 B	30
31	---		---		---		---	---		14700 B		8300 B	31
TOTAL	---	---	---	---	---	---	---	---	---	582400	463900	313720	TOTAL
MEAN	---	---	---	---	---	---	---	---	---	18800	15500	10100	MEAN
AC-FT	---	---	---	---	---	---	---	---	---	1160000	920000	622000	AC-FT
MAX	---	---	---	---	---	---	---	---	---	25700	20300	16400	MAX
MIN	---	---	---	---	---	---	---	---	---	13900	10300	6320	MIN

B-ICE CONDITIONS



WATER SURVEY OF CANADA
AUG 6 1970 PAGE 70
CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

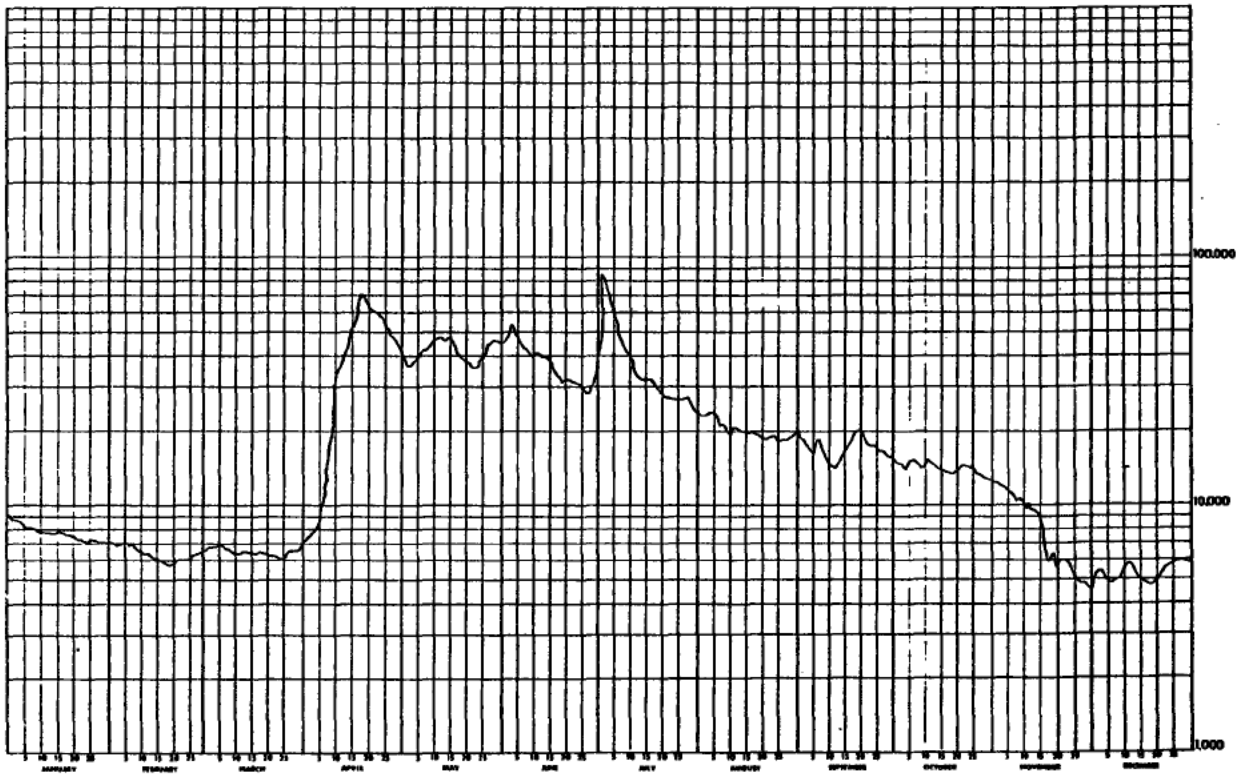
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1958

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	8700 B	7000 B	6500 B	6600 B	41700	45600	30900	23500	19500	15000 E	12300	5080 B	1
2	8600 B	6900 B	6500 B	6900 B	39300	44400	45300	22900	20200	14700 E	12100	5390 B	2
3	8400 B	6800 B	6500 B	7100 B	37200	45100	83900	22900	18600	14700 E	12000 B	5380 B	3
4	8500 B	6900 B	6700 B	7400 B	36200	50200	76800	22900	17600	14200 E	11900 B	5130 B	4
5	8200 B	6900 B	6700 A	7600 B	36800	51000	68700	22900	17100	14700 E	11600 B	4930 B	5
6	7900 B	6900 B	6700 B	7800 B	37600	47000	64600	23500	16500	15100 E	11400 B	4900 B	6
7	8000 B	6800 B	6700 B	8600 B	39500	44600	56100	23700	17100	15000 E	11100 B	4830 B	7
8	8100 B	6800 B	6700 B	10400 A	40500	43000	49800	23000	18500	14800 E	10500 B	4970 B	8
9	7700 B	6600 B	6600 B	12700 B	42000	41300	45400	21900	17200	14400 E	10600 B	5170 B	9
10	7600 B	6500 B	6500 B	16200 B	43200	40200	42600	21600	15900	14000 E	10200 B	5300 B	10
11	7800 B	6320 B	6400 B	22800 B	44000	39800	39800	20200	15100	15200 E	9790 B	5690 B	11
12	7600 B	6300 B	6400 B	28500 B	44600	39700	37200	19100	14400	15000 E	10200 B	5780 B	12
13	7600 B	6200 B	6400 B	33900 B	46100	40100	34900	20100	13900	14800 E	9650 B	5470 B	13
14	7500 B	6100 B	6500 B	37300 B	46100	39600	33300	20900	14300	14300 E	9640 B	5120 B	14
15	7300 B	5900 B	6400 B	41800 B	45700	39600	32200	19900	15600	14100	8920 B	4960 B	15
16	7400 B	5800 B	6400 B	43200 B	46100	38900	31800	19800	16500	13900	8000 B	4830 B	16
17	7600 B	5800 B	6400 B	50900 B	47400	37000	31900	19700	17700	13600	6350 B	4790 B	17
18	7500 B	5690 B	6400 B	53300 B	45100	34700	32600	19500	18300	13400	5930 B	4740 B	18
19	7400 B	5700 B	6400 B	60000 B	42000	32300	31600	19400	18900	13400	6240 B	4740 B	19
20	7500 B	5800 B	6300 B	70000 B	39400	31700	29300	19200	19600	13600	5620 B	4910 B	20
21	7300 B	5800 B	6330 B	63000 B	38100	32300	27700	18900	20200	14000	5920 B	5100 B	21
22	7200 B	6000 B	6300 B	64000 B	37700	31900	27000	18800	19400	14300	5960 B	5290 B	22
23	7200 B	6000 B	6300 B	61000 B	37200	31100	27200	18700	18300	14500	5890 B	5560 B	23
24	7100 B	6000 B	6300 B	59200 B	35900	31300	27400	19100	17700	14400	5570 B	5680 B	24
25	7200 B	6200 B	6100 B	58000 B	35200	31200	27100	19200	17800	14200	5210 B	5780 B	25
26	7200 B	6300 B	6000 B	55600 B	36400	30300	26800	18800	17300	13600	4900 B	5800 B	26
27	7200 B	6400 B	6100 B	53000	40600	29300	26700	18500	16600	13300	4810 B	5990 B	27
28	7100 B	6400 B	6300 B	49700	43900	28800	26700	18600	16400	13200	4840 B	5980 B	28
29	7000 B		6400 B	47700	45800	29300	27000	18500	16100	13000	4750 B	5890 B	29
30	6900 B		6400 B	44200 A	45700	30100	25100	18200	15400	12800	4610 B	5840 B	30
31	6900 B		6400 B		45700		24000	18700		12500		5910 B	31
TOTAL	235080	176810	199030	1088400	1282700	1131400	1191400	632600	517600	438300	246500	164930	TOTAL
MEAN	7600	6310	6420	36300	41400	37700	38400	20400	17300	14100	8220	5320	MEAN
AC-FT	467000	351000	395000	2160000	2540000	2240000	2360000	1250000	1030000	869000	489000	327000	AC-FT
MAX	8700	7000	6700	70000	47400	51000	83900	23700	20200	15200	12300	5990	MAX
MIN	6900	5690	6000	6600	35200	28800	24000	18200	13960	12500	4610	4740	MIN

SUMMARY FOR THE YEAR 1958

MEAN DISCHARGE, 20000 CFS
TOTAL DISCHARGE, 14500000 AC-FT
MAXIMUM DAILY DISCHARGE, 83900 CFS ON JUL 3
MINIMUM DAILY DISCHARGE, 4610 CFS ON NOV 30

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
AUG 15 1974 PAGE 179
CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

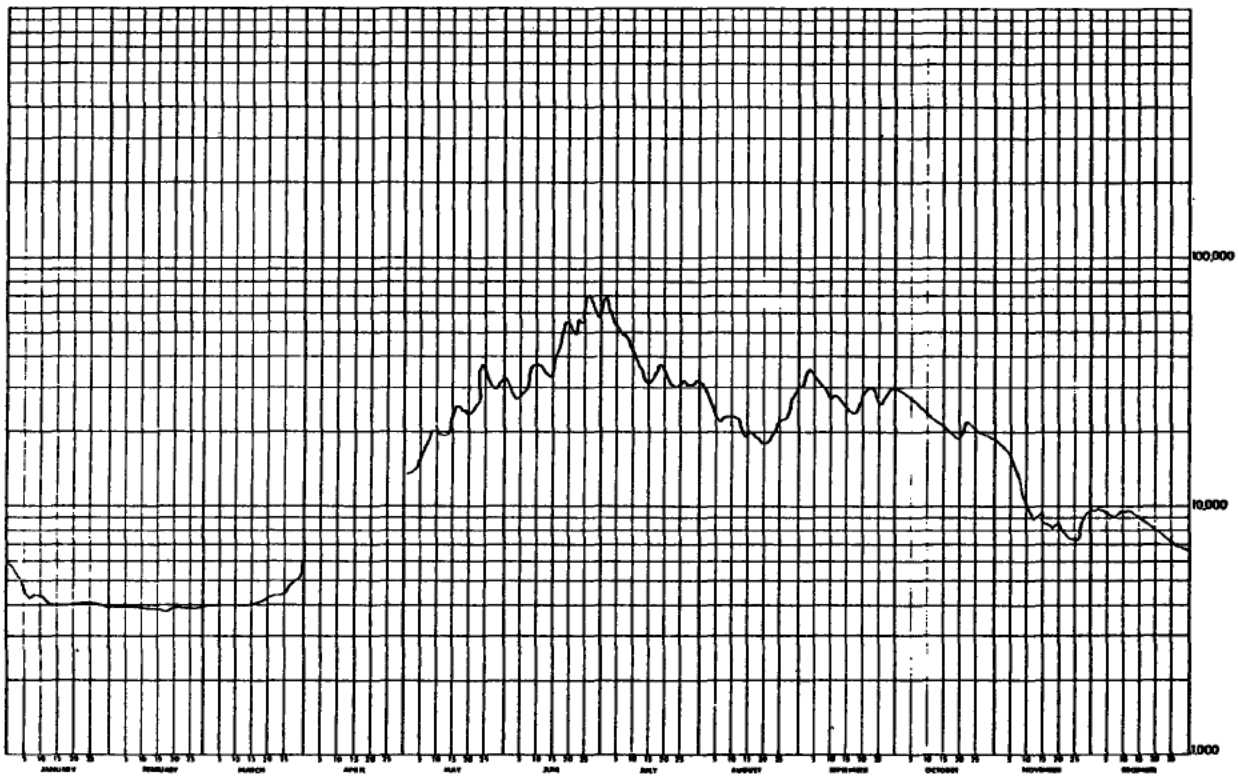
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1959

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	5850 B	4040 B	4000 B	---	13500 B	31500 E	63700	31700	30400	29000	17900	9710 B	1
2	5700 B	4070 B	4020 B	---	13500 B	29200 E	69200	29400	33300	28600	17400 B	9670 B	2
3	5460 B	4060 B	4060 B	---	13800 B	27600 E	61100	27500	36600	28000	17000 B	9570 B	3
4	5160 B	4040 B	4050 B	---	14300 B	27200 E	55900	25900	35600	27400	16500 B	9330 B	4
5	4930 B	4050 B	4060 B	---	15200 E	27800 E	53600	23800	33900	26500	15700 B	9260 B	5
6	4530 B	4010 B	4060 B	---	16600	28200 E	51700	22800	32400	25800	15300 B	8910 B	6
7	4330 B	4030 B	4050 B	---	17800	29500 E	49900	22600	31000	25000	13900 B	8850 B	7
8	4410 B	3940 B	4060 B	---	19600	34700 E	48600	23000	29800	24300	12000 B	9240 B	8
9	4470 B	3930 B	4060 B	---	20100	39300 E	45800	23700	28600	23400	10900 B	9460 B	9
10	4510 B	3840 B	4090 B	---	19600	39200 E	42200	23500	27900	23000	9970 B	9590 B	10
11	4390 B	3960 B	4080 B	---	19200	37800 E	39430	23400	28100	22400	9170 B	9670 B	11
12	4250 B	3930 B	4040 B	---	19400	36400 E	37200	22200	27700	22500	8630 B	9430 B	12
13	4100 B	3950 B	4060 B	---	19700	34600 E	35200	20500	27100	21800	8940 B	9090 B	13
14	4050 B	3950 B	4100 B	---	20800	33800 E	33000	19900	26100	21300	8320 B	8840 B	14
15	4030 B	3940 B	4120 B	---	23000	33800 E	31930	20700	25400	20900	9150 B	8710 B	15
16	4040 B	3910 B	4160 B	---	25700	40300 E	32100	20600	24900	19800	8490 B	8550 B	16
17	4070 B	3790 B	4190 B	---	25000 E	43000 E	33800	19800	24600	19100	7980 B	8510 B	17
18	4100 B	3790 B	4230 B	---	24600 E	49100 E	36006	19400	24500	18800	8250 B	8230 B	18
19	4110 B	3850 B	4260 B	---	24400 E	54900	37500	18900	25400	18400	8440 B	8100 B	19
20	4120 B	3940 B	4300 B	---	23700 E	54800	35600	18700	27500	18300	8290 B	7960 B	20
21	4150 B	3910 B	4330 B	---	24100 E	51100	33700	18100	29600	18700	7860 B	7830 B	21
22	4150 B	3910 B	4400 B	---	25900 E	49900	31600	18200	30100	20700	7650 B	7620 B	22
23	4150 B	3960 B	4460 B	---	26300 E	55700	30100	19500	29200	21800	7520 B	7430 B	23
24	4150 B	3970 B	4490 B	---	27100 E	55100	30250	21600	27600	20600	7350 B	7280 B	24
25	4130 B	3980 B	4540 B	---	35900 E	62700	31300	22800	26400	20200	7230 B	7170 B	25
26	4120 B	3990 B	4730 B	---	32700 E	70500	32200	22400	26300	19700	7340 B	6970 B	26
27	4130 B	3990 B	4880 B	---	30400 E	70500	32000	22500	27600	19900	8733 B	6630 B	27
28	4120 B	3970 B	5050 B	---	29100 E	65300	31100	24500	29200	13500	9160 B	6620 B	28
29	4110 B		5060 B	---	30600 E	59600	31000	27300	30200	15900	9490 B	6730 B	29
30	4070 B		5310 B	---	32300 E	56700	32300	29200	29800	18500	9670 B	6710 B	30
31	4040 B		4040 B		33600 E		33000	30200		18200		6650 B	31
TOTAL	135490	110170	135330	---	727500	1329000	1241900	714700	866800	681000	314230	256300	TOTAL
MEAN	4350	3930	4370	---	23500	44300	40100	23100	28900	22000	10500	8330	MEAN
AC-FT	279000	219000	268000	---	1440000	2640000	2460000	1420000	1720000	1350000	623000	512000	AC-FT
MAX	5850	4070	6040	---	37100	70500	69200	31700	36600	29000	17900	9710	MAX
MIN	4030	3790	4000	---	13500	27200	30100	18100	24500	18200	7230	6600	MIN

SUMMARY FOR THE YEAR 1959

MAXIMUM DAILY DISCHARGE, 70500 CFS ON JUN 26
MINIMUM DAILY DISCHARGE, 3780 CFS ON FEB 17

B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
AUG 6 197- PAGE 72
CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

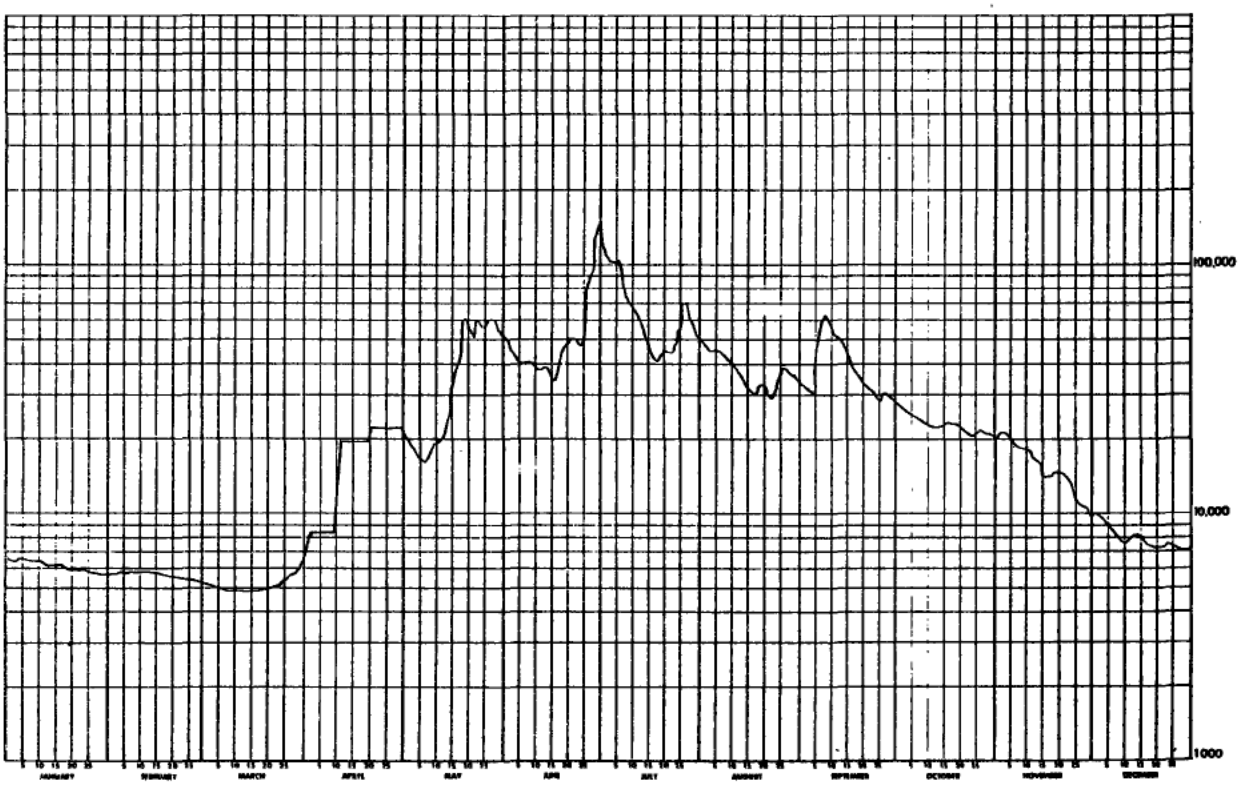
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1960

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	6510 B	5620 B	5220 B	8440 B	20000 E	50800	123000	49000	33100	28000	21400	9920 B	1
2	6490 B	5610 B	5200 B	8440 B	19000 E	48500	111000	47600	32700	33800	21800	9820 B	2
3	6510 B	5620 B	5160 B	8440 B	18300 E	45600	104000	46400	32000	26200	21100	9620 B	3
4	6460 B	5630 B	5120 B	8440 B	17700	42900	101000	45500	31200	25500	20000	9260 B	4
5	6550 B	5610 B	5070 B	8440 B	17100	40800	101000	44700	31000	24900	19500	8880 B	5
6	6410 B	5630 B	5020 B	8440 B	16800	40400	102000	45700	46400	24400	18900	8600 B	6
7	6350 B	5660 B	5000 B	8440 B	16700	40000	88700	45200	58600	23800	19000	8340 B	7
8	6290 B	5700 B	4980 B	8440 B	17000	40200	79600	43500	61900	23200	18100 B	7800 B	8
9	6260 B	5720 B	4950 B	8440 B	18000	40300	72700	41600	60400	23100	16500 B	7610 B	9
10	6320 B	5660 B	4940 B	8440 B	18700	39400	66600	40400	56400	22900	17700 B	7820 B	10
11	6240 B	5610 B	4930 B	19400 B	19300	38200	63600	40000	53800	22800	18100 B	7880 B	11
12	6110 B	5620 B	4890 B	19400 B	19500	37800	62200	38200	51400	22600	16600 B	8150 B	12
13	6080 B	5660 B	4890 B	19400 B	20500	38400	60000	35700	49000	22900	16000 B	8370 B	13
14	6130 B	5640 B	4900 B	19400 B	26900	38000	54700	33500	45700	23100	16200 B	8240 B	14
15	6150 B	5610 B	4900 B	19400 B	32400	36100	48600	32000	42900	23100	14000 B	7740 B	15
16	6160 B	5590 B	4920 B	19400 B	36600	34900	43900	30900	40100	23200	14100 B	7610 B	16
17	6090 B	5550 B	4910 B	19400 B	40500	37200	41400	30300	38000	23300	14400 B	7490 B	17
18	5480 B	5520 B	4900 B	19400 B	54600	43900	41000	30300	36200	23000	14900 B	7370 B	18
19	5580 B	5480 B	4910 B	19400 B	62000	46300	43000	32600	35500	22500	15000 B	7320 B	19
20	5570 B	5430 B	4900 B	19400 B	58100	47500	45000	33400	34600	21900	14400 B	7290 B	20
21	5920 B	5400 B	4920 B	22500 E	53200	50700	45100	31100	33300	21500	14700 B	7380 B	21
22	5900 B	5400 B	5080 B	22500 E	51300	49400	44600	29600	32200	21300	14400 B	7510 B	22
23	5860 B	5380 B	5120 B	22500 E	50900	49100	45300	29200	31200	20500	13300 B	7660 B	23
24	5960 B	5380 B	5110 B	22500 E	58000	47400	48100	30500	30200	21100	12100 B	7610 B	24
25	5980 B	5340 B	5200 B	22500 E	55300	49300	63300	36800	29600	21500	11500 B	7330 B	25
26	5940 B	5310 B	5310 B	22500 E	58500	70100	70000	39200	28900	21800	10900 B	7150 B	26
27	5780 B	5300 B	5440 B	22500 E	59300	88700	67000	37700	30400	21600	10600 B	7090 B	27
28	5700 B	5260 B	5550 B	22500 E	57400	106000	61900	36300	30600	21400	10700 B	7070 B	28
29	5660 B	5230 B	5740 B	22500 E	56400	141000	58400	35400	29900	21200	9650 B	7100 B	29
30	5640 B		6050 B	22500 E	54200	147000	54500	34400	28900	20600	9680 B	7140 B	30
31	5630 B		6550 B		52400		50900	33600		20400		7210 B	31
TOTAL	188630	160170	159780	503400	1164600	1625900	2062100	1160500	1176300	717100	465630	245380	TOTAL
MEAN	6090	5520	5150	16800	37600	54200	66500	37400	39200	23100	15500	7920	MEAN
AC-FT	375000	318000	317000	998000	2310000	3220000	4090000	2300000	2330000	1420000	924000	487000	AC-FT
MAX	6660	5720	6550	22500	62000	147000	123000	49000	61900	33800	21800	9920	MAX
MIN	5630	5230	4890	8440	16700	34900	41000	29200	28900	20400	9650	7070	MIN

SUMMARY FOR THE YEAR 1960

MEAN DISCHARGE, 26300 CFS
TOTAL DISCHARGE, 19100000 AC-FT
MAXIMUM DAILY DISCHARGE, 147000 CFS ON JUN 30
MINIMUM DAILY DISCHARGE, 4890 CFS ON MAR 12

B-ICE CONDITIONS
E-ESTIMATED



WATER SUNVEY OF CANADA
MAR 17 1977 PAGE 32
CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

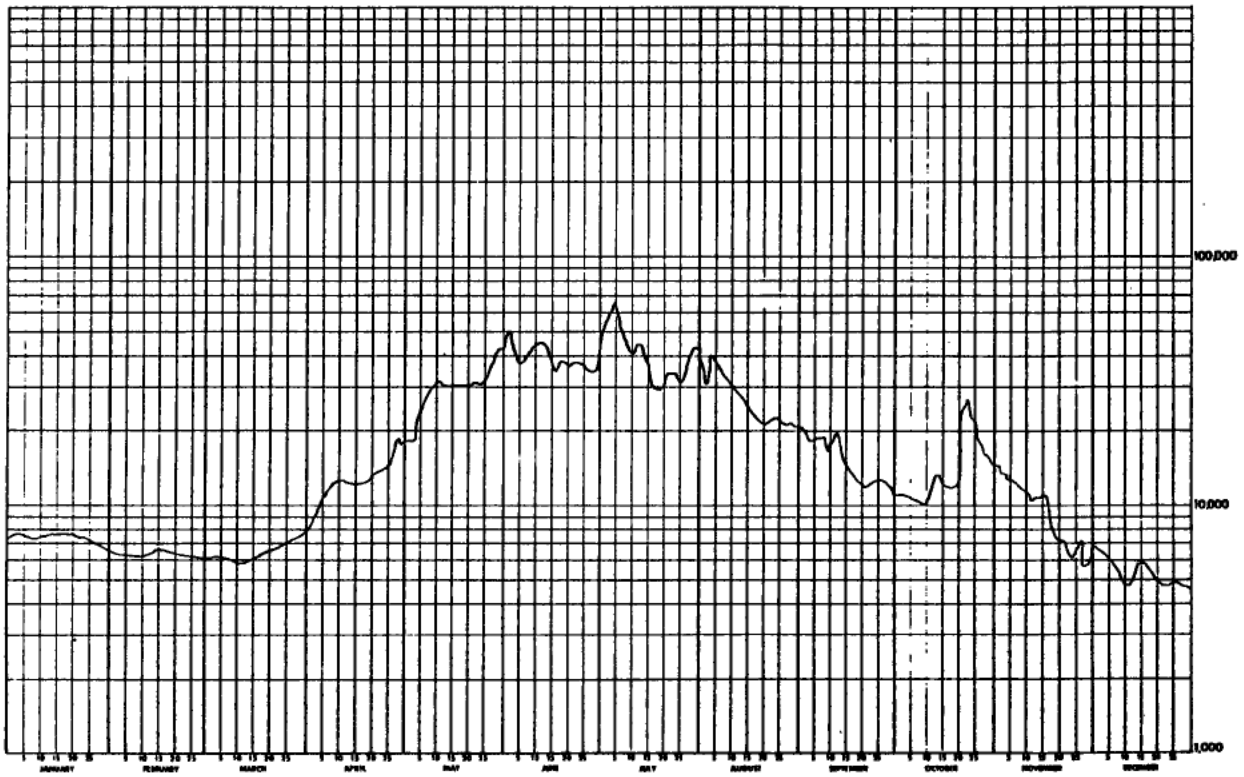
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1961

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	7340 B	6560 B	6190 B	8360 B	18700 B	43300	44900	40200	20400 E	10900 E	14100 B	6820 B	1
2	7400 B	6510 B	6210 B	8440 B	18600 B	50200	53300	38200	19200 E	11000 E	14200 B	6690 B	2
3	7700 B	6460 B	6210 B	9380 B	18400 B	47500	56800	38400	18400 E	11000 E	13300 B	6440 B	3
4	7690 B	6380 B	6180 B	10100 B	20800 B	42000	61600	40600	18200 E	10900 E	13700 B	6420 B	4
5	7830 B	6360 B	6130 B	10900 B	22900 B	38900	65100	39700	18400 E	11000 E	12600 B	6440 B	5
6	7540 B	6330 B	6080 B	11600 B	25000 B	37800	60200	37000	18200 E	10800 E	12900 B	6280 B	6
7	7450 B	6300 B	6020 B	11900 B	26400	38500	52900	34400	19200 E	10600 E	12000 B	5780 B	7
8	7440 B	6250 B	5950 B	12100 B	28100	40200	48200	33600	18400 E	10500 E	8820 B	5340 B	8
9	7520 B	6180 B	5900 B	12200 B	29000	42500	44800	32500	16800 E	10100 E	9600 B	5100 B	9
10	7590 B	6250 B	5850 B	12400 B	30600 E	44100	41700	31300	16800 E	10100 E	11200 B	4920 B	10
11	7580 B	6360 B	5820 B	12500 B	31200	44300	41200	30100	18700 E	10200 E	9270 B	4700 B	11
12	7540 B	6400 B	5870 B	12400 B	31000	45400	44300	30000	20000 E	11800 E	10400 B	4700 B	12
13	7530 B	6430 B	5880 B	12300 B	31000	45900	44800	28600	17800 E	13400 E	10800 B	5060 B	13
14	7410 B	6480 B	5950 B	12200 B	30800	43000	42100	26500	16200 E	13200 E	10600 B	5700 B	14
15	7610 B	6600 B	6020 B	12300 B	30700	39000	37900	25400	15100 E	14600 E	10900 B	5860 B	15
16	7590 B	6670 B	6110 B	12300 B	30200	36200	34300	24300	14300 E	12200 E	10900 B	5840 B	16
17	7510 B	6580 B	6200 B	12400 B	30000	35600	31900	23000	13800 E	12200 E	10400 B	5730 B	17
18	7420 B	6490 B	6310 B	12700 B	30100	37200	30300	22200	13200 E	12000 E	8170 B	5520 B	18
19	7500 B	6450 B	6410 B	13100 B	30700	38600	29400	21700	12700 E	11800 E	7620 B	5330 B	19
20	7560 B	6390 B	6520 B	13300 B	30600	37500	29700	21800	12400 E	12000 E	7360 B	5170 B	20
21	7630 B	6340 B	6620 B	13500 B	31000	36900	32700	21800	12100 E	14900 E	7110 B	4950 B	21
22	7500 B	6300 B	6700 B	13700 B	31600	37500	34300	22300	12100 E	24100 E	7080 B	4840 B	22
23	7340 B	6280 B	6790 B	13800 B	31500	37600	34600	22500	12100 E	26700 E	6610 B	4710 B	23
24	7310 B	6240 B	6900 B	13900 B	31300	37600	33000	22400	12100 E	25800 E	6230 B	4780 B	24
25	7180 B	6130 B	7010 B	14800 B	30800	37500	31600	21800 E	12700 E	24800 E	5410 B	4870 B	25
26	7050 B	6120 B	7180 B	15300 B	31600	36700	31400	21400 E	12900 E	19500 E	5560 B	4850 B	26
27	6970 B	6160 B	7320 B	15800 B	34500	35100	33600	21400 E	12500 E	17300 E	7240 B	4850 B	27
28	6810 A	6160 B	7480 B	16700 B	37100	34700	38500	21600 E	12200 E	16200 E	5740 B	4710 B	28
29	6690 B		7630 B	17400 B	40300	34100	42200	21300 E	11900 E	16200 E	5670 B	4670 B	29
30	6620 A		7780 B	18100 B	43400	36100	43600	20700 E	11700 E	15000 B	6590 B	4600 B	30
31	6590 B		8210 B		42400		42600	20300 E		14600 B		4580 B	31
TOTAL	228480	178160	201430	387880	930700	1191500	1293500	857000	460500	438400	281880	166250	TOTAL
MEAN	7380	6360	6500	12900	30000	39700	41700	27600	15400	14100	9400	5360	MEAN
AC-FT	454000	353000	400000	769000	1850000	2360000	2570000	1700000	913000	870000	559000	330000	AC-FT
MAX	7700	6670	8210	18700	43400	50200	65100	40600	20400	26700	14200	6820	MAX
MIN	6590	6120	5820	8360	18200	34100	29400	20300	11700	10100	5410	4580	MIN

SUMMARY FOR THE YEAR 1961

MEAN DISCHARGE: 18100 CFS
TOTAL DISCHARGE: 13100000 AC-FT
MAXIMUM DAILY DISCHARGE: 65100 CFS ON JUL 5
MINIMUM DAILY DISCHARGE: 4580 CFS ON DEC 31

B-ICE CONDITIONS
E-ESTIMATED



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CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1962

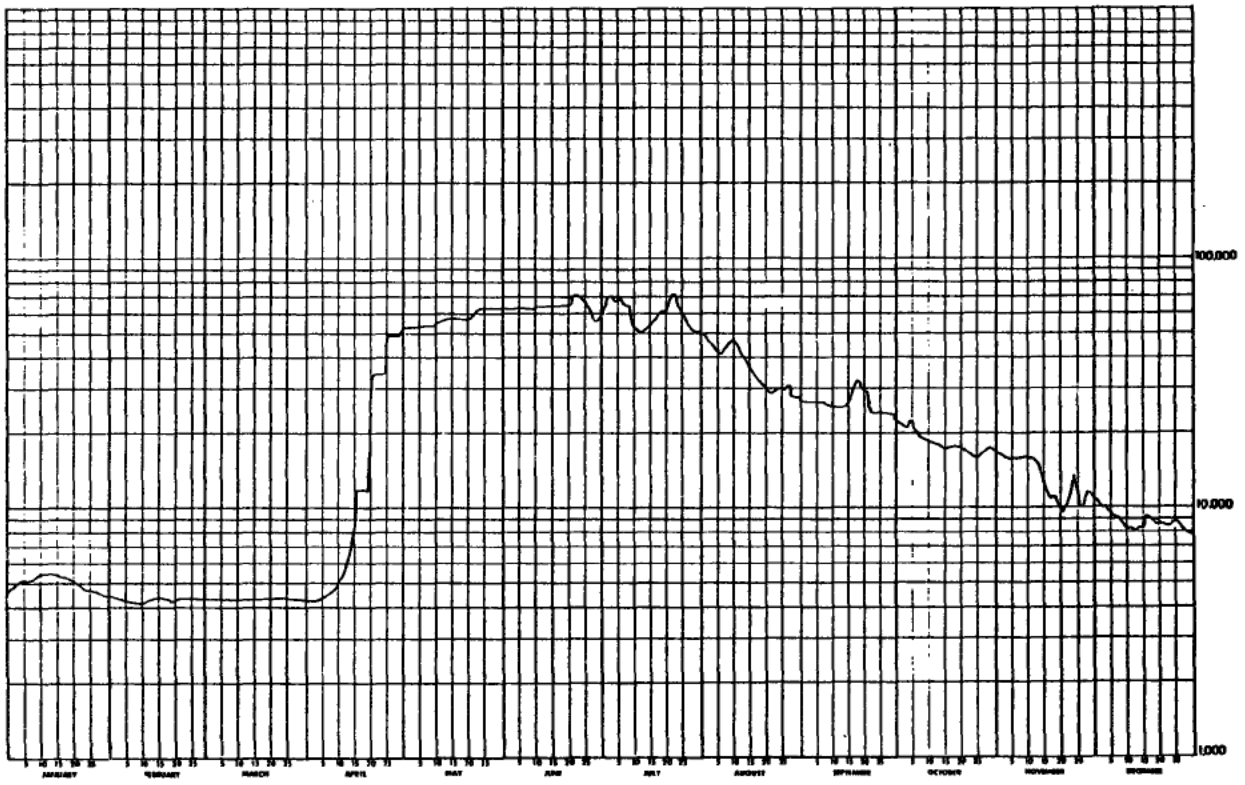
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	4740 B	4460 B	4340 B	4160 B	53400 E	62300 E	60200	49400	26800 E	21600 E	16100 E	10100 B	1
2	4900 B	4400 B	4300 B	4150 B	53400 E	62300 E	65900	48500	26800 E	21100 E	15900 E	9840 B	2
3	5040 B	4390 B	4290 B	4150 B	53400 E	62300 E	70800	47400	26800 E	20900 E	15800 E	10000 B	3
4	5100 B	4290 B	4340 B	4190 B	53400 E	62300 E	68200	44800	26800 E	21000 E	15500 E	9520 B	4
5	5160 B	4230 B	4360 B	4210 B	53400 E	62300 E	67400	42200	26800 E	22100 E	15400 E	9310 B	5
6	5200 B	4150 B	4340 B	4280 B	53400 E	62300 E	68300	41000	26800 E	20400 E	15400 E	9180 B	6
7	5160 B	4180 B	4330 B	4320 B	53400 E	62300 E	67800	41300	26800 E	19600 E	15500 E	8800 B	7
8	5280 B	4210 B	4300 B	4400 B	53400 E	62300 E	64500	42000	26800 E	18800 E	15500 E	8650 B	8
9	5320 B	4270 B	4290 B	4530 B	53400 E	62300 E	60400	44600	25500 E	18700 E	15600 E	8430 B	9
10	5530 B	4270 B	4270 B	4660 B	53400 E	62300 E	55900	46800	25500 E	18500 E	15700 E	8140 B	10
11	5520 B	4240 B	4280 B	4840 B	54800	65300 E	52600	47100	25500 E	18500 E	15500 E	8200 B	11
12	5430 B	4270 B	4260 B	5140 B	56400	65300 E	50300	44100	25500 E	18000 E	15300 B	8170 B	12
13	5420 B	4300 B	4260 B	5590 B	56800	65300 E	49500	41500	25500 E	17500 E	15000 B	8010 B	13
14	5340 B	4350 B	4280 B	6260 B	57100	65300 E	50600	40300	25500 E	17300 E	13800 B	8270 B	14
15	5390 B	4320 B	4320 B	6790 B	57400	65300 E	52700	38700	25500 E	17000 E	12400 B	8290 B	15
16	5320 B	4360 B	4320 B	11800 B	57600 E	65300 E	55200	36400	25500 E	17100 E	11400 B	9060 B	16
17	5290 B	4340 B	4340 B	11800 B	57600 E	65300 E	55500	34500	29800	17200 E	10800 B	8980 B	17
18	5090 B	4380 B	4270 B	11800 B	57600 E	65300 E	57000	33100	32200	17300 E	11100 B	8600 B	18
19	5090 B	4190 B	4260 B	11800 B	57600 E	65300 E	59500	32000	31400	17300 E	10800 B	8550 B	19
20	4920 B	4230 B	4270 B	11800 B	57600 E	65300 E	62100	31200	29600	17200 E	9780 B	8510 B	20
21	4970 B	4260 B	4270 B	34500 B	57600 E	65300 E	61800	29600	28800	16700 E	9540 B	8460 B	21
22	4970 B	4320 B	4250 B	34500 B	57600 E	70800	67200	28600	23800 E	16200 E	10300 B	8450 B	22
23	4910 B	4340 B	4240 B	34500 B	63100 E	70500	73900	28800	23800 E	16000 E	12200 B	8260 B	23
24	4830 B	4380 B	4260 B	34500 B	63100 E	69100	69600	29700	23800 E	15800 E	13200 B	8420 B	24
25	4670 B	4380 B	4230 B	34500 B	63100 E	66700	63000	29400 E	23800 E	15800 E	11200 B	8690 B	25
26	4400 B	4330 B	4230 B	49700 B	63100 E	63100	59500	29400 E	23800 E	16000 E	9860 B	8720 B	26
27	4590 B	4340 B	4270 B	49700 B	63100 E	59400	56800	29400 E	23800 E	16400 E	10400 B	8350 B	27
28	4550 B	4340 B	4280 B	49700 B	63100 E	56100	53400	31600	23800 E	16700 E	11400 B	8000 B	28
29	4510 B		4270 B	49700 B	63100 E	54700	50700	27800	23800 E	17400 E	10900 B	7710 B	29
30	4490 B		4240 B	49700 B	63100 E	56200	50300	27800 E	23800 E	16900 E	10800 B	7690 B	30
31	4450 B		4200 B		63100 E		50100	27800 E		16500 E		7740 B	31
TOTAL	155780	120540	132780	551670	1787200	1907900	1850700	1146800	784400	557500	392080	267100	TOTAL
MEAN	5030	4310	4260	18400	57700	63600	59700	37000	26100	18000	13100	8620	MEAN
AC-FT	309000	239000	263000	1090000	3540000	3780000	3670000	2270000	1560000	1110000	778000	530000	AC-FT
MAX	5530	4460	4360	49700	63100	70800	73900	49400	32200	22100	16100	10100	MAX
MIN	4450	4150	4200	4150	53400	54700	49500	27800	23800	15800	9540	7690	MIN

SUMMARY FOR THE YEAR 1962

MEAN DISCHARGE, 26500 CFS
TOTAL DISCHARGE, 19100000 AC-FT
MAXIMUM DAILY DISCHARGE, 73900 CFS ON JUL 23
MINIMUM DAILY DISCHARGE, 4150 CFS ON FEB 6

MAXIMUM INSTANTANEOUS DISCHARGE
74500 CFS AT 1400 MST ON JUL 23

B-ICE CONDITIONS
E-ESTIMATED



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ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

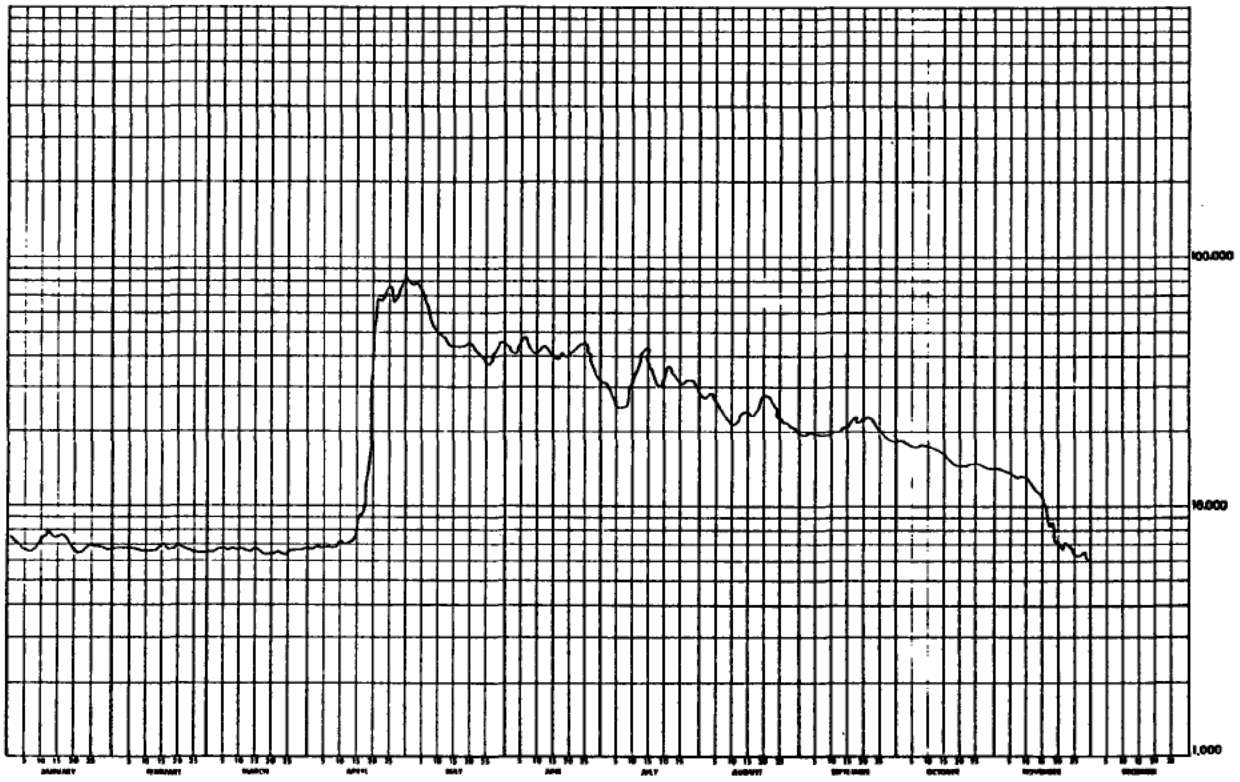
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1963

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	7530 B	6800 B	6620 B	6840 B	82200 E	44400	31800 E	27400	19800	18900	14400	---	1
2	7290 B	6760 B	6610 B	6840 B	79300 E	42400	31200 E	27400	19700	18400	14200	---	2
3	7030 B	6730 B	6640 B	6930 B	77400 E	40900	29300 E	28000	20000	17900	14100	---	3
4	6890 B	6710 B	6700 B	6910 B	78100 E	41400	27300 E	28000	19800	17800	14100	---	4
5	6750 B	6760 B	6750 B	6870 B	77000 E	45900	26100 E	26800	19600	17800	14000	---	5
6	6680 B	6740 B	6740 B	6910 B	72300 E	48200	25600 E	25200	19600	17600	13800	---	6
7	6590 B	6740 B	6750 B	6930 B	66000 E	46100	25400 E	24200	19600	17600	13500	---	7
8	6730 B	6710 B	6800 B	6910 B	60400 E	43100	25700 E	23100	19500	18000	13600	---	8
9	6810 B	6660 B	6770 B	6890 B	55500 E	41300	27600 E	22400	19700	17600	13600	---	9
10	7120 B	6630 B	6760 B	7020 B	51900 E	41400	30000 E	21900	20200	17300	13300	---	10
11	7540 B	6650 B	6730 B	7320 B	50100 E	42700	33800 E	22400	20600	17400	12700	---	11
12	7890 B	6650 B	6720 B	7040 B	48300 E	44400	36400 E	23700	20900	17200	12000	---	12
13	7700 B	6680 B	6690 B	7100 B	47100 E	44400	40000 E	24500	21400	16600	11700	---	13
14	7570 B	6770 B	6660 B	7250 B	45900 E	42600	42800 E	24700	21400	16300	11500	---	14
15	7460 B	6920 B	6700 B	7480 B	44300 E	41000	43200 E	24400	21900	15800	10800	---	15
16	7850 B	7190 B	6770 B	8940 B	44000 E	39000 E	36000 A	23900	22200	15500	10000 B	---	16
17	7440 B	7130 B	6680 B	9160 B	44300 E	39600 E	33900	24600	23000	15200	8580 B	---	17
18	7440 B	6750 B	6490 B	10600 B	44600 E	41200 E	31800	25300	22600	15000	8740 B	---	18
19	7110 B	6780 B	6450 B	13000 B	44700 E	40800 E	30900	27000	22400	14800	7410 B	---	19
20	6750 B	7020 B	6480 B	17700 B	45000 E	40800 E	32000	28500	23300	14700	7300 B	---	20
21	6570 B	7050 B	6520 B	48000 B	44500 E	41100 E	35200	28400	23700	14700	6880 B	---	21
22	6580 B	6840 B	6550 B	68700 B	42800 E	42000 E	36300	27700	23000	14800	7480 B	---	22
23	6580 B	6760 B	6530 B	67500 E	41000 E	44000 E	34800	25700	22400	15100	7060 B	---	23
24	6670 B	6680 B	6480 B	68500 E	39500 E	45600 E	33300	24100	21500	15100	6920 B	---	24
25	6850 B	6670 B	6590 B	74000 E	38500	45800 E	32200	22900	20600	14900	6570 B	---	25
26	7000 B	6670 B	6720 B	76000 E	37800	44500 E	31800	22100	19800	15000	6470 B	---	26
27	6990 B	6630 B	6730 B	66400 E	38200	39200 E	32200	21600	19200	14900	6540 B	---	27
28	6980 B	6630 B	6720 B	68800 E	40100	35600 E	32500	21000	18600	14600	6780 B	---	28
29	6910 B		6730 B	73900 E	43600	33500 E	31900	20600	18300	14300	6250 B	---	29
30	6830 B		6860 B	79300 E	46100	32400 E	30200	20100	18400	14300	6180 B	---	30
31	6760 B		6830 B		45700		26200	19800		14700		---	31
TOTAL	219090	189710	206770	855740	1616100	1259300	999400	757400	622700	499800	306460	---	TOTAL
MEAN	7070	6780	6670	28500	52100	41800	32200	24400	20800	16100	10200	---	MEAN
AC-FT	435000	376000	410000	1700000	3210000	2490000	1980000	1500000	1240000	991000	608000	---	AC-FT
MAX	7890	7190	6860	79300	82200	48200	43200	28500	23700	18900	14400	---	MAX
MIN	6570	6630	6450	6840	37800	32400	25400	19800	18300	14300	6180	---	MIN

SUMMARY FOR THE YEAR 1963

MAXIMUM DAILY DISCHARGE, 82200 CFS ON MAY 1

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



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MAR 17 1977 PAGE 35
CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY — STATION NO. 07DA001

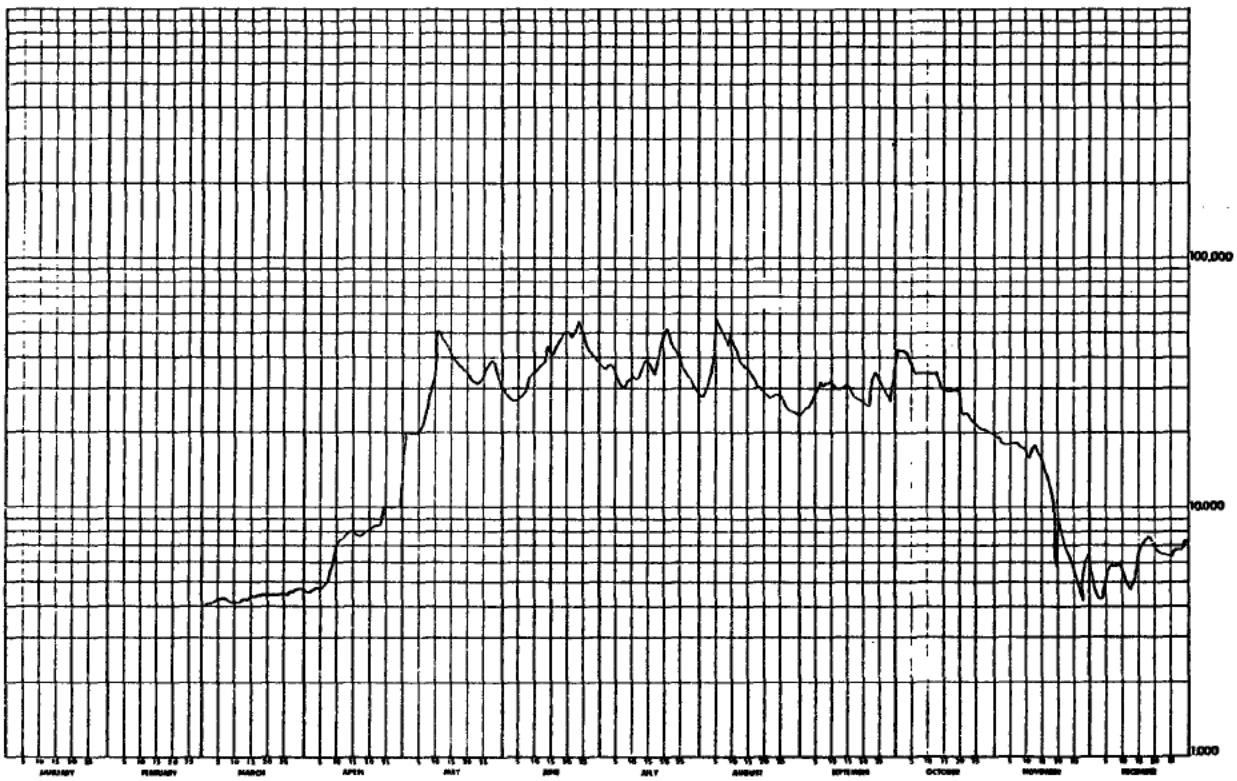
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1964

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	4140 B	4620 B	20000 E	30800	37200	28500	24400	43600	19800	5750 B	1
2	---	---	4140 B	4690 B	20000 E	28900	36000	29100	25200	43400	19200	4950 B	2
3	---	---	4230 B	4710 B	20000 E	27600	37700	30200	25500	43700	18400	4440 B	3
4	---	---	4280 B	4810 B	20000 E	27400	38000	35200	26100	41400	18000	4460 B	4
5	---	---	4300 B	4710 B	20000 E	27400	35200	53700	27500	39800	18100	4510 B	5
6	---	---	4300 B	4810 B	20000 E	28000	32700	56500	30600	35000 E	18400	5510 B	6
7	---	---	4350 B	5050	23000	29700	31000	53000	32000	35000 E	18500	5870 B	7
8	---	---	4280 B	5400 B	28400	32700	30900	48700	31100	35000 E	17800	5840 B	8
9	---	---	4230 B	6060 B	32500	34400	31600	45900	31500	35000 E	17600	6000 B	9
10	---	---	4250 B	6840 B	35400	34900	33700	48500	31700	35000 E	16800	5870 B	10
11	---	---	4280 B	7560 B	51000	35800	34700	45100	31100	35000 E	15600	5480 B	11
12	---	---	4300 B	7670 B	50300	37400	33800	41000	30500	35000 E	17400	5000 B	12
13	---	---	4350 B	8100 B	47000	40200	34200	38900	30000	35000 E	17900	4780 B	13
14	---	---	4370 B	8040 B	45400	44400	37600	38400	30200	34000 E	16800	5080 B	14
15	---	---	4440 B	8220 B	43000	42800	39700	37000	31100	34000 E	15900	6280 B	15
16	---	---	4440 B	7710 B	40400	41600	37700	35000	30100	34000 E	14700	6920 B	16
17	---	---	4550 B	7710 B	38200	43900	35200	33200	28800	34000 E	12900	7340 B	17
18	---	---	4550 B	7820 B	37000	48500	36400	31800	26000	34000 E	11500 B	7790 B	18
19	---	---	4530 B	7900 B	36000	49700	42600	31300	27200	34000 E	8380 B	7750 B	19
20	---	---	4510 B	8100 B	35100	51400	47800	30700	26700	34000 E	5870 B	7200 B	20
21	---	---	4530 B	8420 B	33700	50100	52900	29400	26200	24600	6820 B	6740 B	21
22	---	---	4550 B	8540 B	32400	48400	49000	28300	26100	24700	7710 B	6740 B	22
23	---	---	4510 B	8460 B	32300	53900	45300	28200	31200	23900	6880 B	6640 B	23
24	---	---	4440 B	10000 B	32500	57600	43000	28900	35400	23000	6310 B	6570 B	24
25	---	---	4510 B	10000 B	33900	56500	40400	29100	33100	22400	5840 B	6500 B	25
26	---	---	4580 B	10000 B	36800	47200	37800	27900	31100	21700	5510 B	6470 B	26
27	---	---	4620 B	10000 B	38700	43900	35800	26600	30000	21400	4980 B	6810 B	27
28	---	---	4670 B	10000 E	39000	41700	34600	25500	28400	21000	4230 B	6920 B	28
29	---	---	4710 B	10000 E	37100	39800	32500	25000	27700	20700	5750 B	6980 B	29
30	---		4710 B	10000 E	34800	38800	30200	24700	35800	20400	6410 B	7410 B	30
31	---		4670 B		32900		29000	24400		20000		7340 B	31
TOTAL	---	---	137360	225970	1047100	1211400	1154200	1089700	884900	945700	381990	191940	TOTAL
MEAN	---	---	4430	7530	33800	40400	37200	35200	29500	30500	12700	6190	MEAN
AC-FT	---	---	272000	448000	2080000	2400000	2290000	2160000	1760000	1884000	758000	381000	AC-FT
MAX	---	---	4710	10000	51000	57600	52900	56500	35800	43700	19800	7790	MAX
MIN	---	---	4140	4620	20000	27400	29000	24400	24400	20000	4230	4440	MIN

SUMMARY FOR THE YEAR 1964

MAXIMUM DAILY DISCHARGE, 57600 CFS ON JUN 24

B-ICE CONDITIONS
E-ESTIMATED



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CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1965

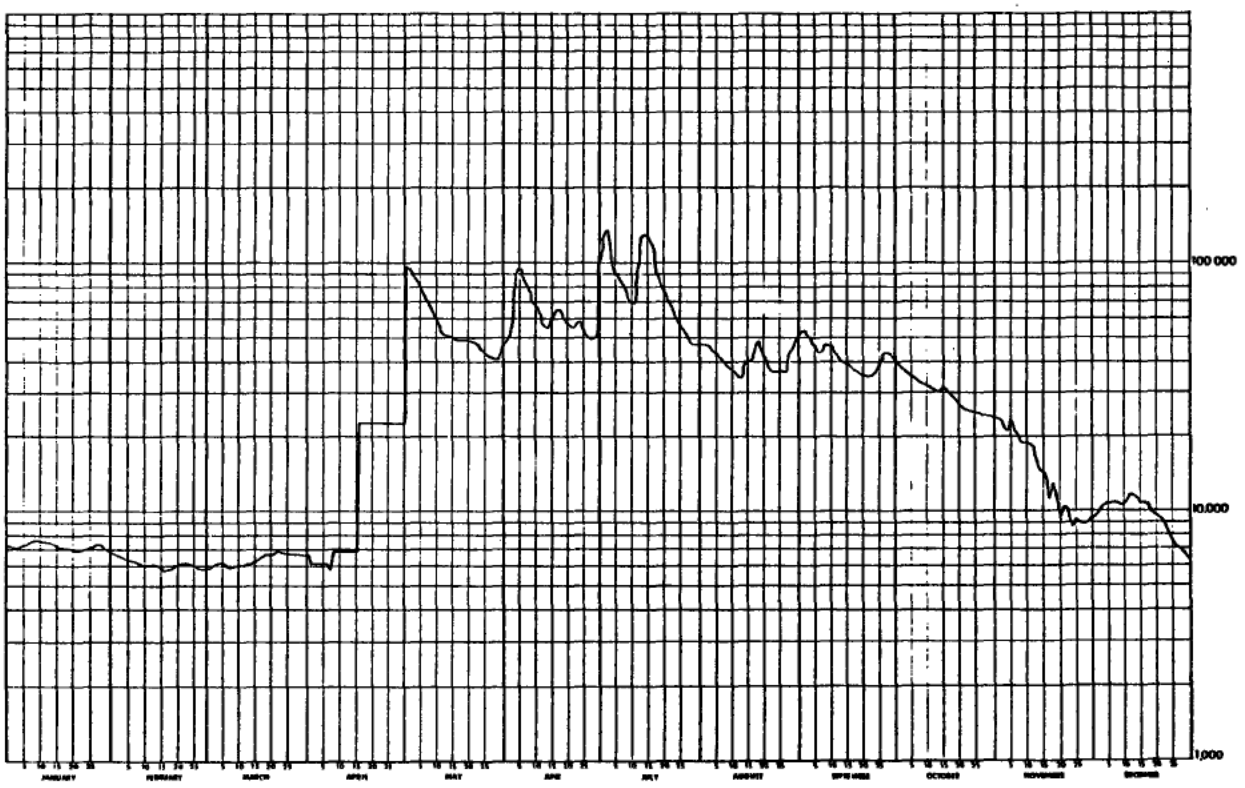
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	7300 B	6740 B	5900 B	6200 B	96900	47500	106000	46500	53900	39600	23600	9460 B	1
2	7230 B	6670 B	6120 B	6200 B	94700	50900	136000	46700	54100	38500	23600	9860 B	2
3	7230 B	6640 B	6340 B	6200 B	88700	61700	120000	45700	51900	37300	21800	10300 B	3
4	7340 B	6540 B	6250 B	6200 B	84100	90600	101000	44400	49300	36300	21200	10600 B	4
5	7480 B	6470 B	6060 B	6200 B	79400	96400	91500	42100	46800	35700	23000	11400 B	5
6	7520 B	6370 B	5900 B	6200 B	74800	85300	85600	40500	44600	34900	22400	11100 B	6
7	7710 B	6340 B	5930 B	5800 B	70700	80600	82100	39300	44100	34300	20000	10800 B	7
8	7750 B	6280 B	5960 B	6860 B	67000	77100	79200	38800	46200	33800	18900	10700 B	8
9	7750 B	6180 B	6030 B	6860 B	62600	71000	74500	38000	47300	33400	18900 B	10600 B	9
10	7670 B	6180 B	6090 B	6860 B	58900	67200	69800	37600	46100	32700	19100 B	10600 B	10
11	7560 B	6150 B	6150 B	6860 B	54700	64400	67300	36500	44100	32000	18000 B	10800 B	11
12	7560 B	6120 B	6120 B	6860 B	52000	59900	80200	35000	42100	31500	17600 B	11800 B	12
13	7410 B	6030 B	6180 B	6860 B	51000	55800	111000	34900	40500	31300	15600 B	11600 B	13
14	7340 B	6000 B	6280 B	6860 B	50800	55600	115000	38700	39600	30800	15000 B	11300 B	14
15	7270 B	5900 B	6410 B	6860 B	50400	59500	113000	40500	39300	30700	14400 B	10800 B	15
16	7160 B	5900 B	6540 B	22700 B	49700	63800	112000	40100	38900	31400	14300 B	11000 B	16
17	7120 B	5900 B	6670 B	22700 B	49300	65400	100000	42200	37800	30200	11600 B	10800 B	17
18	7090 B	5960 B	6810 B	22700 B	48700	63300	88500	48100	36800	28900	12800 B	10200 B	18
19	7020 B	6030 B	6640 B	22700 B	48500	58800	81600	47200	35900	28200	11300 B	9900 B	19
20	6980 B	6150 B	6670 B	22700 B	48600	56100	76200	43300	35600	27500	9300 B	9780 B	20
21	6980 B	6150 B	6920 B	22700 B	49000	55100	72900	40100	35600	27000	10300 B	9380 B	21
22	7090 B	6150 B	6950 B	22700 B	48800	55000	68800	37600	35100	26700	10300 B	9020 B	22
23	7120 B	6090 B	6810 B	22700 B	47800	57000	64700	36200	35000	25900	9800 B	8500 B	23
24	7120 B	6030 B	6780 B	22700 B	45700	58400	60400	35900	36100	25400	8700 B	8180 B	24
25	7200 B	5930 B	6740 B	22700 B	43800	55200	56000	36100	38300	24800	9260 B	7580 B	25
26	7340 B	5900 B	6740 B	22700 B	42800	51600	52700	36400	41100	24700	8980 B	7340 B	26
27	7450 B	5870 B	6710 B	22700 B	41000	49700	50900	38300	43700	24500	8860 B	7220 B	27
28	7300 B	5870 B	6700 B	22700 B	40900	48700	49300	42900	43700	24100	8980 B	6940 B	28
29	7060 B		6700 B	22700 B	40500	48800	47500	44800	42100	24200	9220 B	6600 B	29
30	6950 B		6700 B	22700 B	42900	53800	46100	46500	40500	24400	9380 B	6430 B	30
31	6840 B		6700 B		46200		46100	49700		23900		6580 B	31
TOTAL	225940	172540	199500	438380	1770900	1864200	2505900	1270600	1266100	934600	446180	297170	TOTAL
MEAN	7290	6160	6440	14600	57100	62100	80800	41000	42200	30100	14900	9590	MEAN
AC-FT	448000	342000	396000	870000	3510000	3700000	4970000	2520000	2510000	1854000	885000	589000	AC-FT
MAX	7750	6740	6950	22700	96900	96400	136000	49700	54100	39600	23600	11800	MAX
MIN	6840	5870	5900	5800	40500	47500	46100	34900	35000	23900	8700	6430	MIN

SUMMARY FOR THE YEAR 1965

MEAN DISCHARGE, 31200 CFS
TOTAL DISCHARGE, 22600000 AC-FT
MAXIMUM DAILY DISCHARGE, 136000 CFS ON JUL 2
MINIMUM DAILY DISCHARGE, 5800 CFS ON APR 7

B-ICE CONDITIONS

MAXIMUM INSTANTANEOUS DISCHARGE
138000 CFS AT 1300 MST ON JUL 2



WATER SURVEY OF CANADA — ATHABASCA RIVER BELOW MCMURRAY — STATION NO. 07DA001

MAR 17 1977 PAGE 37

CALGARY, ALTA.

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1966

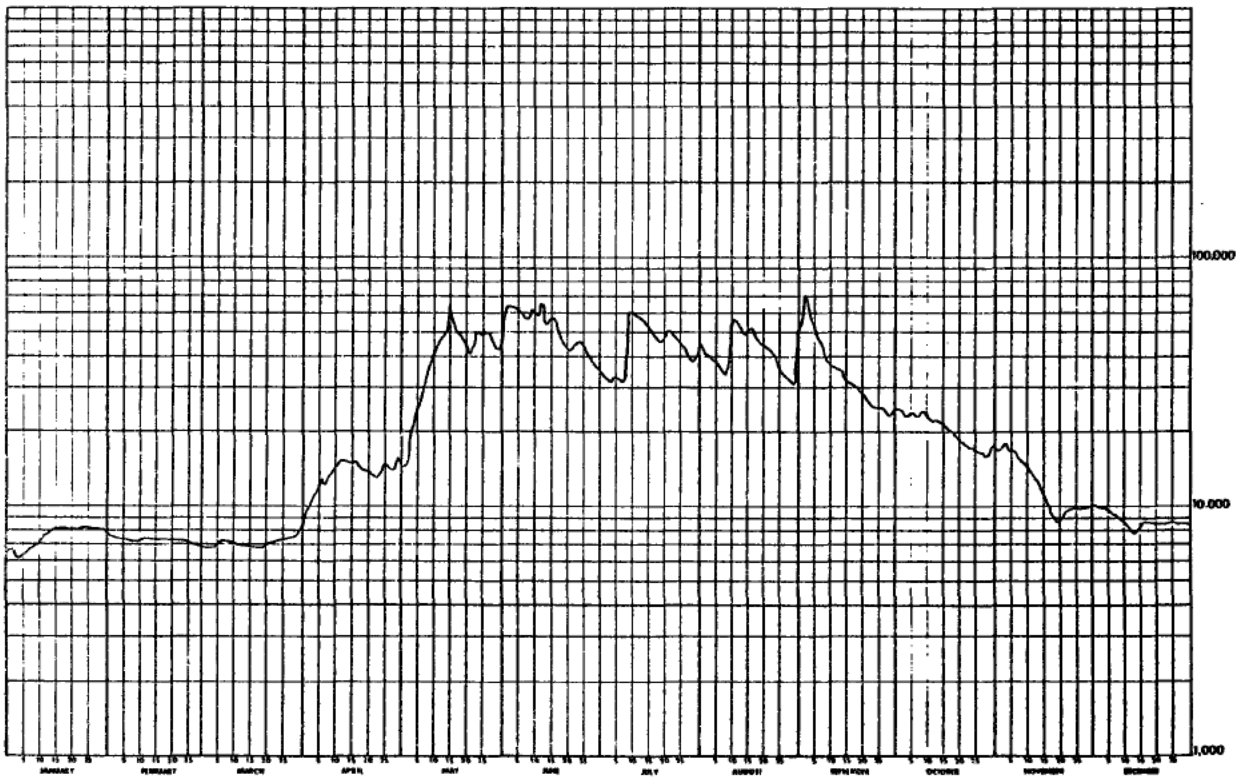
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	6420 B	7660 B	6940 B	9340 B	14600 B	55100	34100	48700	53100	24000	16400	9900 B	1
2	6740 B	7540 B	6940 B	10100 B	14800 B	64400	33400	42200	70800	24100	16400	10000 B	2
3	6320 B	7420 B	6940 B	10700 B	17900 E	64400	32700	40300	64900	23300	17500	9800 B	3
4	6320 B	7420 B	7060 B	11600 B	21100 E	63600	32700	40200	58500	22700	17500	9700 B	4
5	6410 B	7420 B	7140 B	12500 B	24200 E	62500	33600	39300	53900	22700	16500 B	9600 B	5
6	6540 B	7380 B	7180 B	13000 B	27400 E	60400	33300	37200	49600	23400	16500 B	9400 B	6
7	6440 B	7340 B	7300 B	12400 B	30600 E	57800	32100	35100	46100	22900	16200 B	9200 B	7
8	6740 B	7340 B	7340 B	12800 B	33700 E	57200	32700	34400	43400	22900	15600 B	9000 B	8
9	7060 B	7340 B	7220 B	14200 B	36900 E	60800	59000	36100	40900	23600	15000 B	8700 B	9
10	7380 B	7380 B	7140 B	14400 B	40100 E	60800	60800	53300	38900	24100	14500 B	8500 B	10
11	7500 B	7500 B	7100 B	15000 B	43300 E	58500	59000	56400	37200	22400	13900 B	8400 B	11
12	7700 B	7540 B	7060 B	15000 B	46500	59400	61300	53100	36000	24100	13300 B	8100 B	12
13	7900 B	7500 B	7060 B	15200 B	47300	55400	57500	51500	35700	22000	12600 B	7800 B	13
14	7900 B	7460 B	7020 B	15200 B	52000	55300	56500	49500	34400	24000	12100 B	7700 B	14
15	7980 B	7460 B	6940 B	15000 B	63100	56600	55100	49900	32800	21700	11500 B	7900 B	15
16	8020 B	7460 B	6940 B	15200 B	57200	57100	52600	51900	31500	20900	10900 B	8500 B	16
17	8100 B	7460 B	6940 B	14900 B	51500	54300	50100	50900	31000	20200	10300 B	8600 B	17
18	8100 B	7380 B	6940 B	14200 B	50200	50500	47600	47800	30800	19400	9600 B	8600 B	18
19	8100 B	7340 B	7020 B	14200 B	48500	47300	46700	45800	29600	19000	9000 B	8600 B	19
20	8100 B	7340 B	7140 B	14200 B	45000	44900	47700	44300	28300	18700	8500 B	8500 B	20
21	8100 B	7340 B	7260 B	13600 B	41500	43300	49700	43400	27100	18500	8800 B	8500 B	21
22	8100 B	7300 B	7300 B	13400 B	42400	43400	50800	42900	26400	17800	9500 B	8500 B	22
23	8100 B	7260 B	7380 B	13400 B	48300	45400	49900	41300	25600	17000	9600 B	8500 B	23
24	8100 B	7220 B	7460 B	14400 B	49300	46400	47700	38600	25000	17000	9700 B	8500 B	24
25	8100 B	7180 B	7460 B	14600 B	48500	44900	45900	36600	25000	16900	9700 B	8500 B	25
26	8100 B	7100 B	7580 B	14800 B	49600	42700	43900	35000	25000	16300	9700 B	8500 B	26
27	8100 B	7060 B	7660 B	14400 B	49700	40800	41300	33400	24000	16300	9800 B	8500 B	27
28	8100 B	6940 B	7700 B	14200 B	48000	38200	39300	32000	23200	16300	9800 B	8500 B	28
29	7980 B		7700 B	15900 B	45400	36500	38500	31200	22600	15600	9800 B	8500 B	29
30	7980 B		7940 B	14700 B	43400	35000	41200	31300	22900	16600	9800 B	8500 B	30
31	7820 B		8740 B		44900		44700	34300		17200		8400 B	31
TOTAL	234770	206080	225540	412540	1277900	1568700	1411400	1304900	1094200	626600	370000	269900	TOTAL
MEAN	7570	7360	7280	13800	41200	52300	45500	42100	36500	20200	12300	8710	MEAN
AC-FT	466000	409000	447000	818000	2530000	3110000	2800000	2590000	2170000	1240000	734000	535000	AC-FT
MAX	8100	7660	8740	15900	63100	60400	61300	56400	70800	24100	17500	10000	MAX
MIN	6320	6940	6940	9340	14600	35000	32100	31200	22600	15600	8500	7700	MIN

SUMMARY FOR THE YEAR 1966

MEAN DISCHARGE, 24700 CFS
TOTAL DISCHARGE, 17800000 AC-FT
MAXIMUM DAILY DISCHARGE, 70800 CFS ON SEP 2
MINIMUM DAILY DISCHARGE, 6320 CFS ON JAN 3

B=ICE CONDITIONS
E=ESTIMATED

MAXIMUM INSTANTANEOUS DISCHARGE
72900 CFS AT 0730 MST ON SEP 2



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 38
CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1967

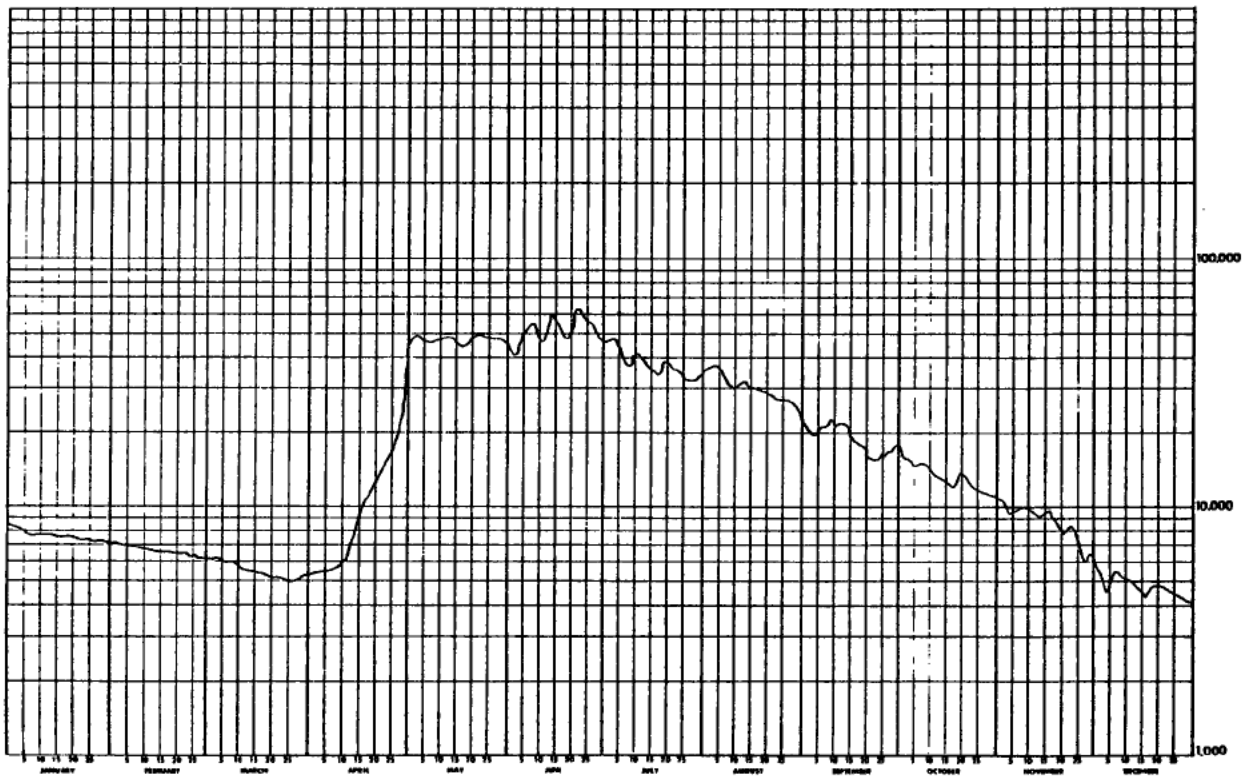
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	8400 B	7100 B	6200 B	5300	47400	43400	46400	35900	21700	16200	10900 B	5900 B	1
2	8300 B	7100 B	6100 B	5400	49100	41300	47100	36200	20400	15600	10400 B	5300 B	2
3	8200 B	7000 B	6100 B	5400	50000	40900	47800	37300	19600	15600	10200 B	4700 B	3
4	8100 B	7000 B	6000 B	5400	49900	42300	47700	37800	19600	15000	9340 B	4490 B	4
5	7900 B	7000 B	6000 B	5500	48900	44700	46300	36800	19700	14400	9380 B	4700 B	5
6	7700 B	6900 B	6000 B	5500	47000	50500	42500	35600	20600	14600	9380 B	5210 B	6
7	7700 B	6900 B	6000 B	5600	46100	51800	39100	34500	21000	14900	9620 B	5480 B	7
8	7700 B	6800 B	6000	5600	46300 E	54200	37000	32300	21100	15000	9700 B	5420 B	8
9	7700 B	6800 B	5900	5700	47300 E	52300	37200	30700	22200	14500	9820 B	5210 B	9
10	7700 B	6700 B	5700	5700	48900 E	48700	40400	29900	22000	14000	9980 B	5150 B	10
11	7700 B	6700 B	5600	6000	48900 E	46200	41600	30200	21300	13700	9300 B	5090 B	11
12	7700 B	6700 B	5600	6600	48600	46800	40300	31000	21100	13400	9180 B	4970 B	12
13	7700 B	6600 B	5500	7400	48500 E	52100	38600	31700	21500	13600	9100 B	4850 B	13
14	7700 B	6600 B	5500	8200	48100 E	50600	37600	31600	21200	12800	8980 B	4730 B	14
15	7600 B	6600 B	5400	8900	46900	59100	36400	30800	19800	12400	9220 B	4550 B	15
16	7600 B	6600 B	5400	9700	45700	54300	35400	29600	18900	12200	9380 B	4280 B	16
17	7600 B	6500 B	5400	10500	45000	50300	33900	29400	18200	12000	9500 B	4460 B	17
18	7600 B	6500 B	5300	11300	44700	48300	33900	29600	17700	12200	8940 B	4670 B	18
19	7500 B	6500 B	5300	12100	45300	47500	36500	29200	17500	12900	8660 B	4760 B	19
20	7500 B	6500 B	5200	12700	47400	48400	38500	28900	16400	13600	8100 B	4790 B	20
21	7500 B	6400 B	5200	13500	49200	54400	37600	28800	15600	13200	7780 B	4730 B	21
22	7400 B	6400 B	5200	14400	50100	63100	36400	28300	15400	12600	7900 B	4670 B	22
23	7400 B	6400 B	5100	15300	50000	63500	35900	27300	15200	12200	8260 B	4610 B	23
24	7400 B	6300 B	5000	16300	49400	59700	35500	27000	15600	11800	8020 B	4550 B	24
25	7300 B	6300 B	5000	17200	48500	56500	34100	27200	16000	11600	7260 B	4490 B	25
26	7300 B	6300 B	5000	18000	48100	55900	32700	27100	16000	11500	6410 B	4430 B	26
27	7300 B	6200 B	5000	19000	48100	54700	32500	26800	16400	11300	6110 B	4370 B	27
28	7300 B	6200 B	5100	21000	49000	52000	32500	26100	16600	11300	5990 B	4310 B	28
29	7300 B		5200	24300	48900	48900	32200	25200	17000	11200	6500 B	4250 B	29
30	7200 B		5300	31500	47600	46900	32800	24100	17500	10800	6380 B	4190 B	30
31	7200 B		5300		45700		35000	23000		10900		4160 B	31
TOTAL	236200	185600	170600	339000	1483900	1543300	1181400	940100	562800	406400	259690	147470	TOTAL
MEAN	7620	6630	5500	11300	47900	51400	38100	30300	18800	13100	8660	4760	MEAN
AC-FT	469000	368000	338000	672000	2940000	3060000	2340000	1860000	1120000	806000	515000	293000	AC-FT
MAX	8400	7100	6200	31500	50100	63500	47800	37800	22200	16200	10900	5900	MAX
MIN	7200	6200	5000	5300	44700	40900	32200	23000	15200	10800	5990	4160	MIN

SUMMARY FOR THE YEAR 1967

MEAN DISCHARGE, 20400 CFS
TOTAL DISCHARGE, 14800000 AC-FT
MAXIMUM DAILY DISCHARGE, 63500 CFS ON JUN 23
MINIMUM DAILY DISCHARGE, 4160 CFS ON DEC 31

MAXIMUM INSTANTANEOUS DISCHARGE
64500 CFS AT 1800 MST ON JUN 22

B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 39
CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1968

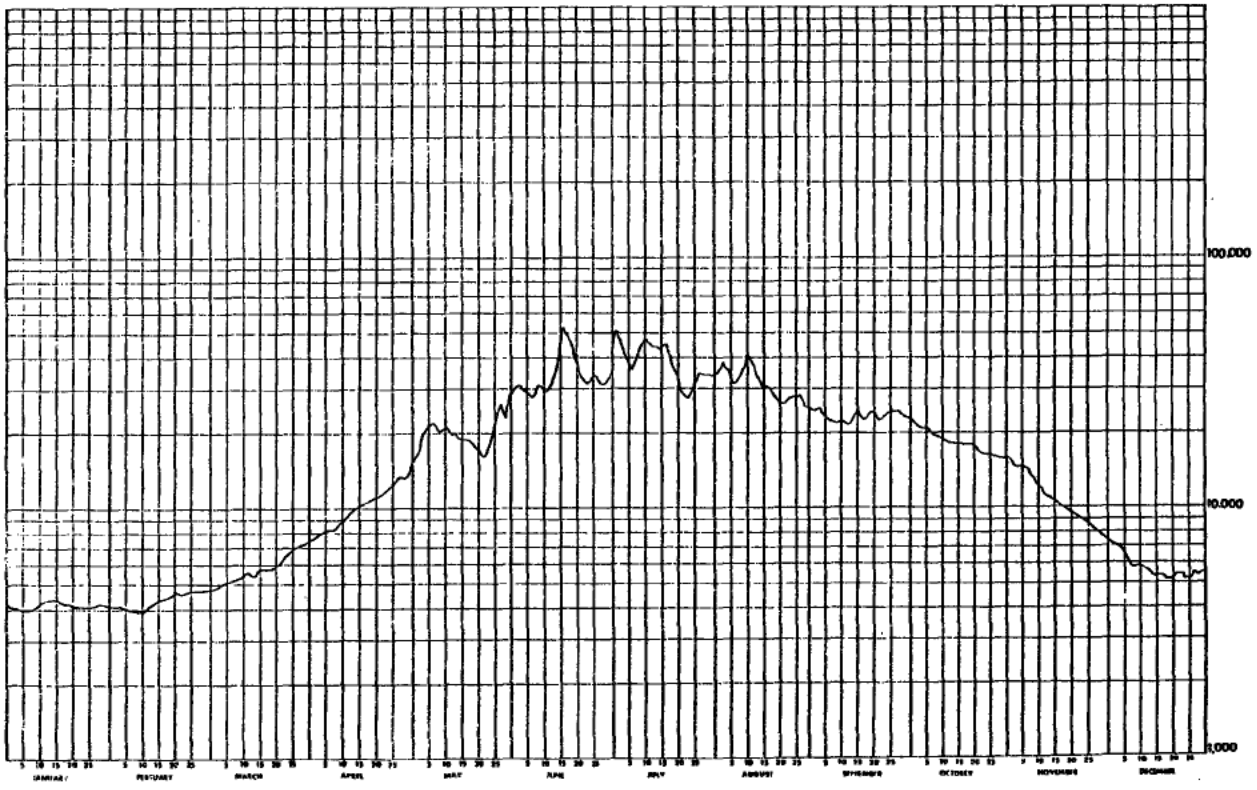
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	4070 A	4010 B	4730 B	7380 B	13900	28900	35000	33300	24400	22200	15000 B	7300 B	1
2	4010 B	4010 B	4730 A	7500 B	15200	29900	46300	33400	24900	21700	14700 B	7260 B	2
3	3950 B	4010 B	4760 B	7620 B	15800	30800	51400	34900	24400	21100	14600 B	6820 B	3
4	3890 B	4010 B	4820 B	7860 B	16900	31200	47300	37500	23200	20900	14500 B	6820 B	4
5	3830 A	3980 B	4910 B	7980 B	18700	30500	42500	36600	22400	21000	14400 B	6440 B	5
6	3860 B	3980 B	5000 B	8100 B	20200	29400	39100	33700	22300 E	20700	14000 B	6230 B	6
7	3920 B	3980 B	5090 B	8140 B	21400	27800	36400	31700	22200 E	20000	13900 B	5810 B	7
8	4010 B	3950 B	5150 B	8180 B	21900	27800	35700	32000	22100 E	19300	13300 B	5780 B	8
9	4070 B	3950 B	5180 B	8380 B	21100	30600	38900	32600	22000 E	19000	12400 B	5840 B	9
10	4220 A	3950 B	5240 B	8620 B	20400	30500	43300	34800	22000 A	18700	12000 B	5840 B	10
11	4280 B	3950 B	5240 B	8860 B	20600	28700	46300	40300	21500	18400	11600 B	5690 B	11
12	4340 B	4040 B	5360 B	9060 B	20500	28700	46900	40100	21300	18200	11200 B	5660 B	12
13	4340 B	4130 B	5450 B	9300 B	20000	30700	44900	37100	22600	18100	10900 B	5420 B	13
14	4340 B	4190 B	5420 B	9500 B	19600	35000	43400	34600	24200	17800	10800 B	5330 B	14
15	4370 B	4280 B	5330 B	9760 B	19300	41300	43800	32400	23360	17900	10500 B	5390 B	15
16	4250 A	4340 B	5420 B	10000 B	19000	50200	43800	30600	22600	17900	10400 B	5390 B	16
17	4130 B	4400 B	5630 B	10200 B	19000	52100	42900	30100	22500	17700	10000 B	5240 B	17
18	4130 B	4490 B	5630 B	10800 B	18800	48900	43000	30800	23500	17800	9940 B	5180 B	18
19	4130 B	4490 B	5600 B	10700 B	18700	44200	40100	29700	24400	17600	9620 B	5090 B	19
20	4070 B	4430 B	5690 B	10400 B	18600	39300	36000	27800	23600	17500	9460 B	5210 B	20
21	4100 H	4520 H	5780 B	11100 B	17500	35800	32800	26700	22600	17200	9380 B	5240 B	21
22	4070 H	4550 H	5900 B	11300 B	16900	33500	30600	26400	22600	16900	9060 B	5360 B	22
23	4010 B	4580 B	5990 B	11500 B	16400	31900	28700	26300	23200	16700	8980 B	5450 B	23
24	4040 B	4610 B	6200 B	11800 B	16000	31100	27400	26500	23600	16500	8580 B	5180 B	24
25	4170 B	4640 B	6410 B	12100 B	16700	32200	27300	27400	24200	16100	8500 B	5150 B	25
26	4070 B	4670 B	6620 B	12500 B	19100	33900	29400	27300	24200	16100	8180 B	5450 B	26
27	4070 B	4700 B	6820 B	12900 B	22300	34900	32900	28000	23900	16000	7980 B	5450 B	27
28	4070 B	4700 B	6980 B	13300 B	24900	31100	34100	27400	23600	15800	7780 B	5300 B	28
29	4040 B	4730 B	7100 B	13000	25700	31100	34500	26100	23200	15800	7580 B	5330 B	29
30	4040 B		7220 B	13100	22800	32600	33400	25100	22800	15500	7500 B	5570 B	30
31	4040 B		7300 B		26800		33100	24300		15500		5510 B	31
TOTAL	126936	124270	176700	301420	603400	1022600	1191200	965500	693300	561600	326740	176730	TOTAL
MEAN	4090	4290	5700	10000	19500	34100	38400	31100	23100	18100	10900	5700	MEAN
AC-FT	252000	246000	350000	598000	1200000	2030000	2360000	1920000	1380000	1110000	648000	351000	AC-FT
MAX	4370	4730	7300	13300	26800	52100	51400	40300	24900	24200	15000	7300	MAX
MIN	3830	3950	4730	7380	13900	27800	27300	24300	21300	15500	7500	5090	MIN

SUMMARY FOR THE YEAR 1968

MEAN DISCHARGE, 17100 CFS
TOTAL DISCHARGE, 12400000 AC-FT
MAXIMUM DAILY DISCHARGE, 52100 CFS ON JUN 17
MINIMUM DAILY DISCHARGE, 3830 CFS ON JAN 5

MAXIMUM INSTANTANEOUS DISCHARGE
52800 CFS AT 1900 MST ON JUN 16

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 40
CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

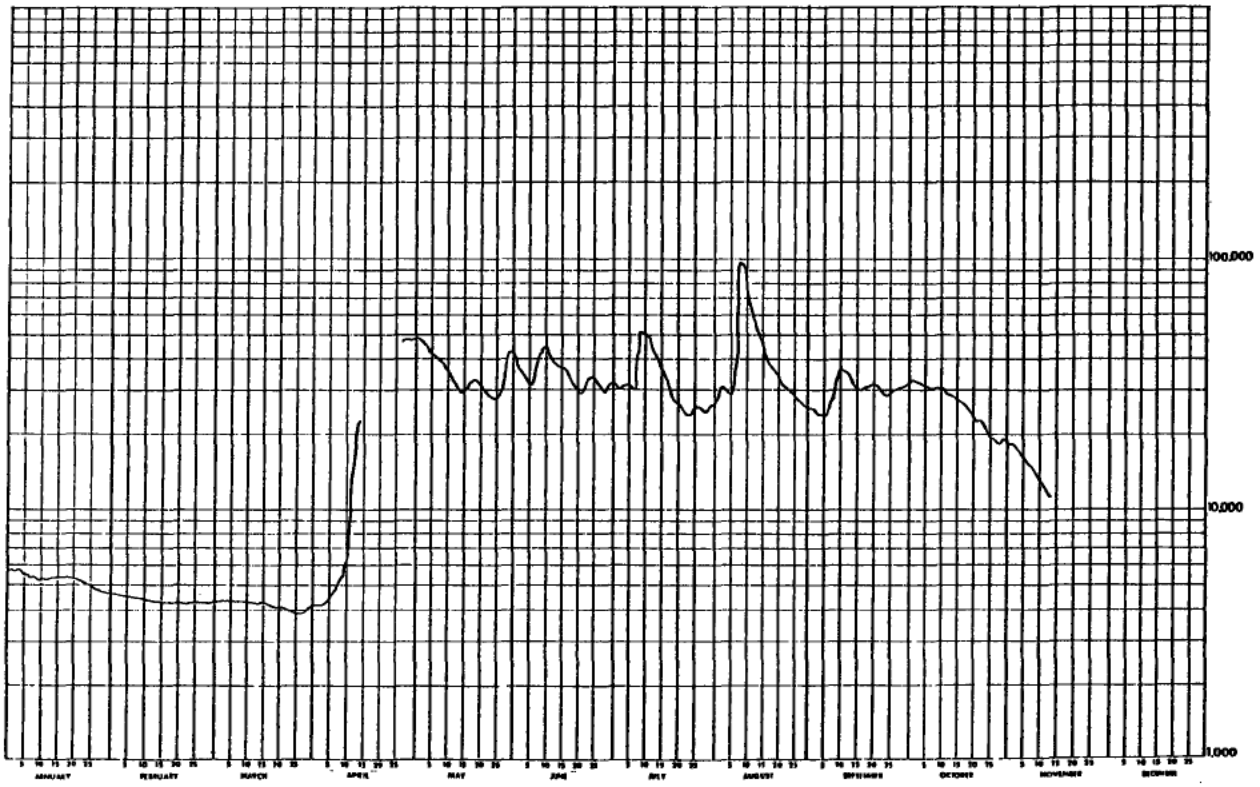
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1969

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	5430 B	4580 B	4310 B	4130 B	47600	42900	31100	26200	25900	32400	18200 B	---	1
2	5400 B	4560 B	4310 B	4130 B	48400	40900	32500	25800	25100	32900	18100 B	---	2
3	5490 B	4530 B	4300 B	4160 B	48500	38200	31300	26800	24400	32800	17600 B	---	3
4	5720 B	4510 B	4300 B	4130 B	47500	35800	30300	30300	24300	32300	16900 B	---	4
5	5480 B	4480 B	4290 B	4160 B	46200	33700	30300	31000	24000	31800	16200 B	---	5
6	5480 B	4460 B	4290 B	4250 B	44700	32400	31200	29300	23800	31300	15500 B	---	6
7	5330 A	4440 B	4290 B	4520 B	43000	31300	31360	28500	24400	30300	14900 B	---	7
8	5360 A	4400 B	4280 B	4700 B	41000	32700	30100	28200	26500	30200	14300 B	---	8
9	5330 A	4380 B	4280 B	5000 B	39000	38200	29600	35500	31200	30100	13500 B	---	9
10	5150 B	4360 B	4270 B	5360 B	39200	43400	37900	92900	36300	30300	12800 B	---	10
11	5210 B	4330 B	4270 B	5830 B	38000	44300	52300	98200	35700	30000	12200 B	---	11
12	5180 B	4310 B	4270 B	7100 B	35900	41900	49900	78600	35200	29200	11600 B	---	12
13	5130 B	4290 B	4260 B	10000 B	34300	39000	48800	69500	33200	28700	10900 B	---	13
14	5330 B	4270 B	4260 B	16900 B	32700	37400	45500	62300	32600	28500	---	---	14
15	5360 B	4240 B	4260 B	22800 B	30800	37000	41800	55500	31200	27900	---	---	15
16	5330 B	4220 B	4250 B	---	29500	37200	39300	50500	30300	27400	---	---	16
17	5330 B	4190 B	4250 B	---	28900	36800	37900	46300	30100	26900	---	---	17
18	5360 B	4170 B	4250 B	---	30200	36000	35800	42500	30500	26100	---	---	18
19	5330 B	4190 B	4190 B	---	32200	34900	32600	39300	31300	25200	---	---	19
20	5270 B	4190 B	4160 B	---	32800	31300	29700	36700	32200	24300	---	---	20
21	5210 B	4190 B	4130 B	---	32800	29700	27500	35500	31400	23600	---	---	21
22	5150 B	4190 B	4070 B	---	31600	29100	26900	34700	30100	22400	---	6030 B	22
23	5060 B	4190 B	4040 B	---	30000	29300	25600	33100	28700	22500	---	---	23
24	4880 B	4220 B	3980 B	---	28700	30700	24600	31000	28500	22300	---	---	24
25	4820 B	4250 B	3950 B	---	28100	32900	24200	29900	28300	21400 B	---	---	25
26	4760 B	4280 B	3890 B	---	27900	33100	24000	29200	28800	19400 B	5270 B	---	26
27	4730 A	4280 B	3890 B	---	27300	32600	24900	28300	29300	18800 B	---	---	27
28	4700 A	4280 B	3830 B	46200	28300	31200	25700	28000	30100	18800 B	---	---	28
29	4670 A		3830 B	47200	30700	29800	25500	27100	30900	18400 B	---	---	29
30	4670 B		3890 B	47400	35600	29500	24500	26000	31500	18700 B	---	---	30
31	4610 B		4040 B		41300		24800	25800		18900 B		---	31
TOTAL	161060	120980	128880	---	1113900	1052200	1007400	1262500	885800	813800	---	---	TOTAL
MEAN	5200	4320	4160	---	35900	35100	32500	40700	29500	26300	---	---	MEAN
AC-FT	319000	240000	256000	---	2210000	2090000	2000000	2500000	1760000	1610000	---	---	AC-FT
MAX	5720	4580	4310	---	48500	44300	52300	98200	36300	32900	---	---	MAX
MIN	4610	4170	3830	---	27300	29100	24000	25800	23800	18400	---	---	MIN

SUMMARY FOR THE YEAR 1969

B=ICE CONDITIONS

MAXIMUM DAILY DISCHARGE, 98200 CFS ON AUG 11
MINIMUM DAILY DISCHARGE, 3830 CFS ON MAR 28



WATER SURVEY OF CANADA
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CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1970

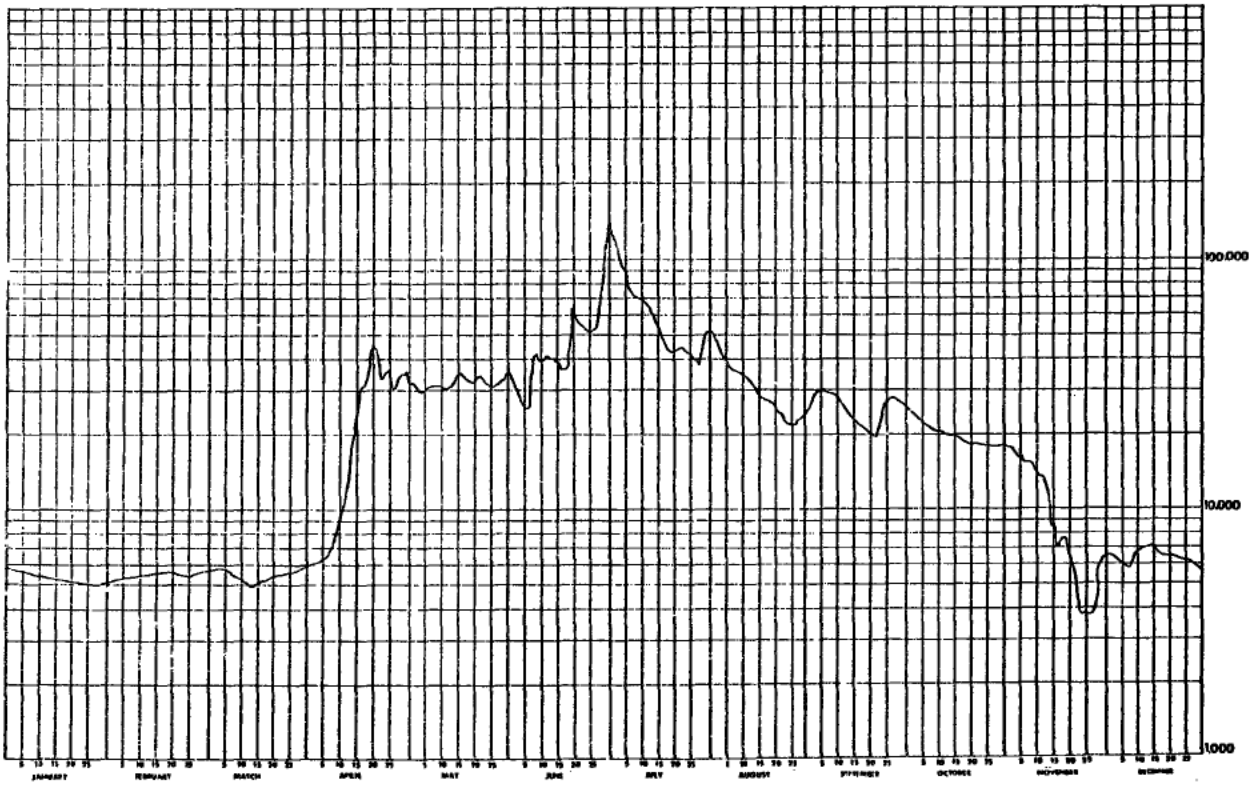
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	5700 B	5040 B	5480 B	5810 B	34100 B	34600	94400	48800	23800	25700	17500	6440 B	1
2	5670 B	5070 B	5510 B	5930 B	34100 B	35600	129000	51100	25700	25000	17500	6540 B	2
3	5640 B	5100 B	5570 B	5900 B	32200	33400	136000	50900	27100	24400	17200	6440 B	3
4	5600 B	5120 B	5630 B	6110 B	32200	30500	123000	48900	29200	23800	16200 B	6260 B	4
5	5570 B	5150 B	5660 B	6140 B	30600	28100	111000	45700	29900	23300	15900 B	6140 B	5
6	5540 B	5180 B	5660 B	6140 B	29900	26100	100000	42100	29600	22600	15600 B	6050 B	6
7	5500 B	5210 B	5630 B	6170 B	29700	25200	89900	39300	29200	22000	15200 B	5840 B	7
8	5470 B	5230 B	5570 B	6290 B	30600	28100	82000	37800	28900	21400	15300 B	5720 B	8
9	5440 B	5260 B	5450 B	6860 B	31300	37600	75900	36400	28700	20700	14800 B	5780 B	9
10	5410 B	5290 B	5420 B	7540 B	31300	41200	72000	35900	28200	20300	14000 B	6260 B	10
11	5370 B	5310 B	5330 B	8420 B	31500	39800	71100	35800	27200	20300	13400 B	6500 B	11
12	5340 B	5340 B	5240 B	9340 B	31100	38500	69800	34700	26000	20000	13200 B	6620 B	12
13	5310 B	5370 B	5120 B	10400 B	30300	38900	68000	34000	24700	19900	12000 B	6820 B	13
14	5270 B	5400 B	5000 B	12900 B	30100	40100	66300	33300	23600	19400	10300 B	6940 B	14
15	5240 B	5420 B	4850 B	17700 B	30900	39700	63100	32200	22600	19700	8540 B	6940 B	15
16	5210 B	5450 B	4910 B	21000 B	31900	39700	59400	30300	22100	19300	8620 B	6900 B	16
17	5180 B	5480 B	5000 B	24200 B	34600	38100	55500	28500	21600	19100	7060 B	6660 B	17
18	5140 B	5480 B	5060 B	30300 B	35000	35500	51500	27900	21100	18800	7500 B	6470 B	18
19	5110 B	5480 B	5150 B	31600 B	34800	35200	47800	27700	20800	18600	7580 B	6470 B	19
20	5080 B	5450 B	5240 B	35700 B	33300	43600	44700	27800	20300	18200	6980 B	6410 B	20
21	5040 B	5450 B	5240 B	43900 B	32200	63000	43300	27000	19900	18100	6050 B	6410 B	21
22	5010 B	5480 B	5210 B	45400 B	31400	58200	43300	25400	19400	18000	5390 B	6380 B	22
23	4980 B	5330 B	5340 B	40200 B	33000	55500	43800	24600	19900	17900	4250 B	6380 B	23
24	4950 B	5360 B	5450 B	33400 B	34100	54400	43800	24200	22700	17800	3720 B	6350 B	24
25	4910 B	5360 B	5420 B	34100 B	32900	53600	43300	22900	25900	17700	3760 B	6260 B	25
26	4880 B	5420 B	5480 B	35700 B	31800	51800	43100	22800	27300	17800	3680 B	6140 B	26
27	4910 B	5450 B	5420 B	31500 B	31400	51500	42100	21700	27700	17900	3700 B	6080 B	27
28	4930 B	5450 B	5480 B	30300 B	31100	51700	40300	21700	27800	17600	4070 B	6020 B	28
29	4960 B		5630 B	32100 B	31700	56700	38900	21900	27300	17500	5780 B	5840 B	29
30	4990 B		5750 B	34100 B	32400	74600	37300	22500	26600	17500	6170 B	5750 B	30
31	5020 B		5750 B		32600		41300	23200		17400		5570 B	31
TOTAL	162370	149130	166700	625150	994900	1280500	2070900	1006200	754800	618200	300950	195380	TOTAL
MEAN	5240	5330	5380	20800	32100	42700	66800	32500	25200	19900	10000	6300	MEAN
AC-FT	322000	296000	331000	1240000	1970000	2540000	4110000	2000000	1500000	1230000	597000	388000	AC-FT
MAX	5700	5480	5750	45400	35000	74600	136000	51100	29900	25700	17500	6940	MAX
MIN	4880	5040	4850	5810	29700	25200	37300	21700	19400	17400	3680	5570	MIN

SUMMARY FOR THE YEAR 1970

MEAN DISCHARGE, 22800 CFS
TOTAL DISCHARGE, 16500000 AC-FT
MAXIMUM DAILY DISCHARGE, 136000 CFS ON JUL 3
MINIMUM DAILY DISCHARGE, 3680 CFS ON NOV 26

B-ICE CONDITIONS

MAXIMUM INSTANTANEOUS DISCHARGE
138000 CFS AT 0200 MST ON JUL 3



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MAR 17 1977 PAGE 42
CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1971

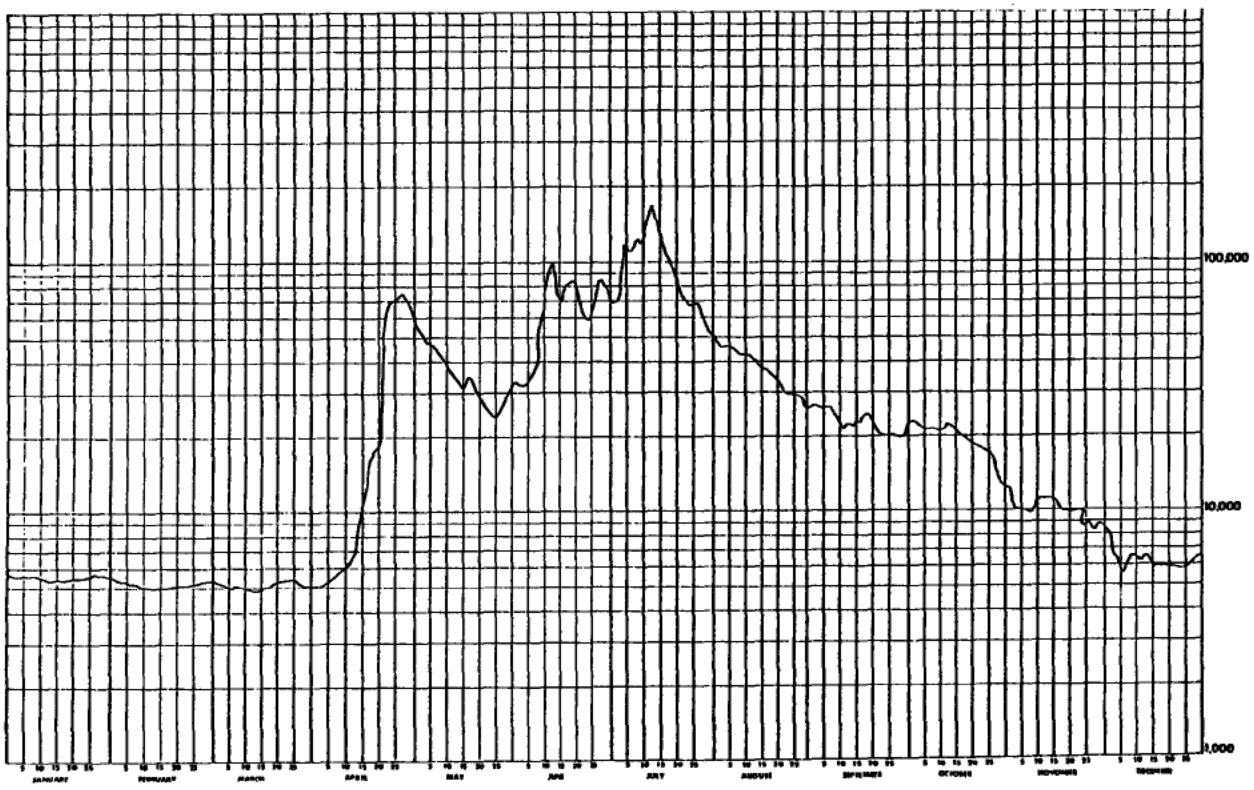
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	5560 B	5400 B	5220 B	5020 B	67100	30800	81600	53000	26500	21200	12300 B	8630 B	1
2	5560 A	5380 B	5280 B	5040 B	62000	32700	72300	51300	26800	24600	12300 B	8350 B	2
3	5500 B	5340 B	5240 B	5020 B	57000	32800	67500	49700	26000	23100	10300 B	8170 B	3
4	5460 B	5280 B	5220 B	4960 B	54400	31800	67900	47200	25900	22700	10100 B	6930 B	4
5	5480 A	5200 B	5120 B	5020 B	51600	31800	72400	45900	25700	24000	10100 B	6410 B	5
6	5480 B	5180 B	5040 B	5100 B	48700	32200	93200	46200	26100	21500	10100 B	6040 B	6
7	5500 B	5120 B	5000 B	5300 B	46800	34800	118000	46000	26300	21400	10000 B	5560 B	7
8	5520 A	5100 B	4980 B	5540 B	46200	34600	114000	45900	25400	21400	9880 B	5720 B	8
9	5500 B	5040 B	5020 B	5630 B	44200	38300	110000	44300	23800	21400	9760 B	6210 B	9
10	5460 B	5000 B	5000 B	5800 B	43300	50600	119000	43000	22600	21100	10400 B	6560 B	10
11	5420 B	5000 B	4980 B	5890 B	41800	62400	124000	42400	21800	21000	11000 B	6500 B	11
12	5340 B	5000 B	5020 B	6150 B	40000	68800	119000	42200	21500	21100	10900 B	6270 B	12
13	5340 B	5000 B	4960 B	6240 B	38500	90500	122000	42400	22600	21600	11000 B	6180 B	13
14	5320 B	4980 B	4880 B	6760 B	36900	97700	150000	41700	22300	22300	11200 B	6470 B	14
15	5340 B	4980 B	4860 B	8280 B	35400	84500	166000	40200	22000	21900	11000 B	6300 B	15
16	5340 B	5020 B	4860 B	9810 B	33400	73000	158000	38600	23100	21100	10800 B	5860 B	16
17	5340 B	5040 B	4900 B	11300 B	31800	68600	135000	38100	22600	20400	10600 B	5720 B	17
18	5380 A	5020 B	4920 B	12800 B	31400	77800	118000	37700	24400	19900	9930 B	5830 B	18
19	5380 B	5000 B	4920 B	15600 B	34500	81100	106000	37200	24000	19500	9880 B	5800 B	19
20	5440 A	5000 B	5000 B	17400 B	34600	82700	98900	35900	22900	19200	9860 B	5890 B	20
21	5440 B	5020 B	5100 B	18100 B	32000	84500	91800	34900	21800	18900	9870 B	5800 B	21
22	5420 B	5040 B	5140 B	28300 B	29800	76700	88500	33900	20900	18600	9990 B	5800 B	22
23	5380 B	5040 B	5200 B	47300 B	27800	67600	76900	32500	20300	18200	10000 B	5890 B	23
24	5420 B	5080 B	5280 B	56600 B	26300	61900	72300	31200	19900	17800	9950 B	5830 B	24
25	5440 B	5140 B	5300 B	68300 B	25100	58900	69300	30100	20100	17600	8510 B	5800 B	25
26	5500 B	5200 B	5340 B	70500 B	24300	58100	67500	29200	20100	17200 B	8730 B	5890 B	26
27	5560 A	5220 B	5340 A	70400	24000	63300	66100	29100	20300	16400 B	8660 B	5980 B	27
28	5540 B	5200 B	5220 B	73000	24400	74500	67100	29100	20000	15400 B	8220 B	6080 B	28
29	5500 B		5200 B	74300	25300	84100	67000	29000	19800	14000 B	8790 B	6170 B	29
30	5440 B		5080 B	72100	27000	84600	61600	27400	19900	12800 B	8730 B	6260 B	30
31	5440 B		5060 B		29100		56000	26000		12400 B		6350 B	31
TOTAL	168780	143020	157680	731560	1174900	1849700	2996900	1201300	685400	605700	302860	195250	TOTAL
MEAN	5440	5110	5090	24400	37900	61700	96700	38800	22800	19500	10100	6300	MEAN
AC-FT	335000	284000	313000	1450000	2330000	3670000	5940000	2380000	1360000	1200000	601000	387000	AC-FT
MAX	5560	5400	5340	74300	67100	97700	166000	53000	26800	24100	12300	8630	MAX
MIN	5320	4980	4860	4960	24000	30800	56000	26000	19800	12400	8220	5560	MIN

SUMMARY FOR THE YEAR 1971

MEAN DISCHARGE, 28000 CFS
TOTAL DISCHARGE, 20300000 AC-FT
MAXIMUM DAILY DISCHARGE, 166000 CFS ON JUL 15
MINIMUM DAILY DISCHARGE, 4860 CFS ON MAR 15

MAXIMUM INSTANTANEOUS DISCHARGE
169000 CFS AT 1700 MST ON JUL 15

B-ICE CONDITIONS



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MAR 17 1977 PAGE 43
CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1972

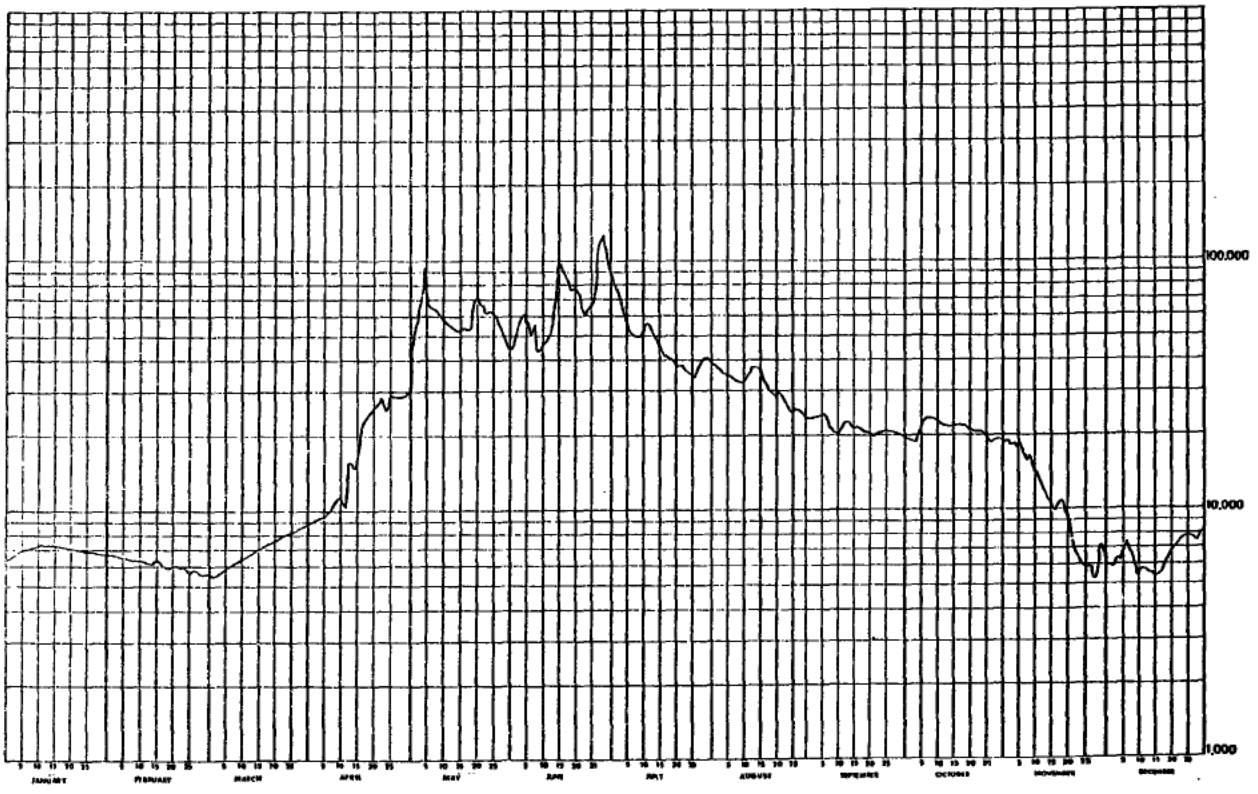
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	6440 B	6560 B	5540 B	8760 B	57000 B	45400	108000	40300	23500	19500	18400	7020 B	1
2	6540 A	6530 B	5500 B	8870 B	65000 B	44400	91900	39900	23300	19300	19000	5890 B	2
3	6630 A	6500 B	5460 B	8990 B	67000 B	47200	84600	39000	23300	19100	18100	5980 B	3
4	6720 A	6470 B	5400 B	9110 B	68000 B	52200	80700	38100	23300	18900	18400	5830 B	4
5	6810 B	6430 B	5540 B	9230 B	67500 B	57900	72900	36900	24000	18700 A	17800	6380 B	5
6	6900 B	6400 B	5660 B	9350 B	67000 B	60800	64400	36200	24300	20200 E	18700 B	6150 B	6
7	6990 B	6370 B	5780 B	9470 B	66500 B	55900	57600	35500	22800	21700 E	16900 B	6790 B	7
8	7090 B	6340 B	5900 B	10100 B	64900 A	49500	52600	34400	21400	23200	15500 B	7330 B	8
9	7180 B	6300 B	6020 B	10600 B	64900	45400	50000	33900	20600	23200	16300 B	6760 B	9
10	7270 A	6270 B	6140 B	10900 B	63200	43600	49300	33400	20100	23200	15400 B	6090 B	10
11	7240 B	6240 B	6250 B	11500 B	61000	43200	49200	32600	20000	22800	14000 B	5440 B	11
12	7210 B	6240 B	6370 B	10900 B	58600	45500	49700	32300	21700	22300	13000 B	5660 B	12
13	7170 B	6040 B	6490 B	10200 B	56600	48300	54100	33400	22700	21700	12000 B	5750 B	13
14	7140 B	6060 B	6610 B	15500 B	55400	51000	56000	35400	22400	21700	11400 B	5540 B	14
15	7110 B	6300 B	6730 B	15100 B	54700	64600	53900	37100	21500	21700	10900 B	5500 B	15
16	7080 B	5980 B	6850 B	14600 B	53400	88100	49500	37700	21200	21700	10100 B	5440 B	16
17	7040 A	5830 B	6970 B	16900 B	52700	96200	45400	36300	21100	21700	9930 B	5340 B	17
18	7010 B	5890 B	7090 B	21400 B	53000	86900	42900	34200	20800	21700	10200 B	5560 B	18
19	6980 A	5920 B	7210 B	23000 B	53100	79300	41900	32200	20300	21700	10800 B	5690 B	19
20	6950 B	5890 B	7330 B	23400 B	53400	75800	41700	30500	20200	21700	9600 B	6040 B	20
21	6920 A	5860 B	7450 B	25100 B	54600	77000	40200	29100	19700	20900	9010 B	6560 B	21
22	6890 B	5880 B	7560 B	26600 B	68200	75100	38800	28700	19700	20400	7540 B	6960 B	22
23	6850 B	5840 B	7680 B	27500 B	71000	69100	37700	29500	20000 E	20700	6640 B	7260 B	23
24	6820 B	5720 B	7800 B	28400 B	65400	63600	38200	28600	20300 A	20400	6560 B	7440 B	24
25	6790 A	5580 B	7920 B	25100 B	61900	60400	37600	27200	20200	20500	6120 B	7650 B	25
26	6760 B	5750 B	8040 B	26100 B	62000	63500	35700	25800	20200	20100	5770 B	7790 B	26
27	6720 B	5630 B	8160 B	29600 B	63300	67100	34600	24900	20200	19800	5950 B	7790 B	27
28	6690 B	5520 B	8280 B	30500 B	61000	73600	34000	24700	20200	18600	5200 B	7750 B	28
29	6660 B	5460 B	8400 B	35000 B	56800	116000	34800	25100	20000	19100	5360 B	7680 B	29
30	6630 B		8520 B	46500 B	52400	128000	39000	24300	19700	19500	7090 B	7720 B	30
31	6590 B		8640 B		47900		40800	23600		19000		8030 B	31
TOTAL	213820	175800	213290	558680	1867400	1974600	1607700	1000800	638700	643700	351670	202810	TOTAL
MEAN	6900	6060	6880	18600	60240	65800	51900	32300	21300	20800	11700	6540	MEAN
AC-FT	424000	349000	423000	1110000	3700000	3920000	3190000	1990000	1270000	1280000	698000	402000	AC-FT
MAX	7270	6560	8640	46500	71000	128000	108000	40300	24300	23200	19000	8030	MAX
MIN	6440	5460	5400	8760	47900	43200	34000	23600	19700	18600	5200	5340	MIN

SUMMARY FOR THE YEAR 1972

MEAN DISCHARGE: 25800 CFS
TOTAL DISCHARGE: 18800000 AC-FT
MAXIMUM DAILY DISCHARGE: 128000 CFS ON JUN 30
MINIMUM DAILY DISCHARGE: 5200 CFS ON NOV 28

MAXIMUM INSTANTANEOUS DISCHARGE
130000 CFS AT 0800 MST ON JUN 30

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA — ATHABASCA RIVER BELOW MCMURRAY — STATION NO. 07DA001
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CALGARY, ALTA.

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1973

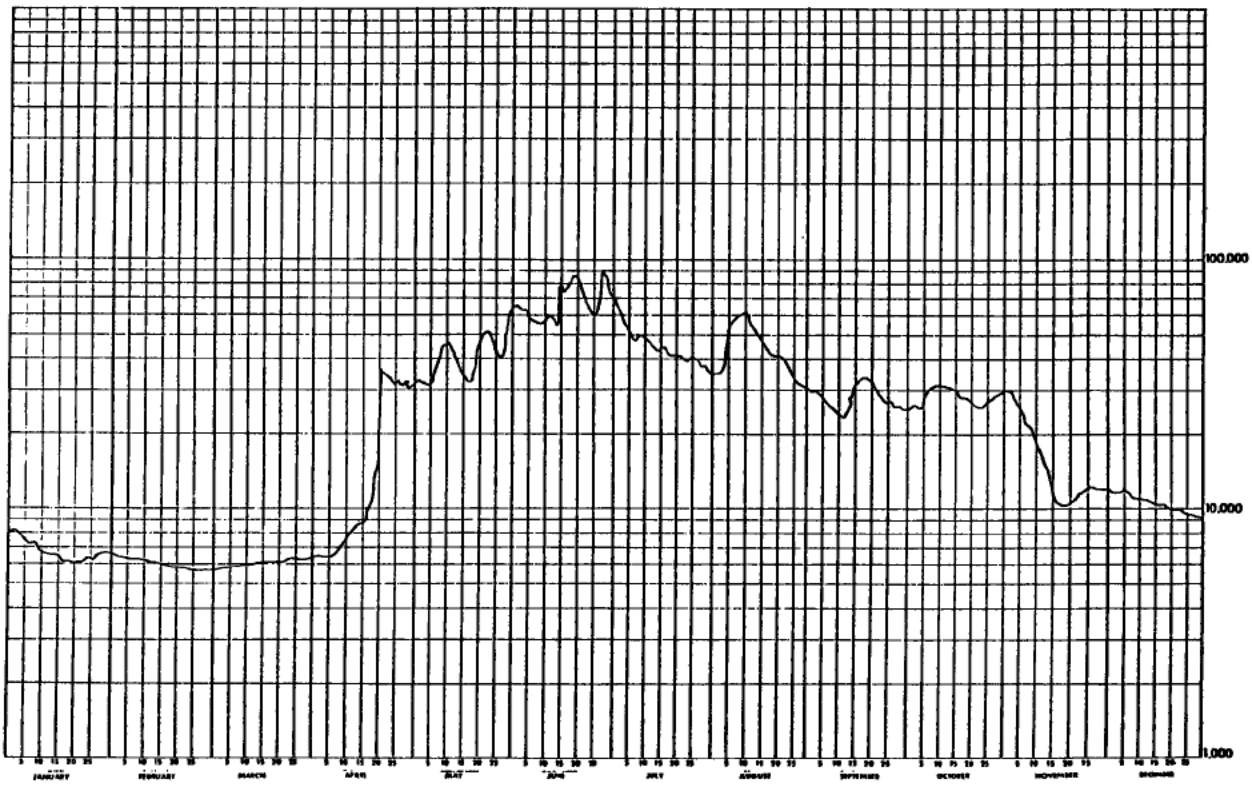
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	8210 B	6550 B	5690 B	6390 B	31000	62700	76500	35300	29900	25000	29300	11700 B	1
2	8280 B	6510 B	5710 B	6410 B	31400	65700	69400	34400	29500	29200	29300	11600 B	2
3	8070 B	6470 B	5730 B	6410 B	32500	64100	65700	35200	29100	29600	28100	11600 B	3
4	7860 B	6430 B	5760 B	6410 B	32700	62400	62500	35300	28300	29100	25900	11500 B	4
5	7510 B	6400 B	5780 B	6500 B	32000	62900	58800	35500	27200	29100	24400 B	11400 B	5
6	7370 B	6360 B	5800 B	6500 B	31600	61400	55000	40500	26500	27400	23100 B	11300 B	6
7	7260 B	6320 B	5820 B	6500 B	31000	57500	51400	52200	25800	29500	21700 B	11200 B	7
8	7130 B	6290 B	5850 B	6590 B	33100	56800	48700	56600	25000	30600	20400 B	11100 B	8
9	7020 B	6250 B	5870 B	6820 B	37600	55900	47100	57400	24100	31200	19000 B	11000 B	9
10	6730 B	6210 B	5890 B	7090 B	40700	55500	48100	59100	23300	31300	17700 B	10900 B	10
11	6640 B	6180 B	5910 B	7370 B	42500	56100	49600	61400	23000	31000	16400 B	10800 B	11
12	6640 B	6140 B	5940 B	7720 B	42800	59400	48500	61200	23700	31000	15000 B	10700 B	12
13	6420 B	6100 B	5960 B	8210 B	43000	59900	46900	57700	25200	30600	13700 B	10600 B	13
14	6560 B	6060 B	5980 B	8590 B	41500	56100	45500	53300	28600	30200	12300 B	10500 B	14
15	6530 B	6030 B	6000 B	8660 B	38900	54100	43200	50600	31700	29500	11000 B	10400 B	15
16	6330 B	5990 B	6030 B	8800 B	36700	66000	42700	49200	32500	28700	10200 B	10300 B	16
17	6150 B	5950 B	6050 B	8880 B	34900	74000	44100	46900	33100	28200	10100 B	10200 B	17
18	6120 B	5920 B	6070 B	10100 B	33400	77800	44300	44400	33100	27800	10100 B	10100 B	18
19	6090 B	5890 B	6090 B	11000 B	32800	82300	41900	42000	32900	27400	10200 B	10000 B	19
20	6060 B	5840 B	6120 B	13500 B	33400	86000	40300	40700	31800	26700	10400 B	9950 B	20
21	6090 B	5810 B	6140 B	16000 B	37200	82500	40700	40300	30100	26300	10700 B	9900 B	21
22	6150 B	5770 B	6160 B	35500 B	44000	75400	41600	40300	28600	25800	11000 B	9800 B	22
23	6210 B	5730 B	6180 B	34600 B	49000	69800	41000	40200	27400	25400	11400 B	9700 B	23
24	6300 B	5690 B	6210 B	33800 B	51200	65600	39700	38900	26900	25500	11700 B	9600 B	24
25	6270 B	5660 B	6230 H	32900 B	51400	61700	38400	36600	26400	26000	11800 B	9500 B	25
26	6300 B	5620 B	6250 B	31600 B	48200	59800	38400	34400	26500	26700	11900 B	9400 B	26
27	6440 B	5640 B	6270 B	32500 B	43900	60000	39600	32700	25600	27400	11900 B	9300 B	27
28	6620 B	5670 B	6300 H	31600 B	41300	71700	40500	31900	25300	28400	11800 B	9200 B	28
29	6590 B		6320 B	31600 B	40400	88600	40200	31700	25100	28600	11800 B	9150 B	29
30	6420 B		6340 B	32200	46900	85300	39000	30900	25000	28900	11800 B	9100 B	30
31	6580 B		6360 B		55000		37100	30300		29200		9000 B	31
TOTAL	209550	169470	186810	470750	1222400	1997000	1466400	1337100	831200	865300	474100	320500	TOTAL
MEAN	6760	6050	6030	15700	39400	66600	47300	43100	27700	27900	15800	10300	MEAN
AC-FT	416000	336000	371000	934000	2420000	3960000	2910000	2650000	1650000	1720000	940000	636000	AC-FT
MAX	8280	6550	6360	35500	55000	88600	76500	61400	33100	31300	29300	11700	MAX
MIN	6060	5620	5690	6390	31000	54100	37100	30300	23000	25000	10100	9000	MIN

SUMMARY FOR THE YEAR 1973

MEAN DISCHARGE, 26200 CFS
TOTAL DISCHARGE, 18900000 AC-FT
MAXIMUM DAILY DISCHARGE, 88600 CFS ON JUN 29
MINIMUM DAILY DISCHARGE, 5620 CFS ON FEB 26

MAXIMUM INSTANTANEOUS DISCHARGE
90200 CFS AT 1700 MST ON JUN 29

B-ICE CONDITIONS



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 1
CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1974

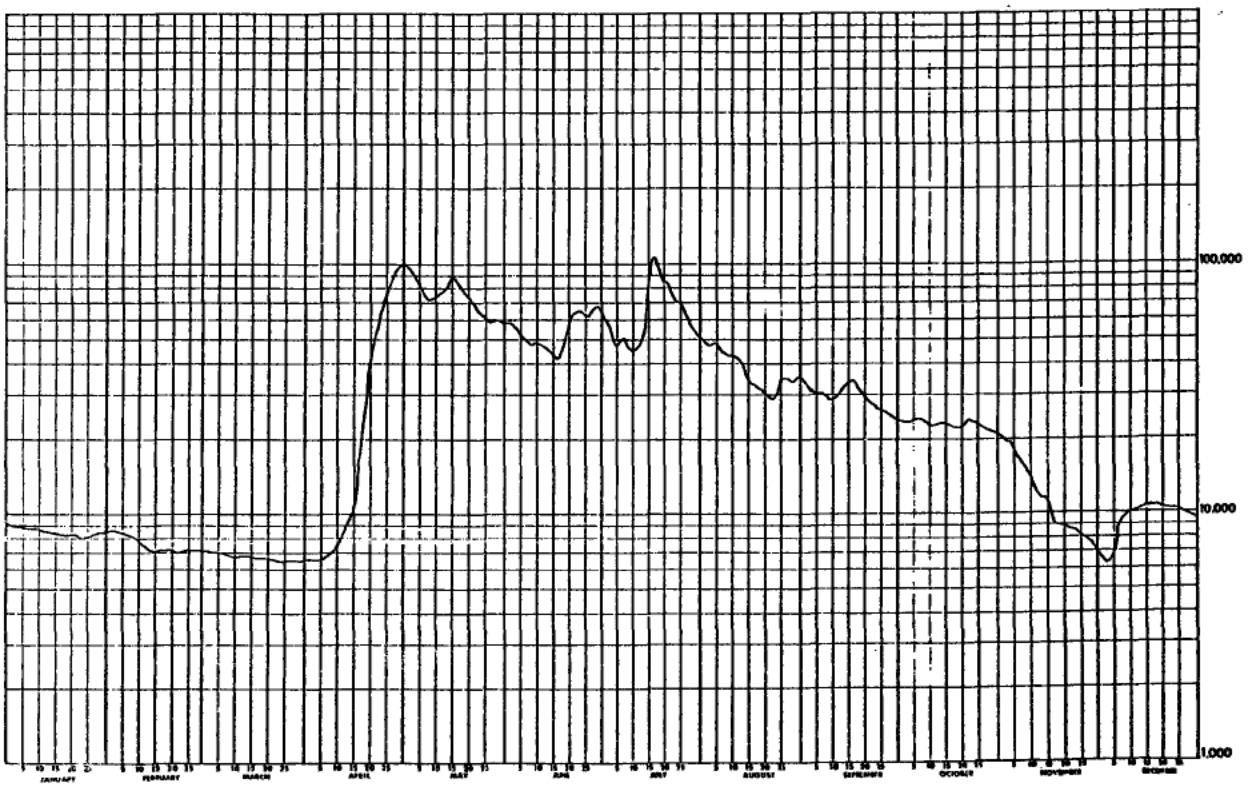
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	8960 B	8550 B	7120 B	6560 B	96800	57200	59600	48400	33800	23300	20200	6600 B	1
2	8910 B	8510 B	7090 B	6550 B	95600	56700	56600	47000	32400	23100	19900	6300 B	2
3	8870 B	8460 B	7050 B	6550 B	91400	55500	53300	46100	31100	23200	19300	6100 B	3
4	8830 B	8370 B	7000 B	6550 B	85800	53500	49100	46800	30400	23500	19100	6300 B	4
5	8780 B	8290 B	6930 B	6560 B	81000	51700	45900	47700	29700	22900	18400	6800 B	5
6	8740 B	8220 B	6840 B	6600 B	77700	49700	48300	46700	29600	24000	17100	7800 B	6
7	8700 B	8060 B	6770 B	6690 B	73600	48400	49700	44600	29800	23900	16500	9300 B	7
8	8650 B	7920 B	6750 B	6840 B	70600	47200	47300	42800	29400	23500	15500	9600 B	8
9	8610 B	7790 B	6780 B	7060 B	70700	47400	45500	42100	28700	23000	14500	9770 B	9
10	8570 B	7630 B	6770 B	7460 B	72400	47500	44900	42300	28200	22400	13400	10000 B	10
11	8520 B	7470 B	6750 B	7860 B	74100	46900	45500	42900	28500	22600	12900	10100 B	11
12	8480 R	7290 B	6760 B	8330 B	75300	46400	46700	41600	29500	22900	11900	10200 B	12
13	8430 B	7160 B	6760 B	9010 B	76300	45700	51200	38600	31800	23100	11400	10400 B	13
14	8390 B	7100 B	6750 B	9830 B	82900	44900	61800	35600	32600	23000	11500	10500 B	14
15	8350 B	7120 B	6680 B	10700 B	87800	44000	76200	33500	32500	22900	11000	10600 B	15
16	8300 B	7150 B	6630 B	13800 B	86700	42300	99300	32300	33800	22700	10000 B	10700 B	16
17	8260 B	7210 B	6620 B	18000 B	81900	41300	105000	32000	33800	22600	9000 B	10700 B	17
18	8220 B	7230 B	6640 B	23900 B	78300	45000	95600	31700	32000	22200	8800 B	10600 B	18
19	8170 B	7180 B	6620 B	33700 B	75500	50400	88100	31200	30400	21900	8750 B	10600 B	19
20	8130 B	7110 B	6550 B	40000 E	72400	52900	83800	30200	28800	22000	8700 B	10500 B	20
21	8110 B	7040 B	6500 B	47000 E	70600	59100	83400	29300	27900	23100	8600 B	10400 B	21
22	8020 B	7050 B	6460 B	53000 E	67900	64100	78900	28700	27200	23500	8500 B	10300 B	22
23	7960 B	7130 B	6450 B	60000 E	65000	64000	72400	28500	26800	23400	8400 B	10300 B	23
24	8050 B	7150 B	6470 B	66000 E	62500	62400	69700	30000	26200	23100	8300 B	10200 B	24
25	8120 B	7150 B	6490 B	73000 E	60300	61100	69300	32800	25900	22600	8100 B	10100 B	25
26	8220 B	7110 B	6490 B	79000 E	58700	61700	65100	34700	25500	22000	7900 B	10000 B	26
27	8250 B	7110 B	6470 B	86000 E	57300	63700	59400	34300	24800	21700	7800 B	9900 B	27
28	8240 B	7120 B	6500 B	91200	58100	66100	55400	33200	24400	21300	7600 B	9800 B	28
29	8320 B		6490 B	97000	58700	66300	53400	32900	24200	20900	7400 B	9600 B	29
30	8450 B		6530 B	97600	58200	63100	50700	34200	23800	20600	7000 B	9500 B	30
31	8470 B		6560 B		57100		49500	34600		20500		9400 B	31
TOTAL	261120	210680	207270	992350	2281000	1606200	1960600	1157300	873500	701400	357450	292970	TOTAL
MEAN	8420	7520	6690	33100	73600	53500	63200	37300	29100	22600	11900	9450	MEAN
AC-FT	518000	418000	411000	1970000	4520000	3190000	3890000	2300000	1730000	1390000	709000	581000	AC-FT
MAX	8960	8550	7120	97600	96800	66300	105000	48400	33800	24000	20200	10700	MAX
MIN	7960	7040	6450	6550	57100	41300	44900	28500	23800	20500	7000	6100	MIN

SUMMARY FOR THE YEAR 1974

MEAN DISCHARGE, 29900 CFS
TOTAL DISCHARGE, 21600000 AC-FT
MAXIMUM DAILY DISCHARGE, 105000 CFS ON JUL 17
MINIMUM DAILY DISCHARGE, 6100 CFS ON DEC 3

MAXIMUM INSTANTANEOUS DISCHARGE
107000 CFS AT 0330 MST ON JUL 17

B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
JUL 25 1977 PAGE 11
CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

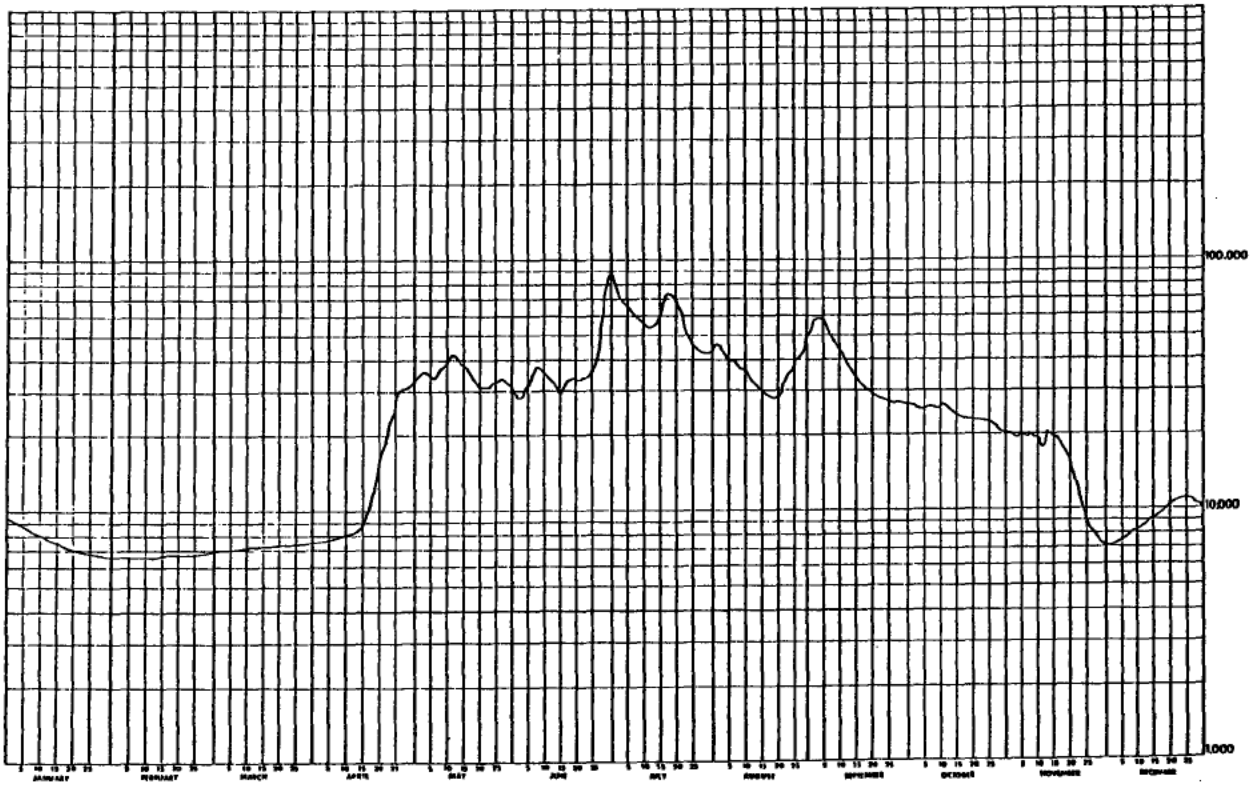
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	9200 B	6600 B	6800 B	7600 B	32000 B	31000	77800	42100	48200	26400	20200	7100 B	1
2	9000 B	6600 B	6800 B	7600 B	33000 B	29600	86800	42200	50900	26200	20000	7000 B	2
3	8900 B	6600 B	6900 B	7700 B	34000 B	28300	82500	45200	55000	26000	19200	7000 B	3
4	8700 B	6600 B	6900 B	7700 B	35000 B	28000	76300	46100	58700	25500	19100	7100 B	4
5	8600 B	6600 B	7000 B	7800 B	36400	28800	70800	44300	58100	25000	19100	7200 B	5
6	8400 B	6600 B	7000 B	7800 B	35500	30600	67300	42100	55300	25000	19800	7300 B	6
7	8300 B	6600 B	7000 B	7900 B	35200	32000	64700	40000	51900	25400	19100	7400 B	7
8	8200 B	6600 B	7000 B	7900 B	33800	34700	62300	38800	49000	25400	19700	7600 B	8
9	8100 B	6600 B	7000 B	8000 B	34700	37600	60600	39100	46400	25300	19100	7800 B	9
10	7900 B	6600 B	7000 B	8000 B	35700	37000	59400	37700	44000	25000	19000	8000 B	10
11	7800 B	6600 B	7100 B	8100 B	36900	35500	58000	36100	41800	25200	18300	8100 B	11
12	7700 B	6600 B	7100 B	8200 B	38300	34500	56400	35900	39600	26100	17400	8200 B	12
13	7600 B	6600 B	7200 B	8200 B	40900	33400	54200	35300	37800	25700	18800	8400 B	13
14	7500 B	6600 B	7200 B	8300 B	41900	32300	52900	33600	36100	25000	19900	8600 B	14
15	7400 B	6600 B	7230 B	8400 B	40400	30700	53700	32300	34500	24500	19400	8800 B	15
16	7300 B	6600 B	7200 B	8500 B	39200	29500	54300	31000	33400	24000	19300	8900 B	16
17	7200 B	6600 B	7300 B	9000 B	38200	29600	59000	29800	32400	23500	18900	9100 B	17
18	7200 B	6600 B	7300 B	10000 B	37200	31600	65500	29300	31200	23200	18400 B	9350 B	18
19	7100 B	6600 B	7300 B	11000 B	36200	33000	69300	28700	30100	23000	17800 B	9600 B	19
20	7000 B	6600 B	7300 B	12500 B	34100	33600	72900	28000	29200	22900	15500 B	9900 B	20
21	7000 B	6600 B	7300 B	14000 B	32300	33700	72400	27600	28400	22800	14000 B	10100 B	21
22	6900 B	6600 B	7400 B	16000 B	31300	33000	69700	27600	28000	22700	13000 B	10300 B	22
23	6900 B	6600 B	7400 B	18000 B	30800	33200	65100	28400	27900	22600	11500 B	10500 B	23
24	6800 B	6700 B	7400 B	20000 B	31000	34000	59400	30400	27900	22400	10500 B	10600 B	24
25	6800 B	6700 B	7400 B	21000 B	31000	34000	54500	32900	27100	22200	9500 B	10700 B	25
26	6700 B	6700 B	7400 B	25000 B	31700	35200	50200	34500	26600	22200	8700 B	10800 B	26
27	6700 B	6700 B	7500 B	27000 B	32400	37400	46500	35400	26300	21900	8300 B	10700 B	27
28	6600 B	6800 B	7500 B	30000 B	32500	41400	44900	38100	26400	21200	8000 B	10600 B	28
29	6600 B		7500 B	31000 B	33100	48900	43600	40900	26600	20500	7600 B	10400 B	29
30	6600 B		7600 B	31000 B	32400	62300	42600	41700	26600	20300	7300 B	10300 B	30
31	6600 B		7600 B		31700		42100	45700		20100		10100 B	31
TOTAL	233300	185400	223630	405200	1078800	1034400	1895700	1120800	1135400	737200	475200	277550	TOTAL
MEAN	7530	6620	7210	13500	34800	34500	61200	36200	37800	23800	15800	8950	MEAN
AC-FT	463000	368000	444000	804000	2140000	2050000	3760000	2220000	2250000	1460000	943000	551000	AC-FT
MAX	9200	6800	7600	31000	41900	62300	86800	46100	58700	26400	20200	10800	MAX
MIN	6600	6600	6800	7600	30800	28000	42100	27600	26300	20100	7300	7000	MIN

SUMMARY FOR THE YEAR 1975
MEAN DISCHARGE, 24100 CFS
TOTAL DISCHARGE, 17500000 AC-FT
MAXIMUM DAILY DISCHARGE, 86800 CFS ON JUL 2
MINIMUM DAILY DISCHARGE, 6600 CFS ON JAN 28

MAXIMUM INSTANTANEOUS DISCHARGE,
97400 CFS AT 1500 MST ON JUL 2

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 46 00 N
LONG 111 24 00 W
DRAINAGE AREA 51300 SQ MILES

B-ICE CONDITIONS



WATER SURVEY OF CANADA
FEB 16 1977 PAGE 11
CALGARY, ALTA.

ATHABASCA RIVER BELOW MCMURRAY

STATION NO. 07DA001

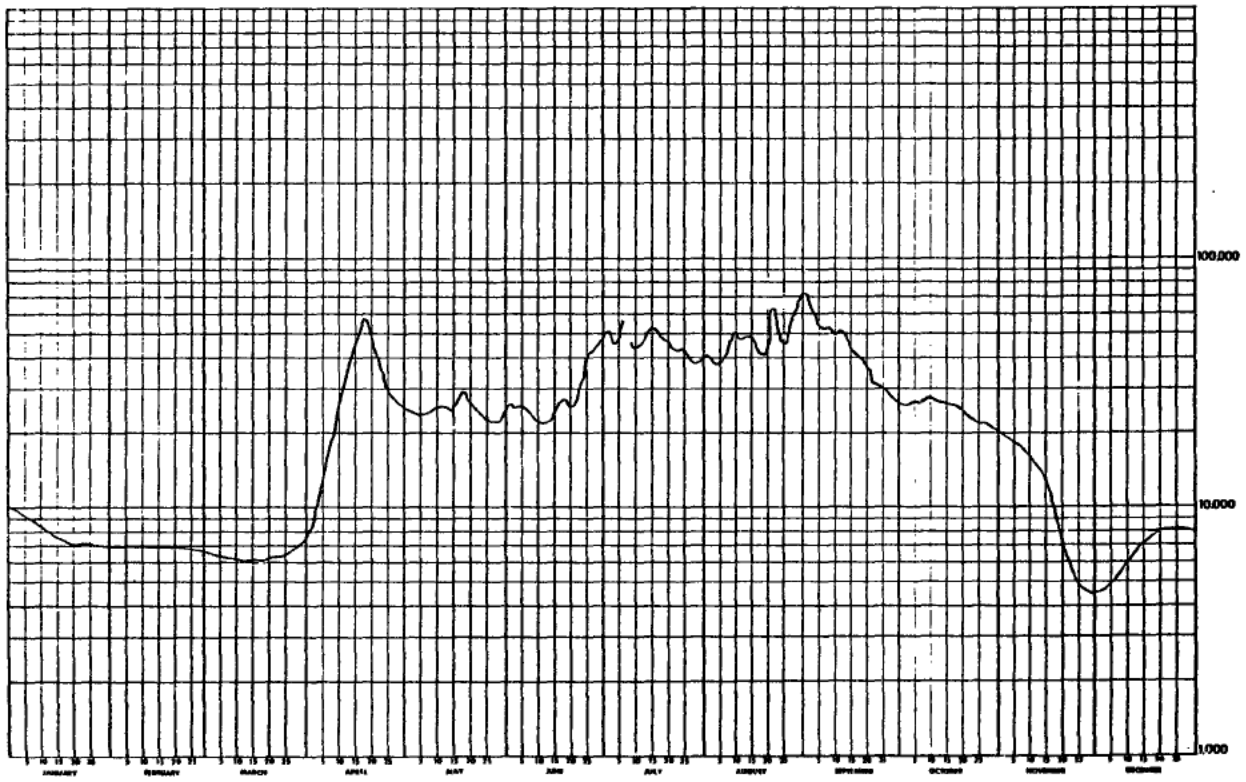
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	10000 A	7000 A	6500 B	7700 B	25300	26400	50400	41200	70800	26100	20200	4600 B	1
2	9800 A	7000 B	6500 B	8300 B	25000	25400	50500	40500	66000	25500	19800	4600 B	2
3	9600 B	7000 B	6400 B	9800 B	24600	25000	47600	38500	60800	26100	19300	4800 B	3
4	9400 B	7000 B	6400 B	11000 B	24300	25900	45100	37500	56700	26500	19200	4940 B	4
5	9200 B	7000 B	6350 B	12200 B	23900	25300	47800	38500	53900	26500	18500 B	5020 B	5
6	9100 B	6900 B	6300 B	14000 B	24000	25000	56500	38900	51700	26500	18000 B	5200 B	6
7	9000 B	6900 B	6250 B	16000 B	24300	24900	54900	39800	52000	26900	17500 B	5400 B	7
8	8800 B	6900 B	6200 B	18000 B	24600	23700	49800	43200	52400	27700	17000 B	5600 B	8
9	8600 B	6900 B	6200 B	21000 B	25200	22800	44700	49800	51200	27800	16500 B	5800 B	9
10	8400 B	6900 B	6100 B	24500 B	25300	22100	44000	51300	49100	27800	16000 B	6000 B	10
11	8200 B	6900 B	6100 B	27000 B	25700	21900	45100	49600	49800	27600	15500 B	6200 B	11
12	8000 B	6900 B	6100 B	31000 B	25700	22200	45800	47700	51500	27200	15000 B	6400 B	12
13	7900 B	6900 B	6000 B	35000 B	25500	22500	49000 E	48400	49300	26700	14000 B	6600 B	13
14	7700 B	6900 B	6000 B	40000 B	24700	22800	51000 E	49200	46500	26600	13500 B	6800 B	14
15	7600 B	6900 B	6100 B	44000 B	25400	24500	52500 E	48600	43400	26200	12900 B	7000 B	15
16	7460 B	6900 B	6100 B	48000 B	26900	26200	52000 E	46000	41700	26000	11700 B	7200 B	16
17	7400 B	6900 B	6100 B	52000 B	29000	27200	50000 E	43000	41100	25700	10100 B	7530 B	17
18	7300 B	6900 B	6100 B	58000 B	29500	27200	49000 E	40900	39800	25600	9000 B	7650 B	18
19	7200 B	6900 B	6200 B	55000 B	27900	26300	47000 E	41300 A	38300	25400	8000 B	7820 B	19
20	7100 B	6870 B	6200 B	50500	26700	25500	47000 E	43100 A	36500	25000	7200 B	7980 B	20
21	7100 B	6850 B	6200 B	43500	25700	25900	45500 E	59900	34900	24300	6600 B	8040 B	21
22	7100 B	6800 B	6200 B	39700	24400	27400	43500 E	63500	33300	23800	6000 B	8160 B	22
23	7100 B	6800 B	6300 B	37100	23800	30600	43000 E	56200	32100	22600	5600 B	8200 B	23
24	7100 B	6750 B	6300 B	33800	23400	33700	43900 E	49500	31200	22300	5200 B	8200 B	24
25	7000 B	6750 B	6400 B	29700	23000	39500	43000 E	45800	30400	22100	5000 B	8200 B	25
26	7000 B	6700 B	6400 B	28600	22700	42500	41500 E	45100	29500	21500	4800 B	8200 B	26
27	7000 B	6650 B	6400 B	27600	22400	42400	40000 E	53600	28600	21800	4700 B	8150 B	27
28	7000 B	6600 B	6700 B	26800	22400	44000	38000 E	58200	27800	21800	4600 B	8100 B	28
29	7000 B	6550 B	6900 B	26000	22600	46500	37900 A	61500	27100	21300	4600 B	8050 B	29
30	7000 B		7100 B	25700	23700	48900	38600	68700	26600	20800	4600 B	8000 B	30
31	7000 B		7300 B		25600		40500	73300		20700		7950 B	31
TOTAL	245160	198920	196600	901500	773200	874200	1435100	1512300	1303800	772400	350600	212390	TOTAL
MEAN	7910	6860	6340	30100	24900	29100	46300	48800	43500	24900	11700	6850	MEAN
AC-FT	486000	395000	390000	1790000	1530000	1730000	2850000	3000000	2590000	1530000	695000	421000	AC-FT
MAX	10000	7000	7300	58000	29500	48900	56500	73300	70800	27800	20200	8200	MAX
MIN	7000	6550	6000	7700	22400	21900	37900	37500	26600	20700	4600	4600	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 24000 CFS
TOTAL DISCHARGE, 17400000 AC-FT
MAXIMUM DAILY DISCHARGE, 73300 CFS ON AUG 31
MINIMUM DAILY DISCHARGE, 4600 CFS ON NOV 28

MAXIMUM INSTANTANEOUS DISCHARGE, 73700 CFS AT 1000 Mar ON Aug 31

A-MANUAL GAUGE
H-ICE CONDITIONS
E-ESTIMATED



5.5 BEAVER RIVER ABOVE SYNCRUDE

STATION NAME: Beaver River above Syncrude

STATION NUMBER: 07DA018

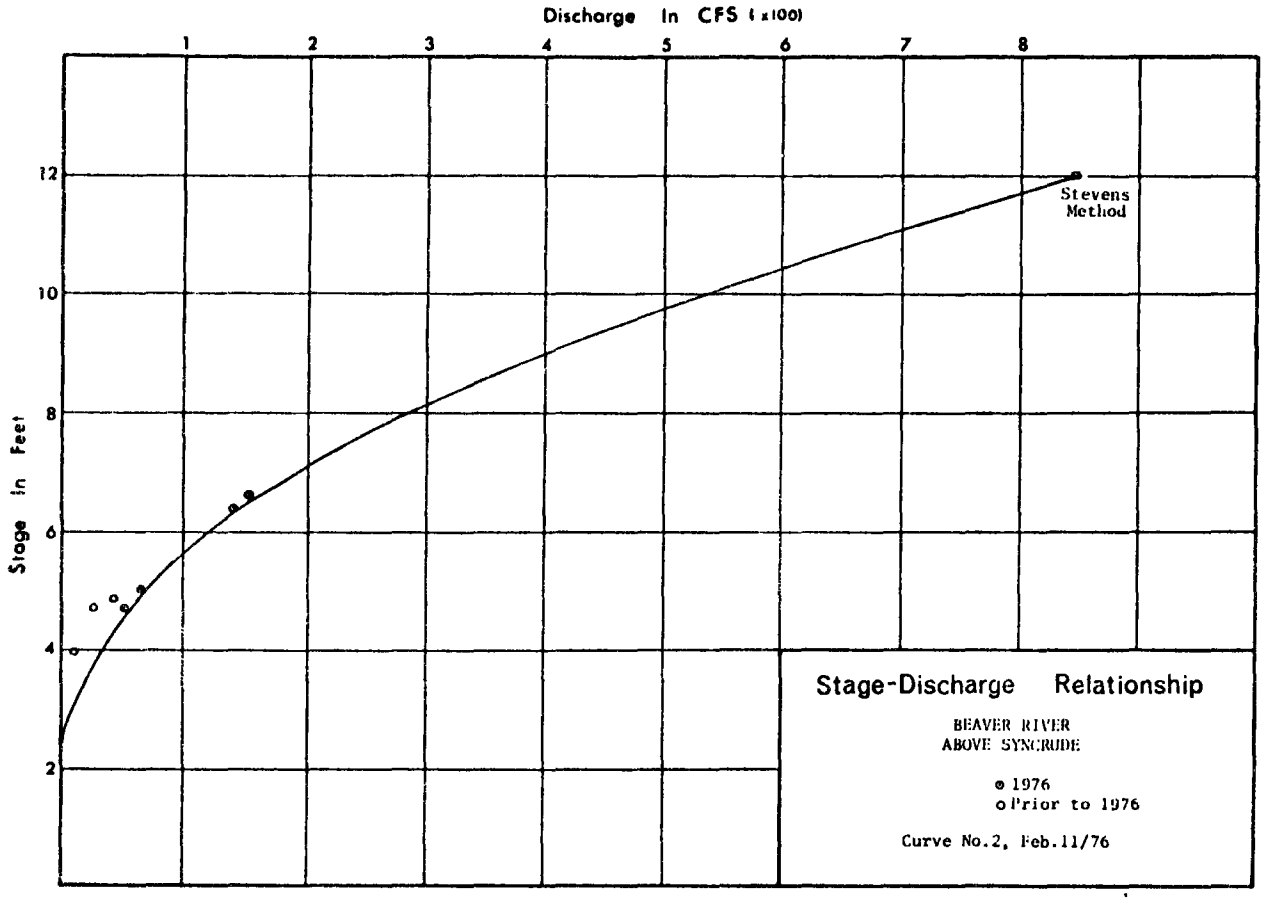
LOCATION: Latitude: 56°56'29" Longitude: 111°33'54"
NE32-91-10-W4

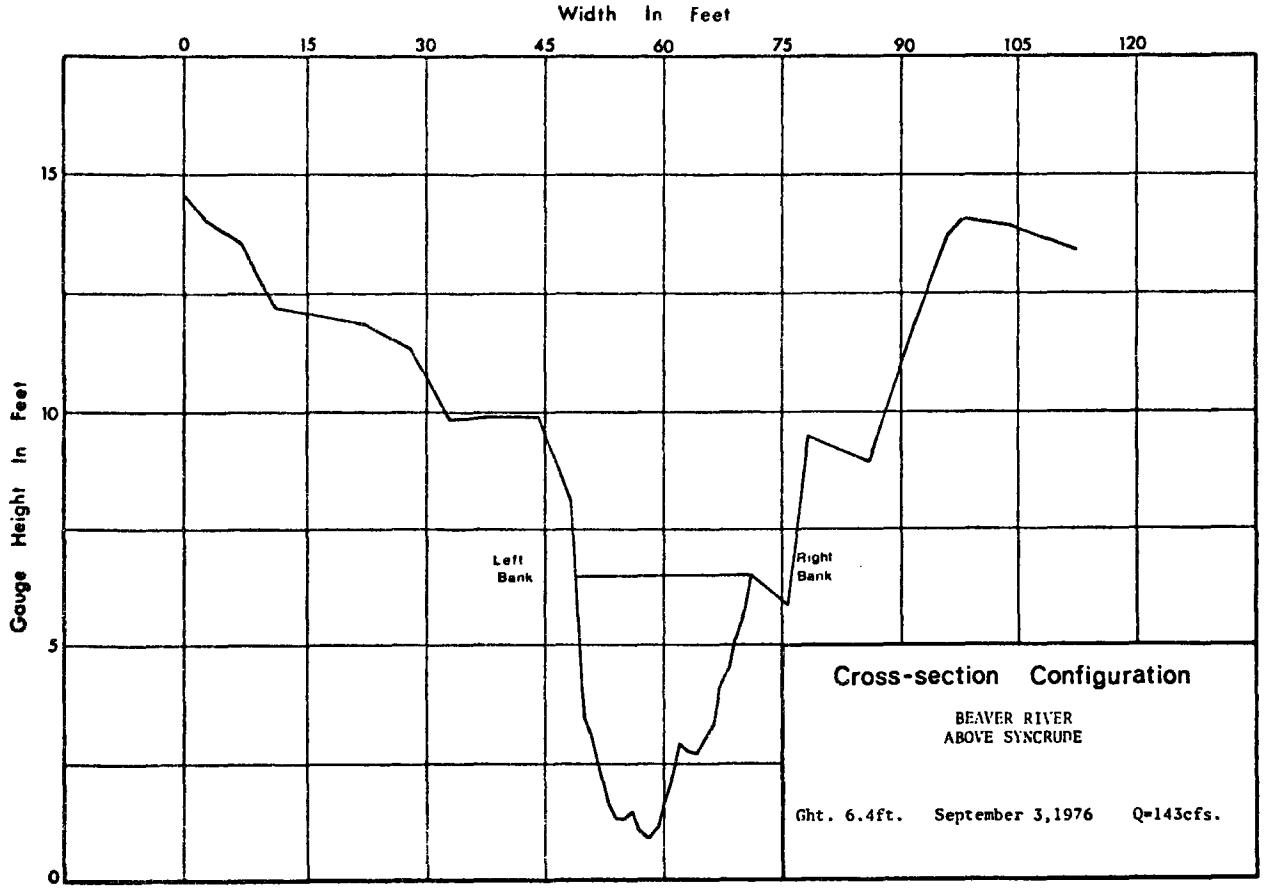
DRAINAGE AREA: 68 square miles (176 km^2)

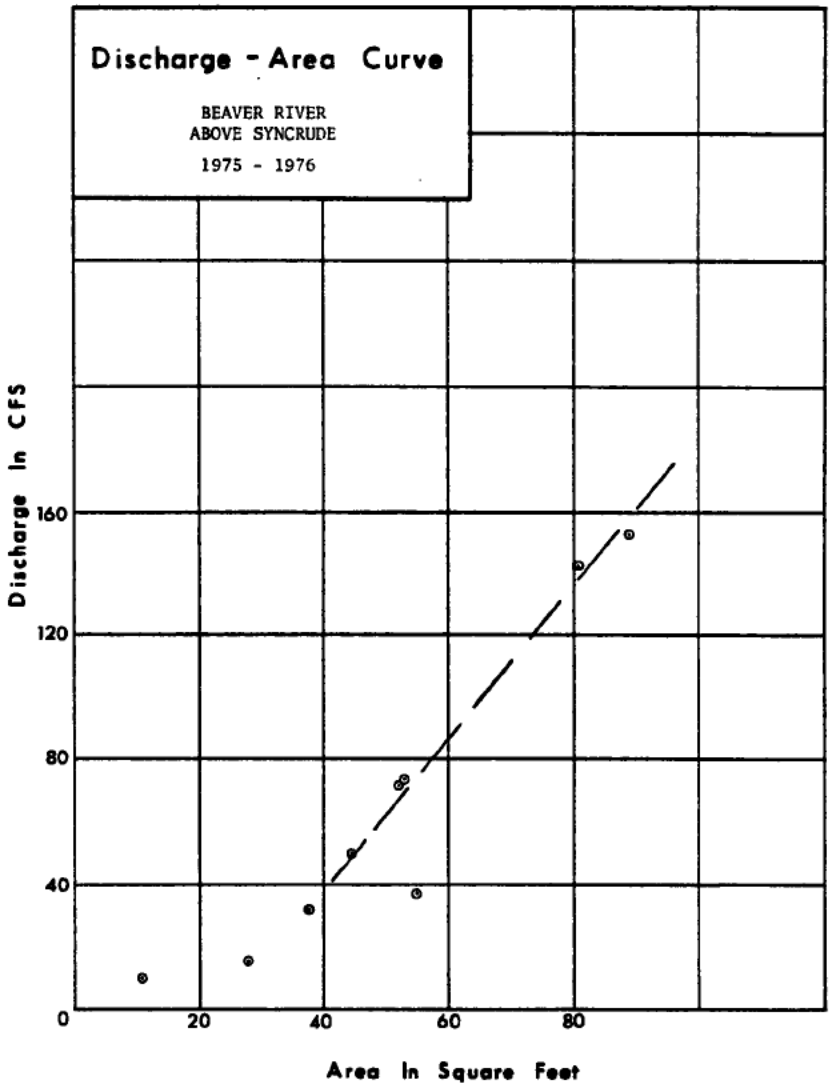
PERIOD OF RECORD: The station was established on August 19, 1975 with continuous discharge data being available from September 17, 1975 to December 31, 1976.

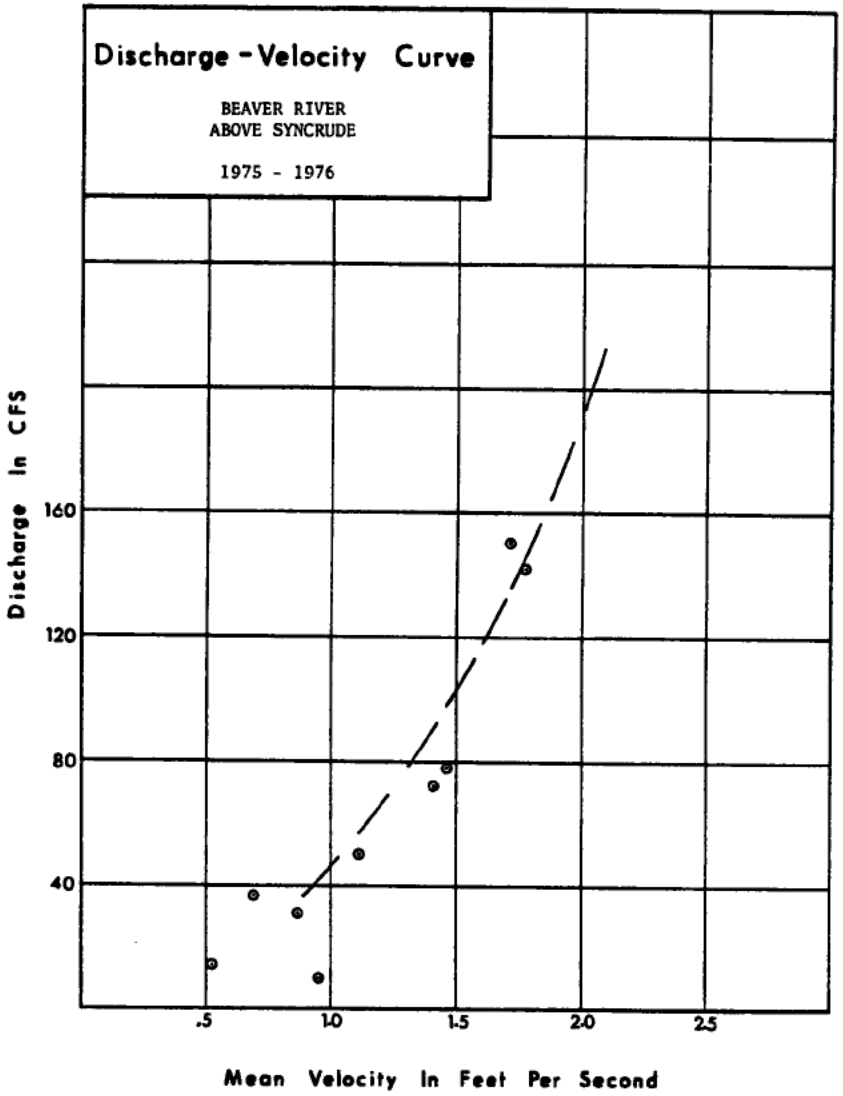
SITE DESCRIPTION: The gauge is located on the right bank approximately one-quarter mile (0.4 km) below confluence with Cache Creek and approximately one mile (1.6 km) above the full supply level of Syncrude's Beaver Reservoir. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water discharge measurements were made by wading at various locations near the gauge or from a small measuring bridge at the gauge prior to its washing out in August, 1976. A cableway was completed at this site on September 17, 1976.

GENERAL: The quality of records are adversely affected by a proliferation of beaver dams. Because of these dams backwater shifts from the stage-discharge curve of up to 1.75 feet have been recorded.
Heavy rains provided a peak discharge of 788 cfs (12.4 cfs/sq. mile) on August 28, 1976. This peak was determined by indirect means (Stevens Extension). The cross-sectional area at this discharge is 314 sq.ft. and the mean velocity is 2.71 ft./sec. During both winters of operation zero flow has been observed.


Discharge In CFS (x100)
1
2
3
4
5
6
7
8
Stage in Feet
12
10
8
6
4
2
Stevens Method
Stage-Discharge Relationship
BEAVER RIVER
ABOVE SYNCRUDE
⊙ 1976
o Prior to 1976
Curve No.2, Feb.11/76


Width In Feet
0
15
30
45
60
75
90
105
120
Gauge Height In Feet
15
10
5
0
Left Bank
Right Bank
Cross-section Configuration
BEAVER RIVER
ABOVE SYNCRUDE
Ght. 6.4ft. September 3,1976 Q=143cfs.


Discharge - Area Curve
BEAVER RIVER
ABOVE SYNCRUDE
1975 - 1976
Discharge In CFS
0
40
80
120
160
20
40
60
80
Area In Square Feet


Discharge - Velocity Curve
BEAVER RIVER
ABOVE SYNCRUDE
1975 - 1976
Discharge In CFS
40
80
120
160
.5
1.0
1.5
2.0
2.5
Mean Velocity In Feet Per Second

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MAY 14 1976 PAGE 295
CALGARY, ALTA.

BEAVER RIVER ABOVE SYNCRUDE — STATION NO. 07DA016

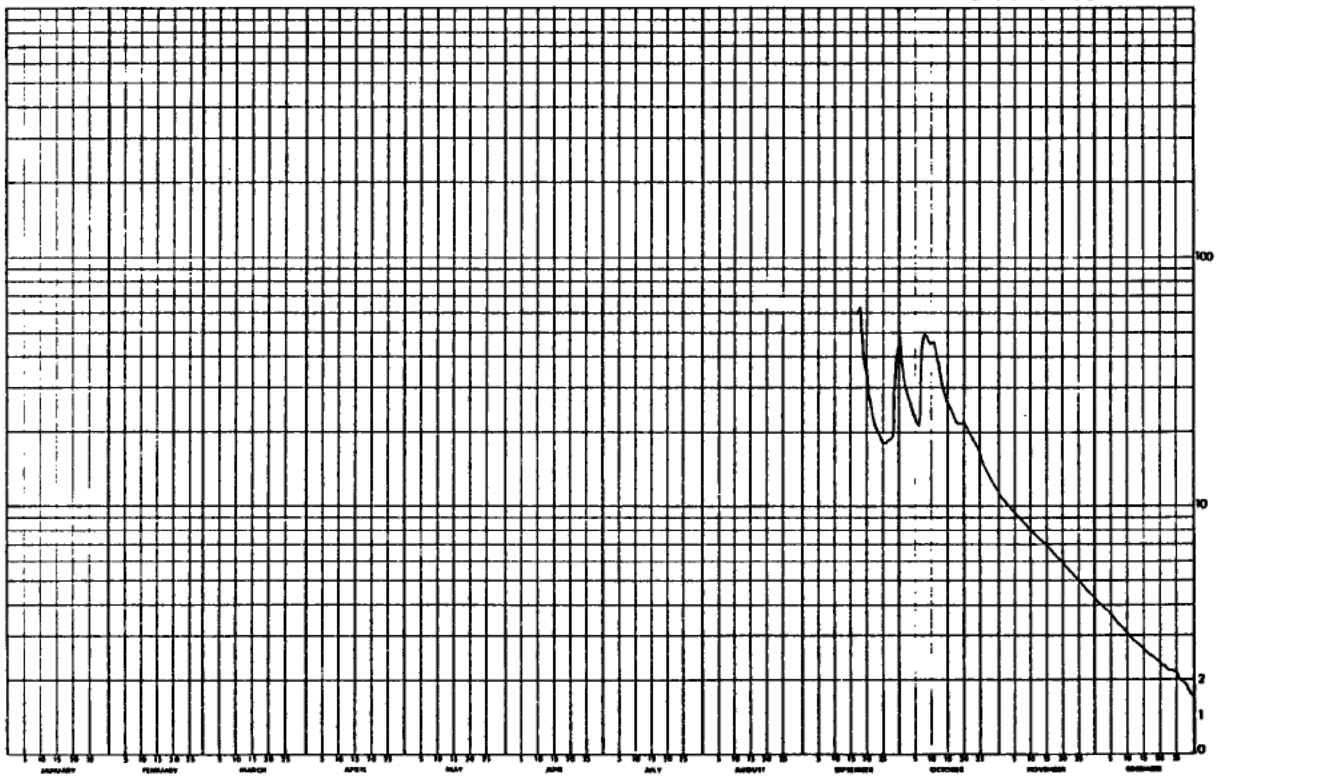
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	---	---	42.9	11.0	4.1 B	1
2	---	---	---	---	---	---	---	---	---	32.8	10.5	4.0 B	2
3	---	---	---	---	---	---	---	---	---	26.9	10.0 B	3.9 B	3
4	---	---	---	---	---	---	---	---	---	24.9	9.8 B	3.8 B	4
5	---	---	---	---	---	---	---	---	---	22.3	9.6 B	3.6 B	5
6	---	---	---	---	---	---	---	---	---	21.1	9.2 B	3.5 B	6
7	---	---	---	---	---	---	---	---	---	38.6	8.9 B	3.4 B	7
8	---	---	---	---	---	---	---	---	---	49.2	8.6 B	3.3 B	8
9	---	---	---	---	---	---	---	---	---	48.5	8.3 B	3.2 B	9
10	---	---	---	---	---	---	---	---	---	43.9	8.0 B	3.1 B	10
11	---	---	---	---	---	---	---	---	---	45.2	7.8 B	3.0 B	11
12	---	---	---	---	---	---	---	---	---	40.6	7.6 B	2.9 B	12
13	---	---	---	---	---	---	---	---	---	33.0	7.3 B	2.8 B	13
14	---	---	---	---	---	---	---	---	---	29.7	7.1 B	2.7 B	14
15	---	---	---	---	---	---	---	---	---	26.5	6.9 B	2.6 B	15
16	---	---	---	---	---	---	---	---	---	24.9	6.6 B	2.6 B	16
17	---	---	---	---	---	---	---	---	59.6 A	23.1	6.4 B	2.5 B	17
18	---	---	---	---	---	---	---	---	61.5	21.9	6.2 B	2.4 B	18
19	---	---	---	---	---	---	---	9.7 A	45.4	21.7	6.0 B	2.4 B	19
20	---	---	---	---	---	---	---	---	31.9	21.4	5.8 B	2.3 B	20
21	---	---	---	---	---	---	---	---	26.5	20.4	5.6 B	2.3 B	21
22	---	---	---	---	---	---	---	---	22.1	19.3	5.4 B	2.2 B	22
23	---	---	---	---	---	---	---	---	20.0	18.4	5.3 B	2.2 B	23
24	---	---	---	---	---	---	---	---	19.0	17.3	5.1 B	2.2 B	24
25	---	---	---	---	---	---	---	---	18.0	16.3	5.0 B	2.1 B	25
26	---	---	---	---	---	---	---	28.7 A	18.0	14.9 E	4.8 B	2.0 B	26
27	---	---	---	---	---	---	---	---	18.3	14.0 E	4.6 B	1.9 B	27
28	---	---	---	---	---	---	---	---	18.5	13.2 E	4.5 B	1.8 B	28
29	---		---	---	---	---	---	---	38.9	12.7 E	4.4 B	1.6 B	29
30	---		---	---	---	---	---	---	51.8	12.2 A	4.2 B	1.4 B	30
31	---		---		---		---	---		11.6		1.3 B	31
TOTAL	---	---	---	---	---	---	---	---	---	808.4	210.5	83.1	TOTAL
MEAN	---	---	---	---	---	---	---	---	---	26.1	7.8	2.7	MEAN
AC-FT	---	---	---	---	---	---	---	---	---	1600	418	165	AC-FT
MAX	---	---	---	---	---	---	---	---	---	49.2	11.0	4.1	MAX
MIN	---	---	---	---	---	---	---	---	---	11.6	4.2	1.3	MIN

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 56 29 N
LONG 111 33 54 W
DRAINAGE AREA 63.5 SQ MILES

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA
FEB 16 1977 PAGE 8
CALGARY, ALTA.

BEAVER RIVER ABOVE SYNCRUDE

STATION NO. 07DA018

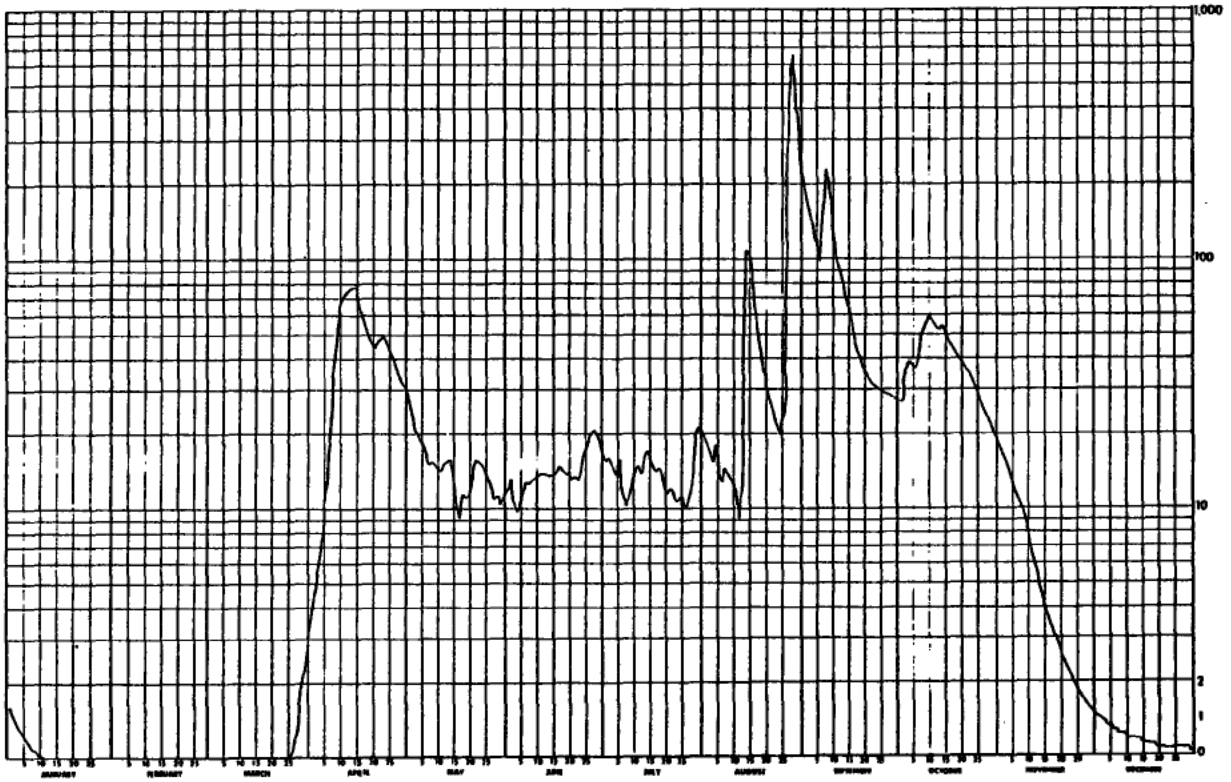
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1.2 B	0 B	0 B	3.2 B	26.8	11.7	15.7	20.3	184	27.1	18.5 B	1.0 B	1
2	.90 H	0 B	0 B	4.0 B	22.7	13.1	16.0	18.2	167	27.1	17.0 B	.90 B	2
3	.70 B	0 B	0 B	5.2 B	20.2	10.7	15.7	16.4	147 A	34.6	15.5 B	.83 B	3
4	.60 B	0 B	0 B	6.4 B	19.7	9.6	14.3	15.3	120	39.0	14.5 B	.70 B	4
5	.50 B	0 B	0 B	8.0 B	18.5	9.8	13.3	14.7	104	37.7	13.5 B	.70 B	5
6	.40 B	0 B	0 B	14.0 B	16.4	12.0	16.0	13.5	95.6	36.1	12.5 B	.60 B	6
7	.20 B	0 B	0 B	25.0 B	15.1	12.8	11.6	12.6	158	38.1	11.5 B	.60 B	7
8	.10 B	0 B	0 B	38.0 B	15.3	12.7	10.2	14.7	232	50.9	10.5 B	.50 B	8
9	.10 B	0 B	0 B	52.4 B	15.1	13.1	11.2	13.9	180	56.1	9.5 B	.50 B	9
10	0 B	0 B	0 B	64.0 B	14.4	13.5	12.0	12.7	135	58.8	8.7 B	.50 B	10
11	0 B	0 B	0 B	70.0 B	14.0	13.6	14.4	12.0	104	58.6	7.5 B	.40 B	11
12	0 H	0 B	0 B	75.6 A	15.0	13.9	14.9	9.0	91.6	55.3	6.6 B	.40 B	12
13	0 B	0 B	0 B	75.3 E	15.3	13.6	13.8	13.0	79.5	53.1	5.8 B	.40 B	13
14	0 H	0 B	0 B	75.0 E	15.5	13.4	16.6	109	71.7	53.6	5.2 B	.40 B	14
15	0 B	0 B	0 B	74.8 A	12.6	13.4	16.8	105	61.7	51.0	4.7 B	.32 H	15
16	0 H	0 H	0 B	64.8	10.0	13.7	15.1	77.9	54.0	48.1	4.2 H	.30 H	16
17	0 H	0 H	0 B	58.9	8.9	14.7	14.4	58.5	47.6	46.0	3.8 B	.30 B	17
18	0 B	0 B	0 B	50.6	11.3	14.0	14.6	46.5	42.2	43.8	3.4 B	.30 H	18
19	0 H	0 H	0 B	47.2	11.1	13.6	14.0	38.8	38.1	42.3	3.1 B	.30 B	19
20	0 B	0 B	0 B	44.6	11.5	13.8	12.1	31.9	35.9	40.3 E	2.8 B	.20 B	20
21	0 B	0 B	0 B	43.5	13.5	13.1	11.7	27.7	34.5	38.3 E	2.5 B	.20 B	21
22	0 B	0 H	0 B	47.3	15.6	13.2	12.1	25.4	33.3	36.3 E	2.3 B	.20 B	22
23	0 H	0 B	0 B	48.7	15.3	12.9	11.5	23.1	32.0	33.7	2.2 B	.20 B	23
24	0 B	0 B	0 B	47.3	15.3	14.6	10.8	20.8	31.0	32.4	2.0 B	.20 B	24
25	0 B	0 B	0 B	44.1	14.0 E	17.9	11.1	19.0	30.0	29.3	1.8 B	.20 H	25
26	0 B	0 B	0 B	40.9	13.0 E	18.2	10.0	23.5	29.2	27.5 B	1.6 B	.20 B	26
27	0 B	0 B	.20 H	37.0	12.0 E	20.0	10.2	402	28.7	26.0 B	1.4 B	.20 B	27
28	0 B	0 B	1.0 B	34.1	10.6 A	20.8	11.5	654	28.9	24.5 B	1.3 B	.20 B	28
29	0 H	0 B	1.8 B	31.6	11.1	19.8	15.1	456	28.6	23.0 B	1.2 B	.20 B	29
30	0 H		2.2 B	30.6	10.4	17.9	20.4	311	27.7	21.5 B	1.1 B	.20 B	30
31	0 B		2.6 B		11.1		21.4	224		20.0 B		.10 B	31
TOTAL	4.70	0	7.80	1258.1	451.5	425.1	428.5	2845.0	2452.8	1210.1	196.2	12.25	TOTAL
MEAN	.15	0	.25	41.9	14.6	14.2	13.8	91.8	81.8	39.0	6.5	.40	MEAN
AC-FT	9.3	0	15.5	2500	896	843	850	5640	4870	2400	389	24.3	AC-FT
MAX	1.2	0	2.6	75.6	26.8	20.8	21.4	654	232	58.8	18.5	1.0	MAX
MIN	0	0	0	3.2	8.9	9.6	10.0	9.0	27.7	20.0	1.1	.10	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 25.4 CFS
TOTAL DISCHARGE, 18400 AC-FT
MAXIMUM DAILY DISCHARGE, 654 CFS ON AUG 28
MINIMUM DAILY DISCHARGE, 0 CFS ON JAN 10

MAXIMUM INSTANTANEOUS DISCHARGE, *788* CFS AT *0100 MST* ON *AUG 28*

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



5.6 BEAVER RIVER NEAR FORT MacKAY

STATION NAME: Beaver River near Fort MacKay

STATION NUMBER: 07DA005

LOCATION: Latitude: 57°06'00" Longitude: 111°38'00"

SW26-93-11-W4

DRAINAGE AREA: 168 square miles (435 km^2)

PERIOD OF RECORD: Discharge data, for varying periods, is available from 1961 to 1966 and from 1972 to 1975.

SITE DESCRIPTION: This station was a wire-weight gauge on the bridge crossing on the old road from Fort McMurray to Fort MacKay. It was read daily by a paid observer.

GENERAL: The station was discontinued in 1975 as the start-up of the construction of the Syncrude Plant not only interfered with the gauge site but water was diverted from the Beaver River to Poplar Creek. Because the gauge site has been changed discharge data only is presented in this report.

WATER SURVEY OF CANADA
AUG 15 1974 PAGE 141
CALGARY, ALTA.

BEAVER RIVER NEAR FORT MACKAY

STATION NO. 07DA005

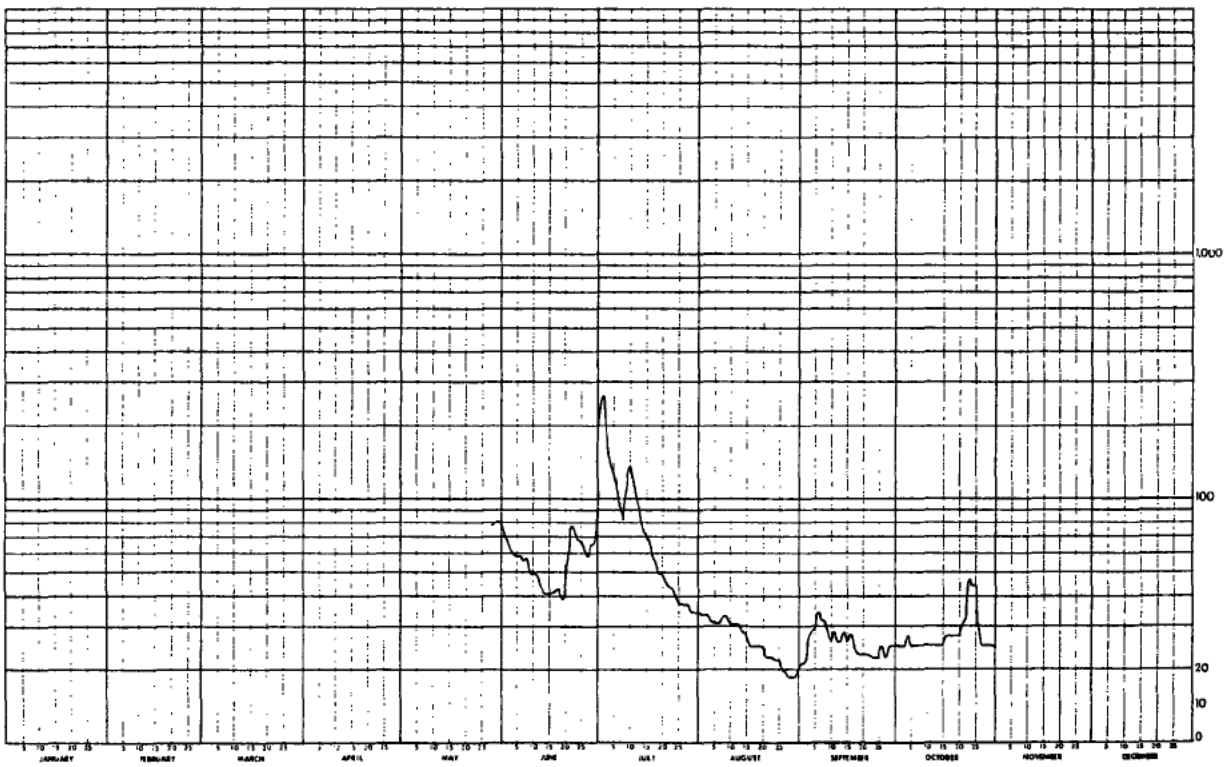
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1961

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	78	233	33.5	21.5	25.0	---	---	1
2	---	---	---	---	---	67	260	33.5	21.5	25.0	---	---	2
3	---	---	---	---	---	63	210	33.5	26.5	25.0	---	---	3
4	---	---	---	---	---	60	159	31.0	29.0	27.5	---	---	4
5	---	---	---	---	---	57	134	31.6	29.0	25.0	---	---	5
6	---	---	---	---	---	57	111	31.0	34.0	25.0	---	---	6
7	---	---	---	---	---	55	95	31.0	31.5	25.0	---	---	7
8	---	---	---	---	---	55	82	33.0	31.0	25.0	---	---	8
9	---	---	---	---	---	52	106	33.0	28.5	25.0	---	---	9
10	---	---	---	---	---	48.8	136	30.5	26.0	25.0	---	---	10
11	---	---	---	---	---	49.4	123	30.5	28.5	25.0	---	---	11
12	---	---	---	---	---	46.4	101	30.5	26.0	25.0	---	---	12
13	---	---	---	---	---	43.4	89	30.5	26.0	25.0	---	---	13
14	---	---	---	---	124	41.0	76	28.0	28.5	25.0	---	---	14
15	---	---	---	---	---	41.0	70	28.0	26.0	25.0	---	---	15
16	---	---	---	---	---	41.0	66	25.0	28.0	27.5	---	---	16
17	---	---	---	---	---	41.6	58	25.0	25.5	27.5	---	---	17
18	---	---	---	---	---	41.6	55	25.0	23.0	27.5	---	---	18
19	---	---	---	---	---	38.6	49.6	25.0	23.0	27.5	---	---	19
20	---	---	---	---	---	42.2	49.4	25.0	23.0	27.5	---	---	20
21	---	---	---	---	---	57	46.4	22.5	23.0	30.0	---	---	21
22	---	---	---	---	---	77	43.4	22.5	23.0	32.5	---	---	22
23	---	---	---	---	---	77	43.4	22.5	22.5	47.0	---	---	23
24	---	---	---	---	---	78	39.8	22.0	22.5	44.0	---	---	24
25	---	---	---	---	---	66	36.8	22.0	22.5	44.0	---	---	25
26	---	---	---	---	---	62	36.8	19.6	25.0	38.0	---	---	26
27	---	---	---	---	---	58	36.8	19.6	22.5	25 E	---	---	27
28	---	---	---	---	79	65	34.0	17.6	25.0	25 E	---	---	28
29	---		---	---	88	65	34.0	17.6	25.0	25 E	---	---	29
30	---		---	---	88	102	34.0	17.6	25.0	25 E	---	---	30
31	---		---		76		34.0	19.6		25 E		---	31
TOTAL	---	---	---	---	---	1718.0	2682.2	816.6	772.0	867.5	---	---	TOTAL
MEAN	---	---	---	---	---	57.0	86.5	26.3	25.7	28.0	---	---	MEAN
AC-FT	---	---	---	---	---	3390	5320	1620	1530	1720	---	---	AC-FT
MAX	---	---	---	---	---	102	260	33.5	34.0	47.0	---	---	MAX
MIN	---	---	---	---	---	38.6	34.0	17.6	21.5	25.0	---	---	MIN

SUMMARY FOR THE YEAR 1961

MAXIMUM DAILY DISCHARGE, 260 CFS ON JUL 2

E-ESTIMATED



WATER SURVEY OF CANADA
AUG 6 1970 PAGE 82
CALGARY, ALTA.

BEAVER RIVER NEAR FORT MACKAY

STATION NO. 07DA005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1962

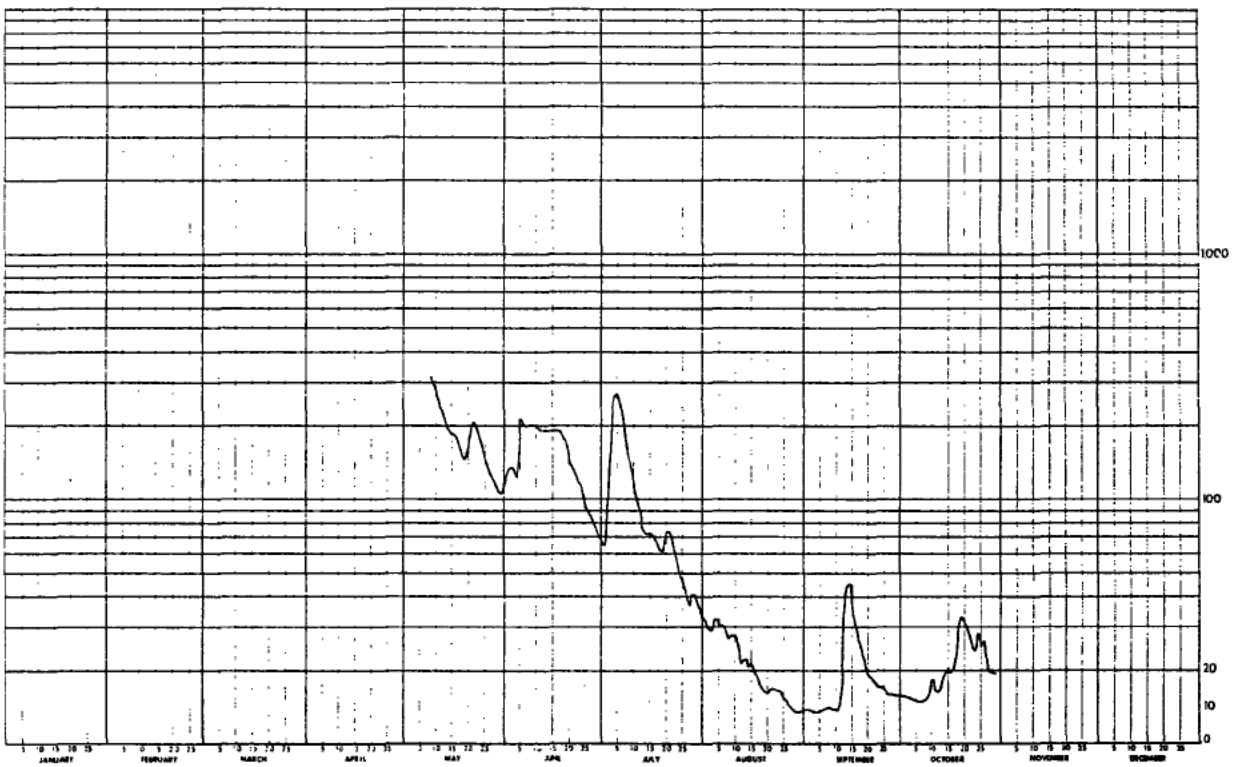
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	131	64.6	31.5	7.8	11.2 E	---	---	1
2	---	---	---	---	---	135	93.6	29.8	6.9	11.1	---	---	2
3	---	---	---	---	---	129	203	29.0	6.6	11.1	---	---	3
4	---	---	---	---	---	124	254	32.5	6.3	10.5	---	---	4
5	---	---	---	---	---	211	263	30.5	6.6	10.2	---	---	5
6	---	---	---	---	---	200 E	234	30.0	7.2	9.6	---	---	6
7	---	---	---	---	---	200 E	188	28.5	7.8	9.9	---	---	7
8	---	---	---	---	---	200 E	157	27.0	8.1	10.2	---	---	8
9	---	---	---	---	314	200 E	135	27.5	7.8	11.7	---	---	9
10	---	---	---	---	286	200 E	114	27.5	7.5	16.4	---	---	10
11	---	---	---	---	260	190 E	98.4	25.0	7.5	13.2	---	---	11
12	---	---	---	---	235	190 E	86.4	21.5	14.0	12.8	---	---	12
13	---	---	---	---	210	190 E	74.4	22.0	43.4	14.0	---	---	13
14	---	---	---	---	198	190 E	70.9	20.5	45.2	18.4	---	---	14
15	---	---	---	---	184	190 E	70.9	21.0	36.2	20.5	---	---	15
16	---	---	---	---	182	190 E	69.5	18.4	31.5	19.6	---	---	16
17	---	---	---	---	178	190 E	65.3	16.8	27.5	21.0	---	---	17
18	---	---	---	---	157	177 A	61.1	14.8	24.5	28.0	---	---	18
19	---	---	---	---	147	168	60.4	12.8	22.0	33.0	---	---	19
20	---	---	---	---	158	146	70.9	12.0	18.4	31.5	---	---	20
21	---	---	---	---	188	135	71.6	13.6	17.6	29.0	---	---	21
22	---	---	---	---	204	126	64.6	13.6	16.0	26.5	---	---	22
23	---	---	---	---	194	116	54.8	13.2	14.4	24.0	---	---	23
24	---	---	---	---	172	107	48.2	12.8	14.0	28.0	---	---	24
25	---	---	---	---	148	97.6	43.4	10.2	13.2	25.0	---	---	25
26	---	---	---	---	134	89.6	39.4	9.0	12.0	26.5	---	---	26
27	---	---	---	---	125	84.0	36.8	8.4	11.6 E	19.6	---	---	27
28	---	---	---	---	116	76.5	40.4	7.5	11.6 E	19.2	---	---	28
29	---		---	---	109	70.9	39.8	7.2	11.6 E	20.5	---	---	29
30	---		---	---	105	65.3	36.2	7.5	11.6 E	19.2	---	---	30
31	---		---		111		32.5	7.2		18.4		---	31
TOTAL	---	---	---	---	---	4518.9	2946.1	588.0	476.4	579.8	---	---	TOTAL
MEAN	---	---	---	---	---	151	95.0	19.0	15.9	18.7	---	---	MEAN
AC-FT	---	---	---	---	---	8960	5840	1170	945	1150	---	---	AC-FT
MAX	---	---	---	---	---	211	263	32.5	45.2	33.0	---	---	MAX
MIN	---	---	---	---	---	65.3	32.5	7.2	6.3	9.6	---	---	MIN

SUMMARY FOR THE MONTHS JUN TO OCT

MEAN DISCHARGE, 59.5 CFS
TOTAL DISCHARGE, 18100 AC-FT
MAXIMUM DAILY DISCHARGE, 263 CFS ON JUL 5
MINIMUM DAILY DISCHARGE, 6.3 CFS ON SEP 4

A-MANUAL GAUGE

E-ESTIMATED



WATER SURVEY OF CANADA
AUG 6 1970 PAGE 83
CALGARY, ALTA.

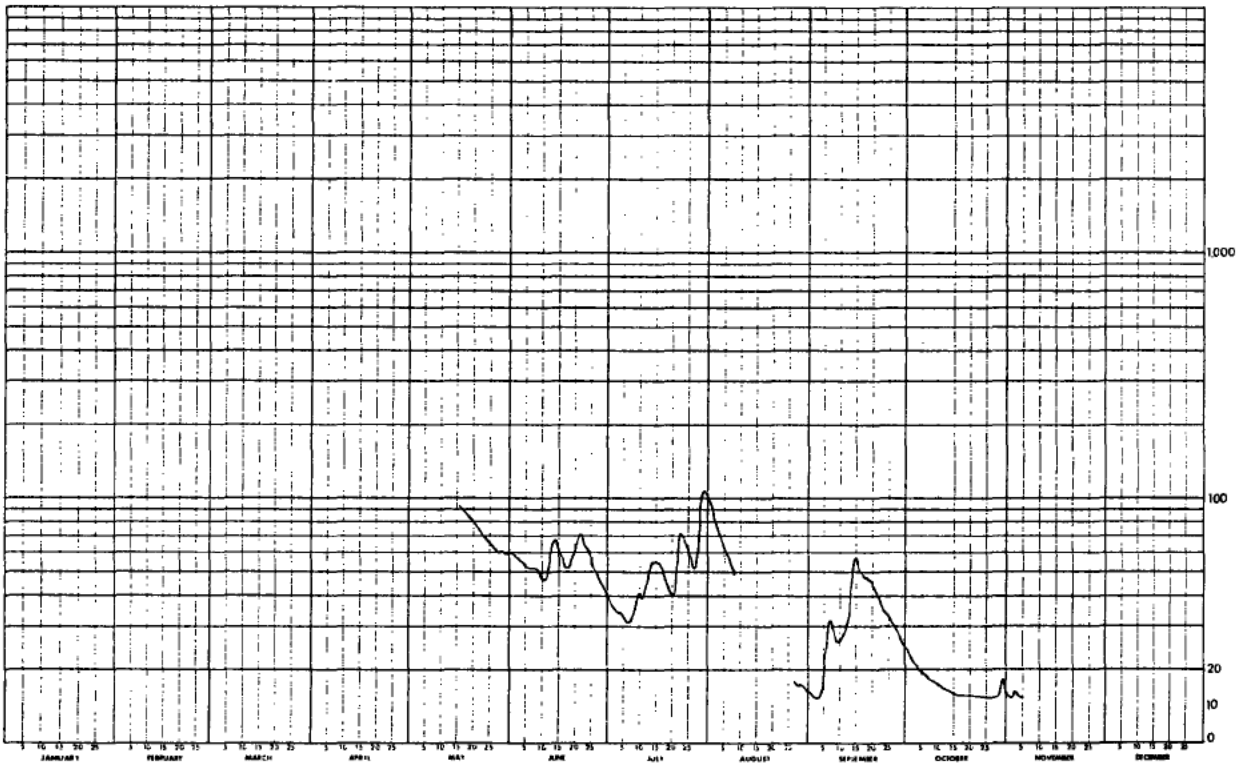
BEAVEN RIVER NEAR FORT MACKAY

STATION NO. 07DA005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1963

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	3.2 B	3.5 B	---	---	59.0	37.4	95.2	12.0	24.0	11.1	---	1
2	---	3.2 B	3.5 B	---	---	58.4	35.6	84.0	11.1	22.5	10.5	---	2
3	---	3.2 B	3.5 B	---	---	56.0	34.5	75.1	10.5	21.5	12.4	---	3
4	---	3.2 B	3.5 B	---	---	54.8	34.5	70.2	11.1	20.0	11.4	---	4
5	---	3.2 B	3.5 B	---	---	52.4	33.0	63.9	17.2	19.2	10.8	---	5
6	---	3.2 B	3.5 B	---	---	51.8	31.5	58.4	24.5	18.4	9.6	---	6
7	---	3.2 B	3.5 B	---	---	51.8	31.5	53.6	31.0	17.2	---	---	7
8	---	3.2 B	3.5 B	---	---	51.2	32.8	49.4	29.0	16.4	---	---	8
9	---	3.2 B	3.5 B	---	---	48.8	35.6	---	26.0	16.0	---	---	9
10	---	3.2 B	3.5 B	---	---	46.4	40.4	---	26.0	14.8	---	---	10
11	---	3.2 B	3.6 B	---	---	46.4	39.2	---	27.5	14.0	---	---	11
12	---	3.2 B	3.6 B	---	---	52.4	41.6	---	30.0	13.6	---	---	12
13	---	3.2 B	3.6 B	---	---	64.6	47.0	---	33.0	13.2	---	---	13
14	---	3.2 B	3.6 B	---	---	66.7	54.8	---	51.2	12.8	---	---	14
15	---	3.2 B	3.6 B	---	---	62.5	54.8	---	56.0	12.0	---	---	15
16	---	3.2 B	3.6 B	---	92.0	56.6	54.8	---	50.0	11.7	---	---	16
17	---	3.2 B	3.6 B	---	89.6	52.4	52.4	---	48.2	11.7	---	---	17
18	---	3.2 B	3.6 B	---	85.6	51.8	47.0	---	48.2	11.7	---	---	18
19	---	3.4 B	3.6 B	---	84.0	56.0	43.4	---	47.6	11.4	---	---	19
20	---	3.4 B	3.6 B	---	81.6	58.4	40.4	---	44.0	11.1	---	---	20
21	---	3.4 B	3.7 B	---	77.2	67.4	40.4	---	41.0	11.4	---	---	21
22	---	3.4 B	3.7 B	---	73.0	71.6	54.8	---	39.6	11.4	---	---	22
23	---	3.4 B	3.7 B	---	71.6	66.0	70.2	---	36.2	11.1	---	---	23
24	---	3.4 B	3.7 B	---	68.8	60.4	68.1	---	34.5	11.4	---	---	24
25	---	3.4 B	3.7 B	---	66.0	55.4	62.5	---	33.5	11.1	---	---	25
26	---	3.4 B	3.7 B	---	63.2	51.2	56.0	---	31.5	11.1	---	---	26
27	---	3.4 B	3.7 B	---	61.1	47.0	51.2	---	30.0	10.5	---	---	27
28	---	3.4 B	3.7 B	---	59.7	44.6	59.0	15.6	28.0	10.8	---	---	28
29	---		3.7 B	---	60.4	42.2	91.2	14.4	26.5	12.8	---	---	29
30	---		3.7 E	---	59.0	39.8	104	14.4	25.5	16.8	---	---	30
31	---		3.7 E		58.4		103	12.4		19.6		---	31
TOTAL	---	91.6	111.7	---	---	1644.0	1581.8	---	959.4	451.2	---	---	TOTAL
MEAN	---	3.3	3.6	---	---	54.8	51.0	---	32.0	14.6	---	---	MEAN
AC-FT	---	182	222	---	---	3260	3140	---	1900	895	---	---	AC-FT
MAX	---	3.4	3.7	---	---	71.6	104	---	56.0	24.0	---	---	MAX
MIN	---	3.2	3.5	---	---	39.8	31.5	---	10.5	10.5	---	---	MIN

B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
FEB 29 1972 PAGE 3
CALGARY, ALTA.

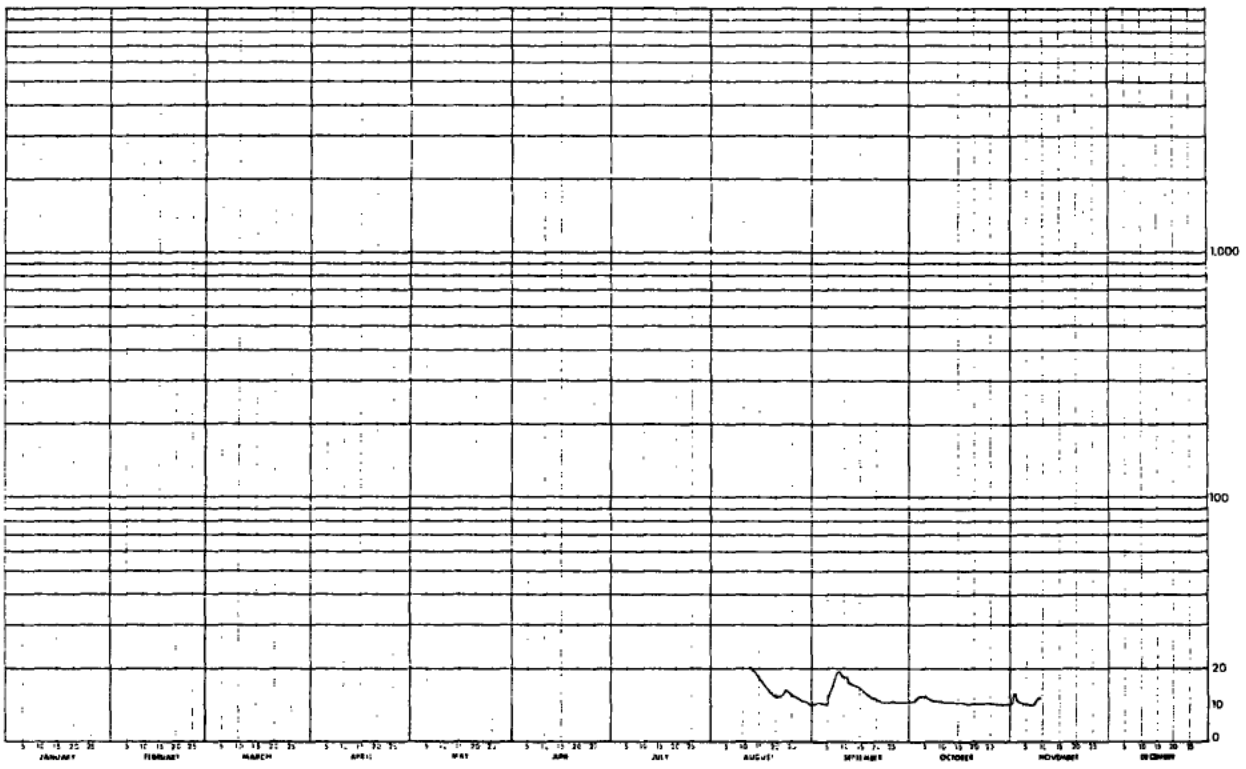
BEAVER RIVER NEAR FORT MACKAY

STATION NO. 07DA005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1964

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	---	8.7	9.9	9.0	---	1
2	---	---	---	---	---	---	---	---	9.3	9.9	12.0	---	2
3	---	---	---	---	---	---	---	---	9.0	10.5	9.0	---	3
4	---	---	---	---	---	---	---	---	9.0	10.8	8.4	---	4
5	---	---	---	---	---	---	---	---	8.7	11.1	8.7	---	5
6	---	---	---	---	---	---	---	---	12.4	10.8	8.4	---	6
7	---	---	---	---	---	---	---	---	16.0	10.2	9.0	---	7
8	---	---	---	---	---	---	---	---	18.4	9.9	10.5	---	8
9	---	---	---	---	---	---	---	---	18.4	9.9	9.3	---	9
10	---	---	---	---	---	---	---	---	17.2	9.9	---	---	10
11	---	---	---	---	---	---	---	---	16.4	9.3	---	---	11
12	---	---	---	---	---	---	---	21.0	15.2	9.3	---	---	12
13	---	---	---	---	---	---	---	19.6	14.6 E	9.3	---	---	13
14	---	---	---	---	---	---	---	18.4	14.0 E	9.6	---	---	14
15	---	---	---	---	---	---	---	16.8	13.3 E	9.3	---	---	15
16	---	---	---	---	---	---	---	15.6	12.7 E	9.6	---	---	16
17	---	---	---	---	---	---	---	14.4	12.1 E	9.3	---	---	17
18	---	---	---	---	---	---	---	12.8	11.5 E	9.0	---	---	18
19	---	---	---	---	---	---	---	12.0	10.8 E	9.6	---	---	19
20	---	---	---	---	---	---	---	11.7	10.2	9.6	---	---	20
21	---	---	---	---	---	---	---	11.4	9.9	9.0	---	---	21
22	---	---	---	---	---	---	---	11.4	9.6	9.0	---	---	22
23	---	---	---	---	---	---	---	12.8	9.6	8.7	---	---	23
24	---	---	---	---	---	---	---	12.0	9.6	9.0	---	---	24
25	---	---	---	---	---	---	---	11.1	9.6	9.0	---	---	25
26	---	---	---	---	---	---	---	11.1	9.6	8.7	---	---	26
27	---	---	---	---	---	---	---	10.5	9.6	8.7	---	---	27
28	---	---	---	---	---	---	---	9.9	9.9	8.7	---	---	28
29	---	---	---	---	---	---	---	9.9	9.9	8.7	---	---	29
30	---		---	---	---	---	---	9.0	9.6	8.7	---	---	30
31	---		---		---		---	8.4		8.7		---	31
TOTAL	---	---	---	---	---	---	---	---	354.8	293.7	---	---	TOTAL
MEAN	---	---	---	---	---	---	---	---	11.8	9.5	---	---	MEAN
AC-FT	---	---	---	---	---	---	---	---	704	583	---	---	AC-FT
MAX	---	---	---	---	---	---	---	---	18.4	11.1	---	---	MAX
MIN	---	---	---	---	---	---	---	---	8.7	8.7	---	---	MIN

E-ESTIMATED



WATER SURVEY OF CANADA
AUG 6 1970 PAGE 84
CALGARY, ALTA.

BEAVER RIVER NEAR FORT MACKAY

STATION NO. 07DA005

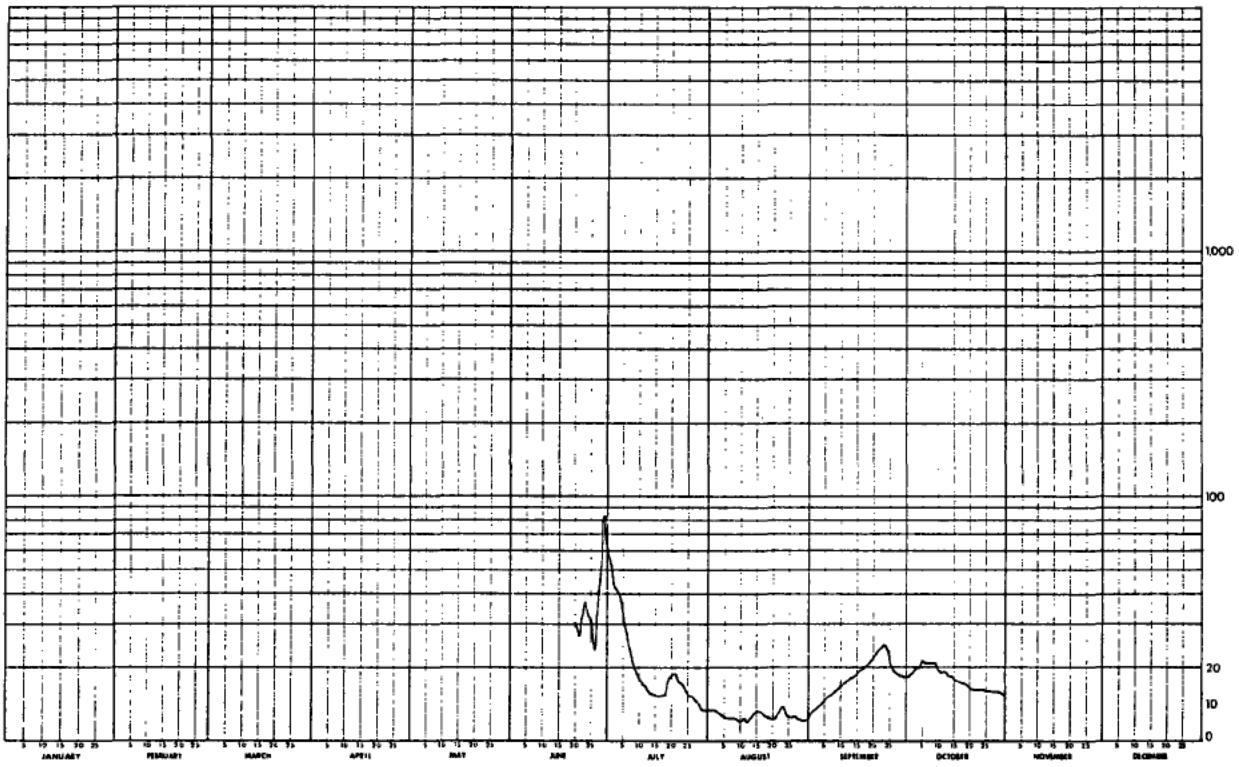
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1965

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	51.2	7.2	6.3	16.8	---	---	1
2	---	---	---	---	---	---	42.2	6.6	7.1 E	18.0	---	---	2
3	---	---	---	---	---	---	41.0	6.3	8.0 E	20.0	---	---	3
4	---	---	---	---	---	---	37.4	5.8	8.8 E	20.0	---	---	4
5	---	---	---	---	---	---	32.0	5.6	9.7 E	21.5	---	---	5
6	---	---	---	---	---	---	27.5	5.4	10.5 E	21.0	---	---	6
7	---	---	---	---	---	---	24.0	5.0	11.4 E	21.0	---	---	7
8	---	---	---	---	---	---	20.5	5.0	12.2 E	21.0	---	---	8
9	---	---	---	---	---	---	18.0	4.6	13.1 E	21.0	---	---	9
10	---	---	---	---	---	---	16.0	4.2	13.9 E	19.6	---	---	10
11	---	---	---	---	---	---	14.0	4.6	14.7 E	18.4	---	---	11
12	---	---	---	---	---	---	13.2	4.8	15.6 E	18.4	---	---	12
13	---	---	---	---	---	---	11.7	5.0	16.4 E	17.2	---	---	13
14	---	---	---	---	---	---	11.1	6.0	17.3 E	16.8	---	---	14
15	---	---	---	---	---	---	10.8	6.3	18.1 E	16.4	---	---	15
16	---	---	---	---	---	---	10.5	6.3	19.0 E	15.6	---	---	16
17	---	---	---	---	---	---	11.1	6.0	19.8 E	14.8	---	---	17
18	---	---	---	---	---	---	11.1	5.8	20.7 E	14.4	---	---	18
19	---	---	---	---	---	---	16.4	5.6	21.5 E	14.0	---	---	19
20	---	---	---	---	---	30.0	16.8	5.2	22.4 E	13.2	---	---	20
21	---	---	---	---	---	27.0	17.2 E	5.2	23.2 E	12.8	---	---	21
22	---	---	---	---	---	32.0	15.6 E	6.6	24.1 E	12.8	---	---	22
23	---	---	---	---	---	36.2	14.0 E	7.8	25.0	12.8	---	---	23
24	---	---	---	---	---	32.5	12.4 E	6.8	23.5	12.4 E	---	---	24
25	---	2.1	---	---	---	31.0	10.8	5.6	21.5	12.4 E	---	---	25
26	---	---	---	---	---	23.5	10.5	5.4	19.6	12.4 E	---	---	26
27	---	---	---	---	---	41.0	9.6	5.6	18.0	12.0 E	---	---	27
28	---	---	---	---	---	79.3	8.7	4.8	17.2	12.0 E	---	---	28
29	---		---	---	---	81.6	7.2	4.6	16.8	12.0 E	---	---	29
30	---		---	---	---	62.5	7.2	4.4	16.8	11.7 E	---	---	30
31	---		---		---		7.2	4.8		11.7 E		---	31
TOTAL	---	---	---	---	---	---	556.9	172.1	492.2	494.1	---	---	TOTAL
MEAN	---	---	---	---	---	---	18.0	5.6	16.4	15.9	---	---	MEAN
AC-FT	---	---	---	---	---	---	1100	341	976	980	---	---	AC-FT
MAX	---	---	---	---	---	---	51.2	7.8	25.0	21.5	---	---	MAX
MIN	---	---	---	---	---	---	7.2	4.2	6.3	11.7	---	---	MIN

SUMMARY FOR THE MONTHS JUL TO OCT

MEAN DISCHARGE, 13.9 CFS
TOTAL DISCHARGE, 3400 AC-FT
MAXIMUM DAILY DISCHARGE, 51.2 CFS ON JUL 1
MINIMUM DAILY DISCHARGE, 4.2 CFS ON AUG 10

E-ESTIMATED



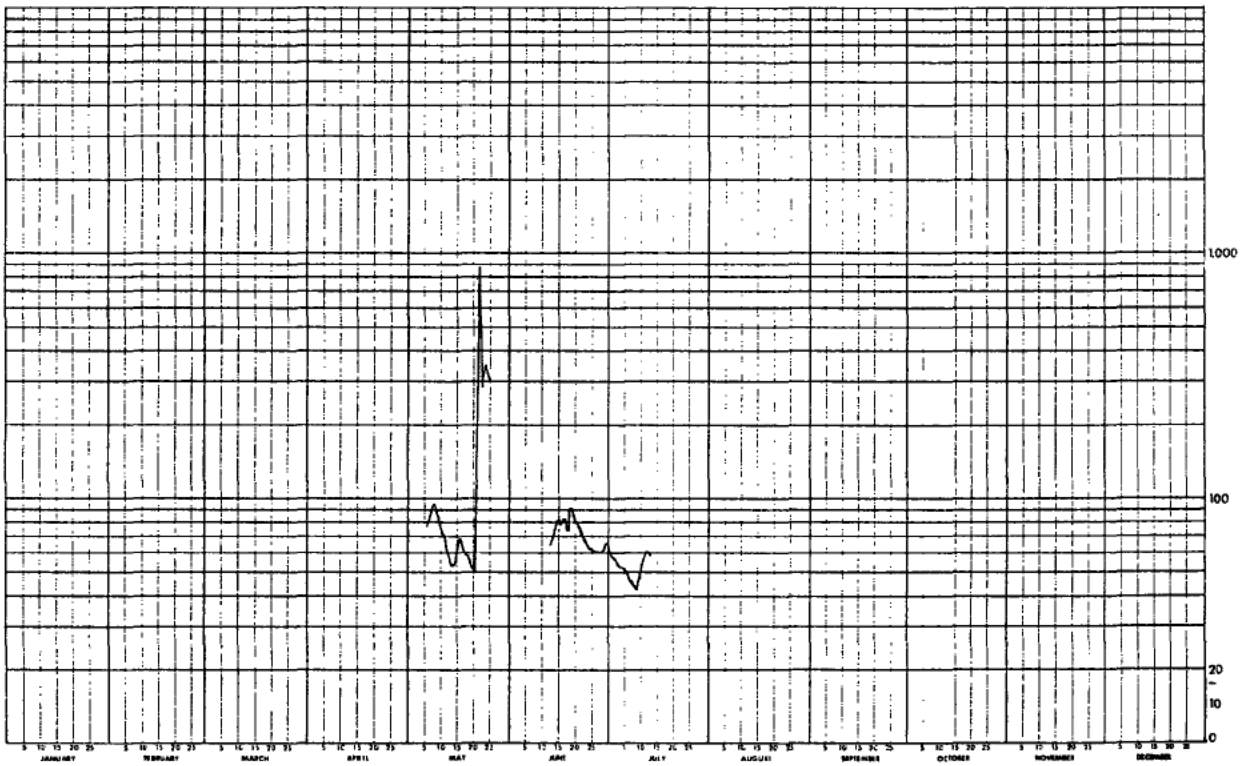
WATER SURVEY OF CANADA
AUG 6 1970 PAGE 85
CALGARY, ALTA.

BEAVER RIVER NEAR FORT MACKAY

STATION NO. 07DA005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1966

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	59.8	---	---	---	---	1
2	---	---	---	---	---	---	---	57.2	---	---	---	---	2
3	---	---	---	---	---	---	---	54.2	---	---	---	---	3
4	---	---	---	---	---	---	---	52.4	---	---	---	---	4
5	---	---	---	---	---	---	---	52.4	---	---	---	---	5
6	---	---	---	---	77.2	---	---	49.4	---	---	---	---	6
7	---	---	---	---	89.6	---	---	46.4	---	---	---	---	7
8	---	---	---	---	95.2	---	---	44.6	---	---	---	---	8
9	---	---	---	---	86.4	---	---	42.8	---	---	---	---	9
10	---	---	---	---	77.9	---	---	48.2	---	---	---	---	10
11	---	---	---	---	70.9	---	---	56.6	---	---	---	---	11
12	---	---	---	---	63.2	---	---	60.4	---	---	---	---	12
13	---	---	---	---	55.4	---	---	58.4	---	---	---	---	13
14	---	---	---	---	53.6	---	66.0	---	---	---	---	---	14
15	---	---	---	---	62.5	---	75.1	---	---	---	---	---	15
16	---	---	---	---	68.8	---	82.4	---	---	---	---	---	16
17	---	---	---	---	63.2	---	78.6	---	---	---	---	---	17
18	---	---	---	---	59.7	---	83.2	---	---	---	---	---	18
19	---	---	---	---	56.6	---	75.1	---	---	---	---	---	19
20	---	---	---	---	51.8	---	91.2	---	---	---	---	---	20
21	---	---	---	---	50.0	---	82.4	---	---	---	---	---	21
22	---	---	---	---	864	---	76.5	---	---	---	---	---	22
23	---	---	---	---	288	---	70.9	---	---	---	---	---	23
24	---	---	---	---	346	---	67.4	---	---	---	---	---	24
25	---	---	---	---	304	---	63.2	---	---	---	---	---	25
26	---	---	---	---	---	---	61.1	---	---	---	---	---	26
27	---	---	---	---	---	---	60.4	---	---	---	---	---	27
28	---	---	---	---	---	---	60.4	---	---	---	---	---	28
29	---		---	---	---	---	64.6	---	---	---	---	---	29
30	---		---	---	---	---	64.6	---	---	---	---	---	30
31	---		---		---		61.8	---		---		---	31
TOTAL	---	---	---	---	---	---	---	---	---	---	---	---	TOTAL
MEAN	---	---	---	---	---	---	---	---	---	---	---	---	MEAN
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---	AC-FT
MAX	---	---	---	---	---	---	---	---	---	---	---	---	MAX
MIN	---	---	---	---	---	---	---	---	---	---	---	---	MIN



WATER SURVEY OF CANADA
AUG 23 1973 PAGE 30
CALGARY, ALTA.

BEAVER RIVER NEAR FORT MACKAY — STATION NO. 07DA005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1972

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	4.3 d	1160	130	15.2 E	9.8	4.7	21.3 E	22.0 B	11.7 B	1
2	---	---	---	4.5 B	1670	134	21.0 E	9.8	4.6 E	27.1	22.0 B	11.6 B	2
3	---	---	---	4.3 d	1110	94.1 E	26.7	8.8	4.5 E	22.4	22.0 B	11.4 B	3
4	---	---	---	5.0 d	1120	94.2 E	27.1	9.1	4.4 E	22.4	21.5 B	11.3 B	4
5	---	---	---	5.2 B	923	14.3	33.8	9.0 E	4.3	13.4	20.9 B	11.2 B	5
6	---	---	---	5.5 B	433	14.1 E	24.8	9.0 E	4.3	13.4	20.4 B	11.1 B	6
7	---	---	---	5.7 B	393 E	13.8	24.3	8.9 E	4.7	19.2 E	19.9 B	10.9 B	7
8	---	---	---	5.9 B	283	37.7 E	17.6 E	8.8	4.1	25.0 E	19.4 B	10.8 B	8
9	---	---	---	6.2 B	228	81.0 E	10.9 E	9.8	4.4 E	30.8 E	18.8 B	10.7 B	9
10	---	---	---	6.4 d	291	85.9 E	4.2	8.8	4.7 E	36.6	18.3 B	10.6 B	10
11	---	---	---	6.6 B	183	105 E	105	8.1	5.0 E	46.6	17.8 B	10.5 B	11
12	---	---	---	6.8 d	222 E	133 E	149	8.8 E	5.3 E	67.5	17.2 B	10.3 B	12
13	---	---	---	7.1 B	253 E	197	80.0	7.9 E	5.8 E	79.4	16.7 B	10.2 B	13
14	---	---	---	7.3 B	283 E	191 E	9.1	7.8	5.9 E	75.4 E	16.2 B	10.1 B	14
15	---	---	6.4 B	7.5 d	323	224 E	33.8	8.4	6.2 E	71.5 E	15.8 B	10.3 B	15
16	---	---	8.8 B	7.8 B	183	258	18.6 E	4.7	6.5 E	67.5	15.1 B	9.9 B	16
17	---	---	8.9 B	8.0 B	184	191 E	3.8	25.7	6.8 E	67.5	14.8 B	9.7 B	17
18	---	---	11.1 B	13.5 B	313	124 E	3.3	5.2	7.1 E	58.8	14.1 B	9.6 B	18
19	---	---	13.3 B	19.6 B	315	97.8	31.8	5.1 E	7.4 E	46.8	13.5 B	9.5 B	19
20	---	---	14.8 B	45.3 B	293 E	96.1	29.3	5.1 E	7.7 E	27.8 B	13.8 B	9.4 B	20
21	---	---	14.8 B	31.8 B	261 E	130	23.4	5.8	8.3 E	32.3 B	12.9 B	9.3 B	21
22	---	---	24.8 B	41.9 B	143 E	109	22.8 E	4.8	8.3 E	38.9 B	12.6 B	9.1 B	22
23	---	---	24.2 B	92.3 B	88.6	88.6	20.8 E	5.9	8.6 E	41.8 B	12.8 B	9.8 B	23
24	---	---	24.9 B	83.7 B	71.8	59.2 E	19.2	4.4	8.3 E	38.8 B	12.8 B	8.9 B	24
25	---	---	24.7 B	74.8 B	82.8	32.1 E	18.8	3.9	9.2 E	32.8 B	12.4 B	8.8 B	25
26	---	---	2.9 B	1.2 B	93.8	5.1	16.5	3.8 E	9.5 E	37.8 B	12.3 B	8.7 B	26
27	---	---	3.2 B	3.2 B	43.8 E	4.5	14.7	3.4 E	9.8	33.8 B	12.2 B	8.5 B	27
28	---	---	3.4 B	8.8 B	43.8 E	3.9	14.3	3.1	9.8	30.5 B	12.0 B	8.4 B	28
29	---	---	3.8 B	12.8 B	33.8	3.7	13.2 E	4.4	9.8	27.4 B	11.9 B	8.3 B	29
30	---		3.9 B	11.8	24.8	4.8 E	12.1 E	4.9	15.4 E	24.3 B	11.8 B	8.2 B	30
31	---		4.1 B		25.7		11.8	4.7		17.4 B		8.8 B	31
TOTAL	---	---	---	340.2	10205.1	2023.2	866.9	223.4	209.1	1188.8	482.4	305.7	TOTAL
MEAN	---	---	---	11.3	332	67.4	28.0	7.2	6.8	38.3	16.1	9.9	MEAN
AC-FT	---	---	---	675	20240	4010	1720	443	415	2360	957	606	AC-FT
MAX	---	---	---	12.9	1670	258	105	25.7	15.4	79.4	22.0	11.7	MAX
MIN	---	---	---	4.3	24.8	3.7	3.3	3.1	4.1	13.4	11.8	8.8	MIN

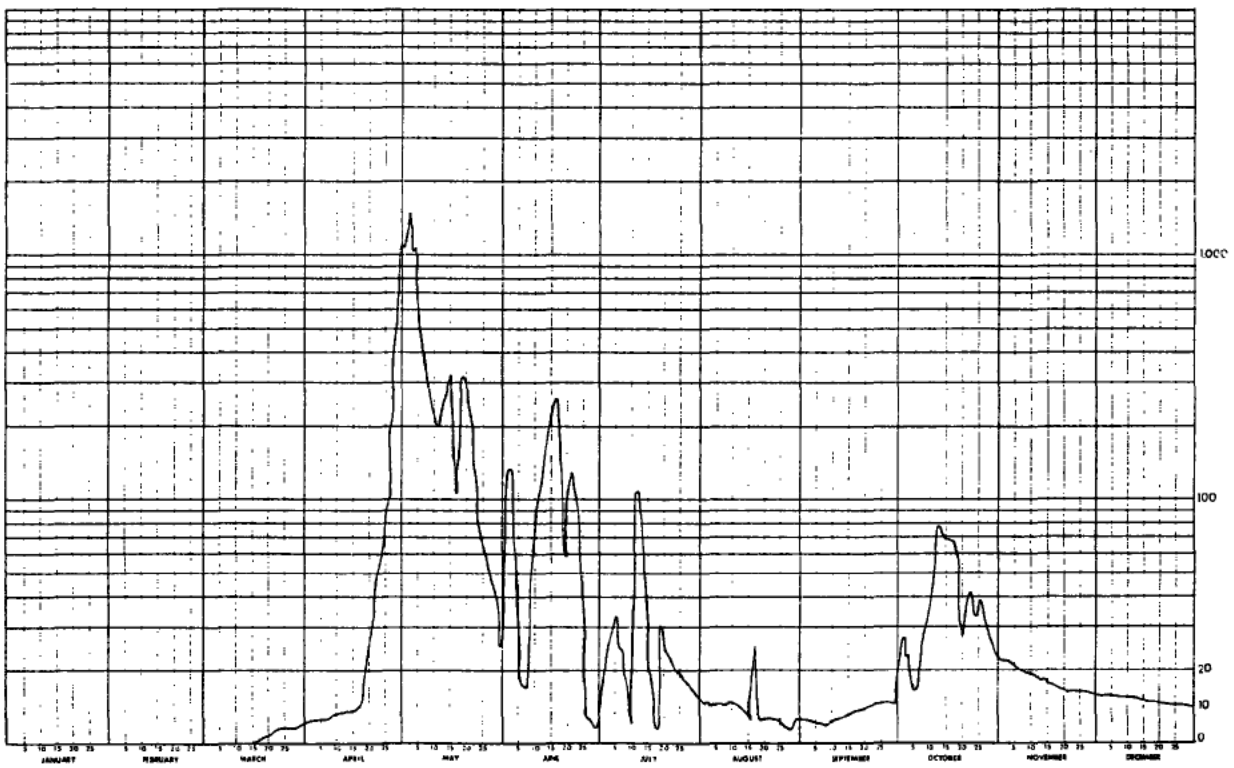
SUMMARY FOR THE YEAR 1972

MAXIMUM DAILY DISCHARGE, 1670 CFS ON MAY 2

TYPE OF GAUGE - MANUAL
LOCATION - LAT 57 06 38 N
LONG 111 36 06 W

B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA
MAY 15 1974 PAGE 288
CALGARY, ALTA.

BEAVER RIVER NEAR FORT MACKAY

STATION NO. 07DA005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1973

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	7.9 B	5.1 B	7.5 B	28.0 B	84.6 E	152	349	35.6	31.0 E	41.6	74.2 B	15.6 B	1
2	7.8 B	5.1 B	8.1 B	28.7 B	84.0 E	164	237	52.6	38.3 E	42.6	63.2 B	15.4 B	2
3	7.7 B	5.0 B	8.8 B	29.3 B	79.4	226	181	66.4	29.6	46.6	52.1 B	15.2 B	3
4	7.6 B	4.9 B	9.5 B	30.0 B	55.6	328	158	136 E	25.7	49.6	41.1 B	15.1 B	4
5	7.4 B	4.8 B	10.1 B	27.5 B	46.6	282 E	161	206 E	24.8	51.6	38.8 B	14.9 B	5
6	7.3 B	4.8 B	10.8 B	25.0 B	49.6	235	125	276 E	26.2	67.5 E	27.8 B	14.7 B	6
7	7.2 B	4.7 B	11.5 B	36.1 B	64.2	240	119	346	22.9	83.3 E	26.8 B	14.5 B	7
8	7.1 B	4.6 B	12.1 B	47.3 B	55.6	468	313 E	475	21.9 E	91.2 E	24.5 B	14.3 B	8
9	7.0 B	4.5 B	12.8 B	58.4 B	56.6	503	519	367	20.8 E	115	23.5 B	14.1 B	9
10	6.8 B	4.5 B	13.4 B	69.5 B	58.6	587	391	253	19.7	107	22.8 B	13.9 B	10
11	6.7 B	4.4 B	14.1 B	80.7 B	48.6	465	395	217 E	16.5	102	22.2 B	13.7 B	11
12	6.6 B	4.3 B	14.8 B	91.8 B	46.6	380	375	188 E	15.6	101	21.6 B	13.5 B	12
13	6.5 B	4.2 B	15.4 B	131 B	42.6	305	367	143	17.9	91.8 E	21.0 B	13.3 B	13
14	6.5 B	4.2 B	16.1 B	121 B	43.6	312	348 E	134	23.8	81.8 E	20.4 B	13.1 B	14
15	6.4 B	4.1 B	16.8 B	84.8 B	36.6	320	328 E	127	22.8 E	71.8	19.8 B	13.0 B	15
16	6.3 B	4.0 B	17.4 B	97.6 B	28.6	468	318	79.4	21.7 E	65.3	19.2 B	12.8 B	16
17	6.2 B	3.9 B	18.1 B	110 B	29.6	589	237	65.3	20.6	64.2	19.0 B	12.6 B	17
18	6.2 B	3.9 B	18.7 B	110 B	27.6	715	152	70.8 E	19.2	64.2	18.7 B	12.4 B	18
19	6.1 B	3.8 B	19.4 B	110 B	27.1	532	146	74.7 E	20.6	62.8	18.5 B	12.2 B	19
20	6.0 B	3.7 B	20.1 B	96.1 B	33.6	369	128	79.4	17.4	60.6 E	18.2 B	12.0 B	20
21	5.9 B	3.6 B	20.7 B	94.6 B	99.1	272	116 E	69.8	19.7	59.1 E	18.0 B	11.8 B	21
22	5.9 B	3.6 B	21.4 B	101 B	86.2	221	104 E	62.0	20.3 E	57.6	17.7 B	11.6 B	22
23	5.8 B	3.5 B	22.1 B	108 B	78.2	188	91.8	63.1	20.9 E	59.8	17.5 B	11.4 B	23
24	5.7 B	4.2 B	22.7 B	115 B	71.0	192	87.5	43.6	21.5	63.1	17.2 B	11.2 B	24
25	5.6 B	4.8 B	23.4 B	113	56.6	199	83.1	42.6 E	49.6	65.3	17.0 B	11.0 B	25
26	5.6 B	5.5 B	24.0 B	112	50.6	188	68.6	41.6 E	41.6	68.6	16.7 B	10.9 B	26
27	5.5 B	6.2 B	24.7 B	102	34.6	181	59.8	40.6	36.6	69.8 E	16.5 B	10.7 B	27
28	5.4 B	6.8 B	25.4 B	102	33.6	305	55.8 E	37.6	31.6	71.0 E	16.2 B	10.5 B	28
29	5.3 B		26.0 B	96.1	75.8	351	51.7 E	33.6	34.9 E	72.2	16.0 B	10.3 B	29
30	5.3 B		26.7 B	93.2	98.6	343	47.5	29.6	38.3 E	73.2 E	15.5 B	10.1 B	30
31	5.2 B		27.4 B		91.8		44.5	31.6		74.8 E		9.9 B	31
TOTAL	194.5	126.7	540.8	2449.7	1763.2	9960	6126.6	3879.1	764.0	2192.8	752.6	395.7	TOTAL
MEAN	6.4	4.5	17.4	81.7	56.9	332	198	125	25.5	70.7	25.1	12.8	MEAN
AC-FT	386	251	1070	4860	3500	19800	12200	7690	1520	4350	1490	785	AC-FT
MAX	7.9	6.8	27.4	131	99.1	715	519	475	49.6	115	74.2	15.6	MAX
MIN	5.2	3.5	7.5	25.0	27.1	152	44.5	29.6	15.6	41.6	15.8	9.9	MIN

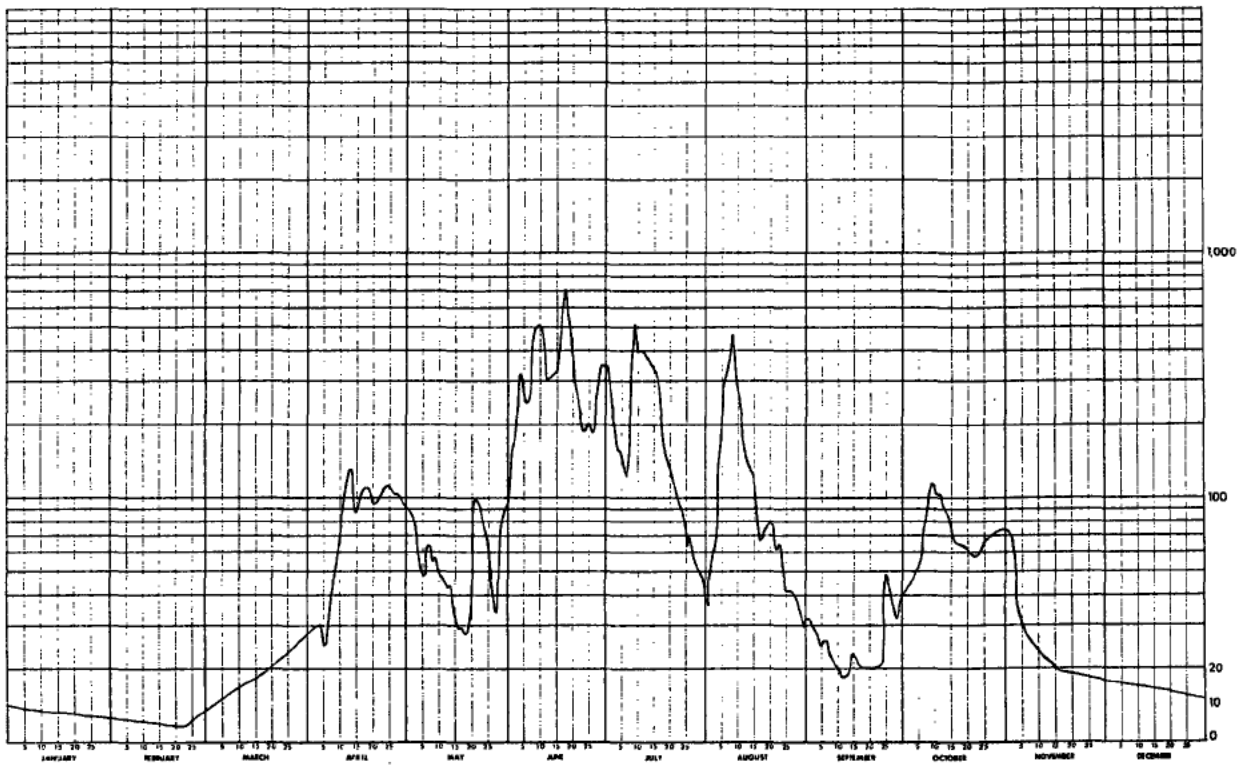
SUMMARY FOR THE YEAR 1973

MEAN DISCHARGE, 79.9 CFS
TOTAL DISCHARGE, 57900 AC-FT
MAXIMUM DAILY DISCHARGE, 715 CFS ON JUN 14
MINIMUM DAILY DISCHARGE, 3.5 CFS ON FEB 23

TYPE OF GAUGE - MANUAL
LOCATION - LAT 57 06 00 N
LONG 111 38 00 W

B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA — PEACE RIVER NEAR FORT MACKAY — STATION NO. 07DA001
JUL 1- 1977 (PAGE 130)
CALGARY, ALTA.

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	4.7	4.3	5.0	5.0	272	76.4 F	52.4 F	174	32.6 F	29.4 E	18.7	11.3	1
2	4.9	4.7	5.0	5.3	214	74.5 F	52.6	167	31.6 F	27.1	19.4	11.1	2
3	5.1	4.8	5.0	5.0	184	72.9 F	51.1 F	144	29.6	27.0 E	19.2	10.9	3
4	5.1	4.5	5.0	5.0	177	71.8	49.6	116	28.7	26.9 E	17.9	10.6	4
5	5.0	4.5	5.0	5.0	166 E	69.5 F	47.6	98.4	27.1 F	26.9 E	17.7	10.5	5
6	4.9	4.2	5.0	7.0	156	70.9	46.6	89.8	26.4	26.8 F	17.4	10.3	6
7	4.8	4.1	5.1	7.0	146	71.0	47.6	81.6	26.5 F	26.7	17.2	10.2	7
8	4.6	4.3	5.1	7.0	133	70.0	48.6	78.6	27.5 F	26.9	16.9	10.1	8
9	5.2	4.3	5.2	7.1	240	73.0	49.6	74.6	29.6	27.1	16.7	10.0	9
10	5.0	4.1	5.2	7.1	349	143	52.6	72.1 E	32.8 F	26.9 E	16.5	9.8	10
11	7.4	4.1	5.2	7.1	334	176 E	54.2 F	73.6 F	34.5 F	26.6 E	16.2	9.7	11
12	7.7	4.2	5.2	7.2	290	148	55.8	77.1	34.9 F	26.1 E	16.0	9.6	12
13	7.8	4.3	5.3	10.4	249	132 E	146	76.5 E	34.3 F	26.1 E	15.7	9.4	13
14	7.6	4.3	5.3	13.6	203	104	144	73.8	41.8 E	25.9 E	15.5	9.3	14
15	7.2	4.5	5.3	28.9	176	92.0	138	76.2	44.2 E	25.6 E	15.2	9.2	15
16	7.1	4.5	5.4	108	149	77.2	135	76.2	45.6 E	25.3 E	15.0	9.1	16
17	7.0	4.5	5.4	336	129	63.1	130	76.7 E	48.1 E	25.1 E	14.8	8.9	17
18	7.4	4.7	5.4	571	115 E	54.9 E	134	77.1 E	51.5 E	24.1	14.5	8.8	18
19	8.7	4.9	5.5	744	101	46.6	117	77.6	52.9 E	23.9 E	14.3	8.7	19
20	9.5	4.9	5.6	788	103 E	78.6 E	108	73.8	51.4 E	23.8 E	14.0	8.6	20
21	9.4	5.0	5.6	667	104	88.6	90.3	71.5	54.8 E	22.8 E	13.8	8.4	21
22	8.1	5.0	5.6	641	104	94.9 E	80.4	72.4	61.2 E	21.1	13.5	8.3	22
23	6.1	5.1	5.6	673	97.6	94.3 E	77.0	72.4	61.7 E	20.9 E	13.3	8.2	23
24	6.0	5.2	5.6	687	93.4	87.6	67.1	68.7 E	61.1 E	20.6 E	13.0	8.0	24
25	6.4	5.3	5.6	701	77.4	65.1	51.6	71.0	64.5 E	20.4 E	12.8	7.9	25
26	5.7	5.4	5.7	575	77.4 E	51.0 E	42.6	56.6	71.8 E	20.1 E	12.6	7.8	26
27	5.5	5.4	5.7	491	77.4	56.6	40.6	53.6	77.4	19.9	12.3	7.7	27
28	5.4	5.5	5.7	411	66.4	61.6	38.6	52.6	59.7 E	19.6	12.1	7.5	28
29	5.3		5.8	323	77.2	61.9 E	36.6	49.1 E	47.1 E	19.4	11.8	7.4	29
30	5.2		5.9	229	84.8	62.1 E	37.6	46.6	31.6	19.1	11.6	7.3	30
31	5.0		6.0		78.7		54.5	41.6 E		18.9		7.1	31
TOTAL	221.8	140.2	166.1	7598.4	4875.8	2137.1	2461.3	1617.9	1342.9	746.1	453.6	281.6	TOTAL
MEAN	7.2	4.7	5.3	245	157	71.2	79.4	52.2	44.8	24.1	15.1	9.1	MEAN
AC-FT	440	278	329	15080	9670	4240	4880	3210	2660	1480	900	559	AC-FT
MAX	9.7	5.5	6.0	744	349	176	198	167	77.4	29.4	19.7	11.3	MAX
MIN	5.0	4.0	5.0	5.0	66.4	39.5	35.6	21.5	23.4	18.9	11.6	7.1	MIN

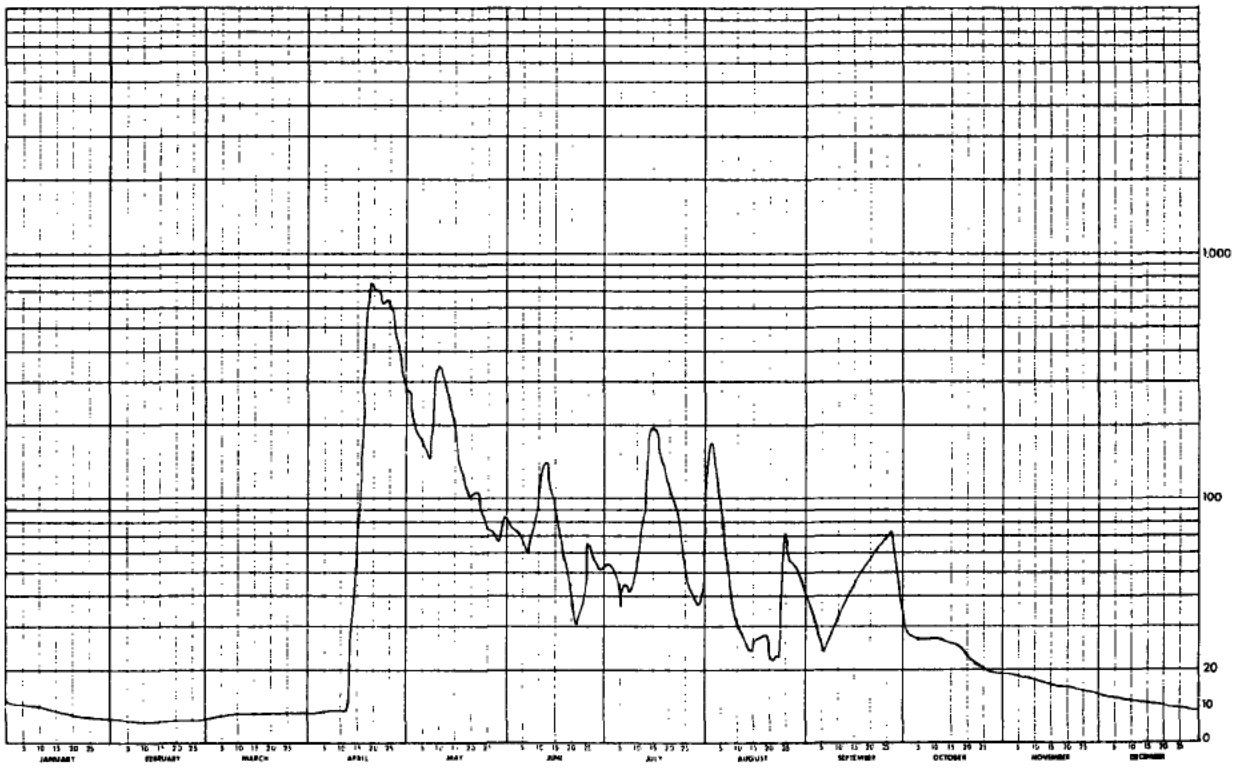
SUMMARY FOR THE YEAR 1976

MEAN DISCHARGE, 81.5 CFS
TOTAL DISCHARGE, 59080 AC-FT
MAXIMUM DAILY DISCHARGE, 744 CFS ON APR 19
MINIMUM DAILY DISCHARGE, 4.9 CFS ON FEB 4

TYPE OF GAUGE - MANUAL
LOCATION - LAT 57 46 00 N
LONG 111 39 00 W

E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA
JUN 02 1976 PAGE 105
CALGARY, ALTA.

BEAVER RIVER NEAR FORT MACKAY

STATION NO. 07DA005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	6.7 A	3.5 A	2.4 A	2.6 A	152	65.3	427	91.6	172	101	18.0	3.2 A	1
2	6.2 A	3.5 A	2.8 A	2.6 A	164	65.3	340	80.6	165	97.6	17.0	3.0 A	2
3	5.9 A	3.5 A	2.7 A	2.6 A	144	67.5	256	83.4	164	82.0	17.0	2.9 A	3
4	5.5 A	3.4 A	2.7 A	2.6 A	132	42.3	134	89.0	219	75.8	18.0	2.8 A	4
5	5.3 A	3.4 A	2.7 A	2.7 A	107	98.4	146	87.6	208	72.2	16.1	2.8 A	5
6	5.1 A	3.4 A	2.7 A	2.7 A	124	102	120	77.8	249	69.8	16.0	2.4 A	6
7	5.0 A	3.3 A	2.7 A	2.7 A	112 E	91.4	94.6	77.2	219	110	15.4 A	2.3 A	7
8	4.9 A	3.1 A	2.7 A	2.8 A	98.5 E	93.6	75.5	66.4	194	125	14.0 A	2.2 A	8
9	4.7 A	3.2 A	2.6 A	2.9 A	84.8	93.2	65.3	60.9	167	122	13.0 A	2.2 A	9
10	4.6 A	3.3 A	2.6 A	3.0 A	80.6	117	50.6	54.6	132	114	13.0 A	2.2 A	10
11	4.5 A	3.2 A	2.6 A	3.2 A	69.8	135	4.2	50.4	135	106	13.0 A	2.2 A	11
12	4.4 A	3.2 A	2.6 A	3.5 A	65.3	124	29.6	45.6	116	113	12.0 A	2.2 A	12
13	4.3 A	3.2 A	2.6 A	3.9 A	79.4	131	31.6	48.4	86.2	102	12.0 A	2.2 A	13
14	4.2 A	3.1 A	2.6 A	5.0 A	84.8	113	242	51.4	91.4	94.4	11.0 A	2.2 A	14
15	4.2 A	3.1 A	2.7 A	5.6 A	84.8	84.8	423	42.6	82.8	35.6	10.0 A	2.2 A	15
16	4.1 A	3.1 A	2.5 A	16.1 A	73.4	89.0	471	39.6	79.4	28.6	9.8 A	2.2 A	16
17	4.6 A	3.1 A	2.5 A	30.0 A	69.8	141	693	34.6	107	33.8	9.1 A	2.2 A	17
18	4.0 A	3.0 A	2.6 A	42.2 A	73.4	165	1910	27.6	111	27.6	8.5 A	2.2 A	18
19	4.0 A	3.0 A	2.5 A	44.2 A	59.8	126	845	25.7	101	27.1	7.9 A	2.2 A	19
20	3.9 A	3.0 A	2.5 A	54.7 A	60.9	91.8	473 E	24.8	75.8	27.1	7.3 A	2.2 A	20
21	3.9 A	3.0 A	2.5 A	57.5 A	56.6	84.8	346	32.6	74.6	25.9 E	6.8 A	2.2 A	21
22	3.9 A	3.0 A	2.5 A	85.1 A	49.6	72.2	253	29.6	73.4	24.6 E	6.4 A	2.2 A	22
23	3.8 A	2.9 A	2.5 A	84.1 A	42.6	71.0	264	37.6	72.2	23.4	6.0 A	2.3 A	23
24	3.8 A	2.9 A	2.5 A	29.0	72.2	75.8	160	58.6	67.5	20.6	5.6 A	2.3 A	24
25	3.7 A	2.9 A	2.5 A	65.3	111	83.4	149	64.2	52.6	19.2	5.3 A	2.3 A	25
26	3.7 A	2.9 A	2.5 A	76.3	351	150	119	66.4	53.1	21.8	4.9 A	2.3 A	26
27	3.7 A	2.9 A	2.5 A	64.3	141	244	116	56.7	49.6	20.0	4.6 A	2.4 A	27
28	3.6 A	2.9 A	2.5 A	96.9	125	292	122	49.6	53.6	19.0	4.2 A	2.4 A	28
29	3.6 A		2.5 A	112	119	465	146	67.5	65.3	19.0	3.8 A	2.4 A	29
30	3.6 A		2.6 A	132	89.0	510	119	190	107	15.0	3.5 A	2.4 A	30
31	3.5 A		2.5 A		73.4		131	192		18.0		2.4 A	31
TOTAL	136.1	98.1	79.9	1043.4	3152.7	3993.9	9578.7	2304.0	3552.5	1795.3	307.8	73.0	TOTAL
MEAN	4.4	3.1	2.6	34.8	102	133	277	64.6	118	57.9	10.3	2.4	MEAN
AC-FT	270	195	159	2110	6250	7920	17000	3970	7050	3560	611	145	AC-FT
MAX	6.7	3.5	2.8	132	351	510	1910	192	249	125	18.0	3.2	MAX
MIN	3.5	2.9	2.5	2.6	42.6	65.3	4.2	24.8	49.6	18.0	3.5	2.2	MIN

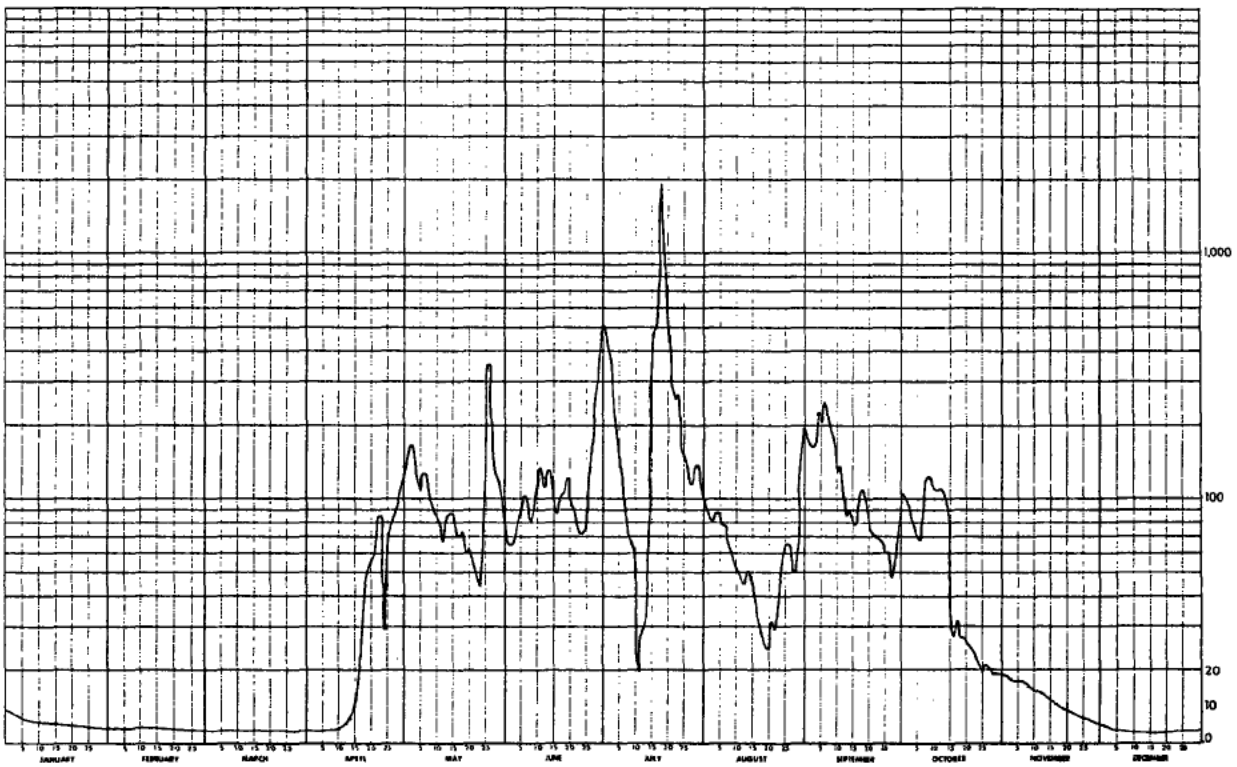
SUMMARY FOR THE YEAR 1975

MEAN DISCHARGE, 69.4 CFS
TOTAL DISCHARGE, 5020 AC-FT
MAXIMUM DAILY DISCHARGE, 1910 CFS ON JUL 19
MINIMUM DAILY DISCHARGE, 2.2 CFS ON DEC 8

TYPE OF GAUGE - MANUAL
LOCATION - LAT 57 06 00 N
LONG 111 38 00 W
DRAINAGE AREA 168 SQ MILES

B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



5.7 BIRCH RIVER BELOW ALICE CREEK

STATION NAME: Birch River below Alice Creek

STATION NUMBER: 07KE001

LOCATION: Latitude: 58°18'40" Longitude: 113°04'05"

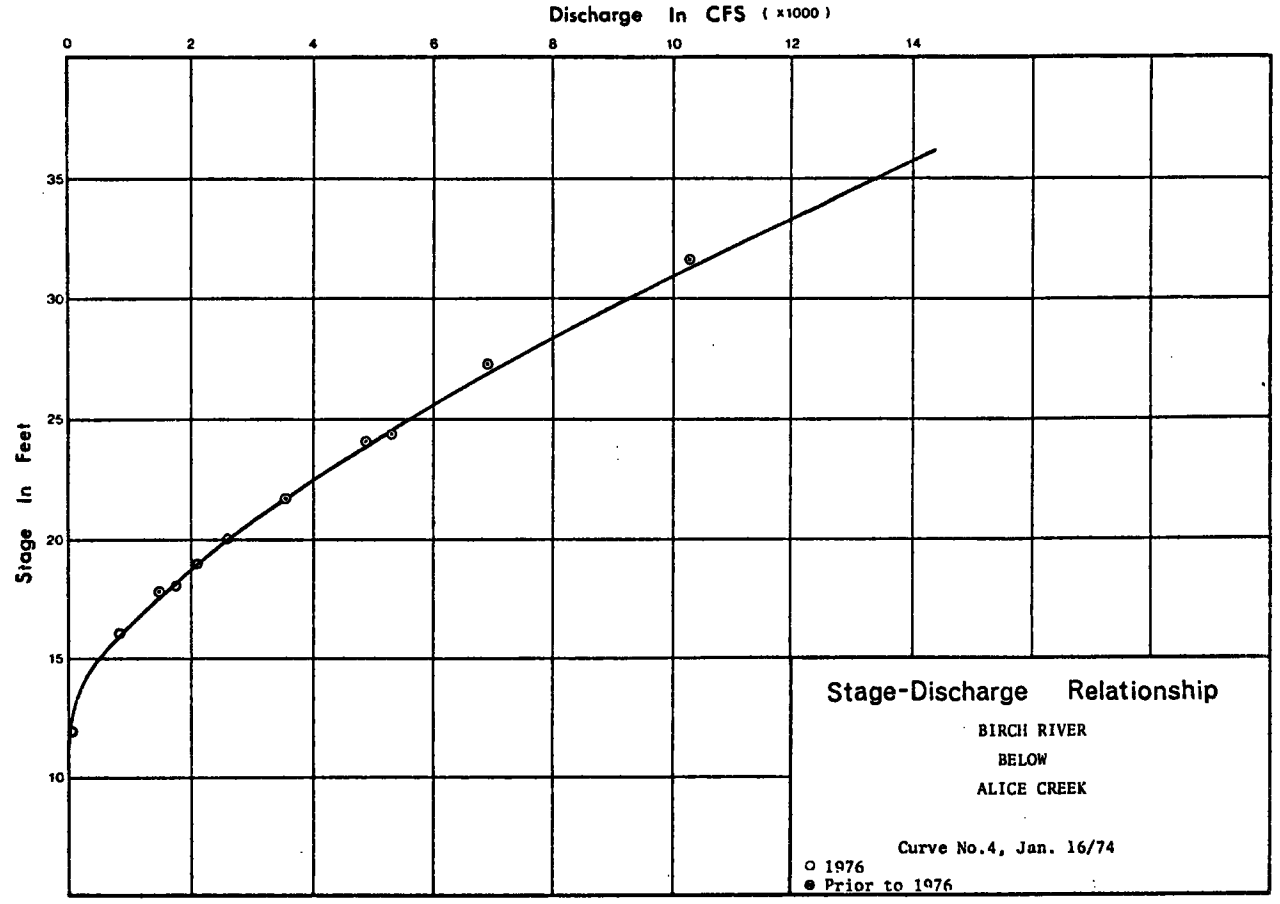
SW26-107-19-W4

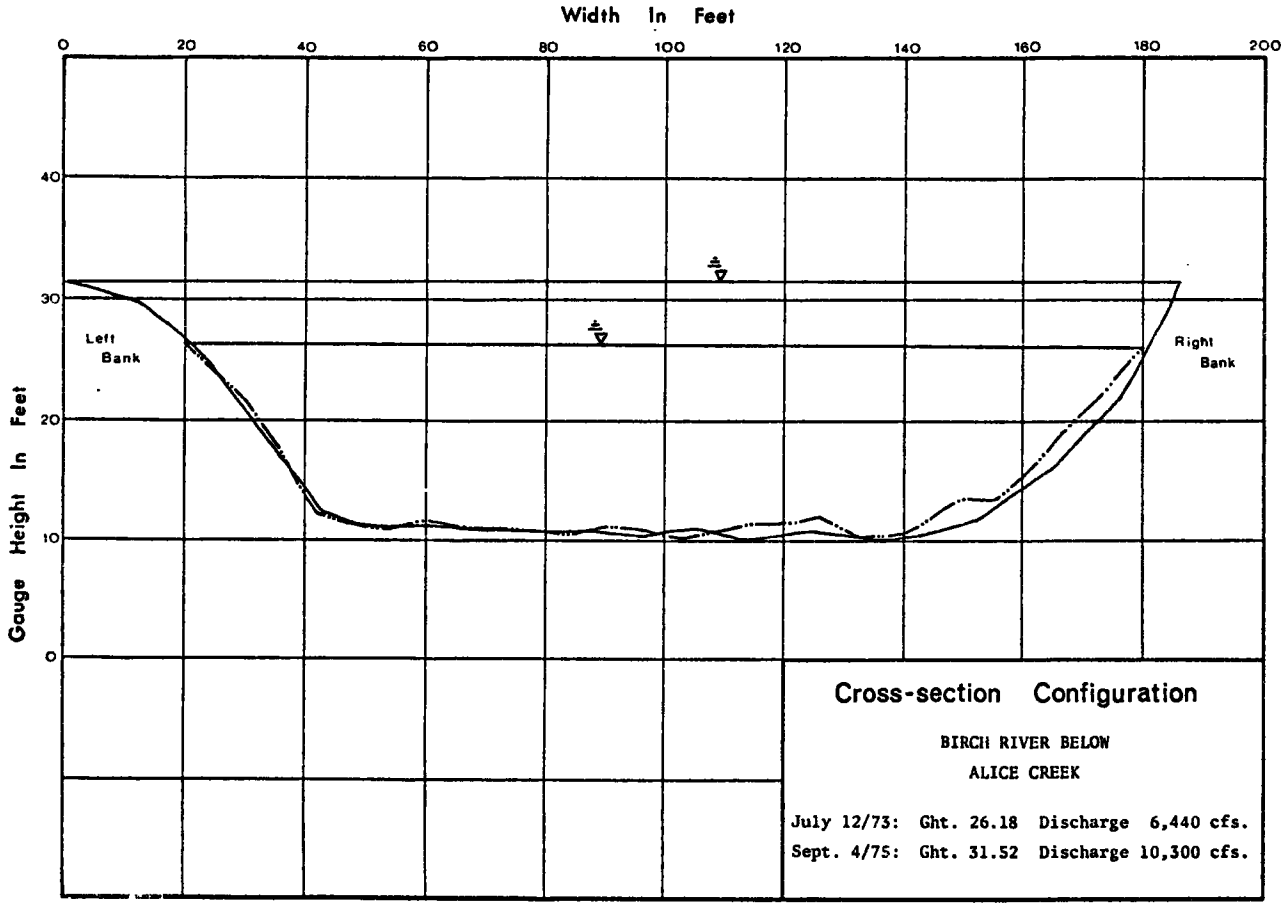
DRAINAGE AREA: 3,860 square miles (10,000 km^2)

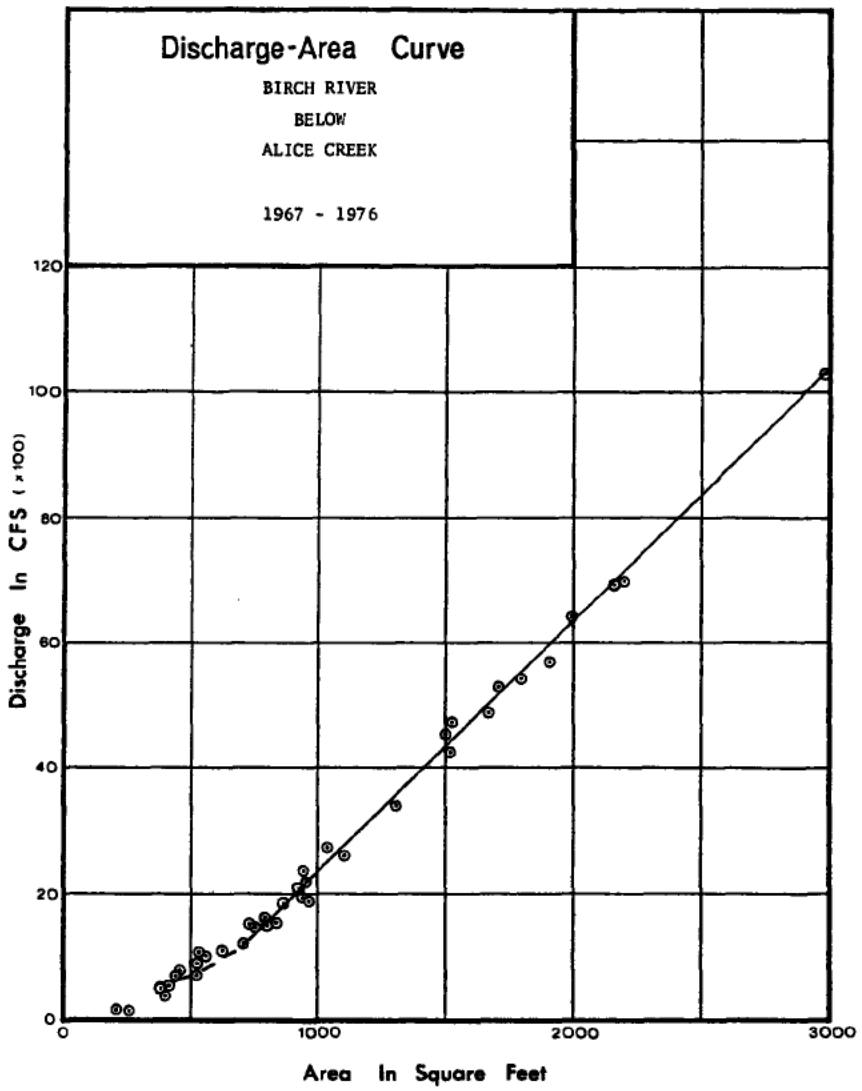
PERIOD OF RECORD: Discharge data is available from July, 1967 to December, 1976.

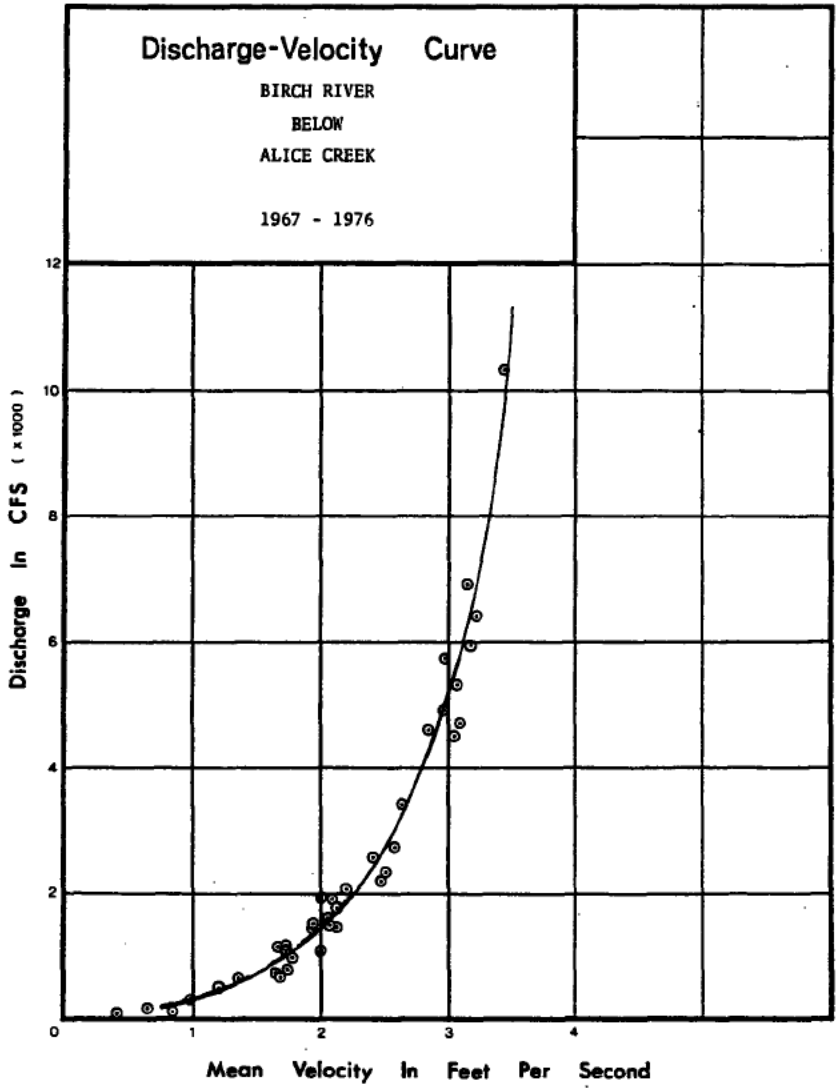
SITE DESCRIPTION: The gauge is located on a steep side-hill on the right bank of the river approximately six miles (10 km) below the confluence with Alice Creek and 76 air miles (122 km) south west of Ft. Chipewyan. The station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. The helicopter pad is on the left bank. There is a cableway located about 60 feet (18 m) above the gauge which is used for open water measurements as well as for gauge access.

GENERAL: The stage-discharge relationship as well as the cross-section configuration appear to be very stable at this site.


Discharge In CFS (x1000)
0
2
4
6
8
10
12
14
Stage In Feet
35
30
25
20
15
10
Stage-Discharge Relationship
BIRCH RIVER
BELOW
ALICE CREEK
Curve No.4, Jan. 16/74
○ 1976
● Prior to 1976


Width In Feet
0
20
40
60
80
100
120
140
160
180
200
Gauge Height In Feet
40
30
20
10
0
Left Bank
Right Bank
Cross-section Configuration
BIRCH RIVER BELOW
ALICE CREEK
July 12/73: Ght. 26.18 Discharge 6,440 cfs.
Sept. 4/75: Ght. 31.52 Discharge 10,300 cfs.


Discharge-Area Curve
BIRCH RIVER
BELOW
ALICE CREEK
1967 - 1976
Discharge In CFS (x 100)
Area In Square Feet
0
20
40
60
80
100
120
1000
2000
3000


Discharge-Velocity Curve
BIRCH RIVER
BELOW
ALICE CREEK
1967 - 1976
Discharge In CFS (x 1000)
Mean Velocity In Feet Per Second
0
2
4
6
8
10
12
1
2
3
4

WATER SURVEY OF CANADA
JAN 02 1975 PAGE 3
CALGARY, ALTA.

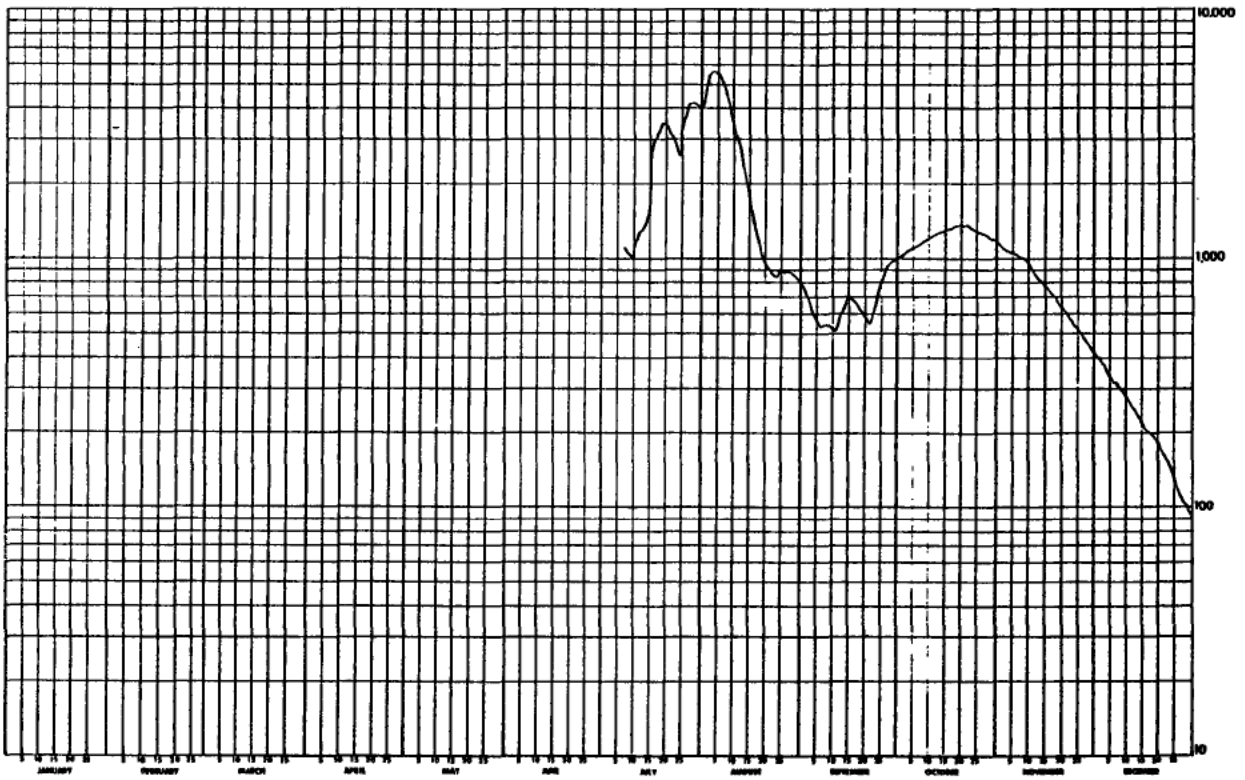
BIRCH RIVER BELOW ALICE CREEK

STATION NO. 07KC001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1967

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	4110	747	1030	1230 B	420 B	1
2	---	---	---	---	---	---	---	4910	699	1070	1220 B	405 B	2
3	---	---	---	---	---	---	---	5530	649	1110	1120 B	330 B	3
4	---	---	---	---	---	---	---	5680	594	1150	1130 B	306 B	4
5	---	---	---	---	---	---	---	5620	552	1190	1060 B	350 B	5
6	---	---	---	---	---	---	---	5340	532	1230	1050 B	314 B	6
7	---	---	---	---	---	---	1120	4930	540	1270	1020 B	323 B	7
8	---	---	---	---	---	---	1060	4470	548	1300	966 B	334 B	8
9	---	---	---	---	---	---	1020	4010	532	1340	961 B	249 B	9
10	---	---	---	---	---	---	1060	3520	512	1380	926 B	280 B	10
11	---	---	---	---	---	---	1210	3040	522	1420	934 B	270 B	11
12	---	---	---	---	---	---	1320	2700	570	1440	870 B	254 B	12
13	---	---	---	---	---	---	1300	2340	621	1501	820 B	240 B	13
14	---	---	---	---	---	---	1470	2040	669	1540	919 B	231 B	14
15	---	---	---	---	---	---	2230	1770	690	1530	790 B	272 B	15
16	---	---	---	---	---	---	2870	1520	675	1620	758 B	215 B	16
17	---	---	---	---	---	---	3060	1310	649	1650	729 B	207 B	17
18	---	---	---	---	---	---	3340	1160	621	1641	705 B	231 B	18
19	---	---	---	---	---	---	3490	1060	595	1700	636 B	193 B	19
20	---	---	---	---	---	---	3470	964	572	1719	633 B	155 B	20
21	---	---	---	---	---	---	1360	912	550	1701	613 B	175 B	21
22	---	---	---	---	---	---	3130	870	574	1702	597 B	147 B	22
23	---	---	---	---	---	---	2930	849	618	1671	573 B	135 B	23
24	---	---	---	---	---	---	2640	867	693	1650	549 B	144 B	24
25	---	---	---	---	---	---	3100	834	765	1623	525 B	133 B	25
26	---	---	---	---	---	---	3660	988	870	1619	505 B	125 B	26
27	---	---	---	---	---	---	4110	844	926	1564	483 B	116 B	27
28	---	---	---	---	---	---	4270	831	955	1491	460 B	111 B	28
29	---		---	---	---	---	4170	861	964	1447	445 B	104 B	29
30	---		---	---	---	---	4060	831	1000	1379	430 B	99.0 B	30
31	---		---		---		3960	792		1279		93.0	31
TOTAL	---	---	---	---	---	---	---	75531	20815	44999	23625	7059.0	TOTAL
MEAN	---	---	---	---	---	---	---	2440	647	1450	788	228	MEAN
AC-FT	---	---	---	---	---	---	---	150000	39700	89200	46900	14000	AC-FT
MAX	---	---	---	---	---	---	---	5680	1000	1710	1260	420	MAX
MIN	---	---	---	---	---	---	---	792	512	1010	430	93.0	MIN

B-ICE CONDITIONS



WATER SURVEY OF CANADA
JAN 82 1975 PAGE 4
CALGARY, ALTA.

BIRCH RIVER BELOW ALICE CREEK

STATION NO. 07KE001

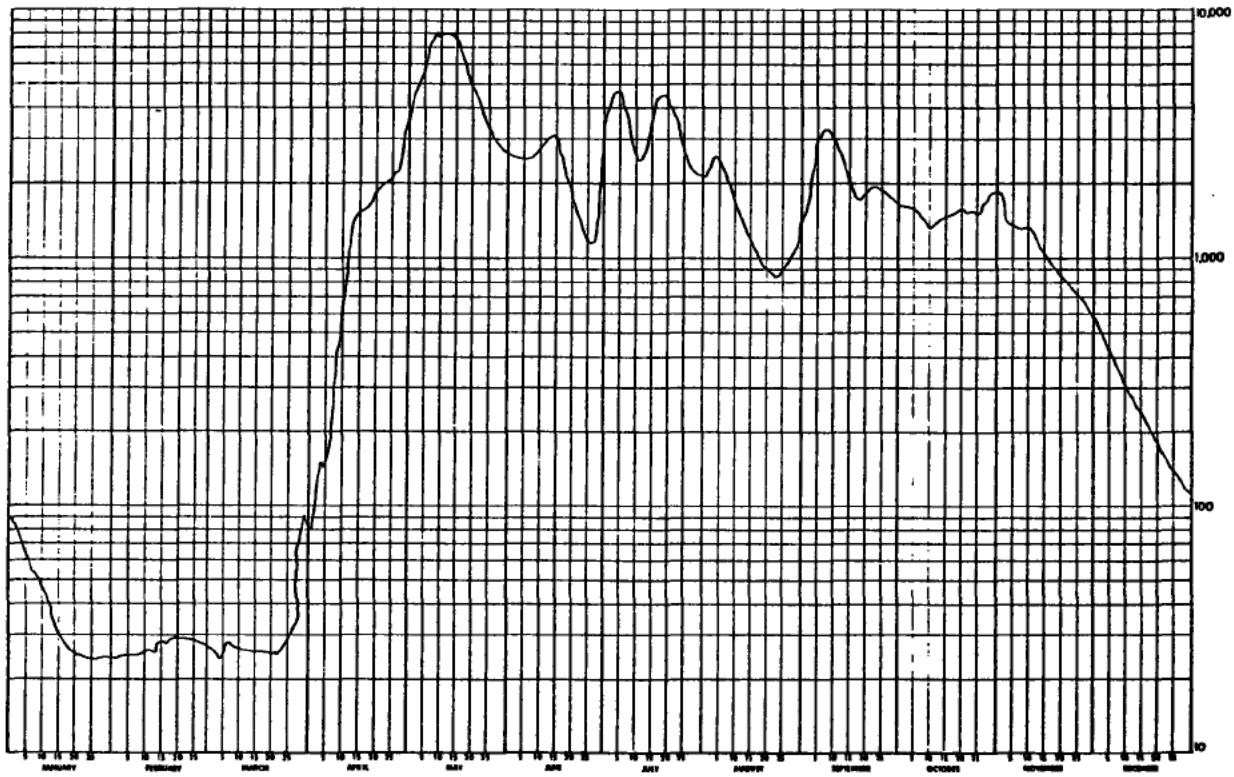
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1964

DAY	JAN		FEB		MAR		APR		MAY	JUN	JUL	AUG	SEP	OCT	NOV		DEC		DAY
1	88.0	B	24.5	A	27.0	B	80.0	B	1920	2590	3690	2140	1450	1620	1820	B	5.0	A	1
2	83.0	B	24.5	A	26.5	B	98.0	A	4340	2540	4280	2230	1520	1410	1660	B	533	A	2
3	79.0	A	25.0	A	25.5	A	131	A	4750	2500	4710	2460	1540	1501	1401	B	495	A	3
4	72.0	A	26.0	A	24.0	A	153	A	5140	2500	4840	2530	2530	1601	1360	B	430	A	4
5	68.0	A	26.0	A	25.0	A	144	A	5600	2530	4760	2440	2850	1539	1320	B	428	B	5
6	62.0	A	26.0	A	27.5	A	153	A	6910	2570	4430	2310	3110	1521	1360	B	411	B	6
7	57.0	A	26.0	A	28.5	A	213	A	7450	2540	3980	2130	3230	1469	1320	B	378	B	7
8	53.0	A	25.0	A	27.5	B	344	A	7740	2670	3480	1940	3340	1419	1320	B	356	A	8
9	52.0	A	25.0	A	27.0	B	403	A	8030	2640	2910	1830	3190	1350	1320	B	334	A	9
10	49.0	A	26.5	A	27.0	A	564	A	7970	2770	2540	1640	2940	1321	1330	B	312	A	10
11	45.0	A	26.5	B	26.5	A	743	A	7990	2490	2450	1540	2730	1350	1240	B	239	A	11
12	41.0	B	26.0	B	26.5	B	954	A	8020	2300	2540	1440	2570	1370	1230	B	232	A	12
13	38.0	A	26.5	A	26.5	A	1230	A	7970	2070	2760	1360	2370	1419	1150	B	254	A	13
14	33.0	A	24.0	A	26.0	A	1440	A	7820	1110	3380	1260	2150	1429	1110	B	252	A	14
15	30.0	B	24.5	A	26.0	A	1440	A	7670	3050	4010	1170	1990	1440	1040	B	237	A	15
16	29.5	A	24.5	A	26.0	A	1550	A	7190	2980	4290	1110	1670	1510	943	A	224	A	16
17	29.0	A	24.0	A	26.0	A	1590	A	6670	2640	4500	1070	1700	1510	901	A	212	A	17
18	27.5	A	23.0	A	25.5	A	1610	A	6040	2390	4540	1000	1780	1529	819	A	210	A	18
19	26.5	A	23.5	A	25.5	A	1690	A	5500	2130	4560	936	1780	1541	670	A	191	A	19
20	25.5	A	23.0	A	25.5	A	1670	A	5000	1490	4400	894	1940	1529	469	A	142	A	20
21	25.0	A	23.5	A	25.5	A	1690	A	4670	1680	4120	841	1900	1529	413	A	174	A	21
22	25.0	A	23.5	A	25.5	A	1930	A	4430	1510	3800	852	1970	1530	783	A	145	A	22
23	24.5	A	24.0	A	27.0	A	2030	A	4010	1390	3480	840	1910	1541	771	A	136	A	23
24	24.5	A	23.0	A	29.0	A	2040	A	3710	1270	3100	864	1840	1510	741	A	145	A	24
25	24.0	A	23.0	A	30.0	A	2080	A	3420	1170	2810	890	1850	1501	711	A	143	A	25
26	24.0	B	23.5	A	31.0	A	2240	A	3190	1120	2540	926	1810	1550	681	A	117	A	26
27	24.5	A	24.0	A	33.0	A	2249		3030	1130	2340	964	1760	1649	649	A	101	A	27
28	24.5	A	27.5	A	54.0	A	2510		2840	1300	2250	1020	1710	1790	619	A	125	A	28
29	24.5	A	27.0	A	60.0	A	2980		2720	2020	2170	1070	1650	1790	609	A	120	A	29
30	24.5	A			74.0	A	3500		2670	2930	2110	1130	1620	1431	574	A	116	A	30
31	24.5	A			95.0	A			2630		2120	1150		1530	A		112	A	31
TOTAL	1255.5		736.0		1044.5		39927.0		166900	65710	107900	44429	64950	47749	31611		4017		TOTAL
MEAN	40.5		27.1		33.7		1331		5459	2228	3480	1430	2170	1549	1050		259		MEAN
AC-FT	2491		1460		2070		79190		330910	130400	214000	88100	128800	94700	62700		15330		AC-FT
MAX	88.0		28.0		34.0		3500		8030	3110	4540	2530	3340	1850	1420		564		MAX
MIN	24.0		24.0		24.0		98.0		2630	1120	2110	840	1450	1320	574		112		MIN

SUMMARY FOR THE YEAR 1964

MEAN DISCHARGE, 1688 CFS
TOTAL DISCHARGE, 1140309 AC-FT
MAXIMUM DAILY DISCHARGE, 8030 CFS ON MAY 9
MINIMUM DAILY DISCHARGE, 24.0 CFS ON JAN 25

A-ICE CONDITIONS



WATER SURVEY OF CANADA
JAN 02 1975 PAGE 1
CALGARY, ALTA.

BIRCH RIVER BELOW ALICE CREEK

STATION NO. 07KE001

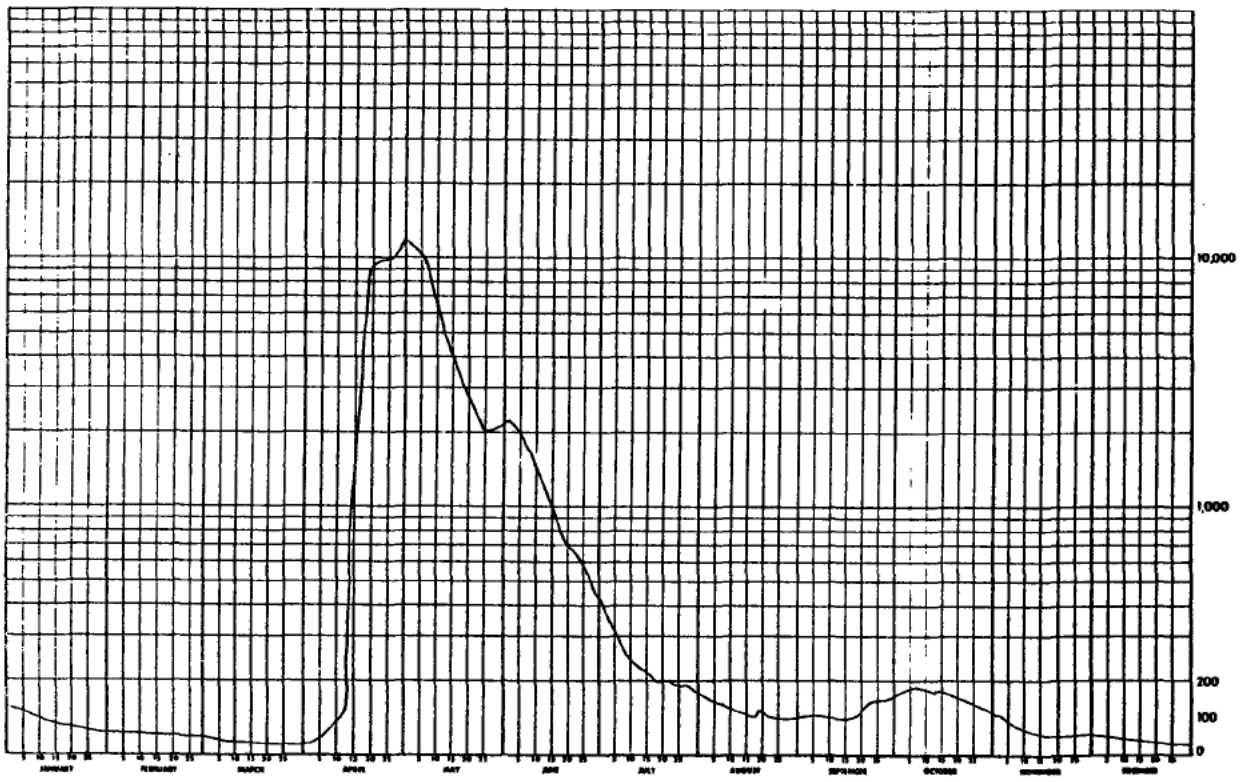
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1969

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	110 B	47.0 B	36.0 B	22.0 B	11600	2200	397	146	58.0	154	92.0 B	42.0 B	1
2	106 B	47.0 B	35.0 B	23.0 B	11300	2200	376	143	85.6	164	87.0 B	41.0 B	2
3	101 B	46.0 B	34.0 B	25.0 B	11000	2130	357	140	96.6	168	81.0 B	40.0 B	3
4	100 B	46.0 B	34.0 B	30.0 B	10600	2040	335	136	99.6	170	73.0 B	38.0 B	4
5	96.0 B	45.0 B	33.0 B	34.0 B	10200	1950	317	133	89.6	172	74.0 B	36.0 B	5
6	94.0 B	45.0 B	33.0 B	45.0 B	9600	1850	299	129	86.2	173	70.0 B	34.0 B	6
7	90.0 B	44.0 B	32.0 B	51.0 B	9070	1750	283	125	86.5	173	64.0 B	32.0 B	7
8	87.0 B	44.0 B	32.0 B	59.0 B	8360	1650	266	119	85.7	173	61.0 B	30.0 B	8
9	83.0 B	43.0 B	31.0 B	64.0 B	7910	1550	256	115	85.1	172	60.0 B	28.0 B	9
10	81.0 B	42.0 B	30.0 B	72.0 B	4730	1450	244	110	84.9	171	57.0 B	35.0 B	10
11	78.0 B	42.0 B	30.0 B	80.0 B	5190	1340	238	107	84.2	167	53.0 B	33.0 B	11
12	75.0 B	42.0 B	29.0 B	87.0 B	5780	1240	233	102	82.2	160	51.0 B	34.0 B	12
13	71.0 B	41.0 B	29.0 B	760 B	4460	1140	227	100	81.2	142	48.0 B	33.0 B	13
14	69.0 B	41.0 B	28.0 B	814 B	4470	1050	220	99.5	80.9	117	45.0 B	33.0 B	14
15	64.0 B	41.0 B	28.0 B	1440 B	4050	971	215	96.0	81.5	102	47.0 B	32.0 B	15
16	66.0 B	41.0 B	24.0 B	2110 B	3700	903	215	94.8	84.9	107	46.0 B	31.0 B	16
17	64.0 B	41.0 B	27.0 B	3440 B	3410	833	206	93.5	88.9	104	45.0 B	30.0 B	17
18	62.0 B	40.0 B	27.0 B	5240 B	3160	775	200	90.2	91.3	102	46.0 B	29.0 B	18
19	60.0 B	40.0 B	26.0 B	7480 B	2960	724	194	101	98.6	149 B	45.0 B	27.0 B	19
20	59.0 B	40.0 B	26.0 B	9000 B	2790	686	200	101	107	143 B	45.0 B	26.0 B	20
21	57.0 B	39.0 B	25.0 B	9470	2610	665	205	95.0	114	139 B	44.0 B	26.0 B	21
22	55.0 B	39.0 B	25.0 B	9690	2450	651	198	91.5	114	134 B	44.0 B	25.0 B	22
23	53.0 B	39.0 B	24.0 B	9490	2300	644	190	88.3	139	129 B	44.0 B	25.0 B	23
24	52.0 B	38.0 B	24.0 B	9430	2160	632	185	85.9	139	125 B	44.0 B	24.0 B	24
25	50.0 B	38.0 B	23.0 B	9500	2040	594	181	85.1	139	121 B	44.0 B	24.0 B	25
26	49.0 B	37.0 B	23.0 B	9770	2003	552	181	83.5	138	117 B	44.0 B	23.0 B	26
27	48.0 B	37.0 B	22.0 B	10300	2041	522	182	83.5	139	114 B	44.0 B	23.0 B	27
28	48.0 B	37.0 B	22.0 B	10900	2061	496	177	82.4	142	139 B	43.0 B	22.0 B	28
29	49.0 B		20.0 B	11400	2070	469	168	81.9	147	185 B	42.0 B	22.0 B	29
30	47.0 B		21.0 B	11700	2100	419	159	83.1	154	190 B	41.0 B	21.0 B	30
31	47.0 B		21.0 B		2130		151	81.4		96.0 B		20.0 B	31
TOTA.	2178.0	1147.0	856.0	131994.2	168660	34052	7261	3226.9	3134.1	4536.0	1641.0	967.0	TOTAL
MEAN	70.3	41.5	27.7	4400	5149	1140	234	104	104	147	54.7	31.5	MEAN
AC-FT	4320	2280	1700	262000	313000	67500	14400	6400	6220	9040	3250	1919	AC-FT
MAX	110	47.0	36.0	11700	11600	2200	397	146	154	173	92.0	42.0	MAX
MIN	47.0	37.0	20.0	22.0	2000	419	151	81.9	80.8	96.0	41.0	20.0	MIN

SUMMARY FOR THE YEAR 1969

MEAN DISCHARGE, 963 CFS
TOTAL DISCHARGE, 699000 AC-FT
MAXIMUM DAILY DISCHARGE, 11700 CFS ON APR 30
MINIMUM DAILY DISCHARGE, 20.0 CFS ON MAR 29

B-ICE CONDITIONS



BIRCH RIVER BELOW ALICE CREEK - STATION NO. 07KE001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1978

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	19.5 B	17.8 B	13.1 B	14.3 B	3000	1560	583	366	174	720	231 B	49.0 B	1
2	19.0 B	17.8 B	12.9 B	14.5 B	3120	1440	621	342	173	698	228 B	46.6 B	2
3	18.0 B	17.8 B	12.7 B	14.6 B	3150	1410	699	322	172	651	226 B	44.0 B	3
4	17.8 B	17.9 B	12.5 B	14.7 B	3080	1290	711	308	170	627	222 B	41.0 B	4
5	16.8 B	17.9 B	12.3 B	14.8 B	3030	1210	698	282	169	621	213 B	39.0 B	5
6	16.5 B	17.7 B	12.1 B	14.9 B	3000	1130	693	264	168	630	207 B	36.0 B	6
7	16.5 B	17.5 B	11.9 B	15.5 B	2920	993	714	242	166	618	195 B	35.0 B	7
8	16.6 B	17.3 B	11.7 B	15.0 B	2810	912	717	236	165	598	191 B	34.0 B	8
9	16.6 B	17.1 B	11.5 B	14.8 B	2720	898	687	224	164	575	186 B	33.0 B	9
10	16.7 B	16.9 B	11.6 B	14.5 B	2650	919	639	219	162	559	176 B	32.0 B	10
11	16.7 B	16.7 B	11.7 B	15.5 B	2520	937	598	203	161	535	162 B	31.0 B	11
12	16.8 B	16.5 B	11.8 B	16.5 B	2350	965	555	202	160	540	147 B	30.0 B	12
13	16.8 B	16.3 B	11.9 B	17.0 B	2170	989	518	201	158	475	131 B	29.5 B	13
14	16.9 B	16.1 B	12.0 B	17.5 B	1980	968	475	199	157	459	116 B	29.0 B	14
15	16.9 B	15.9 B	12.2 B	18.0 B	1930	923	435	198	161	448	113 B	28.5 B	15
16	17.0 B	15.7 B	12.3 B	18.5 B	1900	905	410	197	167	430	106 B	28.0 B	16
17	17.0 B	15.5 B	12.4 B	28.0 B	1330	958	392	195	191	415	102 B	27.5 B	17
18	17.1 B	15.3 B	12.5 B	62.0 B	1770	958	374	194	204	388	96.0 B	27.0 B	18
19	17.1 B	15.1 B	12.6 B	221 B	1720	898	350	193	216	380	93.0 B	27.0 B	19
20	17.2 B	14.9 B	12.7 B	735 B	1680	834	326	191	236	378	92.0 B	26.5 B	20
21	17.2 B	14.7 B	12.8 B	810 B	1710	774	302	190	262	366	91.0 B	26.0 B	21
22	17.3 B	14.5 B	12.9 B	1040 B	1760	724	282	189	266	358	87.0 B	26.0 B	22
23	17.3 B	14.3 B	13.1 B	1370 B	1770	687	264	187	278	354	81.0 B	26.0 B	23
24	17.4 B	14.1 B	13.2 B	1500 B	1770	654	246	186	306	348	78.0 B	25.5 B	24
25	17.4 B	13.9 B	13.3 B	1630 B	1760	633	262	185	394	346	73.0 B	25.0 B	25
26	17.5 B	13.7 B	13.4 B	1880 B	1760	639	312	183	533	344	69.0 B	25.0 B	26
27	17.5 B	13.5 B	13.6 B	2100 B	1750	621	418	181	593	342	63.0 B	24.5 B	27
28	17.6 B	13.3 B	13.7 B	2730	1730	588	440	180	687	314 B	59.0 B	24.5 B	28
29	17.6 B		13.9 B	2750	1730	568	415	178	738	240 B	55.0 B	24.0 B	29
30	17.7 B		14.1 B	2880	1720	565	405	177	741	237 B	52.0 B	23.5 B	30
31	17.7 B		14.2 B		1670		382	176		234 B		23.4 B	31
TOTAL	534.1	445.7	392.6	19985.8	68460	27558	14915	6778	8292	14154	3942.8	946.8	TOTAL
MEAN	17.2	15.9	12.7	666	2210	918	481	219	276	457	131	30.5	MEAN
AC-FT	1060	884	779	39600	136000	54600	29600	13400	16400	28100	7820	1880	AC-FT
MAX	19.5	17.9	14.2	2880	3150	1560	717	366	741	720	231	49.0	MAX
MIN	16.0	13.3	11.5	14.0	1670	565	246	176	157	234	52.0	23.0	MIN

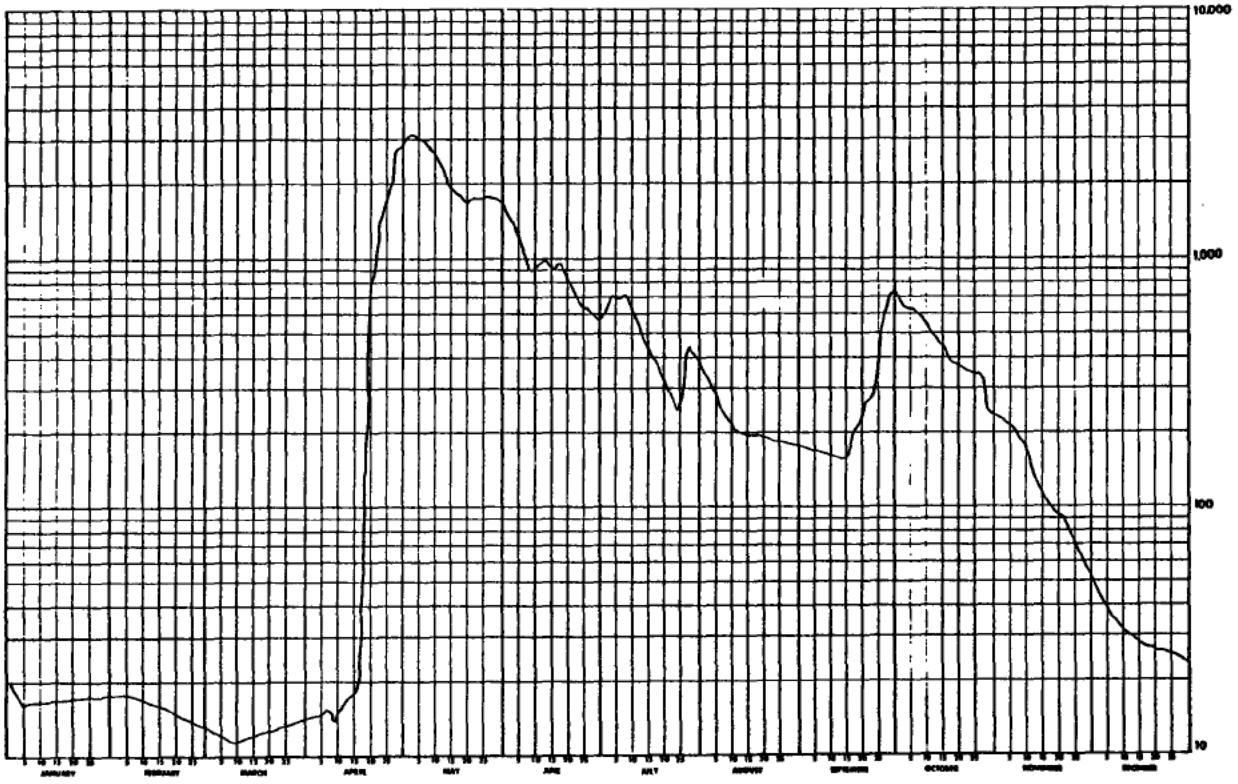
SUMMARY FOR THE YEAR 1978

MEAN DISCHARGE, 456 CFS
TOTAL DISCHARGE, 330000 AC-FT
MAXIMUM DAILY DISCHARGE, 3150 CFS ON MAY 3
MINIMUM DAILY DISCHARGE, 11.5 CFS ON MAR 9

TYPE OF GAUGE - RECORDING
LOCATION - LAT 58 16 40 N
LONG 113 04 05 W

B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA
JUL 18 1972 PAGE 326
CALGARY, ALTA.

BIRCH RIVER BELOW ALICE CREEK

STATION NO. 07KE001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1971

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	22.8 B	21.8 B	8.8 B	5.8 B	2890	289	1650	269	296	1640	573 B	264 B	1
2	21.5 B	21.8 B	8.8 B	6.4 B	2650	281	1670	251	319	1580	539 B	262 B	2
3	21.8 B	20.5 B	8.5 B	6.8 B	2450	291	1750	246	573	1540	527 B	264 B	3
4	19.5 B	20.5 B	8.2 B	5.6 B	2230	309	1760	219	777	1440	521 B	260 B	4
5	19.8 B	20.8 B	8.2 B	5.2 B	2070	306	1730	211	780	1440	521 B	253 B	5
6	18.5 B	19.8 B	8.2 B	5.8 B	1930	301	1650	192	796	1340	521 B	239 B	6
7	18.5 B	19.8 B	7.9 B	6.2 B	1780	291	1540	182	739	1260	512 B	224 B	7
8	18.8 B	18.5 B	7.9 B	7.6 B	1660	281	1410	168	1020	1240	509 B	217 B	8
9	17.6 B	18.0 B	7.9 B	8.5 B	1530	272	1290	176	1060	1180	446 B	206 B	9
10	17.2 B	17.6 B	7.6 B	9.4 B	1390	262	1190	174	1100	1100	403 B	190 B	10
11	17.2 B	17.6 B	7.3 B	9.1 B	1270	255	1090	172	1100	1080	364 B	178 B	11
12	16.8 B	16.8 B	7.3 B	7.3 B	1170	248	989	163	1120	1050	353 B	170 B	12
13	16.8 B	16.8 B	7.3 B	6.6 B	1078	239	919	152	1080	1040	361 B	163 B	13
14	16.8 B	16.4 B	7.0 B	6.4 B	977	235	882	143	1020	1020	361 B	161 B	14
15	16.4 B	14.8 B	7.3 B	7.3 B	895	235	849	152	1170	1000	359 B	153 B	15
16	16.4 B	14.8 B	7.6 B	10.4 B	826	228	808	153	1810	951	353 B	144 B	16
17	15.6 B	13.6 B	7.3 B	40.0 B	761	272	777	165	2350	955	348 B	135 B	17
18	15.6 B	12.4 B	7.3 B	180 B	703	633	763	178	2710	909	332 B	126 B	18
19	15.6 B	11.6 B	7.0 B	132 B	646	691	767	174	3010	909	321 B	117 B	19
20	15.6 B	11.6 B	6.8 B	340 B	595	951	780	178	3140	865	309 B	109 B	20
21	14.8 B	11.2 B	6.6 B	852 B	551	681	655	389	3130	882	294 B	104 B	21
22	14.8 B	10.8 B	6.2 B	1450 B	503	598	592	420	3008	869	286 B	99.0 B	22
23	14.4 B	9.7 B	6.4 B	2450 B	464	579	561	478	2808	833	284 B	94.0 B	23
24	14.8 B	9.4 B	6.6 B	3580	435	542	512	479	2600	829	281 B	89.0 B	24
25	14.4 B	9.4 B	6.4 B	4000	406	500	464	473	2380	833	276 B	84.0 B	25
26	14.4 B	9.4 B	6.8 B	3930	384	485	426	435	2160	723	274 B	79.0 B	26
27	18.8 B	9.1 B	6.8 B	3800	356	551	408	409	2000	617 B	269 B	74.0 B	27
28	20.8 B	8.8 B	6.6 B	3640	340	1110	378	378	1880	671 B	267 B	69.8 B	28
29	21.5 B		6.2 B	3430	334	1360	342	348	1810	697 B	267 B	67.4 B	29
30	21.5 B		6.0 B	3170	321	1440	319	327	1720	659 B	267 B	65.0 B	30
31	21.5 B		5.8 B		304		299	314		601 B		61.7 B	31
TOTAL	545.7	417.7	224.6	31026.8	33899	14636	29144	8092	49446	31793	11298	6719.9	TOTAL
MEAN	17.6	14.9	7.2	1038	1098	488	940	261	1650	1030	377	152	MEAN
AC-FT	1080	829	445	61500	67208	29000	57800	16100	98100	63100	22400	9360	AC-FT
MAX	22.0	21.8	8.8	4000	2890	1440	1760	479	3140	1640	573	264	MAX
MIN	14.4	8.8	5.8	5.8	304	228	299	143	296	601	267	61.7	MIN

SUMMARY FOR THE YEAR 1971

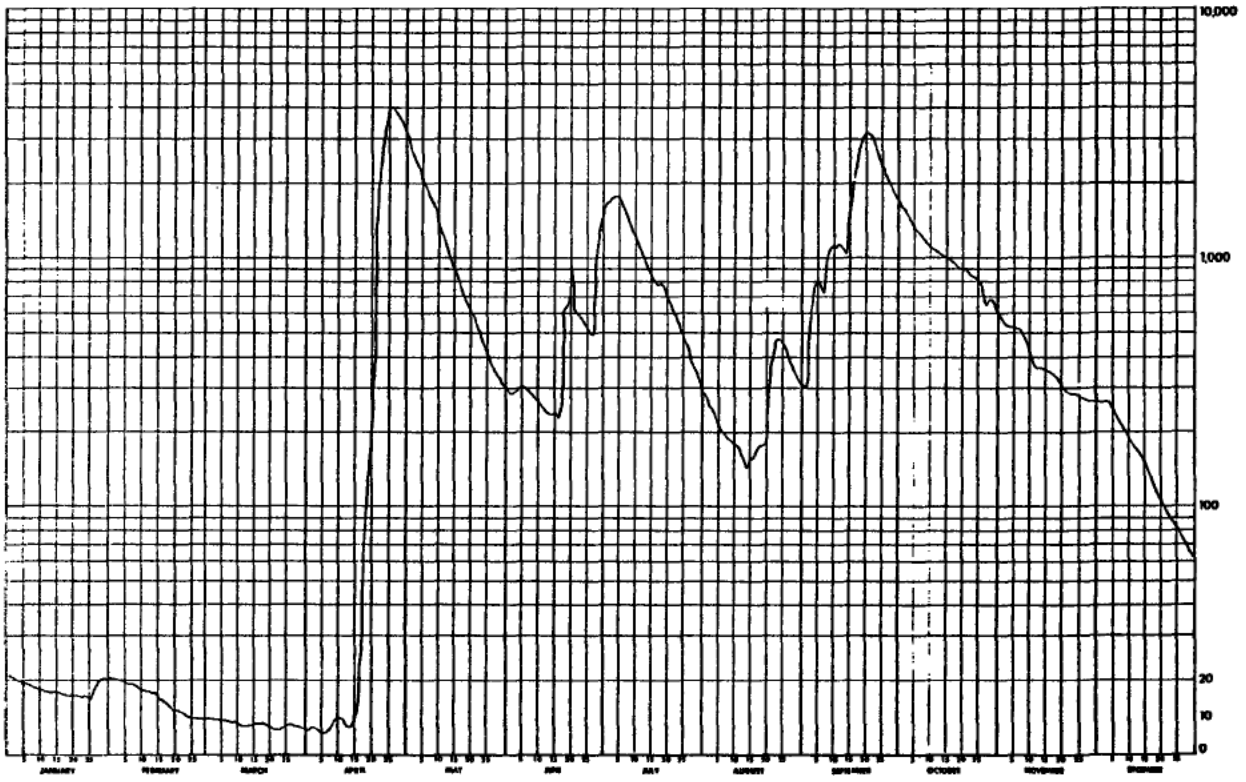
MEAN DISCHARGE, 590 CFS
TOTAL DISCHARGE, 427000 AC-FT
MAXIMUM DAILY DISCHARGE, 4000 CFS ON APR 25
MINIMUM DAILY DISCHARGE, 5.8 CFS ON APR 6

TYPE OF GAUGE - RECORDING
LOCATION - LAT 58 18 48 N
LONG 113 04 05 W
DRAINAGE AREA 3860 SQ MILES

B-ICE CONDITIONS

NATURAL FLOW

MAXIMUM INSTANTANEOUS DISCHARGE
4050 CFS AT 1200 MST ON APR 25



WATER SURVEY OF CANADA
JUL 15 1973 PAGE 302
CALGARY, ALTA.

BIRCH RIVER BELOW ALICE CREEK — STATION NO. 07KE001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1972

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	52.0 B	26.0 B	31.1 B	21.5 B	4270 B	2030 A	598	470	158	228	184 B	71.0 B	1
2	51.0 B	24.8 B	33.2 B	22.5 B	5310 B	1980 E	564	426	141	239	150 B	71.0 B	2
3	51.0 B	24.2 B	33.2 B	22.0 B	6360 B	1940 E	521	398	134	262	143 B	69.8 B	3
4	48.0 B	23.0 B	33.2 B	21.5 B	9710	1890 E	491	384	129	269	137 B	67.4 B	4
5	47.0 B	23.0 B	33.2 B	21.0 B	9800	1840 E	488	367	127	269	141 B	65.0 B	5
6	47.0 B	22.5 B	33.9 B	20.0 B	9730	1790 E	527	342	127	281	139 B	63.9 B	6
7	46.0 B	22.0 B	33.2 B	19.5 B	9700	1750 E	646	324	125	304	141 B	61.7 B	7
8	45.0 B	21.5 B	32.5 B	19.0 B	9850	1700 E	719	311	120	324	136 B	58.4 B	8
9	44.0 B	21.0 B	31.8 B	19.0 B	10300	1650 E	719	289	119	353	132 B	55.1 B	9
10	44.0 B	20.5 B	31.1 B	19.0 B	10900	1600 E	672	274	117	329 B	136 B	53.8 B	10
11	42.0 B	20.5 B	31.1 B	19.0 B	11900	1560 E	1720	262	117	332	139 B	52.0 B	11
12	41.0 B	20.0 B	30.4 B	18.5 B	12300	1510 E	2400	253	116	327	137 B	51.0 B	12
13	40.0 B	20.5 B	30.4 B	19.0 B	12500	1460 E	2450	251	114	353 B	137 B	49.0 B	13
14	42.0 B	20.0 B	30.4 B	21.0 B	12500	1410 E	2470	267	112	345 B	136 B	47.0 B	14
15	39.2 E	20.5 B	31.8 B	22.0 B	12200	1370 E	2490	299	111	356 B	134 B	46.0 B	15
16	38.4 B	20.5 B	32.5 B	22.5 B	11700	1320 E	2490	304	111	356	125 B	43.2 B	16
17	37.6 B	21.5 B	31.8 B	22.0 B	11300	1270 E	2330	299	111	321	119 B	42.4 B	17
18	36.8 B	22.0 B	31.1 B	22.5 B	10800	1220 E	2120	289	111	395 B	112 B	40.8 B	18
19	36.1 B	23.0 B	30.4 B	23.0 B	10300	1180 E	1900	289	129	348 B	103 B	40.0 B	19
20	35.3 B	23.6 B	29.8 B	24.8 B	9680	1130 E	1720	286	137	378 B	96.5 B	37.6 B	20
21	34.5 B	26.9 B	28.4 B	24.2 B	8690	1083 E	1530	274	148	395 B	94.0 B	37.6 B	21
22	33.7 B	26.6 B	27.8 B	23.6 B	7480	1030 E	1380	268	168	353 B	91.0 B	36.8 B	22
23	32.9 B	27.2 B	26.6 B	24.2 B	6680	985 E	1240	241	178	370	89.6 B	36.0 B	23
24	32.1 B	27.8 B	25.4 B	24.2 B	5430	938 E	1120	224	190	361 B	89.6 B	35.3 B	24
25	31.3 B	29.7 B	24.2 B	27.2 B	4490	890 E	992	207	200	340 B	85.4 B	34.6 B	25
26	30.5 B	29.7 B	23.3 B	29.0 B	3790	843 E	899	194	211	414 B	84.0 B	33.9 B	26
27	29.7 B	29.7 B	22.5 B	192 B	3310	795 E	803	182	219	251 B	81.2 B	32.5 B	27
28	28.4 B	29.7 B	22.0 B	241 B	2950	748 A	716	174	224	215 B	79.8 B	32.5 B	28
29	27.8 B	31.1 B	21.5 B	933 B	2690	694	652	161	226	204 B	77.0 B	31.1 B	29
30	27.2 B		21.0 B	2770 B	2460	630	576	153	226	215 B	74.6 B	30.4 B	30
31	26.6 B		21.5 B		2230		515	152		209 B		29.0 B	31
TOTAL	1135.9	698.7	899.2	4788.5	253750	48233	38658	8606	4448	9696	3525.7	1455.8	TOTAL
MEAN	36.6	24.1	29.0	157	8190	1340	1250	278	148	313	118	46.9	MEAN
AC-FT	2370	1390	1780	9340	503000	79800	76700	17100	8820	19200	6990	2890	AC-FT
MAX	52	31.1	33.9	2770	12600	2030	2490	470	226	414	184	71	MAX
MIN	26.6	20.0	21.0	18.5	2230	630	488	152	111	204	74.6	29.0	MIN

SUMMARY FOR THE YEAR 1972

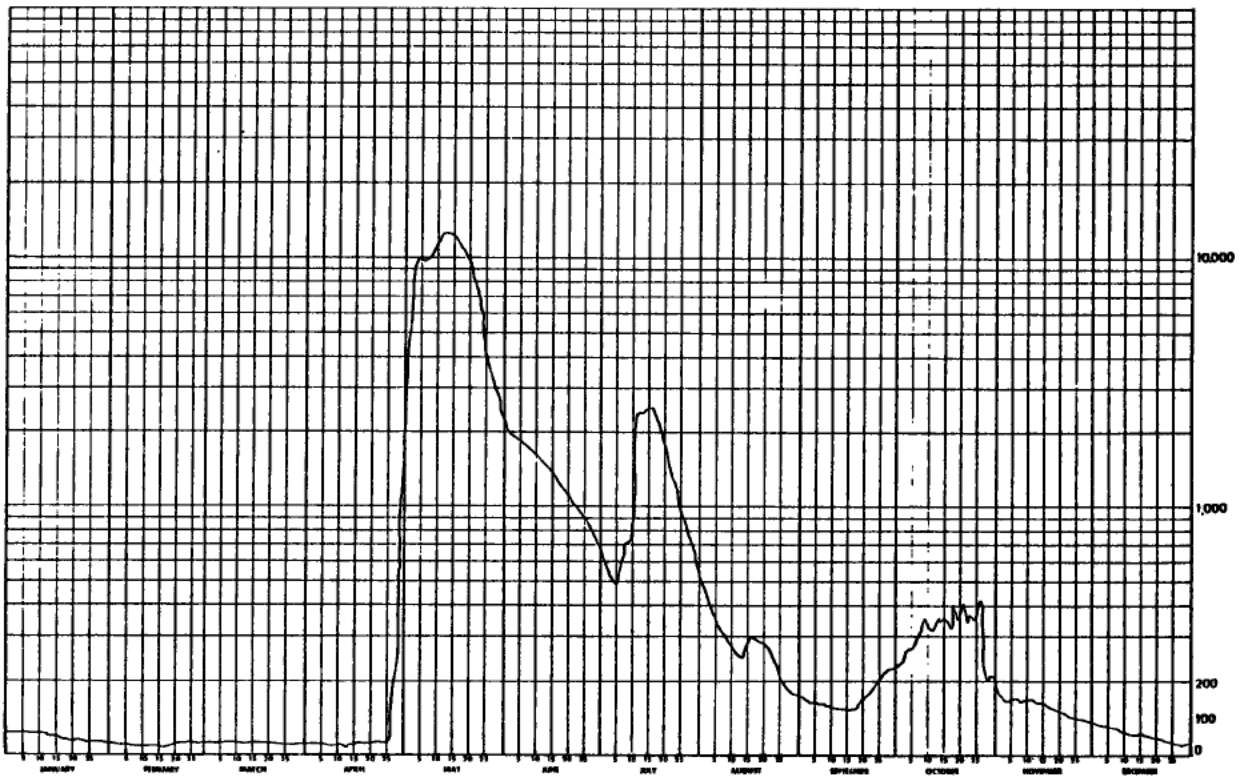
MEAN DISCHARGE, 1816 CFS
TOTAL DISCHARGE, 724060 AC-FT
MAXIMUM DAILY DISCHARGE, 12600 CFS ON MAY 13
MINIMUM DAILY DISCHARGE, 18.5 CFS ON APR 12

MAXIMUM INSTANTANEOUS DISCHARGE
12600 CFS AT 2200 MST ON MAY 13

TYPE OF GAUGE - RECORDING
LOCATION - LAT 58 18 40 N
LONG 113 04 05 W
DRAINAGE AREA 3860 SQ MILES

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA
MAY 15 1974 PAGE 320
CALGARY, ALTA.

BIRCH RIVER BELOW ALICE CREEK

STATION NO. 07KE001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1973

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	28.4 B	53.0 B	22.5 B	19.0 B	1970	2270	5510	8310	3500	1630	2410	439 B	1
2	31.1 B	52.0 B	22.0 B	19.5 B	2150	2210	5190	8420	3170	1630	2450 B	420 B	2
3	29.7 B	49.0 B	23.0 B	20.5 B	2370	2210	4820	8640	2890	1620	2190 B	396 B	3
4	31.8 B	48.0 B	22.5 B	21.0 B	2570	2320	4410	8800	2680	1530	2130 B	378 B	4
5	34.5 B	46.0 B	23.0 B	21.5 B	2760	2510	3940	8940	2530	1570	1960 B	358 B	5
6	39.2 B	44.0 B	21.0 B	28.5 B	2990	2620	3490	8980	2370	1530	1930 B	343 B	6
7	40.6 B	43.2 B	23.0 B	19.5 B	3190	2680	3260	8980	2220	1480	1910 B	324 B	7
8	41.6 B	42.4 B	22.5 B	19.5 B	3270	2730	3740	8740	2040	1450	1900 B	310 B	8
9	43.2 B	41.6 B	22.5 B	20.5 B	3220	2900	4240	8220	1940	1440	1890 B	299 B	9
10	45.0 B	39.2 B	22.5 B	23.0 B	3150	3340	4440	7570	1820	1450	1880 B	285 B	10
11	46.0 B	37.6 B	22.0 B	36.0 B	3050	4100	4680	6850	1700	1480	1840 B	261 B	11
12	48.0 B	36.8 B	22.0 B	48.0 B	2910	4590	6010	6060	1560	1520	1640 B	250 B	12
13	48.0 B	34.6 B	21.5 B	56.2 B	2760	4930	7560	5250	1430	1570	1600 B	244 B	13
14	49.0 B	33.2 B	21.5 B	85.4 B	2670	5140	7850	4510	1340	1590	1480 B	238 B	14
15	49.0 B	31.3 B	21.0 B	105 B	2460	5220	7830	3810	1250	1570	1280 B	229 B	15
16	51.0 B	30.4 B	21.0 B	114 B	2290	5450	7770	3250	1170	1550	1130 B	223 B	16
17	54.0 B	29.0 B	20.5 B	134 B	2110	5870	8140	2940	1100	1520	1060 B	211 B	17
18	55.1 B	24.4 B	20.5 B	157 B	1980	6210	8508	3360	1030	1510	982 B	204 B	18
19	56.2 B	27.8 B	20.0 B	170 B	1838	6470	8290	4020	998	1510	898 B	196 B	19
20	56.2 B	26.6 B	19.5 B	178 B	1708	6660	8058	4750	946	1520	832 B	186 B	20
21	59.5 B	26.0 B	19.0 B	232 B	1780	6800	7850	5390	902	1520	801 B	180 B	21
22	58.4 B	25.4 B	18.5 B	332 B	2130	6880	7640	5828	854	1540	767 B	178 B	22
23	58.4 B	25.4 B	18.0 B	384 B	2470	6910	7498	6020	816	1570	717 B	172 B	23
24	59.5 B	24.8 B	18.0 B	400 B	3010	6930	7360	6050	808	1620	654 B	164 B	24
25	59.5 B	24.8 B	17.2 B	527 B	3568	6940	7298	5920	870	1630	605 B	162 B	25
26	59.5 B	24.2 B	17.6 B	636 B	3770	6890	7390	5680	1110	1730	583 B	158 B	26
27	58.4 B	23.6 B	17.2 B	973 B	3740	6780	7520	5370	1290	1730	554 B	156 B	27
28	58.4 B	22.5 B	17.2 B	1380 B	3530	6540	7740	5030	1480	1790	523 B	154 B	28
29	57.1 B		16.8 B	1710	3160	6220	7890	4640	1520	1920	493 B	151 B	29
30	56.2 B		16.8 B	1818	2780	5860	8080	4290	1680	2110	461 B	149 B	30
31	55.1 B		17.2 B		2540		8180	3880		2280		147 B	31
TOTAL	1517.1	971.3	629.5	9672.1	83820	147180	202870	188530	48846	50250	39558	7565	TOTAL
MEAN	48.9	34.7	20.3	322	2700	4910	6528	6088	1630	1620	1320	244	MEAN
AC-FT	3010	1938	1250	19200	166000	292000	402000	374000	97000	99700	78500	15000	AC-FT
MAX	59.5	53	23.0	1818	3770	6940	8500	8980	3500	2280	2450	439	MAX
MIN	28.4	22.5	16.8	19.0	1700	2210	3260	2940	808	1440	461	147	MIN

SUMMARY FOR THE YEAR 1973

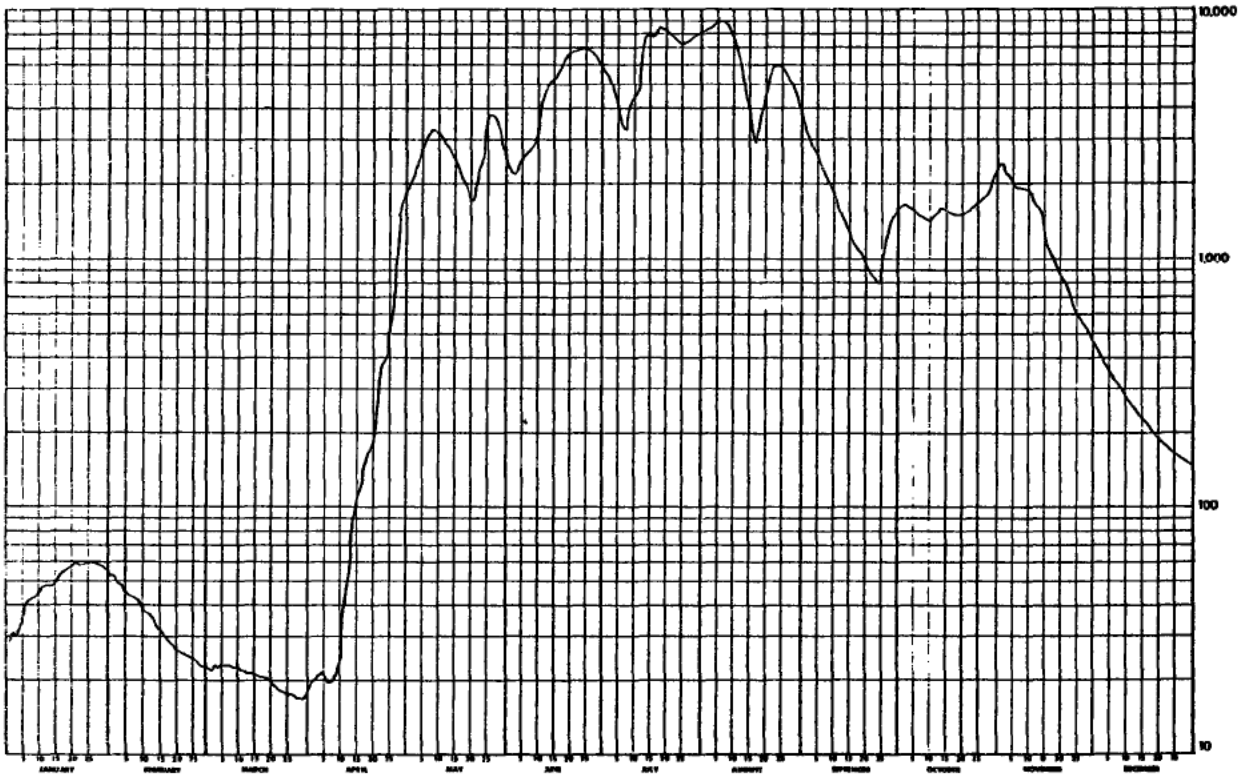
MEAN DISCHARGE, 2140 CFS
TOTAL DISCHARGE, 1550800 AC-FT
MAXIMUM DAILY DISCHARGE, 8980 CFS ON AUG 6
MINIMUM DAILY DISCHARGE, 16.8 CFS ON MAR 29

MAXIMUM INSTANTANEOUS DISCHARGE
8990 CFS AT 1100 MST ON AUG 7

TYPE OF GAUGE - RECORDING
LOCATION - LAT 58 18 48 N
LONG 113 04 55 W
DRAINAGE AREA 3860 SQ MILES

B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA — BIRCH RIVER BELOW ALICE CREEK — STATION NO. 07KF001
JUL 14 1975 PAGE 311
CALGARY, ALTA.

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1974

DAY	JAN		FEB		MAR		APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		DAY
1	149	B	95.0	B	49.0	B	36.3	A 12300	2360	1390	5830	1620	646	545	132	B	1
2	1.0	B	94.0	B	47.0	B	36.0	A 12700	2260	1450	4740	1540	654	503	131	B	2
3	142	B	92.0	B	46.0	B	36.5	A 12700	2200	1570	3440	1530	647	429	130	B	3
4	143	B	91.0	B	45.0	B	36.0	B 12600	2190	1570	3220	1460	784	419	126	B	4
5	144	B	70.0	B	43.3	B	36.5	B 12600	2330	1570	2720	1370	666	456	123	B	5
6	141	B	77.0	B	47.2	B	37.0	B 12700	2310	1540	2350	1290	669	462	123	B	6
7	143	B	74.0	B	43.2	B	38.0	B 11900	2240	1570	2050	1210	799	364	118	B	7
8	136	B	75.2	B	42.8	B	39.0	B 11500	2160	1670	1910	1140	745	318	A 127	B	8
9	134	B	74.5	B	42.8	B	40.0	B 11300	2070	1740	1690	1080	797	308	A 131	B	9
10	131	B	72.2	B	42.6	B	41.0	B 11100	1990	2030	1420	1020	871	305	A 127	B	10
11	129	B	70.0	B	42.5	B	42.0	B 10900	1930	2370	1300	967	939	304	A 127	B	11
12	125	B	68.0	B	42.4	B	45.0	B 10400	1900	2220	1240	920	998	302	A 126	B	12
13	124	B	67.2	B	42.3	B	52.0	B 10000	1840	2050	1190	871	920	300	A 122	B	13
14	122	B	66.5	B	42.2	B	58.0	B 9600	1990	12100	1110	825	907	284	A 120	B	14
15	120	B	63.8	B	42.0	B	102	B 9010	1490	11800	1060	780	874	268	B 114	B	15
16	118	B	61.4	B	41.9	B	82.5	B 8300	1850	11300	1060	745	852	252	A 109	B	16
17	116	B	59.5	B	41.9	B	76.6	B 7770	1770	10900	1090	714	866	240	A 106	B	17
18	114	B	59.1	B	41.7	B	170	B 7170	1650	10500	1110	685	966	228	B 100	B	18
19	112	B	58.8	B	41.6	B	505	B 6580	1530	10300	1150	660	945	216	A 96.7	B	19
20	110	B	7.9	B	41.8	B	1070	B 5930	1490	10400	1200	637	842	205	A 94.5	B	20
21	107	B	56.0	B	33.5	B	2300	B 5330	1280	10700	1200	616	867	195	A 91.8	B	21
22	105	B	55.0	B	36.0	B	4040	B 4870	1130	11000	1230	594	955	185	A 87.2	B	22
23	103	B	54.0	B	34.5	B	7420	B 4450	1140	11200	1260	569	851	178	A 82.3	B	23
24	101	B	53.0	B	38.0	B	9650	B 3920	1070	11100	1220	570	833	170	B 79.3	B	24
25	99.7	B	52.0	B	37.7	B	9480	B 3560	1200	10900	1170	555	797	162	A 79.4	B	25
26	97.0	B	51.0	B	37.4	B	10100	3240	1290	10600	1150	581	745	155	A 76.0	B	26
27	95.0	B	50.0	B	37.1	B	10100	3070	1230	10100	1170	612	693	149	A 74.0	B	27
28	93.0	B	49.0	B	36.7	B	10700	2970	1200	9640	1190	647	635	142	A 72.5	B	28
29	91.0	B			36.2	B	10900	2720	1248	9070	1400	668	636	138	A 69.6	B	29
30	89.0	B			35.9	B	11600	2500	1150	8290	1510	656	614	134	A 68.5	B	30
31	87.0	B			35.6	B		2480		7110	1640		587		65.9	B	31
TOTAL	3677.9		1448.4		1273.7		89718.3	245200	52150	218440	56850	27186	24866	8343	3230.5		TOTAL
MEAN	119		65.7		41.1		2990	7910	1740	7050	1810	906	776	278	104		MEAN
AC-FT	7299		2859		2530		178000	486500	103000	433000	113000	53900	47700	16500	6410		AC-FT
MAX	149		95.0		49.0		11600	12700	2360	12100	5830	1620	939	545	132		MAX
MIN	87.0		49.0		35.5		75.0	2480	1070	1390	1050	555	587	134	65.9		MIN

SUMMARY FOR THE YEAR 1974

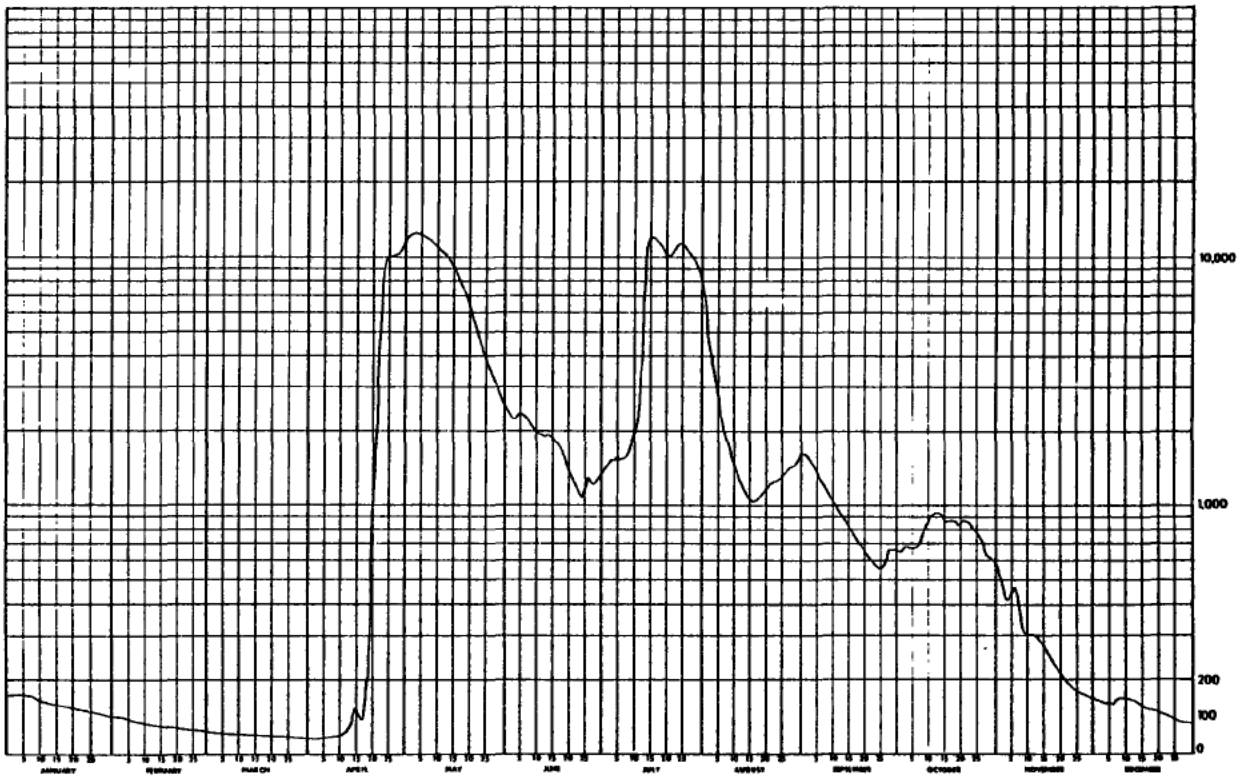
MEAN DISCHARGE, 2000 CFS
TOTAL DISCHARGE, 1450000 AC-FT
MAXIMUM DAILY DISCHARGE, 12700 CFS ON MAY 2
MINIMUM DAILY DISCHARGE, 35.6 CFS ON APR 2

MAXIMUM INSTANTANEOUS DISCHARGE
12800 CFS AT 2140 MST ON MAY 2

TYPE OF GAUGE - RECORDING
LOCATION - LAT 58 1' 40 N
LONG 113 04 05 W
DRAINAGE AREA 3860 SQ MILES

B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA — BIRCH RIVER BELOW ALICE CREEK — STATION NO. 07KE001
MAY 14 1976 PAGE 341
CALGARY, ALTA.

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

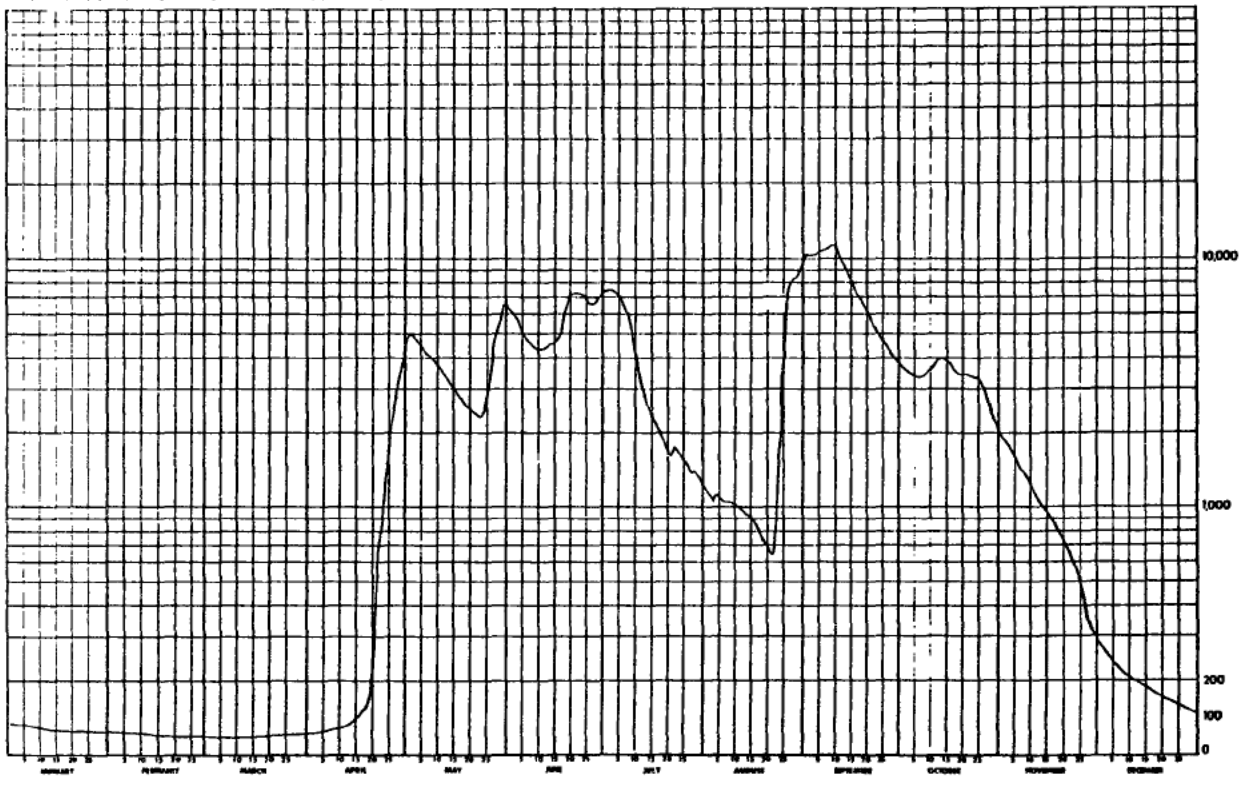
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	54.0 B	44.0 B	37.0 B	45.0 B	5000 A	6300	7380	1140	10400	3600 E	1970	290 B	1
2	53.0 B	43.0 B	37.0 B	47.0 B	4980	5920	7440	1090	10300	3570 A	1900 B	284 B	2
3	57.0 B	42.0 B	37.0 B	49.0 B	4690	5470	7370	1070	10400	3580	1800 B	274 B	3
4	61.0 B	42.0 B	37.0 B	50.0 B	4760	5090	7220	1110	10500	3530	1700 B	263 B	4
5	60.0 B	42.0 B	37.0 B	51.0 B	4560	4810	7040	1110	10500	3430	1600 B	250 B	5
6	60.0 B	41.0 B	36.0 B	52.0 B	4380	4720	6760	1070	10600	3360	1500 B	243 B	6
7	59.0 B	41.0 B	36.0 B	53.0 B	4190	4620	6320	1050	10900	3350	1400 B	235 B	7
8	58.0 B	41.0 B	36.0 B	56.0 B	3990	4450	5750	1060	11200	3420	1400 B	230 B	8
9	58.0 B	40.0 B	35.0 B	58.0 B	3800	4380	5120	1050	11500 A	3540	1300 B	221 B	9
10	57.0 B	40.0 B	35.0 B	60.0 B	3640	4360	4450	1010	11000 E	3670	1200 B	215 B	10
11	56.0 B	40.0 B	35.0 B	61.0 B	3510	4370	3780	1010	10200 E	3830	1200 B	210 B	11
12	55.0 B	40.0 B	34.0 B	63.0 B	3380	4400	3190	975	9400 E	3950	1100 B	205 B	12
13	54.0 B	40.0 B	34.0 B	67.0 B	3210 A	4440	2750	934	8460 E	4000	1100 B	200 B	13
14	51.0 B	40.0 B	34.0 B	70.0 B	3108 E	4550	2420	932	8200 E	3990	1000 B	200 B	14
15	52.0 B	40.0 B	34.0 B	75.0 B	3000 E	4600	2140	916	7800 E	3900	969 B	190 B	15
16	52.0 B	39.0 B	34.0 B	82.0 B	2900 E	4680	2050 E	866	7300 E	3730	923 B	180 B	16
17	51.0 B	39.0 B	33.0 B	103 B	2800 E	5150	1960 E	821	6900 E	3570	880 B	170 B	17
18	50.0 B	39.0 B	34.0 B	140 B	2700 E	6310	1868 E	766	6500 E	3430	840 B	162 B	18
19	50.0 B	39.0 B	35.0 B	190 B	2600 E	6820	1770 E	720	6200 E	3390	760 B	160 B	19
20	50.0 B	39.0 B	36.0 B	328 B	2500 E	7090	1680 E	664 A	5900 E	3440	740 B	155 B	20
21	49.0 B	38.0 B	37.0 B	460 B	2400 E	7240	1580 A	650 E	5600 E	3440	680 B	145 B	21
22	48.0 B	38.0 B	37.0 B	700 B	2300 E	7260	1720	650 E	5360 E	3430	640 B	140 B	22
23	48.0 B	38.0 B	38.0 B	950 B	2300 E	7200	1700	1038	5100 E	3420	580 B	135 B	23
24	48.0 B	38.0 B	39.0 B	1400 B	2400 E	7030	1620	2450	4830 E	3380	500 B	130 B	24
25	48.0 B	38.0 B	40.0 B	1900 B	2800 E	6860	1540	5480	4600 E	3270	440 B	125 B	25
26	47.0 B	38.0 B	40.0 B	2400 B	3470 A	6580	1450	7040	4400 E	3130	400 B	120 B	26
27	47.0 B	38.0 B	41.0 B	2900 B	4190	6490	1370	7960	4200 E	2920	360 B	115 B	27
28	46.0 B	38.0 B	41.0 B	3400 B	4960	6650	1390	8200	4000 E	2580	340 B	115 B	28
29	46.0 B		42.0 B	3900 B	5870	6900	1360	8320	3900 E	2280	320 B	110 B	29
30	45.0 B		42.0 B	4400 B	6430	7250	1280	8680	3700 E	2170	300 B	105 B	30
31	45.0 B		43.0 B		6510		1200	9920		2060		100 B	31
TOTAL	1642.0	1115.0	1146.0	24102.0	117540	172080	104660	79764	230260	104360	29850	5666	TOTAL
MEAN	53.0	39.8	37.0	803	3790	5740	3380	2570	7670	3370	995	183	MEAN
AC-FT	3260	2210	2270	47800	233000	341000	208000	158000	457000	207000	59200	11200	AC-FT
MAX	61.0	44.0	43.0	4400	6510	7260	7440	9920	11500	4000	1970	290	MAX
MIN	45.0	38.0	33.0	45.0	2300	4360	1260	650	3700	2060	300	100	MIN

SUMMARY FOR THE YEAR 1975

MEAN DISCHARGE, 2330 CFS
TOTAL DISCHARGE, 1730800 AC-FT
MAXIMUM DAILY DISCHARGE, 11500 CFS ON SEP 9
MINIMUM DAILY DISCHARGE, 33.0 CFS ON MAR 17

TYPE OF GAUGE - RECORDING
LOCATION - LAT 58 18 40 N
LONG 113 04 05 W
DRAINAGE AREA 3860 SQ MILES

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED
NATURAL FLOW



WATER SURVEY OF CANADA
FEB 7 1977 PAGE 9
CALGARY, ALTA.

BIRCH RIVER BELOW ALICE CREEK

STATION NO. 07KE001

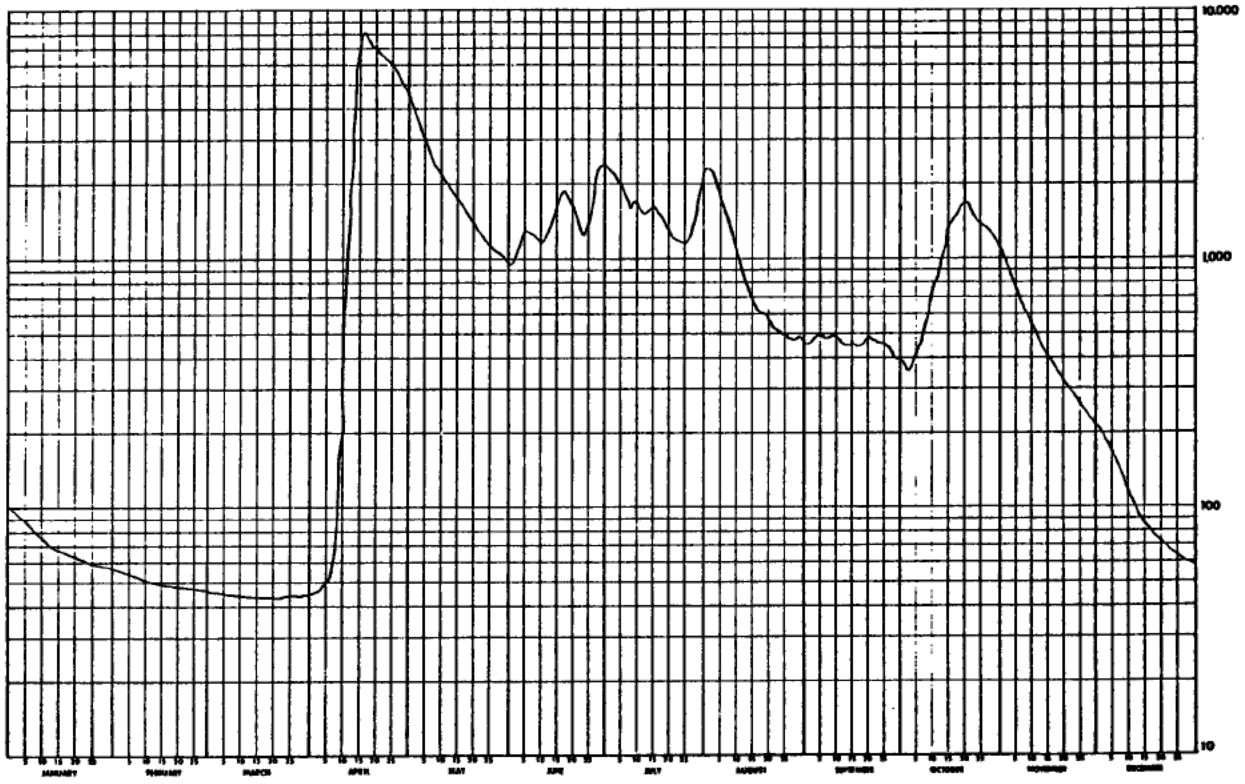
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	98.0 B	56.0 B	46.0 B	45.0 B	4230	945	2390	2280	451	355	920 B	200 B	1
2	96.0 B	56.0 B	46.0 B	45.8 B	3890	986	2360	2350	470	346	850 B	198 B	2
3	93.0 B	55.0 B	46.0 B	46.0 B	3590	1070	2300	2330	481	377	790 B	180 B	3
4	90.0 B	54.0 B	46.0 B	47.0 B	3320	1170	2180	2210	486	394	730 B	170 B	4
5	88.0 B	54.0 B	45.0 B	50.0 B	3040	1250	2050	2040	484	428	700 B	160 B	5
6	86.0 B	53.0 B	45.0 B	55.0 B	2790	1270	1910	1860	480	489	650 B	150 B	6
7	83.0 B	53.0 B	45.0 B	60.0 B	2600	1270	1740	1670	478	536	610 B	140 B	7
8	81.0 B	52.0 B	45.0 B	80.0 B	2440	1260	1600	1500	486	574	580 B	130 B	8
9	78.0 B	52.0 B	45.0 B	150 B	2270	1220	1610	1360	489	654	540 B	120 B	9
10	75.0 B	51.0 B	44.2 B	400 B	2140	1180	1700	1230	473	755	500 B	110 B	10
11	73.0 B	51.0 B	44.0 B	800 B	2060	1180	1660	1110	459	862	480 B	100 B	11
12	71.0 B	50.0 B	44.0 B	1500 B	1980	1200	1570	1000	453	975	460 B	95.0 B	12
13	69.3 B	49.4 B	44.0 B	2500 B	1910	1290	1500	897	458	1100	430 B	90.0 B	13
14	69.0 B	49.0 B	44.0 B	5400 B	1840	1420	1550	816	456	1260	410 B	90.0 B	14
15	68.0 B	49.0 B	44.0 B	7000 B	1770	1550	1610	754	451	1380	390 B	86.5 B	15
16	67.0 B	49.0 B	44.0 B	7700 B	1700	1700	1640	714	439	1460	370 B	80.0 B	16
17	66.0 B	49.0 B	44.0 B	8000 B	1630	1840	1620	664	444	1530	350 B	79.0 B	17
18	65.0 B	49.0 B	44.0 B	7470	1580 E	1860	1540	612	453	1580	360 B	77.0 B	18
19	64.0 B	48.0 B	44.0 B	7110	1500 E	1790	1430	581	468	1620	320 B	75.0 B	19
20	64.0 B	48.0 B	43.0 B	6910	1450 E	1670	1330	552	480	1590	310 B	72.0 B	20
21	63.0 B	48.0 B	43.0 B	6750	1380 E	1540	1260	525	473	1560	300 B	71.0 B	21
22	62.0 B	48.0 B	43.0 B	6600	1310 E	1400	1220	516	461	1400	290 B	69.0 B	22
23	61.0 B	48.0 B	44.0 B	6470	1260 E	1290	1210	510	452	1350	270 B	67.0 B	23
24	60.0 B	47.0 B	44.0 B	6280	1190 E	1220	1170	497	454	1350 B	260 B	65.0 B	24
25	60.0 B	47.0 B	44.0 B	6060	1150 E	1290	1160	485	451	1300 B	255 B	63.0 B	25
26	59.0 B	47.0 B	44.0 B	5840	1090 E	1520	1170	479	434	1280 B	245 B	62.0 B	26
27	59.0 B	47.0 B	44.0 B	5520	1060 A	1780	1200	465	413	1250 B	235 B	61.0 B	27
28	58.0 B	47.0 B	44.0 B	5210	1070	2090	1290	469	397	1210 B	225 B	60.0 B	28
29	58.0 B	46.0 B	45.0 B	4890	1050	2310	1570	483	383	1150 B	215 B	60.0 B	29
30	57.0 B		45.0 B	4550	1010	2400	1830	472	368	1050 B	210 B	59.0 B	30
31	57.0 B		45.0 B		965		2050	456		1000 B		58.0 B	31
TOTAL	2198.3	1452.4	1377.2	113538.8	60265	43961	50420	31887	13621	32165	13235	3091.5	TOTAL
MEAN	70.9	50.1	44.4	3780	1940	1470	1630	1030	454	1040	441	99.7	MEAN
AC-FT	4360	2880	2730	225000	120000	87200	100000	63200	27000	63800	26300	6130	AC-FT
MAX	98.0	56.0	46.0	8000	4230	2400	2390	2350	489	1620	920	200	MAX
MIN	57.0	46.0	43.0	45.0	965	985	1160	456	368	386	210	58.0	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 1000 CFS
TOTAL DISCHARGE, 729000 AC-FT
MAXIMUM DAILY DISCHARGE, 8000 CFS ON APR 17
MINIMUM DAILY DISCHARGE, 43.0 CFS ON MAR 20

MAXIMUM INSTANTANEOUS DISCHARGE, CFS AT ON NOT DETERMINED

A=MANUAL GAUGE
B=ICE CONDITIONS
E=ESTIMATED



5.8 CALUMET RIVER NEAR FORT McKAY

STATION NAME: Calumet River near Ft. MacKay

STATION NUMBER: 07DA014

LOCATION: Latitude: 57°24'12" Longitude: 111°40'57"

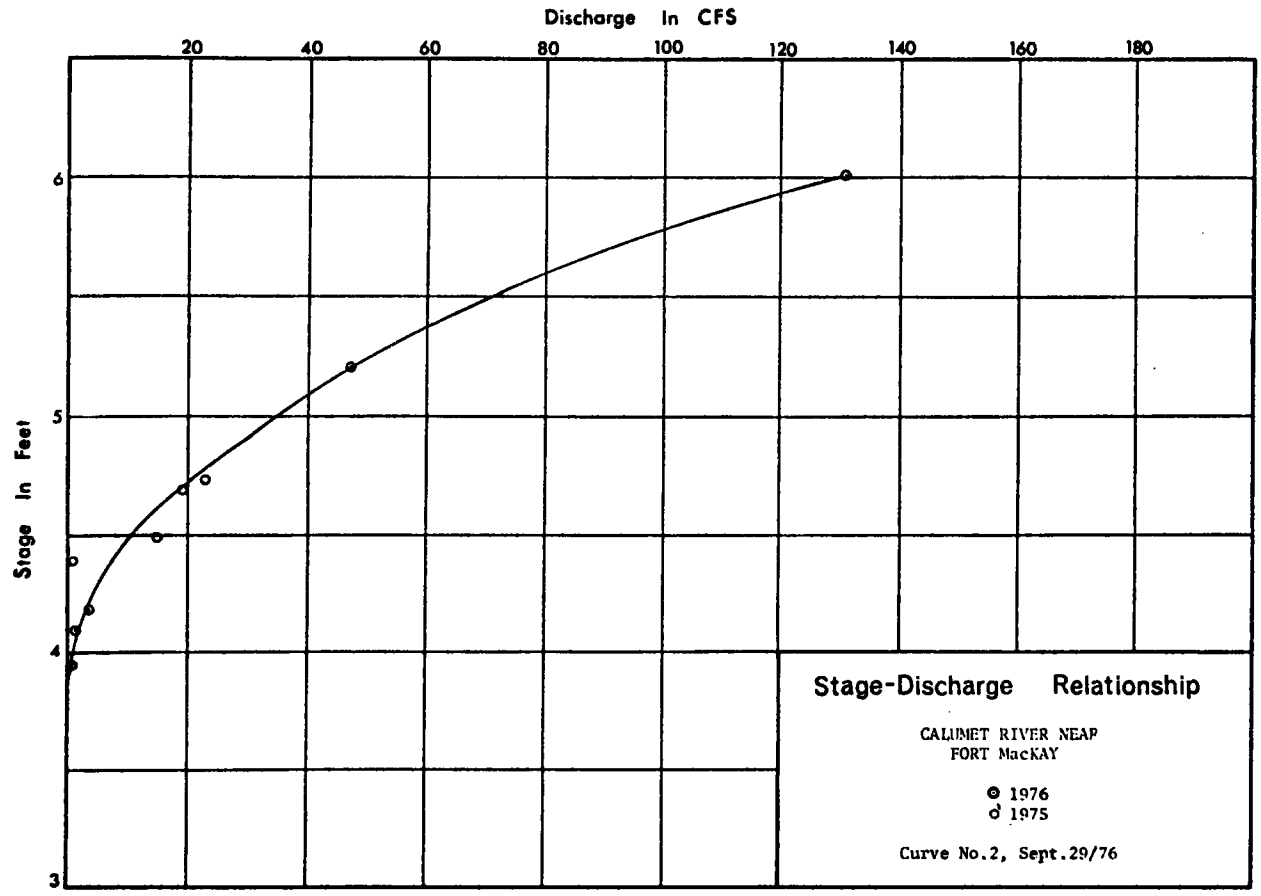
NW11-97-11-W4

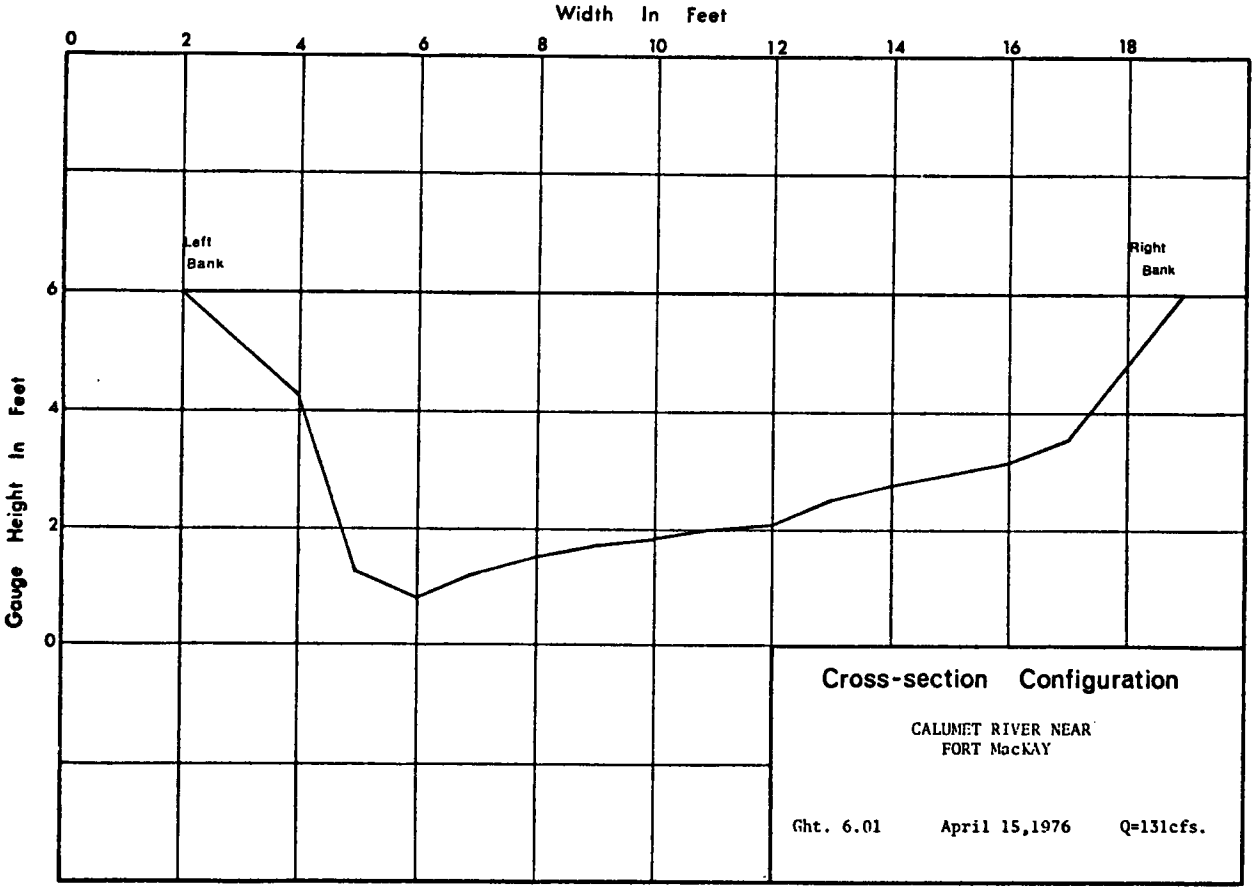
DRAINAGE AREA: 69.8 square miles (181 km^2)

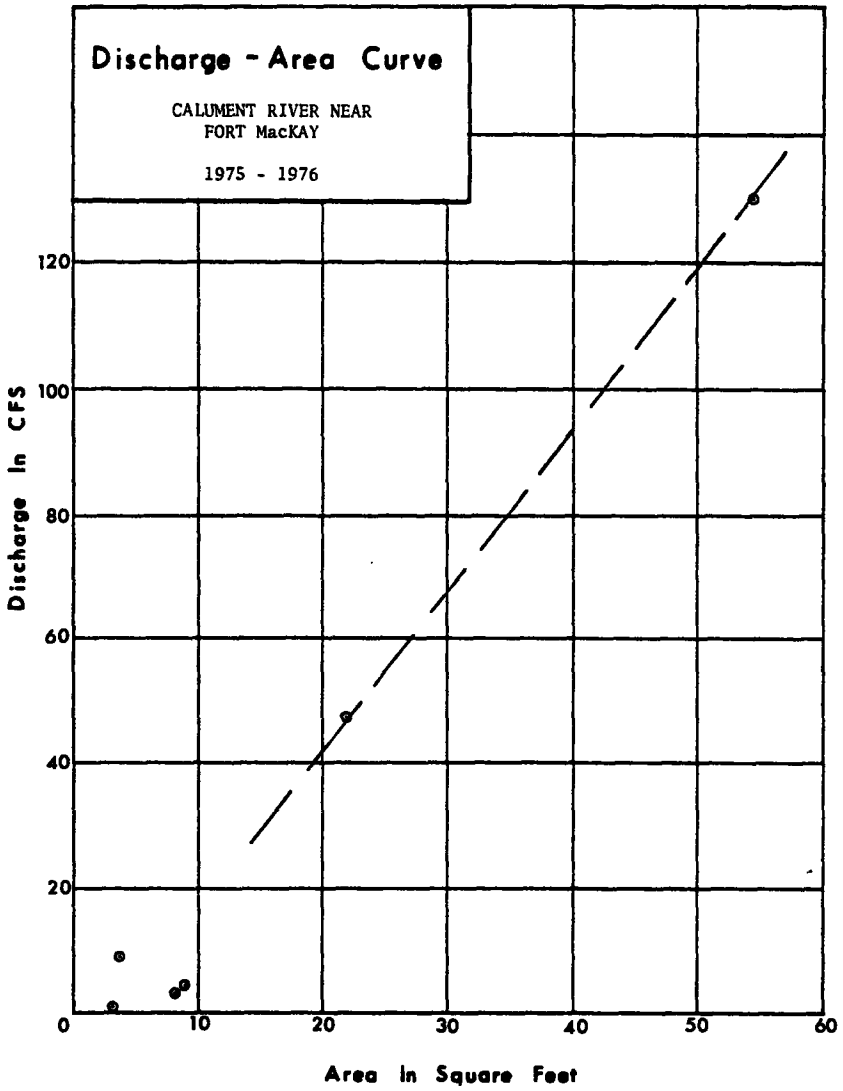
PERIOD OF RECORD: The station was established July 21, 1975 and continuous discharge data is available to December, 1976.

SITE DESCRIPTION: The gauge is located on the right bank, 16 air miles (26 km) north of Ft. MacKay and immediately downstream of a winter forestry road crossing. The station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Measurements are made by wading at various locations near the gauge or from a measuring bridge about 200 feet (60 m) above the gauge.

GENERAL: The water in this stream is noticeably clearer than all of the other small left bank tributaries to the Athabasca River in this area. The Calumet River flows out of a lake some five miles above the gauge. There are not sufficient high water measurements to properly define the discharge-area curve but an approximate curve is included. The available data is insufficient to even define an approximate discharge-velocity curve. Zero flow has been observed during both winters of operation.


Discharge In CFS
20
40
60
80
100
120
140
160
180
Stage In Feet
6
5
4
3
Stage-Discharge Relationship
CALUMET RIVER NEAR
FORT MacKAY
1976
1975
Curve No.2, Sept.29/76


Width In Feet
0
2
4
6
8
10
12
14
16
18
Gauge Height In Feet
6
4
2
0
Left
Bank
Right
Bank
Cross-section Configuration
CALUMET RIVER NEAR
FORT MacKAY
Ght. 6.01
April 15,1976
Q=131cfs.



Discharge - Velocity Curve
Not Available

WATER SURVEY OF CANADA
MAY 14 1976 PAGE 291
CALGARY, ALTA.

CALUMET RIVER NEAR FORT MACKAY

STATION NO. 07DA814

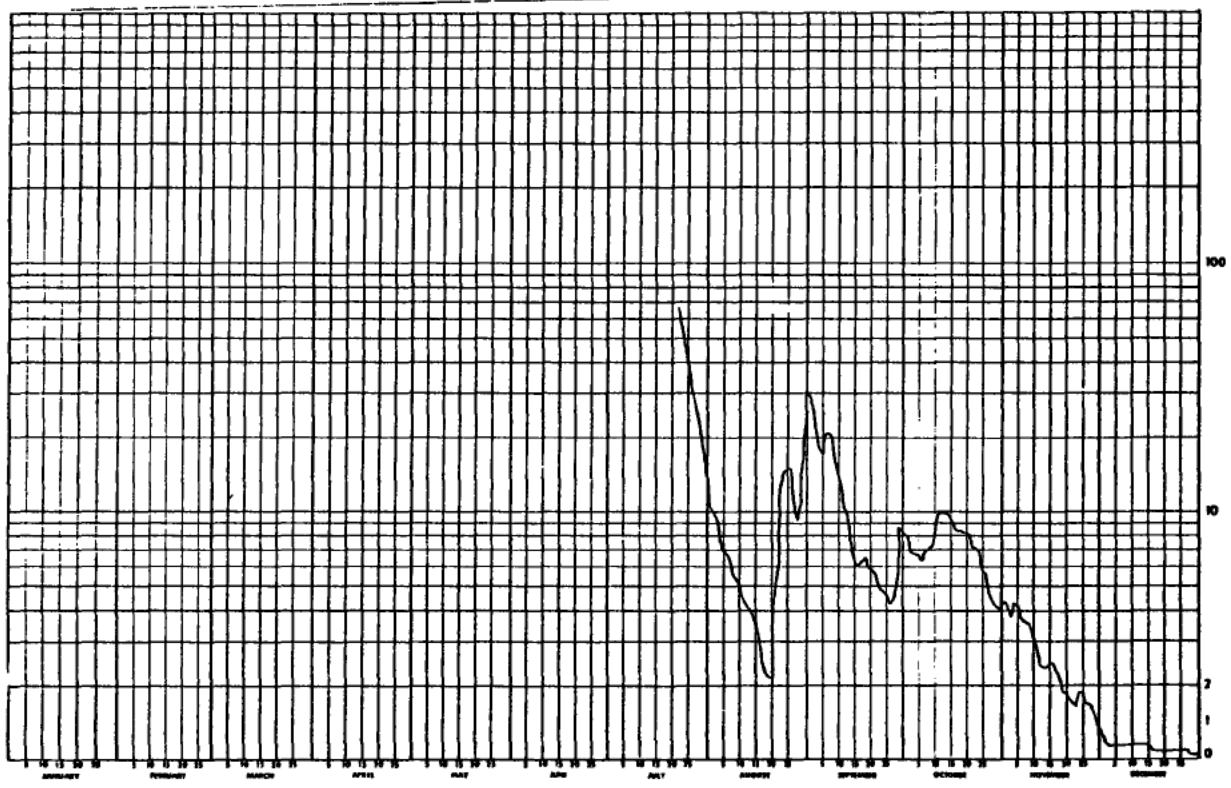
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	18.6	29.4	7.9	4.4 B	0.59 B	1
2	---	---	---	---	---	---	---	10.1	24.2	7.9	4.2 B	0.37 B	2
3	---	---	---	---	---	---	---	9.4	19.7	6.9	3.7 B	0.30 B	3
4	---	---	---	---	---	---	---	7.9	17.8	6.9	4.3 B	0.30 B	4
5	---	---	---	---	---	---	---	6.8	17.0	6.6	4.2 B	0.30 B	5
6	---	---	---	---	---	---	---	6.8	20.8	6.4	3.9 B	0.30 B	6
7	---	---	---	---	---	---	---	6.5	21.1	7.0	3.6 B	0.30 B	7
8	---	---	---	---	---	---	---	5.6	19.2	7.1	3.6 B	0.30 B	8
9	---	---	---	---	---	---	---	5.4	15.9	7.3	3.4 B	0.30 B	9
10	---	---	---	---	---	---	---	5.2	14.1	7.9	3.2 B	0.30 B	10
11	---	---	---	---	---	---	---	4.6	11.7	9.8	2.8 B	0.30 B	11
12	---	---	---	---	---	---	---	4.2	10.4	10.0	2.4 B	0.30 B	12
13	---	---	---	---	---	---	---	4.8	9.3	10.0	2.4 B	0.30 B	13
14	---	---	---	---	---	---	---	4.8	7.1	9.9	2.4 B	0.30 B	14
15	---	---	---	---	---	---	---	3.7	6.2	9.5	2.4 B	0.30 B	15
16	---	---	---	---	---	---	---	3.3	6.1	8.9	2.5 B	0.20 B	16
17	---	---	---	---	---	---	---	2.7	6.4	8.4	2.3 B	0.20 B	17
18	---	---	---	---	---	---	---	2.3	6.6	8.5	2.1 B	0.20 B	18
19	---	---	---	---	---	---	---	2.2	6.8	8.3	1.8 B	0.20 B	19
20	---	---	---	---	---	---	---	2.2	5.9	8.3	1.8 B	0.20 B	20
21	---	---	---	---	---	---	71.2 A	4.8	5.7	8.1	1.6 B	0.20 B	21
22	---	---	---	---	---	---	64.9	5.6	5.2	7.2	1.4 B	0.20 B	22
23	---	---	---	---	---	---	55.3	13.5	4.9	7.2	1.3 B	0.20 B	23
24	---	---	---	---	---	---	44.0	14.3	4.8	6.7	1.6 B	0.20 B	24
25	---	---	---	---	---	---	36.2	15.3	4.7	5.8	1.6 B	0.20 B	25
26	---	---	---	---	---	---	31.8	15.0	4.3	5.7	1.4 B	0.20 B	26
27	---	---	---	---	---	---	27.6	11.0	4.4	5.0	1.4 B	0.20 B	27
28	---	---	---	---	---	---	24.5	9.3	4.9	4.5	1.3 B	0.10 B	28
29	---	---	---	---	---	---	21.3	10.7	4.6	4.2	0.94 B	0.10 B	29
30	---	---	---	---	---	---	17.1	19.8	8.3	4.1	0.78 B	0.10 B	30
31	---	---	---	---	---	---	13.4	29.0		4.1		0.10 B	31
TOTAL	---	---	---	---	---	---	---	255.8	330.7	226.1	75.12	7.66	TOTAL
MEAN	---	---	---	---	---	---	---	8.3	11.0	7.3	2.5	0.25	MEAN
AC-FT	---	---	---	---	---	---	---	507	656	448	149	15.2	AC-FT
MAX	---	---	---	---	---	---	---	29.8	29.4	10.0	4.4	0.59	MAX
MIN	---	---	---	---	---	---	---	2.2	4.3	4.1	0.78	0.10	MIN

A-MANUAL GAUGE
B-ICE CONDITIONS

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 24 12 N
LONG 111 40 57 W
DRAINAGE AREA 69.8 SQ MILES

NATURAL FLOW



WATER SURVEY OF CANADA
JAN 14 1977 SE 8
CALGARY, ALTA.

CALUMET RIVER NEAR FORT MACKAY

STATION NO. 07DA014

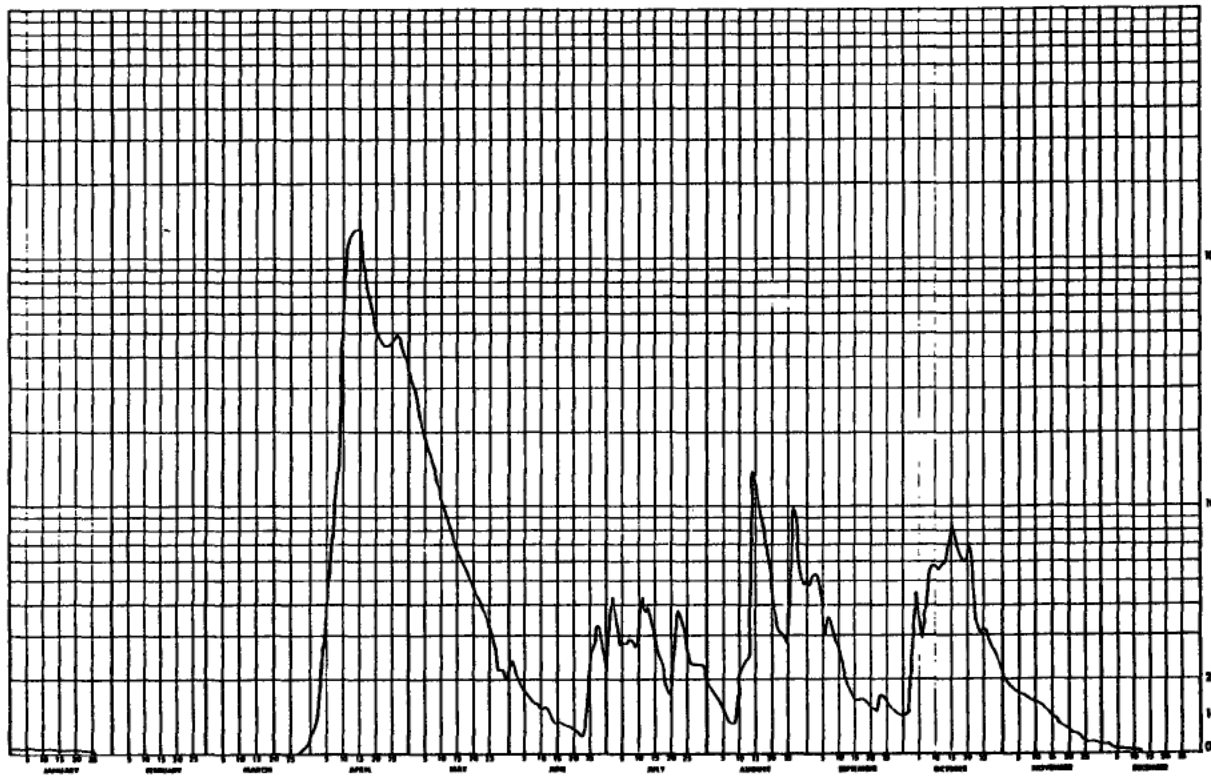
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	.10 A	0 A	0 B	.40 B	29.0 E	2.4	3.2	1.7	4.8	.86	2.0 B	.20 B	1
2	.10 A	0 A	0 B	.60 B	25.0 E	2.2	4.3	1.6	5.2	.89	1.9 A	.20 B	2
3	.10 A	0 A	0 B	1.4 B	22.0 E	2.0	3.7	1.4	5.3	2.4	1.7 B	.20 B	3
4	.10 A	0 A	0 A	2.5 B	19.5 E	1.8	2.7 A	1.2	4.8	4.5	1.7 B	.10 B	4
5	.10 A	0 A	0 B	3.2 B	17.5 E	1.5	2.8 E	1.1	3.5	3.8	1.6 A	.10 B	5
6	.10 B	0 A	0 B	4.8 B	16.0 E	1.4	2.8 E	.85	3.0	2.9	1.5 A	.10 B	6
7	.10 B	0 B	0 B	7.4 B	14.0 E	1.3	2.9 E	.76	3.6	3.4	1.5 A	.10 B	7
8	.10 A	0 B	0 B	12.0 B	12.5 E	1.3	2.9 A	.67	3.1	5.0	1.4 B	.10 B	8
9	.10 B	0 B	0 B	27.0 B	11.0 E	1.2	2.7	.75	2.8	5.7	1.3 B	.10 B	9
10	.10 A	0 B	0 B	54.0 B	10.0 E	1.0	2.9	1.9	2.6	5.8	1.3 A	.10 B	10
11	.10 A	0 B	0 A	109 B	9.0 E	1.1	4.3	2.3	2.3	5.5	1.2 B	.10 A	11
12	.10 B	0 B	0 B	120 B	8.4 E	1.1	3.7	2.4	1.9	5.8	1.1 A	.10 B	12
13	.10 A	0 B	0 B	123 B	7.9 E	.84	3.9	2.5	1.6	5.9	1.0 B	0 B	13
14	.10 B	0 B	0 B	128 B	7.1 E	.71	3.6	13.7	1.5	6.7 B	.90 B	0 B	14
15	.10 A	0 B	0 B	131 A	6.6 E	.75	2.9	12.2	1.3	8.5 B	.80 B	0 B	15
16	.10 B	0 B	0 B	103	6.1 E	.68	2.5	9.8	1.4	7.7 B	.80 B	0 B	16
17	.10 A	0 B	0 B	80.4	5.6 E	.64	2.4	8.1	1.3	6.8 B	.70 A	0 B	17
18	.10 B	0 B	0 B	66.8	5.2 E	.61	2.0	6.6	1.3	6.2 A	.70 A	0 B	18
19	.10 A	0 B	0 B	55.2	4.9 E	.57	1.7	5.8	1.2	6.0 A	.60 B	0 B	19
20	.10 A	0 B	0 B	47.7 A	4.6 E	.53	1.4	4.5	1.1	5.8 B	.60 A	0 B	20
21	.10 B	0 A	0 B	46.0 E	4.4 E	.43	2.6	3.7	1.1	6.8 B	.50 B	0 B	21
22	.10 A	0 B	0 B	48.0 E	4.1 E	.40	3.8	3.2	.98	4.5 B	.50 B	0 B	22
23	.10 A	0 A	0 B	44.0 E	3.8 E	.38	3.6	3.1	1.5	3.4 B	.40 B	0 B	23
24	.10 B	0 A	0 A	44.0 E	3.5 E	1.6	3.0	2.9	1.5	3.1 B	.40 B	0 B	24
25	.10 B	0 B	0 B	46.0 E	3.2 E	2.5	2.6	2.8	1.3	3.2 B	.30 B	0 B	25
26	.10 B	0 B	0 B	49.0 A	2.9 A	2.6	2.3	4.8	1.1	3.2 B	.30 B	0 B	26
27	0 B	0 B	0 B	46.2 A	2.3	3.3	2.3	9.7	1.0	2.9 B	.30 B	0 B	27
28	0 B	0 B	0 B	42.0 E	2.2	3.3	2.3	6.7	.98	2.7 B	.30 B	0 B	28
29	0 B	0 B	.10 B	37.0 E	2.2	2.6	2.3	5.2	.97	2.6 B	.20 B	0 B	29
30	0 B		.12 B	33.0 E	2.0	2.1	2.3	4.8	.96	2.4 B	.22 B	0 B	30
31	0 B		.20 B		2.1		2.0	4.9		2.2 B		0 B	31
TOTAL	2.60	0	.42	1508.60	274.6	42.84	88.4	131.63	64.99	137.15	27.72	1.50	TOTAL
MEAN	.08	0	.01	50.3	8.9	1.4	2.9	4.2	2.2	4.4	.92	.05	MEAN
AC-FT	5.2	0	.83	2990	545	85.0	175	261	129	272	55.0	3.0	AC-FT
MAX	.10	0	.20	131	29.0	3.3	4.3	13.7	5.3	8.5	2.0	.20	MAX
MIN	0	0	0	.40	2.0	.38	1.4	.67	.96	.86	.20	0	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 6.2 CFS
TOTAL DISCHARGE, 4520 AC-FT
MAXIMUM DAILY DISCHARGE, 131 CFS ON APR 15
MINIMUM DAILY DISCHARGE, 0 CFS ON JAN 27

MAXIMUM INSTANTANEOUS DISCHARGE, CFS AT ON Not Determined

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



5.9 CLEARWATER RIVER ABOVE CHRISTINA RIVER(former location)

STATION NAME: Clearwater River above Christina River (former location)

STATION NUMBER: 07CD005

LOCATION: Latitude: 56°40'10" Longitude: 111°03'00"

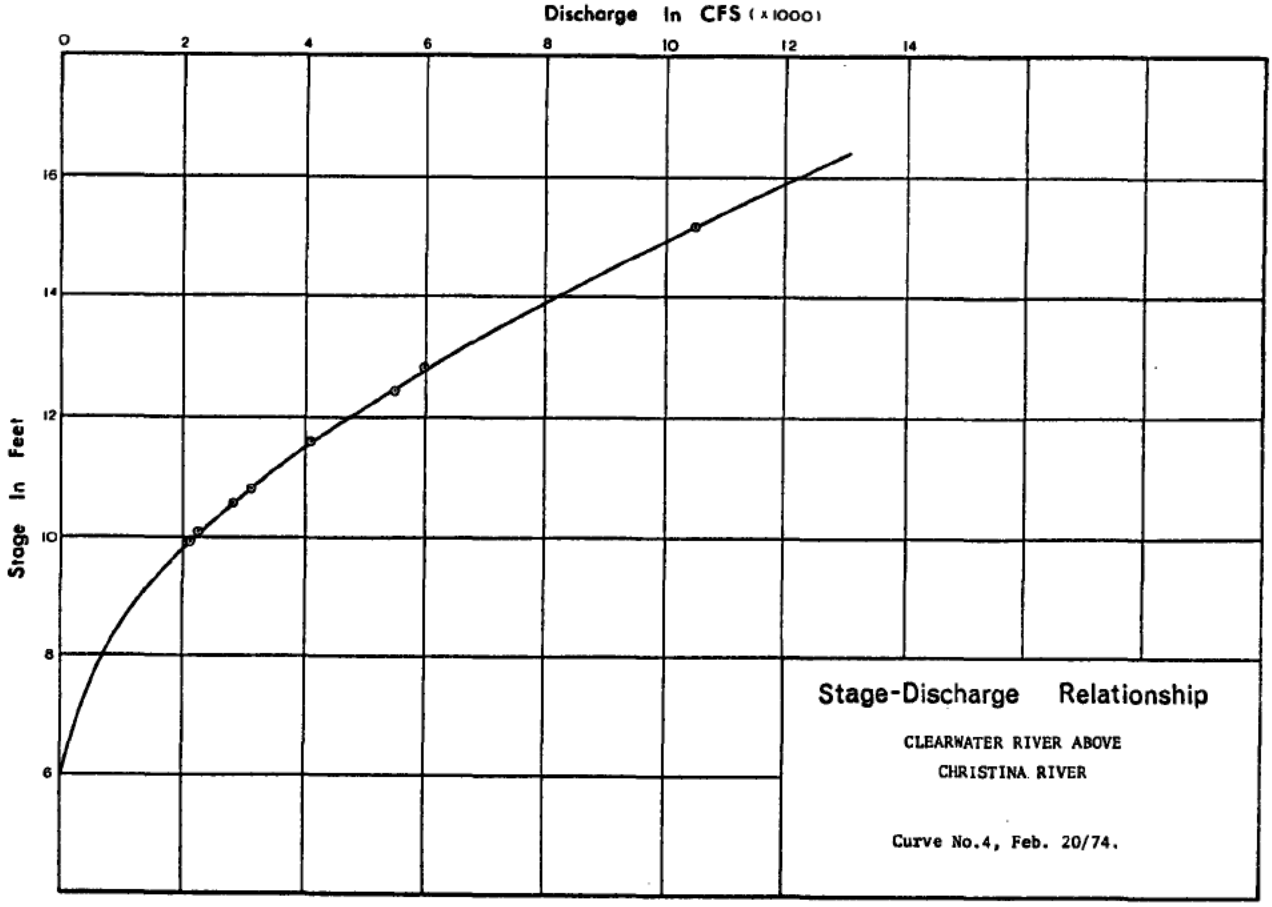
SE33-88-07-W4

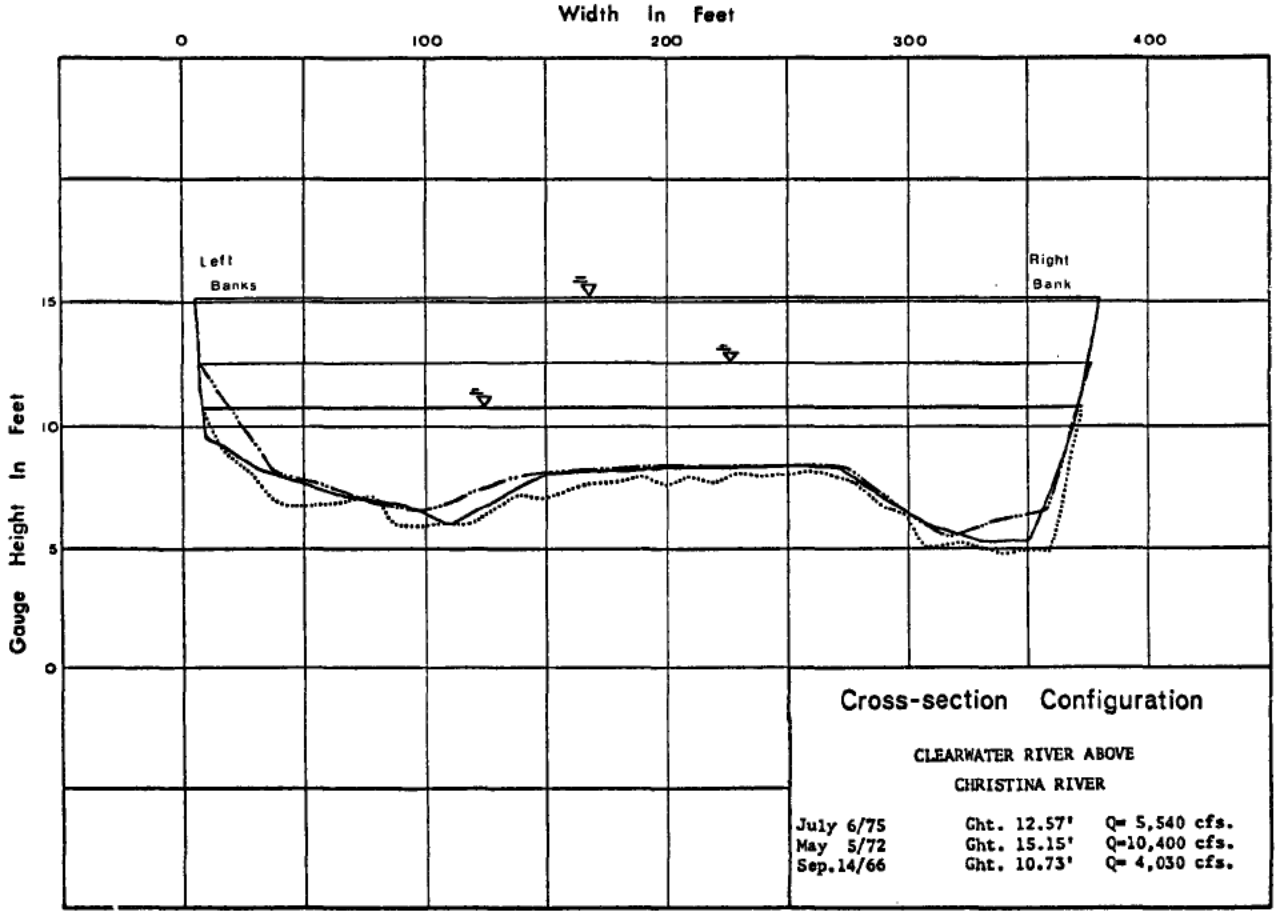
DRAINAGE AREA: 6,630 square miles (17,200 km^2)

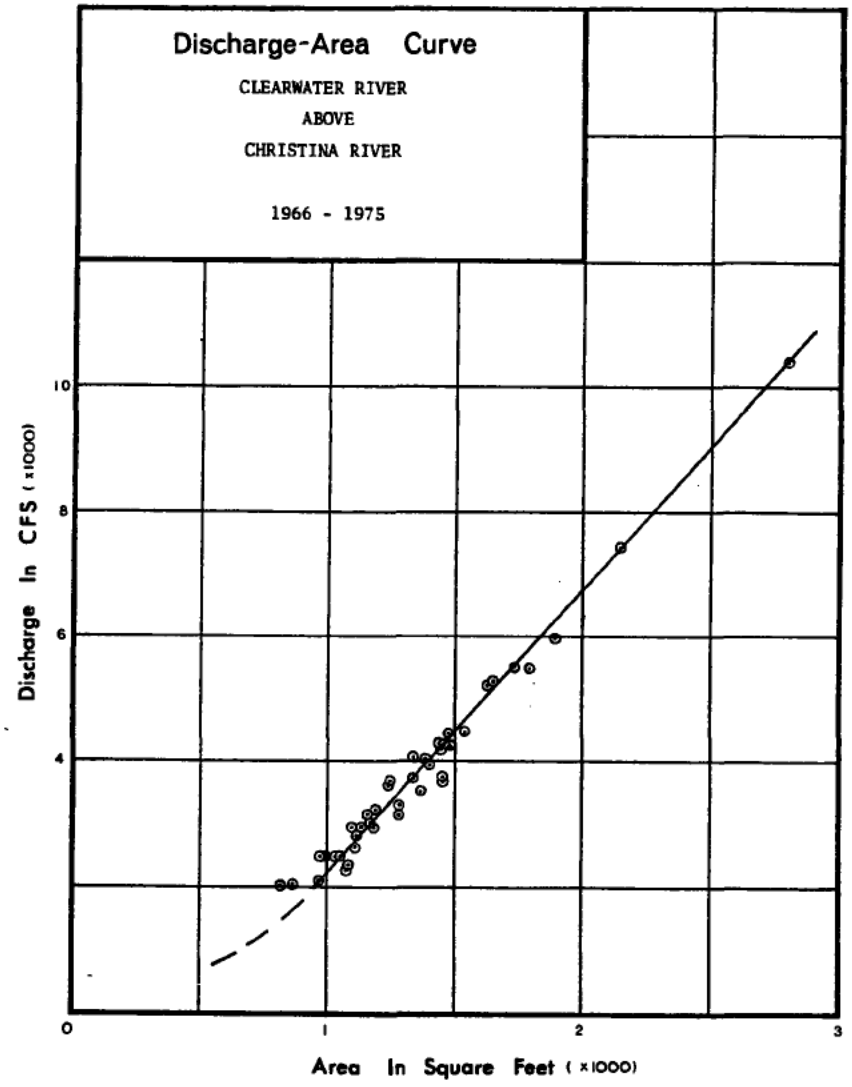
PERIOD OF RECORD: The station was established in May,1966. Discharge data is available for periods of varying length, at this site, until September 25, 1975 at which time the station was moved approximately five miles (8 km) upstream.

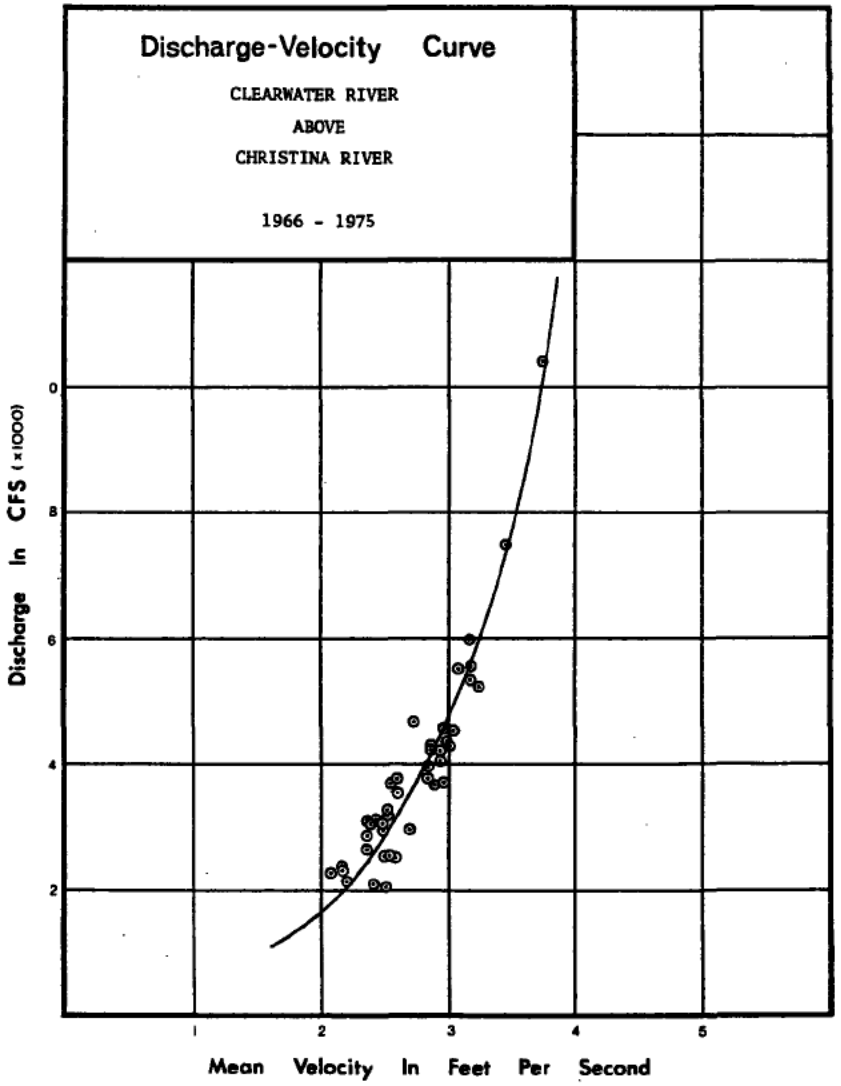
SITE DESCRIPTION: This site was on the right bank about one-half mile (0.8 km) above the confluence with the Christina River and about 16 miles (26 km) upstream of Ft. McMurray. Open water discharge measurements were made by boat about one-quarter mile (0.4 km) above the gauge.

GENERAL: The gauge at this site was on occasion subject to backwater conditions caused by high flows in the Christina River. When not affected by backwater, the stage-discharge relationship was very stable.


Discharge In CFS (x1000)
0
2
4
6
8
10
12
14
Stage In Feet
16
14
12
10
8
6
Stage-Discharge Relationship
CLEARWATER RIVER ABOVE
CHRISTINA RIVER
Curve No.4, Feb. 20/74.


Width In Feet
0
100
200
300
400
Left
Banks
Right
Bank
Gauge Height In Feet
15
10
5
0
Cross-section Configuration
CLEARWATER RIVER ABOVE
CHRISTINA RIVER
July 6/75 Ght. 12.57' Q= 5,540 cfs.
May 5/72 Ght. 15.15' Q=10,400 cfs.
Sep.14/66 Ght. 10.73' Q= 4,030 cfs.


Discharge-Area Curve
CLEARWATER RIVER
ABOVE
CHRISTINA RIVER
1966 - 1975
Discharge In CFS (x1000)
Area In Square Feet (x1000)
0
1
2
3
4
6
8
10


Discharge-Velocity Curve
CLEARWATER RIVER
ABOVE
CHRISTINA RIVER
1966 - 1975
Discharge In CFS (x1000)
Mean Velocity In Feet Per Second
1
2
3
4
5
2
4
6
8
0

5.10 CLEARWATER RIVER ABOVE CHRISTINA RIVER (present site)

STATION NAME: Clearwater River above Christina River (present site)

STATION NUMBER: 07CD005

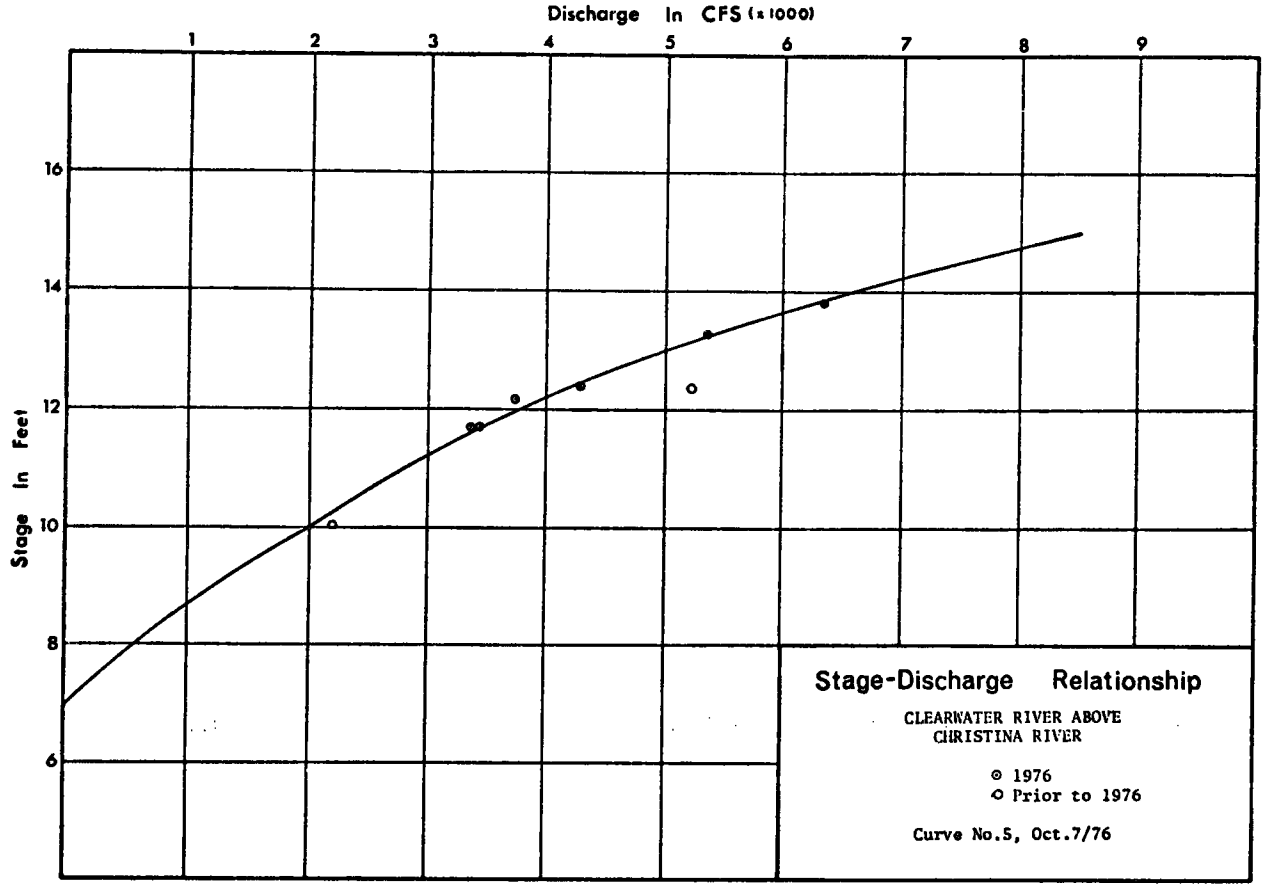
LOCATION: Latitude: 56°39'40" Longitude: 110°55'40"

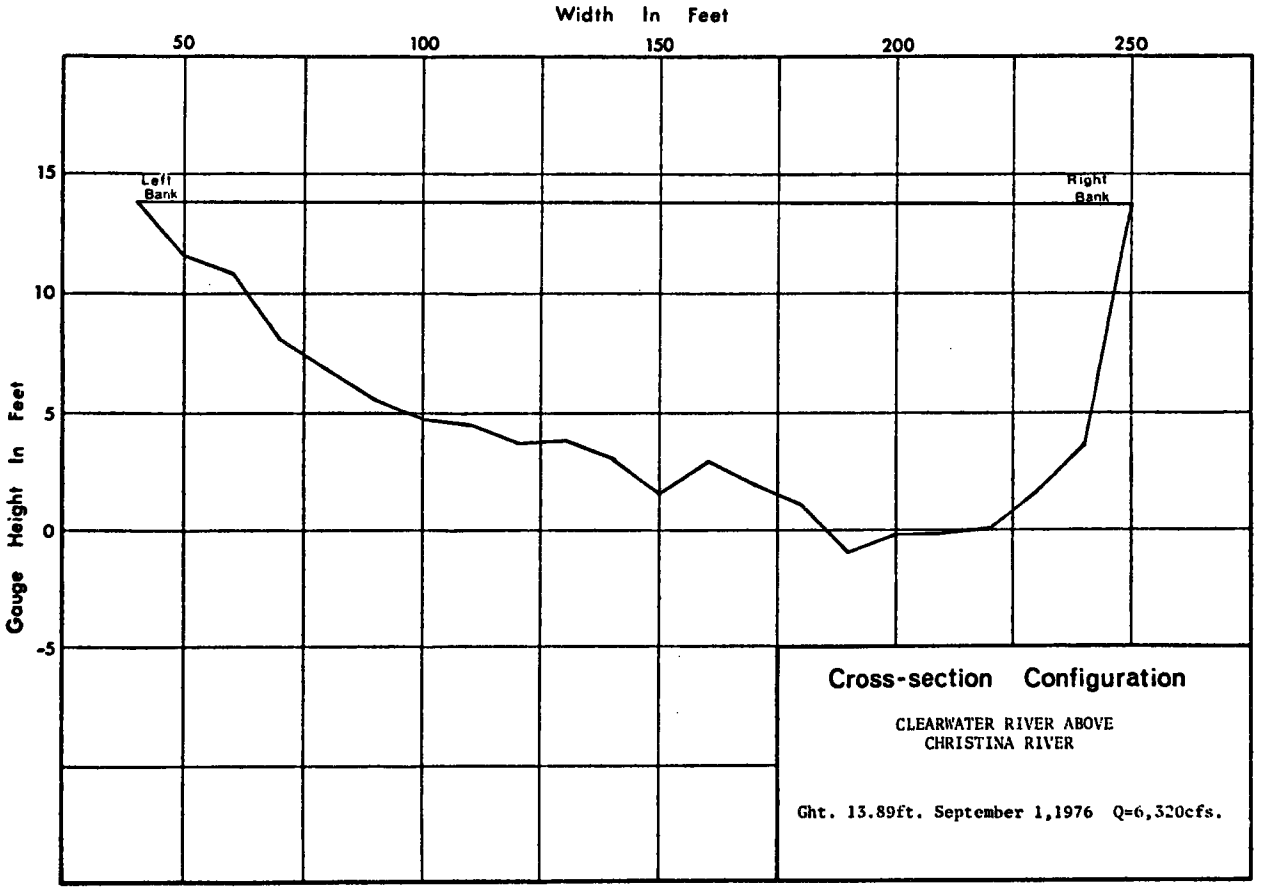
DRAINAGE AREA: 6,630 square miles (17,200 km^2)

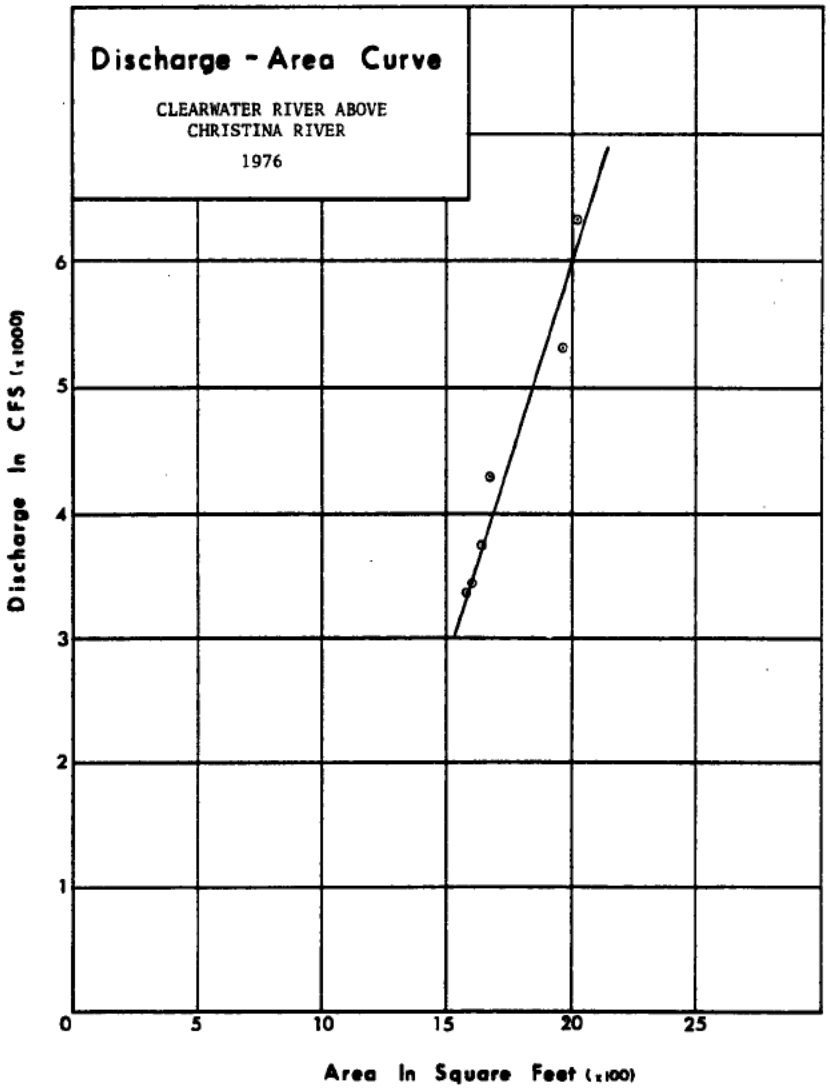
PERIOD OF RECORD: This station was moved to its present site on September 25, 1975 and discharge data is available at this site to December, 1976.

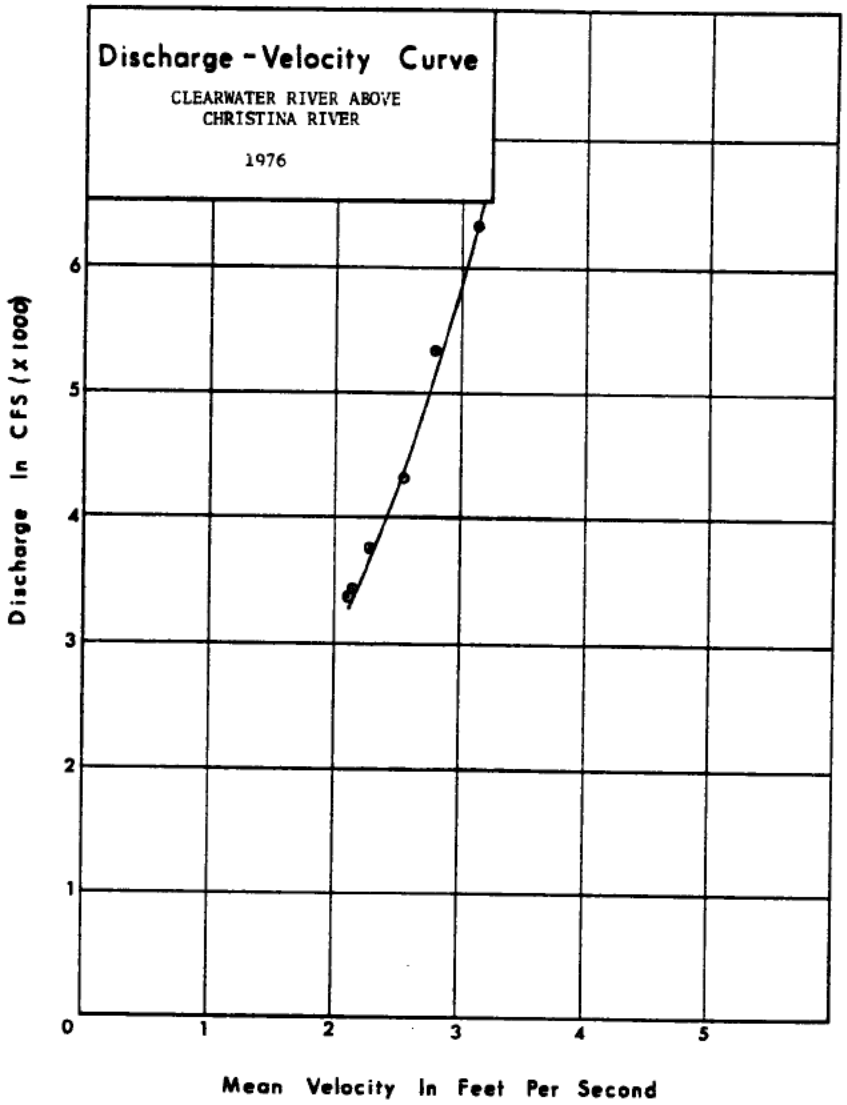
SITE DESCRIPTION: The present location is on the right bank approximately five miles (8 km) above the confluence with the Christina River and about 20 miles (32 km) upstream of Ft. McMurray. The station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water discharge measurements are made by boat about 300 feet (90 m) above the gauge.

GENERAL: Moving the gauge to its present site caused a change in the stage-discharge relationship, discharge-area relationship, discharge-velocity relationship and the cross-section configuration but the actual discharge values are identical at both sites and the drainage areas for practical purposes are identical.


Discharge In CFS (x 1000)
1
2
3
4
5
6
7
8
9
Stage In Feet
16
14
12
10
8
6
Stage-Discharge Relationship
CLEARWATER RIVER ABOVE
CHRISTINA RIVER
⊙ 1976
○ Prior to 1976
Curve No.5, Oct.7/76


Width In Feet
50
100
150
200
250
Gauge Height In Feet
15
10
5
0
-5
Left Bank
Right Bank
Cross-section Configuration
CLEARWATER RIVER ABOVE
CHRISTINA RIVER
Ght. 13.89ft. September 1,1976 Q=6,320cfs.


Discharge - Area Curve
CLEARWATER RIVER ABOVE
CHRISTINA RIVER
1976
Discharge In CFS (x1000)
0
1
2
3
4
5
6
0
5
10
15
20
25
Area In Square Feet (x100)


Discharge - Velocity Curve
CLEARWATER RIVER ABOVE
CHRISTINA RIVER
1976
Discharge In CFS (X1000)
0
1
2
3
4
5
6
0
1
2
3
4
5
Mean Velocity In Feet Per Second

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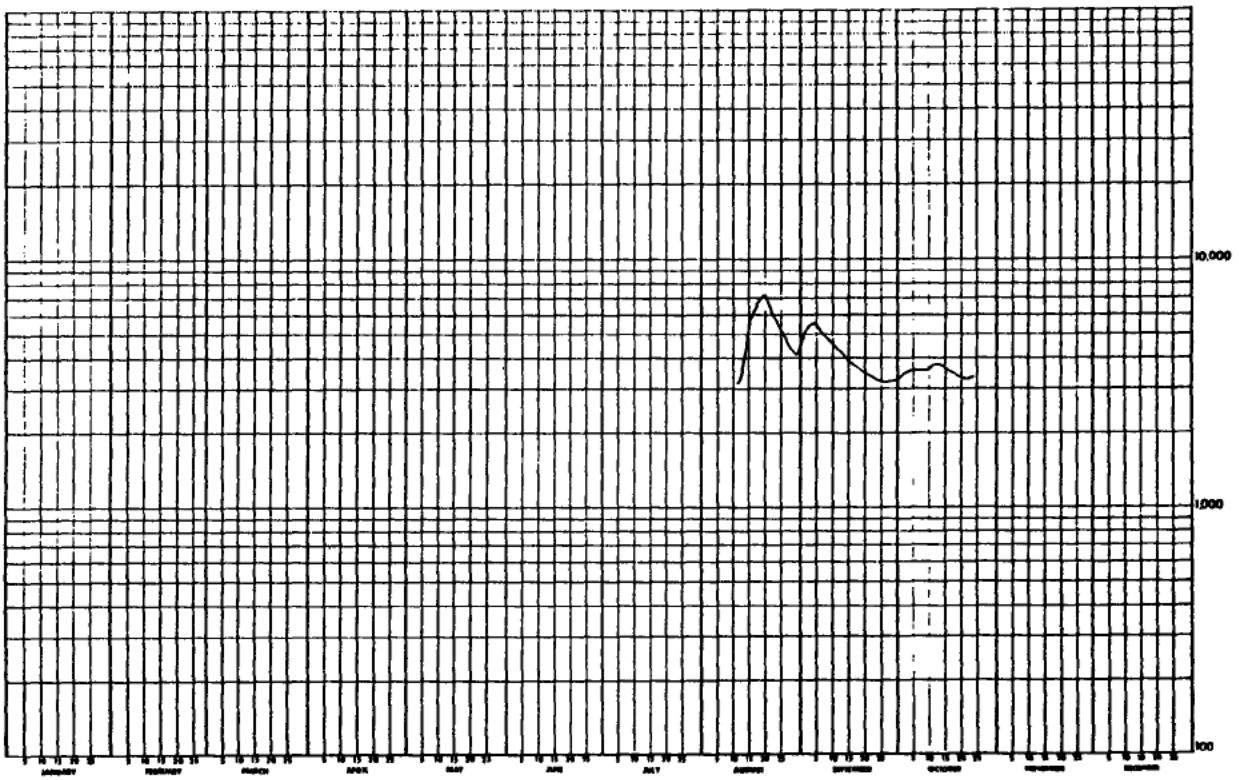
CLEARWATER RIVER ABOVE CHRISTINA RIVER

STATION NO. 07CD005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1966

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	---	5050	3330	---	---	1
2	---	---	---	---	---	---	---	---	5210	3420	---	---	2
3	---	---	---	---	---	---	---	---	5350	3490	---	---	3
4	---	---	---	---	---	---	---	---	5520	3550	---	---	4
5	---	---	---	---	---	---	---	---	5430	3550	---	---	5
6	---	---	---	---	---	---	---	---	5210	3570	---	---	6
7	---	---	---	---	---	---	---	---	5050	3550	---	---	7
8	---	---	---	---	---	---	---	---	4900	3510	---	---	8
9	---	---	---	---	---	---	---	---	4720	3530	---	---	9
10	---	---	---	---	---	---	---	---	4530	3650	---	---	10
11	---	---	---	---	---	---	---	3100	4410	3710	---	---	11
12	---	---	---	---	---	---	---	3210	4290	3750	---	---	12
13	---	---	---	---	---	---	2620	3670	4160	3730	---	---	13
14	---	---	---	---	---	---	---	4530	4020	3710	---	---	14
15	---	---	---	---	---	---	---	5320	3900	3630	---	---	15
16	---	---	---	---	---	4250	---	5840	3810	3510	---	---	16
17	---	---	---	---	---	---	---	6330	3690	3480	---	---	17
18	---	---	---	---	---	---	---	6730	3630	3440	---	---	18
19	---	---	---	---	---	---	---	7090	3510	3380	---	---	19
20	---	---	---	---	---	---	---	7040	3480	3330	---	---	20
21	---	---	---	---	---	---	---	6800	3380	3310	---	---	21
22	---	---	---	---	---	---	---	6200	3330	3310	---	---	22
23	---	---	---	---	---	---	---	5810	3300	3280	---	---	23
24	---	---	---	---	---	---	---	5460	3260	3310	---	---	24
25	---	---	---	---	---	---	---	5130	3230	---	---	---	25
26	---	---	---	---	---	---	---	4840	3180	---	---	---	26
27	---	---	---	---	---	---	---	4600	3150	---	---	---	27
28	---	---	---	---	---	---	---	4380	3210	---	---	---	28
29	---		---	---	---	---	---	4220	3280	---	2230 B	---	29
30	---		---	---	---	---	---	4090	3280	---	---	---	30
31	---		---		---		---	4430		---		---	31
TOTAL	---	---	---	---	---	---	---	---	122470	---	---	---	TOTAL
MEAN	---	---	---	---	---	---	---	---	4080	---	---	---	MEAN
AC-FT	---	---	---	---	---	---	---	---	243000	---	---	---	AC-FT
MAX	---	---	---	---	---	---	---	---	5520	---	---	---	MAX
MIN	---	---	---	---	---	---	---	---	3150	---	---	---	MIN

B-ICE CONDITIONS



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CLEARWATER RIVER ABOVE CHRISTINA RIVER

STATION NO. 07CD005

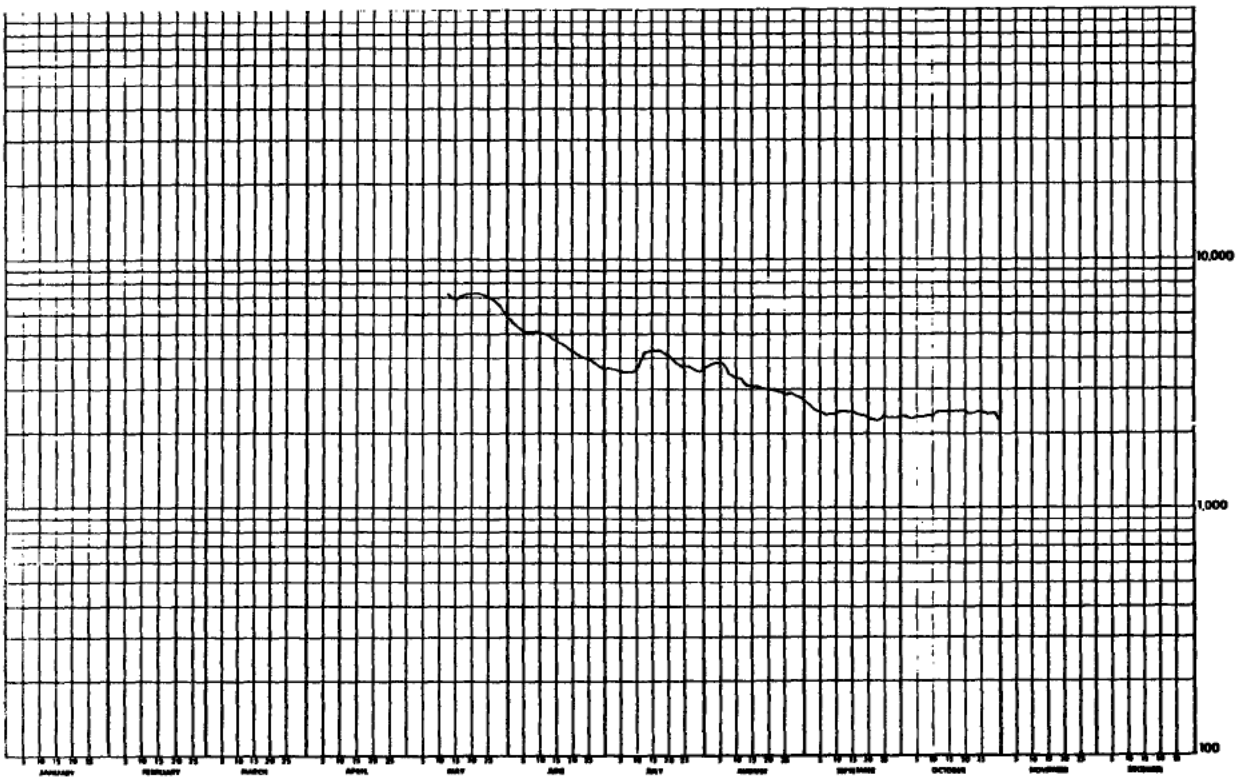
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1967

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	5660	3640	3730	2640	2320	---	---	1
2	---	---	---	---	---	5450	3620	3800	2570	2310	---	---	2
3	---	---	---	---	---	5400	3640	3870	2490	2300	---	---	3
4	---	---	---	---	---	5320	3640	3880	2470	2310	---	---	4
5	---	---	---	---	---	5250	3610	3820	2460	2310	---	---	5
6	---	---	---	---	---	5160	3560	3740	2440	2310	---	---	6
7	---	---	---	---	---	5130	3520	3640	2430	2330	---	---	7
8	---	---	---	---	---	5160	3490	3440	2410	2348	---	---	8
9	---	---	---	---	---	5100	3500	3420	2400	2350	---	---	9
10	---	---	---	---	---	5010	3780	3380	2410	2380	---	---	10
11	---	---	---	---	---	4910	4000	3320	2420	2410	---	---	11
12	---	---	---	1680 A	7300 A	4890	4220	3250	2420	2430	---	---	12
13	---	---	---	---	7210	4840	4200	3160	2440	2430	---	---	13
14	---	---	---	---	7150	4760	4280	3150	2460	2430	---	---	14
15	---	---	---	---	7130	4650	4280	3120	2430	2420	---	---	15
16	---	---	---	---	7130	4620	4270	3090	2410	2430	---	---	16
17	---	---	---	---	7150	4540	4270	3050	2390	2440	---	---	17
18	---	---	---	---	7340	4480	4260	3040	2360	2440	---	---	18
19	---	---	---	---	7320	4400	4120	3010	2340	2460	---	---	19
20	---	---	---	---	7280	4280	4040	3000	2290	2420	---	---	20
21	---	---	---	---	7260	4160	3920	3000	2290	2400	---	---	21
22	---	---	---	---	7260	4110	3880	2970	2310	2410	---	---	22
23	---	---	---	---	7240	4080	3840	2980	2290	2420	---	---	23
24	---	---	---	---	7100	4030	3740	2950	2310	2420	---	---	24
25	---	---	---	---	7120	3980	3720	2900	2350	2430	---	---	25
26	---	---	---	---	7010	3920	3680	2880	2340	2430	---	---	26
27	---	---	---	---	6940	3840	3720	2910	2340	2390	---	---	27
28	---	---	---	---	6560	3780	3600	2900	2350	2410	---	---	28
29	---		---	---	6340	3670	3560	2810	2320	2410 B	---	---	29
30	---		---	---	6090	3660	3610	2770	2320	2290 B	---	---	30
31	---		---		5890		3640	2710		2300 B		---	31
TOTAL	---	---	---	---	---	138240	118850	99690	71900	73880	---	---	TOTAL
MEAN	---	---	---	---	---	4610	3830	3220	2400	2380	---	---	MEAN
AC-FT	---	---	---	---	---	274000	236000	196000	143000	147000	---	---	AC-FT
MAX	---	---	---	---	---	5660	4280	3880	2640	2460	---	---	MAX
MIN	---	---	---	---	---	3660	3490	2710	2290	2290	---	---	MIN

SUMMARY FOR THE MONTHS JUN TO OCT

MEAN DISCHARGE, 3280 CFS
TOTAL DISCHARGE, 998000 AC-FT
MAXIMUM DAILY DISCHARGE, 5660 CFS ON JUN 1
MINIMUM DAILY DISCHARGE, 2290 CFS ON SEP 20

A-MANUAL GAUGE
B-ICE CONDITIONS



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CLEARWATER RIVER ABOVE CHRISTINA RIVER

STATION NO. 07CD005

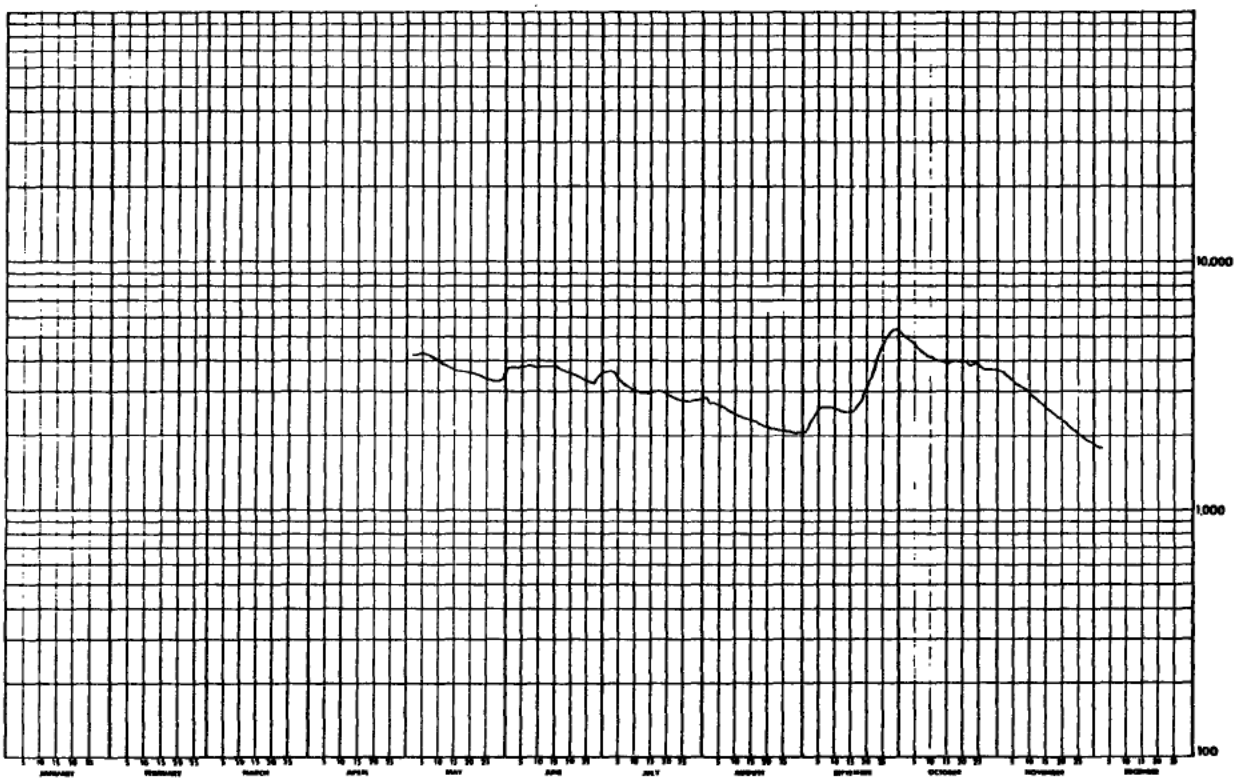
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1968

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	4250 E	3750	3610	2810	2060	5130	3600	1810 B	1
2	---	---	---	---	4210 A	3790	3610	2640	2200	5010	3540	1780 B	2
3	---	---	---	---	4170	3780	3630	2710	2290	4890	3490 B	1770 B	3
4	---	---	---	---	4190	3780	3550	2680	2420	4760	3420 B	1760 B	4
5	---	---	---	---	4240	3760	3420	2630	2520	4640	3360 B	---	5
6	---	---	---	---	4240	3780	3210	2610	2570	4510	3280 B	---	6
7	---	---	---	---	4190	3810	3120	2520	2580	4410	3190 B	---	7
8	---	---	---	---	4120	3810	3090	2480	2570	4300	3090 B	---	8
9	---	---	---	---	4060	3760	3050	2430	2570	4220	3020 B	---	9
10	---	---	---	---	3960	3760	3000	2400	2570	4140	2970 B	---	10
11	---	---	---	---	3880	3810	2950	2370	2540	4080	2880 B	---	11
12	---	---	---	---	3840	3780	2940	2330	2500	4040	2810 B	---	12
13	---	---	---	---	3810	3780	2930	2320	2490	3980	2740 B	---	13
14	---	---	---	---	3750	3780	2910	2300	2480	3920	2680 B	---	14
15	---	---	---	---	3690	3750	2910	2270	2480	3900	2610 B	---	15
16	---	---	---	---	3660	3700	2980	2230	2500	3900	2550 B	---	16
17	---	---	---	---	3630	3690	2950	2210	2590	3930	2500 B	---	17
18	---	---	---	---	3600	3630	2950	2170	2790	3960	2440 B	---	18
19	---	---	---	---	3570	3580	2980	2160	3000	3950	2390 B	---	19
20	---	---	---	---	3550	3520	2940	2150	3120	3980	2320 B	---	20
21	---	---	---	---	3520	3450	2860	2120	3250	4010	2270 B	---	21
22	---	---	---	---	3510	3420	2800	2110	3550	3970	2200 B	---	22
23	---	---	---	---	3460	3390	2800	2100	3960	3840	2150 B	---	23
24	---	---	---	---	3420	3360	2770	2110	4330	3900	2100 B	---	24
25	---	---	---	---	3370	3280	2740	2090	4640	3820	2050 B	---	25
26	---	---	---	---	3340	3250	2740	2070	4890	3760	2010 B	---	26
27	---	---	---	---	3300	3250	2720	2060	5080	3720	1970 B	---	27
28	---	---	---	---	3300	3270	2710	2050	5200	3730	1920 B	---	28
29	---	---	---	---	3330	3490	2740	2050	5250	3690	1890 B	---	29
30	---		---	---	3340	3580	2790	2050	5220	3660	1850 B	---	30
31	---		---		3510		2810	2050		3640		---	31
TOTAL	---	---	---	---	116010	108540	93210	71280	96210	127290	79290	---	TOTAL
MEAN	---	---	---	---	3740	3620	3010	2300	3210	4110	2640	---	MEAN
AC-FT	---	---	---	---	230000	215000	185000	141000	191000	252000	157000	---	AC-FT
MAX	---	---	---	---	4250	3810	3630	2810	5250	5130	3600	---	MAX
MIN	---	---	---	---	3300	3250	2710	2050	2060	3640	1850	---	MIN

SUMMARY FOR THE MONTHS MAY TO NOV

MEAN DISCHARGE, 3230 CFS
TOTAL DISCHARGE, 1370000 AC-FT
MAXIMUM DAILY DISCHARGE, 5250 CFS ON SEP 29
MINIMUM DAILY DISCHARGE, 1850 CFS ON NOV 30

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



CLEARWATER RIVER ABOVE CHRISTINA RIVER - STATION NO. 07CD005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1969

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	5930 E	3640 E	2400	2020	2020	3710	2180 B	2180 B	1
2	---	---	---	---	5780 E	3630 E	2360	2010	2030	3730	2190 B	2170 B	2
3	---	---	---	---	5630 E	3620 E	2340	1990	2030	3710	2180 B	2160 B	3
4	---	---	---	---	5480 E	3600 E	2320	1980	2060	3680	2160 B	---	4
5	---	---	---	---	5330 A	3590 E	2290	1970	2100	3640	2100 B	---	5
6	---	---	---	---	5150	3570 E	2250	1950	2140	3600	2040 B	---	6
7	---	---	---	---	4970	3360 E	2210	1940	2180	3570	1990 B	---	7
8	---	---	---	---	4840	3550 E	2200	1920	2200	3530	1940 B	---	8
9	---	---	---	---	4690	3530 E	2190	1900	2200	3470	1890 B	---	9
10	---	---	---	---	4540	3520 A	2200	1890	2160	3410	1840 B	---	10
11	---	---	---	---	4420	3510	2190	1880	2110	3330	1800 B	---	11
12	---	---	---	---	4320	3500	2200	1900	2080	3230	1770 B	---	12
13	---	---	---	---	4220	3490	2190	1900	2080	3150	1750 B	---	13
14	---	---	---	---	4220	3360	2170	1890	2290	3120	1730 B	---	14
15	---	---	---	---	4130	3310	2160	1900	2420	3060	1700 B	---	15
16	---	---	---	---	4030	3260	2170	1960	2470	3000	1720 B	---	16
17	---	---	---	---	3870	3210	2160	2160	2540	2960	1740 B	---	17
18	---	---	---	---	3730	3220	2130	2120	2690	2920	1760 B	---	18
19	---	---	---	---	3620 E	3240	2090	2090	2420	2830	1780 B	---	19
20	---	---	---	---	3600 E	3170	2040	2090	2980	2750	1600 B	---	20
21	---	---	---	---	3790 E	3080	2000	2100	3090	2670 B	1850 B	---	21
22	---	---	---	---	3780 E	3000	1970	2090	3140	2590 B	1900 B	---	22
23	---	---	---	---	3760 E	2920	1990	2070	3180	2510 B	1950 B	---	23
24	---	---	---	---	3750 E	2810	1990	2040	3230	2430 B	2000 B	---	24
25	---	---	---	---	3740 E	2710	1990	2000	3260	2350 B	2050 B	---	25
26	---	---	---	---	3720 E	2660	2030	1970	3300	2270 B	2100 B	---	26
27	---	---	---	---	3710 E	2610	2040	1930	3320	2200 B	2150 B	---	27
28	---	---	---	---	3700 E	2559	2070	1930	3180	2170 B	2170 B	---	28
29	---		---	---	3680 E	2510	2060	1940	3540	2160 B	2180 B	---	29
30	---		---	---	3670 E	2450	2040	1940	3640	2180 B	2190 B	---	30
31	---		---		3660 E		2040	1970		2190 B		---	31
TOTAL	---	---	---	---	133960	96320	66480	61440	78680	92120	58600	---	TOTAL
MEAN	---	---	---	---	4320	3210	2140	1980	2620	2970	1950	---	MEAN
AC-FT	---	---	---	---	265000	191000	132000	122000	156000	183000	116000	---	AC-FT
MAX	---	---	---	---	5930	3640	2400	2160	3640	3730	2190	---	MAX
MIN	---	---	---	---	3660	2450	1970	1880	2020	2160	1700	---	MIN

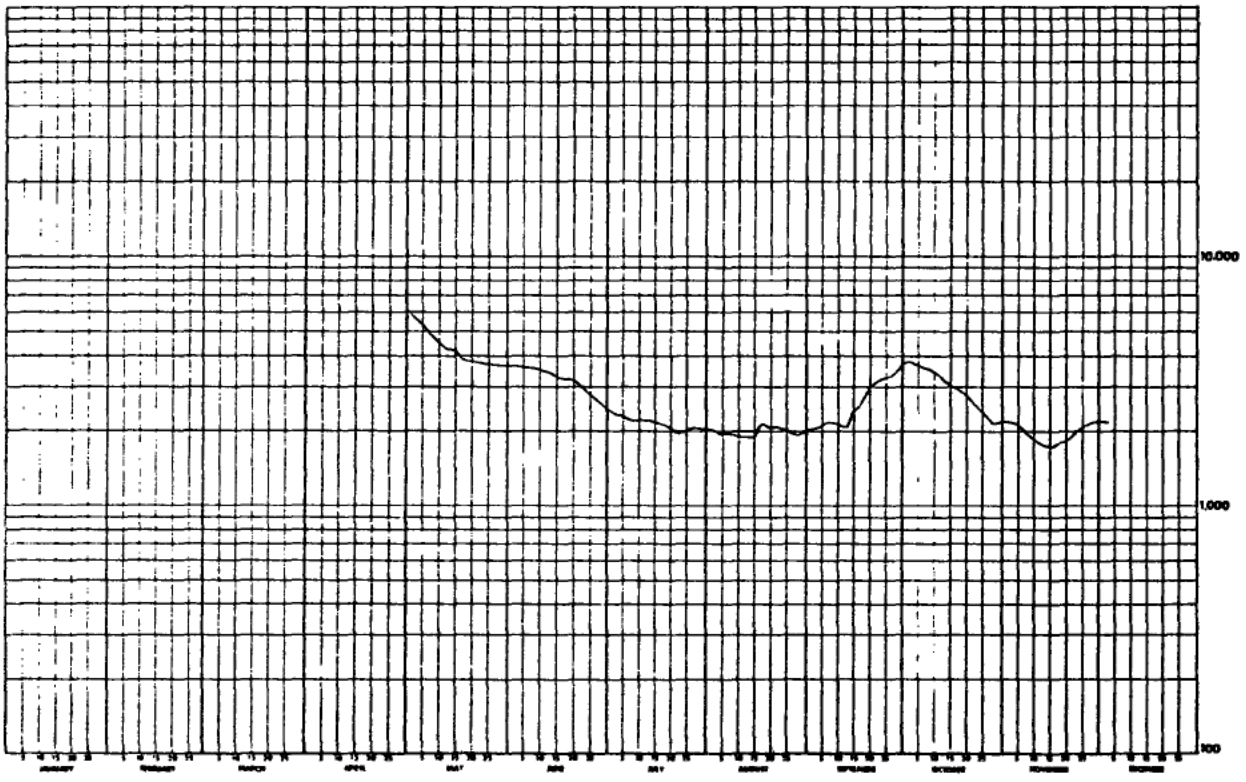
SUMMARY FOR THE MONTHS MAY TO NOV

MEAN DISCHARGE, 2750 CFS
TOTAL DISCHARGE, 1172000 AC-FT
MAXIMUM DAILY DISCHARGE, 5930 CFS ON MAY 1
MINIMUM DAILY DISCHARGE, 1700 CFS ON NOV 15

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 10 N
LONG 111 03 00 W

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



CLEARWATER RIVER ABOVE CHRISTINA RIVER - STATION NO. 07CD005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1978

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	4360	6220	3240	2850 E	3700	---	---	1
2	---	---	---	---	---	4300	6670	3340	2850 E	3640	---	---	2
3	---	---	---	---	---	4200	6560	3460	2850 E	3570	---	---	3
4	---	---	---	---	---	4090	6140	3460	2860 E	3490	---	---	4
5	---	---	---	---	---	4000	6590	3340	2860 E	3430	---	---	5
6	---	---	---	---	---	3850	6850	3250	2864 E	3360	---	---	6
7	---	---	---	---	---	3780	6720	3280	2870 E	3340	---	---	7
8	---	---	---	---	---	3670	6380	3230 E	2870 E	3180	---	---	8
9	---	---	---	---	---	3610	5930	3170 E	2870 E	3080	---	---	9
10	---	---	---	---	---	3550	5390	3120 E	2880 E	3090	---	---	10
11	---	---	---	---	4430	3570	4980	3070 E	2880 E	3080	---	---	11
12	---	---	---	---	4380	3730	4520	3020 E	2880 E	3028	---	---	12
13	---	---	---	---	4160	3860	4170	2960 E	2880 E	3110	---	---	13
14	---	---	---	---	4040	4030	3810	2910	2890 E	2950	---	---	14
15	---	---	---	---	3930	4080	3510	2870	2890 E	2940	---	---	15
16	---	---	---	---	3820	4240	3140	2810	2890 E	2940	---	---	16
17	---	---	---	---	3980	4280	2840	2790	2900 E	2930	---	---	17
18	---	---	---	---	4640	4330	2620	2880	2900 E	2910	---	---	18
19	---	---	---	---	4310	4480	2420	2840	2880	2910	---	---	19
20	---	---	---	---	4810	4520	2330	2810 E	2870	2860	---	---	20
21	---	---	---	---	4710	4540	2330	2810 E	2840	---	---	---	21
22	---	---	---	---	4590	4540	2340	2810 E	2830	---	---	---	22
23	---	---	---	---	4650	4570	2230	2820 E	2910	---	---	---	23
24	---	---	---	---	5130	4840	2220	2820 E	3460	---	---	---	24
25	---	---	---	---	5220	5280	2280	2820 E	3780	---	---	---	25
26	---	---	---	---	5110	5350	2440	2830 E	3880	---	---	---	26
27	---	---	---	---	4960	5270	2410	2830 E	3920	---	---	---	27
28	---	---	---	---	4810	5130	2410	2830 E	3900	---	---	---	28
29	---		---	---	4670	5100	2480	2840 E	3850	---	---	---	29
30	---		---	---	4540	5450	2720	2840 E	3810	---	---	---	30
31	---		---		4440		3080	2840 E		---		---	31
TOTAL	---	---	---	---	---	138540	124670	92920	92660	---	---	---	TOTAL
MEAN	---	---	---	---	---	4358	4020	3000	3098	---	---	---	MEAN
AC-FT	---	---	---	---	---	259000	247000	184000	184000	---	---	---	AC-FT
MAX	---	---	---	---	---	5450	6850	3680	3920	---	---	---	MAX
MIN	---	---	---	---	---	3550	2220	2790	2830	---	---	---	MIN

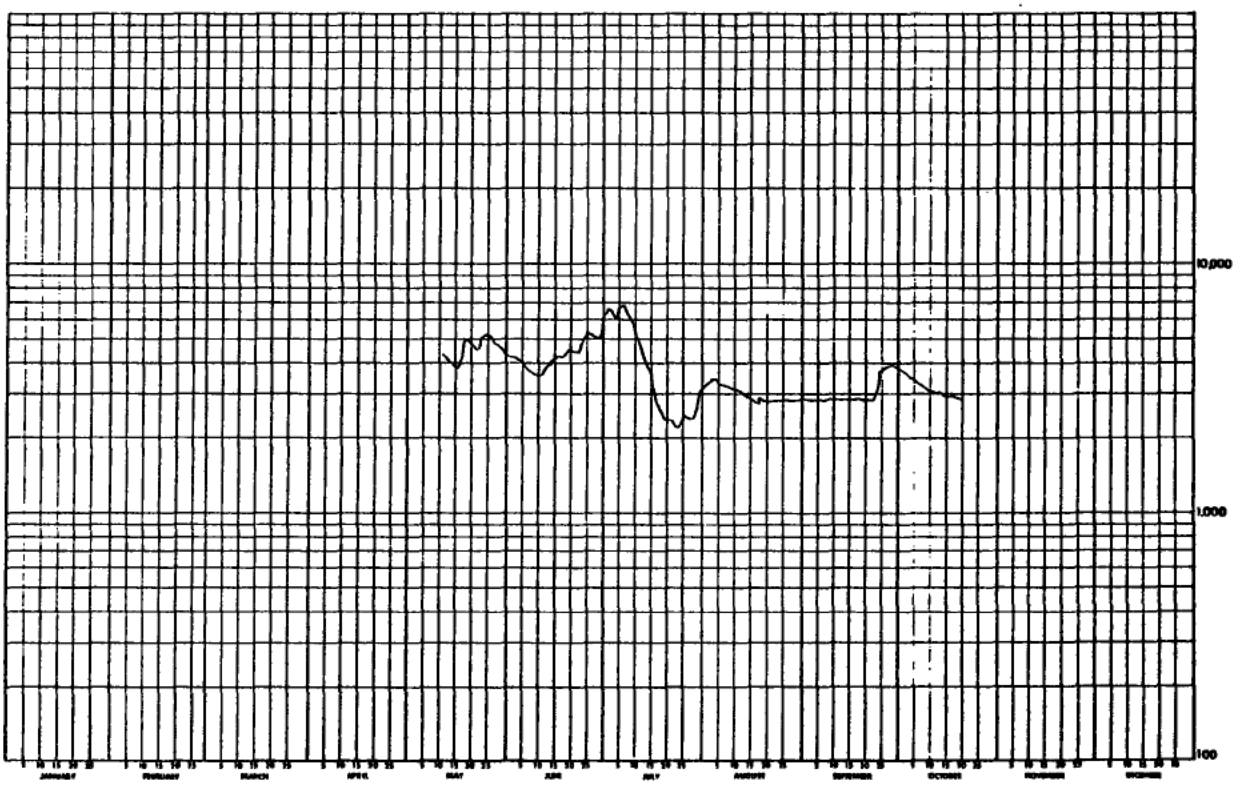
SUMMARY FOR THE MONTHS JUN TO SEP

MEAN DISCHARGE, 3610 CFS
TOTAL DISCHARGE, 874000 AC-FT
MAXIMUM DAILY DISCHARGE, 6850 CFS ON JUL 6
MINIMUM DAILY DISCHARGE, 2220 CFS ON JUL 24

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 10 N
LONG 111 03 00 W

E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA — CLEARWATER RIVER ABOVE CHRISTINA RIVER — STATION NO. 07CD005

JUL 18 1972 PAGE 291
CALGARY, ALTA.

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1971

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	5600 E	3130	3870	2900	2400	2060	---	---	1
2	---	---	---	---	5550 E	3110	3920	2860	2410	2070	---	---	2
3	---	---	---	---	5500 E	3070	4070	2770	2360	2090	---	---	3
4	---	---	---	---	5450 A	3050	4250	2700	2320	2100	---	---	4
5	---	---	---	---	5370	3030	4560	2690	2320	2120	---	---	5
6	---	---	---	---	5170	3040	4730	2680	2270	2110	---	---	6
7	---	---	---	---	4930	3060	4730	2650	2240	2130	---	---	7
8	---	---	---	---	4770	2960	4710	2660	2220	2140	---	---	8
9	---	---	---	---	4620	2920	4620	2650	2190	2150	---	---	9
10	---	---	---	---	4490	2940	4460	2650	2180	2160	---	---	10
11	---	---	---	---	4310	2940	4290	2640	2170	2160	---	---	11
12	---	---	---	---	4170	2960	4100	2660	2140	2160	---	---	12
13	---	---	---	---	4110	2950	3920	2650	2140	2170	---	---	13
14	---	---	---	---	3990	2930	3760	2620	2120	2170	---	---	14
15	---	---	---	---	3890	2990	3620	2580	2120	2170	---	---	15
16	---	---	---	---	3790	3080	3520	2570	2130	2170	---	---	16
17	---	---	---	---	3710	3200	3450	2570	2170	2170	---	---	17
18	---	---	---	---	3650	3220	3410	2580	2180	2180	---	---	18
19	---	---	---	---	3610	3210	3420	2650	2170	2200	---	---	19
20	---	---	---	---	3558	3160	3528	2668	2168	2118	---	---	20
21	---	---	---	---	3510	3130	3570	2690	2160	2110	---	---	21
22	---	---	---	---	3470	3110	3370	2640	2130	2110	---	---	22
23	---	---	---	---	3460	3100	3240	2600	2110	2110	---	---	23
24	---	---	---	---	3420	3050	3210	2560	2100	2240	---	---	24
25	---	---	---	---	3420	2990	3200	2530	2090	2240	---	---	25
26	---	---	---	---	3380	3070	3170	2510	2080	2200 B	---	---	26
27	---	---	---	---	3350	3410	3120	2460	2080	2130 B	---	---	27
28	---	---	---	---	3300	3660	3060	2420	2060	2120 B	---	---	28
29	---		---	---	3250	3760	3010	2410	2070	2100 B	---	---	29
30	---		---	---	3210	3850	2950	2400	2070	2100 B	---	---	30
31	---		---		3150		2940	2350		2100 B		---	31
TOTAL	---	---	---	---	127190	94070	115770	80980	65360	66350	---	---	TOTAL
MEAN	---	---	---	---	4100	3140	3730	2610	2180	2140	---	---	MEAN
AC-FT	---	---	---	---	252000	187000	230000	161000	130000	132000	---	---	AC-FT
MAX	---	---	---	---	5600	3850	4730	2900	2410	2240	---	---	MAX
MIN	---	---	---	---	3198	2920	2948	2350	2060	2060	---	---	MIN

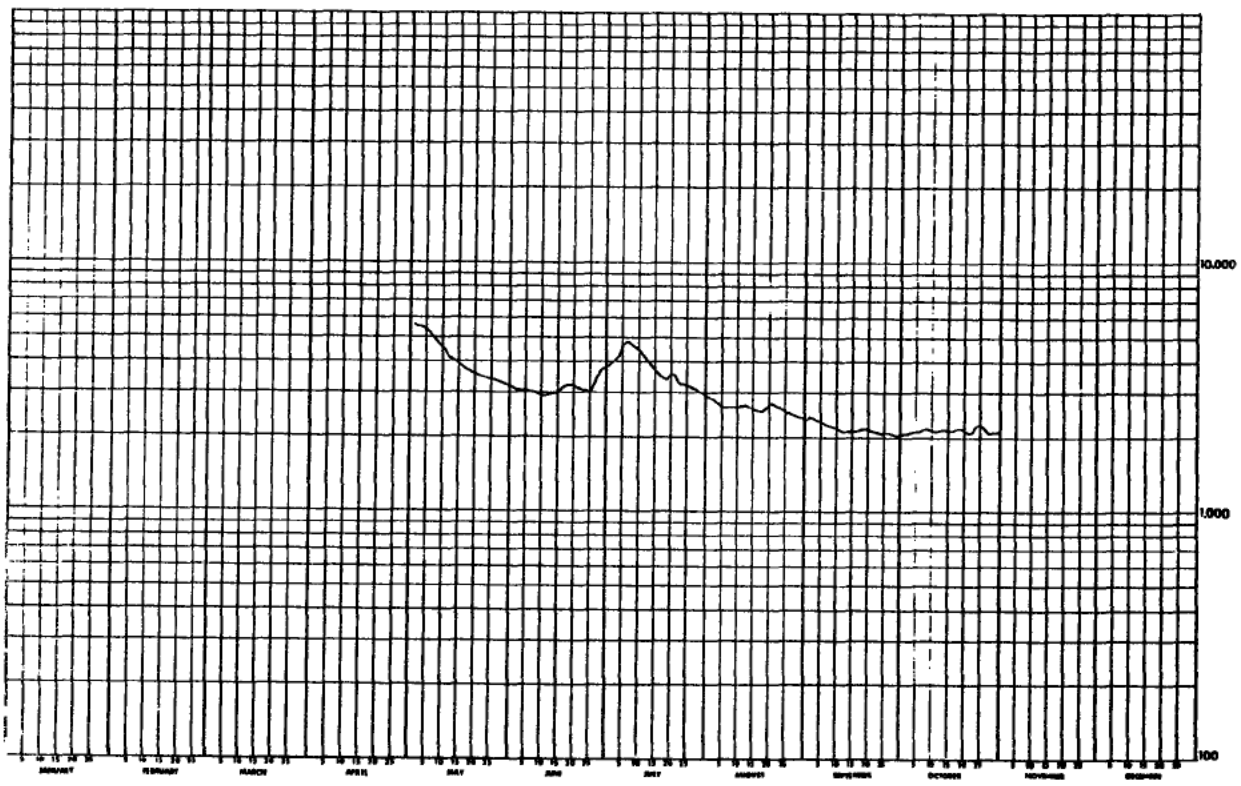
SUMMARY FOR THE MONTHS MAY TO OCT

MEAN DISCHARGE, 2990 CFS
TOTAL DISCHARGE, 1090000 AC-FT
MAXIMUM DAILY DISCHARGE, 5600 CFS ON MAY 1
MINIMUM DAILY DISCHARGE, 2060 CFS ON SEP 28

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 10 N
LONG 111 03 00 W
DRAINAGE AREA 6520 SQ MILES

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA
AUG 23 1973 PAGE 29
CALGARY, ALTA.

CLEARWATER RIVER ABOVE CHRISTINA RIVER — STATION NO. 07CD005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1972

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	3640	2630	2400	1980	2510	---	---	1
2	---	---	---	---	---	3580	2630	2370	1970	2680	---	---	2
3	---	---	---	---	---	3550	2690	2360	1940	2680	---	---	3
4	---	---	---	---	---	3480	2640	2350	1913	2680	---	---	4
5	---	---	---	---	10300 A	3410	2596	2398	1910	2810	---	---	5
6	---	---	---	---	9330	3370	2590	2320	1920	2880	---	---	6
7	---	---	---	---	9530	3340	2680	2300	1910	2920	---	---	7
8	---	---	---	---	9130	3250	2688	2310	1913	2950	---	---	8
9	---	---	---	---	8880	3210	2688	2390	1953	3076	---	---	9
10	---	---	---	---	8120	3120	2760	2420	1930	3120	---	---	10
11	---	---	---	---	7820	3070	2880	2420	1910	3120	---	---	11
12	---	---	---	---	7190	3020	2980	2410	1903	3150	---	---	12
13	---	---	---	---	6840	3070	2990	2404	1880	3150	---	---	13
14	---	---	---	---	6590	3120	3000	2370	1898	3160	---	---	14
15	---	---	---	---	6250	3150	2930	2370	1930	3190	---	---	15
16	---	---	---	---	5890	3110	2920	2330	1940	3210	---	---	16
17	---	---	---	---	5730	3120	2880	2308	1960	3040	---	---	17
18	---	---	---	---	5630	3170	2870	2270	1960	2920	---	---	18
19	---	---	---	---	5420	3130	2840	2240	2020	---	---	---	19
20	---	---	---	---	5200	3110	2810	2190	2080	---	---	---	20
21	---	---	---	---	5120	3050	2770	2170	2130	---	---	---	21
22	---	---	---	---	4910	3010	2750	2190	2240	---	---	---	22
23	---	---	---	---	4700	2980	2720	2140	2270	---	---	---	23
24	---	---	---	---	4560	2930	2680	2120	2300	---	---	---	24
25	---	---	---	---	4430	2840	2640	2110	2320	---	---	---	25
26	---	---	---	---	4240	2840	2620	2080	2330	---	---	---	26
27	---	---	---	---	4130	2860	2580	2040	2350	---	---	---	27
28	---	---	---	---	4010	2860	2560	2020	2360	---	---	---	28
29	---	---	---	---	3870	2720	2520	2010	2370	---	---	---	29
30	---		---	---	3760	2700	2480	2000	2420	---	---	---	30
31	---		---		3660		2420	1990		---		---	31
TOTAL	---	---	---	---	---	93730	84150	69700	61910	---	---	---	TOTAL
MEAN	---	---	---	---	---	3120	2720	2250	2060	---	---	---	MEAN
AC-FT	---	---	---	---	---	186000	167000	138300	123000	---	---	---	AC-FT
MAX	---	---	---	---	---	3640	3000	2420	2420	---	---	---	MAX
MIN	---	---	---	---	---	2700	2420	1990	1880	---	---	---	MIN

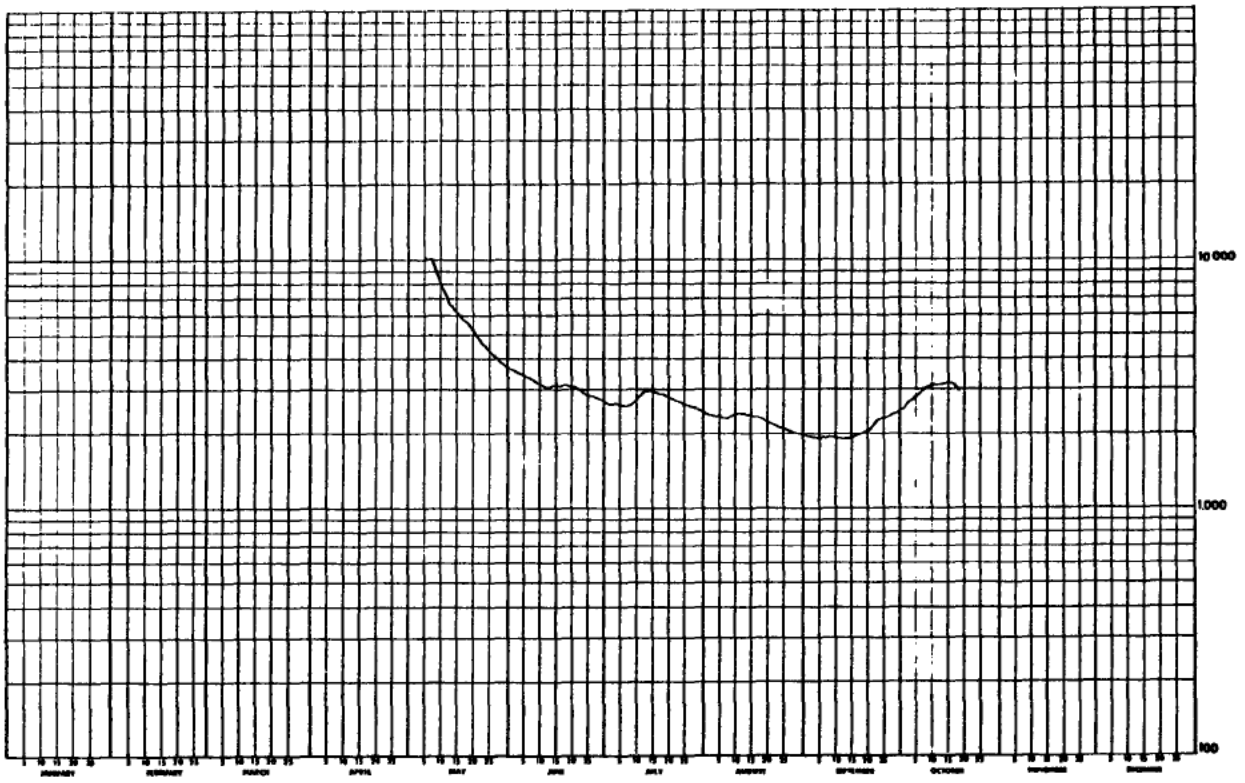
SUMMARY FOR THE MONTHS MAY TO OCT

A-MANUAL GAUGE

MAXIMUM DAILY DISCHARGE, 10300 CFS ON MAY 5
MINIMUM DAILY DISCHARGE, 1880 CFS ON SEP 13

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 10 N
LONG 111 03 00 W
DRAINAGE AREA 6920 SQ MILES

NATURAL FLOW



WATER SURVEY OF CANADA
MAY 15 1974 PAGE 278
CALGARY, ALTA.

CLEARWATER RIVER ABOVE CHRISTINA RIVER

STATION NO. 07CD005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1973

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	4500 E	3500	2980	3640	3490	3160	3960	---	1
2	---	---	---	---	4500 E	3630	3010	3570	3670	3210	---	---	2
3	---	---	---	---	4500 E	3510	3000	3560	3650	3310	---	---	3
4	---	---	---	---	4510	3430	3000	3610	3640	3390	---	---	4
5	---	---	---	---	4510	3380	3120	3990	3670	3410	---	---	5
6	---	---	---	---	4480	3370	3170	6770	3560	3440	---	---	6
7	---	---	---	---	4470	3300	3250	10100	3540	3470	---	---	7
8	---	---	---	---	4460	3420	3310	9480	3520	3640	---	---	8
9	---	---	---	---	4400	3520	3340	8060	3470	3770	---	---	9
10	---	---	---	---	4360	3600	3390	7210	3440	3850	---	---	10
11	---	---	---	---	4370	3590	3510	6790	3420	3830	---	---	11
12	---	---	---	---	4270	3610	3820	6320	3470	3940	---	---	12
13	---	---	---	---	4190	3550	4500	5930	3340	3950	---	---	13
14	---	---	---	---	4040	3500	5090	5500	3250	3960	---	---	14
15	---	---	---	---	4000	3640	4870	4950	3240	3960	---	---	15
16	---	---	---	---	3910	3640	4830	4800	3260	3940	---	---	16
17	---	---	---	---	3860	3650	4780	4540	3250	3930	---	---	17
18	---	---	---	---	3810	3670	4740	4340	3200	3930	---	---	18
19	---	---	---	---	3780	3630	4660	4180	3120	3910	---	---	19
20	---	---	---	---	3740	3380	4560	4000	3110	3930	---	---	20
21	---	---	---	---	3830	3390	4440	3980	3070	3900	---	---	21
22	---	---	---	---	3910	3250	4320	3780	3020	3970	---	---	22
23	---	---	---	---	3890	3130	4300	3640	3010	3870	---	---	23
24	---	---	---	---	3820	3060	4290	3610	3030	3940	---	---	24
25	---	---	---	---	3820	2940	4180	3640	3060	3850	---	---	25
26	---	---	---	---	3760	2950	4090	3680	3060	3830	---	---	26
27	---	---	---	---	3720	3040	3990	3670	3070	3830	---	---	27
28	---	---	---	---	3670	3030	3960	3630	3070	3830	---	---	28
29	---		---	---	3570	2980	3870	3630	3060	3860	---	---	29
30	---		---	---	3560	3000	3800	3640	3120	3830	---	---	30
31	---		---		3540		3740	3690		3930		---	31
TOTAL	---	---	---	---	125640	101190	121910	152110	99000	116640	---	---	TOTAL
MEAN	---	---	---	---	4050	3370	3930	4910	3300	3750	---	---	MEAN
AC-FT	---	---	---	---	249000	201000	242000	302000	196000	231000	---	---	AC-FT
MAX	---	---	---	---	4510	3670	5090	10300	3690	3960	---	---	MAX
MIN	---	---	---	---	3540	2940	2980	3560	3010	3160	---	---	MIN

SUMMARY FOR THE MONTHS MAY TO OCT

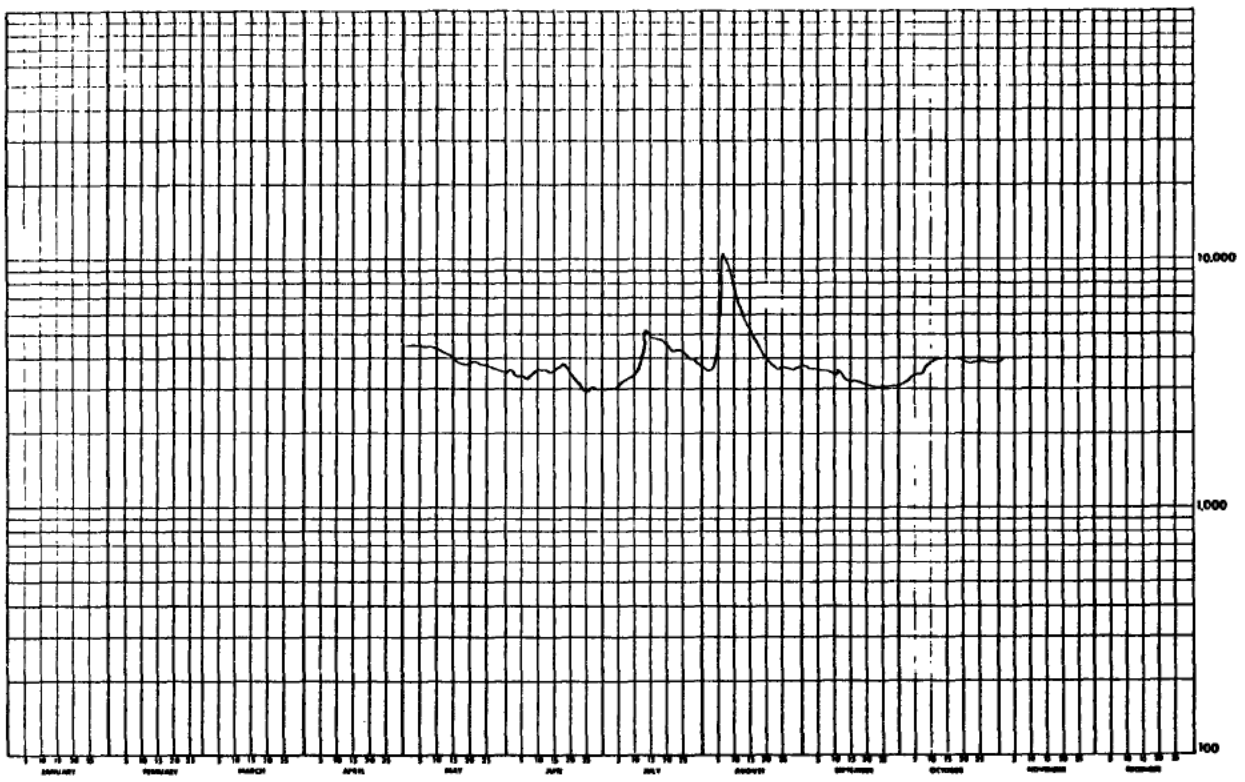
MEAN DISCHARGE, 3898 CFS
TOTAL DISCHARGE, 1420000 AC-FT
MAXIMUM DAILY DISCHARGE, 10300 CFS ON AUG 7
MINIMUM DAILY DISCHARGE, 2940 CFS ON JUN 25

MAXIMUM INSTANTANEOUS DISCHARGE
10600 CFS AT 1700 MST ON AUG 7

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 10 N
LONG 111 03 00 W
DRAINAGE AREA 6520 SQ MILES

E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA
JUL 1- 1975 PAGE 288
CALGARY, ALTA.

CLEARWATER RIVER ABOVE CHRISTINA RIVER

STATION NO. 07CD005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1974

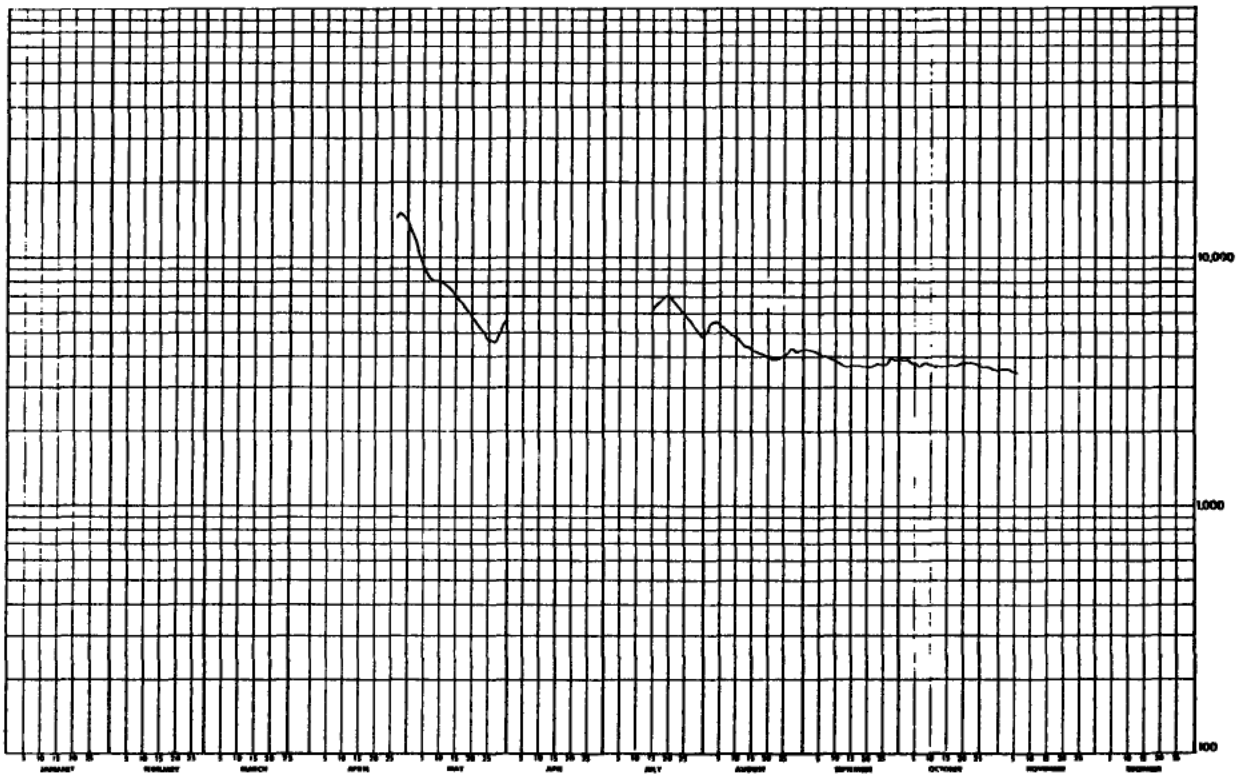
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	13200	---	---	5210	4390	3960	3670	---	1
2	---	---	---	---	12800	---	---	5390	4360	3960	3630	---	2
3	---	---	---	---	10700	---	---	5520	4330	3940	3590	---	3
4	---	---	---	---	9960	---	---	5520	4230	3890	3570	---	4
5	---	---	---	---	9350	---	---	5470	4180	3950	3570	---	5
6	---	---	---	---	8740	---	---	5340	4120	3910	3560	---	6
7	---	---	---	---	8300	---	---	5210	4090	3770	---	---	7
8	---	---	---	---	8120	---	---	5070	4040	3820	---	---	8
9	---	---	---	---	8220	---	---	4920	3990	3820	---	---	9
10	---	---	---	---	8140	---	---	4800	3940	3800	---	---	10
11	---	---	---	---	8020	---	---	4690	3890	3780	---	---	11
12	---	---	---	---	7890	---	---	4570	3830	3780	---	---	12
13	---	---	---	---	7660	---	---	4580	3810	3760	---	---	13
14	---	---	---	---	7420	---	---	4470	3790	3730	---	---	14
15	---	---	---	---	7170	---	6150 A	4300	3730	3740	---	---	15
16	---	---	---	---	6890	---	6390	4250	3700	3730	---	---	16
17	---	---	---	---	6610	---	6720	4200	3700	3760	---	---	17
18	---	---	---	---	6330	---	6850	4160	3720	3740	---	---	18
19	---	---	---	---	6090	---	6990	4090	3760	3830	---	---	19
20	---	---	---	---	5810	---	7090	4030	3740	3810	---	---	20
21	---	---	---	---	5540	---	6970	3990	3760	3820	---	---	21
22	---	---	---	---	5340	---	6740	3940	3740	3820	---	---	22
23	---	---	---	---	5190	---	6540	3930	3810	3820	---	---	23
24	---	---	---	---	4910	---	6250	4080	3810	3800	---	---	24
25	---	---	---	---	4790	---	5990	4130	3900	3780	---	---	25
26	---	---	---	14600	4710	---	5740	4050	3870	3770	---	---	26
27	---	---	---	14200	4600	---	5470	4330	3950	3710	---	---	27
28	---	---	---	13800	4490	---	5250	4350	4020	3630	---	---	28
29	---	---	---	14700	5200 A	---	5010	4360	4070	3640	---	---	29
30	---	---	---	14000	5400 E	---	4830	4360	4000	3640	---	---	30
31	---	---	---		5600 E		4810	4370		3670		---	31
TOTAL	---	---	---	---	229600	---	---	141680	118140	117570	---	---	TOTAL
MEAN	---	---	---	---	7140	---	---	4570	3940	3790	---	---	MEAN
AC-FT	---	---	---	---	447000	---	---	281000	234000	233000	---	---	AC-FT
MAX	---	---	---	---	13200	---	---	5520	4390	3960	---	---	MAX
MIN	---	---	---	---	4600	---	---	3930	3700	3670	---	---	MIN

A-MANUAL GAUGE

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 10 N.
LONG 111 03 00 W.
DRAINAGE AREA 4570 SQ MILES

E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA
JUN 02 1976 PAGE 102
CALGARY, ALTA.

CLEARWATER RIVER ABOVE CHRISTINA RIVER — STATION NO. 07CD005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	4080	5410	5800	6300	5250	4440	2250 B	1
2	---	---	---	---	---	3980	5510	5630	6260	5290	4400 B	2230 B	2
3	---	---	---	---	---	3890	5540	5500	6330	5310	4200 B	2100 B	3
4	---	---	---	---	---	3870	5620	5430	6350	5340	4100 B	2050 B	4
5	---	---	---	---	---	3900	5650	5340	6230	5260	4000 B	2030 B	5
6	---	---	---	---	---	4000	5570	5460	6280	5290	3940 B	1950 B	6
7	---	---	---	---	---	4340	5450	5600	6310	5690	3900 B	1900 B	7
8	---	---	---	---	---	4090	5320	5750	6250	5780	3700 B	1850 B	8
9	---	---	---	---	---	4200	5170	5710	6160	5780	3650 B	1850 B	9
10	---	---	---	---	---	4230	5000	5510	6090	5710	3530 B	1850 B	10
11	---	---	---	---	---	4280	4800	5350	5940	5710	3450 B	1850 B	11
12	---	---	---	---	---	4360	4610	5090	5850	5690	3400 B	1850 B	12
13	---	---	---	---	---	4420	4450	4990	5710	5640	3300 B	1900 B	13
14	---	---	1530 B	---	---	4470	4773	4840	5600	5640	3250 B	1950 B	14
15	---	---	---	---	---	4520	5970	4730	5460	5590	3200 B	1980 B	15
16	---	---	---	---	---	4530	6420	4600	5350	5500	3150 B	2050 B	16
17	---	---	---	---	---	4533	7610	4490	5210	5470	3100 B	2130 B	17
18	---	---	---	---	---	4540	8220	4480	5070	5410	3000 B	2150 B	18
19	---	---	---	---	---	4550	7970	4380	4960	5390	2950 B	2200 B	19
20	---	---	---	---	---	4490	7660	4420	4850	5360	2900 B	2250 B	20
21	---	---	---	---	---	4400	7330	4340	4770	5360	2850 B	2300 B	21
22	---	---	---	---	---	4340	7130	4340	4700	5310	2800 B	2350 B	22
23	---	---	---	---	---	4280	6880	4660	4620	5260	2750 B	2400 B	23
24	---	---	---	---	---	4290	6550	5130	4540	5200	2700 B	2450 B	24
25	---	---	---	---	---	4260	6270	5930	4440 A	5040	2650 B	2500 B	25
26	2360 B	---	---	---	---	4250	5980	5690	4630	4930	2600 B	2530 B	26
27	---	---	---	---	---	4250	5710	5740	4660	4830	2500 B	2530 B	27
28	---	---	---	---	---	4350	5840	5750	4660	4680	2450 B	2530 B	28
29	---	---	---	---	4320 A	4830	6040	5810	4870	4570	2400 B	2500 B	29
30	---	---	---	---	4250	5200	6070	5840	5050	4570	2300 B	2450 B	30
31	---	---	---	---	4170		6010	6090		4480		2450 B	31
TOTAL	---	---	---	---	---	129420	186510	162010	163540	164330	97340	67190	TOTAL
MEAN	---	---	---	---	---	4310	6020	5230	5450	5300	3240	2170	MEAN
AC-FT	---	---	---	---	---	257000	370000	321000	324000	326000	193000	133000	AC-FT
MAX	---	---	---	---	---	5200	8220	6090	6350	5780	4440	2500	MAX
MIN	---	---	---	---	---	3870	4450	4340	4480	4480	2300	1850	MIN

SUMMARY FOR THE YEAR 1975

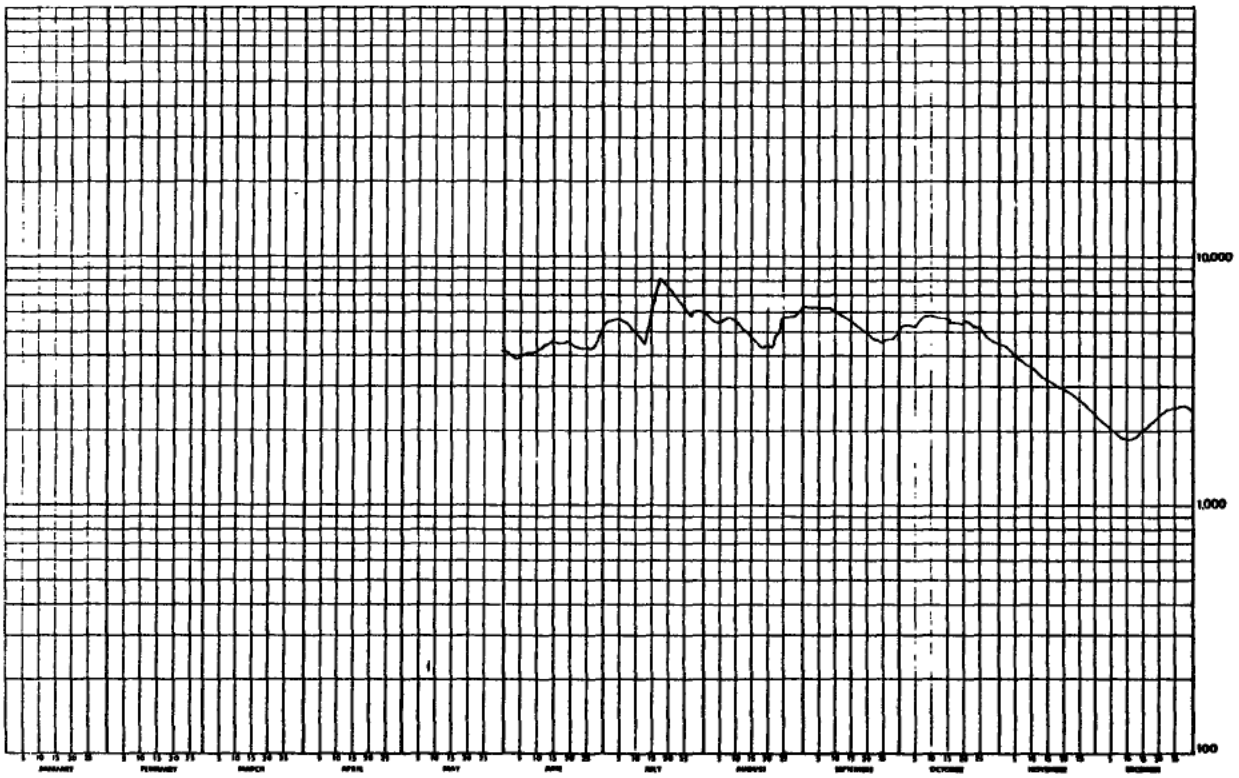
MAXIMUM DAILY DISCHARGE, 8220 CFS ON JUL 18

MAXIMUM INSTANTANEOUS DISCHARGE
9250 CFS AT 0200 MST ON JUL 18

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 39 40 N
LONG 110 55 48 W
DRAINAGE AREA 6520 SQ MILES

A-MANUAL GAUGE
B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA
FEB 21 1977 PAGE 10
CALGARY, ALTA.

CLEARWATER RIVER ABOVE CHRISTINA RIVER

STATION NO. 07CD005

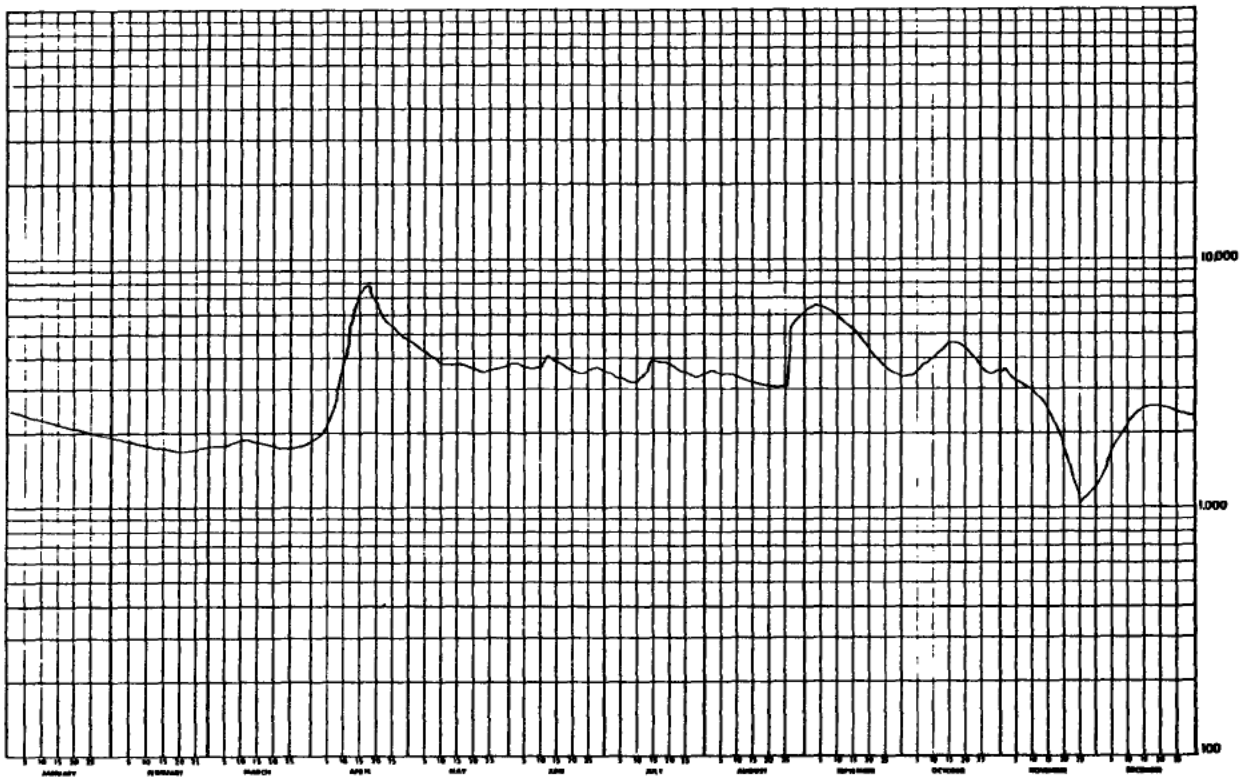
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2420 B	1900 B	1790 B	1890 B	4680	3810	3520	3510 E	6360 A	3350 E	3660 A	1250 B	1
2	2410 B	1890 B	1790 B	1950 B	4580	3800	3450	3520 E	6410 A	3390 A	3600 B	1320 B	2
3	2400 B	1880 B	1800 B	2000 B	4470	3790	3390	3530 E	6520 E	3420 E	3400 B	1450 B	3
4	2380 B	1870 B	1800 B	2060 B	4340	3760	3330	3520 E	6500 E	3450 E	3280 B	1550 B	4
5	2350 B	1860 B	1800 B	2150 B	4260	3710	3300	3500 E	6420 E	3500 E	3210 B	1650 B	5
6	2330 B	1850 B	1810 B	2290 B	4130	3670	3290	3500 E	6350 E	3600 E	3150 B	1750 B	6
7	2300 B	1830 B	1830 B	2510 B	4070	3640	3260	3500 E	6250 E	3700 E	3100 B	1850 B	7
8	2280 B	1820 B	1850 B	2900 B	4000	3630	3230	3480 E	6050 E	3800 E	3000 B	1950 B	8
9	2260 B	1810 B	1860 B	3380 B	3930	3680	3200	3430 E	5950 E	3900 E	2960 B	2050 B	9
10	2240 B	1800 B	1870 B	3860 B	3870	3630	3210	3380 E	5800 E	4000 E	2960 B	2150 B	10
11	2230 B	1790 B	1880 B	4490 B	3830	3790	3310	3340 E	5700 E	4100 E	2900 B	2250 B	11
12	2210 B	1770 B	1890 B	5150 B	3810	4100	3350	3300 E	5600 E	4200 E	2800 B	2350 B	12
13	2190 B	1760 B	1880 B	6170 B	3830	4010	3560	3270 E	5450 E	4300 E	2700 B	2400 B	13
14	2170 B	1750 B	1870 B	6670 B	3860	3960	3860	3240 E	5350 E	4400 E	2600 B	2450 B	14
15	2160 B	1740 B	1860 B	7350 B	3840	3910	3890	3210 E	5200 E	4500 E	2500 B	2480 B	15
16	2140 B	1730 B	1840 B	7580 B	3820	3850	3870	3180 E	5050 E	4570 E	2350 B	2500 B	16
17	2120 B	1730 B	1820 B	7990	3780	3800	3850	3160 E	4850 E	4650 E	2200 B	2520 B	17
18	2100 B	1730 B	1810 B	7790	3740	3740	3890	3140 E	4650 E	4570 E	2050 B	2540 B	18
19	2080 B	1730 B	1800 B	6910	3690	3670	3850	3120 E	4500 E	4500 E	1850 B	2550 B	19
20	2060 B	1720 B	1790 B	6840	3650	3600	3760	3100 E	4300 E	4400 E	1700 B	2540 B	20
21	2050 B	1720 B	1780 B	6210	3620	3560	3690	3100 E	4150 E	4300 E	1500 B	2520 B	21
22	2040 B	1720 B	1770 B	5860	3600	3520	3640	3100 E	4000 E	4100 E	1400 B	2500 B	22
23	2020 B	1720 B	1760 B	5710	3590	3470	3570	3100 E	3900 E	3950 E	1280 B	2490 B	23
24	2010 B	1720 B	1750 B	5520	3610	3490	3520	3090 E	3750 E	3800 E	1150 B	2470 B	24
25	2000 B	1740 B	1760 B	5340	3610	3540	3470	3090 E	3650 E	3650 E	1000 B	2450 B	25
26	1990 B	1750 B	1770 B	5200	3620	3590	3480 A	3150 E	3550 E	3500 E	1080 B	2420 B	26
27	1980 B	1760 B	1780 B	5120	3660	3640	3400 E	5510 A	3500 E	3480 E	1120 B	2400 B	27
28	1960 B	1770 B	1790 B	5030	3670	3670	3380 E	5500	3400 E	3480 E	1150 B	2380 B	28
29	1940 B	1780 B	1800 B	4960	3720	3630	3400 E	5720	3360 E	3500 E	1170 B	2360 B	29
30	1920 B		1820 B	4860	3750	3590	3450 E	5950	3320 E	3600 E	1200 B	2340 B	30
31	1910 B		1850 B		3780		3500 E	6180		3600 E		2300 B	31
TOTAL	66450	51640	56270	145740	120430	111250	108830	110420	149840	121260	68040	68180	TOTAL
MEAN	2150	1780	1820	4860	3880	3710	3510	3690	4990	3910	2270	2200	MEAN
AC-FT	132000	102000	112000	289000	239000	221000	216000	227000	297000	241000	135000	135000	AC-FT
MAX	2420	1900	1890	7990	4680	4100	3890	6180	6520	4650	3660	2550	MAX
MIN	1910	1720	1750	1890	3590	3470	3200	3090	3320	3350	1000	1250	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 4230 CFS
TOTAL DISCHARGE, 2350000 AC-FT
MAXIMUM DAILY DISCHARGE, 7990 CFS ON APR 17
MINIMUM DAILY DISCHARGE, 1000 CFS ON NOV 25

MAXIMUM INSTANTANEOUS DISCHARGE, 8180 CFS AT 0200 MST ON APRIL 17

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



5.11 CLEARWATER RIVER AT DRAPER

STATION NAME: Clearwater River at Draper

STATION NUMBER: 07CD001

LOCATION: Latitude: 56°40'50" Longitude: 110°55'40"

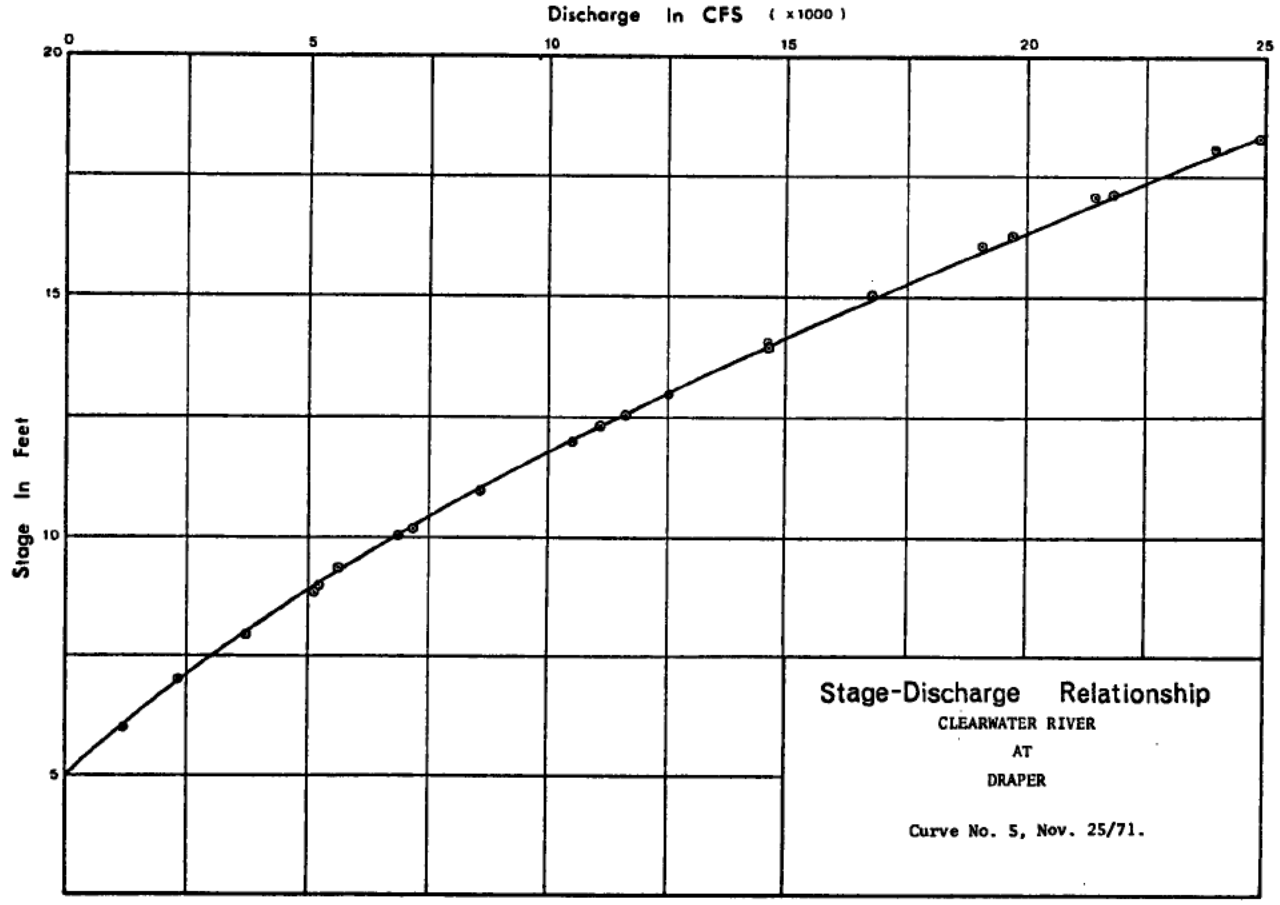
NW32-88-08-W4

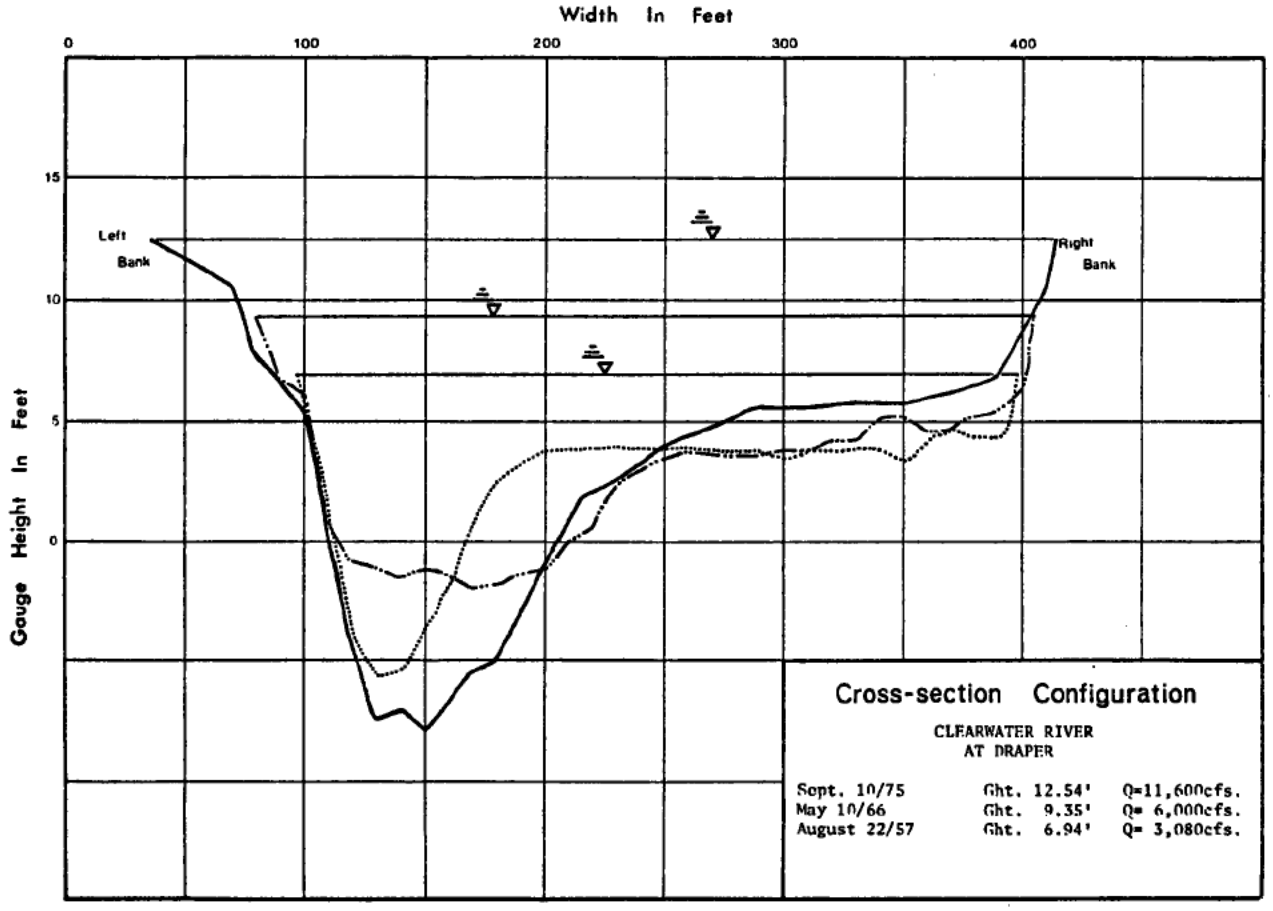
DRAINAGE AREA: 11,800 square miles (30,600 km^2)

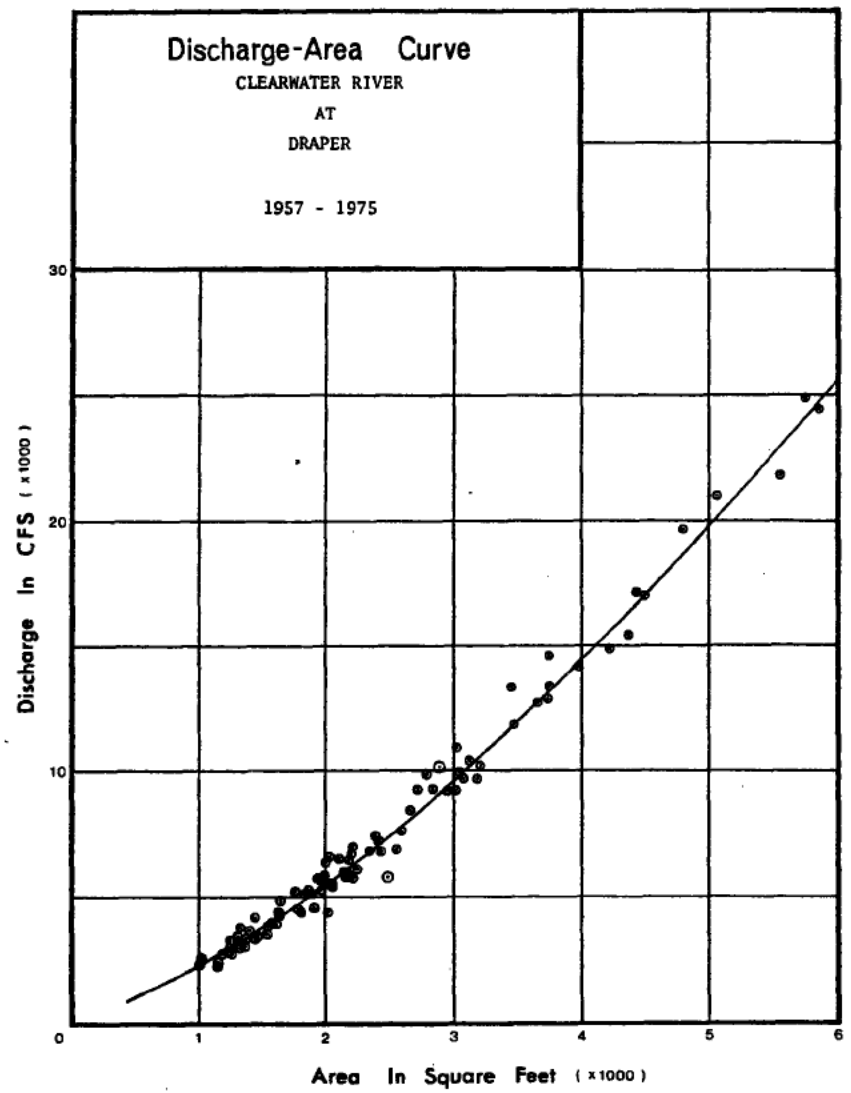
PERIOD OF RECORD: The station was established on August 22, 1957. Discharge data is available on a continuous basis to December, 1976.

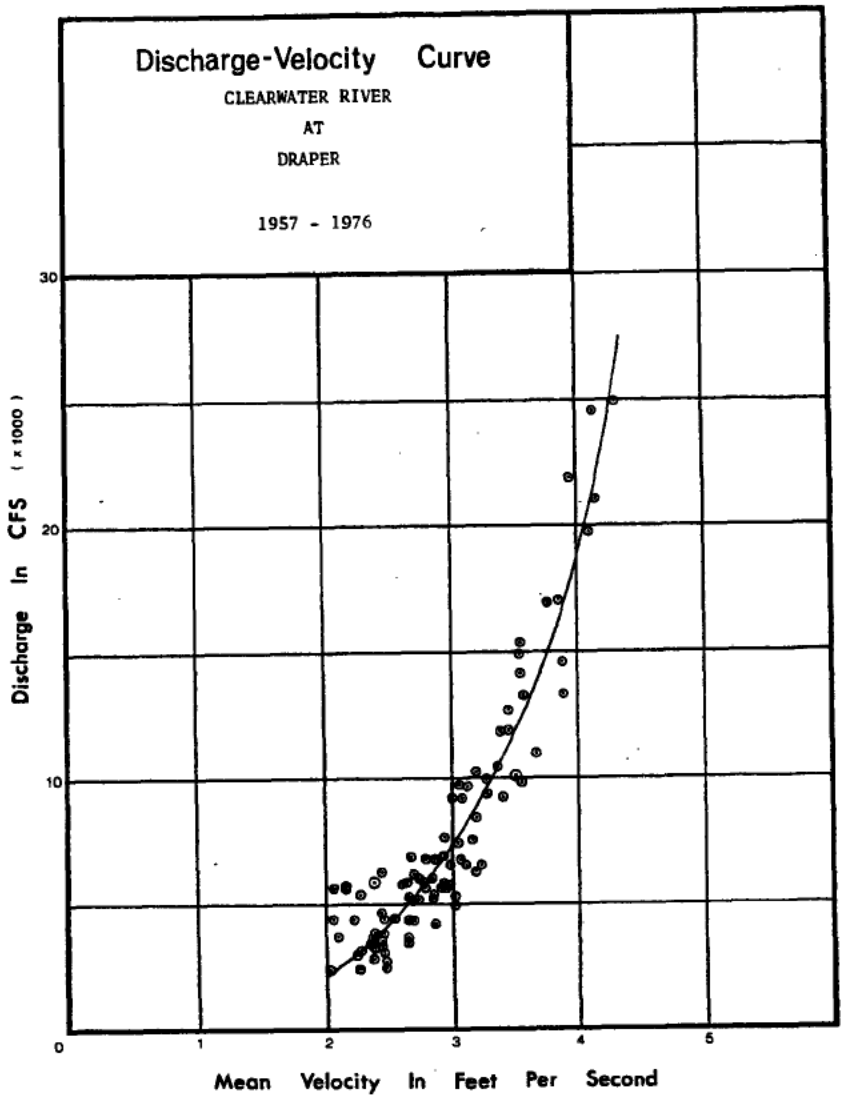
SITE DESCRIPTION: The gauge is located on the left bank about ten miles (16 km) above its confluence with the Athabasca River. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water discharge measurements are made from the cableway one-half mile (0.8 km) below the gauge.

GENERAL: The three cross-sections shown at this site are of particular interest. From 1957 to 1966 the stream bed near the left bank aggraded close to five feet (1.5 m) and from 1966 to 1975 it degraded by six feet (1.8 m) in the same portion of the cross-section. In spite of the cross-section changes, the stage-discharge relationship has remained relatively stable for the entire period of record.


Discharge In CFS (x1000)
0
5
10
15
20
25
Stage In Feet
20
15
10
5
Stage-Discharge Relationship
CLEARWATER RIVER
AT
DRAPER
Curve No. 5, Nov. 25/71.


Width In Feet
0
100
200
300
400
Gauge Height In Feet
15
10
5
0
Left
Bank
Right
Bank
Cross-section Configuration
CLEARWATER RIVER
AT DRAPER
Sept. 10/75 Ght. 12.54' Q=11,600cfs.
May 10/66 Ght. 9.35' Q= 6,000cfs.
August 22/57 Ght. 6.94' Q= 3,080cfs.


Discharge-Area Curve
CLEARWATER RIVER
AT
DRAPER
1957 - 1975
Discharge In CFS (x1000)
Area In Square Feet (x1000)
0
10
20
30
1
2
3
4
5
6


Discharge-Velocity Curve
CLEARWATER RIVER
AT
DRAPER
1957 - 1976
Discharge In CFS (x1000)
Mean Velocity In Feet Per Second
0
10
20
30
1
2
3
4
5

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CALGARY, ALTA.

CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

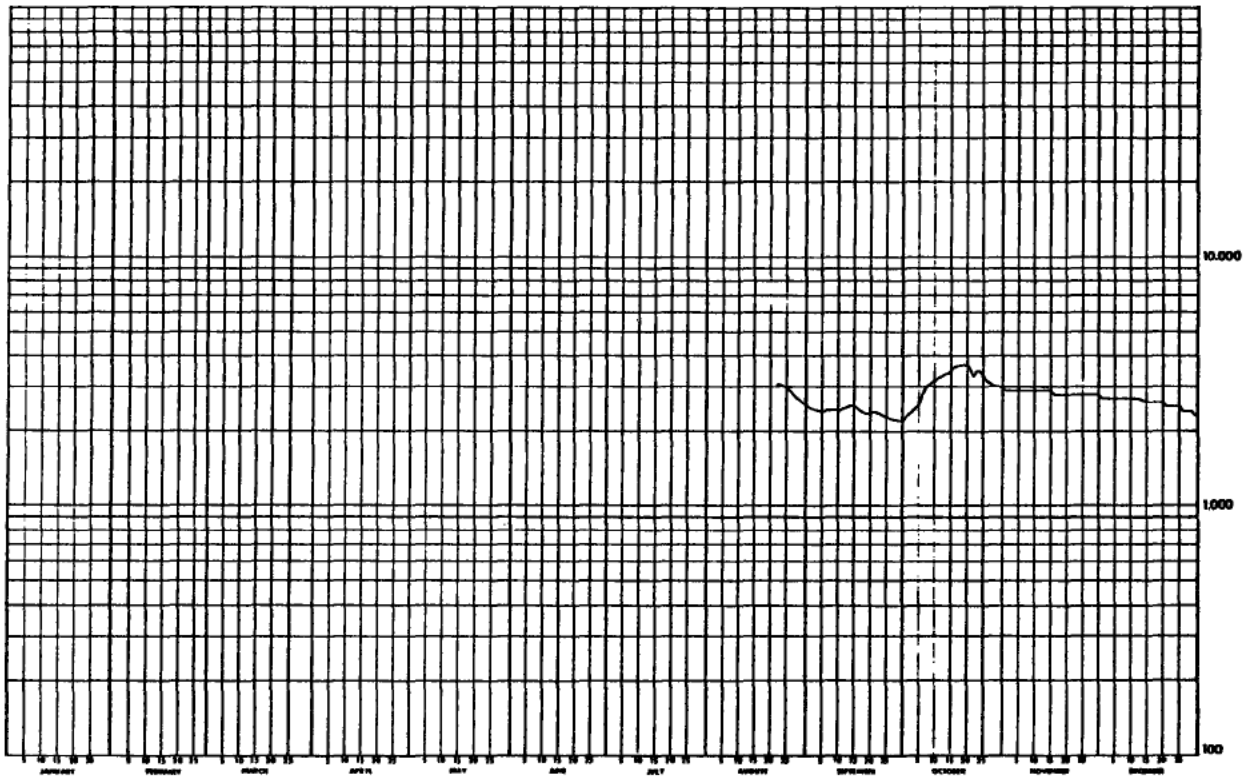
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1957

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	---	2500	2280	2900 B	2700 B	1
2	---	---	---	---	---	---	---	---	2460	2330	2900 B	2700 B	2
3	---	---	---	---	---	---	---	---	2450	2380	2900 B	2700 B	3
4	---	---	---	---	---	---	---	---	2450	2490	2900 B	2700 B	4
5	---	---	---	---	---	7380 A	---	---	2450	2700	2900 B	2700 B	5
6	---	---	---	---	---	6790 A	---	---	2450	2840	2900 B	2700 B	6
7	---	---	---	---	---	---	---	---	2470	2980	2900 B	2700 B	7
8	---	---	---	---	---	---	---	3690 A	2470	3100	2900 B	2700 B	8
9	---	---	---	---	---	---	---	3590 A	2470	3180	2900 B	2690 B	9
10	---	---	---	---	---	---	---	---	2440	3230	2900 B	2690 B	10
11	---	---	---	---	---	---	---	---	2460	3280	2900 B	2690 B	11
12	---	---	---	---	---	---	---	---	2470	3300	2900 B	2690 B	12
13	---	---	---	---	---	---	---	---	2470	3350	2900 B	2660 B	13
14	---	---	---	---	---	---	---	---	2510	3430	2900 B	2630 B	14
15	---	---	---	---	---	---	---	---	2490	3540	2900 B	2600 B	15
16	---	---	---	---	---	---	---	---	2460	3620	2800 B	2600 B	16
17	---	---	---	---	---	---	---	---	2410	3670	2800 B	2600 B	17
18	---	---	---	---	---	---	---	---	2380	3690	2800 B	2600 B	18
19	---	---	---	---	---	---	---	---	2390	3670	2800 B	2600 B	19
20	---	---	---	---	---	---	---	---	2390	3670	2800 B	2600 B	20
21	---	---	---	---	---	---	---	3080	2390	3640	2800 B	2500 B	21
22	---	---	---	---	---	---	---	3060	2360	3350	2800 B	2500 B	22
23	---	---	---	---	---	---	---	3050	2350	3500 B	2800 B	2500 B	23
24	---	---	---	---	---	---	---	2940	2330	3400 B	2800 B	2500 B	24
25	---	---	---	---	---	---	---	2840	2290	3300 B	2800 B	2500 B	25
26	---	---	---	---	---	4380 A	---	2770	2280	3200 B	2800 B	2400 B	26
27	---	---	---	---	---	---	4980 A	2720	2270	3100 B	2800 B	2400 B	27
28	---	---	---	---	---	---	---	---	2260	3100 B	2800 B	2400 B	28
29	---		---	---	---	---	---	2660	2240	3000 B	2800 B	2400 B	29
30	---		---	---	---	---	---	2590	2260	3000 B	2800 B	2300 B	30
31	---		---		---		---	2550		3000 B		2300 B	31
TOTAL	---	---	---	---	---	---	---	---	72070	98320	85500	79950	TOTAL
MEAN	---	---	---	---	---	---	---	---	2400	3170	2850	2580	MEAN
AC-FT	---	---	---	---	---	---	---	---	143000	195000	170000	159000	AC-FT
MAX	---	---	---	---	---	---	---	---	2510	3690	2900	2700	MAX
MIN	---	---	---	---	---	---	---	---	2240	2280	2800	2300	MIN

SUMMARY FOR THE MONTHS SEP TO DEC

MEAN DISCHARGE, 2750 CFS
TOTAL DISCHARGE, 667000 AC-FT
MAXIMUM DAILY DISCHARGE, 3690 CFS ON OCT 18
MINIMUM DAILY DISCHARGE, 2240 CFS ON SEP 29

A-MANUAL GAUGE
B-ICE CONDITIONS



WATER SURVEY OF CANADA
AUG 6 1970 PAGE 51
CALGARY, ALTA.

CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

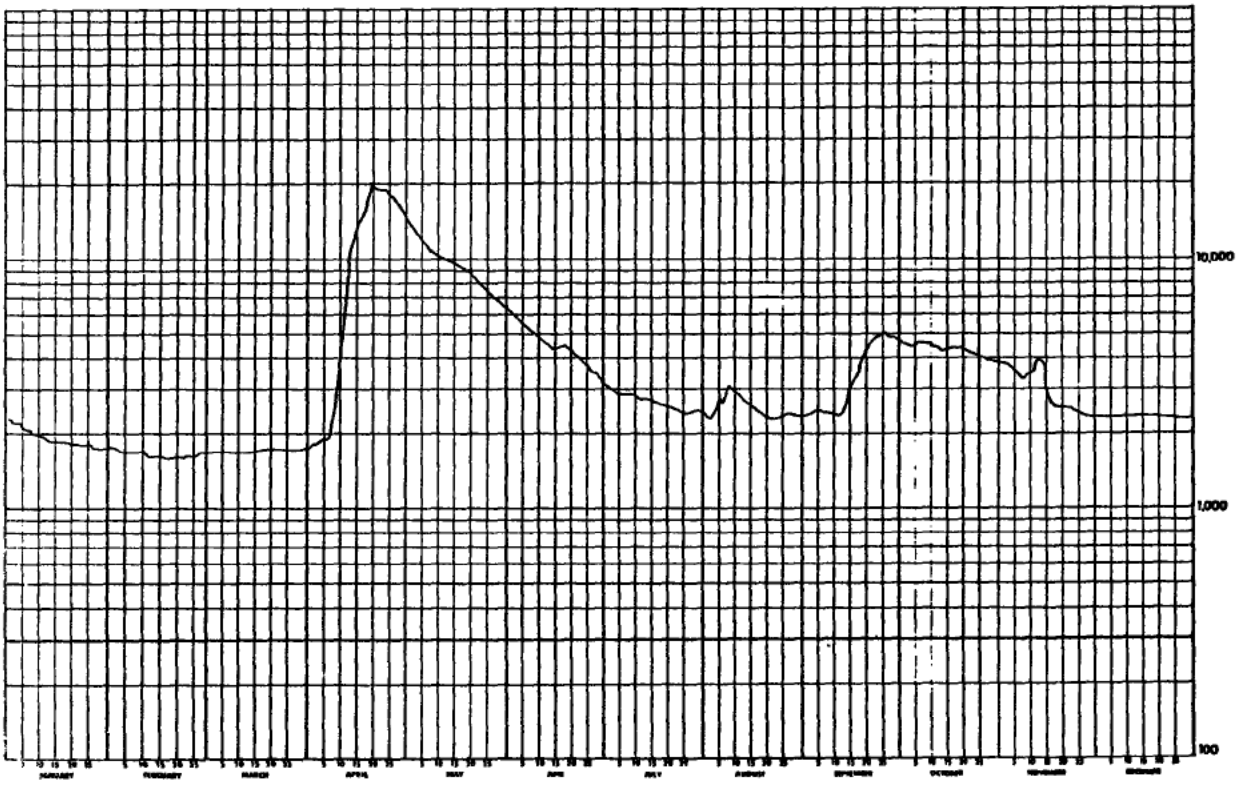
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1958

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2300 B	1750 B	1700 B	1800 B	14000	6240	3140	2360	2380	4600	3830	2300 E	1
2	2200 B	1750 B	1700 B	1800 B	13300	6030	3040	2320	2400	4550	3780	2310 E	2
3	2200 B	1700 B	1700 B	1800 B	12800	5900	3020	2300	2420	4520	3750	2310 E	3
4	2200 B	1700 B	1700 B	1900 B	12200	5720	2990	2510	2460	4500	3700	2310 E	4
5	2100 B	1700 B	1700 B	1900 B	11800	5560	2960	2720	2490	4550	3580	2310 E	5
6	2100 B	1700 B	1700 B	1900 B	11400	5380	2940	2630	2470	4600	3560	2320 E	6
7	2100 B	1700 B	1700 B	2000 B	11200	5220	2920	2640	2450	4590	3480	2320 E	7
8	2000 B	1700 B	1700 B	2500 B	11000	5100	2870	3060	2440	4590	3320	2320 E	8
9	2000 B	1700 B	1700 B	3000 B	10700	4980	2860	3020	2410	4550	3420	2330 E	9
10	1950 B	1700 B	1700 B	4000 B	10400	4820	2860	2980	2400	4520	3500	2330 E	10
11	1950 B	1650 B	1700 B	6000 B	10100	4700	2770	2870	2390	4500	3510	2330 E	11
12	1900 B	1650 B	1700 B	8000 B	9950	4640	2770	2770	2390	4420	3930	2330 E	12
13	1880 B	1650 B	1700 B	10000 B	9890	4520	2770	2690	2490	4360	3870 E	2330 E	13
14	1860 B	1640 B	1700 B	12000 B	9800	4430	2720	2630	2760	4350	3810 E	2330 E	14
15	1860 B	1640 B	1710 B	13000 B	9680	4430	2700	2600	3040	4380	3000 E	2330 E	15
16	1850 B	1640 B	1720 B	14000 B	9510	4480	2690	2540	3220	4420	2700 E	2330 E	16
17	1850 B	1630 B	1730 B	15000 B	9400	4500	2650	2490	3400	4400	2600 E	2330 E	17
18	1850 B	1630 B	1740 B	16000 B	9210	4500	2620	2420	3750	4400	2580 E	2330 E	18
19	1850 B	1630 B	1740 B	18000 B	9010	4430	2590	2360	4060	4360	2560 E	2330 E	19
20	1800 B	1640 B	1740 B	20000 B	8760	4310	2580	2320	4130	4350	2540 E	2330 E	20
21	1800 B	1640 B	1740 B	19000 B	8490	4220	2550	2300	4540	4300	2520 E	2330 E	21
22	1800 B	1640 B	1740 B	19000 B	8240	4090	2500	2300	4690	4250	2500 E	2330 E	22
23	1800 B	1650 B	1740 B	19000 B	7970	3980	2450	2290	4880	4220	2470 E	2320 E	23
24	1800 B	1650 B	1740 B	19000 B	7700	3860	2440	2300	4980	4170	2430 E	2320 E	24
25	1800 B	1650 B	1750 B	18000 B	7500	3700	2410	2340	5030	4090	2400 E	2310 E	25
26	1800 B	1650 B	1750 B	18000 B	7270	3580	2420	2380	5010	4040	2370 E	2310 E	26
27	1750 B	1700 B	1750 B	17000	7120	3500	2470	2400	4940	3990	2340 E	2300 E	27
28	1750 B	1700 B	1750 B	16000	6980	3400	2490	2390	4910	3930	2320 E	2300 E	28
29	1750 B		1750 B	15500 A	6800	3290	2470	2380	4810	3880	2310 E	2300 E	29
30	1750 B		1750 E	14800	6620	3230	2460	2350	4720	3850	2300 E	2300 E	30
31	1750 B		1750 B		6420		2420	2350		3830		2300 E	31
TOTAL	59350	46780	53390	329900	295220	136740	83540	78210	104660	134060	90980	71880	TOTAL
MEAN	1910	1670	1720	11000	9520	4560	2690	2520	3490	4320	3030	2320	MEAN
AC-FT	118000	92800	106000	654000	586000	271000	166000	155000	208000	266000	180000	143000	AC-FT
MAX	2300	1750	1750	20000	14000	6240	3140	3060	5030	4600	3930	2330	MAX
MIN	1750	1630	1700	1800	6420	3230	2410	2290	2380	3830	2300	2300	MIN

SUMMARY FOR THE YEAR 1958

MEAN DISCHARGE, 4070 CFS
TOTAL DISCHARGE, 2950000 AC-FT
MAXIMUM DAILY DISCHARGE, 20000 CFS ON APR 20
MINIMUM DAILY DISCHARGE, 1630 CFS ON FEB 17

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
DEC 16 1970 PAGE 30
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CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

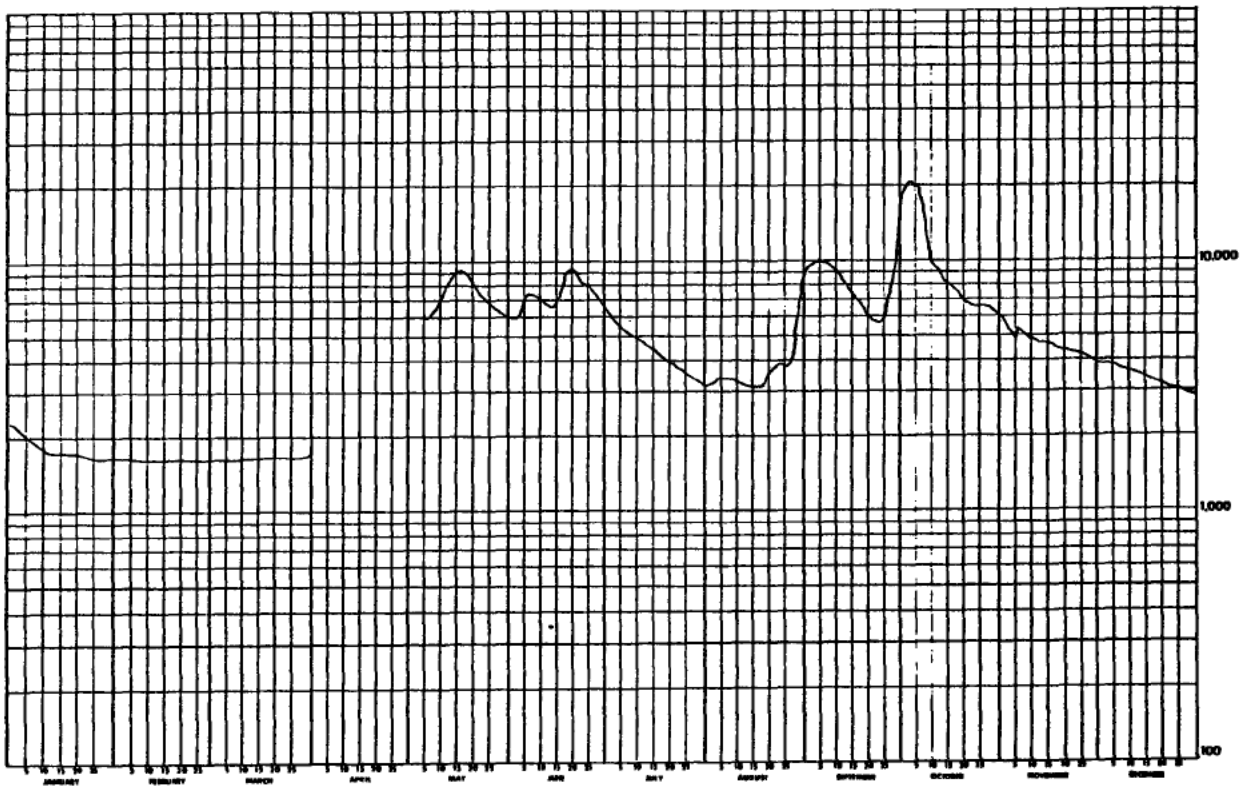
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1959

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2250 E	1640 E	1640 E		6000 E	6030	6430	3230	9310	10800	5930	3990 B	1
2	2200 E	1640 E	1640 E		6000 E	6030	6210	3240	9650	11000	5830	3950 B	2
3	2150 E	1640 E	1640 E		6000 E	6070	5980	3340	9740	11100	5820	3910 B	3
4	2100 E	1640 E	1640 E		6000 E	6610	5780	3420	9490	11100	5160 B	3870 B	4
5	2050 E	1630 E	1640 E		6000 E	7170	5560	3430	10000	11000	4890 B	3830 B	5
6	2000 E	1630 E	1640 E		6000 E	7490	5450	3430	9960	10800	5470 B	3790 B	6
7	1950 E	1630 E	1640 E		6110	7550	5370	3420	9650	10600	5300 B	3750 B	7
8	1900 E	1630 E	1640 E		6360	7460	5270	3400	9630	10400	5130 B	3710 B	8
9	1850 E	1620 E	1640 E		6770	7310	5130	3350	9380	10100	4960 B	3670 B	9
10	1800 E	1620 E	1650 E		7130	7130	5040	3300	9110	9830	4910 B	3630 B	10
11	1750 E	1620 E	1650 E		7420	6970	4930	3240	8770	9420	4870 B	3590 B	11
12	1760 E	1620 E	1650 E		7940	6750	4840	3200	8480	9020	4830 B	3550 B	12
13	1750 E	1620 E	1650 E		8340	6650	4740	3240	8190	8680	4780 B	3510 B	13
14	1750 E	1620 E	1650 E		8730	6610	4600	3220	7870	8480	4740 B	3470 B	14
15	1740 E	1620 E	1650 E		9040	6930	4520	3160	7530	8340	4690 B	3430 B	15
16	1740 E	1620 E	1650 E		9260	7510	4420	3160	7150	7960	4650 B	3390 B	16
17	1730 E	1620 E	1650 E		9260	7800	4310	3170	6810	7600	4610 B	3350 B	17
18	1720 E	1620 E	1650 E		9090	8700	4200	3200	6500	7550	4560 B	3310 B	18
19	1710 E	1620 E	1660 E		8770	9270	4100	3370	6730	7290	4520 B	3270 B	19
20	1700 E	1630 E	1660 E		8360	9330	3980	3560	6050	6770	4470 B	3230 B	20
21	1700 E	1630 E	1660 E		7980	9130	3910	3660	5900	6840	4430 B	3190 B	21
22	1690 E	1630 E	1660 E		7650	8770	3880	3750	5780	6630	4390 B	3150 B	22
23	1680 E	1630 E	1660 E		7330	8430	3800	3830	5690	6600	4340 B	3120 B	23
24	1670 E	1630 E	1660 E		7110	8180	3770	3850	5660	6520	4300 B	3090 B	24
25	1660 E	1630 E	1660 E		6980	8010	3700	3800	5760	6660	4250 B	3060 B	25
26	1660 E	1630 E	1660 E		6740	7850	3560	3780	6430	6610	4210 B	3030 B	26
27	1660 E	1630 E	1670 E		6570	7580	3500	3960	7830	6660	4170 B	3000 B	27
28	1660 E	1630 E	1670 E		6430	7240	3430	4700	9260	6500	4120 B	2970 B	28
29	1650 E		1670 E		6290	6970	3370	5930	10200	6320	4080 B	2950 B	29
30	1650 E		1670 E		6210	6680	3290	7510	10700	6160	4030 B	2930 B	30
31	1650 E		1700 E		6090		3200	8610		6110		2910 B	31
TOTAL	55940	45570	51270	120900	223860	224210	140270	119460	243310	259510	142240	105600	TOTAL
MEAN	1800	1630	1650		7220	7470	4520	3850	8110	8370	4740	3410	MEAN
AC-FT	111000	90400	102000	240000	444000	445000	278000	237000	483000	515000	282000	209000	AC-FT
MAX	2250	1640	1700		9260	9330	6430	8610	10700	11100	5930	3990	MAX
MIN	1650	1620	1640		6000	6030	3200	3160	5660	6110	4030	2910	MIN

SUMMARY FOR THE YEAR 1959

MEAN DISCHARGE= 4750 CFS
TOTAL DISCHARGE= 3440000 AC-FT
MAXIMUM DAILY DISCHARGE= 11100 CFS ON OCT 3
MINIMUM DAILY DISCHARGE= 1620 CFS ON FEB 9

B-ICE CONDITIONS
E-ESTIMATED



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AUG 6 1970 PAGE 53
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CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

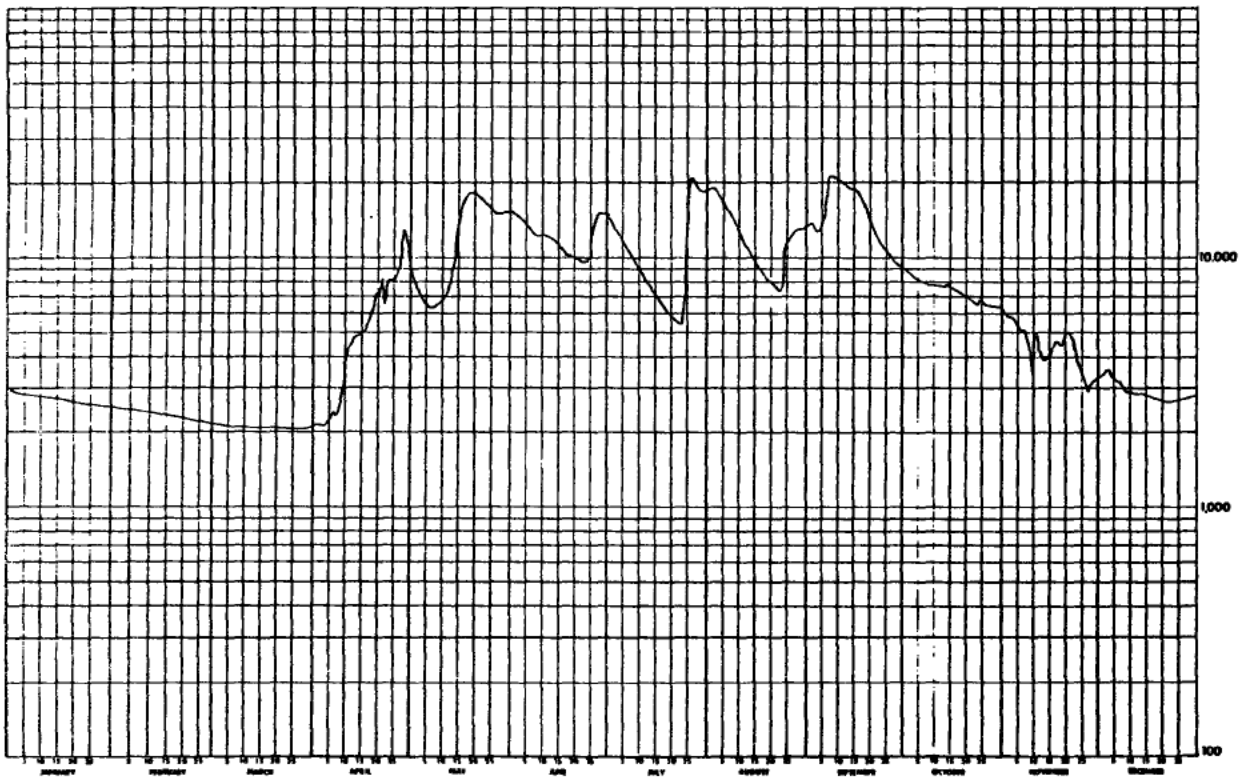
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1960

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2690 B	2500 B	2140 B	2120 B	8570	15400	14800	19000	13800	9220	6070 B	3420 B	1
2	2670 B	2490 B	2140 B	2140 B	7920	15200	14100	19000	13800	8980	5890 B	3470 B	2
3	2650 B	2480 B	2140 B	2150 B	7360	14800	13400	18600	13400	8770	5830 B	3590 B	3
4	2630 B	2470 B	2130 B	2190 B	6850	14200	12600	18000	13000	8640	5600 B	3440 B	4
5	2610 B	2450 B	2130 B	2310 B	6630	13700	12000	17100	13100	8450	5400 B	3280 B	5
6	2790 B	2440 B	2130 B	2430 B	6470	13300	11500	16200	17200	8280	5080 B	3240 B	6
7	2780 B	2430 B	2130 B	2380 B	6400	12900	10900	15200	21100	8180	5240 B	3220 B	7
8	2770 B	2420 B	2120 B	2550 B	6450	12600	10300	14200	21600	8030	4720 B	3000 B	8
9	2760 B	2400 B	2120 B	3090 B	6640	12600	9770	13400	21200	7940	3440 B	2920 B	9
10	2750 B	2390 B	2120 B	3540 B	6920	12700	9180	12600	20700	7790	4950 B	2990 B	10
11	2740 B	2380 B	2120 B	4450 B	7250	12600	8690	11900	20400	7740	5030 B	2940 B	11
12	2730 B	2370 B	2120 B	4500 B	7410	12500	8250	11200	20000	7700	4020 B	2890 B	12
13	2720 B	2350 B	2110 B	4910 B	8110	12200	7840	10600	19500	7740	3950 B	2860 B	13
14	2710 B	2340 B	2110 B	4940 B	10700	11800	7480	9990	19100	7670	4080 B	2900 B	14
15	2700 B	2330 B	2110 B	5100 B	12600	11400	7200	9550	18600	7650	4120 B	2790 B	15
16	2690 B	2320 B	2110 B	5180 B	15600	10900	6870	9140	18000	7570	4360 B	2830 B	16
17	2680 B	2300 B	2100 B	5570 B	17600	10500	6550	8770	17200	7480	4610 B	2800 B	17
18	2670 B	2290 B	2100 B	6220 B	18400	10300	6290	8430	16200	7330	4710 B	2750 B	18
19	2660 B	2280 B	2100 B	7300 B	18600	10200	6040	8140	15000	7190	4580 B	2720 B	19
20	2650 B	2270 B	2100 B	7280 B	18200	10100	5810	7910	14000	7030	5030 B	2700 B	20
21	2640 B	2250 B	2100 B	8260 B	17600	9990	5620	7640	13100	6880	5170 B	2690 B	21
22	2630 B	2240 B	2090 B	8580 B	17100	9790	5490	7500	12300	6770	4980 B	2680 B	22
23	2620 B	2230 B	2090 B	8260 B	16700	9740	5590	7740	11700	6560	4300 B	2660 B	23
24	2600 B	2220 B	2090 B	8080 B	16200	10000	7210	9630	11200	6760	3740 B	2730 B	24
25	2590 B	2200 B	2090 B	8490 B	15900	10400	16600	11600	10800	6600	3470 B	2740 B	25
26	2580 B	2190 B	2080 B	8920 B	15700	14000	21100	12400	10500	6530	3140 B	2750 B	26
27	2570 B	2180 B	2080 B	9860 B	15400	15200	20600	12900	10200	6500	2940 B	2760 B	27
28	2550 B	2170 B	2080 B	10300	15300	15400	18900	13100	9900	6520	3140 B	2770 B	28
29	2540 B	2150 B	2090 B	9740	15700	15300	18600	13100	9590	6450	3220 B	2780 B	29
30	2530 B		2100 B	9160	15800	15300	18700	13300	9410	6450	3260 B	2790 B	30
31	2520 B		2110 B		15400		18800	13700		6230		2800 B	31
TOTAL	83420	67530	65380	167980	381480	375020	346780	381540	455600	231630	134020	90900	TOTAL
MEAN	2690	2330	2110	5600	12300	12500	11200	12300	15200	7470	4470	2930	MEAN
AC-FT	165000	134000	130000	333000	757000	744000	688000	757000	904000	459000	266000	180000	AC-FT
MAX	2790	2500	2140	10300	18600	15400	21100	19000	21600	9220	6020	3590	MAX
MIN	2520	2150	2080	2120	6400	9740	5490	7500	9410	6230	2940	2660	MIN

SUMMARY FOR THE YEAR 1960

MEAN DISCHARGE, 7600 CFS
TOTAL DISCHARGE, 5520000 AC-FT
MAXIMUM DAILY DISCHARGE, 21600 CFS ON SEP 8
MINIMUM DAILY DISCHARGE, 2080 CFS ON MAR 26

B-ICE CONDITIONS



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AUG 6 1970 PAGE 54
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CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

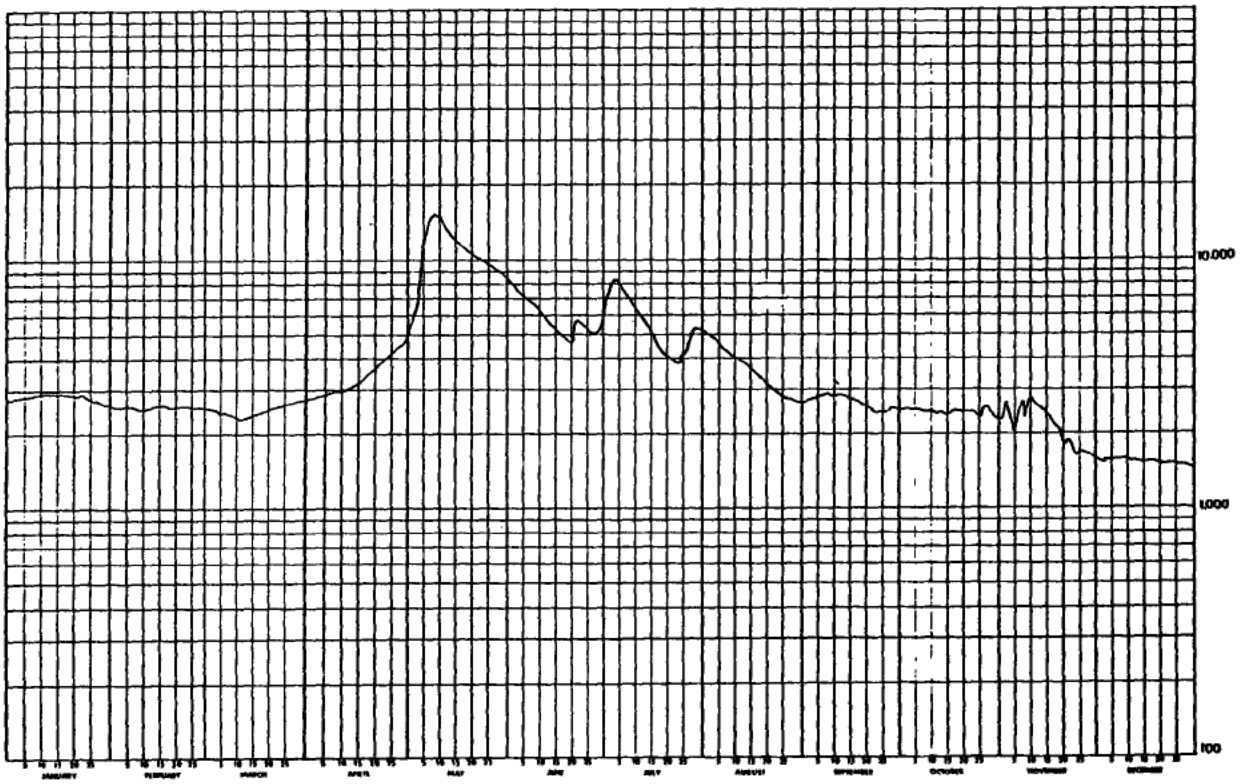
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1961

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2610 B	2630 B	2540 B	2760 B	5500 B	8260	6530	5110	2760	2490	2360 B	1560 B	1
2	2620 B	2590 B	2520 B	2780 B	6000 B	7980	7330	5030	2780	2510	2750 B	1550 B	2
3	2630 B	2590 B	2500 B	2800 B	6500 B	7690	8090	4870	2780	2510	2590 B	1550 B	3
4	2640 B	2580 B	2480 B	2820 B	9000 B	7450	8550	4800	2800	2500	1980 B	1550 B	4
5	2660 B	2590 B	2450 B	2850 B	11000 B	7280	8430	4640	2850	2500	2030 B	1550 B	5
6	2670 B	2600 B	2430 B	2870 B	13000 B	7040	8060	4550	2890	2500	2450 B	1560 B	6
7	2680 M	2590 B	2410 B	2890 B	14000 E	6820	7570	4340	2900	2490	2660 B	1570 B	7
8	2690 M	2550 B	2390 B	2910 B	15000 E	6690	7120	4250	2890	2470	2330 B	1590 B	8
9	2700 B	2520 B	2360 B	2930 B	15000 E	6520	6950	4180	2860	2450	2710 B	1580 B	9
10	2710 B	2550 B	2340 B	2960 B	15000 E	6280	6680	4120	2850	2460	2790 B	1580 B	10
11	2720 B	2560 B	2320 B	2980 B	14200	5960	6370	4010	2890	2440	2580 B	1570 B	11
12	2730 B	2560 B	2320 B	3000 B	13400	5780	6130	3980	2930	2440	2580 B	1560 B	12
13	2740 B	2580 B	2340 B	3020 B	12700	5600	5860	3890	2850	2420	2550 B	1560 B	13
14	2750 B	2590 B	2360 B	3100 B	12300	5400	5650	3760	2800	2400	2560 B	1550 B	14
15	2760 B	2600 B	2390 B	3200 B	12000	5200	5400	3660	2790	2410	2340 B	1550 B	15
16	2770 B	2620 B	2410 B	3300 B	11700	5110	5110	3540	2730	2420	2210 B	1540 B	16
17	2780 B	2620 B	2430 B	3400 B	11400	5000	4820	3460	2710	2420	2210 B	1540 B	17
18	2790 B	2590 B	2450 B	3500 B	11100	4840	4580	3350	2630	2420	2010 B	1530 B	18
19	2820 B	2590 B	2470 B	3600 B	10900	4660	4400	3260	2620	2460	1850 B	1530 B	19
20	2900 B	2590 B	2500 B	3700 B	10700	4600	4240	3180	2550	2490	1750 B	1520 B	20
21	2900 B	2600 B	2520 B	3800 B	10400	4900	4100	3110	2520	2470	1850 B	1520 B	21
22	2890 M	2590 B	2540 B	3900 B	10200	5730	3980	3060	2490	2420	1800 B	1520 B	22
23	2880 B	2580 B	2560 B	4000 B	9950	5650	3890	2990	2510	2340	1590 B	1510 B	23
24	2870 M	2580 B	2580 M	4100 B	9860	5460	3880	2940	2500	2300	1590 B	1510 B	24
25	2760 B	2580 B	2600 B	4200 B	9760	5240	4100	2900	2490	2280	1680 B	1500 B	25
26	2720 M	2580 B	2630 B	4300 B	9570	5120	4250	2870	2510	2360	1660 B	1500 B	26
27	2750 B	2560 B	2650 M	4400 B	9440	5090	4760	2850	2520	2640	1670 B	1490 B	27
28	2710 B	2550 B	2670 B	4500 B	9220	5170	5220	2760	2520	2510	1620 B	1490 B	28
29	2710 B		2690 B	4600 B	9000	5250	5330	2690	2540	2300	1540 B	1480 B	29
30	2660 B		2710 B	5000 B	8760	5650	5300	2750	2510	2290 B	1550 B	1480 B	30
31	2640 B		2740 B		8550		5170	2750		2280 B		1470 B	31
TOTAL	88420	72310	77300	104170	335110	177420	177850	113650	80970	75390	63840	47560	TOTAL
MEAN	2850	2580	2490	3470	10800	5910	5740	3670	2700	2430	2130	1530	MEAN
AC-FT	175000	143000	153000	207000	665000	352000	353000	225000	161000	150000	127000	94300	AC-FT
MAX	2970	2630	2740	5000	15000	8260	8550	5110	2930	2640	2790	1590	MAX
MIN	2640	2520	2320	2760	5500	4600	3880	2690	2490	2280	1540	1470	MIN

SUMMARY FOR THE YEAR 1961

MEAN DISCHARGE, 3870 CFS
TOTAL DISCHARGE, 2810000 AC-FT
MAXIMUM DAILY DISCHARGE, 15000 CFS ON MAY 8
MINIMUM DAILY DISCHARGE, 1470 CFS ON DEC 31

B-ICE CONDITIONS
E-ESTIMATED



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AUG 6 1970 PAGE 55
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CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

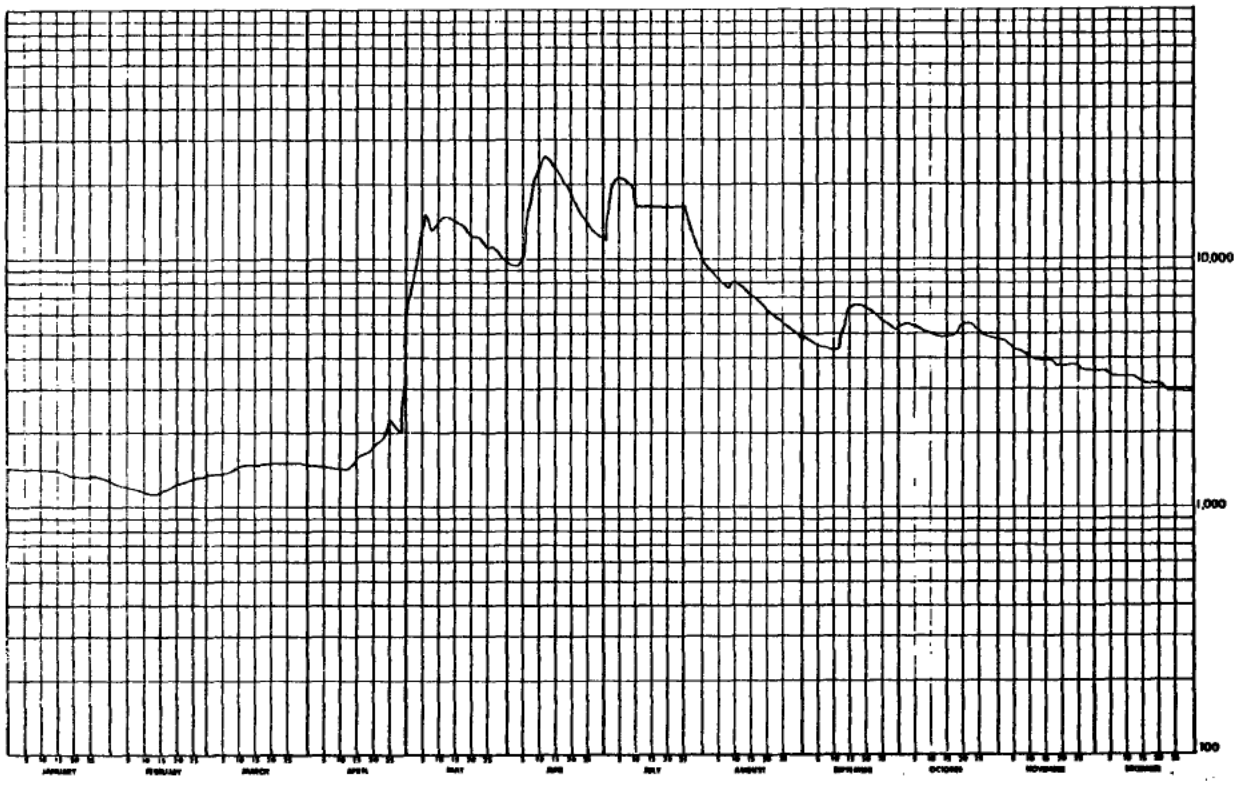
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1962

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1470 B	1260 B	1340 B	1480 B	6520 B	9560	12000	9420	4770	5320	4490	3500 B	1
2	1470 B	1250 B	1350 B	1480 B	8000 B	9510	15700	9130	4640	5440	4680	3500 B	2
3	1460 B	1240 B	1360 B	1480 B	9000 B	9380	20400	8770	4550	5490	4440	3500 B	3
4	1460 B	1230 B	1370 B	1480 B	11000 E	9310	20500	8480	4440	5460	4550	3500 B	4
5	1450 B	1220 B	1380 B	1480 B	13000 E	10600	21300	8180	4400	5330	4440	3300 B	5
6	1450 B	1210 B	1400 B	1480 B	15000 E	13700	21400	7940	4440	5270	4360	3300 B	6
7	1440 B	1200 B	1410 B	1470 B	14500 E	17000	20900	7750	4420	5200	4190	3300 B	7
8	1440 B	1200 B	1420 B	1470 B	13000 E	18800	20400	7640	4370	5120	4220	3300 B	8
9	1430 B	1190 B	1430 B	1470 B	13500 E	21800	20000	7890	4320	5090	4140	3300 B	9
10	1430 B	1180 B	1440 B	1470 B	14000 E	23800	16600 E	8060	4320	5030	3900 E	3300 B	10
11	1420 B	1170 B	1460 B	1470 B	14500 E	24500	16600 E	7960	4390	4980	3900 E	3300 B	11
12	1420 B	1160 B	1470 B	1470 B	14700	25100	16600 E	7740	4840	4920	3900 E	3300 B	12
13	1420 B	1150 B	1480 B	1470 B	14700	24800	16600 E	7550	5520	4960	3900 E	3300 B	13
14	1410 B	1160 B	1490 B	1510 B	14400	24100	16600 E	7330	6070	4960	3900 E	3100 B	14
15	1410 B	1170 B	1500 B	1550 B	14200	23400	16600 E	7120	6360	4930	3900 B	3100 B	15
16	1400 B	1180 B	1500 B	1590 B	14000	22300	16600 E	6930	6470	4960	3900 B	3100 B	16
17	1400 B	1190 B	1500 B	1640 B	13800	21200	16600 E	6760	6500	5010	3900 B	3100 B	17
18	1390 B	1200 B	1500 B	1680 B	13400	20200	16600 E	6560	6530	5220	3700 B	3100 B	18
19	1380 B	1220 B	1500 B	1720 B	12900	19200	16600 E	6360	6500	5350	3700 B	3100 B	19
20	1370 B	1230 B	1500 B	1760 B	12500	18400	16600 E	6130	6400	5460	3700 B	3100 B	20
21	1360 B	1240 B	1500 B	1810 B	12400	17400	16600 E	6050	6290	5490	3700 B	3100 B	21
22	1350 B	1250 B	1490 B	1850 B	12300	16400	16600 E	5910	6160	5440	3700 B	3100 B	22
23	1340 B	1260 B	1490 B	1890 B	12000	15600	16600 E	5780	5990	5360	3700 B	2900 B	23
24	1340 B	1280 B	1490 B	1930 B	11400	14800	16600 E	5650	5840	5200	3700 B	2900 B	24
25	1330 B	1290 B	1490 B	2280 B	11100	13800	16600 E	5480	5670	5040	3700 B	2900 B	25
26	1320 B	1300 B	1490 B	2160 B	11200	13000	16600 E	5350	5520	5010	3500 B	2900 B	26
27	1310 B	1310 B	1490 B	2040 B	11000	12700	13100	5250	5410	4950	3500 B	2900 B	27
28	1300 B	1320 B	1490 B	2000 B	10700	12500	12200	5120	5300	4920	3500 B	2900 B	28
29	1290 B		1490 B	2090 B	10300	12000	11200	5030	5200	4870	3500 B	2900 B	29
30	1280 B		1480 B	4190 B	9920	11500	10500	4980	5250	4800	3500 B	2900 B	30
31	1270 B		1480 B		9680		9890	4870		4770		2900 B	31
TOTAL	43010	34260	45180	52860	378620	506360	511690	213170	160880	159350	118210	97700	TOTAL
MEAN	1390	1220	1460	1760	12200	16900	16500	6880	5360	5140	3940	3150	MEAN
AC-FT	85300	68000	89600	105000	751000	1000000	1010000	423000	319000	316000	234000	194000	AC-FT
MAX	1470	1320	1500	4190	15000	25100	21400	9420	6530	5490	4690	3500	MAX
MIN	1270	1150	1340	1470	6520	9310	9890	4870	4320	4770	3500	2900	MIN

SUMMARY FOR THE YEAR 1962

MEAN DISCHARGE, 6360 CFS
TOTAL DISCHARGE, 4590000 AC-FT
MAXIMUM DAILY DISCHARGE, 25100 CFS ON JUN 12
MINIMUM DAILY DISCHARGE, 1150 CFS ON FEB 13

B-ICE CONDITIONS
E-ESTIMATED



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CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

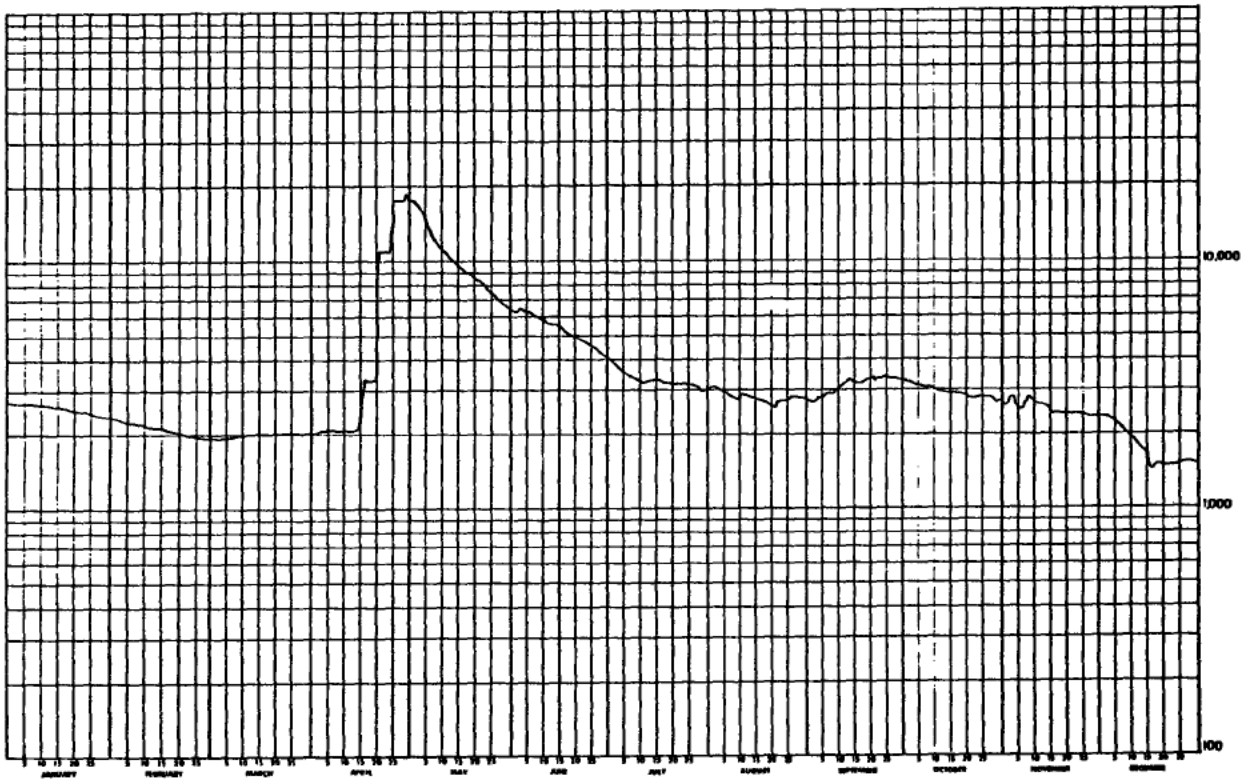
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1963

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2700 B	2340 B	1980 B	2050 B	17600	6360	3990	3110	2750	3290	2600	2350 B	1
2	2700 B	2330 B	1980 B	2050 B	17100	6310	3860	3120	2720	3260	2640	2300 B	2
3	2700 B	2310 B	1980 B	2100 B	16200	6370	3780	3080	2770	3230	2840	2330 B	3
4	2700 B	2300 B	1980 B	2100 B	15400	6330	3710	3080	2770	3200	2660	2270 B	4
5	2700 B	2280 B	1990 B	2100 B	14500	6250	3610	3050	2770	3190	2510	2210 B	5
6	2700 B	2270 B	1990 B	2100 B	13500	6170	3540	2970	2840	3130	2510	2170 B	6
7	2700 B	2250 B	1990 B	2100 B	12800	6090	3470	2910	2870	3110	2600	2140 B	7
8	2700 B	2240 B	1990 B	2100 B	12200	6020	3390	2860	2880	3060	2810	2090 B	8
9	2690 B	2220 B	2000 B	2100 B	11700	5970	3320	2810	2870	3040	2830	2020 B	9
10	2680 B	2200 B	2000 B	2100 B	11300	5880	3300	2830	2980	3010	2780	1910 B	10
11	2670 B	2190 B	2000 B	2100 B	10900	5750	3270	2940	3130	2990	2660	1850 B	11
12	2660 B	2170 B	2000 B	2100 B	10500	5730	3320	2920	3130	2980	2610	1780 B	12
13	2640 B	2160 B	2010 B	2100 B	10200	5650	3290	2860	3160	2950	2600	1720 B	13
14	2630 B	2140 B	2010 B	2100 B	9740	5490	3320	2830	3270	2940	2610	1690 B	14
15	2610 B	2130 B	2010 B	2100 B	9490	5430	3330	2810	3290	2910	2400	1600 B	15
16	2590 B	2110 B	2010 B	3300 B	9210	5320	3320	2780	3260	2900	2470 B	1420 B	16
17	2580 B	2090 B	2010 B	3300 B	8910	5240	3300	2720	3230	2870	2470 B	1420 B	17
18	2560 B	2080 B	2020 B	3300 B	8770	5170	3270	2650	3260	2870	2460 B	1500 B	18
19	2550 B	2060 B	2020 B	3300 B	8780	5080	3230	2600	3320	2870	2450 B	1510 B	19
20	2530 B	2050 B	2020 B	3300 B	8640	5050	3200	2570	3360	2860	2440 B	1500 B	20
21	2520 B	2030 B	2020 B	10900 B	8420	4980	3190	2550	3340	2860	2400 B	1500 B	21
22	2500 B	2020 B	2030 B	10900 B	8160	4900	3250	2730	3330	2870	2400 B	1500 B	22
23	2480 B	2000 B	2030 B	10900 B	7940	4870	3250	2700	3330	2870	2400 B	1490 B	23
24	2470 B	1990 B	2030 B	10900 B	7720	4750	3230	2720	3400	2860	2400 B	1490 B	24
25	2450 B	1970 B	2030 B	17300 B	7500	4630	3190	2790	3400	2840	2400 B	1500 B	25
26	2440 B	1970 B	2040 B	17300 B	7250	4520	3180	2790	3400	2830	2350 B	1510 B	26
27	2420 B	1970 B	2040 B	17300 B	7030	4390	3130	2790	3390	2820	2350 B	1510 B	27
28	2410 B	1980 B	2040 B	17300 B	6840	4300	3120	2780	3340	2790	2350 B	1540 B	28
29	2390 B		2040 B	18300	6710	4210	3040	2790	3330	2750	2350 B	1520 B	29
30	2380 B		2040 B	18000	6570	4100	3020	2780	3320	2740	2350 B	1520 B	30
31	2360 B		2050 B		6420		3060	2780		2690		1490 B	31
TOTAL	79410	59850	62380	197000	318000	161310	103480	87700	94210	91580	75700	54350	TOTAL
MEAN	2570	2140	2010	6570	10300	5380	3340	2830	3140	2950	2520	1750	MEAN
AC-FT	157000	119000	124000	391000	631000	320000	205000	174000	187000	182000	150000	108000	AC-FT
MAX	2700	2340	2050	18300	17600	6370	3990	3120	3400	3290	2840	2350	MAX
MIN	2360	1970	1980	2050	6420	4100	3020	2550	2720	2690	2350	1420	MIN

SUMMARY FOR THE YEAR 1963

MEAN DISCHARGE, 3800 CFS
TOTAL DISCHARGE, 2750000 AC-FT
MAXIMUM DAILY DISCHARGE, 18300 CFS ON APR 29
MINIMUM DAILY DISCHARGE, 1420 CFS ON DEC 16

B-ICE CONDITIONS



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CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

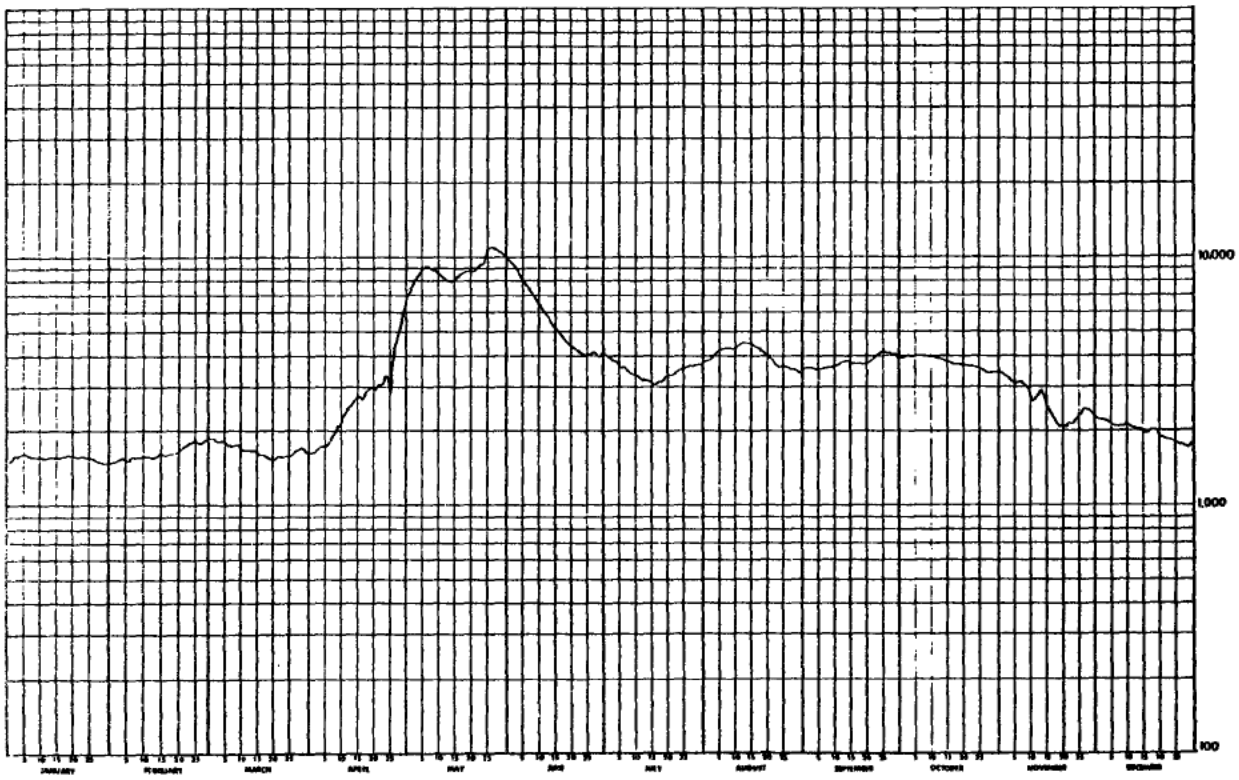
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1964

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1510 B	1480 B	1860 B	1620 B	6920	9630	4040	3820	3550	4000	3460	2200 B	1
2	1520 B	1490 B	1880 B	1620 B	7550	9250	3960	3850	3580	3990	3360	2200 B	2
3	1560 B	1510 B	1810 B	1690 B	7890	8800	3850	4000	3580	4010	3260	2170 B	3
4	1580 B	1520 B	1810 B	1740 B	8320	8410	3790	4100	3510	3990	3160	2160 B	4
5	1580 B	1520 B	1810 B	1720 B	8770	8020	3670	4250	3540	3990	3090	2130 B	5
6	1600 B	1510 B	1740 B	1750 B	8950	7680	3610	4300	3530	4010	3160	2080 B	6
7	1580 B	1550 B	1740 B	1820 B	9020	7350	3580	4320	3550	4030	3130	2060 B	7
8	1590 B	1570 B	1740 B	1920 B	8930	6980	3500	4340	3610	4010	3010	2080 B	8
9	1570 B	1560 B	1740 B	2080 B	8710	6680	3440	4350	3620	4010	2790	2100 B	9
10	1560 B	1560 B	1740 B	2120 B	8440	6370	3370	4390	3640	3970	2600 B	2130 B	10
11	1560 B	1580 B	1670 B	2300 B	8280	6130	3300	4440	3640	3940	2660 B	2090 B	11
12	1550 B	1570 B	1670 B	2380 B	8060	5890	3260	4500	3720	3930	2760 B	2080 B	12
13	1550 B	1570 B	1670 B	2480 B	7860	5640	3220	4520	3750	3890	2910 B	2029 B	13
14	1550 B	1570 B	1670 B	2580 B	7800	5380	3190	4500	3750	3870	2600 B	2010 B	14
15	1550 B	1600 B	1670 B	2730 B	7920	5140	3120	4390	3750	3850	2480 B	1960 B	15
16	1560 B	1600 B	1600 B	2740 B	8200	5020	3120	4270	3740	3800	2320 B	1970 B	16
17	1580 B	1600 B	1600 B	2660 B	8460	4860	3180	4210	3740	3750	2200 B	2000 B	17
18	1580 B	1610 B	1600 B	2860 B	8750	4720	3190	4130	3720	3690	2120 B	1980 B	18
19	1580 B	1640 B	1540 B	2990 B	8860	4520	3320	4030	3740	3690	2070 B	1980 B	19
20	1580 B	1630 B	1510 B	2980 B	8770	4440	3330	3920	3740	3690	2100 B	1890 B	20
21	1580 B	1670 B	1540 B	2910 B	8710	4320	3370	3850	3830	3660	2060 B	1890 B	21
22	1570 B	1730 B	1570 B	3090 B	9040	4350	3480	3760	3950	3650	2160 B	1840 B	22
23	1560 B	1780 B	1570 B	3050 B	9380	4250	3540	3760	4030	3640	2120 B	1830 B	23
24	1550 B	1800 B	1560 B	3360 B	9480	4160	3570	3680	4070	3610	2180 B	1790 B	24
25	1550 B	1790 B	1580 B	2750 B	10200	4090	3610	3650	4090	3580	2320 B	1780 B	25
26	1510 B	1790 B	1580 B	3620 B	10900	4160	3600	3610	4090	3550	2430 B	1760 B	26
27	1510 B	1790 B	1600 B	4300 B	10900	4070	3620	3600	4070	3510	2490 B	1730 B	27
28	1500 B	1800 B	1700 B	4800 B	10800	4110	3720	3550	4030	3470	2430 B	1740 B	28
29	1490 B	1820 B	1690 B	5780	10600	4060	3690	3510	3990	3430	2320 B	1680 B	29
30	1480 B		1700 B	6340	10400	4040	3710	3460	4000	3430	2240 B	1740 B	30
31	1480 B		1610 B		10000		3790	3510		3440		1780 B	31
TOTAL	48060	47210	51770	84780	276870	172520	108740	124570	113150	117080	77950	60850	TOTAL
MEAN	1550	1630	1670	2830	8930	5750	3510	4020	3770	3780	2600	1960	MEAN
AC-FT	95300	93600	103000	168000	549000	342000	216000	247000	224000	232000	155000	121000	AC-FT
MAX	1600	1820	1880	6340	10900	9630	4040	4520	4090	4030	3460	2200	MAX
MIN	1480	1480	1510	1620	6920	4040	3120	3460	3510	3430	2060	1680	MIN

SUMMARY FOR THE YEAR 1964

MEAN DISCHARGE, 3510 CFS
TOTAL DISCHARGE, 2550000 AC-FT
MAXIMUM DAILY DISCHARGE, 10900 CFS ON MAY 26
MINIMUM DAILY DISCHARGE, 1480 CFS ON JAN 30

B-ICE CONDITIONS



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CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

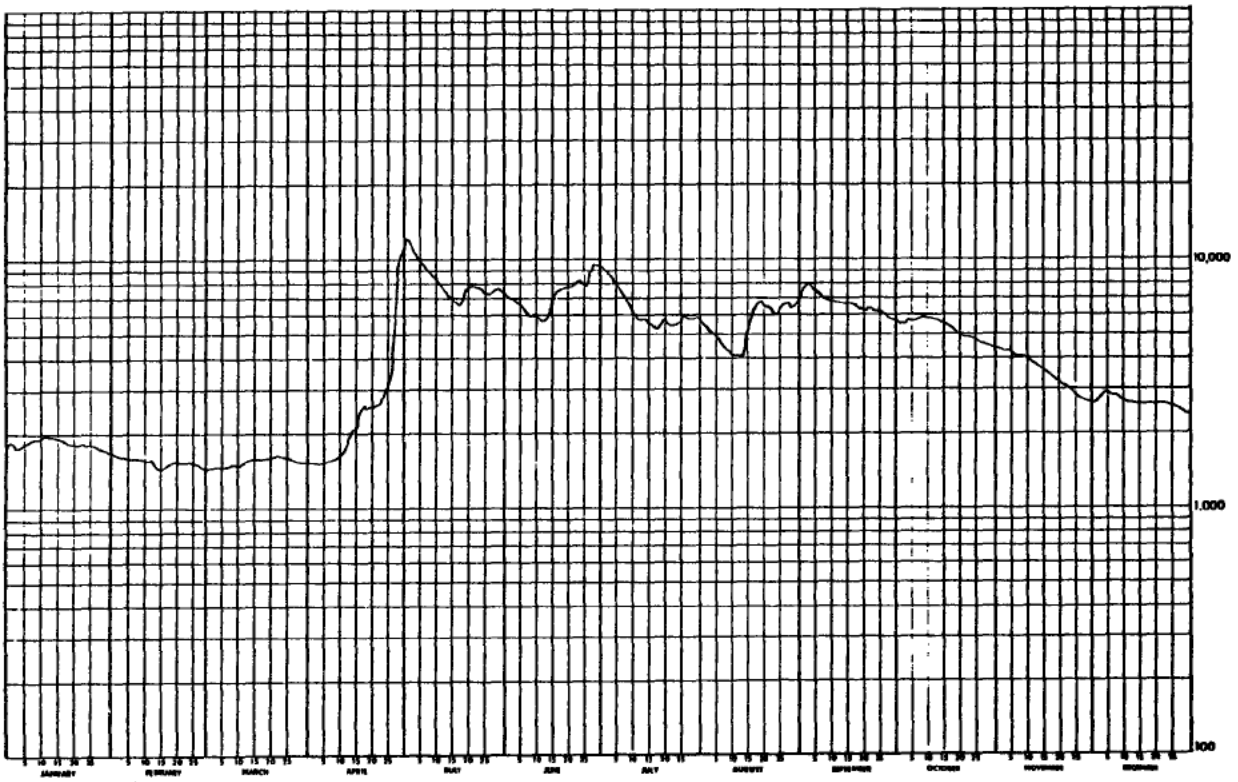
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1965

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1850 B	1640 B	1430 B	1540 B	11000	7140	9140	5430	7530	5620	4320	2650 B	1
2	1770 B	1620 B	1460 B	1540 B	10700	6970	8980	5200	7450	5560	4310	2740 B	2
3	1770 B	1600 B	1470 B	1550 B	10400	6810	8580	5060	7470	5540	4290	2790 B	3
4	1780 B	1580 B	1470 B	1550 B	10200	6660	8230	5000	7750	5640	4250 B	2910 B	4
5	1820 B	1560 B	1460 B	1550 B	9860	6520	7900	4830	7530	5700	4220 B	2910 B	5
6	1850 B	1590 B	1470 B	1560 B	9440	6390	7560	4620	7270	5690	4070 B	2810 B	6
7	1900 B	1580 B	1480 B	1560 B	9100	6140	7220	4480	7030	5750	4110 B	2790 B	7
8	1900 B	1580 B	1490 B	1580 B	8830	5990	6820	4290	6870	5780	4070 B	2780 B	8
9	1910 B	1560 B	1490 B	1610 B	8530	5940	6460	4180	6790	5900	4010 B	2720 B	9
10	1950 B	1560 B	1490 B	1660 B	8180	5800	6100	4180	6710	5800	3990 B	2680 B	10
11	1950 B	1560 B	1500 B	1680 B	7800	5690	5820	4060	6630	5780	3890 B	2660 B	11
12	1980 B	1540 B	1540 B	1780 B	7530	5560	5660	4030	6700	5740	3800 B	2680 B	12
13	1950 B	1490 B	1560 B	1940 B	7220	5700	5610	3990	6790	5690	3720 B	2640 B	13
14	1920 B	1470 B	1580 B	2060 B	6970	5980	5660	4530	6780	5620	3650 B	2610 B	14
15	1900 B	1460 B	1580 B	2140 B	6820	6710	5510	5130	6700	5540	3580 B	2600 B	15
16	1890 B	1490 B	1580 B	2440 B	6620	7180	5420	5930	6600	5420	3500 B	2620 B	16
17	1850 B	1490 B	1580 B	2550 B	6500	7480	5280	6330	6460	5340	3430 B	2590 B	17
18	1840 B	1520 B	1590 B	2510 B	6730	7580	5240	6580	6360	5240	3380 B	2570 B	18
19	1830 B	1520 B	1600 B	2560 B	7400	7620	5510	6630	6280	5140	3300 B	2570 B	19
20	1830 B	1540 B	1600 B	2540 B	7750	7680	5620	6550	6260	4980	3220 B	2590 B	20
21	1800 B	1530 B	1610 B	2590 B	7800	7820	5480	6340	6330	4920	3150 B	2590 B	21
22	1840 B	1520 B	1610 B	2620 B	7740	7960	5380	6140	6250	4920	3060 B	2590 B	22
23	1800 B	1520 B	1610 B	2770 B	7600	7970	5420	5980	6180	4860	3010 B	2590 B	23
24	1820 B	1520 B	1600 B	2960 B	7430	8090	5660	6090	6200	4820	2910 B	2570 B	24
25	1900 B	1500 B	1580 B	3330 B	7340	7870	5990	6460	6100	4720	2860 B	2540 B	25
26	1770 B	1500 B	1580 B	3860 B	7300	7750	5900	6550	5960	4660	2810 B	2510 B	26
27	1760 B	1480 B	1560 B	5880 B	7460	8490	5690	6500	5820	4600	2760 B	2500 B	27
28	1740 B	1470 B	1550 B	9710 B	7550	9350	5610	6520	5780	4540	2700 B	2460 B	28
29	1710 B		1540 B	10100	7530	9460	5670	6310	5690	4520	2680 B	2420 B	29
30	1670 B		1540 B	10900	7450	9270	5800	6570	5560	4470	2660 B	2390 B	30
31	1650 B		1540 B		7320		5610	7030		4400		2370 B	31
TOTAL	56000	42990	47740	92620	250100	215570	194530	171520	198630	162900	105690	81440	TOTAL
MEAN	1830	1540	1540	3090	8070	7190	6280	5530	6620	5250	3520	2630	MEAN
AC-FT	111000	85300	94700	184000	496000	428000	386000	340000	394000	323000	210000	162000	AC-FT
MAX	1980	1640	1610	10900	11000	9460	9140	7030	7870	5900	4320	2910	MAX
MIN	1650	1460	1430	1540	6500	5560	5240	3990	5560	4400	2660	2370	MIN

SUMMARY FOR THE YEAR 1965

MEAN DISCHARGE, 4440 CFS
TOTAL DISCHARGE, 3220000 AC-FT
MAXIMUM DAILY DISCHARGE, 11000 CFS ON MAY 1
MINIMUM DAILY DISCHARGE, 1430 CFS ON MAR 1

B-ICE CONDITIONS



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CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

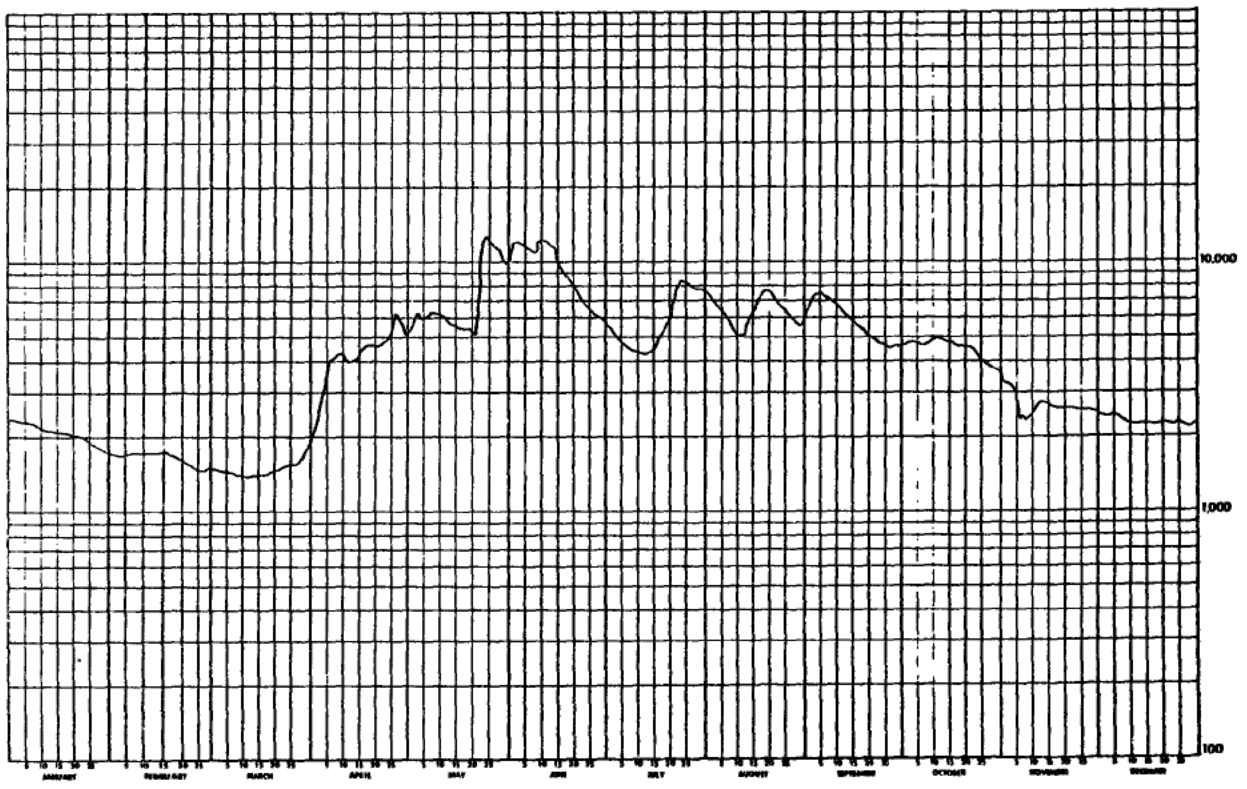
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1966

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2370 B	1770 B	1490 B	2120 B	5340 B	11700	5430	7400	6640	4640	3270 B	2440 B	1
2	2370 B	1740 B	1480 B	2400 E	5640 B	12000	5260	7190	6890	4680	3300 B	2430 B	2
3	2360 B	1720 B	1460 B	2700 E	6250	11800	5120	6920	7210	4700	3220 B	2400 B	3
4	2330 B	1720 B	1480 B	3050 E	5980	11600	4950	6700	7480	4760	3090 B	2450 B	4
5	2320 B	1710 B	1470 B	3640 B	5990	11400	4800	6440	7500	4740	2950 B	2450 B	5
6	2280 B	1730 B	1460 B	3990 B	6070	11300	4660	6150	7400	4710	2360 B	2430 B	6
7	2260 B	1740 B	1430 B	4070 B	6180	11100	4540	5830	7320	4680	2440 B	2460 B	7
8	2220 B	1740 B	1420 B	4180 B	6300	10900	4470	5530	7130	4720	2330 B	2330 B	8
9	2200 B	1760 B	1430 B	4270 B	6210 E	11100	4380	5220	6940	4740	2380 B	2270 B	9
10	2180 B	1760 B	1430 B	4250 B	6120	11400	4320	5080	6760	4860	2450 B	2240 B	10
11	2150 B	1760 B	1420 B	4070 B	5980	11200	4310	5130	6580	4940	2650 B	2220 B	11
12	2160 B	1770 B	1420 B	3970 B	5770	10800	4320	5100	6340	4940	2690 B	2240 B	12
13	2130 B	1760 B	1410 B	4000 B	5580	10600	4290	5360	6120	4900	2760 B	2260 B	13
14	2130 B	1740 B	1410 B	4110 B	5430	10200	4350	5930	5960	4880	2700 B	2240 B	14
15	2120 B	1740 B	1420 B	4340 B	5450	9860	4540	6490	5800	4840	2660 B	2250 B	15
16	2090 B	1730 B	1430 B	4520 B	5430	9500	4680	6810	5640	4760	2640 B	2260 B	16
17	2090 B	1700 B	1430 B	4580 B	5430	9080	5000	7190	5460	4700	2590 B	2270 B	17
18	2080 B	1660 B	1430 B	4700 B	5370	8690	5300	7450	5340	4640	2590 B	2270 B	18
19	2070 B	1640 B	1460 B	4700 B	5300	8260	5560	7600	5250	4600	2590 B	2260 B	19
20	2060 B	1590 B	1480 B	4660 B	5200	7820	5930	7620	5120	4540	2590 B	2270 B	20
21	2040 B	1580 B	1490 B	4600 B	5180	7480	6730	7460	4960	4560	2590 B	2270 B	21
22	2020 B	1540 B	1490 B	4680 B	7140	7130	7700	7240	4880	4470	2570 B	2250 B	22
23	2000 B	1540 B	1500 B	4800 B	12000	6860	8330	7000	4800	4350 B	2570 B	2240 B	23
24	1970 B	1490 B	1530 B	5060 B	12700	6600	8470	6730	4700	4070 B	2560 B	2270 B	24
25	1940 B	1490 B	1530 B	5530 B	12300	6380	8310	6460	4620	4070 B	2550 B	2240 B	25
26	1890 B	1480 B	1530 B	6200 B	12000	6230	8080	6220	4590	3940 B	2550 B	2250 B	26
27	1860 B	1490 B	1540 B	6120 B	11600	6170	7920	5990	4540	3890 B	2550 B	2240 B	27
28	1820 B	1490 B	1590 B	5640 B	11000	6100	7900	5780	4590	3790 B	2540 B	2200 B	28
29	1790 B		1670 B	5240 B	10200	5910	7900	5610	4590	3710 B	2520 B	2220 B	29
30	1780 B		1770 B	5220 B	9760	5660	7770	5500	4580	3620 B	2440 B	2240 B	30
31	1770 B		1920 B		10400		7560	5910		3510 B		2240 B	31
TOTAL	64850	46580	46420	131410	229300	274830	182880	197040	175530	138950	79690	71100	TOTAL
MEAN	2090	1660	1500	4380	7400	9160	5900	6360	5850	4480	2660	2290	MEAN
AC-FT	129000	92400	92100	261000	455000	545000	363000	391000	348000	276000	158000	141000	AC-FT
MAX	2370	1770	1920	6200	12700	12000	8470	7620	7500	4940	3300	2460	MAX
MIN	1770	1480	1410	2120	5180	5660	4290	5080	4540	3510	2330	2200	MIN

SUMMARY FOR THE YEAR 1966

MEAN DISCHARGE, 4490 CFS
TOTAL DISCHARGE, 3250000 AC-FT
MAXIMUM DAILY DISCHARGE, 12700 CFS ON MAY 24
MINIMUM DAILY DISCHARGE, 1410 CFS ON MAR 13

B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
AUG 6 1970 PAGE 60
CALGARY, ALTA.

CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

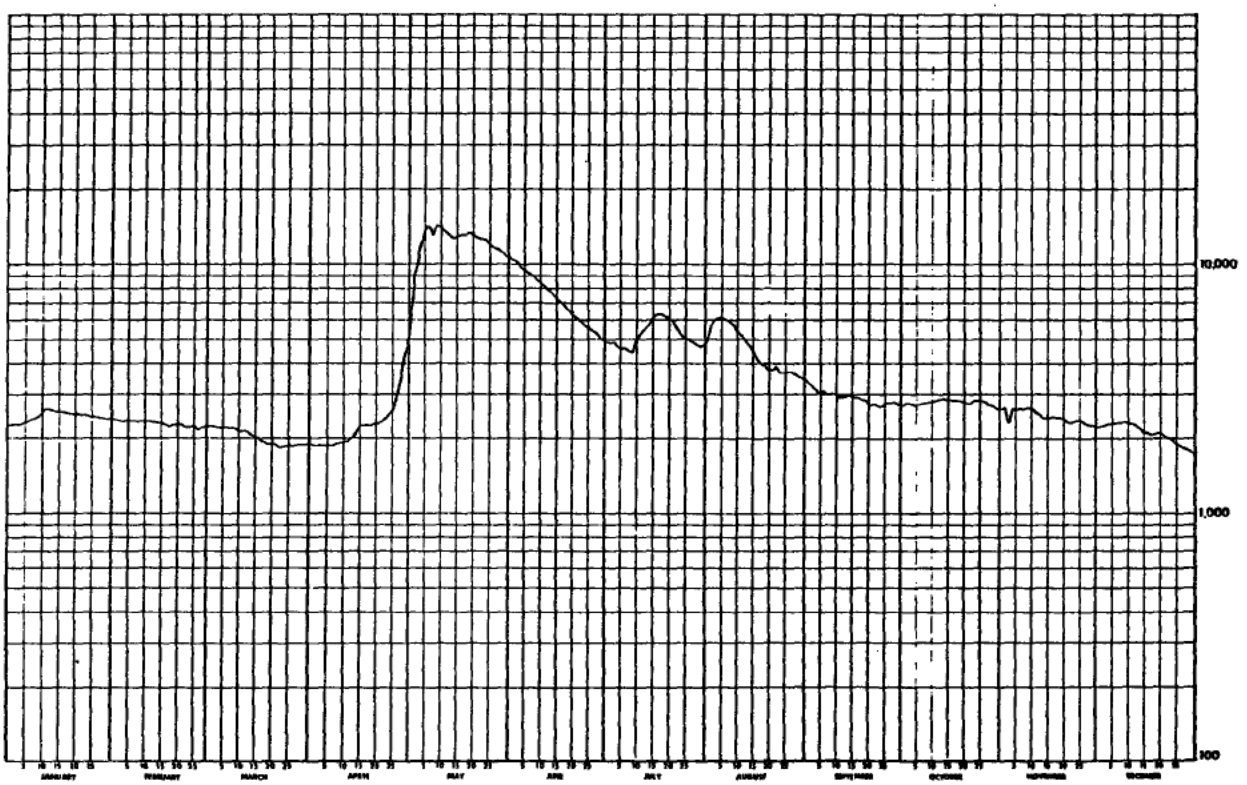
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1967

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2270 B	2380 B	2240 B	1900 B	7160 B	10500 E	4880	5120	3410	2760	2650 B	2280 B	1
2	2270 B	2370 B	2240 B	1880 B	9100 B	10200 E	4830	5690	3310	2760	2690 B	2280 B	2
3	2280 B	2360 B	2210 B	1890 B	10100 B	10000 E	4820	6040	3200	2760	2320 B	2300 B	3
4	2300 B	2350 B	2210 B	1890 B	12100 B	9790 E	4710	6120	3120	2730	2640 B	2300 B	4
5	2320 B	2340 B	2210 B	1890 B	14100 B	9560 E	4660	6070	3050	2730	2610 B	2310 B	5
6	2340 B	2330 B	2220 B	1880 B	14100	9340 E	4600	5940	3100	2740	2600 B	2310 B	6
7	2370 B	2320 B	2210 B	1900 B	13100	9110 E	4560	5850	3060	2760	2650 B	2320 B	7
8	2430 B	2310 B	2200 B	1920 B	14000	8880 E	4440	5740	2960	2780	2660 B	2320 B	8
9	2490 B	2330 B	2200 B	1920 B	14300	8650 E	4500	5590	2990	2810	2680 B	2330 B	9
10	2540 B	2330 B	2160 B	1950 B	13900	8420 E	4960	5420	2960	2850	2690 B	2330 B	10
11	2620 B	2320 B	2150 B	1950 B	13600	8200 E	5200	5220	2960	2890	2560 B	2340 B	11
12	2590 B	2320 B	2140 B	1970 B	11000	7970 E	5460	5010	2990	2880	2540 B	2310 B	12
13	2580 B	2320 B	2100 B	2080 B	12600	7740 E	5720	4780	3010	2870	2480 B	2200 B	13
14	2570 B	2310 B	2070 B	2130 B	12800	7510 E	5990	4590	3010	2870	2440 B	2140 B	14
15	2560 B	2280 B	2020 B	2210 B	13000	7280 E	6230	4460	2980	2860	2440 B	2150 B	15
16	2550 B	2280 B	1980 B	2270 B	13000	7060 E	6330	4270	2940	2860	2460 B	2130 B	16
17	2540 B	2270 B	1970 B	2260 B	13000	6830 E	6310	4130	2910	2890	2480 B	2100 B	17
18	2530 B	2270 B	1940 B	2260 B	13200	6600 E	6230	3990	2870	2850	2480 B	2130 B	18
19	2520 B	2280 B	1910 B	2280 B	13200	6370 E	6070	3890	2830	2850	2420 B	2160 B	19
20	2510 B	2270 B	1900 B	2300 B	13100	6150	5900	3820	2740	2790	2360 B	2150 B	20
21	2500 B	2260 B	1900 B	2300 B	13000	6100	5690	3760	2720	2790	2320 B	2090 B	21
22	2490 B	2220 B	1880 B	2340 B	12700	5930	5530	3900	2760	2830	2320 B	2040 B	22
23	2480 B	2220 B	1860 B	2400 B	12600	5770	5380	3750	2720	2850	2360 B	2000 B	23
24	2470 B	2220 B	1890 B	2480 B	12300	5670	5190	3710	2730	2850	2370 B	1940 B	24
25	2450 B	2240 B	1890 B	2620 B	12100 E	5540	5020	3690	2790	2820	2370 B	1920 B	25
26	2440 B	2210 B	1890 B	2850 B	11800 E	5400	4940	3690	2780	2830	2340 B	1900 B	26
27	2430 B	2190 B	1890 B	3230 B	11600 E	5280	4880	3720	2780	2740	2320 B	1880 B	27
28	2420 B	2220 B	1890 B	3760 B	11400 E	5180	4740	3690	2810	2760	2300 B	1830 B	28
29	2410 B		1900 B	4420 B	11200 E	4980	4660	3620	2760	2720 B	2270 B	1800 B	29
30	2400 B		1900 B	5220 B	10900 E	4900	4660	3550	2740	2600 B	2270 B	1760 B	30
31	2390 B		1890 B		10700 E		4740	3480		2690 B		1700 B	31
TOTAL	76060	64120	63060	72350	380760	220910	161830	142300	88010	86770	74090	65750	TOTAL
MEAN	2450	2290	2030	2410	12300	7360	5220	4590	2930	2800	2470	2120	MEAN
AC-FT	151000	127000	125000	144000	755000	438000	321000	282000	175000	172000	147000	130000	AC-FT
MAX	2620	2380	2240	5220	14300	10500	6330	6120	3410	2890	2690	2340	MAX
MIN	2270	2190	1860	1880	7160	4900	4440	3480	2720	2600	2270	1700	MIN

SUMMARY FOR THE YEAR 1967

MEAN DISCHARGE, 4100 CFS
TOTAL DISCHARGE, 2970000 AC-FT
MAXIMUM DAILY DISCHARGE, 14300 CFS ON MAY 9
MINIMUM DAILY DISCHARGE, 1700 CFS ON DEC 31

B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
AUG 6 1970 PAGE 61
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CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

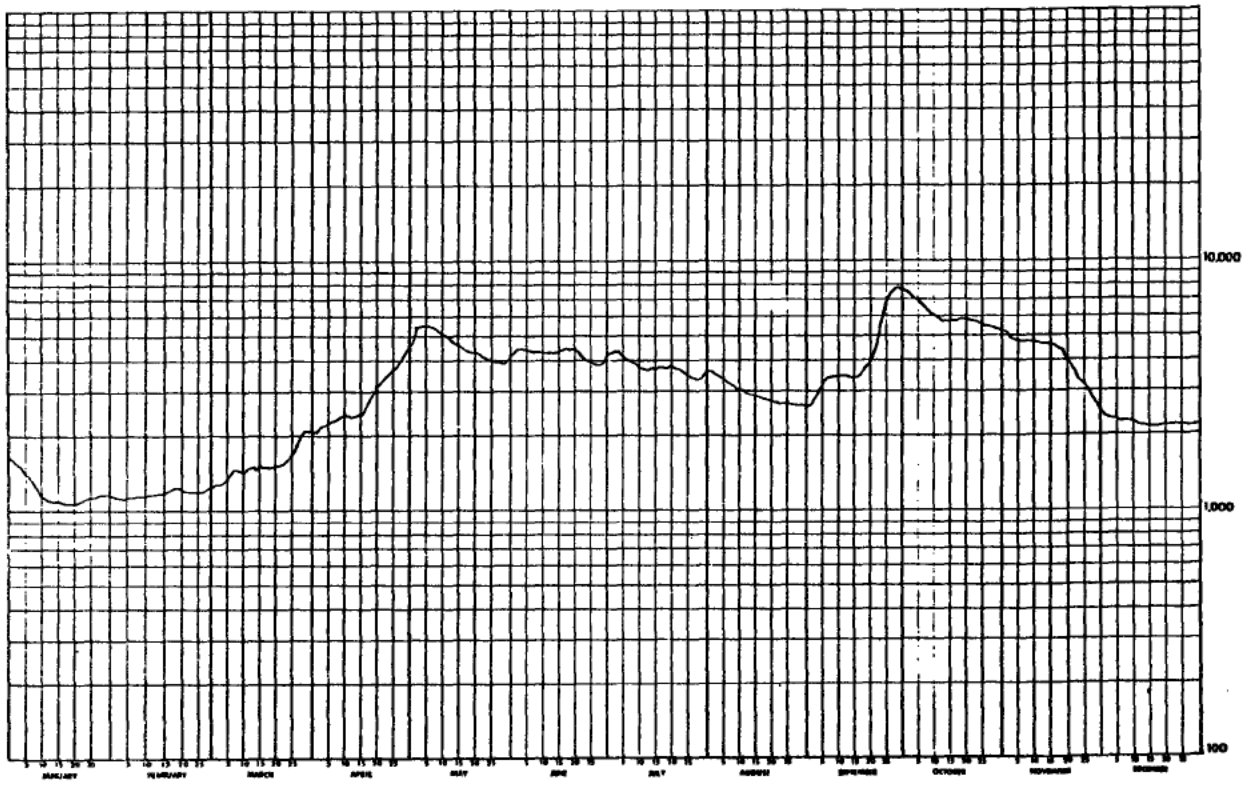
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1968

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1650 M	1140 B	1280 B	2100 B	4950	4410	4350	3590	2630	7580	5180	2380 B	1
2	1600 B	1130 B	1260 B	2160 B	5430	4440	4350	3580	2810	7480	5030 B	2320 B	2
3	1550 M	1130 B	1310 B	2210 B	5430	4400	4350	3500	2950	7270	4900 B	2300 B	3
4	1490 B	1120 B	1330 M	2210 B	5500	4400	4270	3430	3090	7060	4770 B	2270 B	4
5	1430 B	1120 B	1370 B	2250 B	5500	4310	4170	3330	3260	6860	4760 B	2250 B	5
6	1370 B	1130 B	1430 B	2310 B	5480	4310	4030	3230	3310	6550	4710 B	2240 B	6
7	1310 B	1140 B	1470 M	2330 B	5400	4320	3970	3150	3380	6410	4700 B	2220 B	7
8	1250 B	1140 B	1460 M	2370 B	5310	4290	3930	3080	3440	6250	4700 B	2220 B	8
9	1200 B	1150 B	1470 B	2390 B	5160	4270	3850	3020	3450	6060	4680 B	2200 B	9
10	1170 B	1150 B	1440 B	2400 B	5060	4240	3780	2960	3440	5940	4680 B	2190 B	10
11	1140 M	1160 B	1480 B	2400 B	4950	4290	3720	2950	3450	5830	4670 B	2180 B	11
12	1120 B	1160 B	1490 B	2380 B	4850	4270	3690	2910	3450	5770	4650 B	2160 B	12
13	1110 B	1170 B	1500 B	2380 B	4770	4290	3710	2910	3430	5720	4640 B	2160 B	13
14	1100 M	1170 B	1480 B	2420 B	4640	4320	3690	2890	3400	5660	4610 B	2150 B	14
15	1070 B	1180 B	1520 B	2420 B	4560	4340	3660	2850	3400	5660	4550 B	2140 B	15
16	1090 B	1200 B	1500 B	2540 B	4470	4430	3760	2860	3450	5690	4500 B	2130 B	16
17	1090 B	1210 B	1500 B	2790 B	4400	4460	3730	2820	3510	5720	4400 B	2120 B	17
18	1090 B	1230 B	1500 M	2910 B	4350	4400	3690	2790	3690	5780	4250 B	2120 B	18
19	1090 B	1240 B	1500 B	3060 B	4320	4430	3760	2770	3890	5780	4100 B	2120 B	19
20	1100 B	1230 B	1490 B	3160 B	4320	4350	3750	2730	4060	5770	3960 B	2120 B	20
21	1100 B	1220 B	1500 B	3290 B	4270	4210	3660	2690	4210	5750	3800 B	2120 B	21
22	1100 B	1210 B	1520 B	3410 B	4220	4110	3610	2690	4650	5660	3690 B	2120 B	22
23	1110 B	1200 B	1550 B	3520 B	4150	4040	3580	2700	5370	5610	3500 B	2120 B	23
24	1120 B	1200 B	1620 B	3660 B	4080	4000	3500	2700	6070	5580	3380 B	2120 B	24
25	1130 B	1200 B	1680 B	3780 B	4010	3890	3480	2690	6840	5480	3200 B	2120 B	25
26	1140 B	1200 B	1800 B	3900	3990	3830	3400	2680	7270	5510	3010 B	2120 B	26
27	1150 B	1220 B	1980 B	3920	3940	3800	3360	2680	7460	5420	2850 B	2120 B	27
28	1160 B	1240 B	2070 B	4150	3900	3830	3370	2630	7620	5400	2690 B	2130 B	28
29	1170 B	1260 B	2080 B	4430	3960	4110	3310	2630	7750	5360	2520 B	2140 B	29
30	1160 B		2080 B	4590	4040	4290	3540	2630	7740	5310	2420 B	2150 B	30
31	1150 B		2080 B		4170		3570	2610		5280		2180 B	31
TOTAL	37510	34250	48760	87840	143580	127080	116590	90680	132470	185200	123500	67430	TOTAL
MEAN	1210	1180	1570	2930	4630	4240	3760	2930	4420	5970	4120	2180	MEAN
AC-FT	74400	67900	96700	174000	285000	252000	231000	180000	263000	367000	245000	134000	AC-FT
MAX	1650	1260	2080	4590	5500	4460	4350	3590	7750	7580	5180	2380	MAX
MIN	1070	1120	1280	2100	3900	3800	3310	2610	2630	5280	2420	2120	MIN

SUMMARY FOR THE YEAR 1968

MEAN DISCHARGE, 3260 CFS
TOTAL DISCHARGE, 2370000 AC-FT
MAXIMUM DAILY DISCHARGE, 7750 CFS ON SEP 29
MINIMUM DAILY DISCHARGE, 1070 CFS ON JAN 15

B-ICE CONDITIONS



CLEARWATER RIVER AT DRAPER - STATION NO. 07CD001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1969

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2140 B	2050 B	1880 B	2010 B	13500	6740	3590	2760	2220	6100	3860 B	2820 B	1
2	2190 B	2070 B	1880 B	2020 B	13000	6920	3500	2730	2250	6250	3890 B	2800 B	2
3	2270 B	2060 B	1950 B	2020 B	12300	6980	3440	2670	2240	6340	3900 B	2790 B	3
4	2220 B	2030 B	1900 B	2020 B	11700	7010	3380	2610	2300	6340	3870 B	2760 B	4
5	2200 B	2010 B	1910 B	2020 B	11500	7040	3300	2560	2380	6330	3970 B	2740 B	5
6	2240 B	1960 B	1920 B	2070 B	11100	6940	3220	2490	2430	6280	3260 B	2710 B	6
7	2240 B	1970 B	1940 B	2060 B	10900	6790	3130	2430	2600	6210	2980 B	2680 B	7
8	2250 B	1980 B	1940 B	2160 B	10500	6620	3080	2400	2940	6130	2780 B	2660 B	8
9	2260 B	1940 B	1950 B	2250 B	10100	6430	3060	2370	3170	6030	2270 B	2640 B	9
10	2270 B	1920 B	1960 B	2350 B	9840	6240	3060	2340	3270	5850	1960 B	2610 B	10
11	2250 B	1900 B	1970 B	2540 B	9380	6020	3030	2290	3290	5780	1890 B	2580 B	11
12	2260 B	1890 B	1980 B	2910 B	8960	5820	2960	2260	3250	5550	2900 B	2530 B	12
13	2350 B	1880 B	1990 B	4100 B	8640	5610	2890	2250	3260	5420	2750 B	2500 B	13
14	2310 B	1850 B	2000 B	5960 B	8390	5400	2830	2220	3630	5370	2540 B	2480 B	14
15	2310 B	1840 B	2010 B	6570 B	8120	5200	2780	2200	3810	5250	2340 B	2450 B	15
16	2310 B	1820 B	2020 B	7160 B	7820	5010	2760	2300	3920	5100	2010 B	2410 B	16
17	2310 B	1820 B	2030 B	10100 B	7550	4840	2730	2560	4160	4980	1670 B	2380 B	17
18	2300 B	1830 B	2240 B	11400 B	7320	4700	2730	2520	4440	4920	1680 B	2330 B	18
19	2240 B	1890 B	2160 B	12000 B	7100	4580	2710	2530	4700	4770	1890 B	2300 B	19
20	2200 B	1880 B	2060 B	14000 B	6850	4440	2710	2610	4930	4640	1970 B	2260 B	20
21	2270 B	1880 B	2060 B	16000 B	6660	4350	2660	2560	5080	4490 B	2190 B	2210 B	21
22	2250 B	1860 B	2060 B	18000 B	6460	4340	2700	2530	5150	4220 B	2270 B	2160 B	22
23	2240 B	1820 B	2060 B	19000 B	6280	4320	2620	2470	5160	4150 B	2320 B	2130 B	23
24	2220 B	1860 B	2060 B	20000 B	6140	4300	2590	2420	5170	4040 B	2420 B	2110 B	24
25	2210 B	1830 B	2070 B	19000 B	5980	4240	2670	2360	5200	3900 B	2480 B	2090 B	25
26	2190 B	1840 B	2070 B	17000	5800	4160	2740	2310	5230	3130 B	2560 B	2060 B	26
27	2140 B	1850 B	2070 B	16300	5660	4040	2720	2220	5280	2890 B	2680 B	2020 B	27
28	2150 B	1860 B	2070 B	15300	5910	3930	2790	2200	5400	3160 B	2710 B	2000 B	28
29	2150 B		2030 B	14700	6140	3820	2850	2200	5600	3590 B	2750 B	1980 B	29
30	2130 B		2000 B	16100	6420	3690	2810	2190	5830	3780 B	2830 B	1960 B	30
31	2120 B		2010 B		6580		2800	2200		3830 B		1950 B	31
TOTAL	69310	53030	61880	257950	262580	160520	90860	74760	118290	154740	79590	74100	TOTAL
MEAN	2240	1890	2000	8600	8470	5350	2930	2410	3940	4990	2650	2390	MEAN
AC-FT	137500	105200	123000	531000	521000	318000	180000	148000	235000	307000	158000	147000	AC-FT
MAX	2310	2070	2070	20000	13500	7040	3590	2760	5830	6340	3970	2820	MAX
MIN	2120	1800	1880	2010	5660	3690	2590	2190	2220	2890	1670	1950	MIN

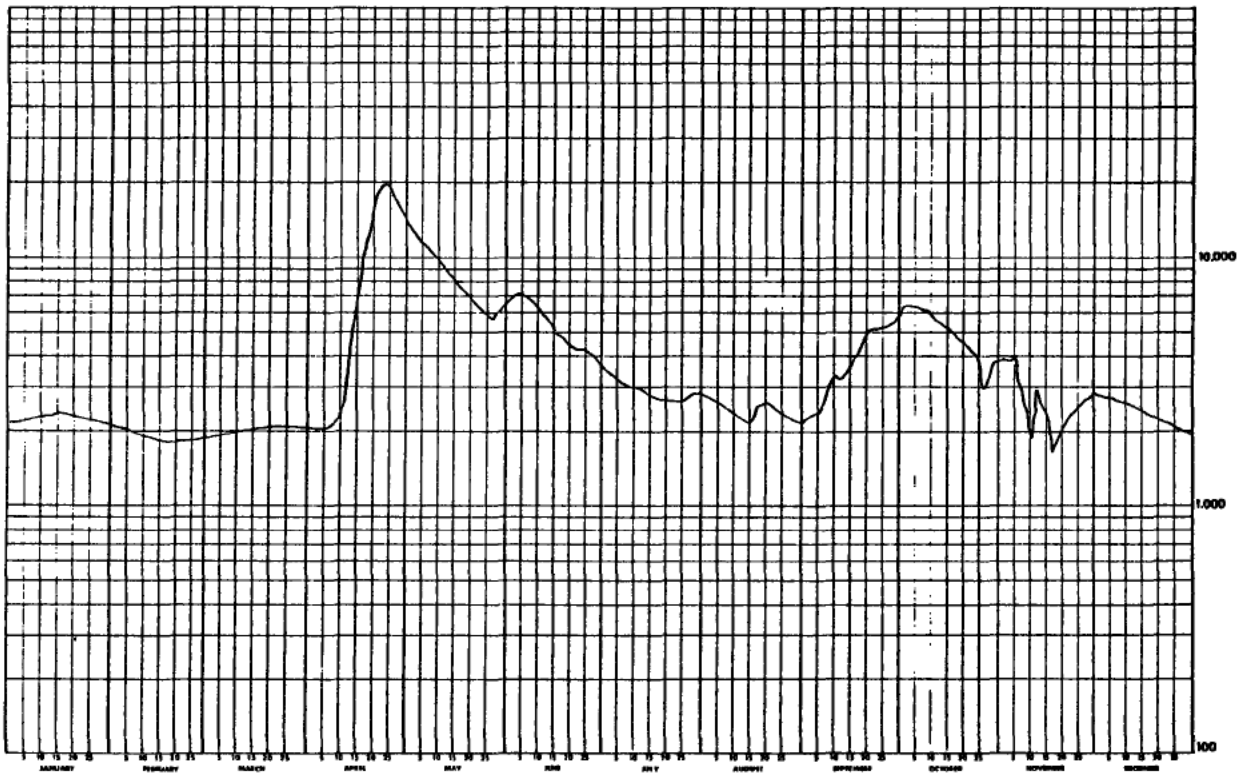
SUMMARY FOR THE YEAR 1969

MEAN DISCHARGE, 4020 CFS
TOTAL DISCHARGE, 2910000 AC-FT
MAXIMUM DAILY DISCHARGE, 20000 CFS ON APR 24
MINIMUM DAILY DISCHARGE, 1670 CFS ON NOV 17

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 50 N
LONG 111 15 00 W
DRAINAGE AREA 9380 SQ MILES

B-ICE CONDITIONS

NATURAL FLOW



CLEARWATER RIVER AT DRAPER - STATION NO. 07CC001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1970

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2040 B	1660 B	1530 B	1400 B	9990 B	6870	16500	9040	4940	9580 E	5940	3060 B	1
2	2030 B	1640 B	1530 B	1410 B	9690 B	6780	23700	9530	5590	9380 E	5940	3170 B	2
3	2030 B	1620 B	1530 B	1430 B	9350	6620	25000	9630	6520	9170 A	5830	3130 B	3
4	2020 B	1640 B	1550 B	1470 B	9170	6410	23200	9310	7420	8910	5610 B	3160 B	4
5	2010 B	1610 B	1530 B	1480 B	8970	6180	24000	8890	8090	8650	5510 B	3090 B	5
6	2000 B	1590 B	1520 B	1520 B	8560	5930	24300	8510	8370	8310	5610 B	3030 B	6
7	1970 B	1600 B	1500 B	1540 B	8190	5750	24000	8160	8310	8010	5540 B	2960 B	7
8	1830 B	1590 B	1490 B	1550 B	7890	5510	22900	6980	8110	7680	5150 B	2960 B	8
9	1800 B	1600 B	1440 B	1560 B	7620	5340	21800	7420	7850	7370	5240 B	2920 B	9
10	1780 B	1600 B	1410 B	1650 B	7370	5190	20600	7110	7630	7140	5240 B	2850 B	10
11	1830 B	1590 B	1410 B	1700 B	7100	5220	19400	6790	7460	7030	5280 B	2790 B	11
12	1840 B	1600 B	1400 B	1700 B	6810	5390	18100	6570	7340	6820	5160 B	2810 B	12
13	1820 B	1600 B	1370 B	1700 B	6540	5640	16800	6330	7160	6660	5160 B	2780 B	13
14	1790 B	1590 B	1350 B	1760 B	6260	5820	15600	6250	7000	6490	5250 B	2780 B	14
15	1720 B	1600 B	1340 B	2010 B	6090	5910	14500	6200	6860	6340	5130 B	2770 B	15
16	1720 B	1600 B	1330 B	2450 B	5900	6220	13400	6230	6680	6250	5040 B	2744 B	16
17	1710 B	1580 B	1320 B	2910 B	6120	6500	12300	6250	6550	6120	5280 B	2690 B	17
18	1650 B	1560 B	1330 B	3590 B	7330	6810	11300	6140	6470	6010	4550 B	2690 B	18
19	1600 B	1550 B	1330 B	4070 B	7300	7320	10500	6060	6380	5940	4730 B	2680 B	19
20	1590 B	1550 B	1340 B	4070 B	7240	7480	9760	6040	6200	5850	2160 B	2730 B	20
21	1560 B	1530 B	1330 B	9140 B	7050	7370	9150	5980	6100	5780	2010 B	2640 B	21
22	1560 B	1520 B	1340 B	14600 B	6970	7210	8550	5910	6010	5780	1060 B	2560 B	22
23	1590 B	1500 B	1350 B	15000 B	7000	7240	8130	5750	6180	5740	1620 B	2540 B	23
24	1610 B	1500 B	1360 B	16200 B	7430	7630	7790	5660	7430 A	5690	1800 B	2510 B	24
25	1640 B	1530 B	1350 B	15800 B	7660	8640	7580	5500	7940 E	5640	1960 B	2510 B	25
26	1620 B	1520 B	1340 B	15300 B	7550	9100	7450	5450	8460 E	5770	1940 B	2520 B	26
27	1650 B	1530 B	1350 B	9800 B	7350	9290	7320	5360	8970 E	5780	2260 B	2560 B	27
28	1690 B	1530 B	1340 B	9670 B	7180	9120	7160	5330	9490 E	5740	2700 B	2540 B	28
29	1670 B		1360 B	9880 B	7130	9380	7160	5220	10000 A	5800	2900 B	2510 B	29
30	1670 B		1350 B	9970 B	7350	11300	7550	5130	9790 E	5850	2920 B	2460 B	30
31	1670 B		1350 B		6340		8180	5830		5900		2385 B	31
TOTAL	54780	44130	43370	166350	232420	209170	453680	207760	221260	211180	125380	85510	TOTAL
MEAN	1770	1580	1400	5550	7500	6970	14600	6700	7380	6810	4180	2760	MEAN
AC-FT	109000	87500	86000	330000	461000	415000	900000	412000	439000	419000	249000	170000	AC-FT
MAX	2040	1660	1550	16200	9990	11300	25000	9630	10000	9580	5940	3170	MAX
MIN	1560	1500	1320	1400	5900	5190	7160	5030	4940	5640	1620	2380	MIN

SUMMARY FOR THE YEAR 1970

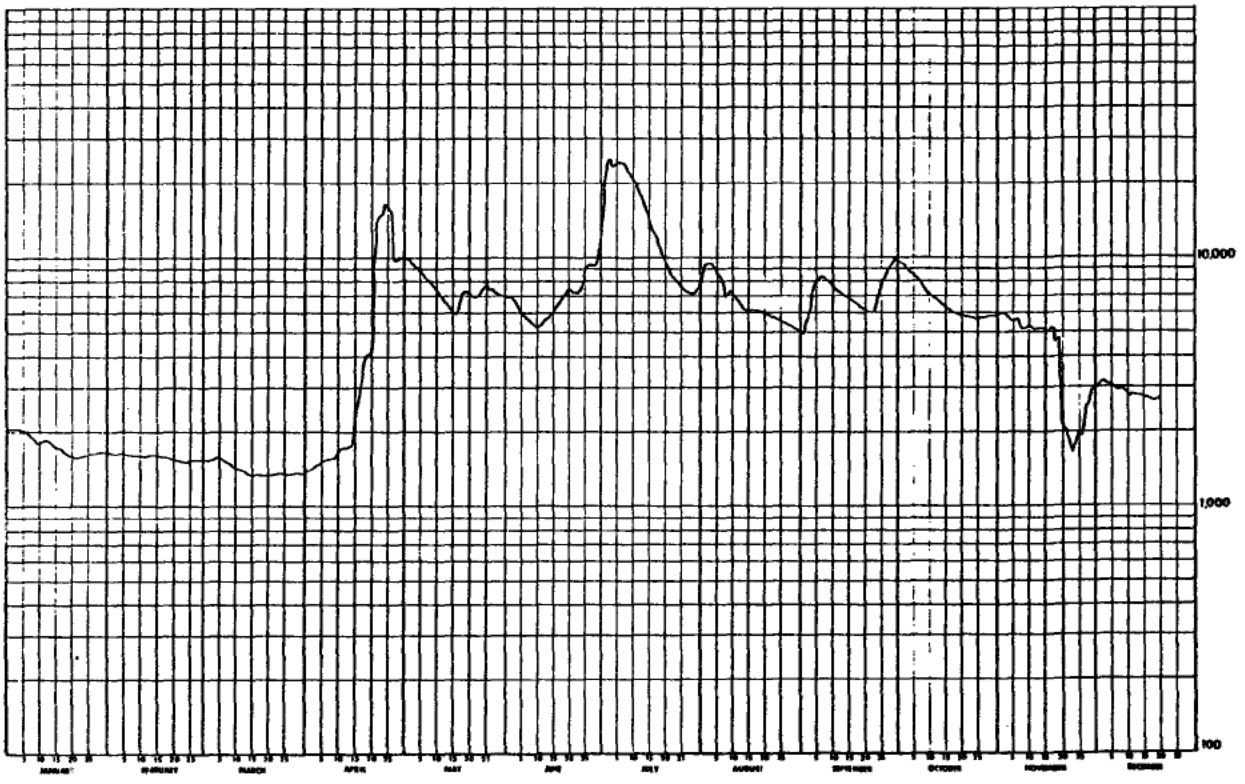
MEAN DISCHARGE, 5636 CFS
TOTAL DISCHARGE, 4080000 AC-FT
MAXIMUM DAILY DISCHARGE, 25000 CFS ON JUL 3
MINIMUM DAILY DISCHARGE, 1320 CFS ON MAR 17

MAXIMUM INSTANTANEOUS DISCHARGE
25700 CFS AT 0400 MST ON JUL 3

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 50 N
LONG 111 15 00 W
DRAINAGE AREA 9380 SQ MILES

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA — CLEARWATER RIVER AT DRAPER — STATION NO. 07CB001

JUL 13 1972 PAGE 289
CALGARY, ALTA.

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1971

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2370 B	2040 B	1950 B	2080 B	13500	4840	7040	5620	3300	2620	1770 B	2080 B	1
2	2430 B	2050 B	1950 B	2080 B	12800	4750	7440 A	5410	3370	2620	1770 B	2050 B	2
3	2400 B	2040 B	1950 B	2080 B	12200	4660	7740	5190	3280	2640	1760 B	2080 B	3
4	2360 B	1970 B	1950 B	2010 B	11700	4570	8510	4990	3250	2660	1760 B	2100 B	4
5	2330 B	1950 A	1950 A	2040 B	11280	4540	9840	4830	3230	2680	1760 B	2050 B	5
6	2330 B	1950 B	1940 B	2090 B	10600	4420	10700	4740	3160	2660	1760 B	2050 B	6
7	2340 B	1950 B	1940 B	2160 B	10100	4360	11100	4650	3090	2680	1760 B	1990 B	7
8	2310 B	1950 B	1920 B	2250 B	9550	4240	11300	4530	3030	2700	1750 B	1910 B	8
9	2300 B	1950 B	1910 B	2380 B	9020	4150	11200	4440	2960	2700	1750 B	1900 B	9
10	2290 B	1950 B	1910 B	2440 B	8580	4100	10900	4410	2880	2730	1750 A	1880 B	10
11	2270 B	1950 B	1910 B	2440 B	8160	4200	10600	4380	2860	2690	1870 B	1820 B	11
12	2270 B	1950 B	1940 B	2440 B	7850	4260	10200	4290	2810	2700	1910 B	1810 B	12
13	2250 B	1950 B	1940 B	2510 B	7620	4170	9760	4210	2770	2720	2210 B	1780 B	13
14	2210 B	1950 B	1940 B	2640 B	7360	4120	9460	4140	2720	2740	2490 B	1740 B	14
15	2180 B	1950 B	1960 B	3040 B	7040	4230	9250	4090	2720	2730	2440 B	1680 B	15
16	2200 B	1950 B	1970 B	3720 B	6880	4350	8810	3980	2720	2720	2420 B	1670 B	16
17	2180 B	1950 B	1990 B	4650 B	6680	4500	8520	4040	2730	2700	2330 B	1670 B	17
18	2140 B	1950 B	1990 B	5500 B	6360	4570	8520	4040	2730	2700	2230 B	1640 B	18
19	2120 B	1950 B	2000 B	6730 B	6180	4570	8450	4080	2730	2730	2130 B	1630 B	19
20	2120 B	1950 B	2010 B	8640 B	6050	4500	8450	4110	2780	2750	2050 B	1620 B	20
21	2140 B	1950 B	2010 B	10600 B	5870	4470	8300	4120	2680	2770	2008 B	1580 B	21
22	2140 B	1950 B	2010 B	13800 B	5760	4410	7760	4070	2660	2750	2078 B	1570 B	22
23	2170 B	1950 B	2010 B	16400 B	5700	4270	7490	3970	2660	2730	2038 B	1540 B	23
24	2170 B	1950 B	2030 B	17300 B	5560	4150	7310	3810	2650	2740	1910 B	1520 B	24
25	2170 B	1950 B	2030 B	17500 B	5500	4070	7230	3720	2660	2730	1910 B	1520 B	25
26	2180 B	1950 B	2030 B	17700 B	5400	4360	7120	3600	2650	2590 B	1910 B	1460 B	26
27	2170 B	1950 B	2030 B	17200	5310	4870	6920	3490	2620	2300 B	1878 B	1430 B	27
28	2170 B	1950 B	2030 B	16300	5230	5580	6720	3420	2610	2080 B	1880 B	1430 B	28
29	2140 B		2010 B	15400	5100	6230 A	6430	3350	2620	1960 B	2000 B	1440 B	29
30	2090 B		2000 B	14400	5020	6630	6160	3300	2610	1910 B	2180 B	1440 B	30
31	2070 B		2000 B		4930		5870	3230		1770 A		1440 B	31
TOTAL	69030	54900	61210	222280	238650	137220	285100	130250	85460	80200	59350	53600	TOTAL
MEAN	2230	1960	1970	7410	7700	4570	8550	4200	2850	2590	1960	1730	MEAN
AC-FT	137000	109000	121000	441000	473000	272000	526000	258000	170000	159000	118000	106000	AC-FT
MAX	2430	2050	2030	18400	13500	6630	11300	5620	3370	2770	2490	2180	MAX
MIN	2070	1950	1910	2080	4930	4070	5870	3230	2610	1770	1750	1430	MIN

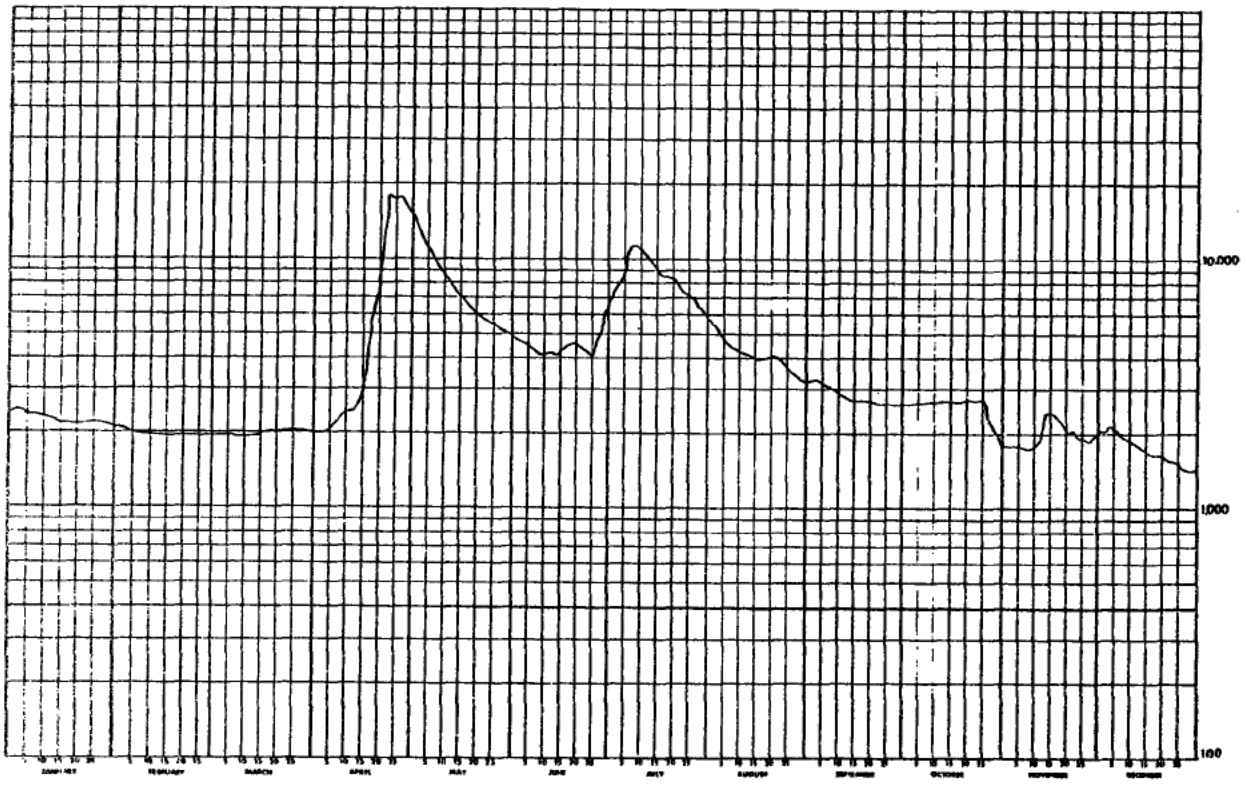
SUMMARY FOR THE YEAR 1971

MEAN DISCHARGE, 3990 CFS
TOTAL DISCHARGE, 2890000 AC-FT
MAXIMUM DAILY DISCHARGE, 18400 CFS ON APR 23
MINIMUM DAILY DISCHARGE, 1430 CFS ON DEC 27

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 50 N
LONG 111 15 00 W
DRAINAGE AREA 11800 SQ MILES

A-MANUAL GAUGE
B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA
JUL 15 1973 PAGE 256
CALGARY, ALTA.

CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1972

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1400 B	1260 B	1430 B	1840 B	16300 B	6310	4410	2940	1970	2590	2940 B	2390 B	1
2	1480 B	1270 B	1520 B	1820 B	23300 E	6070	4240	2870	1970	2690	2950 B	2380 B	2
3	1490 B	1260 B	1440 B	1790 B	22200 E	5920	4180	2830	1950	2820	3170 B	2350 B	3
4	1510 B	1270 B	1440 B	1740 B	20930 A	5750	4070	2790	1920	2900	3200 B	2350 B	4
5	1510 B	1260 B	1430 B	1730 B	18600 A	5550	3970	2750	1920	3000	2860 B	2360 B	5
6	1540 B	1280 B	1400 B	1690 B	18600	5430	3900	2730	1940	3120	2720 B	2340 B	6
7	1540 B	1290 B	1420 B	1580 B	16300	5250	3880	2730	1920	3200	2310 B	2310 B	7
8	1550 B	1290 B	1400 B	1610 B	17700	5110	3860	2690	1910	3240	2040 B	2250 B	8
9	1550 B	1240 B	1420 B	1600 B	17300	4960	3910	2820	1910	3450	2210 B	2140 B	9
10	1550 B	1220 B	1430 B	1660 B	16200	4800	3970	2810	1900	3560	2560 B	2100 B	10
11	1560 B	1210 B	1420 B	1640 B	15320	4660	4120	2740	1880	3550	2660 B	2050 B	11
12	1540 B	1200 B	1440 B	1860 B	14500	4570	4140	2690	1870	3550	2660 B	2080 B	12
13	1510 B	1240 B	1440 B	1660 B	13700	4630	4180	2660	1860	3560	2690 B	2080 B	13
14	1510 B	1240 B	1440 B	1670 B	13100	4570	4200	2640	1860	3630	2660 B	2050 B	14
15	1510 B	1240 B	1450 B	1680 B	12490	4530	4120	2610	1870	3660	2590 B	1990 B	15
16	1510 B	1250 B	1450 B	1670 B	11800	4420	4080	2600	1920	3660	2380 B	1920 B	16
17	1510 B	1270 B	1460 B	1670 B	11300	4470	4020	2550	1960	3410	2230 B	1900 B	17
18	1510 B	1230 B	1510 B	1640 B	10800	4530	3970	2530	1950	3140	2470 B	1860 B	18
19	1510 E	1270 B	1560 B	1670 B	10320	4650	3880	2440	2000	3040	2700 B	1830 B	19
20	1510 B	1300 B	1580 B	1690 B	10000	4930	3790	2400	2100	3140	2690 B	1840 B	20
21	1500 B	1320 B	1620 B	1740 B	9660	5400	3700	2340	2200	3080	2620 B	1840 B	21
22	1490 B	1320 B	1650 B	1810 B	9430	5550	3620	2300	2330	3340	2570 B	1830 B	22
23	1490 E	1330 B	1080 B	2220 B	9380	5860	3530	2270	2390	3450	2560 B	1840 B	23
24	1480 E	1330 B	1720 B	3880 B	8660	5700	3460	2230	2390	3420	2590 B	1810 B	24
25	1490 B	1340 B	1730 B	4190 B	8240	5460	3390	2230	2400	3520	2650 B	1780 B	25
26	1430 E	1390 B	1770 B	4180 B	7870	5280	3300	2220	2420	3410	2640 B	1740 B	26
27	1410 E	1390 B	1790 B	4480 B	7540	5150	3200	2100	2430	3180 B	2690 B	1730 B	27
28	1360 E	1430 B	1810 B	4740 B	7240	5010	3200	2040	2440	2780 B	2560 B	1720 B	28
29	1330 E	1430 B	1830 B	6430 B	6950	4860	3120	2040	2460	2860 B	2440 B	1700 B	29
30	1310 B		1830 B	8770 B	6690	4710	3050	2010	2490	2520 B	2460 B	1690 B	30
31	1300 E		1830 B		6430		2960	2000		2620 B		1690 B	31
TOTAL	47050	37340	48340	76210	399550	154130	117460	77580	62530	99110	78500	61970	TOTAL
MEAN	1440	1290	1560	2540	12930	5140	3790	2580	2080	3200	2620	2000	MEAN
AC-FT	93300	74030	95900	151100	793000	306000	233000	154000	124000	197000	156000	123000	AC-FT
MAX	1590	1430	1830	8770	23300	6310	4410	2940	2490	3660	3200	2390	MAX
MIN	1300	1200	1400	1560	6430	4420	2960	2000	1860	2520	2040	1690	MIN

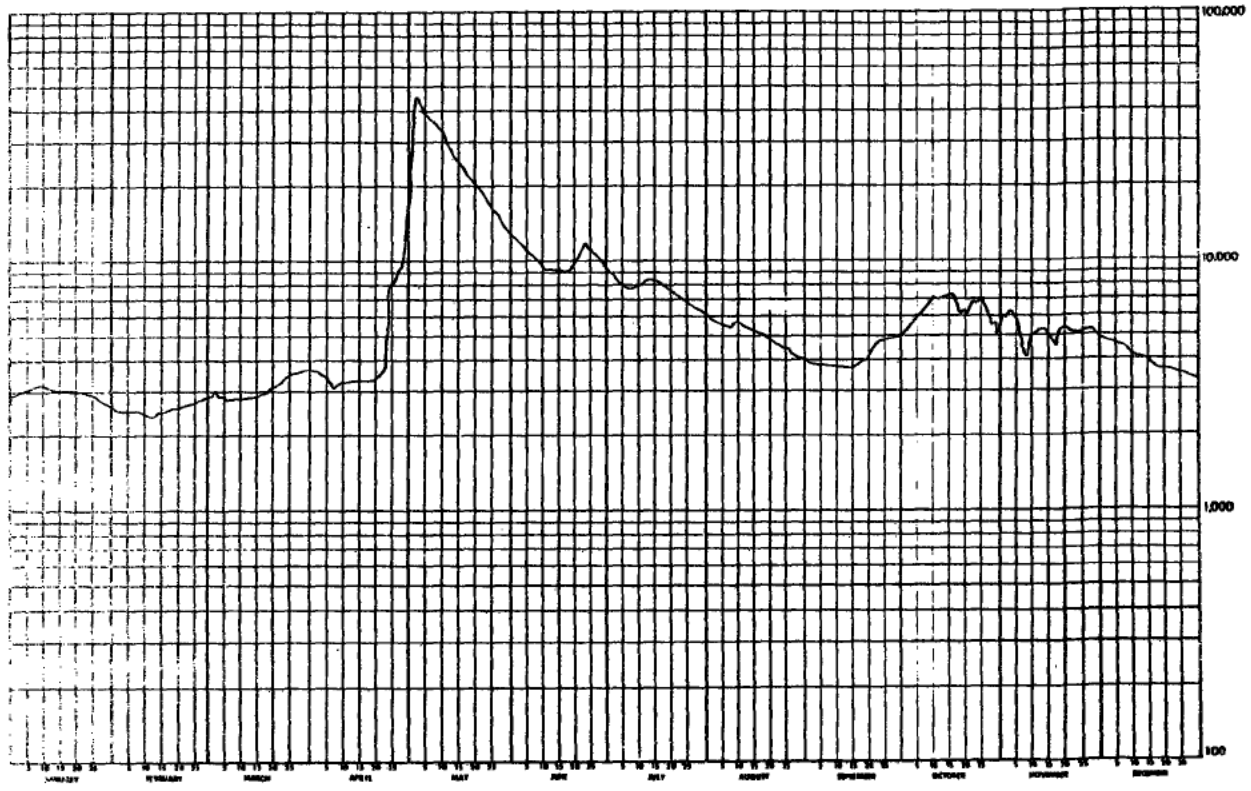
SUMMARY FOR THE YEAR 1972

MEAN DISCHARGE, 3440 CFS
TOTAL DISCHARGE, 2506000 AC-FT
MAXIMUM DAILY DISCHARGE, 23300 CFS ON MAY 2
MINIMUM DAILY DISCHARGE, 1200 CFS ON FEB 12

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 50 N
LONG 111 15 00 W
DRAINAGE AREA 11000 SQ MILES

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA
MAY 15 1976 PAGE 276
CALGARY, ALTA.

CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1973

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1670 B	1840 B	1640 B	1970 B	5760	5140	7720	6070	8200	6110	6750	3960 B	1
2	1750 B	1840 B	1640 B	2040 B	5780	5950	7360	5860	8050	6070	6600	3820 B	2
3	1730 B	1840 B	1640 B	2140 B	5810	7150	7060	5780	7920	6130	7220	3840 B	3
4	1710 B	1840 B	1660 B	2220 B	5790	8030	6800	5710	7810	6140	7380 B	3840 B	4
5	1700 B	1840 B	1670 B	2360 B	5780	8430	6580	6150	7740	6110	7000 B	3800 B	5
6	1670 B	1840 B	1680 B	2470 B	5750	8390	6650	10000	7490	8090	6700 B	3770 B	6
7	1670 B	1840 B	1680 B	2510 B	5680	8320	6580	19200	7360	8030	6400 B	3730 B	7
8	1660 B	1830 B	1700 B	2560 B	5620	8830	6490	20200	7230	8810	6110 B	3690 B	8
9	1670 B	1860 B	1720 B	2620 B	5590	9650	6320	19300	7040	9470	5870 B	3650 B	9
10	1670 B	1840 B	1730 B	2720 B	5490	10300	6210	18700	6870	9930	5630 B	3610 B	10
11	1660 B	1830 B	1730 B	2850 B	5530	10400	6260	18700	6770	10100	5480 B	3580 B	11
12	1660 B	1810 B	1740 B	3200 B	5620	10300	6600	18500	6920	10000	5300 B	3540 B	12
13	1660 B	1770 B	1750 B	3620 B	5830	9990	7360	17900	7760	9930	5160 B	3500 B	13
14	1660 B	1750 B	1750 B	3900 B	5910	9550	8390	16900	9230	9830	5020 B	3460 B	14
15	1670 B	1740 B	1750 B	4030 B	5910	9610	8130	15900	10400	9610	4900 B	3420 B	15
16	1690 B	1730 B	1750 B	4450 B	5830	10300	8160	14600	11100	9340	4790 B	3390 B	16
17	1700 B	1670 B	1750 B	5200 B	5710	11300	8180	13700	11100	9170	4690 B	3350 B	17
18	1700 B	1670 B	1750 B	5970 B	5610	12300	8140	12600	10700	9040	4590 B	3310 B	18
19	1720 B	1670 B	1750 B	6290 B	5490	12800	8010	11600	10300	8870	4500 B	3270 B	19
20	1720 B	1670 B	1750 B	6380	5410	12600	7760	10900	9890	8650	4410 B	3230 B	20
21	1720 B	1670 B	1750 B	6770	5470	12200	7530	10300	9590	8430	4340 B	3200 B	21
22	1720 B	1640 B	1750 B	6780	5470	11800	7240	9660	9300	8330	4300 B	3160 B	22
23	1730 B	1690 B	1750 B	6780	5460	11400	7160	9230	9000	8240	4260 B	3120 B	23
24	1740 B	1690 B	1750 B	6230	5340	10900	7110	8850	8900	8140	4220 B	3060 B	24
25	1750 B	1630 B	1770 B	6180	5220	10400	6990	8600	8830	8180	4160 B	3040 B	25
26	1750 B	1690 B	1780 B	5990	5100	9970	6820	8520	8680	8200	4150 B	3010 B	26
27	1790 B	1640 B	1740 B	5890	4980	9570	6650	8620	8510	8280	4110 B	2970 B	27
28	1810 B	1640 B	1840 B	5890	4890	9040	6530	8600	8330	8240	4070 B	2930 B	28
29	1910 B		1840 B	5860	4870	8560	6460	8490	8180	8280	4030 B	2890 B	29
30	1870 B		1850 B	5830	4810	8090	6360	8370	8050	8430	3990 B	2850 B	30
31	1830 B		1940 B		4800		6180	8300		8640		2820 B	31
TOTAL	53140	49110	54060	131650	170310	291340	219870	367770	257240	270860	160670	104370	TOTAL
MEAN	1710	1750	1740	4390	5490	9710	7090	11900	8570	8740	5360	3390	MEAN
AC-FT	105000	97400	107000	261000	338000	578000	436000	729000	510000	537000	319000	207000	AC-FT
MAX	1910	1860	1940	6780	5910	12800	8390	20200	11100	10100	8750	3960	MAX
MIN	1630	1640	1640	1970	4800	5140	6180	5710	6770	8070	3990	2820	MIN

SUMMARY FOR THE YEAR 1973

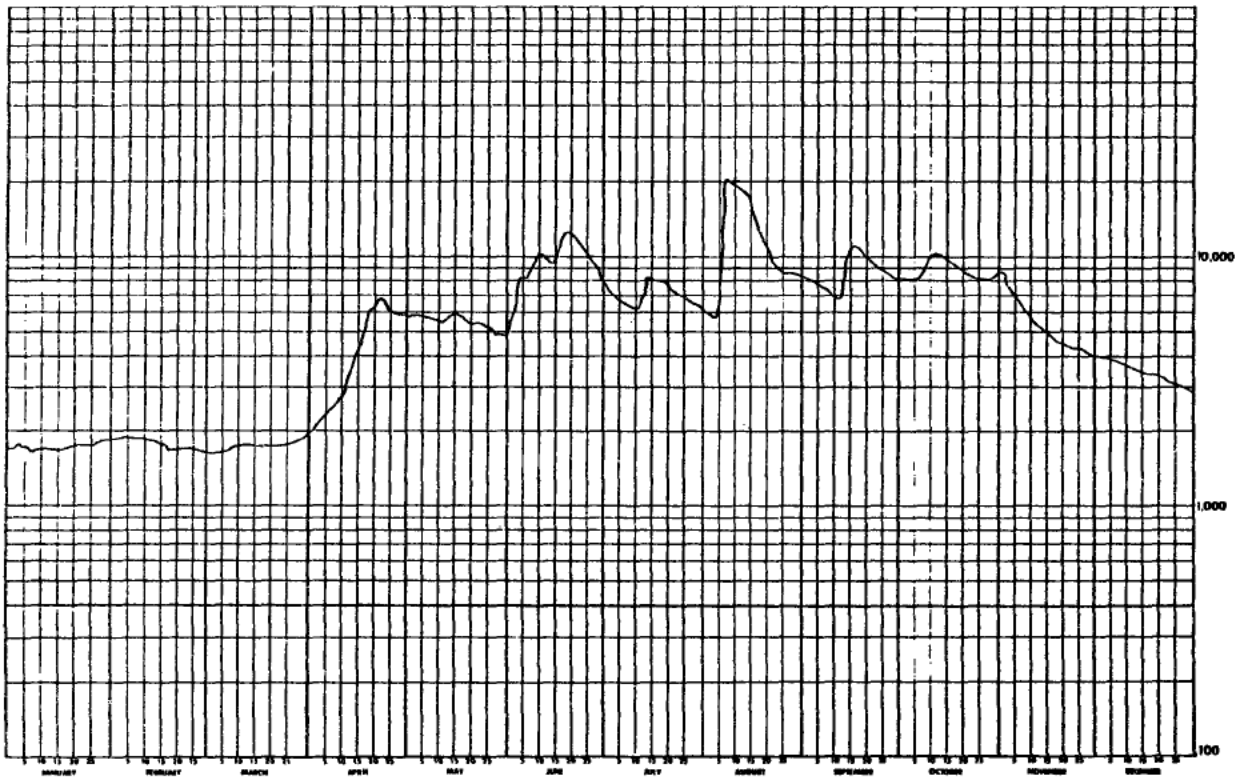
MEAN DISCHARGE, 5840 CFS
TOTAL DISCHARGE, 4230000 AC-FT
MAXIMUM DAILY DISCHARGE, 20200 CFS ON AUG 8
MINIMUM DAILY DISCHARGE, 1630 CFS ON JAN 7

MAXIMUM INSTANTANEOUS DISCHARGE
20500 CFS AT 0100 MST ON AUG 8

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 50 N
LONG 111 15 00 W
DRAINAGE AREA 11800 SQ MILES

B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA
JUL 14 1975 PAGE 295
CALGARY, ALTA.

CLEARWATER RIVER AT DRASER — STATION NO. 07CD001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1974

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2740 B	2430 A	1970 A	2090 A	27700 E	17800	7030	4590	6120	5170	4510	3340 B	1
2	2670 B	2470 A	1970 A	2080 A	26700 E	17600	6910	4750	6250	5170	4460	3350 B	2
3	2620 B	2460 A	1960 A	2090 A	24700	16700	6770	4840	6140	5150	4410	3420 B	3
4	2600 B	2460 A	1960 A	2040 A	23100	14700	6640	4980	6070	5050	4400	3470 B	4
5	2560 B	2460 B	1970 B	2110 A	21900	13400	6640	4840	5910	4980	4320	3440 B	5
6	2580 B	2470 A	1960 B	2130 A	20300	14400	6610	4640	5830	4910	4330	3440 B	6
7	2610 B	2410 A	1990 A	2160 B	19300	14600	6910	4740	5730	4850	4320 A	3220 B	7
8	2720 B	2440 A	1950 B	2200 A	19510	14100	6830	7910	5690	4910	4200 B	3170 B	8
9	2720 B	2470 A	2000 A	2270 A	19400	13500	6490	7610	5650	4960	4210 A	3200 B	9
10	2770 B	2470 A	2100 B	2390 A	19300	13000	7160	7330	5640	5010	4090 A	3030 B	10
11	2750 B	2440 A	2070 A	2550 A	19800	12600	7440	7110	5600	4950	4070 B	2920 A	11
12	2740 B	2440 A	2010 A	2760 A	19500	12400	8230	6870	5580	4930	3970 A	3020 B	12
13	2740 B	2440 A	2310 B	2960 A	19200	12000	9110	6640	5610	4900	3890 A	3140 B	13
14	2710 B	2360 B	2310 B	3100 A	18700	11600	10200	6580	5430	4840	3760 A	3170 B	14
15	2710 B	2310 B	2020 B	3300 A	18100	11200	11300	6310	5590	4840	3930 A	3070 B	15
16	2560 B	2350 A	2120 A	4690 A	17500	10800	12200	6150	5570	4850	3920 A	3000 B	16
17	2610 B	2130 A	2120 B	6580 B	16900	10400	12900	6070	5540	4360	3920 A	3010 A	17
18	2560 B	2140 B	2370 A	8600 B	16100	9940	13200	5950	5510	4490	3910 A	3010 B	18
19	2660 B	2030 B	2210 B	14100 A	15500	9540	13500	5840	5480	4940	3910 A	2840 B	19
20	2560 B	2140 B	2370 A	16000 A	14900	9130	13600	5720	5420	4960	3900 A	2810 B	20
21	2610 B	2010 B	2340 B	19000 A	14100	8770	13400	5720	5400	4940	3900 B	2730 B	21
22	2610 B	1930 B	2060 B	21200 A	13500	8410	12900	5690	5340	4840	3890 A	2660 B	22
23	2600 B	1830 A	2060 A	22800 A	12900	8120	12500	5670	5350	4850	3570 A	2610 B	23
24	2560 B	1930 B	2060 B	23500 A	12300	9220	11900	5770	5330	4800	1960 B	2600 B	24
25	2510 B	1940 B	2030 B	23000 A	11800	7910	11300	5990	5270	4750	2260 B	2690 B	25
26	2560 B	1940 A	2060 A	23500 A	11400	7670	10700	6290	5330	4710	2690 B	2770 A	26
27	2610 B	1930 B	2070 A	24500 B	11200	7440	10100	6310	5160	4650	2670 B	2730 B	27
28	2610 B	1940 B	2100 B	24600 B	11100	7340	9510	6340	5140	4590	2650 B	2760 B	28
29	2620 B		2360 B	26900 A	11500	7430	8920	6370	5320	4550	2620 B	2700 B	29
30	2511 B		2060 A	27910 E	12100	7240	8390	6350	5240	4540	2920 B	2640 B	30
31	2510 B		2040 B		12600		8220	6310		4520		2590 B	31
TOTAL	83131	67450	62710	326140	534000	328640	298040	213120	168120	150870	111350	92710	TOTAL
MEAN	2649	2359	2020	10500	17200	11000	9610	6870	5600	4870	3710	2990	MEAN
AC-FT	164900	133800	124400	647000	1060000	652000	591000	423000	333000	299000	221000	184000	AC-FT
MAX	2770	2470	2120	27900	27700	14400	13600	7840	6320	5170	4510	3480	MAX
MIN	2510	1930	1930	2080	11100	7240	6640	5670	5240	4520	1960	2590	MIN

SUMMARY FOR THE YEAR 1974

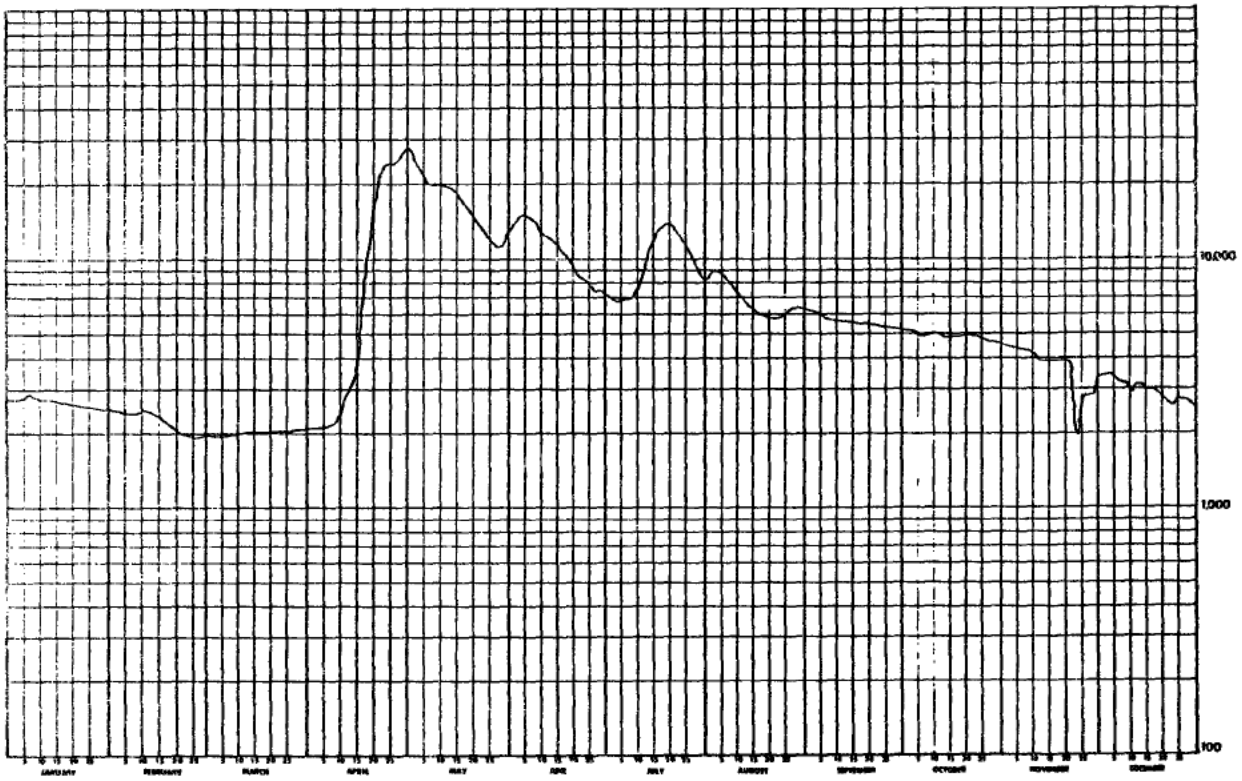
MEAN DISCHARGE, 6660 CFS

TOTAL DISCHARGE, 4820900 AC-FT
MAXIMUM DAILY DISCHARGE, 27900 CFS ON APR 30
MINIMUM DAILY DISCHARGE, 1640 CFS ON FEB 25

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 50 N
LONG 111 15 00 W
DRAINAGE AREA 11800 SQ MILES

B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA
JUN 02 1976 PAGE 131
CALGARY, ALTA.

CLEARWATER RIVER AT DRAPER — STATION NO. 07CD001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	2410 B	2500 B	2300 B	2100 B	11300 E	9020	9680	11300	10300	8240	6520	3010 B	1
2	2400 A	2500 B	2250 B	2100 B	11000 E	8710	9970	10900	10500	8280	6200	2900 B	2
3	2410 B	2500 B	2250 B	2150 B	11000 E	8400	10100	10700	11000	8230	6130	2900 B	3
4	2500 B	2500 B	2250 B	2150 B	11000 E	8230	10200	10700	11400	8200	5970	2750 B	4
5	2600 B	2500 B	2250 B	2150 B	11000 E	8250	10300	10800	11600	8080	5800 B	2650 B	5
6	2600 B	2500 B	2250 B	2150 B	10500 E	8400	10200	11200	11950	8170	5700 B	2600 B	6
7	2610 B	2450 B	2250 B	2150 B	10500 E	8480	10000	11100	12000	8590	5600 B	2650 B	7
8	2610 B	2450 B	2200 B	2150 B	10500 E	8490	9790	10900	12000	8700	5400 B	2550 B	8
9	2600 B	2450 B	2200 B	2150 B	11000 E	8650	9450	10700	11800	8710	5300 B	2600 B	9
10	2600 B	2450 B	2200 B	2150 B	11400 E	8680	9080	10400	11600	9650	5200 B	2600 B	10
11	2600 B	2450 B	2200 B	2200 B	11500 E	8770	8610	10100	11300	8660	5100 B	2650 B	11
12	2600 B	2450 B	2200 B	2300 B	11700 E	8790	8140	9840	11100	8630	5000 B	2700 B	12
13	2600 B	2400 B	2150 B	2400 B	11400 E	8740	7720	9670	10800	8570	4900 B	2800 B	13
14	2600 B	2400 B	2150 B	2600 B	11400 E	8690	8210	9360	10400	8490	4800 B	2900 B	14
15	2600 B	2400 B	2150 B	2900 B	12000 E	8650	10300	9050	10100	8380	4700 B	3000 B	15
16	2600 B	2400 B	2150 B	3130 B	11600 E	8600	11500	8740	9780	8240	4600 B	3100 B	16
17	2600 B	2400 B	2150 B	3300 B	11300 E	8530	13900	8470	9440	8130	4500 B	3230 B	17
18	2600 B	2350 B	2150 B	3600 B	11000 E	8470	15500	8330 A	9050	8040	4400 B	3300 B	18
19	2600 B	2350 B	2150 B	3900 B	10500 E	8440	15900	7850 A	8730	7960	4400 B	3430 B	19
20	2600 B	2350 B	2150 B	4400 B	9800 E	8190	15700	7580	8430	7880	4300 B	3450 B	20
21	2600 B	2350 B	2150 B	4400 B	9000 E	7980	15200	7360	8160	7860	4300 B	3500 B	21
22	2600 B	2350 B	2150 B	5200 B	8030 E	7750	14900	7230	7920	7790	4200 B	3500 B	22
23	2550 B	2350 B	2150 B	5600 B	8400 E	7530	14500	7540	7710	7700	4100 B	3550 B	23
24	2500 B	2300 B	2150 B	6800 B	9000 E	7470	13900	8170	7490	7610	4100 B	3550 B	24
25	2550 B	2300 B	2150 B	7500 B	10000 E	7360	13200	8790	7330	7440	4000 B	3550 B	25
26	2600 B	2300 B	2100 B	8000 B	10000 E	7270	12500	9100	7490	7300	4000 B	3500 B	26
27	2550 B	2300 B	2100 B	9000 B	10000 E	7250	11700	9170	7560	7150	3900 B	3500 B	27
28	2550 B	2300 B	2100 B	10000 B	10000 E	7400	11800	9090	7590	6910	3800 B	3500 B	28
29	2500 B		2100 B	11000 B	9700 A	8340	11900	9150	7920	6490	3400 B	3500 B	29
30	2500 B		2100 B	10400 A	9550	9170	11900	9360	8120	6630	3200 B	3500 B	30
31	2550 B		2100 B		9310		11700	9890		6520		3450 B	31
TOTAL	79150	67300	67350	129400	324960	248650	357450	292510	290530	246230	143100	96110	TOTAL
MEAN	2550	2400	2170	4310	10500	8290	11500	9440	9680	7940	4770	3100	MEAN
AC-FT	157000	133500	134000	257000	645000	493000	709000	580000	576000	488000	284000	191000	AC-FT
MAX	2610	2500	2300	11000	12000	9170	15900	11300	12000	8710	6520	3550	MAX
MIN	2500	2300	2100	2100	8000	7250	7720	7230	7330	6490	3200	2550	MIN

SUMMARY FOR THE YEAR 1975

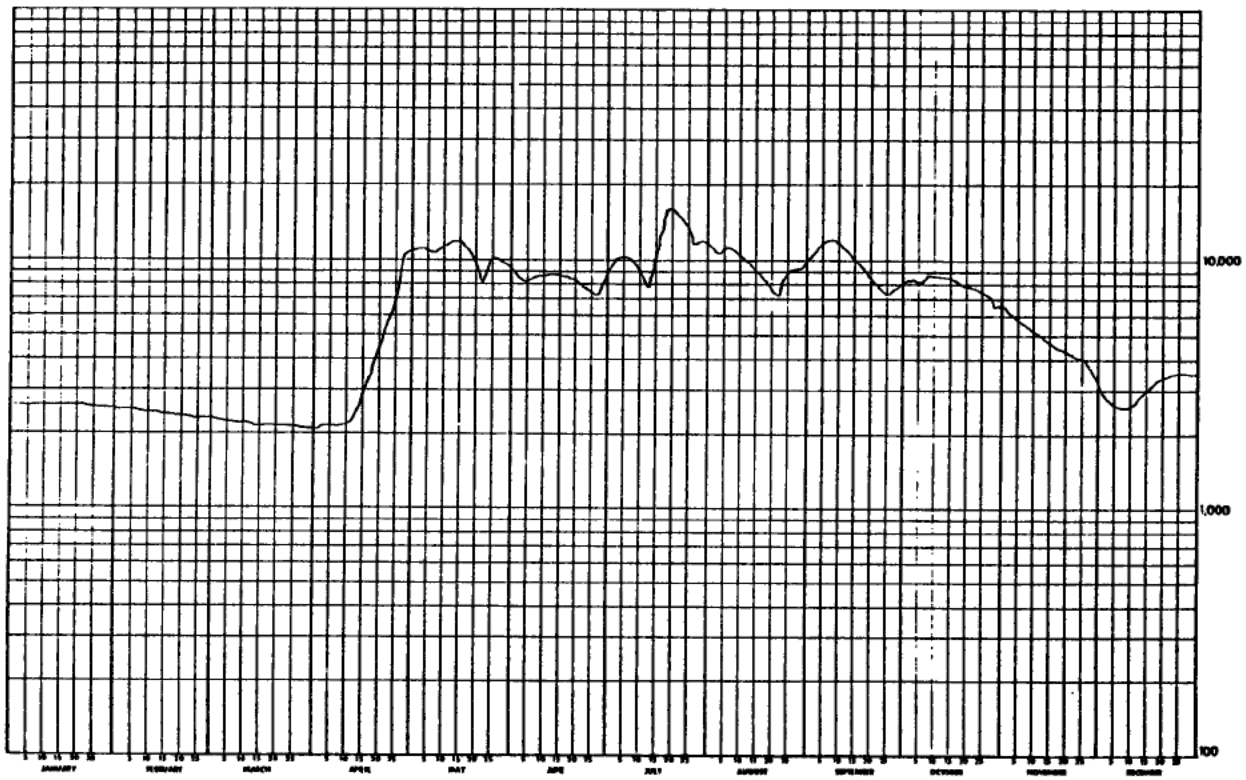
MEAN DISCHARGE, 6420 CFS
TOTAL DISCHARGE, 4651000 AC-FT
MAXIMUM DAILY DISCHARGE, 15900 CFS ON JUL 19
MINIMUM DAILY DISCHARGE, 2100 CFS ON MAR 26

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 40 58 N
LONG 111 15 00 W
DRAINAGE AREA 11800 SQ MILES

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW

MAXIMUM INSTANTANEOUS DISCHARGE
15900 CFS AT 1200 MST ON JUL 19



WATER SURVEY OF CANADA
DEC 15 1977 PAGE 9
CALGARY, ALTA.

CLEARWATER RIVER AT DRAPER

STATION NO. 07CD001

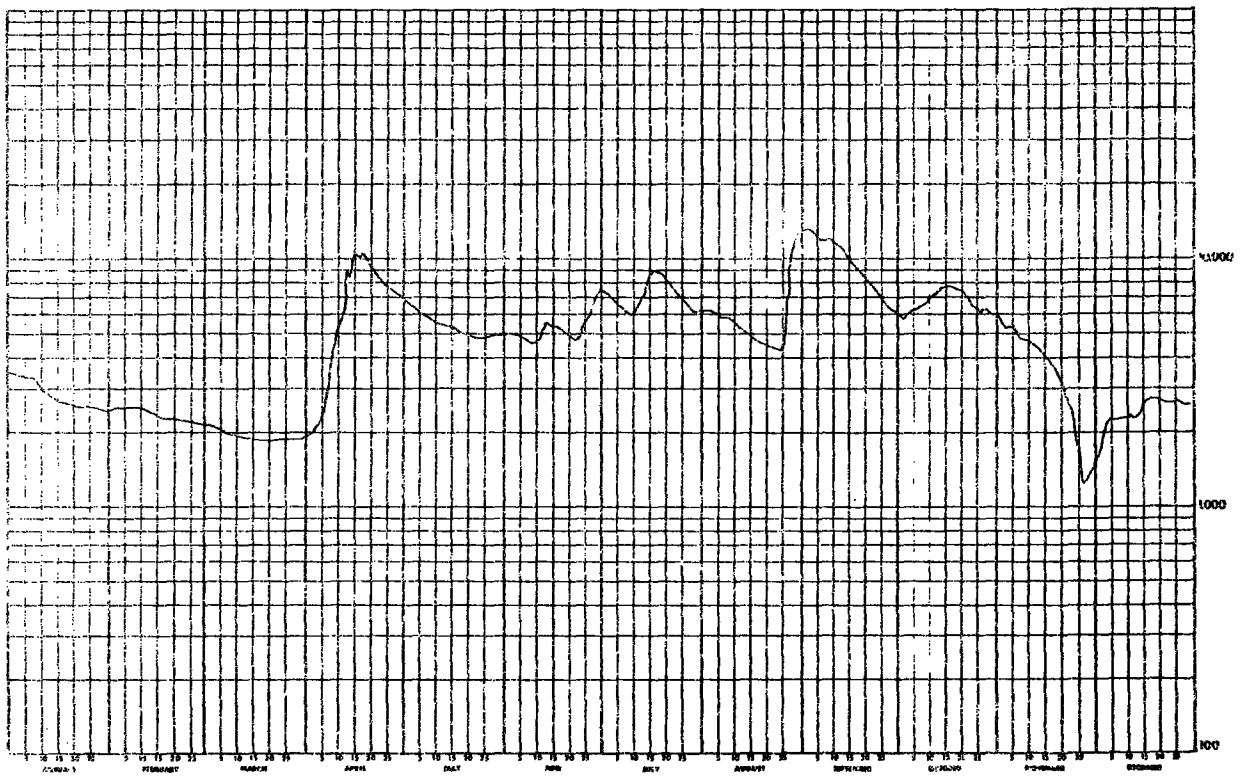
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	3500 B	2470 B	2120 B	1980 B	6790	5030	7350	6190	13100	5810	5550	1560 B	1
2	3480 B	2520 B	2090 B	2000 B	6590	4980	7220	6190	13100	5680	5440	1790 B	2
3	3450 B	2520 B	2070 B	2050 B	6430	4940	7030	6150	12900	5890	5210	2120 B	3
4	3410 B	2510 B	2050 B	2140 B	6260	4860	6840	6030	12500	6080	5380	2230 B	4
5	3360 B	2510 B	2090 B	2250 B	6100	4790	6680	5840	12100	6190	5240	2230 B	5
6	3320 B	2500 B	1980 B	2470 B	5910	4730	6430	5690	11800	6270	5100	2260 B	6
7	3280 B	2500 B	1950 B	2920 B	5750	4650	6240	5800	11900	6340	4780	2290 B	7
8	3300 B	2510 B	1940 B	3630 B	5620	4590	6050	5770	12000	6530	4660	2280 B	8
9	3050 B	2500 B	1940 B	4280 B	5530	4670	5860	5570	11900	6730	4740	2260 B	9
10	2970 B	2480 M	1920 B	4830 B	5410	4680	5930	5380	11600	6940	4730	2280 B	10
11	2920 B	2450 M	1900 B	5500 B	5350	4790	6210	5210	11300	7120	4600 B	2310 B	11
12	2850 B	2420 B	1890 B	5950 B	5270	5450	6440	5040	10900	7230	4450 B	2280 B	12
13	2800 B	2390 B	1690 B	8870 B	5270	5520	7070	4940	10500	7300	4350 B	2350 B	13
14	2740 B	2360 B	1890 B	8360 B	5310	5400 A	7880	4920	10200	7540	4250 B	2500 M	14
15	2650 B	2330 B	1870 B	9900 B	5240	5350 E	8290	4830	9910	7690	4000 M	2570 B	15
16	2650 B	2270 B	1850 B	10500 B	5180	5310 A	8580	4740	9550	7740	3900 B	2650 B	16
17	2640 M	2260 M	1870 B	10100 B	5120	5270	8710	4640	9200	7720	3750 B	2740 M	17
18	2620 M	2260 B	1880 B	10500 B	5010	5140	8770	4580	8830	7620	3600 B	2710 B	18
19	2600 B	2240 B	1870 B	9880 B	4910	4970	8530	4520	8460	7540	3300 B	2720 B	19
20	2570 B	2240 B	1850 M	9770	4840	4820	8190	4470	8110	7440	3100 B	2690 B	20
21	2540 B	2230 B	1870 B	9170	4800	4710	7870	4430	7790	7360	2850 B	2670 B	21
22	2560 M	2230 B	1880 B	8390	4780	4670	7590	4380	7480	6730	2600 B	2680 B	22
23	2540 B	2230 B	1860 B	8140	4740	4800	7280	4370	7180	6350	2170 B	2670 B	23
24	2530 B	2210 B	1850 B	7960	4760	5240	7010	4340	6930	6350	1920 B	2670 B	24
25	2510 B	2200 B	1900 B	7690	4770	5470	6720	4380	6710	6320	1650 B	2660 B	25
26	2500 B	2180 B	1890 B	7500	4800	5720	6430	5170	6490	5890	1240 B	2670 B	26
27	2480 B	2170 B	1880 B	7370	4850	6170	6200	9840	6330	6290	1270 B	2620 M	27
28	2480 B	2170 B	1890 B	7260	4890	6700	6030	11400	6180	6140	1390 B	2600 M	28
29	2470 B	2150 B	1880 B	7150	4940	7190	5970	12100	6080	5990	1420 B	2560 B	29
30	2450 M		1890 B	7000	4940	7380	6060	12400	5940	5980	1460 B	2570 B	30
31	2450 B		1940 B		5010		6150	12900		6010		2570 B	31
TOTAL	87660	67970	59620	195380	165170	157990	217610	192210	286970	206660	108100	75780	TOTAL
MEAN	2830	2340	1920	6510	5330	5270	7020	6200	9570	6670	3603	2440	MEAN
AC-FT	174000	135000	118000	388000	328000	313000	432000	381000	569000	410000	214000	150000	AC-FT
MAX	3500	2520	2120	10500	6790	7380	8770	12900	13100	7740	5550	2740	MAX
MIN	2450	2130	1850	1980	4740	4590	5860	4340	5940	5680	1240	1560	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 4980 CFS
TOTAL DISCHARGE, 3610000 AC-FT
MAXIMUM DAILY DISCHARGE, 13100 CFS ON SEP 1
MINIMUM DAILY DISCHARGE, 1240 CFS ON NOV 26

MAXIMUM INSTANTANEOUS DISCHARGE, 13500 CFS AT 1110 MST ON SEP 1

A=MANUAL GAUGE
B=ICE CONDITIONS
E=ESTIMATED



5.12 DOVER RIVER NEAR THE MOUTH

STATION NAME: Dover River near the Mouth

STATION NUMBER: 07DB002

LOCATION: Latitude: 57°10'12" Longitude: 111°47'38"

SW24-94-12-W4

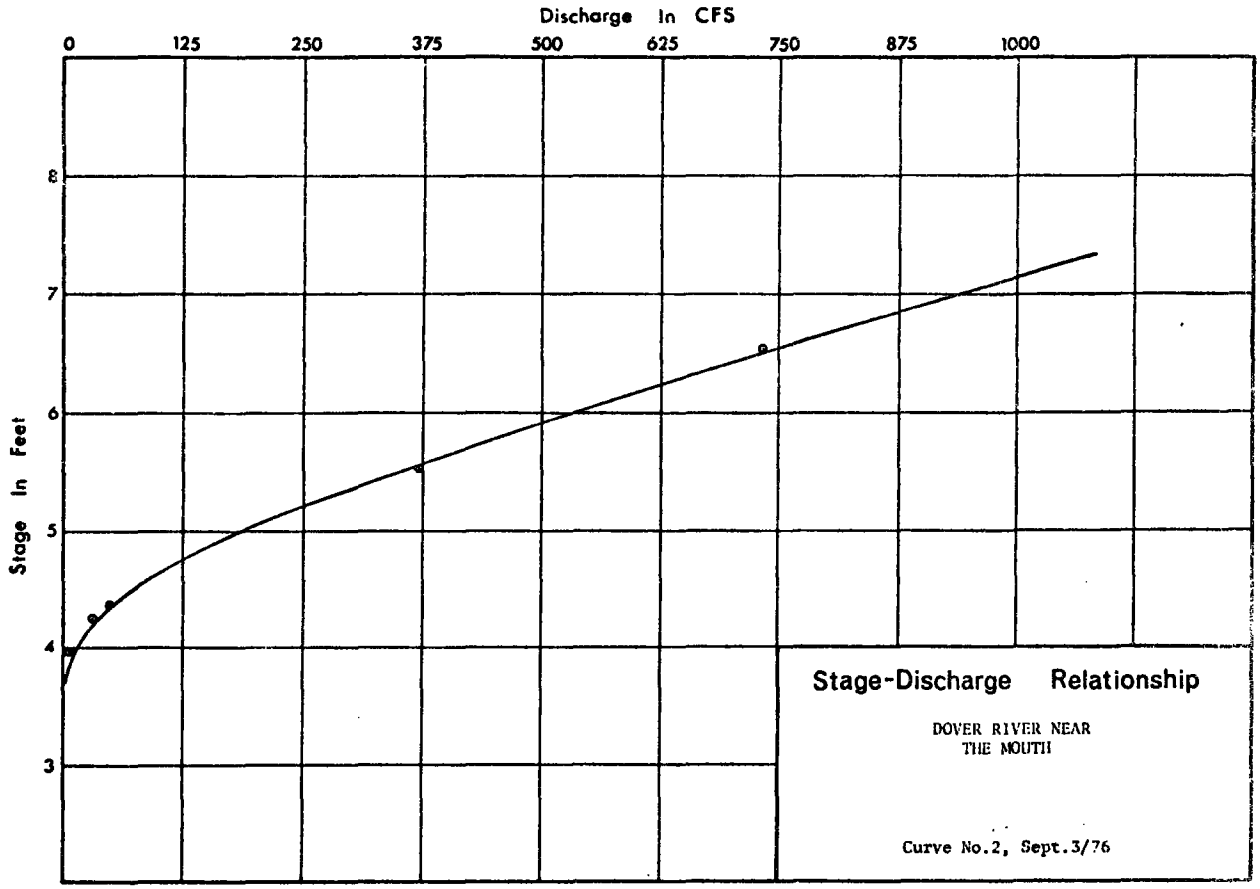
DRAINAGE AREA: 369 square miles (956 km^2)

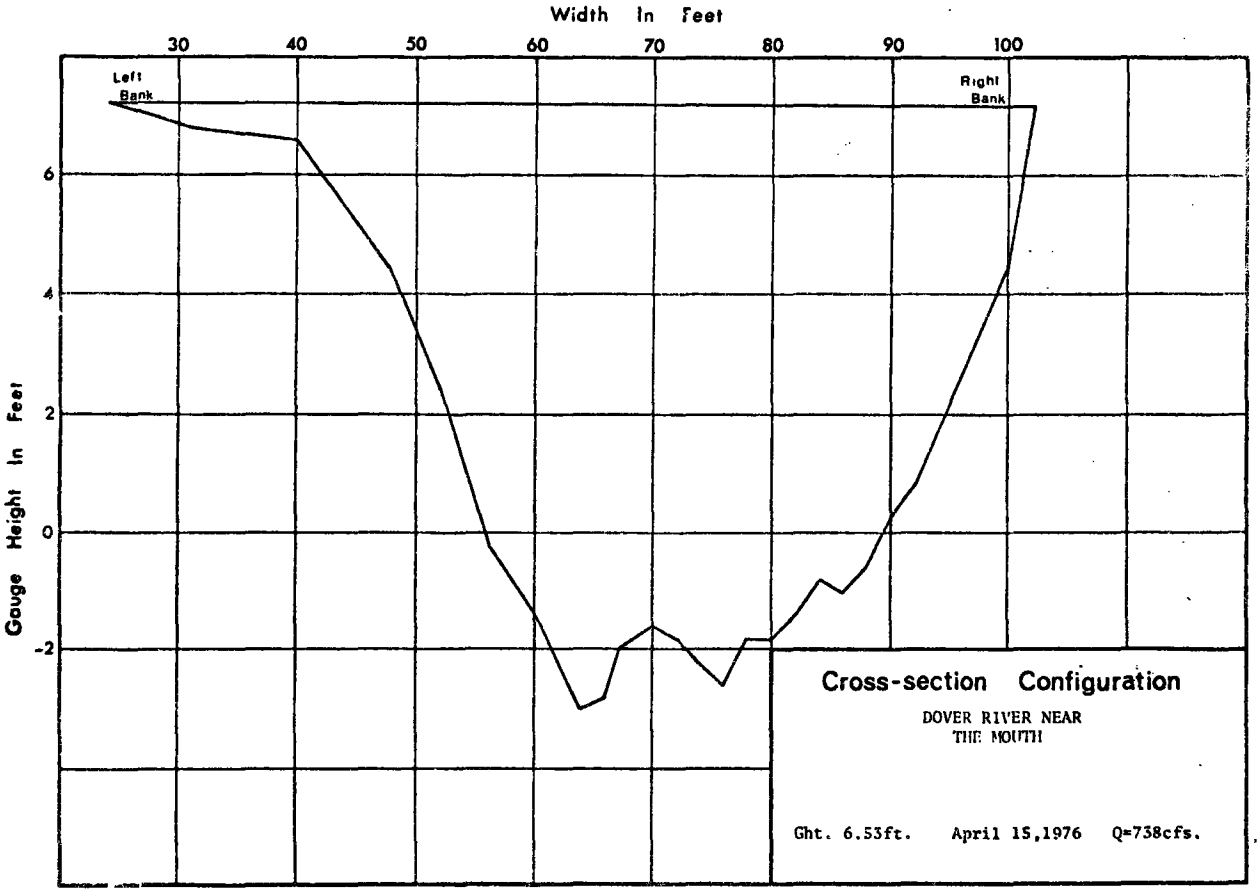
PERIOD OF RECORD: The station was established July 15, 1975. Continuous discharge data is available to December,1976 with the exception of about one month in 1976 when the equipment malfunctioned. Reliable discharge estimates could not be made for this period of missing record.

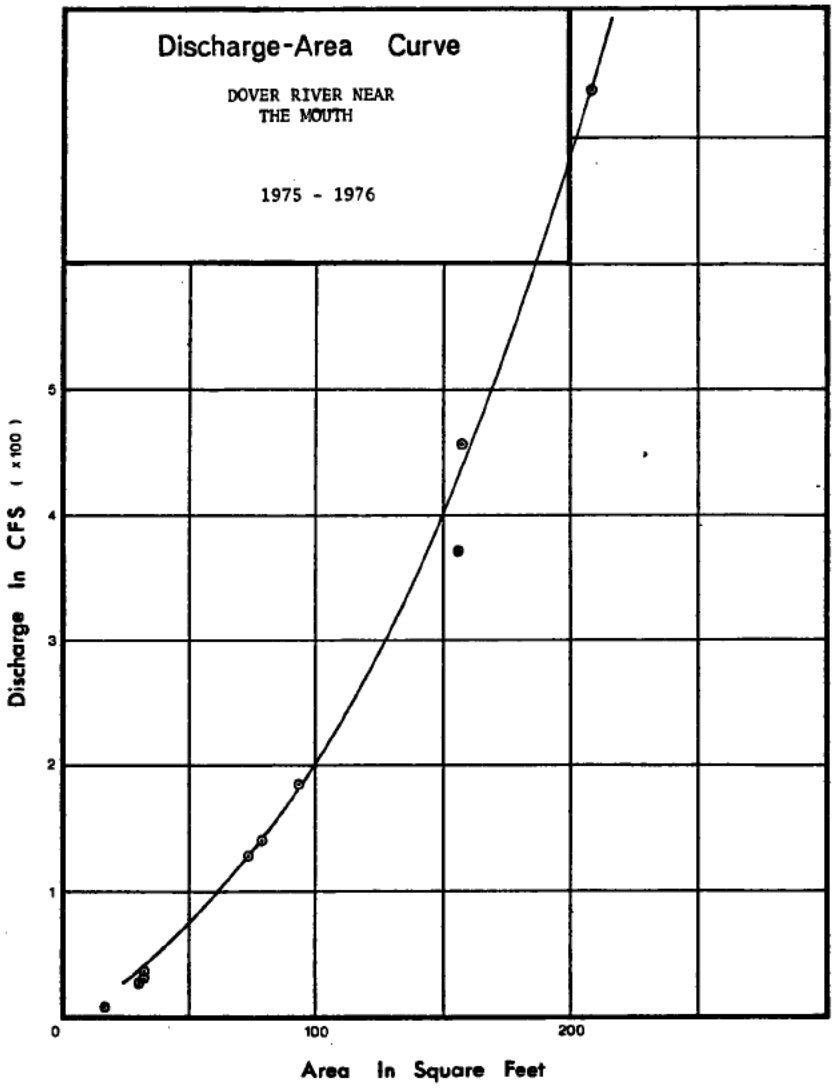
SITE DESCRIPTION:

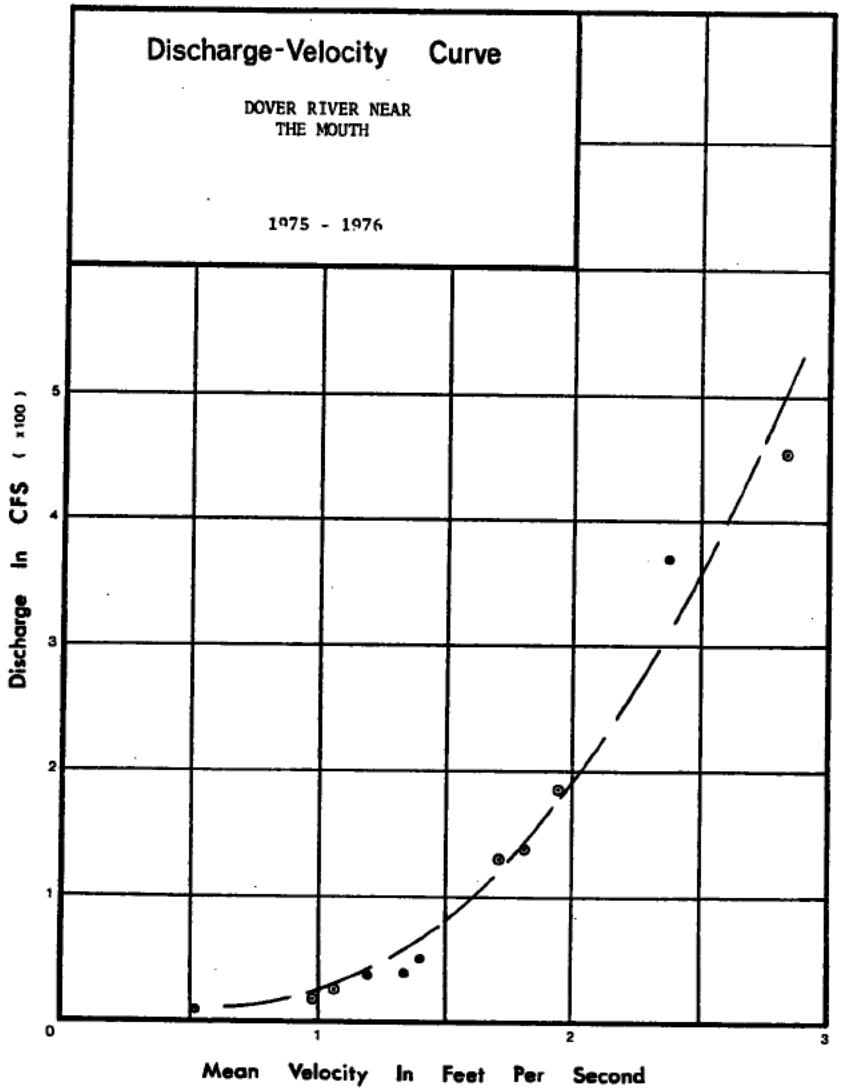
The gauge is located on the right bank approximately two miles (3.2 km) above its confluence with the MacKay River and about six air miles (10 km) west of Ft. MacKay. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water discharge measurements are made by wading near the gauge or from the cableway immediately below the gauge.

GENERAL:


Discharge In CFS
0
125
250
375
500
625
750
875
1000
Stage In Feet
8
7
6
5
4
3
Stage-Discharge Relationship
DOVER RIVER NEAR
THE MOUTH
Curve No.2, Sept.3/76


Width In Feet
30
40
50
60
70
80
90
100
Left Bank
Right Bank
Gauge Height In Feet
6
4
2
0
-2
Cross-section Configuration
DOVER RIVER NEAR
THE MOUTH
Ght. 6.53ft. April 15,1976 Q=738cfs.


Discharge-Area Curve
DOVER RIVER NEAR
THE MOUTH
1975 - 1976
Discharge In CFS (x100)
0
1
2
3
4
5
100
200
Area In Square Feet


Discharge-Velocity Curve
DOVER RIVER NEAR
THE MOUTH
1975 - 1976
Discharge In CFS (x100)
0
1
2
3
4
5
1
2
3
Mean Velocity In Feet Per Second

WATER SURVEY OF CANADA
MAY 14 1976 PAGE 297
CALGARY, ALTA.

DOVER RIVER NEAR THE MOUTH — STATION NO. 07DB002

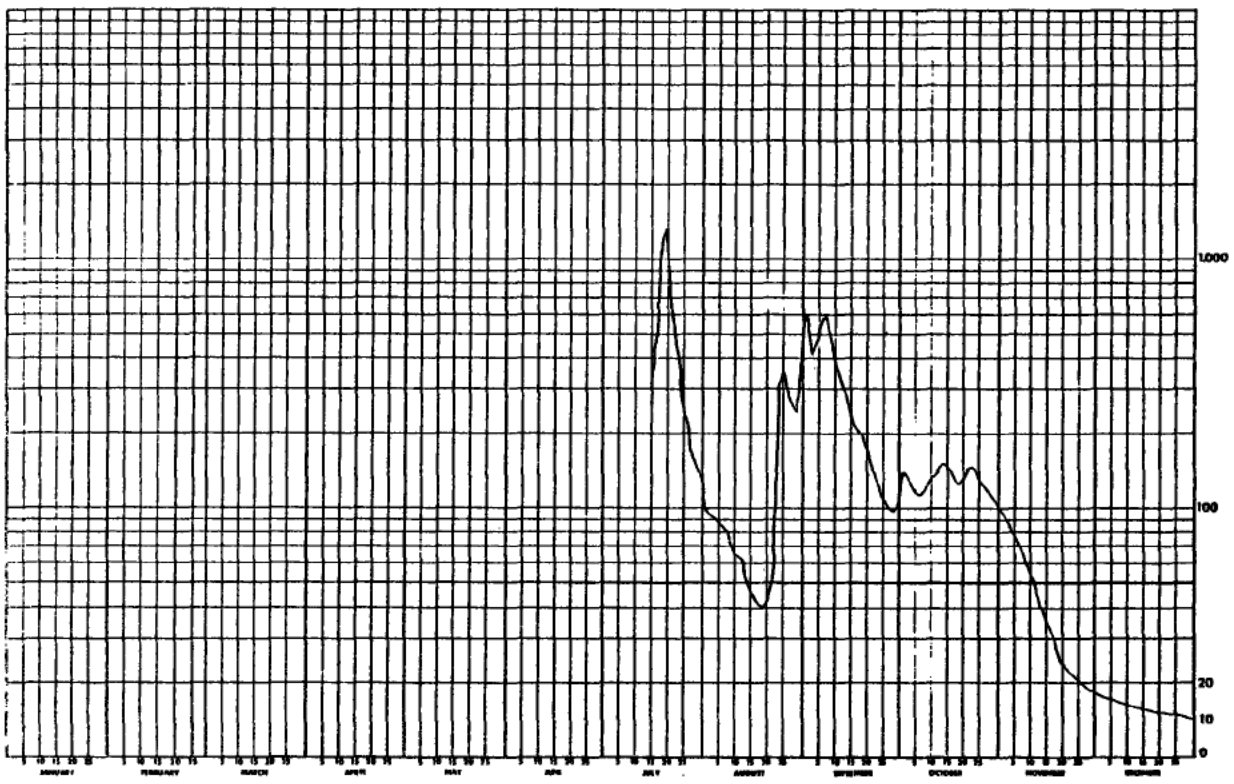
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	102	598	138	96.0 B	16.5 B	1
2	---	---	---	---	---	---	---	95.9	470	132	91.0 B	16.0 B	2
3	---	---	---	---	---	---	---	93.1	400	126	87.0 B	15.5 B	3
4	---	---	---	---	---	---	---	86.6	449	117	83.0 B	15.0 B	4
5	---	---	---	---	---	---	---	86.2	521	113	78.0 B	15.0 B	5
6	---	---	---	---	---	---	---	85.9	564	111	74.0 B	14.5 B	6
7	---	---	---	---	---	---	---	84.4	590	112	68.0 B	14.0 B	7
8	---	---	---	---	---	---	---	81.4	525	121	62.0 B	14.0 B	8
9	---	---	---	---	---	---	---	70.3	429	127	58.0 B	13.5 B	9
10	---	---	---	---	---	---	---	66.3	378	132	53.0 B	13.5 B	10
11	---	---	---	---	---	---	---	64.7	344	138	49.0 B	13.0 B	11
12	---	---	---	---	---	---	---	63.7	311	144	45.0 B	13.0 B	12
13	---	---	---	---	---	---	---	56.9	282	148	41.0 B	12.5 B	13
14	---	---	---	---	---	---	---	47.1	250	151	37.0 B	12.0 B	14
15	---	---	---	---	---	---	253 A	45.7	224	144	35.0 B	12.0 B	15
16	---	---	---	---	---	---	424	44.3	206	137	33.0 B	12.0 B	16
17	---	---	---	---	---	---	469	42.7	204	127	30.0 B	11.5 B	17
18	---	---	---	---	---	---	738	41.5	194	125	28.0 B	11.5 B	18
19	---	---	---	---	---	---	1120	40.3	174	124	25.0 B	11.5 B	19
20	---	---	---	---	---	---	1320	40.8	161	132	23.7 B	11.0 B	20
21	---	---	---	---	---	---	844	46.9	145	141	23.0 B	11.0 B	21
22	---	---	---	---	---	---	568	56.0	130	144	22.0 B	10.5 B	22
23	---	---	---	---	---	---	452	151	122	143	21.5 B	10.5 B	23
24	---	---	---	---	---	---	336	308	114	137	21.0 B	10.5 B	24
25	---	---	---	---	---	---	273	346	107	127	20.5 B	10.0 B	25
26	---	---	---	---	---	---	221	332	102	119	20.0 B	10.0 B	26
27	---	---	---	---	---	---	184	272	96.6	128 B	19.5 B	10.0 B	27
28	---	---	---	---	---	---	158	258	94.5	115 B	19.0 B	9.8 B	28
29	---		---	---	---	---	150	241	103	110 B	18.5 B	9.6 B	29
30	---		---	---	---	---	139	354	126	105 B	17.0 B	9.3 B	30
31	---		---		---		128	521		100 B		9.0 B	31
TOTAL	---	---	---	---	---	---	---	4225.7	8408.1	3960	1298.2	377.8	TOTAL
MEAN	---	---	---	---	---	---	---	136	280	128	43.3	12.2	MEAN
AC-FT	---	---	---	---	---	---	---	8380	16700	7850	2570	749	AC-FT
MAX	---	---	---	---	---	---	---	521	590	151	96.0	16.5	MAX
MIN	---	---	---	---	---	---	---	40.3	94.5	100	17.0	9.0	MIN

A-MANUAL GAUGE
B-ICE CONDITIONS

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 10 12 N
LONG 111 47 38 W

NATURAL FLOW



WATER SURVEY OF CANADA
FEB 8 1977 PAGE 8
CALGARY, ALTA.

DOVER RIVER NEAR THE MOUTH

STATI NO. 07DB002

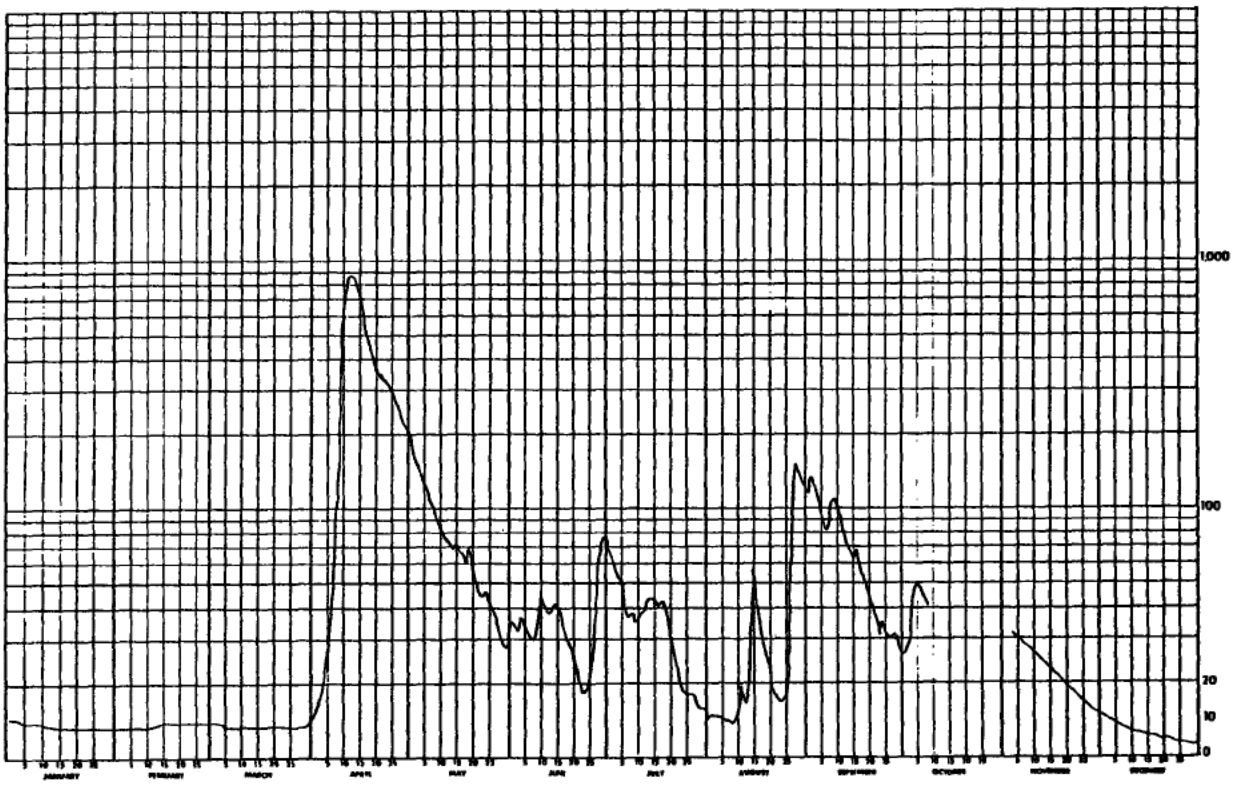
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	9.0 B	7.0 B	8.8 B	10.0 B	191	35.6	71.2	9.6	113	26.2		10.0 H	1
2	9.0 B	7.0 B	8.0 B	13.0 B	168	33.1	62.4	9.9	132	27.7		9.5 B	2
3	9.0 B	7.0 B	8.0 B	17.0 B	150	33.5	57.6	9.9	121	34.1	32.0 B	9.0 B	3
4	8.0 B	7.0 B	8.0 B	22.0 B	140	36.7	52.6	9.1	106	44.1	31.5 B	8.5 H	4
5	8.0 B	7.0 B	7.0 B	26.0 B	130	34.6	47.3	8.8	98.4	49.4	30.5 B	8.0 H	5
6	8.0 B	7.0 B	7.0 B	34.0 B	123	32.0	39.8	8.6	82.9	48.0	30.0 H	8.0 H	6
7	8.0 B	7.0 B	7.0 B	60.0 B	108	30.0	36.9	8.6	81.9	48.0	29.0 B	7.5 B	7
8	8.0 B	7.0 B	7.0 B	107 B	102	29.5	37.6	7.9	102	40.8 A	28.5 H	7.0 B	8
9	8.0 B	7.0 B	7.0 B	300 B	93.8	34.7	34.7	7.5	110		28.0 H	6.5 B	9
10	7.0 H	7.0 B	6.9 B	500 B	85.2	43.6	37.0	8.8	105		27.0 B	6.0 H	10
11	7.0 H	7.0 B	7.0 B	719 B	78.1	40.3	38.3	19.9	94.1		26.0 B	6.0 H	11
12	7.0 B	7.0 B	7.0 B	820 B	74.9	38.7	39.1	15.7	82.9		25.5 B	5.5 B	12
13	7.0 B	7.6 B	7.0 B	869 B	72.1	39.4	42.1	13.6	73.4		25.0 H	5.5 B	13
14	7.0 H	8.0 B	7.0 B	820 B	68.6	40.9	42.8	25.1	67.5		24.5 H	5.2 B	14
15	7.0 H	8.0 B	7.0 B	738 A	72.8	41.1	42.8	56.8	63.3		23.5 B	5.0 B	15
16	7.0 B	8.0 H	7.0 B	684	66.7	36.9	40.9	43.3	66.6		23.0 H	5.0 H	16
17	7.0 B	8.0 H	7.0 B	524	65.5	33.3	40.7	32.2	57.3		22.0 B	4.5 H	17
18	7.0 B	8.0 B	7.0 B	467	60.4	29.8	42.5	29.2	54.1		21.5 H	4.5 H	18
19	7.0 B	8.0 H	7.0 B	403	70.4	27.4	37.5	25.3	48.7		21.0 B	4.5 H	19
20	7.0 B	8.0 H	7.0 B	371 A	56.5	24.1	29.7	22.0	43.9		20.5 H	4.0 H	20
21	7.0 B	8.0 B	7.0 B	341	50.1	20.1	25.3	18.9	39.8		19.5 B	4.0 H	21
22	7.0 B	8.0 H	7.0 B	339	45.2	17.0	23.1	16.4	36.3		18.0 B	4.0 H	22
23	7.0 B	8.0 B	7.0 B	330	44.3	16.4	18.8	14.1	31.6		17.0 B	4.0 B	23
24	7.0 B	8.0 B	7.0 B	314	47.0	18.5	17.2	14.0	35.3		16.0 B	3.5 B	24
25	7.0 B	8.0 B	7.0 B	297	43.2	21.6	16.2	15.0	32.3		15.0 B	3.5 H	25
26	7.0 H	8.0 B	7.0 B	278	37.4	27.4	16.0	18.5	30.8		14.0 B	3.5 H	26
27	7.0 B	8.0 B	7.0 B	251	35.2	42.6	16.0	87.9	30.8		13.0 B	3.5 H	27
28	7.0 B	8.0 H	7.0 B	236	32.6	60.2	16.4	150	31.5		12.0 H	3.0 H	28
29	7.0 H	8.0 B	8.0 B	220	29.2	71.4	11.3	137	28.9		11.5 B	3.0 B	29
30	7.0 H		8.0 B	215	28.3	76.8	11.6	124	26.6		11.0 B	3.0 B	30
31	7.0 B		9.0 B		33.9		11.1	118				3.0 B	31
TOTAL	229.0	219.6	224.9	10325.0	2803.4	1067.2	1053.9	1085.6	2023.9			167.7	TOTAL
MEAN	7.4	7.6	7.3	344	77.5	35.6	34.0	35.0	67.5			5.4	MEAN
AC-FT	454	436	446	20500	4770	2120	2090	2150	4010			333	AC-FT
MAX	9.0	8.0	9.0	869	191	76.8	71.2	150	132			10.0	MAX
MIN	7.0	7.0	6.9	10.0	28.3	16.4	11.1	7.5	26.6			3.0	MIN

SUMMARY FOR THE MONTHS JAN TO SEP
MEAN DISCHARGE, 68.8 CFS
TOTAL DISCHARGE, 37000 AC-FT
MAXIMUM DAILY DISCHARGE, 869 CFS ON APR 13
MINIMUM DAILY DISCHARGE, 6.9 CFS ON MAR 10

MAXIMUM INSTANTANEOUS DISCHARGE, CFS AT ON NOT DETERMINED

A=MANUAL GAUGE
B=ICE CONDITIONS



5.13 DUNKIRK RIVER NEAR FORT MacKAY

STATION NAME: Dunkirk River near Fort MacKay

STATION NUMBER: 07DB003

LOCATION: Latitude: 56°51'20" Longitude: 112°42'40"

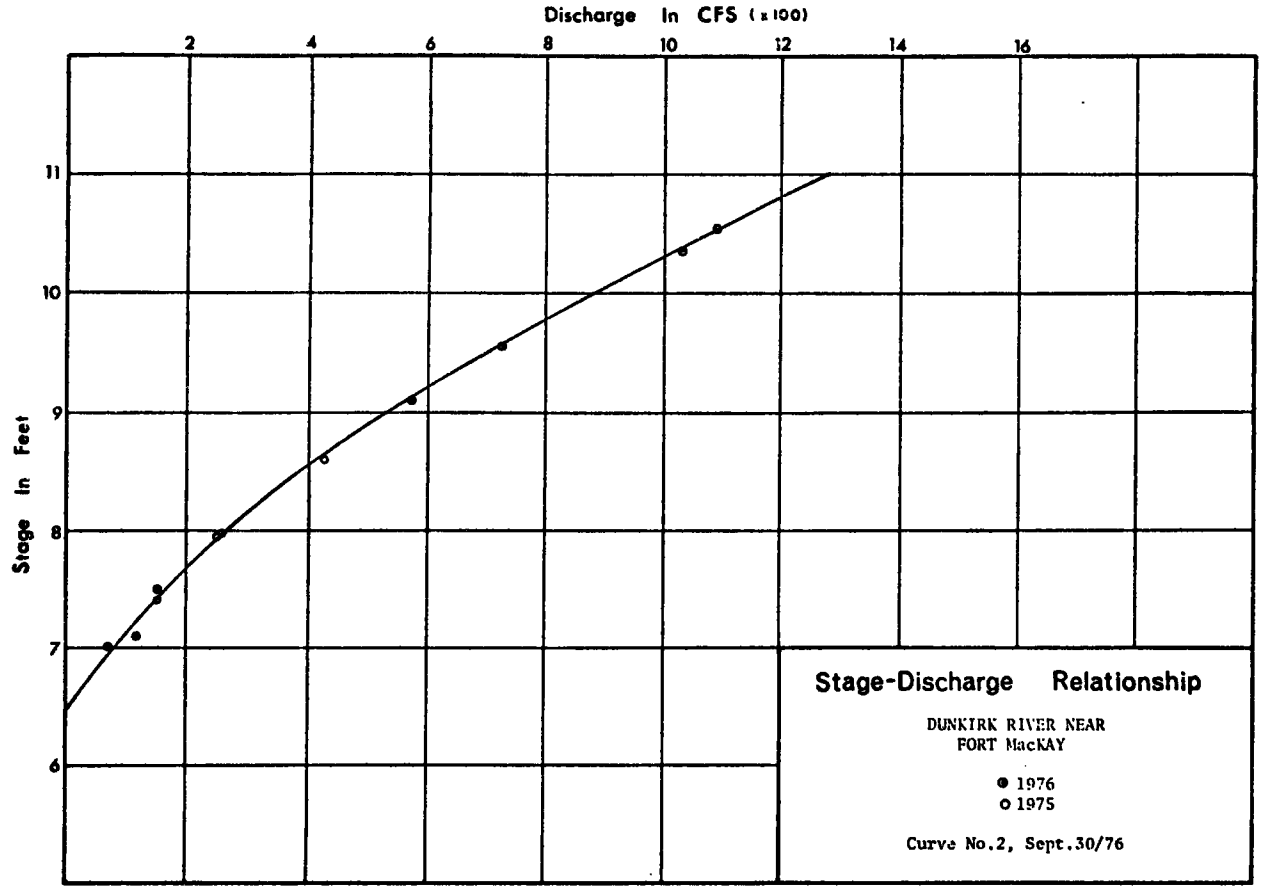
SE06-91-17-W4

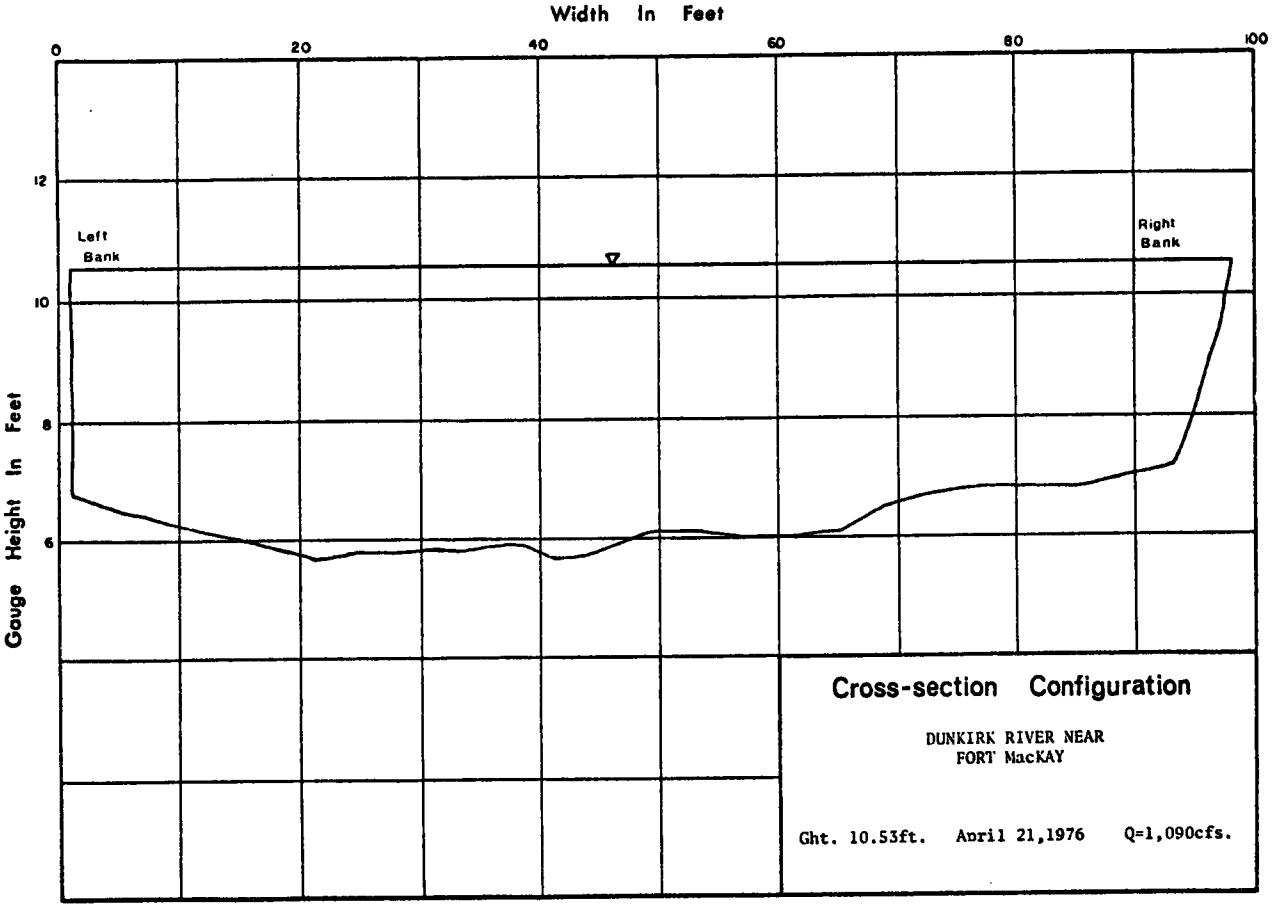
DRAINAGE AREA: 611 square miles (1,580 km^2)

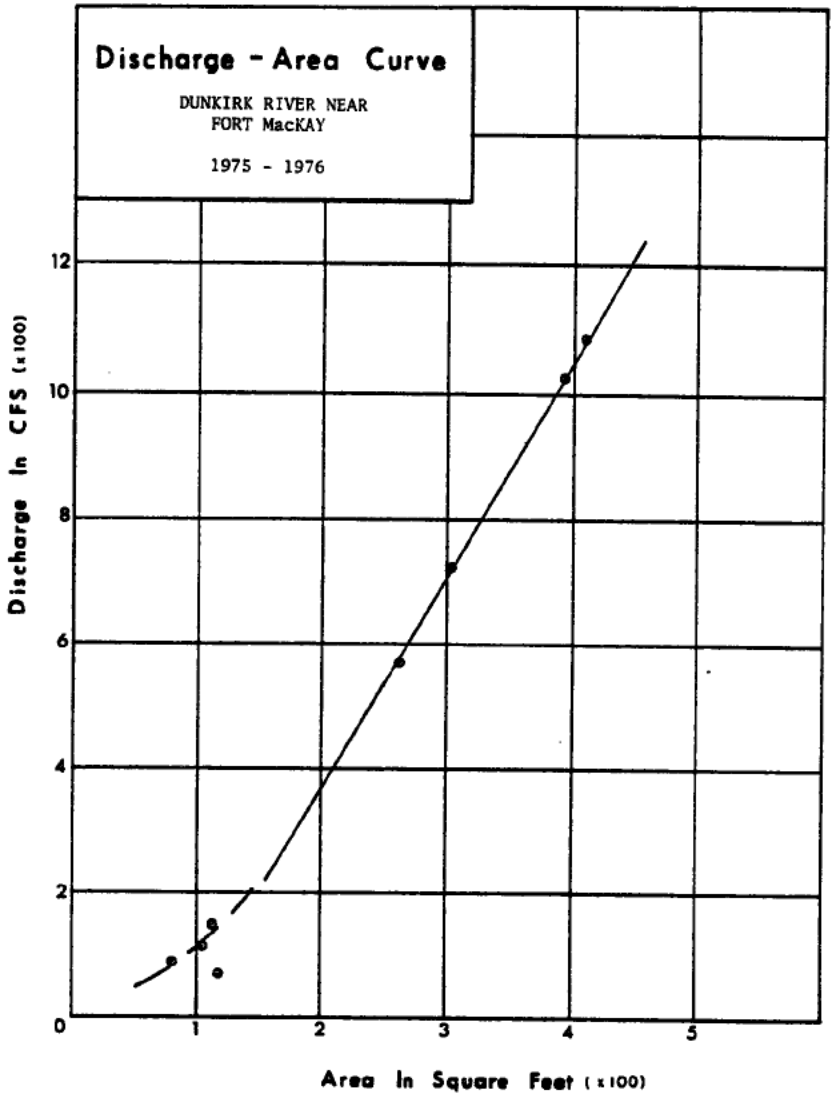
PERIOD OF RECORD: This station was established on August 18, 1975. Continuous discharge data is available to December, 1976.

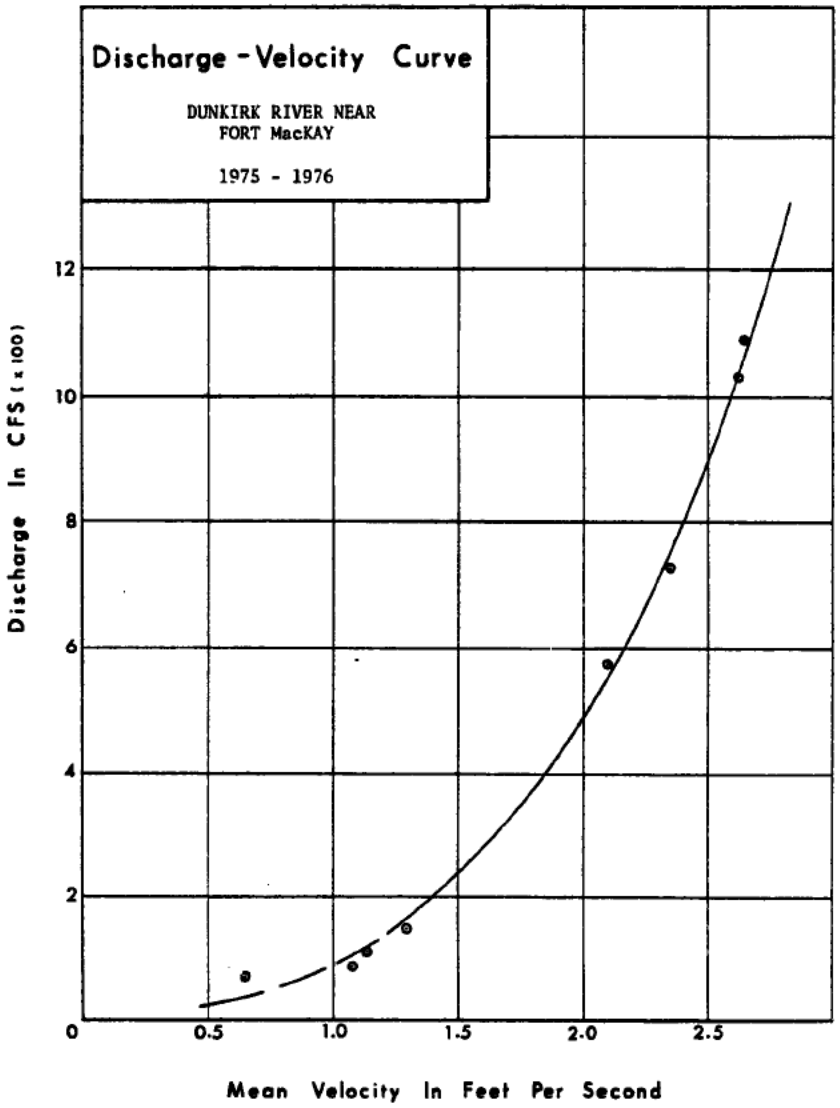
SITE DESCRIPTION: The gauge is located on the right bank 52 air miles (84 km) west of Ft. McMurray. This station is instrumented with a Stacom manometer linked to a Stevens A-71 recorder. Open water measurements are made by wading at various locations near the gauge or from the cableway 35 feet (11 m) below the gauge.

GENERAL: This station appears to have a stable control. The stage-discharge relationship has been well defined throughout the measured range in stage.


Discharge In CFS (x100)
2
4
6
8
10
12
14
16
Stage In Feet
11
10
9
8
7
6
Stage-Discharge Relationship
DUNKIRK RIVER NEAR
FORT MacKAY
● 1976
o 1975
Curve No.2, Sept.30/76


Width In Feet
0
20
40
60
80
100
Gauge Height In Feet
12
10
8
6
Left
Bank
Right
Bank
Cross-section Configuration
DUNKIRK RIVER NEAR
FORT MacKAY
Ght. 10.53ft. April 21,1976 Q=1,090cfs.


Discharge - Area Curve
DUNKIRK RIVER NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS (x100)
0
2
4
6
8
10
12
1
2
3
4
5
Area In Square Feet (x100)


Discharge - Velocity Curve
DUNKIRK RIVER NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS (x100)
0
2
4
6
8
10
12
0.5
1.0
1.5
2.0
2.5
Mean Velocity In Feet Per Second

WATER SURVEY OF CANADA
MAY 14 1976 PAGE 298
CALGARY, ALTA.

DUNKIRK RIVER NEAR FORT MACKAY

STATION NO. 07DB003

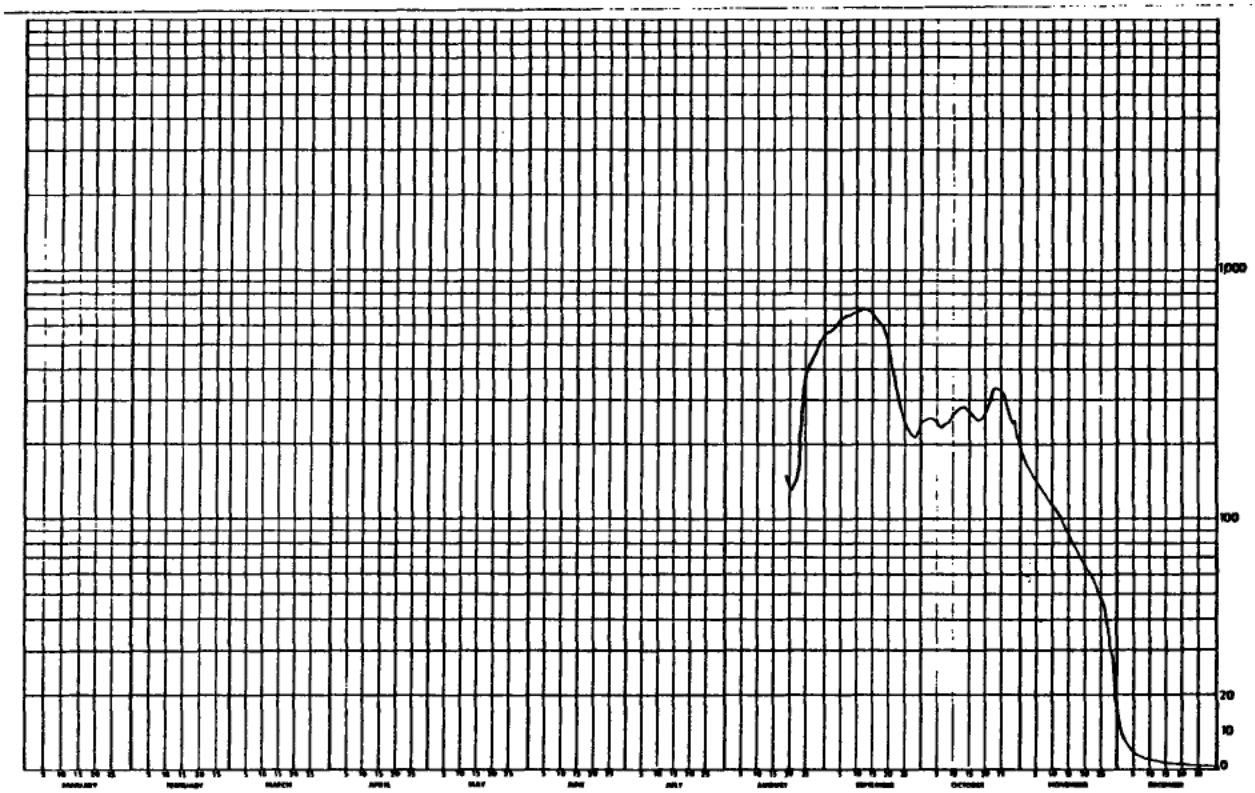
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV		DEC		DAY
1	---	---	---	---	---	---	---	---	553	247	175	B	14.0	B	1
2	---	---	---	---	---	---	---	---	558	251	160	B	7.8	B	2
3	---	---	---	---	---	---	---	---	598	251	150	B	5.4	B	3
4	---	---	---	---	---	---	---	---	616	243	145	B	4.4	B	4
5	---	---	---	---	---	---	---	---	629	235	140	B	3.9	B	5
6	---	---	---	---	---	---	---	---	640	232	130	B	3.5	B	6
7	---	---	---	---	---	---	---	---	655	240	125	B	3.0	B	7
8	---	---	---	---	---	---	---	---	661	240	120	B	2.6	B	8
9	---	---	---	---	---	---	---	---	666	240	115	B	2.4	B	9
10	---	---	---	---	---	---	---	---	672	262	110	B	2.3	B	10
11	---	---	---	---	---	---	---	---	675	269	105	B	2.1	B	11
12	---	---	---	---	---	---	---	---	678	275	100	B	2.0	B	12
13	---	---	---	---	---	---	---	---	681	274	95.0	B	1.9	B	13
14	---	---	---	---	---	---	---	---	659	271	90.0	B	1.9	B	14
15	---	---	---	---	---	---	---	---	630	262	86.0	B	1.8	B	15
16	---	---	---	---	---	---	---	---	615	255	81.0	B	1.7	B	16
17	---	---	---	---	---	---	---	---	588	245	77.0	B	1.6	B	17
18	---	---	---	---	---	---	---	153 A	556	244	73.0	B	1.6	B	18
19	---	---	---	---	---	---	---	143	520	255	70.0	B	1.5	B	19
20	---	---	---	---	---	---	---	132	465	269	65.3	B	1.4	B	20
21	---	---	---	---	---	---	---	129	396	308	62.0	B	1.4	B	21
22	---	---	---	---	---	---	---	137	329	326	58.0	B	1.3	B	22
23	---	---	---	---	---	---	---	207	284	330	55.0	B	1.2	B	23
24	---	---	---	---	---	---	---	301	254	332	52.0	B	1.1	B	24
25	---	---	---	---	---	---	---	356	234	327	48.0	B	1.0	B	25
26	---	---	---	---	---	---	---	406	220	265	44.0	B	1.0	B	26
27	---	---	---	---	---	---	---	436	214	253	37.0	B	1.0	B	27
28	---	---	---	---	---	---	---	459	212	240	32.0	B	1.0	B	28
29	---		---	---	---	---	---	493	231	248	28.0	B	1.0	B	29
30	---		---	---	---	---	---	532	244	205	23.0	B	1.0	B	30
31	---		---		---		---	548		190	B		1.0	B	31
TOTAL	---	---	---	---	---	---	---	---	14935	8082	2651.3		79.0		TOTAL
MEAN	---	---	---	---	---	---	---	---	498	261	88.4		2.5		MEAN
AC-FT	---	---	---	---	---	---	---	---	29600	16000	5260		157		AC-FT
MAX	---	---	---	---	---	---	---	---	681	332	175		14.0		MAX
MIN	---	---	---	---	---	---	---	---	212	190	23.0		1.0		MIN

A-MANUAL GAUGE
B-ICE CONDITIONS

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 51 20 N
LONG 112 42 40 W

NATURAL FLOW



WATER SURVEY CANADA
FEB 16 1977 . GE 8
CALGARY, ALTA.

DUNKIRK RIVER NEAR FORT MACKAY

STATION NO. 07DH003

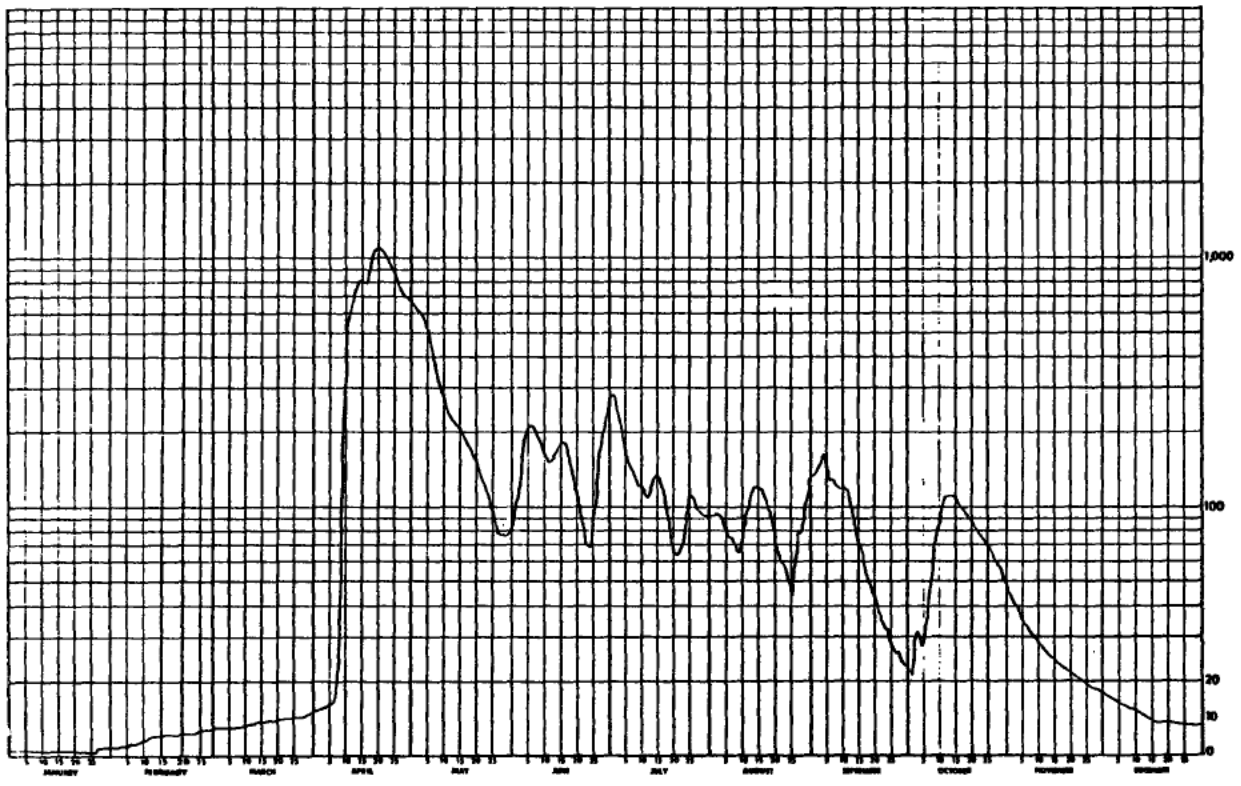
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1.0 B	1.5 B	6.0 B	10.0 B	641	104	284	92.8	132	21.9	46.0 B	15.0 B	1
2	1.0 B	1.5 B	6.0 B	10.5 B	624	124	270	92.7	133	21.3	43.0 B	14.5 B	2
3	1.0 B	2.0 B	6.0 B	11.0 B	603	150	235	98.7	148	30.2	41.0 B	13.9 B	3
4	1.0 B	2.0 B	6.0 B	11.5 B	579	201	208	93.3	157	31.4	38.0 B	13.0 B	4
5	1.0 B	2.0 B	6.5 B	11.9 B	541	215	180	83.9	141	27.4	36.0 B	12.5 B	5
6	1.0 B	2.0 B	6.5 B	13.0 B	489	213	160	76.2	125	31.5	34.0 B	12.0 B	6
7	1.0 B	2.5 B	6.5 B	15.0 B	425	205	146	76.3	128	39.4	32.5 B	11.5 B	7
8	1.0 B	2.5 B	6.5 B	27.0 B	365	186	135	69.8	122	56.6	31.0 B	11.0 B	8
9	1.0 B	3.0 B	6.5 B	90.0 B	315	173	121	64.5	117	73.0	30.0 B	10.5 B	9
10	1.0 B	3.0 B	6.8 B	312 B	281	158	122	70.9	116	83.4	28.5 B	10.0 B	10
11	1.0 B	3.5 B	7.0 B	520 B	259	153	116	90.9	115	95.1	27.5 B	9.5 B	11
12	.99 B	4.0 B	7.0 B	600 B	237	153	109	98.7	105	105	26.5 B	9.5 B	12
13	.99 B	4.0 B	7.0 B	660 B	223	159	117	113	94.6	108	26.0 B	9.0 B	13
14	.99 B	4.0 B	7.5 B	730 B	211	169	130	121	83.5	110	25.0 B	8.5 B	14
15	.99 B	4.0 B	7.5 B	800 B	202	182	133	120	73.1	113	24.5 B	8.0 B	15
16	.99 B	4.5 B	7.5 B	783	194	180	123	119	64.8	105 B	24.0 B	7.8 B	16
17	.99 B	4.5 B	8.0 B	796	186	165	113	112	56.8	100 B	23.5 B	7.6 B	17
18	.99 B	4.5 B	8.0 B	906	178	148	98.3	108	50.1	96.0 B	23.0 B	7.0 B	18
19	.99 B	4.5 B	8.0 B	1020	163	126	84.2	89.5	46.0	92.0 B	22.0 B	7.0 B	19
20	.99 B	5.0 B	8.0 B	1080	150	109	69.4	77.1	41.7	86.0 B	21.5 B	7.0 B	20
21	.99 B	5.0 B	8.5 B	1090	140	96.0	64.5	65.9	40.5	84.0 B	21.0 B	7.0 B	21
22	.99 B	5.0 B	8.5 B	1060	129	81.0	66.4	58.9	35.8	80.0 B	20.5 B	7.0 B	22
23	.99 B	5.0 B	8.5 B	997	119	70.5	71.2	56.6	31.6	77.0 B	20.0 B	7.0 B	23
24	.99 B	5.0 B	8.5 B	933	109	69.6	89.4	51.6	31.8	74.0 B	19.5 B	6.5 B	24
25	.99 B	5.5 B	9.0 B	874	99.9	82.3	111	43.7	27.8	71.0 B	18.5 B	6.5 B	25
26	.99 B	5.5 B	9.0 B	821	89.9	108	111	54.2	25.3	68.0 B	18.0 B	6.5 B	26
27	.99 B	5.5 B	9.0 B	768	79.4	154	104	78.6	26.1	65.0 B	17.5 B	6.5 B	27
28	1.5 B	5.5 B	9.0 B	721	80.1	196	96.1	77.7	23.8	61.0 B	17.0 B	6.5 B	28
29	1.5 B	6.0 B	9.4 B	686	77.6	225	94.8	90.4	23.1	57.0 B	16.5 B	6.5 B	29
30	1.5 B		9.5 B	663	76.3	257	91.9	121	23.2	53.0 B	15.5 B	6.5 B	30
31	1.5 B		10.0 B		86.8		92.1	132		49.0 B		6.5 B	31
TOTAL	32.84	112.5	237.7	17019.9	7953.0	4606.4	3945.5	2686.9	2338.2	2165.2	787.5	276.8	TOTAL
MEAN	1.1	3.9	7.7	567	257	154	127	86.7	77.9	69.8	26.3	8.9	MEAN
AC-FT	65.1	223	471	33800	15800	9140	7830	5330	4640	4290	1560	549	AC-FT
MAX	1.5	6.0	10.0	1090	641	257	284	132	157	113	46.0	15.0	MAX
MIN	.99	1.5	6.0	10.0	76.3	69.6	64.5	43.7	23.1	21.3	15.5	6.5	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 115 CFS
TOTAL DISCHARGE, 83700 AC-FT
MAXIMUM DAILY DISCHARGE, 1090 CFS ON APR 21
MINIMUM DAILY DISCHARGE, .99 CFS ON JAN 12

B-ICE CONDITIONS

MAXIMUM INSTANTANEOUS DISCHARGE, 1100 CFS AT 1900 MST ON APR 20



5.14 EAGLENEST LAKE NEAR OUTLET

STATION NAME: Eaglenest Lake near Outlet

STATION NUMBER: 07DA022

LOCATION: Latitude: 57°45'20" Longitude: 112°10'00"

DRAINAGE AREA:

PERIOD OF RECORD: The station was established on May 20, 1976. Miscellaneous water levels are available during the 1976 open water period.

SITE DESCRIPTION: The station is located near the outlet approximately 44 air miles (71 km) northwest of Ft. MacKay. The station simply consists of three bench marks. Levels are run from these bench marks to the waters edge on each visit to the site.

GENERAL: The bench marks are referred to an assumed datum. Five water levels were taken during 1976; 92.85 on May 29, 93.05 on July 6, 92.98 on August 5, 92.64 on September 14 and 92.95 on November 3.
An automatic recording gauge has since been installed and will be activated for the 1977 open water season.

5.15 ELLS RIVER BELOW GARDINER LAKES

STATION NAME: Ells River below Gardiner Lakes

STATION NUMBER: 07DA010

LOCATION: Latitude: 57°22'30" Longitude: 112°33'40"

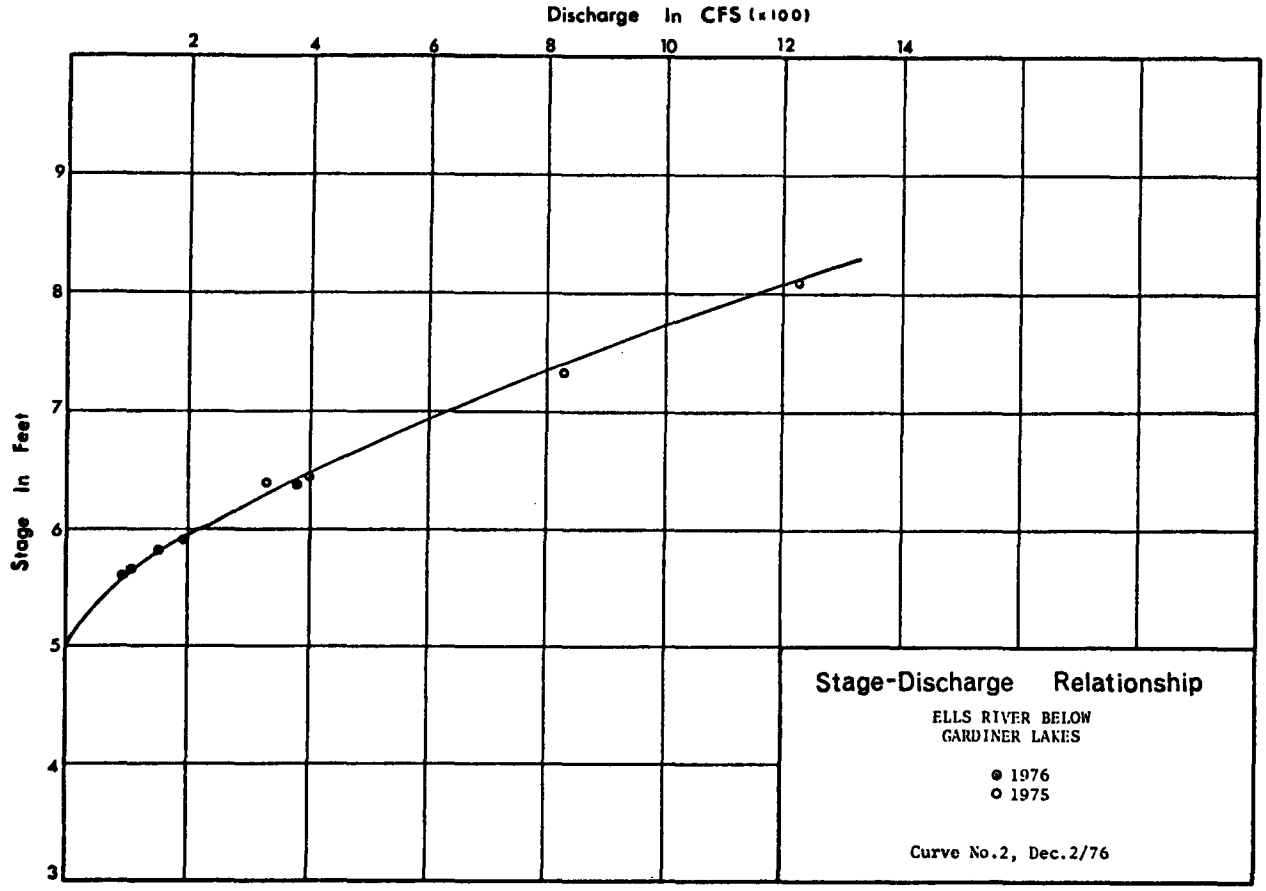
SE05-97-16-W4

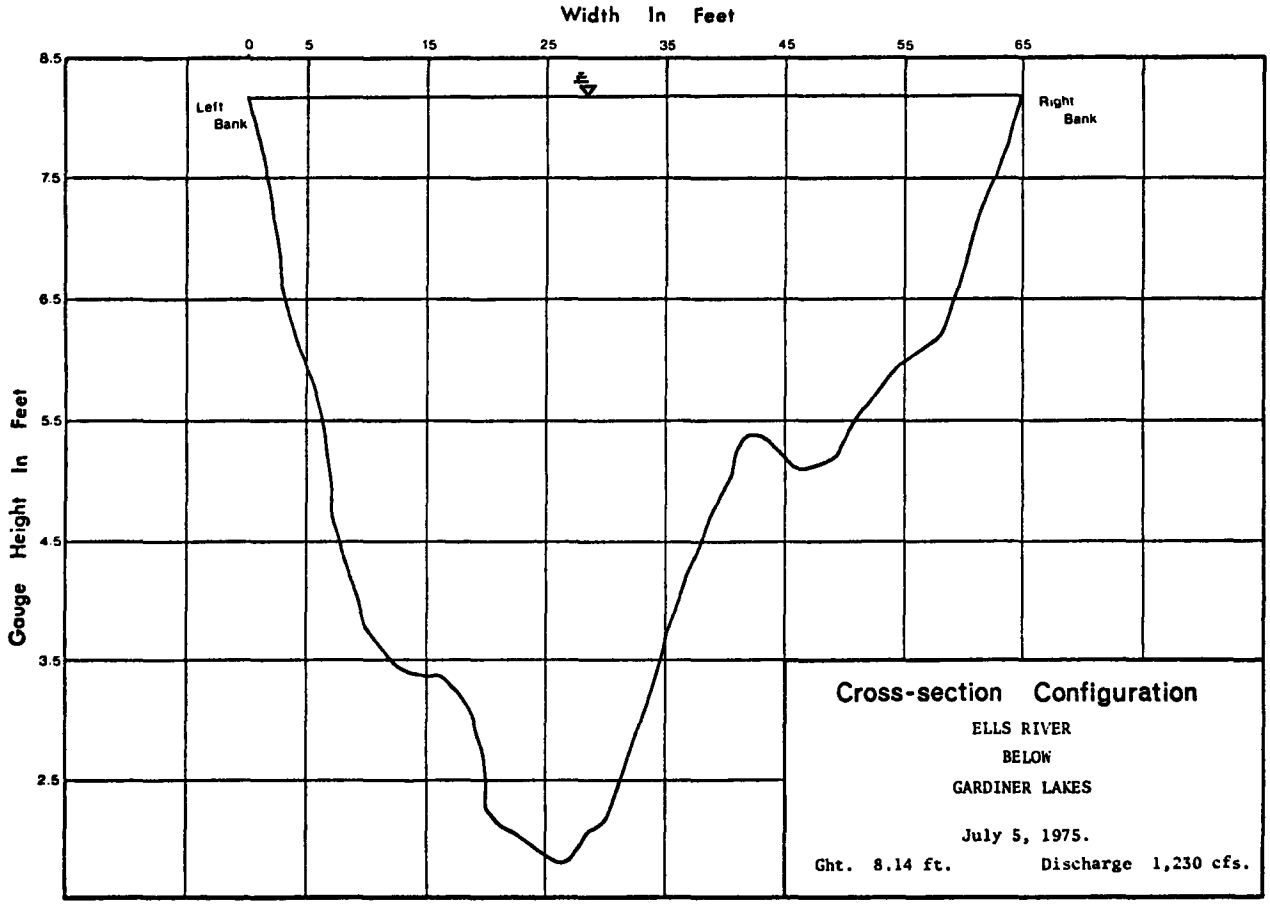
DRAINAGE AREA: 527 square miles (1,360 km^2)

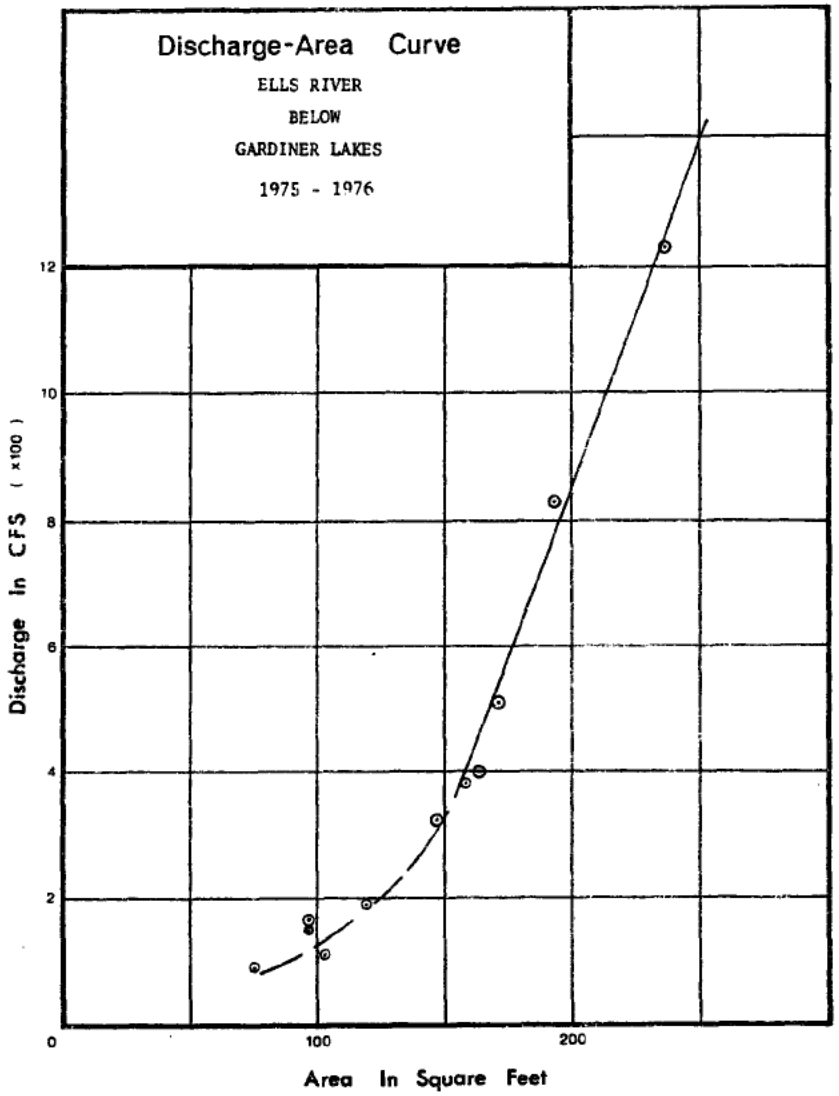
PERIOD OF RECORD: This station was established June 25, 1975. Discharge data is available on a continuous basis to December, 1976.

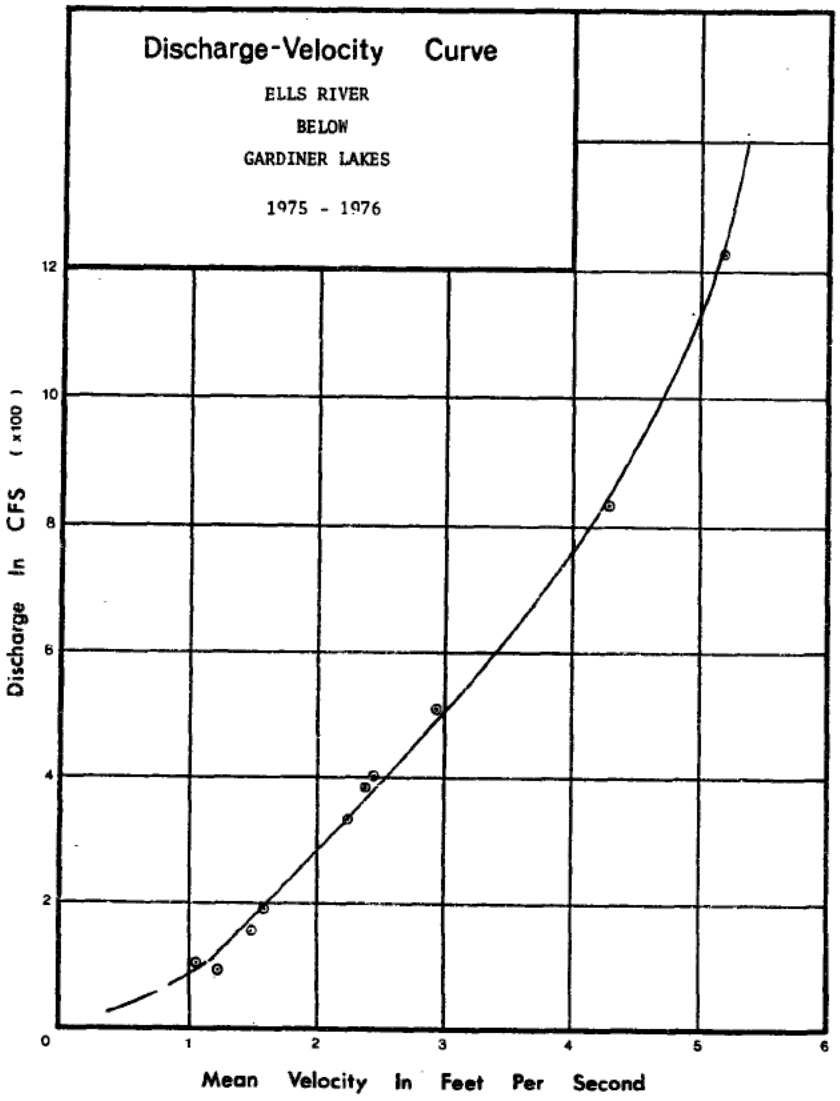
SITE DESCRIPTION: The gauge is located on the left bank approximately five miles (8 km) below Gardiner Lakes and 37 air miles (60 km) northwest of Ft. MacKay. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water discharge measurements are made by wading 1,000 (300 m) above the gauge or from the cableway immediately above the gauge.

GENERAL: The drainage system of this river consists almost entirely of a series of lakes including; Namur, Gardiner, Eaglenest and several small lakes. As a result, the water is relatively clear and the stream responds quite slowly to weather changes.


Discharge In CFS (x100)
2
4
6
8
10
12
14
Stage In Feet
9
8
7
6
5
4
3
Stage-Discharge Relationship
ELLS RIVER BELOW
GARDINER LAKES
● 1976
○ 1975
Curve No.2, Dec.2/76


Width In Feet
0
5
15
25
35
45
55
65
Gauge Height In Feet
8.5
7.5
6.5
5.5
4.5
3.5
2.5
Left Bank
Right Bank
Cross-section Configuration
ELLS RIVER
BELOW
GARDINER LAKES
July 5, 1975.
Ght. 8.14 ft.
Discharge 1,230 cfs.


Discharge-Area Curve
ELLS RIVER
BELOW
GARDINER LAKES
1975 - 1976
Discharge In CFS (x100)
Area In Square Feet
0
2
4
6
8
10
12
100
200


Discharge-Velocity Curve
ELLS RIVER
BELOW
GARDINER LAKES
1975 - 1976
Discharge In CFS (x100)
Mean Velocity In Feet Per Second
0
2
4
6
8
10
12
1
2
3
4
5
6

WATER SURVEY OF CANADA — ELLS RIVER BELOW GARDINER LAKES — STATION NO. 07DA010

MAY 14 1976 PAGE 287

CALGARY, ALTA.

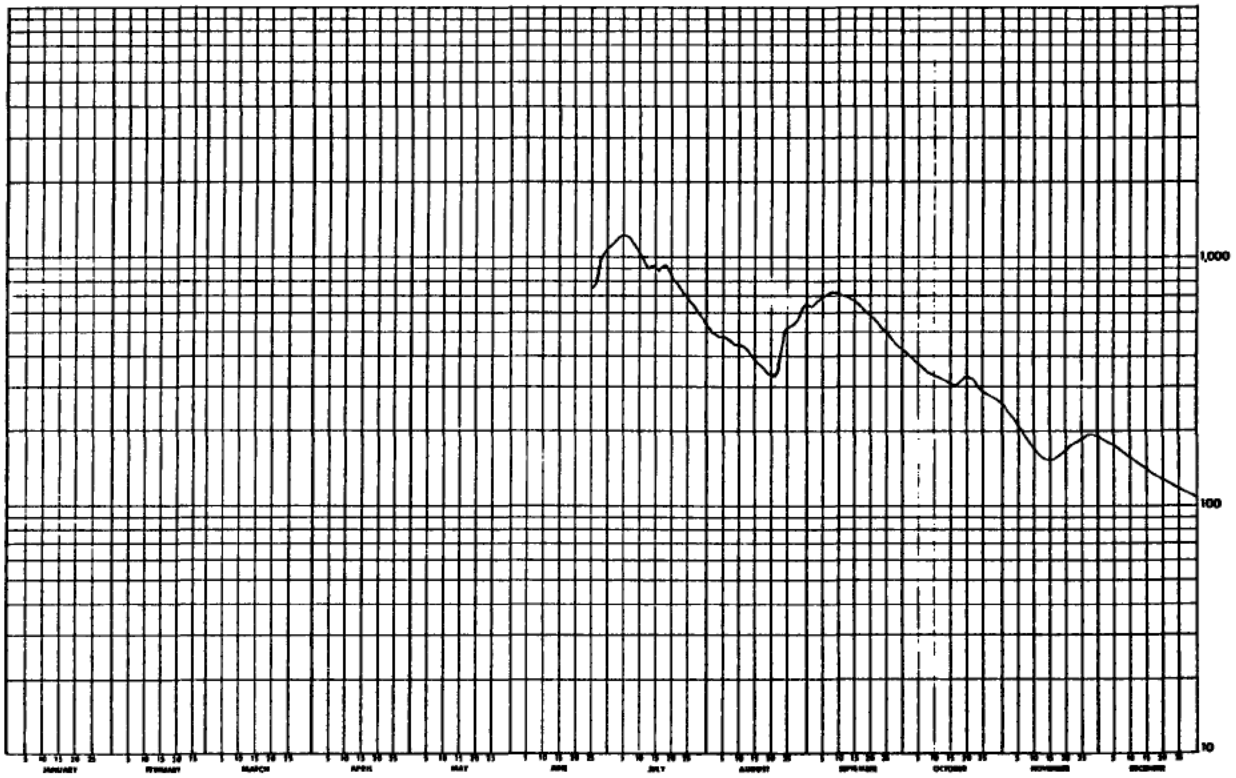
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	1100	504	628	417	250 B	168 B	1
2	---	---	---	---	---	---	1130	489	631	407	235 B	185 B	2
3	---	---	---	---	---	---	1160	487	648	390	225 B	182 B	3
4	---	---	---	---	---	---	1220	474	667	380	212 B	180 B	4
5	---	---	---	---	---	---	1220	480	685	367	204 B	175 B	5
6	---	---	---	---	---	---	1230	479	707	362	197 B	172 B	6
7	---	---	---	---	---	---	1190	465	715	350	189 B	169 B	7
8	---	---	---	---	---	---	1140	449	725	347	180 B	165 B	8
9	---	---	---	---	---	---	1090	440	723	342	175 B	162 B	9
10	---	---	---	---	---	---	1040	446	717	340	168 B	157 B	10
11	---	---	---	---	---	---	978	442	711	335	165 B	154 B	11
12	---	---	---	---	---	---	927	428	703	331	161 B	151 B	12
13	---	---	---	---	---	---	869	409	697	320	158 B	148 B	13
14	---	---	---	---	---	---	938	394	661	318	157 B	145 B	14
15	---	---	---	---	---	---	922	385	664	310	156 B	142 B	15
16	---	---	---	---	---	---	868	375	653	307	158 B	139 B	16
17	---	---	---	---	---	---	908	363	634	307	159 B	137 B	17
18	---	---	---	---	---	---	926	354	614	319	161 B	135 B	18
19	---	---	---	---	---	---	878	345	593	326	165 B	131 B	19
20	---	---	---	---	---	---	837	337	576	328	170 B	129 B	20
21	---	---	---	---	---	---	806	335	562	329	173 B	127 B	21
22	---	---	---	---	---	---	776	350	548	326	177 B	125 B	22
23	---	---	---	---	---	---	746	419	534	300	181 B	123 B	23
24	---	---	---	---	---	---	711	486	516	294	185 B	120 B	24
25	---	---	---	---	---	---	749 A	688	518	447	289	168 B	114 B	25
26	---	---	---	---	---	---	769	658	526	479	285	190 B	117 B	26
27	---	---	---	---	---	---	863	625	533	464	280	191 B	115 B	27
28	---	---	---	---	---	---	952	604	541	450	275 B	191 B	113 B	28
29	---		---	---	---	---	1030	579	583	443	269 B	190 B	111 B	29
30	---		---	---	---	---	1030	552	634	429	264 B	189 B	110 B	30
31	---		---		---			523	644		258 B		108 B	31
TOTAL	---	---	---	---	---	---	---	27879	14114	18294	10078	5500	4434	TOTAL
MEAN	---	---	---	---	---	---	---	899	455	610	325	183	143	MEAN
AC-FT	---	---	---	---	---	---	---	55300	28000	36300	20000	10900	8790	AC-FT
MAX	---	---	---	---	---	---	---	1230	644	725	417	250	188	MAX
MIN	---	---	---	---	---	---	---	523	335	429	258	156	108	MIN

A-MANUAL GAUGE
B-ICE CONDITIONS

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 22 30 N
LONG 112 33 40 W

NATURAL FLOW



WATER SURVEY OF CANADA
FEB 8 1977 . SE 10
CALGARY, ALTA.

ELLS RIVER BELOW GARDINER LAKES

STATION NO. 07DA010

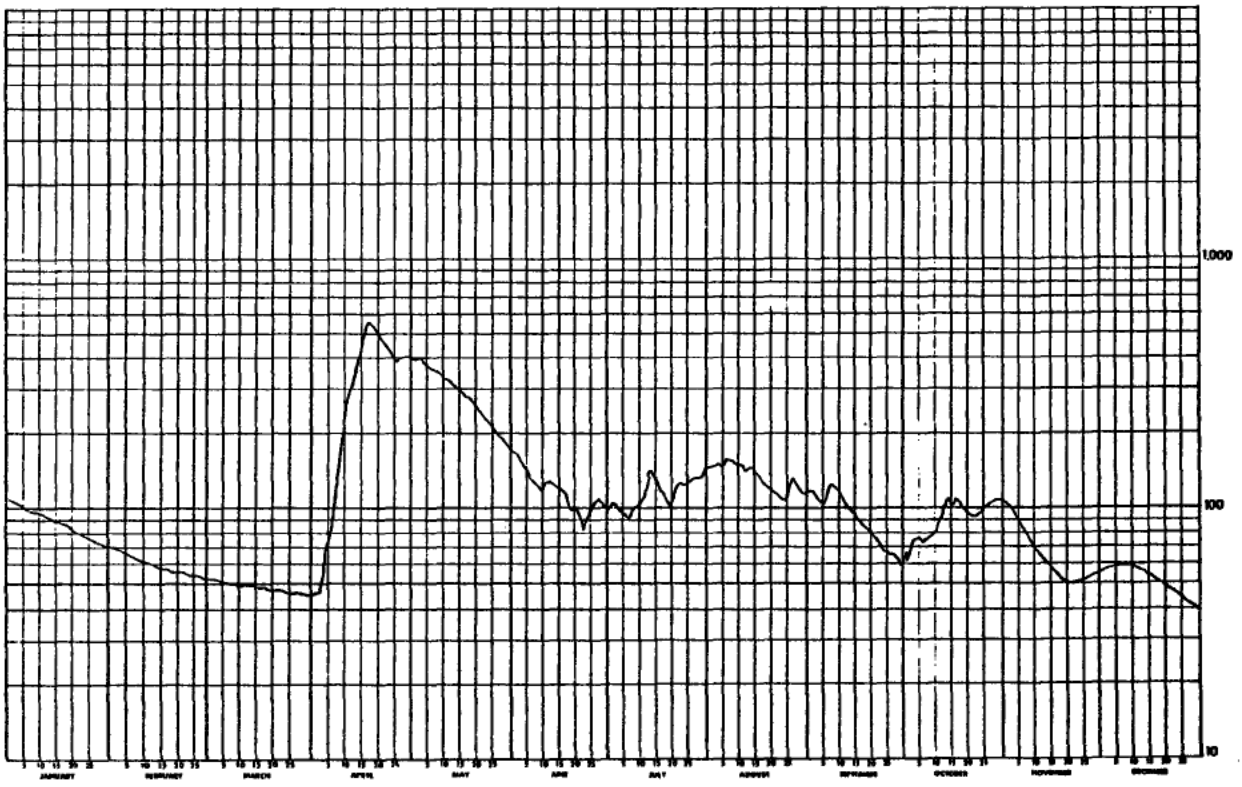
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	106 B	70.0 B	52.0 B	46.0 B	396	169	102	148	114	57.0	106 B	56.0 B	1
2	105 B	69.0 B	52.0 B	45.0 B	390	162	105	147	116	53.5	103 B	57.0 B	2
3	103 B	68.0 B	52.0 B	46.0 B	397	154	99.1	150	113	64.9	101 B	57.2 B	3
4	101 B	67.0 B	51.0 B	56.5 B	380	148	98.2	151	108	65.5 E	97.1 B	58.0 B	4
5	100 B	66.0 B	51.0 B	74.6 B	372	141	95.7	149	105	67.0 E	90.0 B	58.0 B	5
6	99.0 B	65.0 B	51.0 B	78.0 B	363	137	92.9	154	104	64.5 E	84.0 B	59.0 B	6
7	98.0 B	64.0 B	50.0 B	96.0 B	365	130	91.5	158	121	66.0 E	80.0 B	59.0 B	7
8	97.0 B	63.0 B	50.0 B	130 B	352	125	98.2	154	126	69.4 E	77.0 B	59.0 B	8
9	96.0 B	62.0 B	50.0 B	160 B	347	121	103	150	121	69.2 E	74.0 B	59.0 B	9
10	95.0 B	62.0 B	50.0 B	210 B	331	117	103	150	115	70.2 E	71.0 B	59.0 B	10
11	94.0 B	61.0 B	50.0 B	250 B	332	128	107	148	107	73.0 E	68.0 B	58.0 B	11
12	93.0 B	60.0 B	50.0 B	300 B	320	126	117	140	103	80.5 E	65.0 B	57.0 B	12
13	91.9 B	58.8 B	50.0 B	340 B	311	125	142	141	102	87.5 B	62.0 B	56.0 B	13
14	89.0 B	58.0 B	49.0 B	380 B	308	118	143	146	99.9	110 B	60.0 B	55.0 B	14
15	88.0 B	58.0 B	49.0 B	430 B	297	118	135	143	93.8	104 B	58.0 B	53.8 B	15
16	87.0 B	57.0 B	49.0 B	500 B	291	117	123	137	91.9	104 B	56.0 B	52.0 B	16
17	86.0 B	57.0 B	49.0 B	570 B	278	107	116	131	89.8	110 B	55.0 B	51.0 B	17
18	85.0 B	56.0 B	49.0 B	550 B	278	102	109	128	85.5	106 B	53.0 B	50.0 B	18
19	83.0 B	56.0 B	48.0 B	530 A	266	98.6	105	122	82.6	101 B	52.0 B	49.0 B	19
20	82.0 B	56.0 B	48.0 B	510 E	255	99.5	100	117	80.5	98.0 B	51.0 B	48.0 B	20
21	81.0 B	56.0 B	48.0 B	490 E	245	90.5	116	117	77.6	96.0 B	51.0 B	47.0 B	21
22	80.0 B	55.0 B	48.0 B	460 E	238	85.0	127	116	74.7	95.0 B	51.0 B	46.5 B	22
23	78.0 B	55.0 B	48.0 B	440 E	228	82.7	127	111	72.3	94.0 B	51.0 B	45.5 B	23
24	77.0 B	54.0 B	47.0 B	420 E	220	92.1	124	111	67.7	96.0 B	51.0 B	44.5 B	24
25	76.0 B	54.0 B	47.0 B	410 E	211	100	127	107	67.9	98.0 B	52.0 B	44.0 B	25
26	75.0 B	54.0 B	47.0 B	390 E	205	105	130	117	65.2	101 B	52.0 B	43.0 B	26
27	74.0 B	54.0 B	47.0 B	384 A	192	109	134	134	66.2	104 B	53.0 B	42.0 B	27
28	73.0 B	53.0 B	47.0 B	404	191	108	136	129	63.9	107 B	53.0 B	41.0 B	28
29	72.0 B	53.0 B	46.0 B	404	183	104	134	121	62.5	108 B	54.0 B	40.0 B	29
30	71.0 B		46.0 B	405	174	99.0	135	114	58.2	109 B	55.0 B	39.5 B	30
31	70.0 B		46.0 B		171		147	113		108 B		39.0 B	31
TOTAL	2705.9	1721.8	1517.0	9509.9	8887	3518.4	3622.6	4154	2755.2	2737.8	1986.1	1583.0	TOTAL
MEAN	87.3	59.4	48.9	317	287	117	117	134	91.8	88.3	66.2	51.1	MEAN
AC-FT	5370	3420	3010	18900	17600	6980	7190	8240	5460	5430	3940	3140	AC-FT
MAX	106	70.0	52.0	570	397	169	147	158	126	110	106	59.0	MAX
MIN	70.0	53.0	46.0	45.8	171	82.7	91.5	107	58.2	53.5	51.0	39.0	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 122 CFS
TOTAL DISCHARGE, 88700 AC-FT
MAXIMUM DAILY DISCHARGE, 570 CFS ON APR 17
MINIMUM DAILY DISCHARGE, 39.0 CFS ON DEC 31

MAXIMUM INSTANTANEOUS DISCHARGE, CFS AT ON *Not Determined*

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



5.16 ELLS RIVER NEAR THE MOUTH

STATION NAME: Ells River near the Mouth

STATION NUMBER: 07DA017

LOCATION: Latitude: 57°16'04" Longitude: 111°42'51"

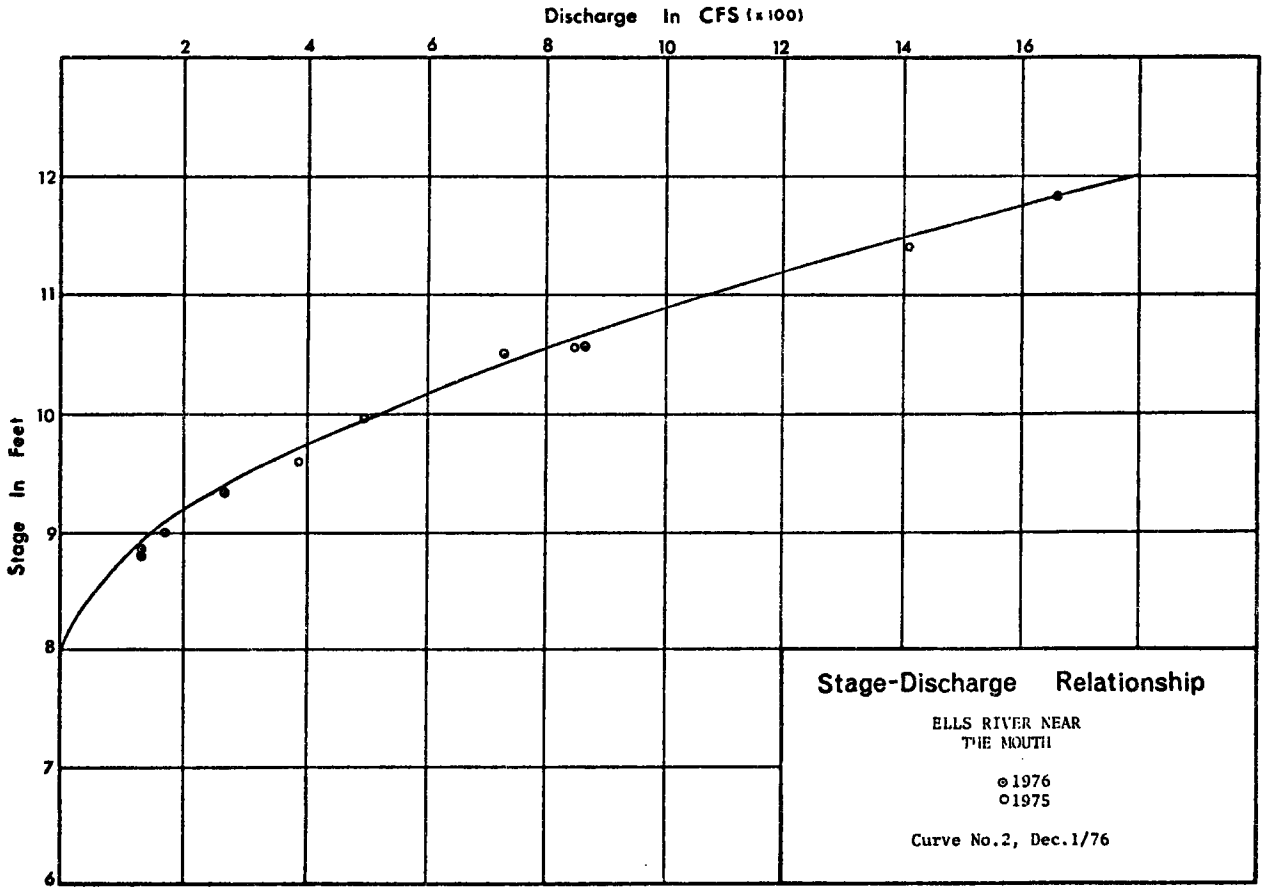
SW27-95-11-W4

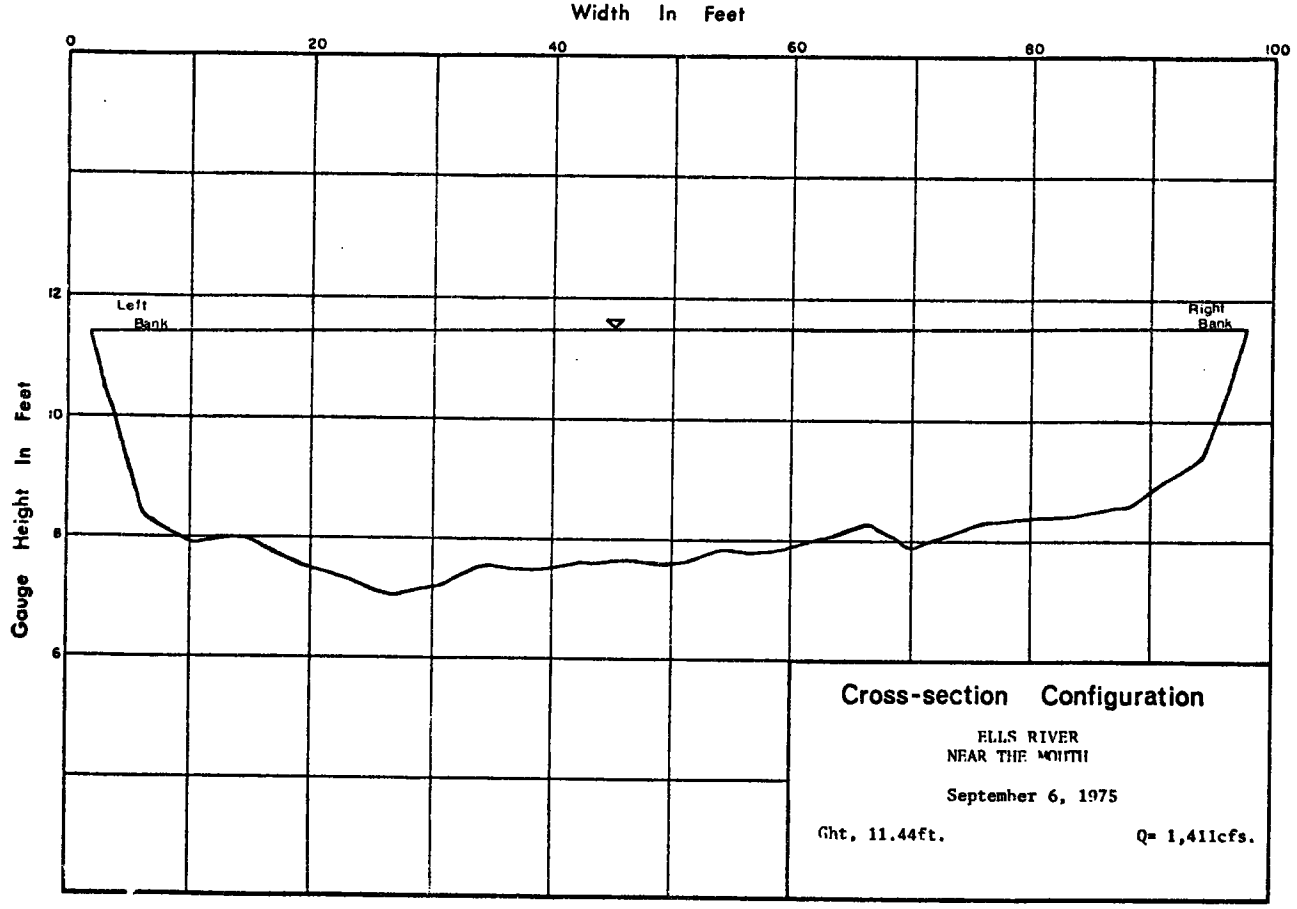
DRAINAGE AREA: 956 square miles (2476 km^2)

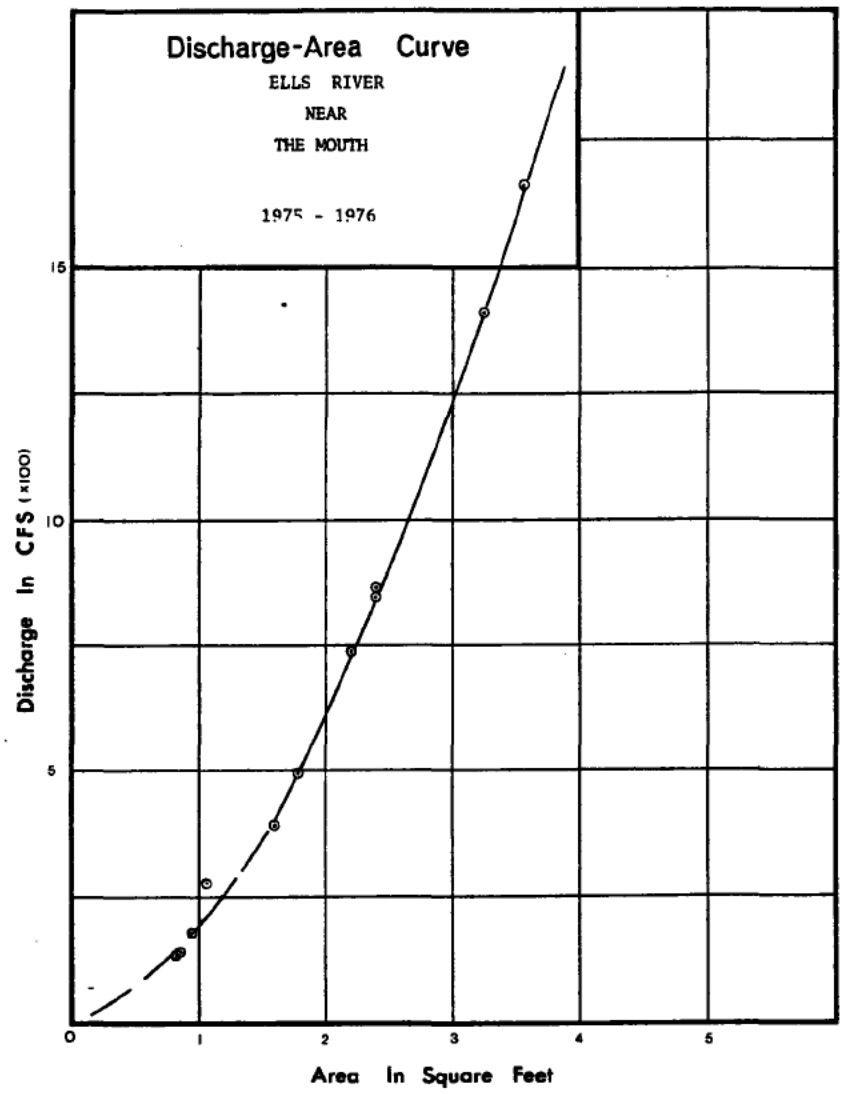
PERIOD OF RECORD: The station was established July 28, 1975. Discharge data is available on a continuous basis to December,1976.

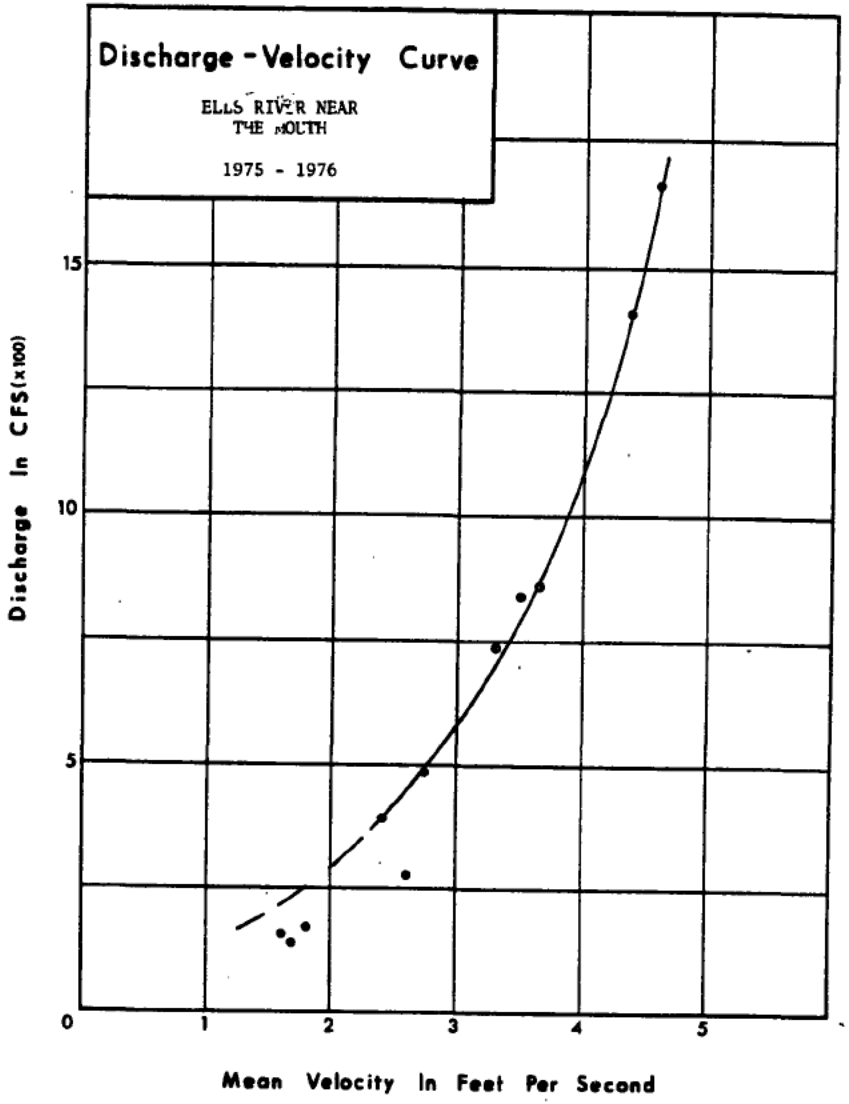
SITE DESCRIPTION: The gauge is located on the right bank approximately five miles (8 km) above its confluence with the Athabasca River and approximately seven air miles (11 km) northwest of Ft. MacKay. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water discharge measurements are made by wading near the gauge or from the cableway located approximately 500 feet (150 m) below the gauge.

GENERAL:


Discharge In CFS (x 100)
2
4
6
8
10
12
14
16
Stage In Feet
12
11
10
9
8
7
6
Stage-Discharge Relationship
ELLS RIVER NEAR
THE MOUTH
⊙1976
○1975
Curve No.2, Dec.1/76


Width In Feet
0
20
40
60
80
100
Gauge Height In Feet
12
10
8
6
Left Bank
Right Bank
Cross-section Configuration
ELLS RIVER
NEAR THE MOUTH
September 6, 1975
Ght. 11.44ft.
Q= 1,411cfs.


Discharge-Area Curve
ELLS RIVER
NEAR
THE MOUTH
1975 - 1976
Discharge In CFS (x100)
Area In Square Feet
0
5
10
15
1
2
3
4
5


Discharge - Velocity Curve
ELLS RIVER NEAR
THE MOUTH
1975 - 1976
Discharge In CFS (x100)
Mean Velocity In Feet Per Second
0
5
10
15
1
2
3
4
5

WATER SURVEY OF CANADA
MAY 14 1976 PAGE 294
CALGARY, ALTA.

ELLS RIVER NEAR THE MOUTH — STATION NO. 07DA017

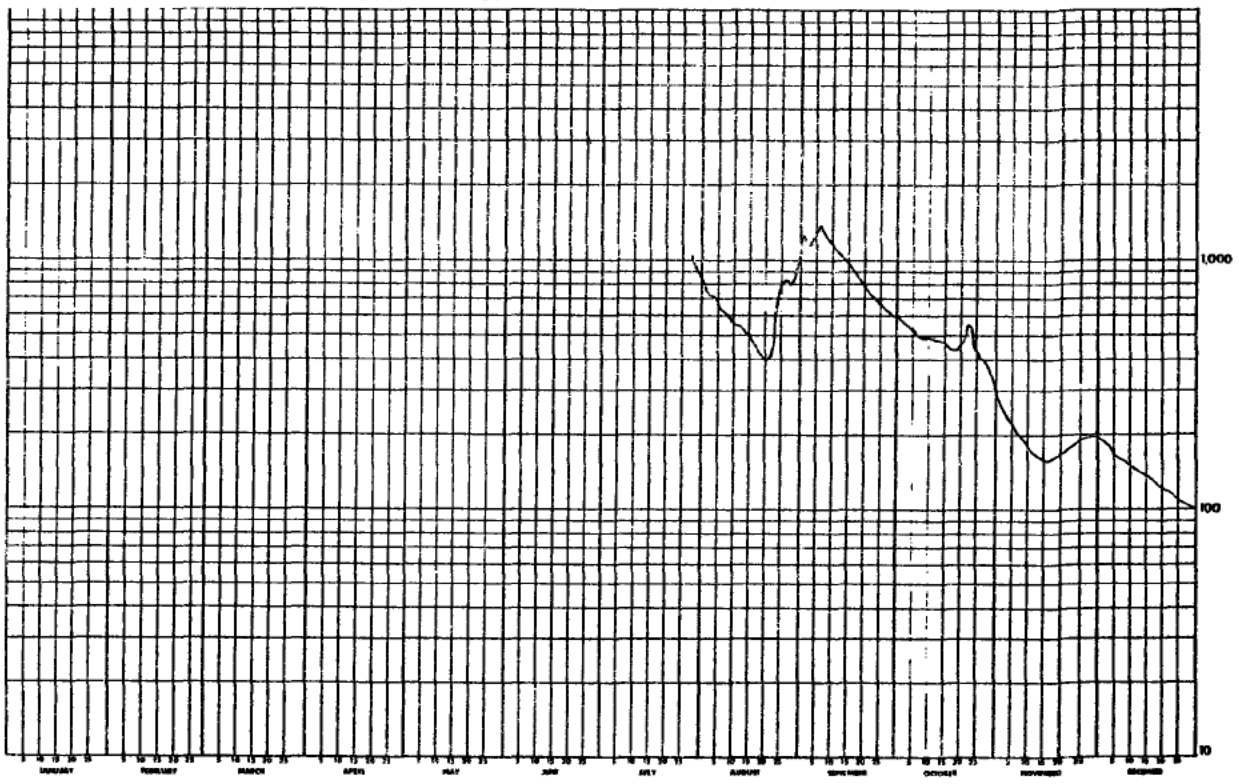
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	763	1200	583	280 B	190 B	1
2	---	---	---	---	---	---	---	732	1160	566	265 B	198 B	2
3	---	---	---	---	---	---	---	721	1140	534	248 B	180 B	3
4	---	---	---	---	---	---	---	720	1170	534	238 B	176 B	4
5	---	---	---	---	---	---	---	681	1260	515	225 B	171 B	5
6	---	---	---	---	---	---	---	637	1380	502	212 B	168 B	6
7	---	---	---	---	---	---	---	626	1290	496	204 B	164 B	7
8	---	---	---	---	---	---	---	609	1260	497	198 B	160 B	8
9	---	---	---	---	---	---	---	577	1180	494	188 B	156 B	9
10	---	---	---	---	---	---	---	546	1150	488	180 B	152 B	10
11	---	---	---	---	---	---	---	559	1120	488	175 B	150 B	11
12	---	---	---	---	---	---	---	551	1070	489	169 B	148 B	12
13	---	---	---	---	---	---	---	532	1040	486	165 B	143 B	13
14	---	---	---	---	---	---	---	510	1010	476	161 B	140 B	14
15	---	---	---	---	---	---	---	487	991	465	160 B	138 B	15
16	---	---	---	---	---	---	---	470	951	452	160 B	135 B	16
17	---	---	---	---	---	---	---	453	896	443	161 B	132 B	17
18	---	---	---	---	---	---	---	432	860	439	162 B	130 B	18
19	---	---	---	---	---	---	---	419	817	444	166 B	128 B	19
20	---	---	---	---	---	---	---	385	781	466	170 B	125 B	20
21	---	---	---	---	---	---	---	392	763	473	173 B	122 B	21
22	---	---	---	---	---	---	---	416	727	549	179 B	120 B	22
23	---	---	---	---	---	---	---	498	704	554	182 B	118 B	23
24	---	---	---	---	---	---	---	658	691	459	188 B	116 B	24
25	---	---	---	---	---	---	---	765	673	438	190 B	114 B	25
26	---	---	---	---	---	---	---	828	655	404	193 B	112 B	26
27	---	---	---	---	---	---	---	815	636	405	195 B	110 B	27
28	---	---	---	---	---	---	1020 A	790	598	393	196 B	108 B	28
29	---		---	---	---	---	962	818	598	352	197 B	106 B	29
30	---		---	---	---	---	906	933	603	320 B	197 B	105 B	30
31	---		---		---		849	1200		300 B		102 B	31
TOTAL	---	---	---	---	---	---	---	19555	28494	14530	5777	4303	TOTAL
MEAN	---	---	---	---	---	---	---	631	950	469	193	139	MEAN
AC-FT	---	---	---	---	---	---	---	38800	56500	28800	11500	8540	AC-FT
MAX	---	---	---	---	---	---	---	1200	1380	589	280	198	MAX
MIN	---	---	---	---	---	---	---	385	598	300	160	102	MIN

A-MANUAL GAUGE
B-ICE CONDITIONS

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 16 04 N
LONG 111 42 51 W
DRAINAGE AREA 960 SQ MILES

NATURAL FLOW



WATER SURVEY OF CANADA
FEB 8 1977 AGE 9
CALGARY, ALTA.

ELLS RIVER NEAR THE MOUTH

STATION NO. 07DA017

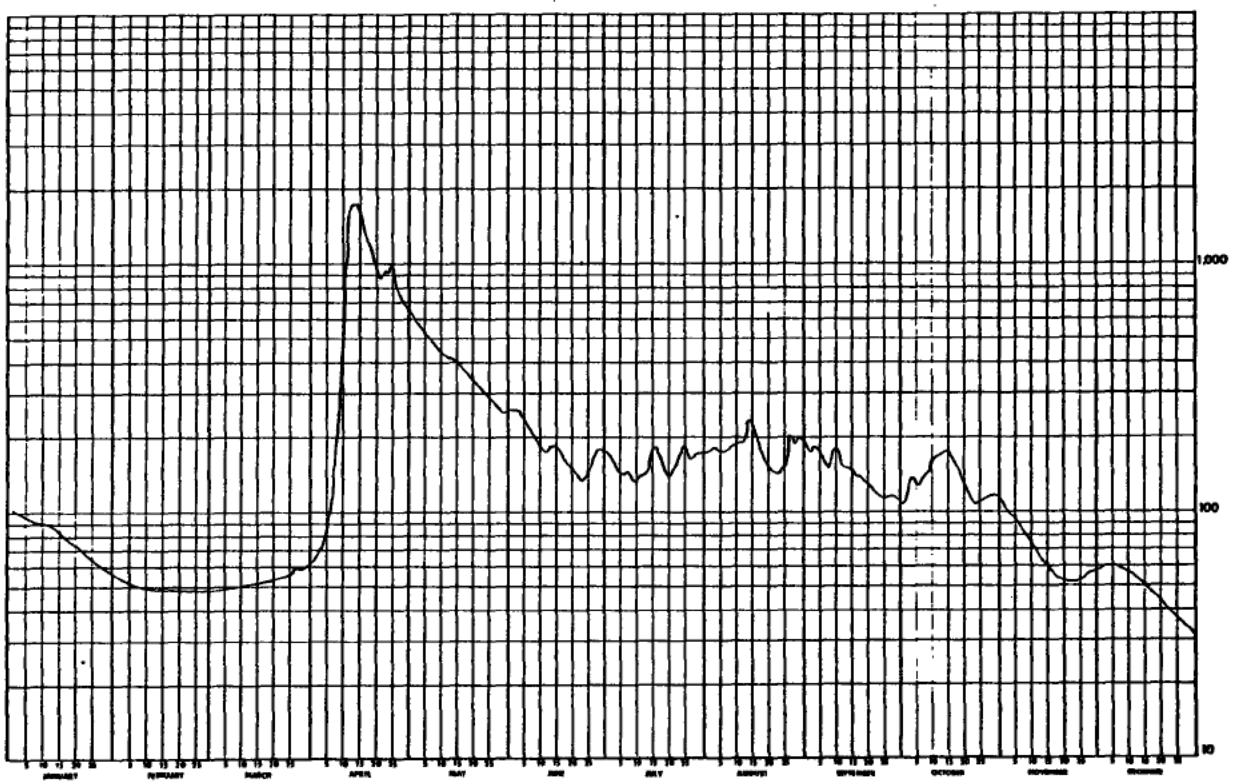
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	101 B	56.0 B	49.9 B	62.0 B	637	249	170	170	180	107	114 B	58.0 B	1
2	100 B	55.0 B	49.9 B	65.0 B	610	247	164	181	174	108	110 B	59.0 B	2
3	99.0 B	54.0 B	50.0 B	68.0 B	589	254	150	182	184	133	104 B	59.0 B	3
4	98.0 B	53.0 B	50.0 B	72.0 B	558	236	145	177	184	140	99.0 B	60.0 B	4
5	96.0 B	52.0 B	50.1 B	80.0 B	536	220	141	173	175	131	94.0 B	60.0 B	5
6	95.0 B	52.0 B	50.1 B	92.0 B	503	213	142	168	161	128	89.0 B	60.0 B	6
7	94.0 B	51.0 B	50.2 B	120 B	479	207	145	167	157	116	84.0 B	60.0 B	7
8	93.0 B	51.0 B	50.2 B	164 B	465	197	132 A	172	160	139	80.0 B	59.0 B	8
9	92.0 B	50.0 B	50.3 B	300 B	456	188	130	176	171	143	76.0 B	59.0 B	9
10	91.0 B	50.0 B	50.3 B	480 B	444	179	133	175	179	155	72.0 B	58.0 B	10
11	90.0 B	49.0 B	51.0 B	736 B	431	174	141	183	175	164	69.0 B	57.0 B	11
12	89.1 B	49.1 B	51.0 B	1550 B	420	171	142	179	157	166	66.0 B	56.0 B	12
13	87.0 B	49.1 B	51.0 B	1700 B	419	181	142	189	150	168	63.0 B	54.0 B	13
14	84.0 B	49.1 B	52.0 B	1760 B	410	185	150	236	149	171 B	61.0 B	52.4 B	14
15	81.0 B	49.2 B	52.0 B	1660 A	407	182	180	218	145	181 B	59.0 B	51.0 B	15
16	79.0 B	49.2 B	52.0 B	1450 E	393	172	183	201	141	170 B	58.0 B	49.0 B	16
17	77.0 B	49.3 B	52.0 B	1270 E	378	165	168	183	140	160 B	56.0 B	48.0 B	17
18	75.0 B	49.3 B	51.0 B	1130 E	363	161	153	164	136	150 B	55.0 B	47.0 B	18
19	74.0 B	49.4 B	53.0 B	990 E	347	151	142	155	132	140 B	54.0 B	45.0 B	19
20	72.0 B	49.4 B	54.0 B	867 A	340	145	137	151	129	130 B	53.0 B	44.0 B	20
21	71.0 B	49.5 B	54.0 B	872	327	141	144	147	126	120 B	53.0 B	43.0 B	21
22	69.0 B	49.5 B	55.0 B	889	322	136	150	146	121	112 B	53.0 B	42.0 B	22
23	68.0 B	49.6 B	55.0 B	940	307	132	159	146	119	109 B	53.0 B	41.0 B	23
24	66.0 B	49.6 B	56.0 B	915	295	136	178	146	117	107 B	53.0 B	39.0 B	24
25	64.0 B	49.7 B	56.0 B	985	288	143	178	146	115	108 B	54.0 B	38.0 B	25
26	63.0 B	49.7 B	57.0 B	831	280 A	149	166	156	116	109 B	54.0 B	37.0 B	26
27	62.0 B	49.7 B	58.0 B	731	270 E	168	162	205	115	111 B	55.0 B	36.0 B	27
28	60.0 B	49.8 B	58.0 B	693	262 A	180	169	187	116	113 B	56.0 B	35.0 B	28
29	59.0 B	49.8 B	59.0 B	678	253	175	171	197	112	115 B	57.0 B	34.0 B	29
30	58.0 B		59.5 B	657	248	169	171	199	110	116 B	57.6 B	33.0 B	30
31	57.0 B		60.0 B		246		171	191		115 B		32.0 B	31
TOTAL	2464.1	1463.0	1649.5	22807.0	12283	5404	4809	5466	4346	4155	2062.5	1505.4	TOTAL
MEAN	79.5	50.4	53.2	760	396	180	155	176	145	134	68.8	48.6	MEAN
AC-FT	4890	2900	3270	45200	24400	10700	9540	13800	8620	8240	8090	2990	AC-FT
MAX	101	56.0	60.0	1760	637	254	183	236	184	181	114	60.0	MAX
MIN	57.0	49.0	49.9	62.0	246	132	130	146	110	107	53.0	32.0	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 187 CFS
TOTAL DISCHARGE, 136000 AC-FT
MAXIMUM DAILY DISCHARGE, 1760 CFS ON APR 14
MINIMUM DAILY DISCHARGE, 32.0 CFS ON DEC 31

MAXIMUM INSTANTANEOUS DISCHARGE, CFS AT ON *NOT DETERMINED*

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



5.17 FIREBAG RIVER NEAR THE MOUTH

STATION NAME: Firebag River near the Mouth

STATION NUMBER: 07DC001

LOCATION: Latitude: 57°38'30" Longitude: 111°10'30"

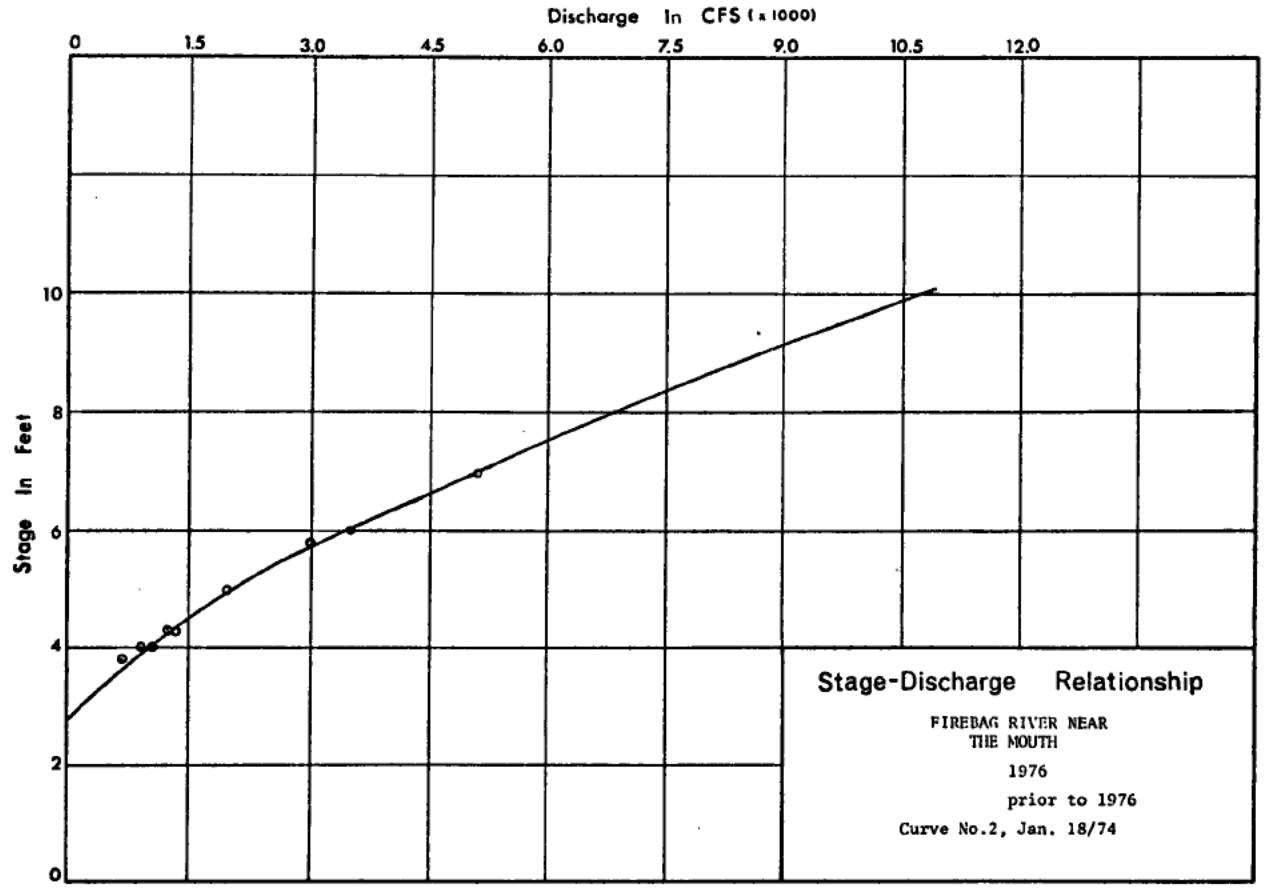
NE35-99-08-W4

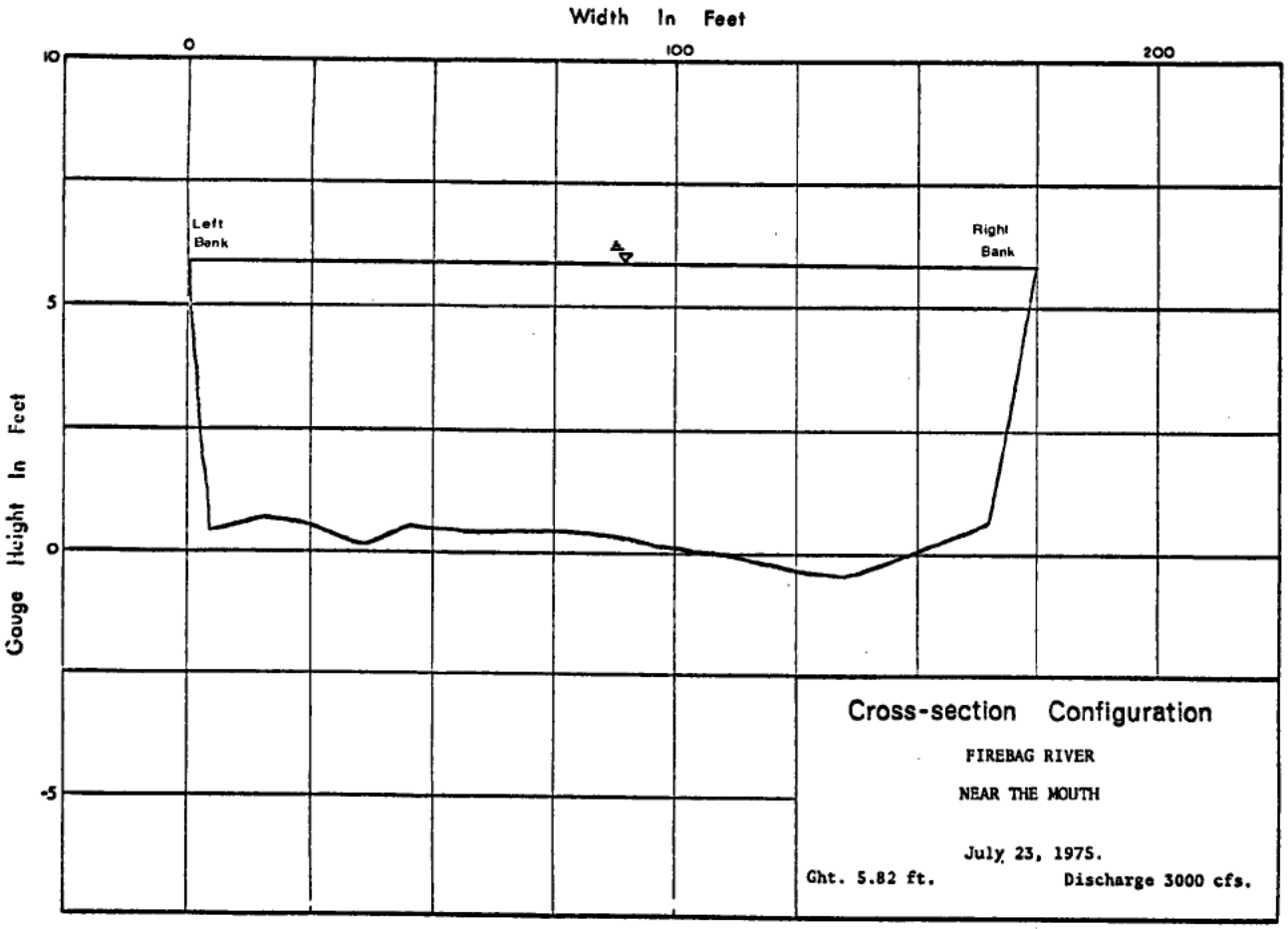
DRAINAGE AREA: 2,330 square miles(6,030 km^2)

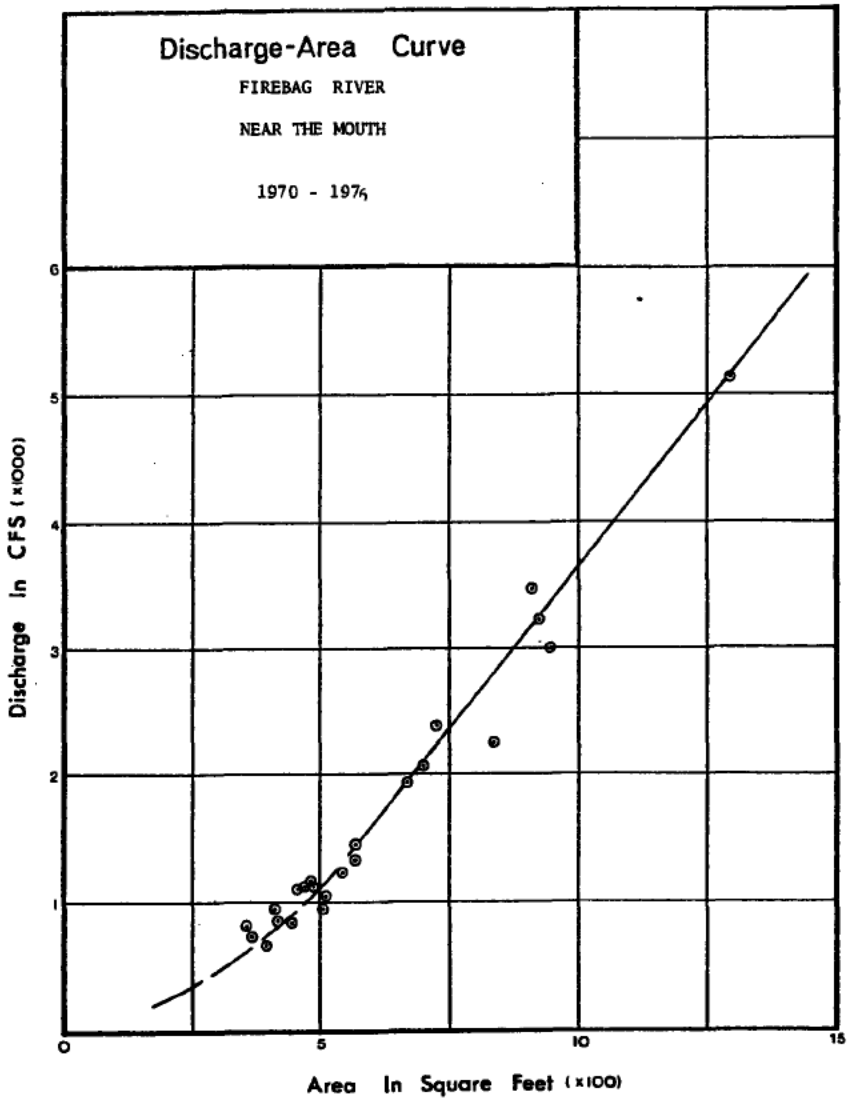
PERIOD OF RECORD: The station was established on October 16, 1971. Discharge data is available on a more or less continuous basis to December,1976.

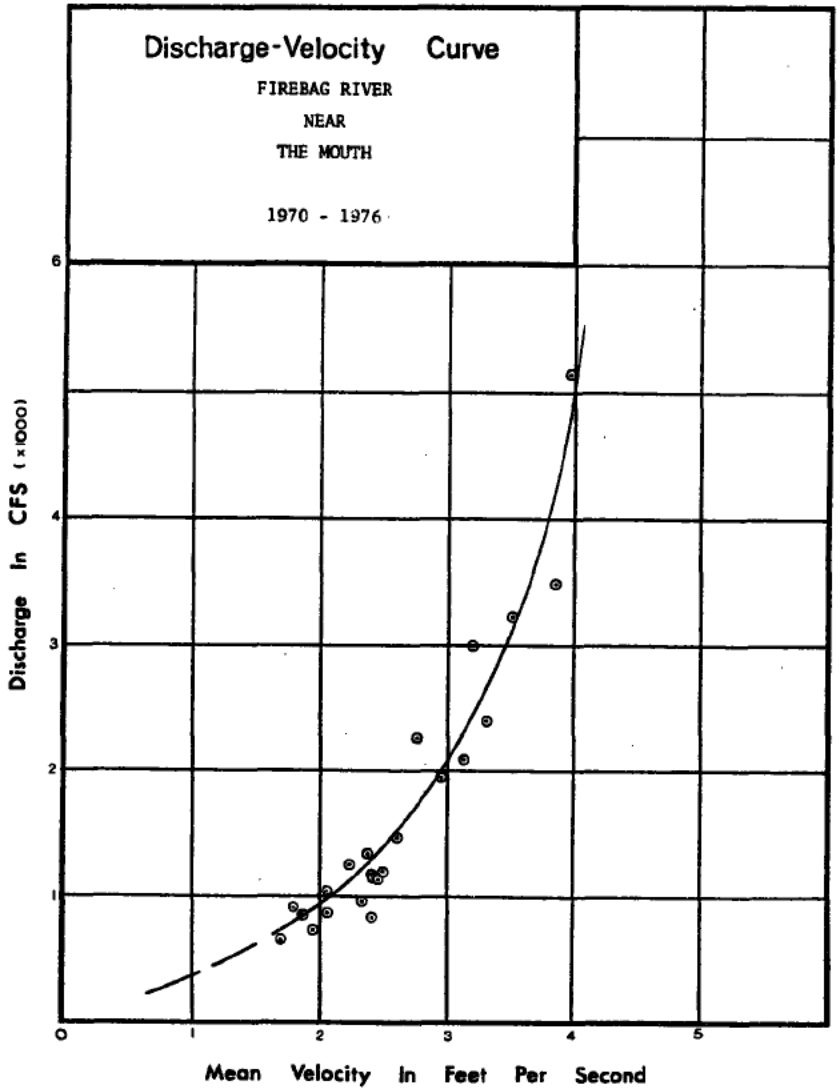
SITE DESCRIPTION: The gauge is located on the right bank about eighteen and one-half miles (30 km) by river above its confluence with the Athabasca and about 900 feet (270 m) above the Forestry bridge. The station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water discharge measurements are made from the cableway approximately three-quarters of a mile (1.2 km) below the gauge.

GENERAL: Prior to construction of the cableway in 1976 the discharge measurements were generally made by boat at approximately the same location.


Discharge In CFS (x 1000)
0
1.5
3.0
4.5
6.0
7.5
9.0
10.5
12.0
Stage In Feet
0
2
4
6
8
10
Stage-Discharge Relationship
FIREBAG RIVER NEAR
THE MOUTH
1976
prior to 1976
Curve No.2, Jan. 18/74


Width In Feet
0
100
200
Gauge Height In Feet
10
5
0
-5
Left
Bank
Right
Bank
Cross-section Configuration
FIREBAG RIVER
NEAR THE MOUTH
July 23, 1975.
Ght. 5.82 ft.
Discharge 3000 cfs.


Discharge-Area Curve
FIREBAG RIVER
NEAR THE MOUTH
1970 - 1976
Discharge In CFS (x1000)
Area In Square Feet (x100)
0
1
2
3
4
5
6
0
5
10
15


Discharge-Velocity Curve
FIREBAG RIVER
NEAR
THE MOUTH
1970 - 1976
Discharge In CFS (x1000)
Mean Velocity In Feet Per Second
0
1
2
3
4
5
6

WATER SURVEY OF CANADA
SEP 07 1973 PAGE 3
CALGARY, ALTA.

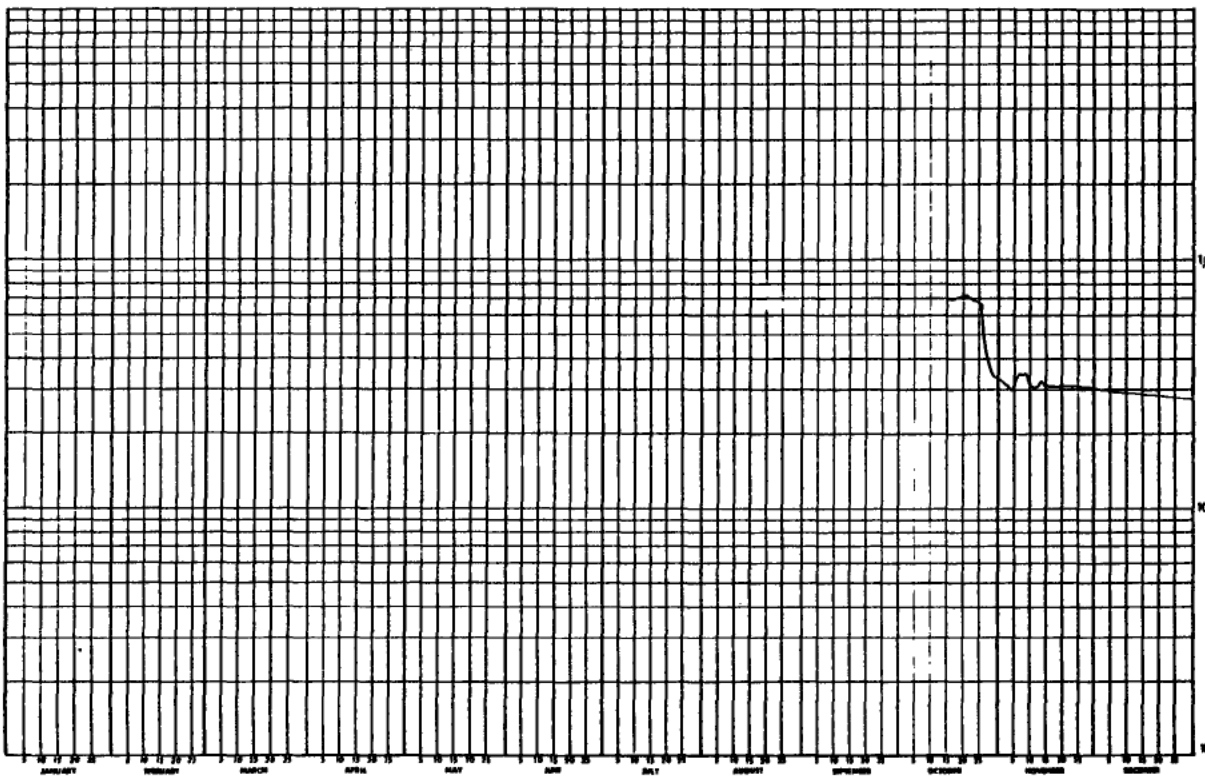
FIREBAG RIVER NEAR THE MOUTH

STATION NO. 07DC001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1971

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	832 A	---	---	---	---	330 B	300 B	1
2	---	---	---	---	---	---	---	---	---	---	325 B	299 B	2
3	---	---	---	---	---	---	---	---	---	---	310 B	298 B	3
4	---	---	---	---	---	---	---	---	---	---	310 B	297 B	4
5	---	---	---	---	---	---	---	---	---	---	295 B	296 B	5
6	---	---	---	---	2260 A	---	---	---	---	---	320 B	296 B	6
7	---	---	---	---	---	---	---	---	---	---	348 B	295 B	7
8	---	---	---	---	---	---	---	---	---	---	342 B	294 B	8
9	---	---	---	---	---	---	---	---	---	---	348 B	293 B	9
10	---	---	---	---	---	---	---	---	---	---	320 B	292 B	10
11	---	---	---	---	---	---	---	---	---	---	305 B	291 B	11
12	---	---	---	---	---	---	---	---	---	---	305 B	290 B	12
13	---	---	---	---	---	---	---	---	---	---	310 B	290 B	13
14	---	---	---	---	---	---	---	---	---	---	325 B	289 B	14
15	---	---	---	---	---	---	---	---	---	---	315 B	288 B	15
16	---	---	---	---	---	---	---	---	---	698 A	310 B	287 B	16
17	---	---	---	---	---	---	---	---	---	698	310 B	286 B	17
18	---	---	---	---	---	---	---	---	---	698	310 B	285 B	18
19	---	---	---	---	---	---	---	---	---	706	310 B	285 B	19
20	---	---	---	---	---	---	---	---	---	706	309 B	284 B	20
21	---	---	---	---	---	---	---	---	---	714	308 B	283 B	21
22	---	---	---	---	---	---	---	---	---	706	307 B	282 B	22
23	---	---	---	---	---	---	---	---	---	698	307 B	281 B	23
24	---	---	---	---	---	---	---	---	---	682	306 B	280 B	24
25	---	---	---	---	---	---	---	---	---	674	305 B	280 B	25
26	---	---	---	---	---	---	---	---	---	656 B	304 B	279 B	26
27	---	---	---	---	---	---	---	---	---	450 B	303 B	278 B	27
28	---	---	---	---	---	---	---	---	---	390 B	302 B	277 B	28
29	---		---	---	---	---	---	---	---	348 B	302 B	277 B	29
30	---		---	---	---	---	---	648 A	---	342 B	301 B	276 B	30
31	---		---		---		---	---		342 B		275 B	31
TOTAL	---	---	---	---	---	---	---	---	---	---	9402	8903	TOTAL
MEAN	---	---	---	---	---	---	---	---	---	---	313	287	MEAN
AC-FT	---	---	---	---	---	---	---	---	---	---	18600	17700	AC-FT
MAX	---	---	---	---	---	---	---	---	---	---	348	300	MAX
MIN	---	---	---	---	---	---	---	---	---	---	295	275	MIN

A-MANUAL GAUGE
B-ICE CONDITIONS



WATER SURVEY OF CANADA
JUL 15 1973 PAGE 206
CALGARY, ALTA.

FIREBAG RIVER NEAR THE MOUTH

STATION NO. 07DC001

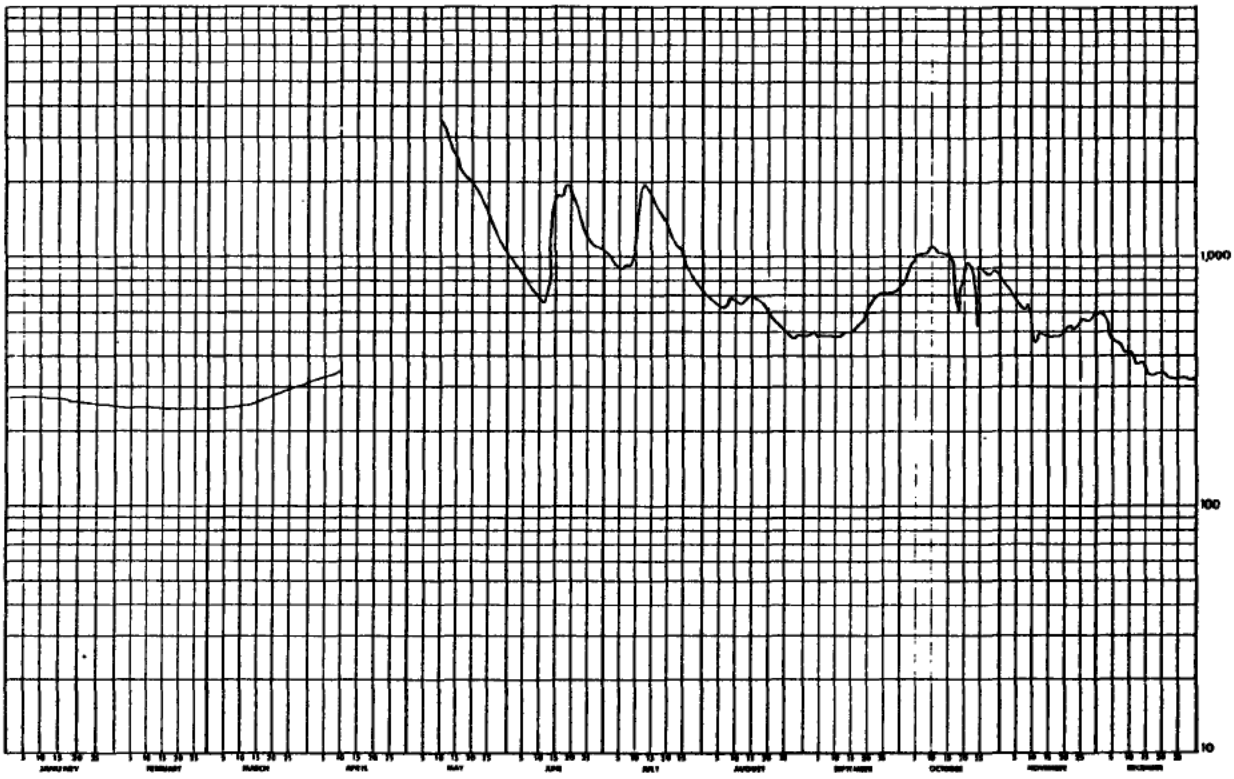
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1972

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	274 B	250 B	250 B	317 B	---	1000	1030	722	486	770	828 B	567 B	1
2	273 B	250 B	250 B	320 B	---	946	980	698	492	810	797 B	594 B	2
3	273 B	250 B	250 B	324 B	---	914	954	682	492	890	766 B	559 B	3
4	272 B	250 B	250 B	327 B	---	874	914	666	492	954	735 B	524 B	4
5	271 B	250 B	250 B	330 B	---	842	890	650	488	988	704 B	474 B	5
6	270 B	250 B	250 B	333 B	---	810	906	636	480	1020	673 B	462 B	6
7	270 B	250 B	250 B	336 B	---	778	922	650	480	1040	643 B	456 B	7
8	269 B	250 B	250 B	339 B	---	746	922	682	480	1040	615 B	438 B	8
9	268 B	250 B	250 B	342 B	---	722	962	682	480	1060	650 B	416 B	9
10	267 B	250 B	250 B	345 B	3550 A	690	1080	674	480	1100	580 B	420 B	10
11	266 B	250 B	253 B	---	3250	658	1420	658	486	1100	450 B	408 B	11
12	266 B	250 B	256 B	---	3020	658	1800	658	492	1040	486 B	372 B	12
13	265 B	250 B	259 B	---	2800	818	1970	674	504	1030 B	498 B	372 B	13
14	264 B	250 B	262 B	---	2650	1250	1920	698	504	1020 B	486 B	384 B	14
15	263 B	250 B	265 B	---	2480	1650	1790	698	510	1020 B	486 B	366 B	15
16	262 B	250 B	268 B	---	2320	1780	1660	706	517	997 B	486 B	336 B	16
17	262 B	250 B	271 B	---	2180	1770	1570	662	538	714 B	480 B	336 B	17
18	261 B	250 B	275 B	---	2140	1790	1530	650	552	601 B	480 B	336 B	18
19	260 B	250 B	273 B	---	2100	1960	1480	615	587	746 B	480 B	336 B	19
20	259 B	250 B	281 B	---	2020	1830	1380	601	622	818 B	504 B	342 B	20
21	259 B	250 B	284 B	---	1940	1710	1290	573	658	962 B	510 B	336 B	21
22	258 B	250 B	287 B	---	1820	1550	1190	552	698	938 B	531 B	330 B	22
23	257 B	250 B	290 B	---	1700	1400	1120	538	722	858 B	517 B	325 B	23
24	256 B	250 B	293 B	---	1580	1280	1100	531	722	930	524 B	320 B	24
25	255 B	250 B	296 B	---	1460	1200	986	510	706	922	531 B	325 B	25
26	255 B	250 B	299 B	---	1360	1150	922	498	722	874	559 B	325 B	26
27	254 B	250 B	302 B	---	1280	1150	898	486	722	810	552 B	325 B	27
28	253 B	250 B	305 B	---	1200	1120	842	474	738	850	559 B	325 B	28
29	252 B	250 B	308 B	---	1130	1110	810	480	754	890 B	580 B	320 B	29
30	252 B		311 B	---	1060	1090	778	486	746	890 B	580 B	320 B	30
31	251 B		314 B		1000		746	480		859 B		320 B	31
TOTAL	8137	7250	8457	---	---	35250	36764	18982	17342	28261	17270	12887	TOTAL
MEAN	262	250	273	---	---	1180	1190	612	578	912	576	390	MEAN
AC-FT	16100	14400	16800	---	---	69900	72900	37700	34400	56100	34300	24000	AC-FT
MAX	274	250	314	---	---	1980	1970	722	754	1100	828	594	MAX
MIN	251	250	250	---	---	658	746	474	483	510	450	320	MIN

A-MANUAL GAUGE
B-ICE CONDITIONS

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 38 30 N
LONG 111 10 30 W

NATURAL FLOW



WATER SURVEY OF CANADA
MAY 15 1974 PAGE 284
CALGARY, ALTA.

FIREBAG RIVER NEAR THE MOUTH

STATION NO. 07DC001

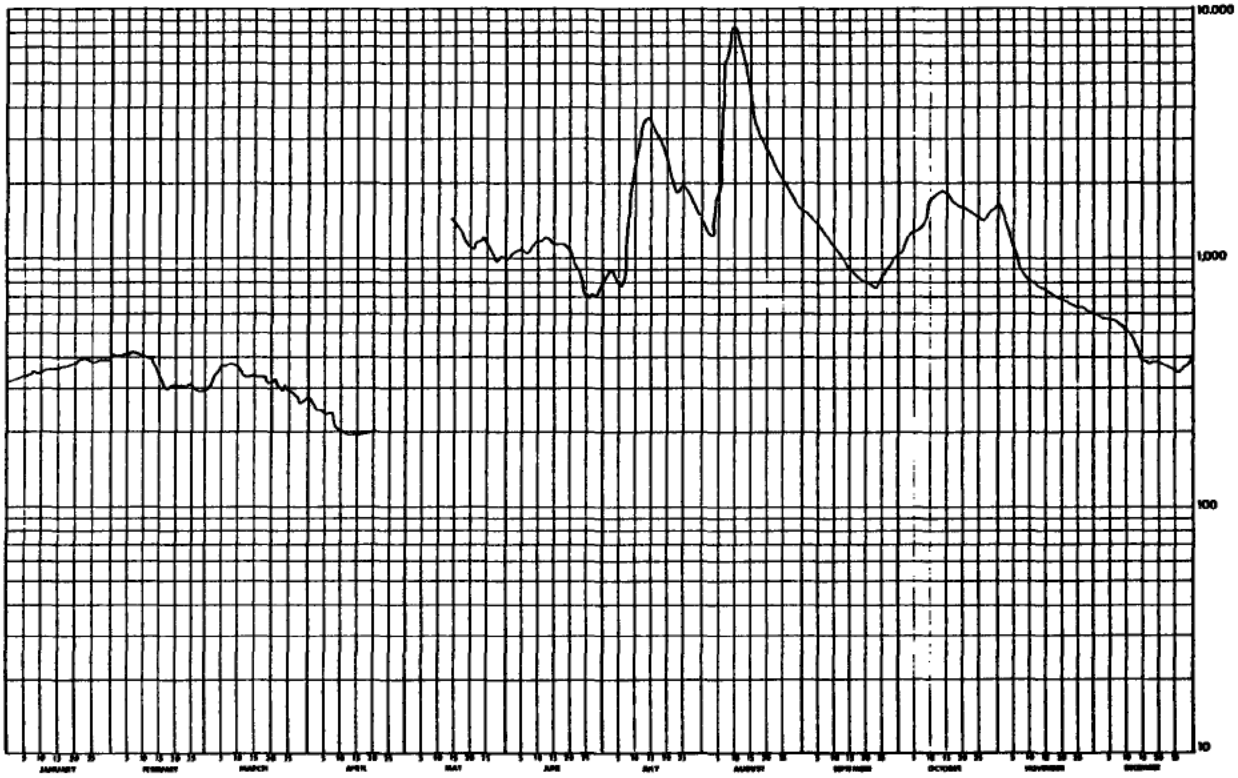
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1973

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	325 B	412 B	303 B	268 B	---	997	838	1350	1550	1050	1640	580 B	1
2	328 B	404 B	317 B	261 B	---	1030	870	1270	1500	1140	1520 B	575 B	2
3	338 B	404 B	331 B	247 B	---	1060	880	1270	1440	1240	1400 B	570 B	3
4	333 B	412 B	359 B	247 B	---	1090	840	1760	1400	1280	1280 B	567 B	4
5	336 B	412 B	366 B	234 B	---	1090	798	1860	1340	1280	1170 B	585 B	5
6	338 B	412 B	366 B	234 B	---	1070	778	2820	1310	1230	1060 B	557 B	6
7	341 B	420 B	373 B	240 B	---	1060	840	6040	1260	1320	970 B	549 B	7
8	344 B	412 B	373 B	228 B	---	1110	1310	6840	1210	1480	885 B	540 B	8
9	346 B	404 B	373 B	204 B	---	1150	1950	8360	1150	1550	858 B	524 B	9
10	349 B	404 B	366 B	282 B	---	1170	2310	8410	1090	1730	825 B	516 B	10
11	352 B	396 B	352 B	280 B	---	1180	2500	7620	1040	1770	805 B	500 B	11
12	354 B	396 B	338 B	198 B	---	1200	3010	6630	1010	1820	790 B	478 B	12
13	357 B	380 B	338 B	136 B	---	1200	3530	5660	953	1920	770 B	444 B	13
14	360 B	352 B	338 B	194 B	1430 A	1150	3590	4810	920	1810	755 B	404 B	14
15	362 B	338 B	338 B	195 B	1480	1130	3470	4140	900	1760	740 B	388 B	15
16	365 B	310 B	331 B	196 B	1330	1150	3320	3600	870	1700	730 B	388 B	16
17	368 B	296 B	338 B	197 B	1250	1140	3180	3260	840	1660	715 B	373 B	17
18	370 B	296 B	331 B	198 B	1180	1140	2990	3040	830	1620	700 B	380 B	18
19	373 B	289 B	317 B	199 B	1130	1100	2750	2860 A	810	1630	695 B	380 B	19
20	359 B	282 B	317 B	208 B	1100	1050	2480	2730 E	800	1580	680 B	388 B	20
21	384 B	303 B	324 B	201 B	1110	986	2210	2600 E	780	1550	670 B	380 B	21
22	396 B	303 B	303 B	---	1150	910	1930	2460 E	770	1520	660 B	380 B	22
23	396 B	303 B	296 B	---	1180	840	1810	2330 E	750	1500	650 B	366 B	23
24	396 B	310 B	303 B	---	1200	780	1860	2200 E	808	1490	640 B	352 B	24
25	388 B	303 B	296 B	---	1150	720	1950	2070 E	860	1480	630 B	345 B	25
26	380 B	296 B	289 B	---	1090	693	1900	1930 E	880	1460	625 B	345 B	26
27	358 B	296 B	282 B	---	1030	702	1790	1800 A	931	1440	615 B	352 B	27
28	388 B	289 B	268 B	---	964	711	1660	1720	975	1490	605 B	359 B	28
29	388 B		261 B	---	986	750	1550	1640	1020	1540	595 B	366 B	29
30	388 B		268 B	---	1010	788	1495	1580	1040	1580	590 B	373 B	30
31	388 B		275 B		997		1420	1550		1620		336 B	31
TOTAL	11274	9834	10030	---	---	30139	61780	106230	31809	47040	25255	13782	TOTAL
MEAN	364	351	324	---	---	1000	1990	3430	1030	1520	842	442	MEAN
AC-FT	22400	19500	19900	---	---	59800	123000	211000	63100	93330	50100	27300	AC-FT
MAX	396	420	373	---	---	1200	3590	8410	1550	1820	1640	585	MAX
MIN	325	282	261	---	---	693	778	1270	750	1050	590	345	MIN

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 38 30 N
LONG 111 18 30 N

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA
JUL 14 1975 PAGE 235
CALGARY, ALTA.

PEEDAG RIVER NEAR THE MOUTH

STATION NO. 07CC001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1974

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	421 B	389 B	362 B	322 A	---	2130	1260	1590	886	972	837 B	684 B	1
2	426 B	371 B	357 B	330 A	---	2350	1240	1840	868	939	829 B	598 B	2
3	443 B	381 B	354 B	362 B	---	2440	1240	1940	871	932	821 B	585 B	3
4	442 B	385 B	364 B	401 B	---	2600	1190	1960	1030	915	811 B	581 B	4
5	440 B	394 B	366 B	445 B	---	2640	1170	1930	1060	931	806 B	573 B	5
6	430 B	393 B	378 B	453 B	---	2640	1140	1850	1090	911	799 B	565 B	6
7	426 B	388 B	369 B	444 B	---	2780	1130	1730	1090	837	799 B	561 B	7
8	417 B	385 B	359 B	448 B	---	2540	1110	1600	1080	852	782 B	553 B	8
9	410 B	387 B	357 B	435 B	---	2510	1160	1480	1070	857	775 B	548 B	9
10	424 B	389 B	360 B	398 B	3310	2470	1290	1360	979	873	767 B	544 B	10
11	412 B	390 B	366 B	386 B	3270	2350	1310	1270	915	879	759 B	540 B	11
12	434 B	393 B	376 B	381 B	3170	2250	1500	1240	879	879	751 B	536 B	12
13	445 B	389 B	381 B	381 B	2990	2150	1740	1170	862	867	744 B	532 B	13
14	437 B	384 B	371 B	405 B	2870	2040	1940	1110	847	856	736 B	527 B	14
15	424 B	381 B	382 B	431 B	2740	2010	1980	1050	836	855	727 B	523 B	15
16	405 B	388 B	386 B	433 B	2550	1910	1980	1000	813	869	721 B	519 B	16
17	393 B	386 B	389 B	417 B	2410	1810	1900	991	799	906	713 B	515 B	17
18	386 B	391 B	397 B	393 B	2270	1710	1840	971	776	937	705 B	511 B	18
19	384 B	392 B	391 B	392 B	2170	1610	1780	940	759	949	697 B	507 B	19
20	386 B	395 B	396 B	1050 B	2070	1590	1790	918	758	1010	699 B	502 B	20
21	391 B	397 B	391 B	2880 B	1970	1490	1740	901	757	1010	691 B	498 B	21
22	394 B	392 B	389 B	---	1880	1390	1730	934	755	1000	674 B	494 B	22
23	397 B	384 B	379 B	---	1780	1260	1630	984	761	933	666 B	490 B	23
24	391 B	371 B	382 B	---	1680	1210	1610	1030	770	954	659 B	486 B	24
25	387 B	370 B	381 B	---	1610	1230	1410	1070	795	935	650 B	482 B	25
26	390 B	371 B	385 B	---	1630	1230	1350	1090	796	893	643 B	477 B	26
27	392 B	373 B	394 B	---	1490	1210	1290	1100	824	859 B	635 B	473 B	27
28	399 B	377 B	399 B	---	1470	1170	1240	1030	884	872 B	627 B	468 B	28
29	415 B		399 B	---	1570	1170	1210	1010	930	862 B	628 B	464 B	29
30	403 B		393 B	---	1710	1130	1200	991	958	853 B	612 B	460 B	30
31	397 B		390 B		1998		1240	992		845 B		456 B	31
TOTAL	11759	9439	11316	---	---	57050	45820	39112	26449	28119	21727	16174	TOTAL
MEAN	379	353	365	---	---	1900	1478	1258	882	907	724	522	MEAN
AC-FT	23320	13510	22440	---	---	113100	90880	77580	52400	55800	43100	32080	AC-FT
MAX	445	397	397	---	---	3700	1900	1960	1090	1010	837	604	MAX
MIN	387	369	359	---	---	1170	1110	901	756	837	612	456	MIN

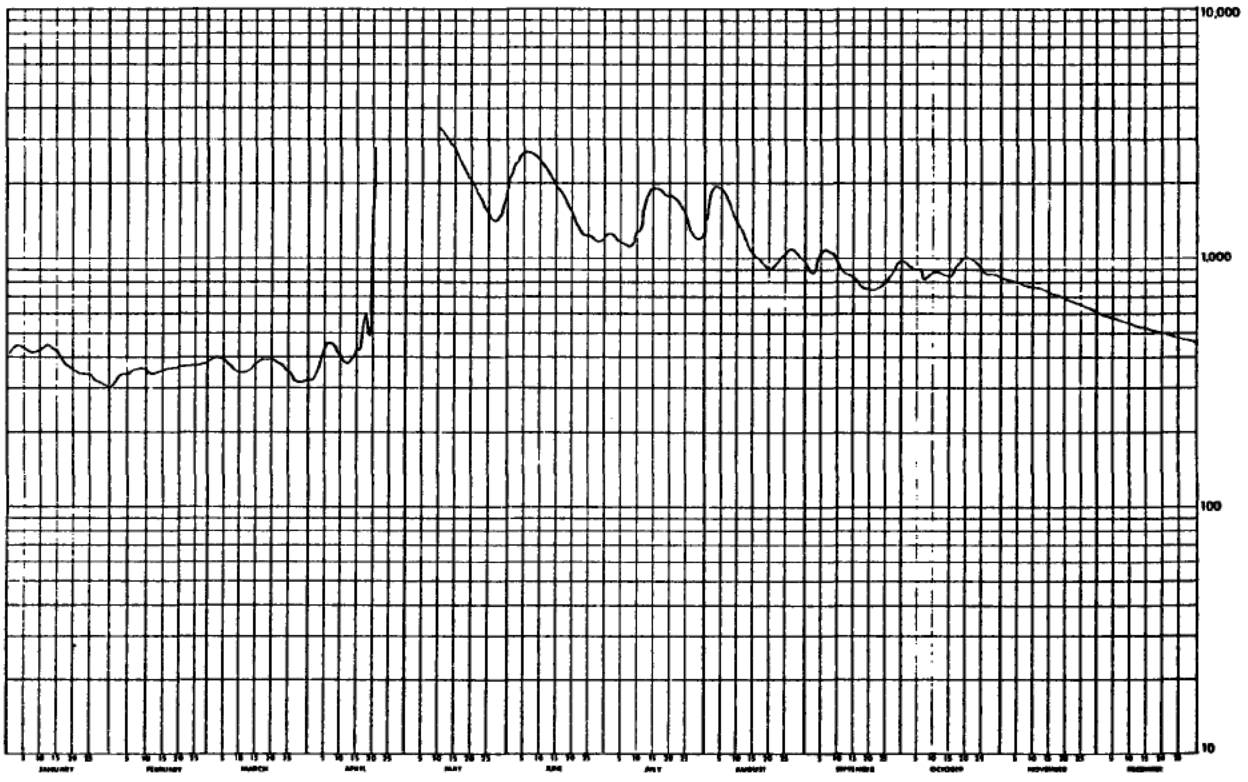
SUMMARY FOR THE YEAR 1974

TYPE OF GAUGE - RECORDING
LOCATION - LAT 67 34 30 N
LONG 111 19 30 W

B-ICE CONDITIONS

MINIMUM DAILY DISCHARGE, 387 CFS ON JAN 31

NATURAL FLOW



WATER SURVEY OF CANADA — FIREBAG RIVER NEAR THE MOUTH — STATION NO. 07DC001
MAY 14 1976 PAGE 299
CALGARY, ALTA.

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	450 B	358 B	330 B	356 B	2020	1260	2700 E	1550	3480	2090	1450	520 B	1
2	445 B	356 B	329 B	359 B	2080	1190	2900 E	1470	3480	2140	1400 B	506 B	2
3	440 B	354 B	328 B	362 B	2100	1130	2900 E	1440	3420	2150	1350 B	495 B	3
4	435 B	353 B	326 B	366 B	2100	1100	2800 E	1420	3370	2120	1290 B	485 B	4
5	430 B	351 B	327 B	370 B	2080	1110	2560 E	1390	3260	2070	1240 B	475 B	5
6	425 B	350 B	326 B	373 B	2020	1140	2140 A	1380	3150	2020	1200 B	465 B	6
7	421 B	349 B	326 B	379 B	1970	1160 E	1960	1410	3020	2040	1160 B	455 B	7
8	417 B	348 B	325 B	387 B	1950	1180 E	1750	1400	2870	2080	1170 B	450 B	8
9	413 B	347 B	325 B	395 B	1910	1240 E	1570	1370	2710	2100	1100 B	440 B	9
10	409 B	346 B	324 B	411 B	1850	1300 E	1390	1330	2610	2110	1070 B	430 B	10
11	404 B	344 B	324 B	435 B	1790	1400 E	1240	1330	2510	2110	1030 B	425 B	11
12	403 B	343 B	323 B	460 B	1730	1550 E	1110	1330	2400	2090	1000 B	420 B	12
13	396 B	342 B	323 B	490 B	1650	1730 E	1030	1320	2290	2060	960 B	420 B	13
14	391 B	341 B	324 B	520 B	1580	1830 E	1020	1330	2160	2050	920 B	420 B	14
15	390 B	340 B	325 B	555 B	1490	1960 E	1100	1350	2060	2020	880 B	425 B	15
16	387 B	339 B	326 B	611 B	1430	2080 E	1260	1360	1990	1970	845 B	425 B	16
17	384 B	338 B	327 B	663 B	1370	2130 E	1430 A	1330	1970	1940	810 B	430 B	17
18	381 B	337 B	328 B	720 B	1320	2080 E	1600 E	1280	1940	1900	780 B	435 B	18
19	378 B	336 B	329 B	780 B	1280	2030 E	2250 E	1220	1890	1860	750 B	440 B	19
20	375 B	335 B	330 B	840 B	1260	1970 A	2600 E	1160	1820	1870	725 B	445 B	20
21	372 B	335 B	333 B	910 B	1220	1870	3000 E	1130	1750	1840	700 B	450 B	21
22	370 B	334 B	335 B	1010 B	1180	1740	3050 E	1150	1660	1830	660 B	455 B	22
23	369 B	334 B	337 B	1150 B	1120	1660	2970 A	1340	1610	1800	660 B	455 B	23
24	368 B	333 B	339 B	1300 B	1100	1630	2830	1600	1540	1760	630 B	460 B	24
25	367 B	332 B	341 B	1450 B	1090	1600	2660	2030	1470	1670	610 B	469 B	25
26	366 B	332 B	343 B	1650 B	1130	1590	2460	2410	1440	1780	590 B	480 B	26
27	364 B	331 B	345 B	1850 B	1260	1770	2270	2710	1500	1550	580 B	485 B	27
28	363 B	330 B	347 B	1720	1350	1990	2100	2860	1550	1420	560 B	480 B	28
29	362 B		349 B	1740	1400	2190	1950	2940	1710	1350	540 B	480 B	29
30	360 B		350 B	1900	1400	2450 E	1800	3120	1960	1430	530 B	480 B	30
31	359 B		353 B		1330		1670	3310		1520		455 B	31
TOTAL	12193	9568	10299	24512	48560	49040	64450	51770	68630	58780	27170	14044	TOTAL
MEAN	393	342	332	817	1570	1630	2080	1670	2290	1900	906	453	MEAN
AC-FT	24200	19000	20400	48600	96300	97300	128000	103000	136000	117000	53900	27900	AC-FT
MAX	450	358	353	1900	2100	2450	3058	3310	3480	2150	1450	520	MAX
MIN	359	330	323	356	1090	1190	1020	1130	1440	1350	530	423	MIN

SUMMARY FOR THE YEAR 1975

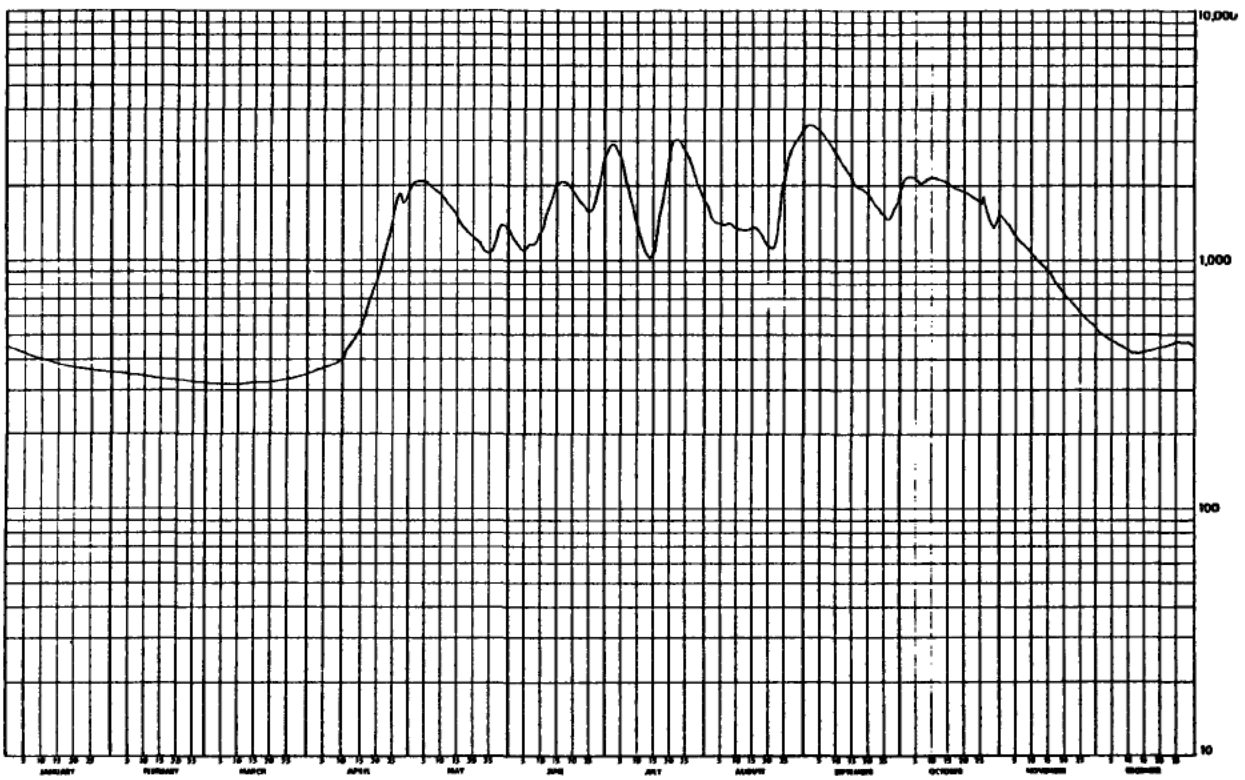
MEAN DISCHARGE, 1200 CFS
TOTAL DISCHARGE, 872000 AC-FT
MAXIMUM DAILY DISCHARGE, 3480 CFS ON SEP 1
MINIMUM DAILY DISCHARGE, 323 CFS ON MAR 12

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 38 30 N
LONG 111 10 30 W

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW

MAXIMUM INSTANTANEOUS DISCHARGE
3510 CFS AT 1800 MST ON SEP 1



WATER SURVEY OF CANADA
FEB 10 1977 PAGE 10
CALGARY, ALTA.

FIREBAG RIVER NEAR THE MOUTH

STATION NO. 07DC001

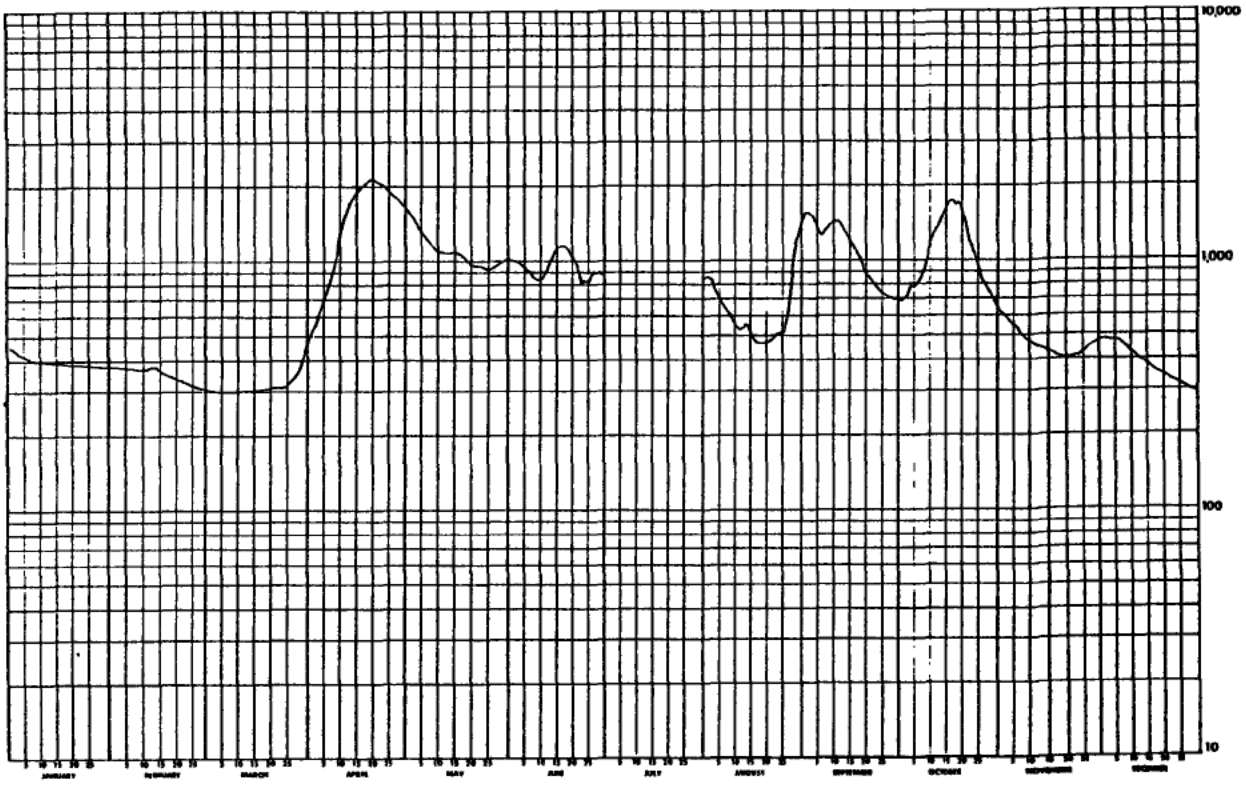
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	450 B	377 B	310 B	500 B	1570	1010		862	1520	693	650 B	480 B	1
2	440 H	377 B	308 B	550 B	1490	987		860	1550	682	620 B	482 B	2
3	430 B	376 H	306 B	600 B	1420	961		833	1500	750	590 B	480 H	3
4	425 B	376 H	304 B	650 B	1360	944		782	1420	782	570 B	480 B	4
5	420 B	375 B	302 B	700 B	1300	927		731	1340	779	550 B	475 H	5
6	410 B	374 B	301 B	770 B	1230	912		691	1260	793	530 B	470 B	6
7	400 H	374 B	301 B	860 B	1180	880		645	1290	832	510 B	460 B	7
8	396 H	373 B	300 B	950 B	1150	848		612	1360	989	500 B	450 B	8
9	396 B	373 H	300 B	1130 H	1120	822		590	1420	1040	490 H	440 B	9
10	395 H	372 B	301 B	1300 B	1080	826		572	1440	1150	480 H	430 B	10
11	395 B	370 B	302 B	1450 B	1050 A	857		556	1440	1230	470 B	420 H	11
12	393 H	378 B	303 B	1600 B	1050	912 A		529	1410	1320	460 B	410 B	12
13	392 B	376 B	304 B	1700 B	1060	985		525	1340	1390	450 B	400 H	13
14	391 B	372 B	305 B	1800 B	1080	1060		548	1260	1520	440 H	390 B	14
15	390 B	360 B	307 B	1900 B	1090	1120		507	1190	1630	435 B	385 B	15
16	390 H	355 B	308 B	2000 B	1080	1140		479	1150	1710	430 B	375 B	16
17	389 B	351 B	309 B	2050 B	1040	1140		470	1090	1740	425 H	365 B	17
18	387 H	349 B	310 B	2100 B	1010	1120		468	1020	1690	425 B	360 B	18
19	386 B	342 B	311 B	2150 E	972	1090		463	950	1710	420 B	350 B	19
20	385 B	340 B	312 B	2150 E	956	1050		469	898	1640	420 B	345 B	20
21	384 B	338 B	314 B	2100 E	941	982		474	867	1510 B	415 B	380 H	21
22	383 B	334 B	318 B	2080 A	947	894		490	829	1320 B	415 B	335 B	22
23	382 H	332 B	320 B	2030	951	812		497	794	1210 B	420 B	330 H	23
24	381 B	328 H	322 B	1980	943	828		507	764	1060 B	425 H	325 B	24
25	380 B	324 B	325 B	1930	917	830		514	741	971 B	430 H	320 B	25
26	380 B	320 B	334 B	1870	935	875		517	735	886 B	435 H	315 B	26
27	380 B	316 B	345 B	900 A	932	900 A		586	717	820 B	445 B	310 H	27
28	379 H	312 B	360 B	1760	949	900 E		829	714	790 B	455 B	310 B	28
29	379 B	310 B	390 B	1700	973	900 E		1100	718	750 B	470 H	305 B	29
30	378 B		435 B	1640	1010	900 E		1240	710	710 B	475 B	300 B	30
31	378 B		472 B		1020		833 A	1410		680 B		300 B	31
TOTAL	12244	10254	10039	44900	33806	28404		20356	33437	34697	14250	11937	TOTAL
MEAN	395	354	324	1500	1090	947		657	1110	1120	475	385	MEAN
AC-FT	24300	20300	19900	89100	67100	56300		40400	66300	68800	28300	23700	AC-FT
MAX	450	378	472	2150	1570	1140		1410	1550	1740	650	482	MAX
MIN	378	340	300	500	917	812		463	710	680	415	300	MIN

SUMMARY FOR THE MONTHS JAN TO JUN
MEAN DISCHARGE, 767 CFS
TOTAL DISCHARGE, 277000 AC-FT
MAXIMUM DAILY DISCHARGE, 2150 CFS ON APR 19
MINIMUM DAILY DISCHARGE, 300 CFS ON MAR 8

MAXIMUM INSTANTANEOUS DISCHARGE, CFS AT ON NOT DETERMINED

A-MANUAL GAUGE
H-ICE CONDITIONS
E-ESTIMATED



5.18 GARDINER LAKE(UPPER) IN BIRCH MOUNTAINS

STATION NAME: Gardiner Lake (Upper) in Birch Mountains

STATION NUMBER: 07DA020

LOCATION: Latitude: 57°32'30" Longitude: 112°28'40"

DRAINAGE AREA:

PERIOD OF RECORD: This station was established on May 29, 1976. Miscellaneous water levels are available during the 1976 open water period.

SITE DESCRIPTION: This station is located on the east shore of North Gardiner Lake approximately 50 air miles (80 km) northwest of Mildred Lake. Water elevations are determined by running levels from one of three bench marks located in the area of an old abandoned fish camp.

GENERAL: The bench marks are referred to an assumed datum. Five water levels were taken during 1976; 95.62 on May 29, 95.43 on July 11, 95.73 on August 5, 95.25 on September 15 and 95.28 on November 3.

5.19 GREGOIRE LAKE NEAR FORT McMURRAY

STATION NAME: Gregoire Lake near Fort McMurray

STATION NUMBER: 07CE001

LOCATION: Latitude: 56°27'00" Longitude: 111°03'30"

DRAINAGE AREA:

PERIOD OF RECORD: This station was established August 1, 1969. Water levels are available on a seasonal basis.

SITE DESCRIPTION: A staff gauge is attached to a pier located one-half mile (0.8 km) west of the village of Anzac. This gauge is read by an observer every other day.

GENERAL: Water levels are referred to Geodetic Datum.

GREGOIRE LAKE NEAR FORT MCMURRAY - STATION NO. 07CE001

DAILY WATER LEVEL IN FEET FOR 1969

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	1559.77	---	---	---	---	1
2	---	---	---	---	---	---	---	---	---	---	---	---	2
3	---	---	---	---	---	---	---	---	---	---	---	---	3
4	---	---	---	---	---	---	---	---	---	1561.07	---	---	4
5	---	---	---	---	---	---	---	1559.75	1559.75	---	---	---	5
6	---	---	---	---	---	---	---	---	---	---	---	---	6
7	---	---	---	---	---	---	---	---	---	---	---	---	7
8	---	---	---	---	---	---	---	1559.74	---	---	---	---	8
9	---	---	---	---	---	---	---	---	---	---	---	---	9
10	---	---	---	---	---	---	---	---	---	1561.02	---	---	10
11	---	---	---	---	---	---	---	---	1560.01	---	---	---	11
12	---	---	---	---	---	---	---	---	---	---	---	---	12
13	---	---	---	---	---	---	---	1559.76	---	---	---	---	13
14	---	---	---	---	---	---	---	---	---	---	---	---	14
15	---	---	---	---	---	---	---	1559.57	---	---	---	---	15
16	---	---	---	---	---	---	---	---	---	---	---	---	16
17	---	---	---	---	---	---	---	---	---	---	---	---	17
18	---	---	---	---	---	---	---	---	---	1560.81	---	---	18
19	---	---	---	---	---	---	---	1559.79	1560.50	---	---	---	19
20	---	---	---	---	---	---	---	---	---	---	---	---	20
21	---	---	---	---	---	---	---	---	---	---	---	---	21
22	---	---	---	---	---	---	---	---	---	---	---	---	22
23	---	---	---	---	---	---	---	---	---	---	---	---	23
24	---	---	---	---	---	---	---	---	---	1560.86	---	---	24
25	---	---	---	---	---	---	---	---	---	---	---	---	25
26	---	---	---	---	---	---	---	---	1560.84	---	---	---	26
27	---	---	---	---	---	---	---	---	---	---	---	---	27
28	---	---	---	---	---	---	---	1559.70	---	---	---	---	28
29	---		---	---	---	---	---	---	---	---	---	---	29
30	---		---	---	---	---	---	---	---	---	---	---	30
31	---		---		---		---	---		---		---	31

SUMMARY FOR THE YEAR 1969

TYPE OF GAUGE - MANUAL
LOCATION - LAT 56 27 00 N
LONG 111 03 00 W

NATURAL FLOW

WATER LEVELS ARE REFERRED TO GEODETIC SURVEY OF CANADA DATUM.

GREGOIRE LAKE NEAR FORT MCMURRAY - STATION NO. 07CE001

DAILY WATER LEVEL IN FEET FOR 1970

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	1561.49	---	---	---	---	---	1
2	---	---	---	---	---	---	1561.95	---	---	---	---	---	2
3	---	---	---	---	---	---	1562.13	---	---	---	---	---	3
4	---	---	---	---	---	---	1562.20	---	---	---	---	---	4
5	---	---	---	---	---	---	1562.63	---	---	---	---	---	5
6	---	---	---	---	---	---	1562.42	1561.30	---	---	---	---	6
7	---	---	---	---	---	---	---	---	---	---	---	---	7
8	---	---	---	---	---	---	---	---	---	---	---	---	8
9	---	---	---	---	---	---	1562.31	---	---	---	---	---	9
10	---	---	---	---	---	---	---	---	---	---	---	---	10
11	---	---	---	---	---	---	---	---	---	---	---	---	11
12	---	---	---	---	---	1560.67	---	---	---	---	---	---	12
13	---	---	---	---	---	---	---	---	---	---	---	---	13
14	---	---	---	---	---	---	1562.12	---	---	---	---	---	14
15	---	---	---	---	1560.61	---	---	---	---	---	---	---	15
16	---	---	---	---	---	---	---	---	---	---	---	---	16
17	---	---	---	---	---	---	---	---	---	---	---	---	17
18	---	---	---	---	---	---	---	---	---	---	---	---	18
19	---	---	---	---	---	1560.85	---	---	---	---	---	---	19
20	---	---	---	---	---	---	---	---	---	---	---	---	20
21	---	---	---	---	---	---	1561.60	---	---	---	---	---	21
22	---	---	---	---	1561.02	---	---	---	---	1560.92	---	---	22
23	---	---	---	---	---	---	---	---	---	---	---	---	23
24	---	---	---	---	---	---	---	---	---	---	---	---	24
25	---	---	---	---	---	---	---	---	---	---	---	---	25
26	---	---	---	---	---	---	---	---	---	---	---	---	26
27	---	---	---	---	---	---	---	---	---	---	---	---	27
28	---	---	---	---	---	---	---	---	---	---	---	---	28
29	---		---	---	1561.30	1561.04	---	---	---	---	---	---	29
30	---		---	---	---	---	---	---	---	---	---	---	30
31	---		---		---		---	---		---		---	31

TYPE OF GAUGE - MANUAL
LOCATION - LAT 56 27 00 N
LONG 111 03 00 W

NATURAL FLOW

WATER LEVELS ARE REFERRED TO GEODETIC SURVEY OF CANADA DATUM.

WATER SURVEY OF CANADA
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GREGOIRE LAKE NEAR FORT MCMURRAY

STATION NO. 07CE001

DAILY WATER LEVEL IN FEET FOR 1971

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	---	---	---	---	---	1
2	---	---	---	---	---	1560.24	---	---	---	---	---	---	2
3	---	---	---	---	1560.82	---	---	---	---	1559.66	---	---	3
4	---	---	---	---	---	---	---	---	---	---	---	---	4
5	---	---	---	---	---	---	1560.52	---	---	---	---	---	5
6	---	---	---	---	---	---	---	1560.27	---	---	---	---	6
7	---	---	---	---	---	---	---	---	---	---	---	---	7
8	---	---	---	---	---	---	---	---	---	---	---	---	8
9	---	---	---	---	---	---	---	---	---	---	---	---	9
10	---	---	---	---	---	---	---	---	---	---	---	---	10
11	---	---	---	---	---	---	---	1560.21	---	---	---	---	11
12	---	---	---	---	---	---	---	---	1559.81	---	---	---	12
13	---	---	---	---	---	---	---	---	---	---	---	---	13
14	---	---	---	---	---	---	1560.56	---	---	---	---	---	14
15	---	---	---	---	---	---	---	---	---	---	---	---	15
16	---	---	---	---	---	---	---	---	---	---	---	---	16
17	---	---	---	---	---	---	---	---	---	---	---	---	17
18	---	---	---	---	---	---	---	---	---	---	---	---	18
19	---	---	---	---	---	---	---	---	---	---	---	---	19
20	---	---	---	---	---	---	---	---	---	---	---	---	20
21	---	---	---	---	---	1559.98	---	---	---	---	---	---	21
22	---	---	---	1560.31	---	---	---	---	---	---	---	---	22
23	---	---	---	---	---	---	1560.59	---	---	---	---	---	23
24	---	---	---	---	---	---	---	---	---	---	---	---	24
25	---	---	---	---	1560.31	---	---	---	---	---	---	---	25
26	---	---	---	---	---	---	---	---	---	---	---	---	26
27	---	---	---	---	---	---	---	---	---	---	---	---	27
28	---	---	---	---	---	---	---	---	---	---	---	---	28
29	---		---	---	---	---	---	---	---	---	---	---	29
30	---		---	---	---	---	---	---	---	---	---	---	30
31	---		---		---		---	---		---		---	31

TYPE OF GAUGE - MANUAL
LOCATION - LAT 56 27 00 N
LONG 111 03 00 W

WATER LEVELS ARE REFERRED TO GEODETIC SURVEY OF CANADA DATUM.

WATER SURVEY OF CANADA
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GREGOIRE LAKE NEAR FORT MCMURRAY

STATION NO. 07CE001

DAILY WATER LEVEL IN FEET FOR 1972

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	---	---	---	---	---	1
2	---	---	---	---	---	---	---	1559.62	---	---	---	---	2
3	---	---	---	---	---	---	---	---	---	---	---	---	3
4	---	---	---	---	---	---	---	---	---	1559.18	---	---	4
5	---	---	---	---	---	1560.37	1559.97	---	---	---	---	---	5
6	---	---	---	---	---	---	---	---	1559.21	---	---	---	6
7	---	---	---	---	---	---	---	---	---	---	---	---	7
8	---	---	---	---	---	---	---	---	---	---	---	---	8
9	---	---	---	---	---	---	---	1559.62	---	---	---	---	9
10	---	---	---	---	---	---	---	---	---	---	---	---	10
11	---	---	---	---	---	---	---	---	---	1559.20	---	---	11
12	---	---	---	---	---	---	1559.94	---	---	---	---	---	12
13	---	---	---	---	---	1560.33	---	---	1559.13	---	---	---	13
14	---	---	---	---	---	---	---	---	---	---	---	---	14
15	---	---	---	---	---	---	---	---	---	---	---	---	15
16	---	---	---	---	---	---	---	1559.55	---	---	---	---	16
17	---	---	---	---	---	---	---	---	---	---	---	---	17
18	---	---	---	---	---	---	---	---	---	1559.08	---	---	18
19	---	---	---	---	---	---	1559.92	---	---	---	---	---	19
20	---	---	---	---	---	1560.15	---	1559.41	1559.11	---	---	---	20
21	---	---	---	---	---	---	---	---	---	---	---	---	21
22	---	---	---	---	---	---	---	---	---	---	---	---	22
23	---	---	---	---	---	---	---	---	---	---	---	---	23
24	---	---	---	---	---	---	---	---	---	---	---	---	24
25	---	---	---	---	---	---	---	---	---	---	---	---	25
26	---	---	---	---	---	---	1559.77	---	---	---	---	---	26
27	---	---	---	---	---	1560.08	---	---	1559.18	---	---	---	27
28	---	---	---	---	---	---	---	1559.26	---	---	---	---	28
29	---	---	---	---	---	---	---	---	---	---	---	---	29
30	---		---	---	---	---	---	---	---	---	---	---	30
31	---		---		---		---	---		---		---	31

TYPE OF GAUGE - MANUAL
LOCATION - LAT 56 27 00 N
LONG 111 03 00 W

WATER LEVELS ARE REFERRED TO GEODETIC SURVEY OF CANADA DATUM.

WATER SURVEY OF CANADA
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GREGOIRE LAKE NEAR FORT MCMURRAY

STATION NO. 07CE001

DAILY WATER LEVEL IN FEET FOR 1973

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	---	---	---	---	---	1
2	---	---	---	---	---	---	---	1560.54	---	---	---	---	2
3	---	---	---	---	---	---	---	---	---	---	---	---	3
4	---	---	---	---	---	---	1561.03	---	---	---	---	---	4
5	---	---	---	---	---	---	---	---	---	---	---	---	5
6	---	---	---	---	---	1560.49	---	---	---	---	---	---	6
7	---	---	---	---	---	---	---	---	---	---	---	---	7
8	---	---	---	---	---	---	---	---	---	---	---	---	8
9	---	---	---	---	---	---	---	---	---	---	---	---	9
10	---	---	---	---	---	---	---	1560.97	---	---	---	---	10
11	---	---	---	---	---	---	---	---	---	---	---	---	11
12	---	---	---	---	---	---	---	---	---	---	---	---	12
13	---	---	---	---	---	1560.87	---	---	---	---	---	---	13
14	---	---	---	---	---	---	1560.87	---	---	---	---	---	14
15	---	---	---	---	---	---	---	---	---	---	---	---	15
16	---	---	---	---	---	---	---	1560.84	---	---	---	---	16
17	---	---	---	---	---	---	---	---	---	---	---	---	17
18	---	---	---	---	---	---	---	---	---	---	---	---	18
19	---	---	---	---	---	---	1560.85	---	---	---	---	---	19
20	---	---	---	---	---	1561.49	---	---	---	---	---	---	20
21	---	---	---	---	---	1561.46	---	---	---	---	---	---	21
22	---	---	---	---	---	1561.44	---	1560.63	---	---	---	---	22
23	---	---	---	---	---	---	---	---	---	---	---	---	23
24	---	---	---	---	---	---	---	---	---	---	---	---	24
25	---	---	---	---	---	---	---	---	---	---	---	---	25
26	---	---	---	---	---	---	1560.74	---	---	---	---	---	26
27	---	---	---	---	---	1561.34	---	---	---	---	---	---	27
28	---	---	---	---	---	---	---	---	---	---	---	---	28
29	---		---	---	---	---	---	---	---	---	---	---	29
30	---		---	---	---	---	---	---	---	---	---	---	30
31	---		---		---		---	---		---		---	31

TYPE OF GAUGE - MANUAL
LOCATION - LAT 56 27 00 N
LONG 111 03 00 W

WATER LEVELS ARE REFERRED TO GEODETIC SURVEY OF CANADA DATUM

WATER SURVEY OF CANADA
JUL 18 1975 PAGE 43
CALGARY, ALTA.

GREGOIRE LAKE NEAR FORT MCMURRAY

STATION NO. 07CE001

DAILY WATER LEVEL IN FEET FOR 1974

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	1559.98	---	1559.93	1559.81	---	---	1
2	---	---	---	---	---	1560.58	---	1560.42	---	---	1559.62	---	2
3	---	---	---	---	---	---	1559.98	---	1559.90	1559.80	---	---	3
4	---	---	---	---	---	1560.44	---	1560.41	---	---	---	---	4
5	---	---	---	---	---	---	1559.97	---	1559.89	1559.79	---	---	5
6	---	---	---	---	---	1560.39	---	1560.37	---	---	---	---	6
7	---	---	---	---	---	---	1559.98	---	1559.89	1559.80	---	---	7
8	---	---	1559.28	---	1560.54	1560.30	---	1560.31	---	---	---	---	8
9	---	---	---	---	---	---	1560.81	---	1559.88	1559.76	---	---	9
10	---	---	---	---	1560.61	1560.38	---	1560.26	---	---	---	---	10
11	---	1559.36	---	---	---	---	1560.87	---	1559.88	1559.75	---	---	11
12	---	---	---	---	1560.69	1560.38	---	1560.18	---	---	---	---	12
13	---	---	---	---	---	---	1560.18	---	1559.89	1559.74	---	---	13
14	---	---	---	---	---	1560.31	---	1560.15	---	---	---	---	14
15	---	---	---	---	1560.69	---	1560.41	---	1559.90	1559.73	---	---	15
16	---	---	---	---	---	1560.28	---	1560.12	---	---	---	---	16
17	---	---	---	---	1560.71	---	1560.42	---	1559.91	1559.72	---	---	17
18	---	---	---	---	---	1560.18	---	1560.06	---	---	---	---	18
19	---	---	---	---	1560.65	---	1560.44	---	1559.91	1559.71	---	---	19
20	---	---	---	---	---	1560.14	---	1560.03	---	---	---	---	20
21	---	---	---	---	---	---	1560.47	---	1559.90	1559.68	---	---	21
22	---	---	---	---	1560.63	1560.17	---	1560.01	---	---	---	---	22
23	---	---	---	---	---	---	1560.53	---	1559.89	1559.65	---	---	23
24	---	---	---	---	1560.53	1560.16	---	1559.94	---	---	---	---	24
25	---	---	---	---	---	---	1560.50	---	1559.88	1559.56	---	---	25
26	---	---	---	---	1560.52	1560.09	---	1559.97	---	---	---	---	26
27	---	---	---	---	---	---	1560.50	---	1559.84	1559.58	---	---	27
28	---	---	---	---	1560.50	1560.06	---	1559.99	---	---	---	---	28
29	---		---	---	---	---	1560.47	---	1559.82	1559.67	---	---	29
30	---		---	---	---	1560.05	---	1559.96	---	---	---	---	30
31	---		---		1560.50		1560.43	---		1559.64		---	31

TYPE OF GAUGE - MANUAL
LOCATION - LAT 56 27 00 N
LONG 111 03 00 W

NATURAL FLOW

WATER LEVELS ARE REFERRED TO GEODETIC SURVEY OF CANADA DATUM

WATER SURVEY OF CANADA
JUL 02 1976 PAGE 41
CALGARY, ALTA.

GREGOIRE LAKE NEAR FORT MCMURRAY

STATION NO. 07CE001

DAILY WATER LEVEL IN FEET FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	1560.78	1560.73	---	---	---	---	---	1
2	---	---	---	---	---	1560.84	1560.71	---	---	---	---	---	2
3	---	---	---	---	---	1560.93	1560.70	---	---	---	---	---	3
4	---	---	---	---	1559.54	1561.03	1560.68	---	---	---	---	---	4
5	---	---	---	---	1559.55	1560.94	1560.66	---	---	---	---	---	5
6	---	---	---	---	1559.55	1560.84	1560.63	---	---	---	1560.41	---	6
7	---	---	---	---	1559.57	1560.85	1560.62	---	---	---	---	---	7
8	---	---	---	---	1559.57	1561.05	1560.61	---	---	---	---	---	8
9	---	---	---	---	1559.58	1561.05	1560.59	---	---	---	---	---	9
10	---	---	---	---	1559.59	1561.06	1560.58	---	---	---	---	---	10
11	---	---	---	---	1559.65	1560.86	1560.57	---	---	---	---	---	11
12	---	---	---	---	1559.71	1560.87	1560.56	---	---	---	---	---	12
13	---	---	---	---	1560.12	1560.87	1560.58	---	---	---	---	---	13
14	---	---	---	---	1560.18	1560.89	1560.59	---	---	---	---	---	14
15	---	---	---	---	1560.22	1560.89	1560.61	---	---	---	---	---	15
16	---	---	---	---	1560.26	1560.88	1560.61	---	---	---	---	---	16
17	---	---	---	---	1560.29	1560.87	1560.63	---	---	---	---	---	17
18	---	---	---	---	1560.30	1560.86	1560.63	---	---	---	---	---	18
19	---	---	---	---	1560.32	1560.85	1560.64	---	---	---	---	---	19
20	---	---	---	---	1560.35	1560.89	1560.66	---	---	---	---	---	20
21	---	---	---	---	1560.38	1560.84	1560.67	---	---	---	---	---	21
22	---	---	---	---	1560.44	1560.84	1560.68	---	---	---	---	---	22
23	---	---	---	---	1560.44	1560.85	1560.68	---	---	---	---	---	23
24	---	---	---	---	1560.54	1560.85	1560.69	---	---	---	---	---	24
25	---	---	---	---	1560.56	1560.86	1560.73	---	---	---	---	---	25
26	---	---	---	---	1560.56	1560.86	1560.71	---	---	---	---	---	26
27	---	---	---	---	1560.60	1560.85	---	---	---	---	---	---	27
28	---	---	---	---	1560.68	1560.35	---	---	---	---	---	---	28
29	---		---	---	1560.72	1560.86	---	---	---	---	---	---	29
30	---		---	---	1560.73	1560.85	---	---	---	---	---	---	30
31	---		---		1560.76		---	---		---		---	31
MEAN	---	---	---	---	---	1560.85	---	---	---	---	---	---	MEAN
MAX	---	---	---	---	---	1560.94	---	---	---	---	---	---	MAX
MIN	---	---	---	---	---	1560.78	---	---	---	---	---	---	MIN

TYPE OF GAUGE - MANUAL
LOCATION - LAT 56 27 40 N
LONG 111 33 40 W

NATURAL FLOW

WATER SURVEY OF CANADA
DEC 22 1976 PAGE 8
CALGARY, ALTA.

GREGOIRE LAKE NEAR FORT MCMURRAY

STATION NO. 07CE001

(PRELIMINARY) DAILY WATER LEVEL IN FEET FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1						1560.10	1559.98	1560.31	1561.16	1560.89			1
2													2
3							1559.98	1560.31	1561.23	1560.86			3
4					1560.09								4
5					1560.07			1560.33		1560.83			5
6						1559.97			1561.23				6
7					1560.10			1560.34		1560.81			7
8						1560.01			1561.24				8
9					1560.11			1560.34		1560.79			9
10						1560.03			1561.20				10
11					1560.10			1560.35		1560.77			11
12						1560.04			1561.18				12
13					1560.11			1560.35		1560.75			13
14						1560.01	1560.27		1561.16				14
15					1560.11			1560.33		1560.72			15
16						1560.01	1560.32		1561.13				16
17					1560.09			1560.30		1560.71			17
18						1560.00	1560.33		1561.10				18
19					1560.07			1560.27		1560.71			19
20						1560.01	1560.34		1561.08				20
21					1560.08			1560.26		1560.70			21
22						1560.01	1560.34		1561.03				22
23					1560.10			1560.30	1560.97				23
24						1560.01	1560.36		1561.02				24
25					1560.12			1560.36		1560.53			25
26						1560.01	1560.38		1561.00				26
27					1560.10			1560.91					27
28						1560.00	1560.39		1560.96				28
29					1560.12			1561.01					29
30					1560.12	1559.98	1560.40		1560.94				30
31					1560.11			1561.10					31

SUMMARY FOR THE YEAR 1976

MAXIMUM DAILY WATER LEVEL, 1561.24 FEET ON SEP 8

MINIMUM DAILY WATER LEVEL, 1559.97 FEET ON JUN 6

WATER LEVELS ARE REFERRED TO GEODETIC SURVEY OF CANADA DATUM

5.20 HANGINGSTONE RIVER AT FORT McMURRAY

STATION NAME: Hangingstone River at Fort McMurray

STATION NUMBER: 07CD004

LOCATION: Latitude: 56°42'18" Longitude: 111°21'20"

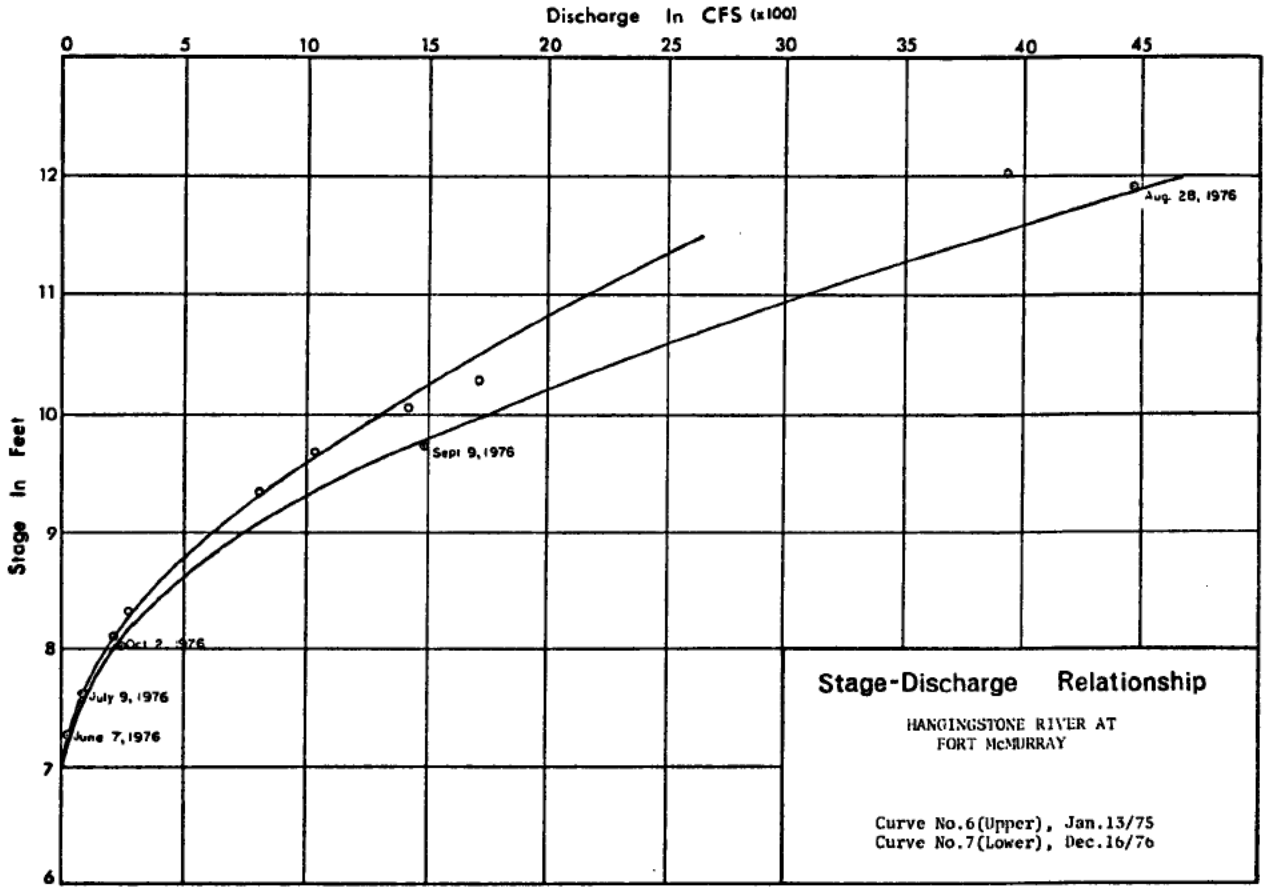
NW10-89-09-W4

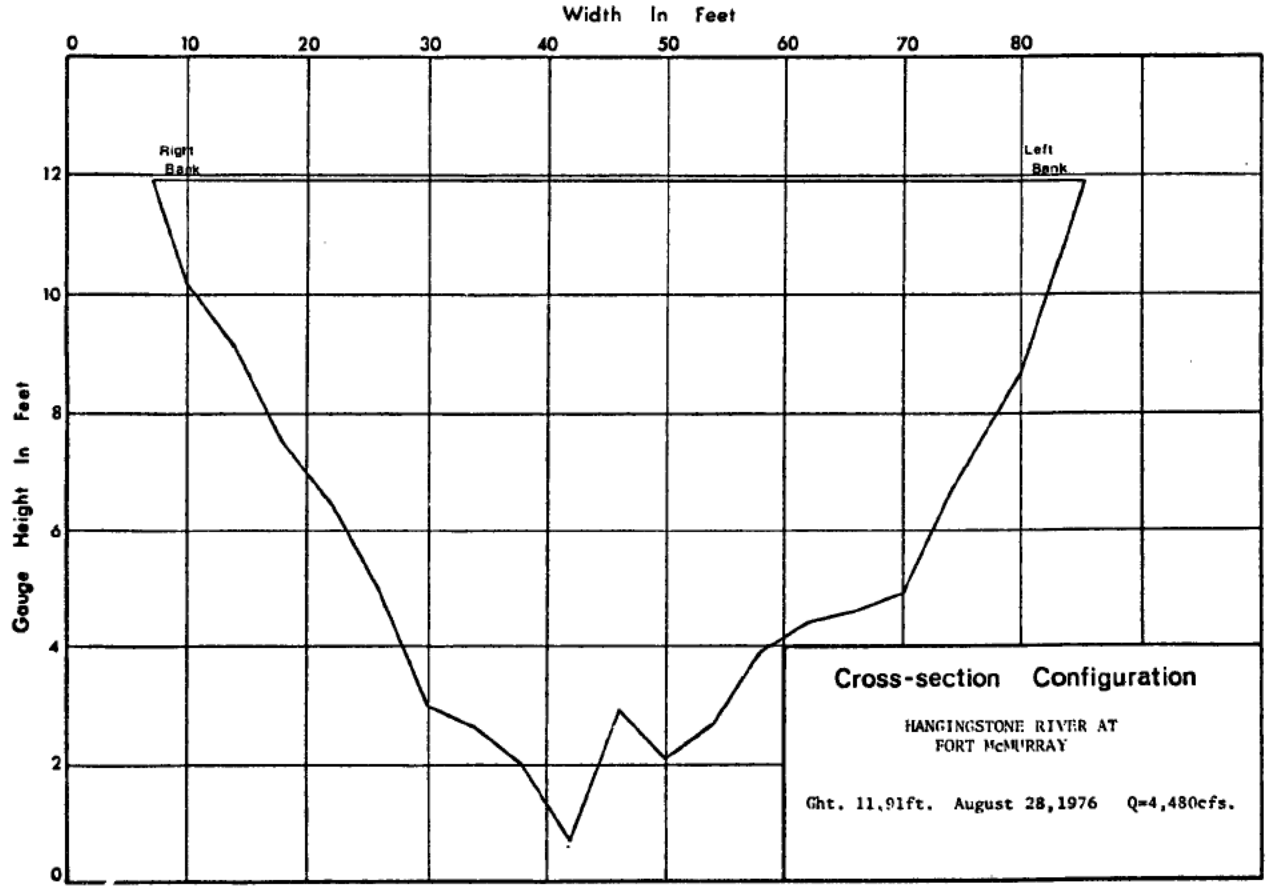
DRAINAGE AREA: 353 square miles (914 km^2)

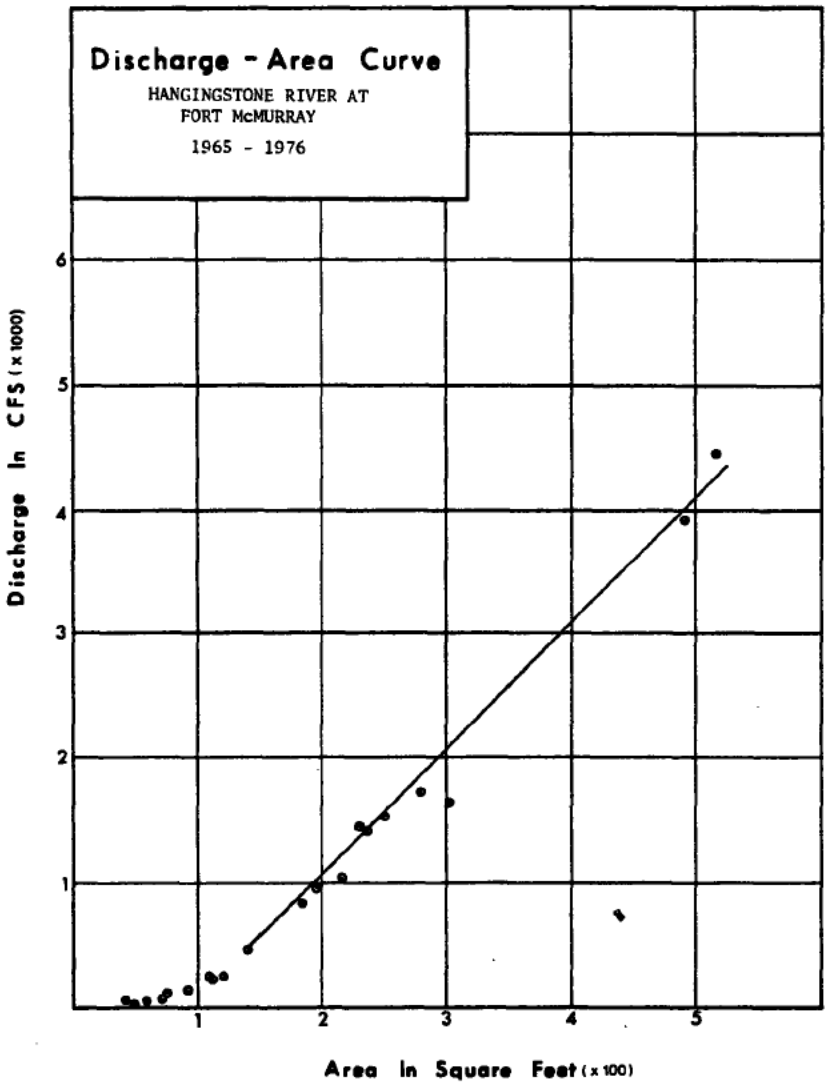
PERIOD OF RECORD: The station was established on April 8, 1965. Discharge data for periods of varying length is available to 1969. From January,1970 to December,1976 discharge data was collected on a continuous basis.

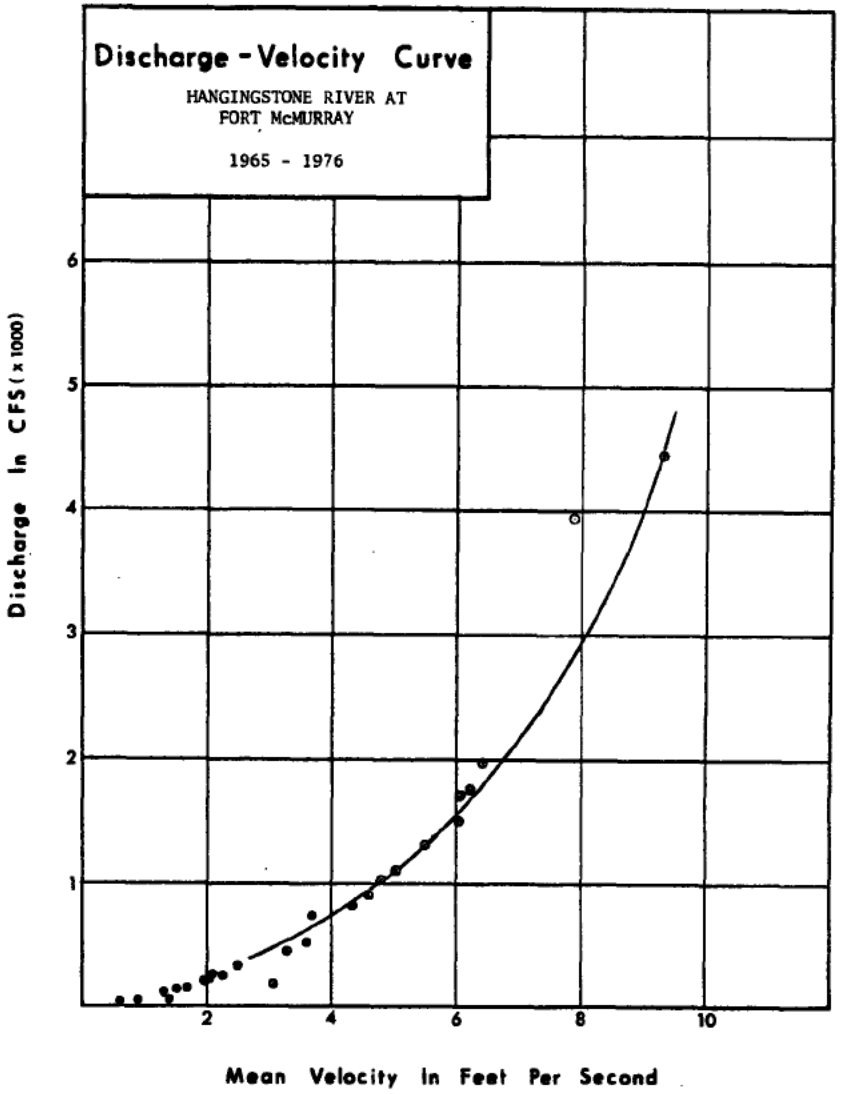
SITE DESCRIPTION: The gauge is a wire weight gauge located on the traffic bridge between Ft. McMurray and Waterways. The gauge is read on a daily basis during the open water period by a paid observer. Open water measurements are made by wading at various locations or from the highway bridge about one-quarter mile (0.4 km) upstream from the gauge.

GENERAL:


Discharge In CFS (x100)
0
5
10
15
20
25
30
35
40
45
Stage In Feet
6
7
8
9
10
11
12
June 7, 1976
July 9, 1976
Oct 2, 1976
Sept 9, 1976
Aug. 28, 1976
Stage-Discharge Relationship
HANGINGSTONE RIVER AT
FORT McMURRAY
Curve No.6(Upper), Jan.13/75
Curve No.7(Lower), Dec.16/76


Width In Feet
0
10
20
30
40
50
60
70
80
Gauge Height In Feet
0
2
4
6
8
10
12
Right Bank
Left Bank
Cross-section Configuration
HANGINGSTONE RIVER AT
FORT McMURRAY
Ght. 11.91ft. August 28,1976 Q=4,480cfs.


Discharge - Area Curve
HANGINGSTONE RIVER AT
FORT McMURRAY
1965 - 1976
Discharge In CFS (x 1000)
Area In Square Feet (x 100)
1
2
3
4
5
6


Discharge - Velocity Curve
HANGINGSTONE RIVER AT
FORT McMURRAY
1965 - 1976
Discharge In CFS (x 1000)
Mean Velocity In Feet Per Second
1
2
3
4
5
6
2
4
6
8
10

WATER SURVEY OF CANADA
MAR 17 1977 PAGE 21
CALGARY, ALTA.

HANGINGSTONE RIVER AT FORT MCMURRAY

STATION NO. 07CD004

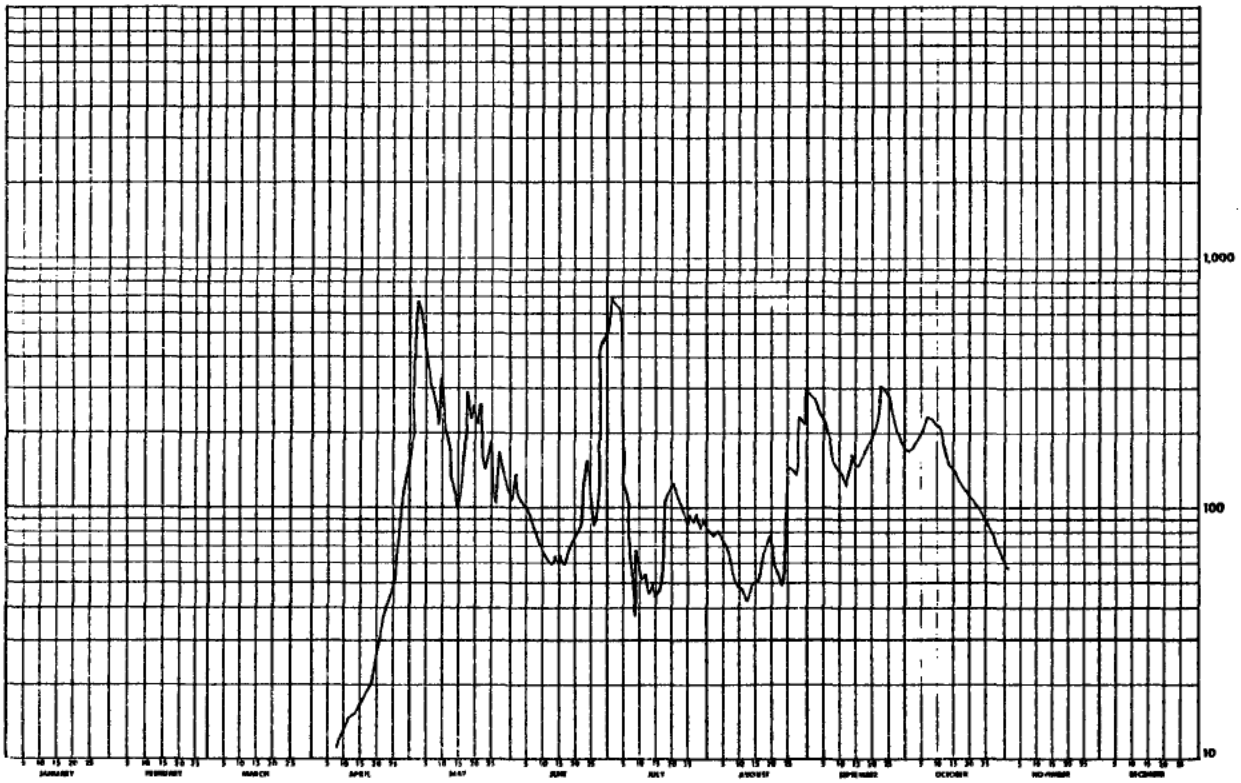
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1965

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	200 B	105	536 E	81.4	284	167	---	---	1
2	---	---	---	---	400 B	135	685	76.0	272	167	---	29.9	2
3	---	---	---	---	655	112	648	79.6	254	173	---	---	3
4	---	---	---	---	560	103	625	77.8	237	182	---	---	4
5	---	---	---	---	480	101	124	74.2	227	204	---	---	5
6	---	---	---	---	370	95.0 E	117	70.6	210	217	---	---	6
7	---	---	---	---	310	89.0	77.8	65.5	194	234	---	---	7
8	---	---	---	11.0 B	280	72.4	36.4	53.5	155	223	---	---	8
9	---	---	---	12.0 B	210	72.4	67.0	50.0	146	217	---	---	9
10	---	---	---	13.0 B	320	67.0	61.0	48.0	138	214	---	---	10
11	---	---	---	14.0 B	207	62.5	51.0	46.8	135	201	---	---	11
12	---	---	0 B	15.0 B	188	60.3 E	53.5	42.0	122	179	---	---	12
13	---	---	---	15.0 B	146	58.0	46.0	44.0	138	161	---	---	13
14	---	---	---	16.0 B	119	64.0	49.0	47.0	161	146	---	---	14
15	---	---	---	17.0 B	97.0	59.5	45.0	50.0	149	140 E	---	---	15
16	---	---	---	18.0 B	122	64.0	48.0	50.0	146	134 E	---	---	16
17	---	---	---	19.0 B	138	58.0	51.0	59.5	155	128 E	---	---	17
18	---	---	---	20.0 B	287	65.5	107	67.0	167	123 E	---	---	18
19	---	---	---	21.0 B	223	72.4	112	72.4	176	117 E	---	---	19
20	---	---	---	25.0 B	254	76.0	117	76.0	198	111 E	---	---	20
21	---	---	---	30.0 B	214	79.6	124	59.5	207	105	---	---	21
22	---	---	---	35.0 B	258	85.0	117	53.5	254	102 E	---	---	22
23	---	---	---	40.0 B	161	135	103	48.0	303	98.0 E	---	---	23
24	---	---	---	45.0 B	138	141	95.0	50.0	291	94.5 E	---	---	24
25	---	---	---	50.0 B	170	119	85.0	124	280	91.0	---	---	25
26	---	---	---	70.0 B	107	85.0	91.0	141	251	85.0	---	---	26
27	---	---	---	90.0 B	101	132	87.0	138	230	79.6	---	---	27
28	---	---	---	110 B	167	436	93.0	135	207	76.0	---	---	28
29	---		---	130 B	146 E	465	81.4	234	185	70.6	---	12.4	29
30	---		---	150 B	124	486	87.0	220	176	64.0	---	---	30
31	---		---		114 E		85.0	299		58.0 E		---	31
TOTAL	---	---	---	---	7272.0	3755.6	4705.1	2732.5	6048	4301.7	---	---	TOTAL
MEAN	---	---	---	---	235	125	152	88.1	202	141	---	---	MEAN
AC-FT	---	---	---	---	14400	7450	9330	5420	12000	8690	---	---	AC-FT
MAX	---	---	---	---	655	486	685	299	303	234	---	---	MAX
MIN	---	---	---	---	97.0	58.0	36.4	42.0	122	58.0	---	---	MIN

SUMMARY FOR THE YEAR 1965

MAXIMUM DAILY DISCHARGE, 685 CFS ON JUL 2
MINIMUM DAILY DISCHARGE, 0 CFS ON MAR 12

B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 22
CALGARY, ALTA.

HANGINGSTONE RIVER AT FORT MCMURRAY

STATION NO. 07CD004

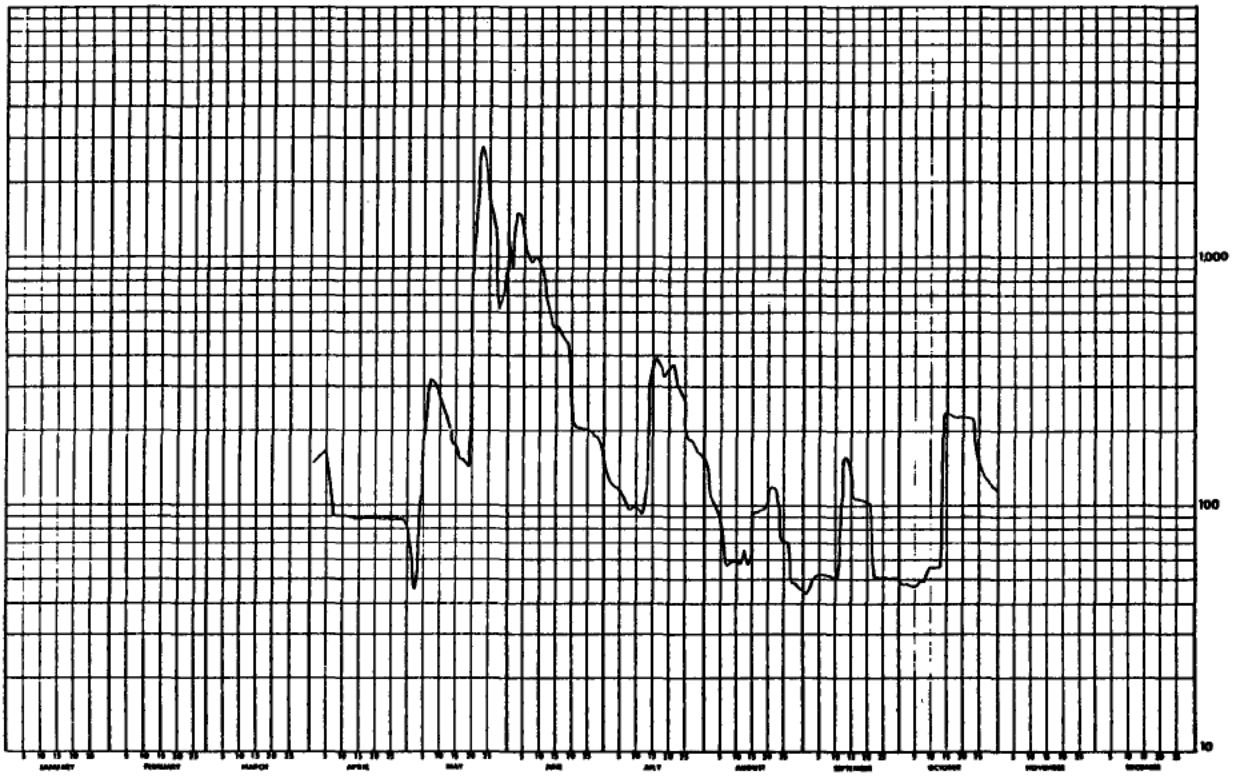
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1966

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	6.3 B	148 B	68.8	880	128	123	44.0	49.0	---	---	1
2	---	---	---	152 B	45.0	1240	123	107	47.5	47.5	---	---	2
3	---	---	---	156 B	56.5	1500	120	104	51.8	47.5	---	---	3
4	---	---	---	160 B	107	1440	119	95.4	52.3	47.5	---	---	4
5	---	---	---	164 B	179	1110	119	86.6	52.3	46.4	---	---	5
6	---	---	---	126 B	272	1030	102	60.6	52.3	49.0	---	---	6
7	---	---	---	89.0 B	318	950	97.6	57.6	52.3	49.0	---	---	7
8	---	---	---	89.0 B	318	942	95.4	57.6	51.8	49.0	---	---	8
9	---	---	---	89.0 B	295	990	95.4	59.1	50.4	56.2	---	---	9
10	---	---	---	89.0 B	272	934	97.6	59.1	49.0	56.2	---	---	10
11	---	---	---	89.0 B	240	835	95.4	57.6	60.6	56.2	---	---	11
12	---	---	---	89.0 B	214	739	91.0	65.6	154	56.2	---	---	12
13	---	---	---	88.0 B	207	618	107	57.6	157	56.2	---	---	13
14	---	---	---	88.0 B	173	526	266	57.6	148	233	---	---	14
15	---	---	---	88.0 B	176	526	377	93.2	109	233	---	---	15
16	---	---	---	88.0 B	152	521	382	93.2	107	233	---	---	16
17	---	---	---	88.0 B	152	470	377	95.4	104	230	---	---	17
18	---	---	---	88.0 B	149	465	334	95.4	104	226	---	---	18
19	---	---	---	88.0 B	144	451	334	95.4	102	226	---	---	19
20	---	---	---	88.0 B	972 E	219	351	118	102	226	---	---	20
21	---	---	---	88.0 B	1800 E	212	368	118	100	226	---	---	21
22	---	---	---	88.0 B	2630	209	338	118	50.4	226	---	---	22
23	---	---	---	88.0 B	2760	206	301	116	50.4	226	---	---	23
24	---	---	---	87.0 B	2220	202	285	72.8	50.4	183 B	---	---	24
25	---	---	---	87.0 B	1730	202	313	71.0	50.4 E	146 B	---	---	25
26	---	---	---	87.0 B	1460	199	183	71.0	50.4	135 B	---	---	26
27	16.5 B	---	---	87.0 B	1350	190	180	49.0	50.4	130 B	---	---	27
28	---	---	---	87.0 B	619	190	180	49.0	50.4	125 B	---	---	28
29	---		---	87.0	669 E	177	166	47.5	50.4	122 B	---	---	29
30	---		---	77.9 E	711	151	160	46.3	50.4	118 B	---	---	30
31	---		---		1170		160	45.2		116 B		---	31
TOTAL	---	---	---	3007.9	21629.3	18324	6445.4	2442.8	2204.9	4045.9	---	---	TOTAL
MEAN	---	---	---	100	698	611	208	78.8	73.5	130	---	---	MEAN
AC-FT	---	---	---	5970	42900	36300	12800	4850	4370	7990	---	---	AC-FT
MAX	---	---	---	164	2760	1500	382	123	157	233	---	---	MAX
MIN	---	---	---	77.9	45.8	151	91.0	45.2	44.0	46.4	---	---	MIN

SUMMARY FOR THE YEAR 1966

MAXIMUM DAILY DISCHARGE, 2760 CFS ON MAY 23

B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 23
CALGARY, ALTA.

MANGINGSTONE RIVER AT FORT MCMURRAY — STATION NO. 07CD004

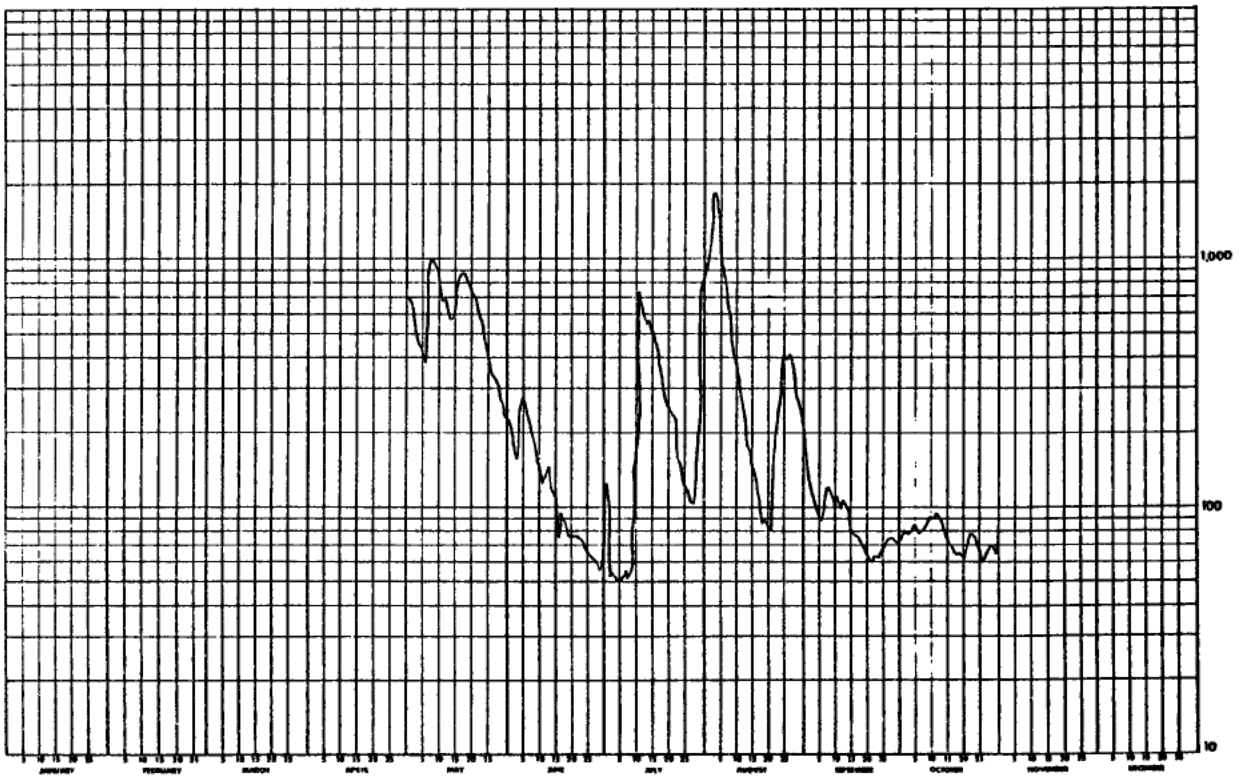
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1967

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	697	219	125	895	183	78.3	---	---	1
2	---	---	---	---	651	183	52.9	1130	123	79.2	---	---	2
3	---	---	---	---	521	157	54.3	1840	110	79.2	---	---	3
4	---	---	---	---	446	244	51.5	1580	98.9	79.2	---	---	4
5	---	---	---	---	427	277	50.1	1020	88.7	84.4	---	---	5
6	---	---	---	---	377	255	52.9	902	92.1	79.2	---	---	6
7	---	---	---	---	902	233	55.8	690	110	80.5	---	---	7
8	---	---	---	---	982	193	52.9	554	121	81.8	---	---	8
9	---	---	---	---	934	171	57.4	446	112 E	87.0	---	---	9
10	---	---	---	---	858	191	160	377	102	90.4	---	---	10
11	---	---	---	---	690	125	739	301	110	90.4	---	---	11
12	---	---	---	---	677	133	651	258	98.9	93.8	---	---	12
13	---	---	---	---	571	146	554	196	106	90.4	---	---	13
14	---	---	---	---	571	117	560	174	101	81.8	---	---	14
15	---	---	---	---	704	112	512 E	151	83.1	76.6	---	---	15
16	---	---	---	---	828	74.0	465	130	77.9	72.9	---	---	16
17	---	---	---	---	865	93.8	400	117	77.9	69.6	---	---	17
18	---	---	---	---	858	84.4	329	87.0	71.8	65.2	---	---	18
19	---	---	---	---	782	76.6	289	90.4	68.5	65.2	---	---	19
20	---	---	---	---	732	75.3	255	87.0	64.1	63.0	---	---	20
21	---	---	---	---	711	77.9	240	81.6	62.2	63.0	---	---	21
22	---	---	---	---	613	76.0 E	226	166	59.8	75.3	---	---	22
23	---	---	---	---	571	74.0	160	222	64.1	80.5	---	---	23
24	---	---	---	---	475	71.8	146	266	64.1	76.6	---	---	24
25	---	---	---	---	432	67.4	121	400	67.1 E	86.3	---	---	25
26	---	---	---	---	359	63.0	117	395	70.2 E	80.6	---	---	26
27	---	---	---	---	334	61.4	104	413	73.2 E	83.0	---	---	27
28	---	---	---	---	321	58.2	108	346	75.3	70.7	---	---	28
29	---		---	---	270	56.6	212	274	75.3	69.6	---	---	29
30	---		---	---	251	59.0	753	251	71.8	65.2	---	---	30
31	---		---		233		842	216		79.2		---	31
TOTAL	---	---	---	---	18043	3785.4	8495.8	14056.2	2683.0	2395.1	---	---	TOTAL
MEAN	---	---	---	---	601	126	274	453	89.4	76.0	---	---	MEAN
AC-FT	---	---	---	---	37000	7510	16900	27900	5320	4670	---	---	AC-FT
MAX	---	---	---	---	982	277	842	1840	183	93.8	---	---	MAX
MIN	---	---	---	---	233	56.6	50.1	81.8	59.8	60.6	---	---	MIN

SUMMARY FOR THE YEAR 1967

MAXIMUM DAILY DISCHANGE, 1840 CFS ON AUG 3

E-ESTIMATED



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 24
CALGARY, ALTA.

HANGINGSTONE RIVER AT FORT MCMURRAY

STATION NO. 07CD004

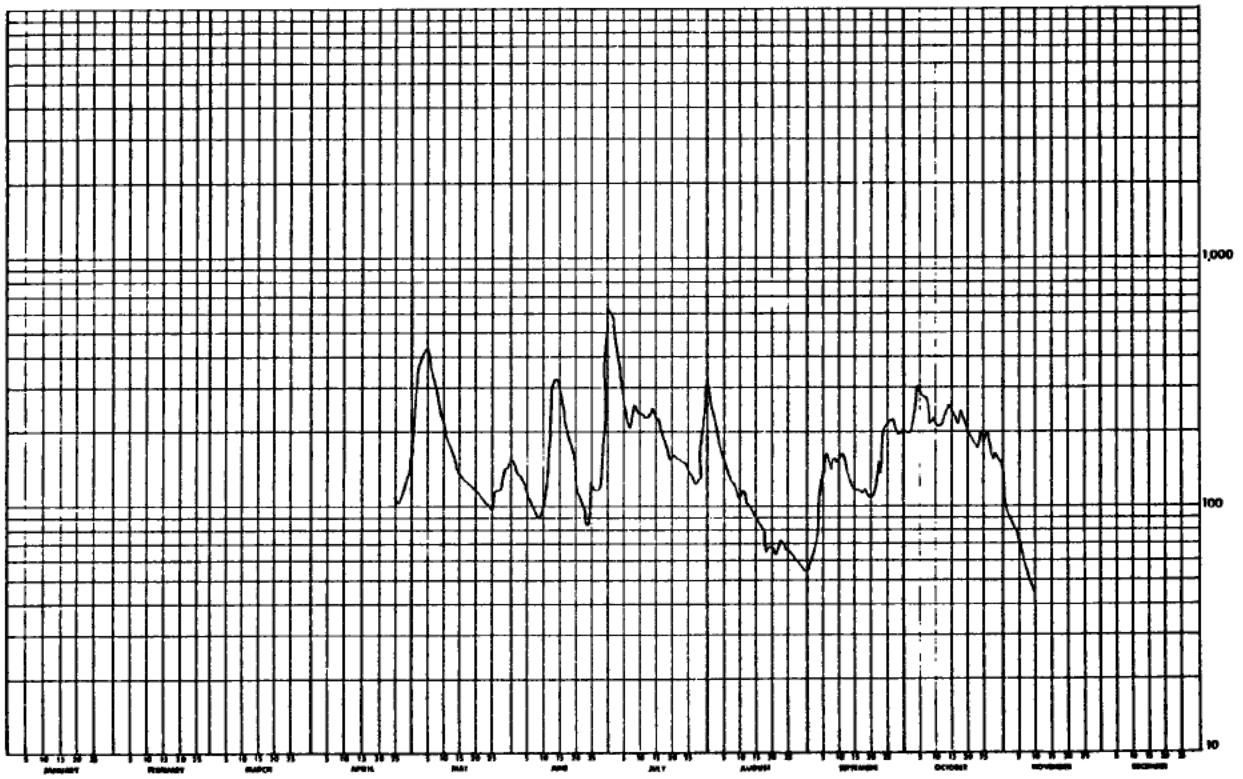
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1968

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	***	***	***	***	218	191	613	277	58.2	196	102 B	***	1
2	***	***	***	***	364	135	516	237	62.2	199	93.8 B	***	2
3	***	***	***	***	377	125	455	206	75.3	251	83.4 B	***	3
4	***	***	***	***	404	123	342	171	101	301	81.8 B	***	4
5	***	***	***	***	437	112	277	157	128	281	75.3 B	***	5
6	***	***	***	***	373	104	226	141	160	277	65.2 B	***	6
7	***	***	***	***	342	98.9	209	125	135	262	58.2 B	***	7
8	***	***	***	***	297	88.7	255	121	154	212	52.9 B	***	8
9	***	***	***	***	247	90.4	240	108	148	226	47.4 B	***	9
10	***	***	***	79.2	216	98.9	226	106	160	219	42.8 B	***	10
11	***	***	***	***	196	115	226	115	160	206	***	***	11
12	***	***	***	***	171	226	226	101	146	209	***	***	12
13	***	***	***	***	159	317	226	97.2	130	230	***	***	13
14	***	***	***	***	143	325	237	92.1	121	255	***	***	14
15	***	***	***	***	138	285	226	84.4	115	247	***	***	15
16	***	***	***	***	128	247	223	81.8	115	233	***	***	16
17	***	***	***	***	128	209	186	79.2	112	212	***	***	17
18	***	***	***	***	125	180	171	65.2	119	240	***	***	18
19	***	***	***	***	121	168	154	67.4	108	216	***	***	19
20	***	***	***	***	115	148	160	68.5	106	212	***	***	20
21	***	***	***	***	110	112	157	62.2	110	196	***	***	21
22	***	***	***	***	108	106	154	64.1	148	180	***	***	22
23	***	***	***	***	102	80.5	151	70.7	135	168	***	***	23
24	***	***	***	***	98.9	85.7	143	69.6	209	193	***	***	24
25	***	***	***	110	95.5	123	141	67.4	212	177	***	***	25
26	***	***	***	101	117	115	130	63.0	223	199	***	***	26
27	***	***	***	102	115	117	121	62.2	212	160	***	***	27
28	***	***	***	119 E	117	121	128	59.0	193	151	***	***	28
29	***	***	***	135	141	196	193	55.8	199	160	***	***	29
30	***		***	151	146	638	281	55.0	199	151	***	***	30
31	***		***		151		305	53.6		133		***	31
TOTAL	***	***	***	***	5998.4	5041.1	7298	3183.4	4253.7	6552	***	***	TOTAL
MEAN	***	***	***	***	193	168	235	103	142	211	***	***	MEAN
AC-FT	***	***	***	***	11900	10000	14500	6310	8440	13000	***	***	AC-FT
MAX	***	***	***	***	437	638	613	277	223	301	***	***	MAX
MIN	***	***	***	***	95.5	80.5	121	53.6	58.2	133	***	***	MIN

SUMMARY FOR THE YEAR 1968

MAXIMUM DAILY DISCHARGE, 638 CFS ON JUN 30

B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 25
CALGARY, ALTA.

MANGINGSTONE RIVER AT FORT MCMURRAY — STATION NO. 07CD004

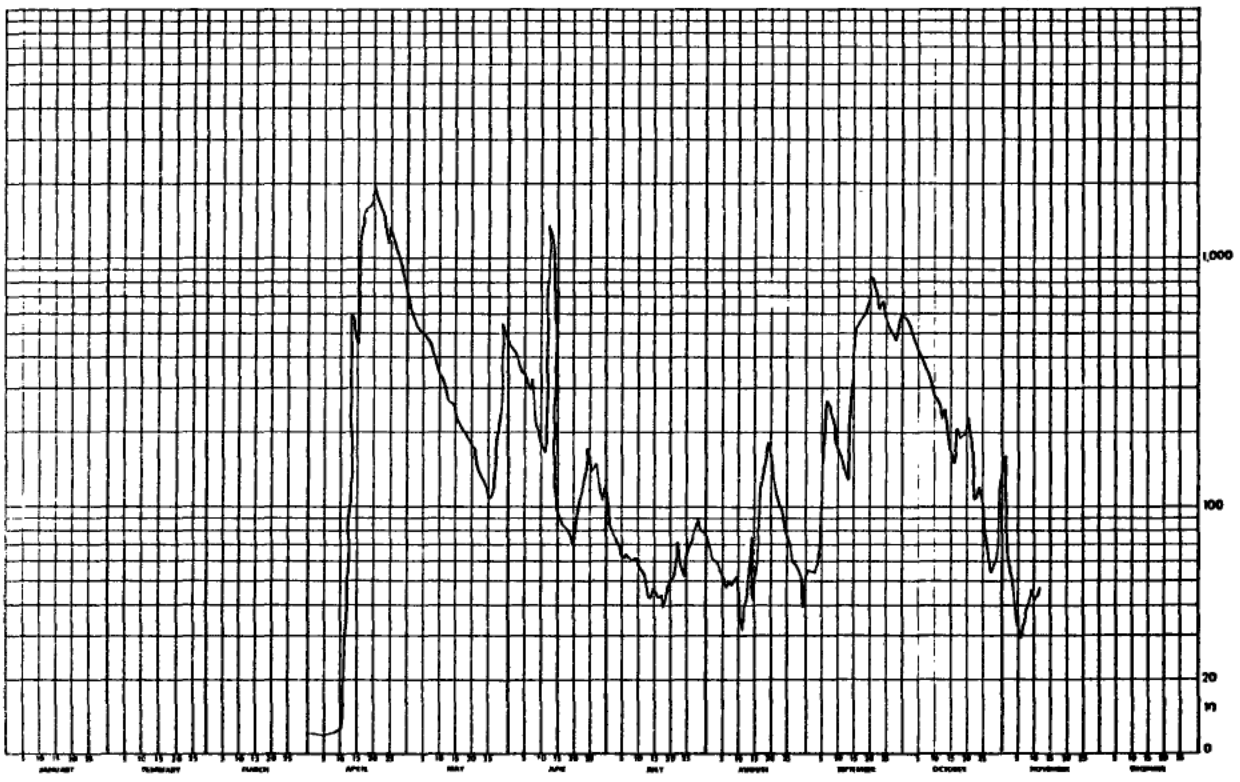
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1969

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	5.0 E	658	480	88.7	70.7	55.8	583	154 B	---	1
2	---	---	---	5.0 E	671	427	80.5	60.6	55.0	565	60.6 B	---	2
3	---	---	---	5.0 E	521	382	75.3	62.2	54.3	545	52.9 B	---	3
4	---	---	---	5.0 E	510	347	70.7	57.4	66.3	485	37.0 B	---	4
5	---	---	---	5.0 E	500	342	63.0	53.6	141	437	33.6 B	---	5
6	---	---	---	6.0 E	490	297	64.1	48.0	199	409	29.2 B	---	6
7	---	---	---	7.0 E	446	329	62.2	49.4	270	382	34.8 B	---	7
8	---	---	---	8.0 E	413	219	60.6	48.0	255	395	38.5 B	---	8
9	---	---	---	9.0 E	377	202	62.2	52.9	212	365	46.2 B	---	9
10	---	---	---	10.0 E	347	177	58.2	48.0	174	274	42.2 B	---	10
11	---	---	---	34.4 B	325	161	56.6	31.2	168	266	43.4 B	---	11
12	---	---	---	92.1 B	289	1320	52.2	38.0	143	226	47.4 B	---	12
13	---	---	---	595 B	262	1270	43.4	46.8	128	247	---	---	13
14	---	---	---	571 B	262	121	43.4	76.6	285	186	---	---	14
15	---	---	---	455 B	251	102	46.2	41.0	451	160	---	---	15
16	---	---	---	820 B	216	88.7	43.4	59.0	527	148	---	---	16
17	---	---	---	1570 B	206	83.1	44.0	123	543	209	---	---	17
18	---	---	---	1580 E	199	81.8	39.0	146	589	190	---	---	18
19	---	---	---	1590	190	71.8	48.7	180	632	193 E	---	---	19
20	---	---	---	1990	177	75.3	49.4	151	813	196	---	---	20
21	---	---	---	1710	168	97.2	50.1	135	820	226	---	---	21
22	---	---	---	1570	133	106	71.8	110	725	198	---	---	22
23	---	---	---	1340	133	119	57.4	97.2	625	196 B	---	---	23
24	---	---	---	1130	123	171	53.6	81.8	651	117 B	---	---	24
25	---	---	---	1310	110	138	66.3	75.3	565	95.5 B	---	---	25
26	---	---	---	1160	115	143	69.6	68.5	521	89.6 B	---	---	26
27	---	---	---	1080	138	146	79.2	59.0	480	80.6 B	---	---	27
28	---	---	---	930	244	125	83.1	59.8	465	54.3 B	---	---	28
29	---		---	850	549	106	87.0	55.8	549	64.1 B	---	---	29
30	---		---	725	505	119	79.2	38.5	595	108 B	---	---	30
31	---		---		470		77.9	55.0		146 B		---	31
TOTAL	---	---	---	21167.5	9898	7828.9	1927.0	2279.3	11757.4	7496.1	---	---	TOTAL
MEAN	---	---	---	706	319	261	62.2	73.5	392	242	---	---	MEAN
AC-FT	---	---	---	42000	19600	15500	3820	4520	23300	14900	---	---	AC-FT
MAX	---	---	---	1990	658	1320	88.7	180	820	583	---	---	MAX
MIN	---	---	---	5.0	110	71.8	39.0	31.2	54.3	54.3	---	---	MIN

SUMMARY FOR THE YEAR 1969

MAXIMUM DAILY DISCHARGE, 1990 CFS ON APR 20

B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 2A
CALGARY, ALTA.

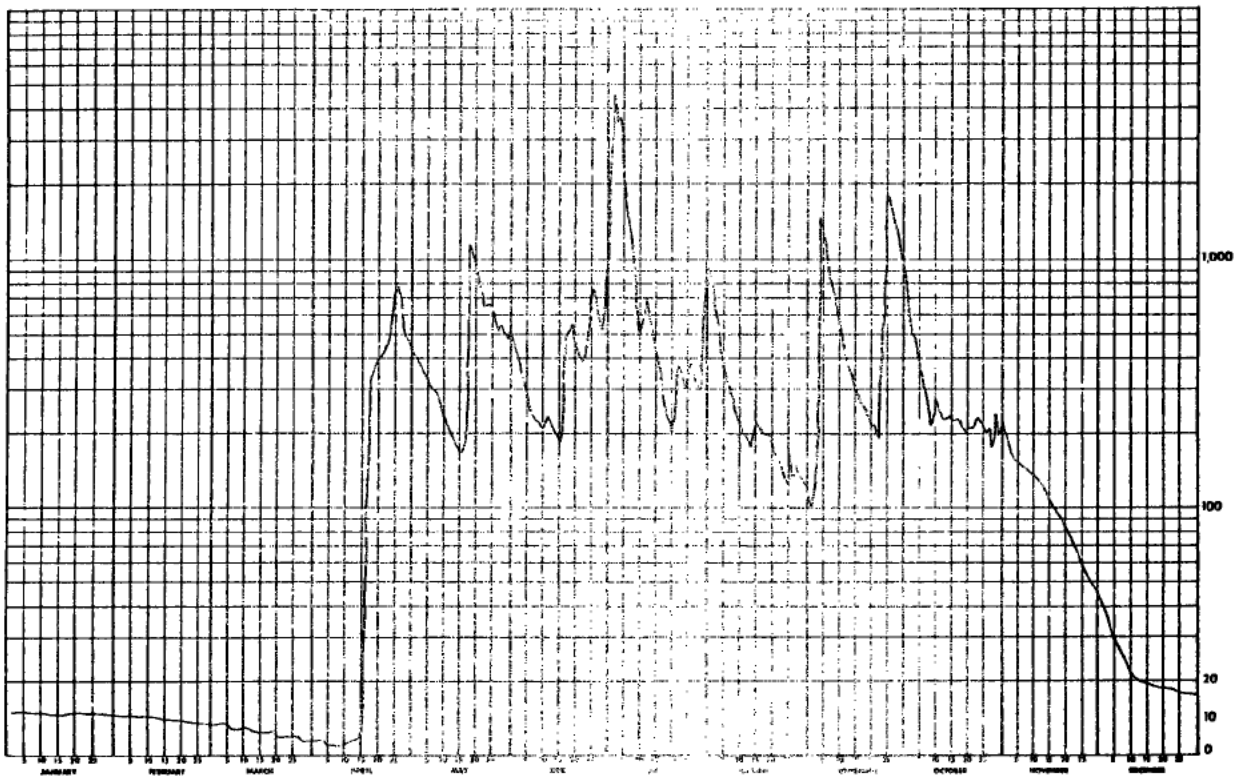
STATION NO. 07CD004

DAY	JAN	FEB											DEC	DAY
1	10.0 B	9.0 B											42.0 B	1
2	10.0 B	9.0 B											39.0 B	2
3	10.0 B	9.0 B											36.0 B	3
4	10.0 B	9.0 B											33.0 B	4
5	10.0 B	9.0 B											30.0 B	5
6	10.0 B	9.0 B											28.0 B	6
7	10.0 B	9.0 B											26.0 B	7
8	10.0 B	9.0 B											25.0 B	8
9	10.0 B	9.0 B											23.0 B	9
10	10.0 B	9.0 B											21.0 B	10
11	10.0 B												20.0 B	11
12	10.0 B	8.0 B											20.0 B	12
13	10.0 B	8.0 B											20.0 B	13
14	10.0 B	8.0 B											19.0 B	14
15	10.0 B	8.0 B											19.0 B	15
16	9.0 B	8.0 B											19.0 B	16
17	9.0 B	8.0 B											18.0 B	17
18	9.0 B	8.0 B											18.0 B	18
19	9.0 B	8.0 B											18.0 B	19
20	9.0 B	8.0 B											17.0 B	20
21	9.0 B	7.0 B											17.0 B	21
22	9.0 B	7.0 B											17.0 B	22
23	9.0 B	7.0 B											16.0 B	23
24	9.0 B	7.0 B											16.0 B	24
25	9.0 B	7.0 B											16.0 B	25
26	9.0 B	7.0 B											16.0 B	26
27	9.0 B	7.0 B											15.0 B	27
28	9.0 B	7.0 B											15.0 B	28
29	9.0 B												15.0 B	29
30	9.0 B												15.0 B	30
31	9.0 B												15.0 B	31
TOTAL	294.0	226.0											664.0	TOTAL
MEAN	9.5	8.1											21.4	MEAN
AC-FT	583	448											1320	AC-FT
MAX	10.0	9.0											42.0	MAX
MIN	9.0	7.0											15.0	MIN

SUMMARY FOR THE YEAR 1970

MEAN DISCHARGE, 292 CFS
TOTAL DISCHARGE, 211000 ACRE-FT
MAXIMUM DAILY DISCHARGE, 4260 CFS ON JUNE
MINIMUM DAILY DISCHARGE, 7.0 CFS ON APR

B-ICE CONDITIONS



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 27
CALGARY, ALTA.

HANGINGSTONE RIVER AT FORT MCMURRAY

STATION NO. 07CD004

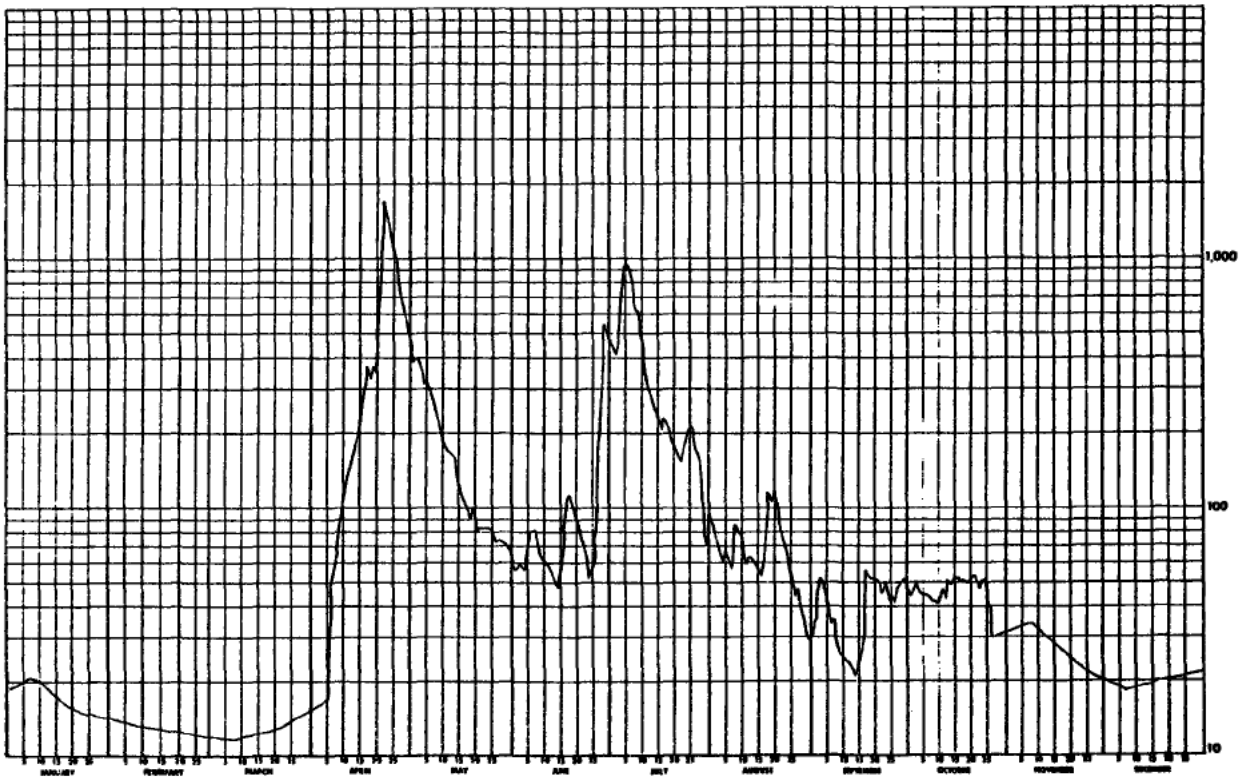
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1971

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	19.0 A	13.9 B	11.9 B	15.3 B	381	56.7	425	90.0	34.2	43.8	31.7 B	20.2 B	1
2	19.3 B	13.8 B	11.8 B	15.5 B	409	59.5	405	79.8	45.0	47.6	32.0 B	19.9 B	2
3	19.7 A	13.8 B	11.7 B	16.0 B	376	58.0	470	70.0	51.5	48.9	32.3 B	19.6 B	3
4	20.0 B	13.7 B	11.7 B	16.5 B	324	56.7	888	61.0	47.6	45.0	32.7 B	19.3 B	4
5	20.4 A	13.6 B	11.6 B	17.0 B	327	78.1	963	65.5	42.6	45.0	33.0 B	19.1 B	5
6	20.7 B	13.5 B	11.7 B	37.0 B	295	79.8	873	64.0	34.2	43.8	33.3 B	18.8 B	6
7	21.1 A	13.5 B	11.7 B	57.0 B	267	79.8	754	56.7	35.4	43.8	33.7 B	18.5 B	7
8	20.7 B	13.4 A	11.8 B	77.0 B	256	71.5	619	86.6	28.0	41.4	34.0 B	18.6 B	8
9	20.2 A	13.3 B	11.9 B	97.0 B	199	62.5	613	79.8	26.0	41.4	33.3 B	18.8 B	9
10	19.8 B	13.2 B	12.0 B	117 B	190	61.0	475	76.4	25.0	41.4	32.6 B	18.9 B	10
11	19.4 B	13.2 B	12.0 B	137 B	166	58.0	354	58.0	24.0	47.6	31.8 B	19.0 B	11
12	19.0 B	13.1 B	12.1 B	157 B	169	55.4	300	64.0	24.0	42.6	31.1 B	19.1 B	12
13	18.5 B	13.0 B	12.2 B	177 B	163	51.5	267	62.5	21.4	50.2	30.4 B	19.3 B	13
14	18.1 B	12.9 B	12.2 B	197 B	129	46.3	245	59.5	21.4	48.9	29.7 B	19.4 B	14
15	17.7 B	12.8 B	12.3 B	217 B	129	55.4	231	56.7	24.0	51.5	29.0 B	19.5 B	15
16	17.3 B	12.8 B	12.4 B	327 B	110	62.5	202	52.8	26.0	51.5	28.3 B	19.6 B	16
17	16.8 B	12.7 B	12.5 B	376 B	102	110	227	64.0	55.4	50.2	27.5 B	19.8 B	17
18	16.4 B	12.6 B	12.5 B	327 B	90.0	112	214	115	52.8	50.2	26.8 B	19.9 B	18
19	16.0 B	12.5 B	12.6 B	381 B	98.6	102	196	106	51.5	48.9	26.1 B	20.0 B	19
20	15.6 B	12.5 B	12.8 B	345 B	79.8	90.0	175	115	50.2	50.2	25.4 B	20.1 B	20
21	15.1 B	12.4 B	13.0 B	787 B	83.2	79.8	166	86.6	50.2	52.8	24.7 B	20.3 B	21
22	14.7 B	12.3 B	13.2 B	1719 B	83.2	74.7	150	81.5	45.0	51.5	24.0 B	20.4 B	22
23	14.6 B	12.2 B	13.4 B	1530 B	83.2	65.5	169	70.0	48.9	46.3	23.2 B	20.5 B	23
24	14.5 B	12.2 B	13.6 B	1280 B	83.2	52.8	187	64.0	41.4	50.2	22.5 B	20.6 B	24
25	14.5 A	12.1 B	13.8 B	1060 B	78.1	56.7	214	50.2	43.8	50.2	21.8 B	20.8 B	25
26	14.4 B	12.0 B	14.0 B	918	73.0	79.8	208	43.8	41.4	40.2 B	21.5 B	20.9 B	26
27	14.3 B	12.0 B	14.3 B	703	74.7	234	169	46.3	47.6	30.0 B	21.3 B	21.0 B	27
28	14.2 B	11.9 B	14.5 B	637	73.0	529	160	39.0	48.9	30.3 B	21.0 B	21.1 B	28
29	14.2 B		14.7 B	513	71.5	569	112	32.0	50.2	30.7 B	20.7 B	21.3 B	29
30	14.1 B		14.9 B	470	70.0	475	71.5	28.0	46.3	31.0 B	20.4 B	21.4 B	30
31	14.0 B		15.1 B		58.0		96.0	29.0		31.3 B		21.5 B	31
TOTAL	534.3	360.9	395.9	12714.3	5060.9	3583.0	10598.5	2053.7	1186.9	1378.4	835.8	617.2	TOTAL
MEAN	17.2	12.9	12.8	424	163	119	342	66.2	39.6	44.5	27.9	19.9	MEAN
AC-FT	1060	716	785	25200	10100	7110	21000	4070	2350	2730	1660	1220	AC-FT
MAX	21.1	13.9	15.1	1710	409	529	963	115	55.4	52.8	34.0	21.5	MAX
MIN	14.0	11.9	11.6	15.3	58.0	46.3	71.5	28.0	21.4	30.0	20.4	18.5	MIN

SUMMARY FOR THE YEAR 1971

MEAN DISCHARGE, 108 CFS
TOTAL DISCHARGE, 78000 AC-FT
MAXIMUM DAILY DISCHARGE, 1710 CFS ON APR 22
MINIMUM DAILY DISCHARGE, 11.6 CFS ON MAR 5

B-ICE CONDITIONS



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 28
CALGARY, ALTA.

MANGINGSTONE RIVER AT FORT MCMURRAY

STATION NO. 07CD004

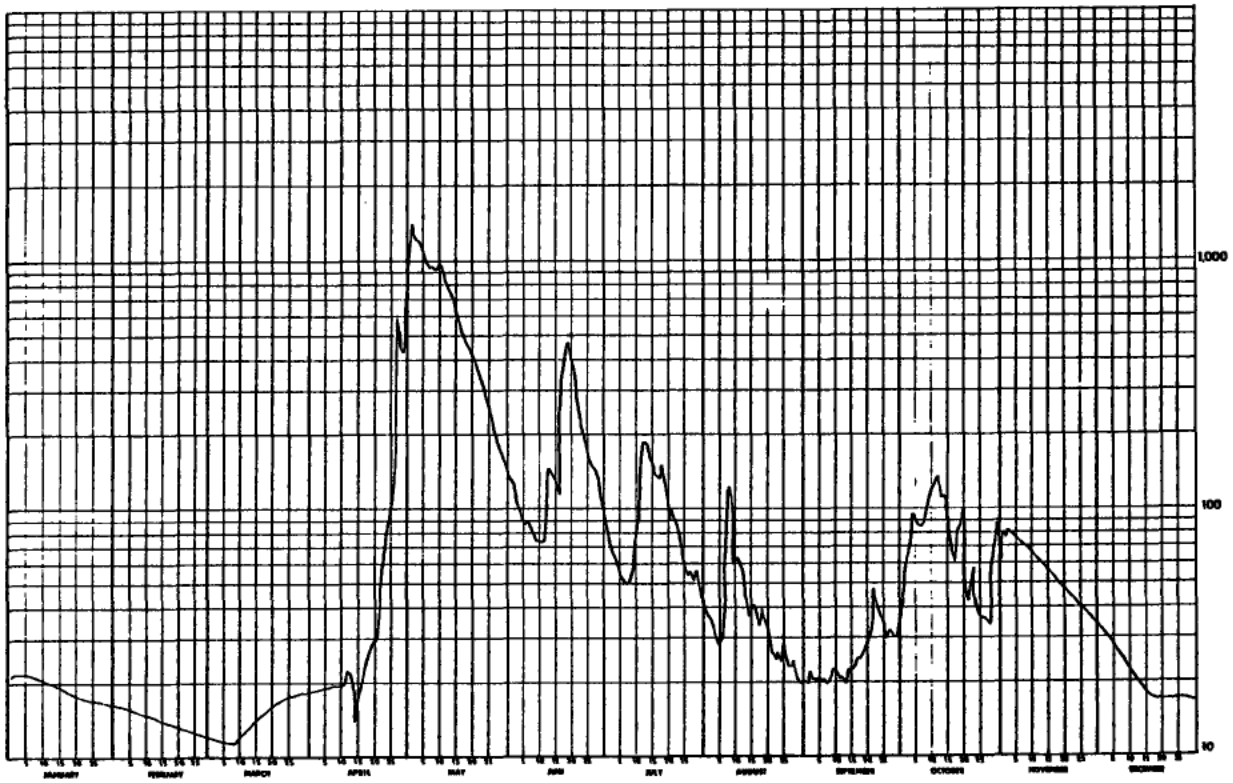
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1972

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	21.6 H	16.2 B	12.2 B	18.5 B	1250	134	86.6	37.8	20.6	46.3	79.8 B	33.5 B	1
2	21.8 B	16.1 B	12.2 B	18.7 B	1390	129	76.4	36.6	22.2	56.7	76.4 B	32.4 B	2
3	21.9 B	15.9 B	12.1 B	18.8 B	1210	110	65.5	33.0	20.6	73.0	79.8 B	31.2 B	3
4	22.0 B	15.8 B	12.0 B	18.9 B	1200	94.0	62.5	30.0	20.6	94.0	77.9 B	30.1 B	4
5	21.7 B	15.6 B	11.9 B	19.0 B	1050	88.3	55.4	28.0	20.6	88.3	75.9 B	28.9 B	5
6	21.5 B	15.5 B	11.8 H	19.2 B	963	86.6	52.8	30.0	20.6	84.9	74.0 B	27.8 B	6
7	21.2 B	15.3 B	11.8 B	19.3 B	940	88.3	50.2	58.0	19.8	84.9	72.1 B	26.8 B	7
8	21.0 B	15.1 B	11.7 B	19.4 B	933	81.5	51.5	122	20.6	92.0	70.1 B	25.4 B	8
9	20.7 B	15.0 B	11.6 B	19.5 B	910	74.7	59.5	59.5	22.2	106	68.2 B	24.3 B	9
10	20.5 B	14.8 B	12.0 B	19.7 B	940	74.7	79.8	59.5	22.2	120	66.3 B	23.2 B	10
11	20.2 B	14.7 B	12.4 B	19.8 B	940	73.0	98.0	61.0	20.6	92.0	64.3 B	22.0 B	11
12	20.0 B	14.5 B	12.8 B	22.2 B	843	74.7	184	56.7	20.6	134	62.4 B	20.9 B	12
13	19.7 B	14.4 B	13.3 B	22.2 B	754	144	184	42.6	19.8	112	60.5 B	19.7 B	13
14	19.5 B	14.3 B	13.7 B	14.0 B	715	142	163	37.8	22.2	112	58.5 B	18.6 B	14
15	19.2 B	14.1 B	14.1 B	16.7 B	625	132	152	39.0	22.2	90.0	56.6 B	17.4 B	15
16	19.0 B	13.9 B	14.5 B	19.4 B	562	115	132	40.2	24.0	68.5 B	54.7 B	17.4 B	16
17	18.7 B	13.8 B	14.9 B	22.1 B	529	137	132	34.2	25.0	61.0 B	52.7 B	17.3 B	17
18	18.5 B	13.6 B	15.3 B	24.9 B	502	440	150	39.0	25.0	78.1 B	50.8 B	17.3 B	18
19	18.2 B	13.5 B	15.7 B	27.6 B	460	475	127	36.6	27.0	84.9 B	48.9 B	17.3 B	19
20	18.0 B	13.3 H	16.2 B	30.3 B	425	410	90.0	28.0	28.0	96.0 B	46.9 B	17.3 B	20
21	17.9 B	13.2 B	16.6 B	33.0 B	385	327	98.0	26.0	33.0	42.6 B	45.0 B	17.2 B	21
22	17.7 B	13.0 B	17.0 B	52.8 B	363	267	90.0	25.0	47.6	46.3 B	43.9 B	17.2 B	22
23	17.6 B	12.9 B	17.4 B	72.6 B	327	220	81.5	26.0	39.0	56.7 B	42.7 B	17.2 B	23
24	17.4 B	12.7 B	17.5 B	92.4 B	291	193	71.5	24.0	37.8	49.0 B	41.6 B	17.1 B	24
25	17.3 B	12.6 B	17.7 B	112 B	252	169	61.0	28.0	36.6	36.6 B	40.4 B	17.1 B	25
26	17.1 B	12.5 B	17.8 B	132 B	241	152	54.1	24.0	36.0	36.6 B	39.3 B	17.1 B	26
27	17.0 B	12.5 B	17.9 B	584 B	202	147	55.4	23.0	32.0	35.4 B	38.1 B	17.1 B	27
28	16.8 B	12.4 B	18.0 B	455 B	184	124	51.5	24.0	30.0	34.2 B	37.0 B	17.0 B	28
29	16.7 B	12.3 B	18.2 B	425 B	166	110	56.7	22.2	32.0	65.5 B	35.8 B	17.0 B	29
30	16.5 B		18.3 B	880 B	152	96.0	48.9	19.8	35.4	86.6 B	34.7 B	17.0 B	30
31	16.4 B		18.4 B		142		41.4	20.6		63.2 B		16.9 B	31
TOTAL	593.3	409.5	457.0	3249.0	19846	4908.8	2762.2	1172.1	797.8	2317.3	1695.3	656.5	TOTAL
MEAN	19.1	14.1	14.7	108	640	164	89.1	37.8	26.6	74.8	56.5	21.2	MEAN
AC-FT	1180	812	906	6440	39400	9740	5480	2320	1580	4600	3360	1300	AC-FT
MAX	22.0	16.2	18.4	880	1390	475	184	122	47.6	134	79.8	33.5	MAX
MIN	16.4	12.3	11.6	14.0	142	73.0	41.4	19.8	19.8	34.2	34.7	16.9	MIN

SUMMARY FOR THE YEAR 1972

MEAN DISCHARGE: 106 CFS
TOTAL DISCHARGE: 77100 AC-FT
MAXIMUM DAILY DISCHARGE: 1390 CFS ON MAY 2
MINIMUM DAILY DISCHARGE: 11.6 CFS ON MAR 9

B-ICE CONDITIONS



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 29
CALGARY, ALTA.

HANGINGSTONE RIVER AT FORT MCMURRAY

STATION NO. 07CD004

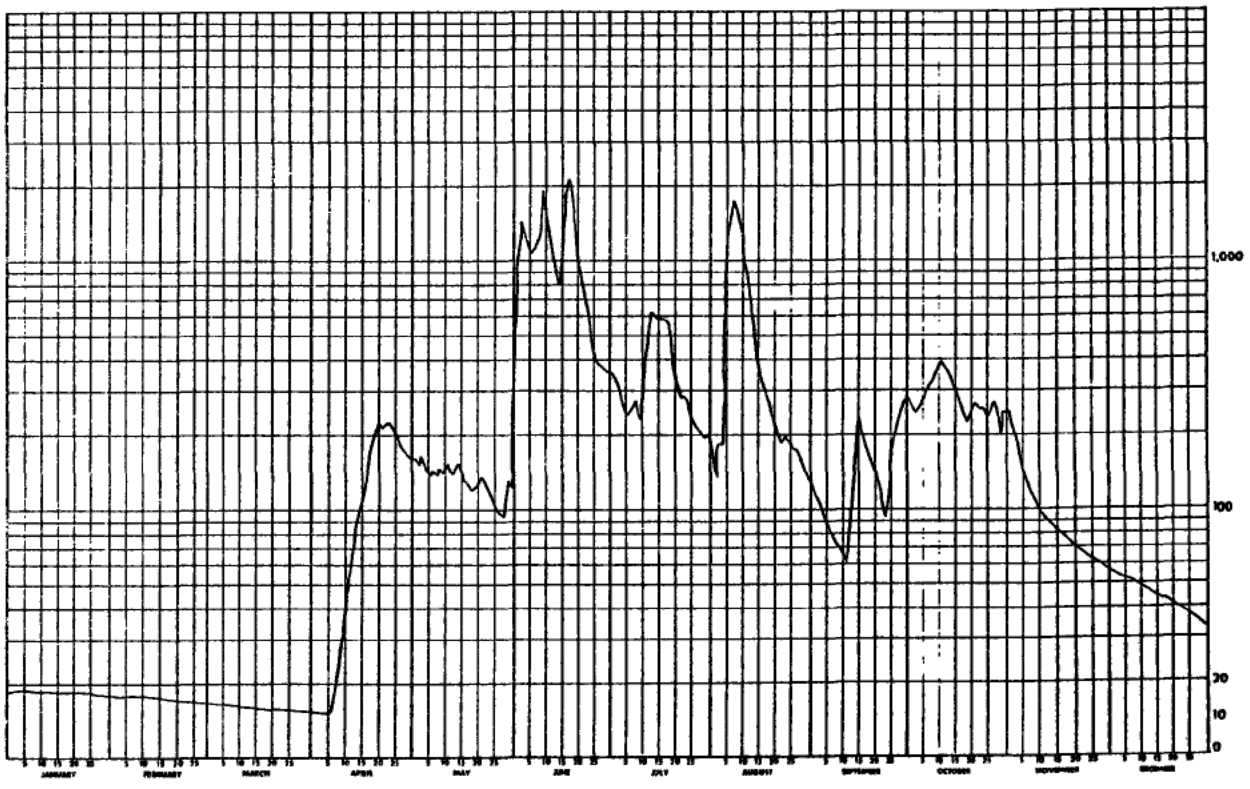
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1973

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	16.9 A	15.6 B	13.4 B	10.5 B	160	970	345	166	122 E	275	241	56 B	1
2	16.9 A	15.5 B	13.3 B	10.4 B	154	1450	336	132 E	117	255	200 B	55 B	2
3	16.9 A	15.5 A	13.2 B	10.3 B	163	1330	291	187	108	245	184 B	54 B	3
4	16.8 A	15.4 A	13.1 B	10.2 B	156	1170	252	184	94.0	259	163 B	54 B	4
5	16.8 B	15.3 B	13.1 B	10.1 B	139	1070	238	696 E	90.0	283	145 B	53 B	5
6	16.8 A	15.2 B	13.0 B	10.0 B	144	1070	243 E	1210 E	84.9 E	295	130 B	52 B	6
7	16.7 A	15.2 B	12.9 B	15.0 B	139	1150 E	248	1720	79.8	315 E	120 B	51 B	7
8	16.7 A	15.1 B	12.8 B	20.0 B	144	1230	275	1700	76.4	334 E	112 B	51 B	8
9	16.7 B	15.0 B	12.7 B	30.0 B	142	1910	251 E	1460	71.5	354	107 B	50 B	9
10	16.6 B	15.0 B	12.6 B	40.0 B	147	1610	227	1300	64.0	372	100 B	49 B	10
11	16.6 B	14.9 B	12.5 B	50.0 B	152	1360	336 E	903	59.5	390	97 B	48 B	11
12	16.6 B	14.8 B	12.4 B	60.0 B	146	1020	445	748	76.4	370 E	93 B	47 B	12
13	16.6 B	14.7 B	12.3 B	80.0 B	149 E	843	607	661	106	351 E	90 B	47 B	13
14	16.5 A	14.7 B	12.2 B	100 B	155	780	579	524	202	331	87 B	46 B	14
15	16.5 B	14.6 B	12.1 B	120 B	147	1060	581 E	395	238	313	84 B	45 B	15
16	16.5 A	14.5 B	12.0 B	140 B	129	1760	583 E	345 E	190	279	81 B	44 B	16
17	16.4 B	14.5 B	11.9 B	160 B	127	2090	584	295	181	248	78 B	43 B	17
18	16.4 B	14.4 B	11.8 B	180 B	129	1830	557	275	169	234	76 B	43 B	18
19	16.4 B	14.3 B	11.7 B	210 B	127	1400	496	245	152	224	74 B	42 B	19
20	16.4 A	14.2 B	11.6 B	220 B	134	1040	367	227	142 E	246 E	72 B	41 B	20
21	16.3 B	14.2 B	11.5 B	214 B	137	918	331	205	132	267	70 B	40 B	21
22	16.3 B	14.1 B	11.4 B	217 B	129	761	279	187	106	259	68 B	40 B	22
23	16.2 B	14.0 B	11.3 B	224 B	122	639 E	279	193	90.0	252	65 B	39 B	23
24	16.2 B	13.9 B	11.2 B	214 B	115	517 E	271	193	120	252	64 B	38 B	24
25	16.1 B	13.8 B	11.1 B	196 B	104	395	252	187	178	234	63 B	37 B	25
26	16.0 B	13.7 B	11.0 B	187 B	96.0	390	224	178	196	248	62 B	36 B	26
27	15.9 B	13.6 B	11.0 B	172 B	94.0	376	211	178	208	271	60 B	36 B	27
28	15.9 B	13.5 B	10.9 B	166 B	94.0	367 E	202	157	240 E	255	59 B	35 B	28
29	15.8 A		10.8 B	163 B	134	358	193	150	271	196	58 B	34 B	29
30	15.7 A		10.7 B	160 B	120	358	193	137	283	248	57 B	33 B	30
31	15.7 A		10.6 B		543 E		199	127		241		32 B	31
TOTAL	508.8	409.2	372.1	3399.5	4552.0	31222	10475	15265	4247.5	8696	2960	1371	TOTAL
MEAN	16.4	14.6	12.0	113	147	1040	338	492	142	281	98.7	44.2	MEAN
AC-FT	1010	812	738	6740	9030	61900	20800	30300	8420	17200	5870	2720	AC-FT
MAX	16.9	15.6	13.4	224	545	2090	607	1720	283	390	241	56	MAX
MIN	15.7	13.5	10.6	10.0	94.0	358	193	127	59.5	196	57	32	MIN

SUMMARY FOR THE YEAR 1973

MEAN DISCHARGE, 229 CFS
TOTAL DISCHARGE, 166000 AC-FT
MAXIMUM DAILY DISCHARGE, 2090 CFS ON JUN 17
MINIMUM DAILY DISCHARGE, 10.0 CFS ON APR 6

B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 30
CALGARY, ALTA.

MANGINGSTONE RIVER AT FORT MCMURRAY

STATION NO. 07CD004

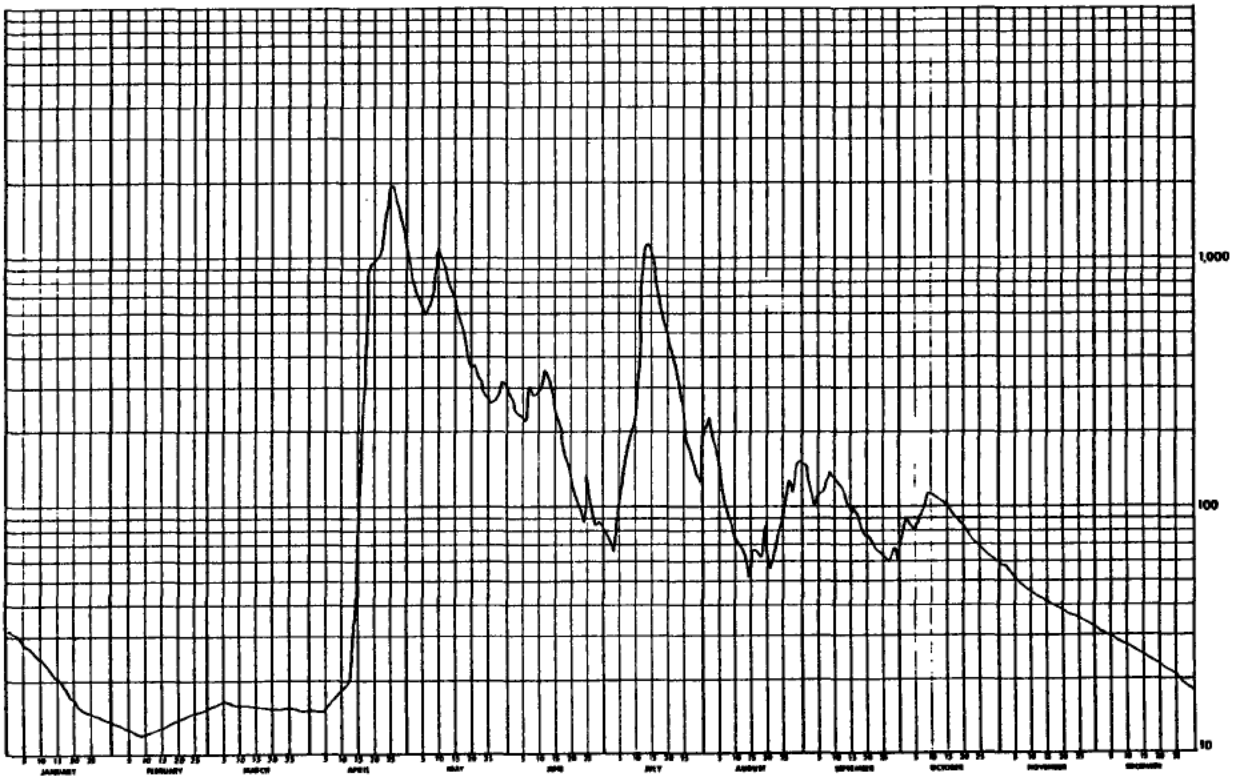
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1974

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	32.0 B	13.6 B	15.7 B	15.2 B	970	276 E	77.6	214	143	75.4 E	57.8	32.1 B	1
2	31.0 B	13.4 B	15.8 B	15.2 B	843	257 E	73.0	224	124	89.1	57.8	31.5 B	2
3	30.0 B	13.2 B	16.0 B	15.1 B	728	238	67.3	194	114	89.1	56.5 B	31.0 B	3
4	29.0 B	13.0 B	16.2 B	15.1 B	673	231	82.2	175	101	84.5	54.0 B	30.5 B	4
5	28.0 B	12.8 B	16.3 B	15.6 B	625	227	114	143	109	79.9	52.0 B	30.1 B	5
6	28.0 B	12.5 B	16.4 B	16.2 B	590	220	126	121	114	86.8	50.5 B	29.6 B	6
7	27.0 B	12.3 B	16.3 B	16.7 B	619	309	154	98.5	124	91.4	49.5 B	29.1 B	7
8	26.0 B	12.1 B	16.3 B	17.3 B	685	279	194	91.4	126	98.5	48.0 B	28.7 B	8
9	25.0 B	12.3 B	16.2 B	17.8 B	948	283 E	214	79.9	137	111	47.0 B	28.2 B	9
10	25.0 B	12.4 B	16.2 B	18.3 B	1100	287	258	73.0	132	114	46.3 B	27.7 B	10
11	24.0 B	12.6 B	16.2 B	18.9 B	1000	309	354	71.1	126	109	45.6 B	27.3 B	11
12	23.0 B	12.8 B	16.0 B	19.4 B	918	349	790	68.3 E	124	107 E	44.8 B	26.8 B	12
13	22.0 B	13.0 B	16.0 A	20.0 B	829	331	1120	65.4	109	104	44.0 B	26.3 B	13
14	21.0 B	13.1 B	15.9 B	30.0 B	748	290 E	1140	42.8	101	104	43.2 B	25.9 B	14
15	21.0 B	13.3 B	15.9 B	40.0 B	655	248	1100	55.9	93.7	101	42.4 B	25.4 B	15
16	20.0 B	13.5 B	15.9 B	328 B	584	214	910	57.8	96.0	93.7	41.8 B	24.9 B	16
17	19.0 B	13.6 B	15.8 B	616 B	529	202	730	55.9	91.4	91.4	40.8 B	24.4 B	17
18	18.0 B	13.8 B	15.8 B	904 B	455	163	620	52.4	82.2	86.8	40.1 B	24.0 B	18
19	17.0 B	14.0 B	15.7 B	951 B	405	150 E	560	67.3	77.6	84.5	39.5 B	23.5 B	19
20	17.0 B	14.1 B	15.7 B	997 B	367	137	515	73.0	75.3	82.2	38.9 B	23.0 B	20
21	15.9 B	14.3 B	15.7 B	1040 B	376	115	435	46.0	75.3	79.9	38.2 B	22.6 B	21
22	15.7 A	14.5 B	15.6 B	1090 B	336	106	391	52.4	69.2	77.6	37.6 B	22.1 B	22
23	15.5 B	14.7 B	15.6 B	1530	322	96.0	341	63.5	67.3	75.3	37.0 B	21.6 B	23
24	15.3 B	14.8 B	15.5 B	1810	283	86.6	285	82.2	65.4	73.0	36.3 B	21.2 B	24
25	15.1 B	15.0 B	15.5 B	1970	275	132	239	86.8	63.5	71.1	35.8 B	20.7 B	25
26	14.9 B	15.2 B	15.5 B	1940	263	114	191	109	63.5	69.2	35.0 B	20.2 B	26
27	14.6 B	15.3 B	15.4 B	1700	267	84.5	167 E	126	59.7	67.3	34.4 B	19.8 B	27
28	14.4 B	15.5 B	15.4 B	1470	275	85.7 E	143	116	65.4	65.4	33.8 B	19.3 B	28
29	14.2 B		15.3 B	1270	295	86.8	135	140	67.3	63.5	33.2 B	18.8 B	29
30	14.0 B		15.3 B	1080	313	84.5	124	151	61.6	61.6	32.7 B	18.4 B	30
31	13.8 B		15.3 B		294 E		169 E	147 E		59.7		17.9 B	31
TOTAL	646.4	380.7	490.4	18986.8	17570	5991.1	11819.1	3143.6	2858.4	2646.9	1294.5	772.6	TOTAL
MEAN	20.9	13.6	15.8	633	567	200	381	101	95.3	85.4	43.2	24.9	MEAN
AC-FT	1280	755	973	37700	34900	11900	23400	6240	5670	5250	2570	1530	AC-FT
MAX	32.0	15.5	16.4	1970	1100	349	1140	224	143	114	57.8	32.1	MAX
MIN	13.8	12.1	15.3	15.1	263	84.5	67.3	42.8	59.7	59.7	32.7	17.9	MIN

SUMMARY FOR THE YEAR 1974

MEAN DISCHARGE, 182 CFS
TOTAL DISCHARGE, 132000 AC-FT
MAXIMUM DAILY DISCHARGE, 1970 CFS ON APR 25
MINIMUM DAILY DISCHARGE, 12.1 CFS ON FEB 8

B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
MAR 17 1977 PAGE 31
CALGARY, ALTA.

HANGINGSTONE RIVER AT FORT MCMURRAY

STATION NO. 07CD004

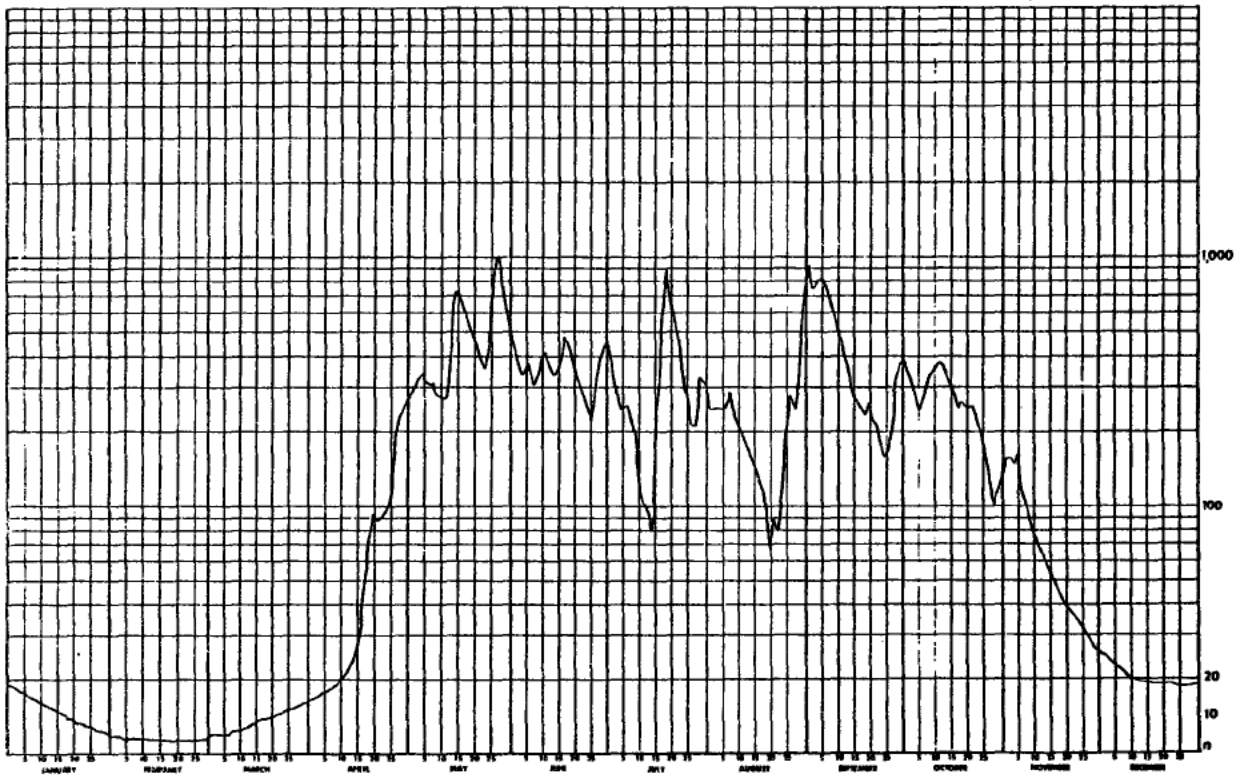
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	17.0 B	4.0 B	4.0 B	14.0 B	275 B	415	401	246	931	350	157	26.0 B	1
2	17.0 B	4.0 B	4.0 B	14.0 B	290 B	378 E	345	247 E	748	327	154	25.0 B	2
3	16.0 B	4.0 B	4.0 B	15.0 B	310 B	341	293	248 E	754	306	148	25.0 B	3
4	16.0 B	3.0 B	4.0 B	15.0 B	330 B	332	246	249 E	820	266	145	24.0 B	4
5	15.0 B	3.0 B	4.0 B	16.0 B	345	368	250 E	250	814	239	157 B	23.0 B	5
6	14.0 B	3.0 B	4.0 B	16.0 B	310	354	254	242	778	277	130 B	23.0 B	6
7	14.0 B	3.0 B	5.0 B	17.0 B	306	327	232	285	697	314	112 B	22.0 B	7
8	13.0 B	3.0 B	5.0 B	18.0 B	310	302	200	258	648	327	98.0 B	22.0 B	8
9	13.0 B	3.0 B	5.0 B	19.0 B	277	352 E	172	239	570	336	89.0 B	21.0 B	9
10	12.0 B	3.0 B	5.0 B	20.0 B	273	401	114	214	485	354	82.0 B	20.4 B	10
11	12.0 B	3.0 B	6.0 B	21.0 B	273 E	410	105 E	200	443 E	377	76.0 B	20.0 B	11
12	11.0 B	3.0 B	6.0 B	22.0 B	273	372	96.0	181	401	368	69.0 B	20.0 B	12
13	11.0 B	3.0 B	6.0 B	23.0 B	272	345	77.6	175	345	336	65.0 B	20.0 B	13
14	10.0 B	3.0 B	7.0 B	24.0 B	719	336	82.2	157	293	327	60.0 B	20.0 B	14
15	10.0 B	3.0 B	7.0 B	27.0 B	703	350	168 E	148	273	298	56.0 B	19.0 B	15
16	9.0 B	3.0 B	7.4 B	30.0 B	659	377	254	135	266	269	52.0 B	19.0 B	16
17	9.0 B	3.0 B	8.0 B	45.0 B	590	485	487 E	121	254	246	48.0 B	19.0 B	17
18	8.0 B	3.0 B	8.0 B	70.0 B	555	450	719	111	232	258	45.0 B	19.0 B	18
19	8.0 B	3.0 B	8.0 B	80.0 B	510	401	880	84.5	254	252 E	43.0 B	19.0 B	19
20	7.0 B	3.0 B	9.0 B	95.6 B	480	345	664	65.4	228	246	41.0 B	19.0 B	20
21	7.0 B	3.0 B	9.0 B	85.1 B	445	332	610	89.1	217	250	39.0 B	19.0 B	21
22	7.0 B	3.0 B	9.0 B	90.0 B	391	302	525	79.9	197	235	37.0 B	19.0 B	22
23	6.0 B	3.0 B	10.0 B	95.0 B	350	266	401	98.5	178	210	35.0 B	19.0 B	23
24	6.0 B	3.0 B	10.0 B	100 B	420	242	319	137	157	200	34.0 B	18.0 B	24
25	6.0 B	3.0 B	10.0 B	104 B	659 E	214	285	181	169	172	33.0 B	18.0 B	25
26	5.0 B	3.0 B	11.0 B	140 B	898	242	210	269	204	148	31.0 B	18.0 B	26
27	5.0 B	3.0 B	11.0 B	216 B	1020	323	210 E	269	275 E	114	30.0 B	18.0 B	27
28	5.0 B	3.0 B	12.0 B	230 B	880	372	210	242	345	101	28.0 B	18.0 B	28
29	4.3 B		12.0 B	245 B	886	420	336	414 E	363	109	27.0 B	18.0 B	29
30	4.0 B		13.0 B	260 B	960	450	319	587 E	377	121	26.0 B	18.0 B	30
31	4.0 B		13.0 B		900		310	759 E		135		18.0 B	31
TOTAL	301.3	87.0	236.4	2166.7	14969	10604	9774.8	6981.4	12716	7868	2147.0	626.4	TOTAL
MEAN	9.7	3.1	7.6	72.2	483	353	315	225	424	254	71.6	20.2	MEAN
AC-FT	598	173	469	4300	29700	21000	19400	13800	25200	15600	4260	1240	AC-FT
MAX	17.0	4.0	13.0	260	1020	485	880	759	931	377	157	26.0	MAX
MIN	4.0	3.0	4.0	14.0	273	214	77.6	65.4	157	101	26.0	18.0	MIN

SUMMARY FOR THE YEAR 1975

MEAN DISCHARGE, 188 CFS
TOTAL DISCHARGE, 136000 AC-FT
MAXIMUM DAILY DISCHARGE, 1020 CFS ON MAY 27
MINIMUM DAILY DISCHARGE, 3.0 CFS ON FEB 4

B-ICE CONDITIONS
E-ESTIMATED



WATER SURVEY OF CANADA
JAN 28 1977 PAGE 13
CALGARY, ALTA.

HANGINGSTONE RIVER AT FORT MC MURRAY

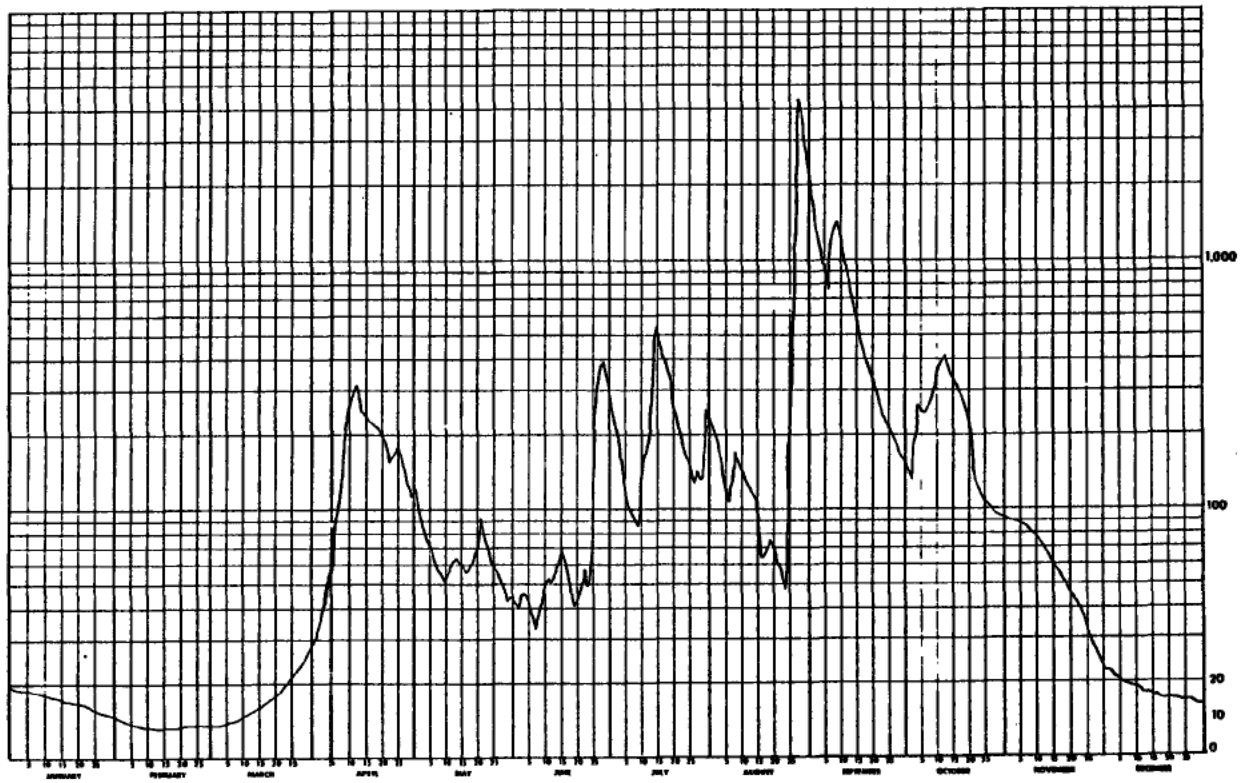
STATION NO. 07CD004

(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	18.0 H	9.0 B	7.5 B	30.0 B	121	42.0 E	254	210 E	1720	138	90.0 B	22.0 B	1
2	17.5 B	8.7 B	7.6 B	34.0 B	101	41.2	209 E	184	1400	129	89.0 B	22.0 B	2
3	17.3 B	8.5 B	7.7 B	40.0 B	84.5	46.0	163	172	1200	197 E	88.0 B	21.0 B	3
4	17.1 B	8.2 B	7.8 B	48.0 B	75.3	46.0	145	140	1070	264	87.0 B	21.0 B	4
5	17.0 B	8.0 B	8.0 B	70.0 B	73.0	41.3 E	116	119	876	246	86.4 B	20.0 B	5
6	16.8 H	7.6 B	8.3 B	100 B	65.4	36.6	106	106	753	246	86.0 B	20.0 B	6
7	16.7 H	7.3 B	8.6 B	108 B	59.7	33.8	96.4 E	139 E	1180	253	84.0 B	19.3 B	7
8	16.5 B	7.0 B	9.0 B	188 B	55.9	39.6	86.8	172	1340 E	280	82.0 B	18.0 B	8
9	16.3 B	6.7 B	9.4 B	240 B	54.2 E	44.4	86.8	154	1500	288	80.0 B	18.0 B	9
10	16.2 B	6.6 B	9.8 B	270 B	52.4	47.6	126 E	143	1250	334 E	78.0 B	17.0 B	10
11	16.1 B	6.6 B	10.0 B	300 B	57.8	52.4	166	135	1070	380	75.0 B	17.0 B	11
12	16.0 B	6.5 B	10.5 B	329 B	59.7	50.8	181	124	876	405	72.0 B	16.0 B	12
13	15.6 B	6.6 B	11.0 B	280 B	65.4	55.3 E	273	114	725	415	69.0 B	16.0 B	13
14	15.3 B	6.7 B	11.5 B	245 B	61.6	59.7	485	111	662	380	66.0 B	16.0 B	14
15	15.0 B	6.7 B	12.0 B	215 B	59.7	71.1	545	89.1	578 E	355	62.0 B	15.0 B	15
16	14.6 B	6.8 B	12.5 B	230 B	57.8 E	61.6	460	63.5	494	330 E	58.0 B	15.0 B	16
17	14.3 B	6.8 B	13.0 H	220 B	55.9	55.9	420	67.4 E	440	305 E	55.0 B	14.0 B	17
18	14.0 B	6.9 B	14.0 B	215 B	57.8	47.6	354	71.4 E	395	280	52.0 B	14.0 B	18
19	13.8 B	6.9 B	14.5 B	210 B	65.4	41.2	314	75.3	362 E	260	50.0 B	14.0 B	19
20	13.5 H	7.0 B	16.0 B	200 B	67.3	43.6 E	258	69.2	328	239	46.0 B	14.0 B	20
21	13.0 H	7.0 B	17.0 B	184	93.7	46.0	217	63.5	294 E	162 B	43.0 B	14.0 B	21
22	12.6 H	7.0 B	18.0 B	151	82.2	55.9	204	57.8	260	135 B	40.0 B	14.0 B	22
23	12.3 B	7.1 B	19.0 B	162 E	75.3	49.2	169	49.2	246 E	124 B	37.0 B	13.0 B	23
24	12.0 B	7.1 B	20.0 B	172	63.5	63.5	166	47.6	232 E	113 B	34.0 B	13.0 B	24
25	11.8 B	7.2 B	21.0 B	175	59.7	137	145 E	273	218 E	102 B	31.0 B	13.0 B	25
26	11.5 B	7.2 B	22.0 B	169	57.8	246 E	124	700 E	204 E	104 B	29.0 B	13.0 B	26
27	11.0 B	7.3 B	23.0 B	145	54.0	354	137	1750 E	190 E	100 B	27.0 B	13.0 B	27
28	10.6 B	7.4 B	24.0 H	124	49.2	386	135 E	4500	176 E	98.0 B	25.0 B	12.0 B	28
29	10.3 H	7.5 B	25.0 B	121	42.8	341	132	3500 E	162	96.0 B	24.0 B	12.0 B	29
30	10.0 B		26.5 B	119	44.4	285	250	2600 E	153	94.0 B	23.0 B	12.0 B	30
31	9.8 B		28.0 B		42.8		235	1960		91.0 B		12.0 B	31
TOTAL	442.5	209.9	452.2	5114.0	2016.2	2921.3	6759.0	17960.0	20354	6943.0	1768.4	490.3	TOTAL
MEAN	14.3	7.2	14.6	170	65.0	97.4	218	579	678	224	58.9	15.8	MEAN
AC-FT	878	416	897	10100	4000	5790	13400	35600	40400	13800	3510	973	AC-FT
MAX	18.0	9.0	28.0	329	121	386	545	4500	1720	415	90.0	22.0	MAX
MIN	9.8	6.5	7.5	30.0	42.8	33.8	86.8	47.6	153	91.0	23.0	12.0	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 179 CFS
TOTAL DISCHARGE, 130000 AC-FT
MAXIMUM DAILY DISCHARGE, 4500 CFS ON AUG 28
MINIMUM DAILY DISCHARGE, 6.5 CFS ON FEB 12

B-ICE CONDITIONS
E-ESTIMATED



5.21 HARTLEY CREEK NEAR FORT MacKAY

STATION NAME: Hartley Creek near Fort MacKay

STATION NUMBER: 07DA009

LOCATION: Latitude: 57°15'34" Longitude: 111°27'53"

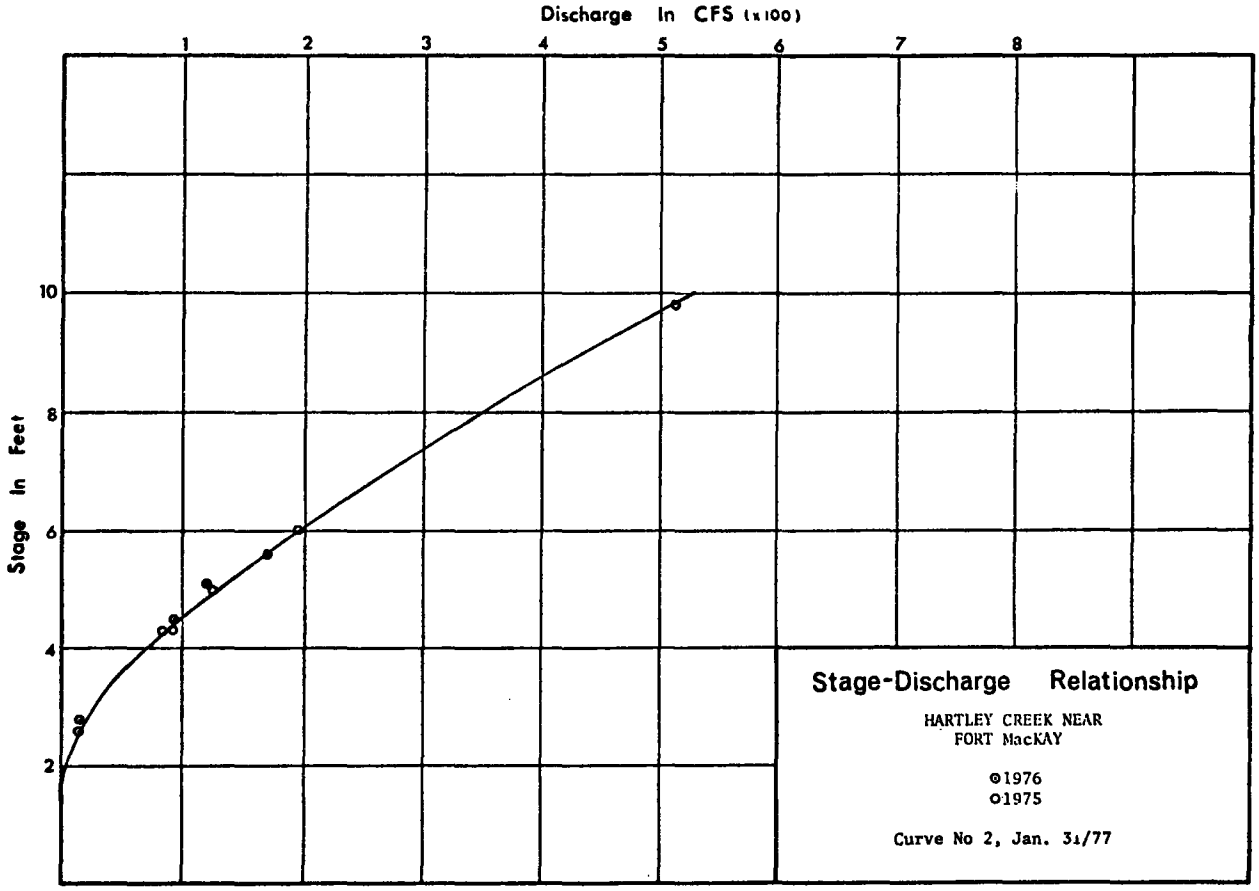
NW19-95-09-W4

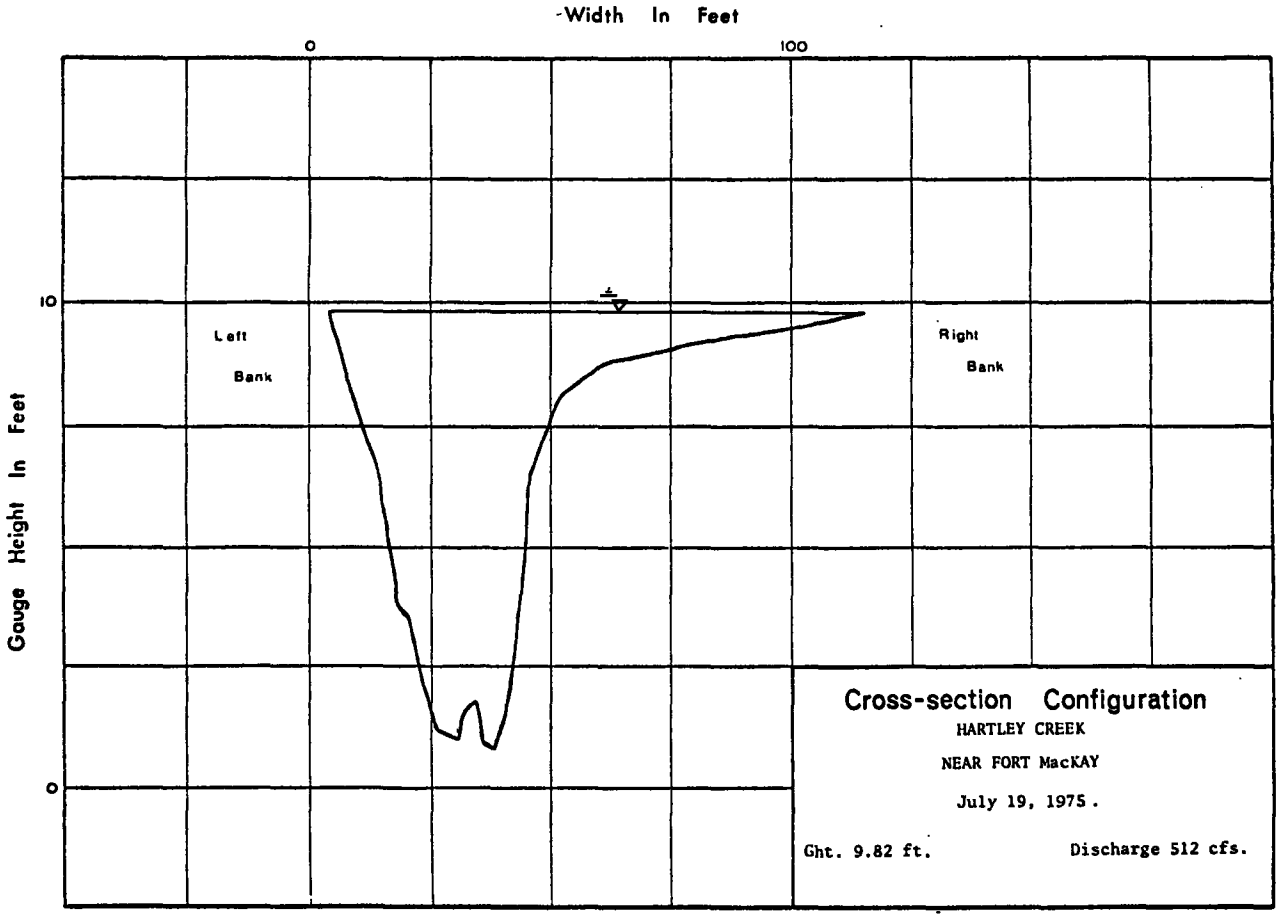
DRAINAGE AREA: 142 square miles (368 km^2)

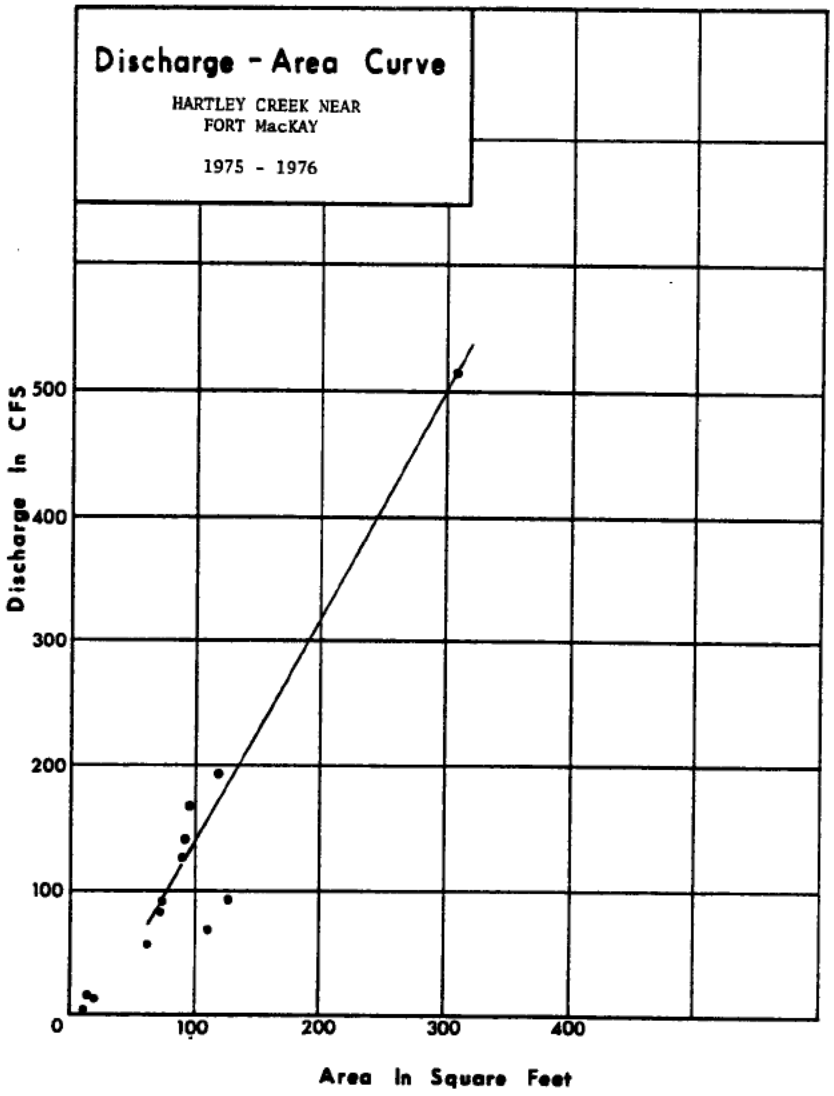
PERIOD OF RECORD: The station was established on June 17, 1975. Discharge data is available on a continuous basis to December, 1976.

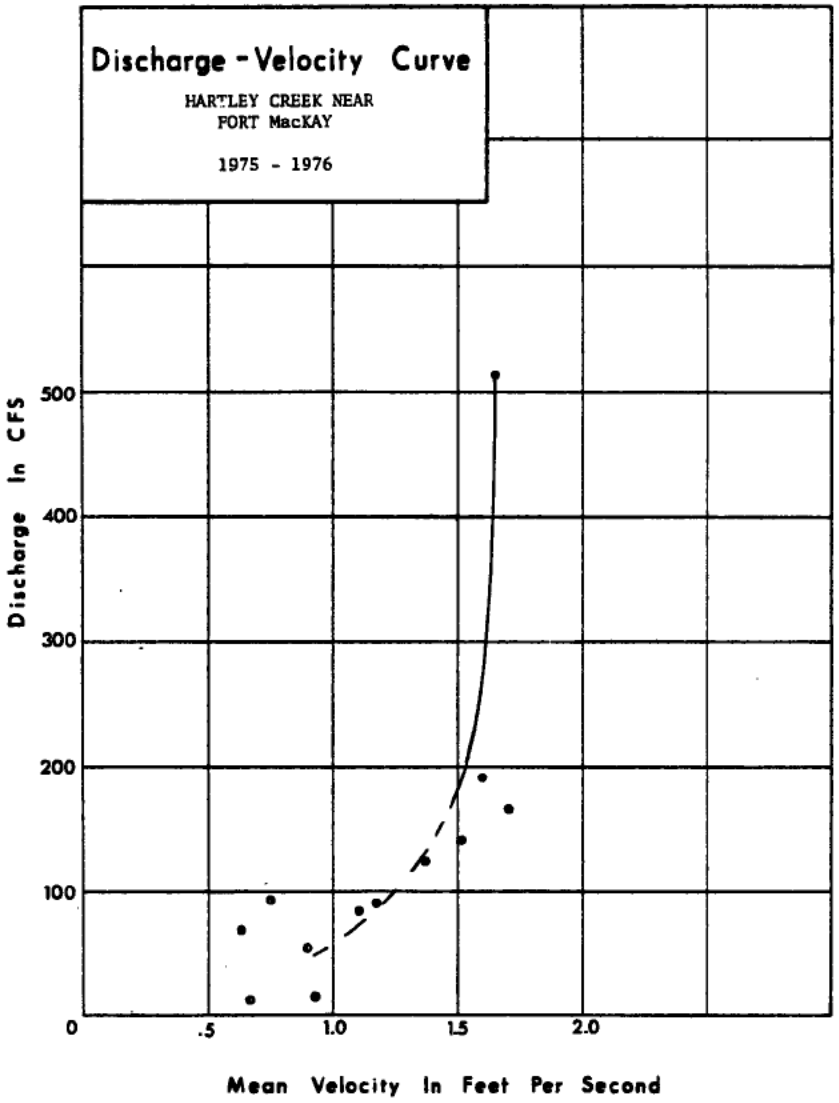
SITE DESCRIPTION: The gauge is located on the left bank approximately one-quarter mile (0.4 km) above its confluence with the Muskeg River and nine air miles (14 km) northeast of Fort MacKay. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder.
Open water measurements are made from the cableway immediately below the gauge or by wading at various locations near the gauge.

GENERAL: The almost vertical line on the discharge velocity curve is caused by the abundance of vegetation, mainly willows, in the top portion of the channel as well as in the overflow area on the right bank.


Discharge In CFS (x100)
1
2
3
4
5
6
7
8
Stage In Feet
10
8
6
4
2
Stage-Discharge Relationship
HARTLEY CREEK NEAR
FORT MacKAY
©1976
○1975
Curve No 2, Jan. 31/77


Width In Feet
0
100
Gauge Height In Feet
10
0
Left
Bank
Right
Bank
Cross-section Configuration
HARTLEY CREEK
NEAR FORT MacKAY
July 19, 1975.
Ght. 9.82 ft.
Discharge 512 cfs.


Discharge - Area Curve
HARTLEY CREEK NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS
0
100
200
300
400
500
100
200
300
400
Area In Square Feet


Discharge - Velocity Curve
HARTLEY CREEK NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS
0
100
200
300
400
500
.5
1.0
1.5
2.0
Mean Velocity In Feet Per Second

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JUN 12 1978 PAGE 109
CALGARY, ALTA.

HARTLEY CREEK NEAR FORT MACKAY

STATION NO. 07DAC09

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	202	163	351	194	73.0 B	8.6 B	1
2	---	---	---	---	---	---	157	136	424	191	70.0 B	7.8 B	2
3	---	---	---	---	---	---	164	128	437	183	67.0 B	7.4 B	3
4	---	---	---	---	---	---	144	122	438	173	64.0 B	6.4 B	4
5	---	---	---	---	---	---	125	115	441	162	61.0 B	5.8 B	5
6	---	---	---	---	---	---	104	110	450	158	59.0 B	5.4 B	6
7	---	---	---	---	---	---	94.5	104	436	148	57.0 B	5.0 B	7
8	---	---	---	---	---	---	83.6	98.3	409	192	54.0 B	4.6 B	8
9	---	---	---	---	---	---	72.8	90.8	376	198	51.0 B	4.4 B	9
10	---	---	---	---	---	---	62.6	83.7	355	199	49.0 B	4.3 B	10
11	---	---	---	---	---	---	50.1	79.2	334	197	47.0 B	4.2 B	11
12	---	---	---	---	---	---	42.4	76.0	312	192	44.0 B	4.1 B	12
13	---	---	---	---	---	---	40.8	74.5	289	184	42.0 B	4.0 B	13
14	---	---	---	---	---	---	42.6	75.8	263	175	40.0 B	3.9 B	14
15	---	---	---	---	---	---	57.1	74.1	235	166	38.0 B	3.8 B	15
16	---	---	---	---	---	---	173	69.6	217	156	37.0 B	3.6 B	16
17	---	---	---	---	---	90.8 A	386	64.5	224	150	35.0 B	3.4 B	17
18	---	---	---	---	---	91.2	427	58.7	236	144	37.0 B	3.2 B	18
19	---	---	---	---	---	92.0	508	55.0	220	141	31.0 B	3.0 B	19
20	---	---	---	---	---	97.7	523	52.9	210	136	29.0 B	2.9 B	20
21	---	---	---	---	---	99.1	516	55.3	197	132	27.0 B	2.8 B	21
22	---	---	---	---	---	94.9	504	57.6	192	127	25.0 B	2.7 B	22
23	---	---	---	---	---	88.3	475	85.4	169	121	23.0 B	2.6 B	23
24	---	---	---	---	---	83.7	431	111	157	115	21.0 B	2.4 B	24
25	---	---	---	---	---	83.0	384	129	148	107 B	19.0 B	2.3 B	25
26	---	---	---	---	---	92.4	333	134	144	98.0 B	16.0 B	2.2 B	26
27	---	---	---	---	---	108	291	131	145	91.0 B	14.0 B	2.1 B	27
28	---	---	---	---	---	118	235	129	148	86.0 B	12.0 B	2.0 B	28
29	---		---	---	---	149	216	139	169	83.0 B	10.7 B	2.0 B	29
30	---		---	---	---	192	199	195	188	88.0 B	9.6 B	1.9 B	30
31	---		---		---		174	279		76.0 B		1.8 B	31
TOTAL	---	---	---	---	---	---	7145.6	3267.2	8298	4567.0	1158.3	123.2	TOTAL
MEAN	---	---	---	---	---	---	232	105	277	148	38.6	3.9	MEAN
AC-FT	---	---	---	---	---	---	14300	6480	16500	9100	2300	238	AC-FT
MAX	---	---	---	---	---	---	523	279	456	199	73.0	8.6	MAX
MIN	---	---	---	---	---	---	40.8	52.9	144	76.0	9.6	1.8	MIN

SUMMARY FOR THE YEAR 1975

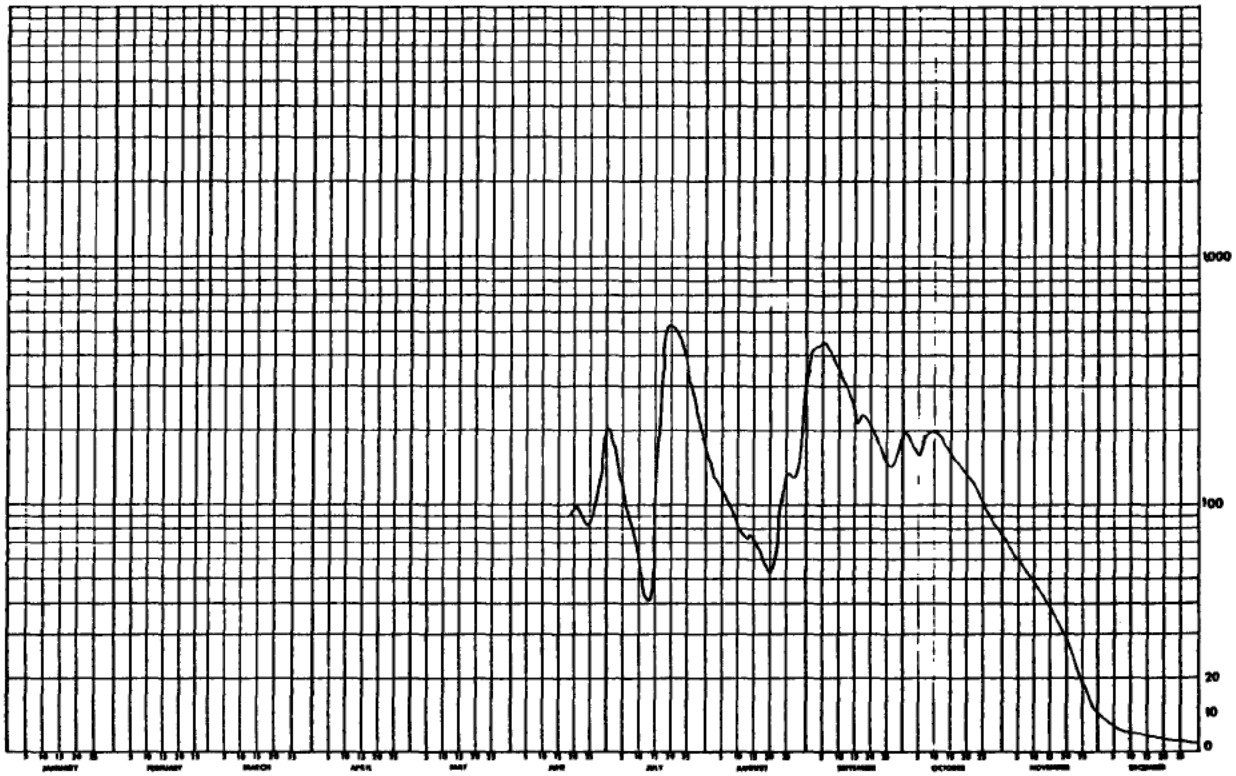
MAXIMUM DAILY DISCHARGE, 523 CFS ON JUL 20

MAXIMUM INSTANTANEOUS DISCHARGE
525 CFS AT 2030 MST ON JUL 20

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 15 34 N
LONG 111 27 53 W

A-MANUAL GAUGE
B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA
FEB 14 1977 PAGE 7
CALGARY, ALTA.

HARTLEY CREEK NEAR FORT MACKAY

STATION NO. 07DA009

(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

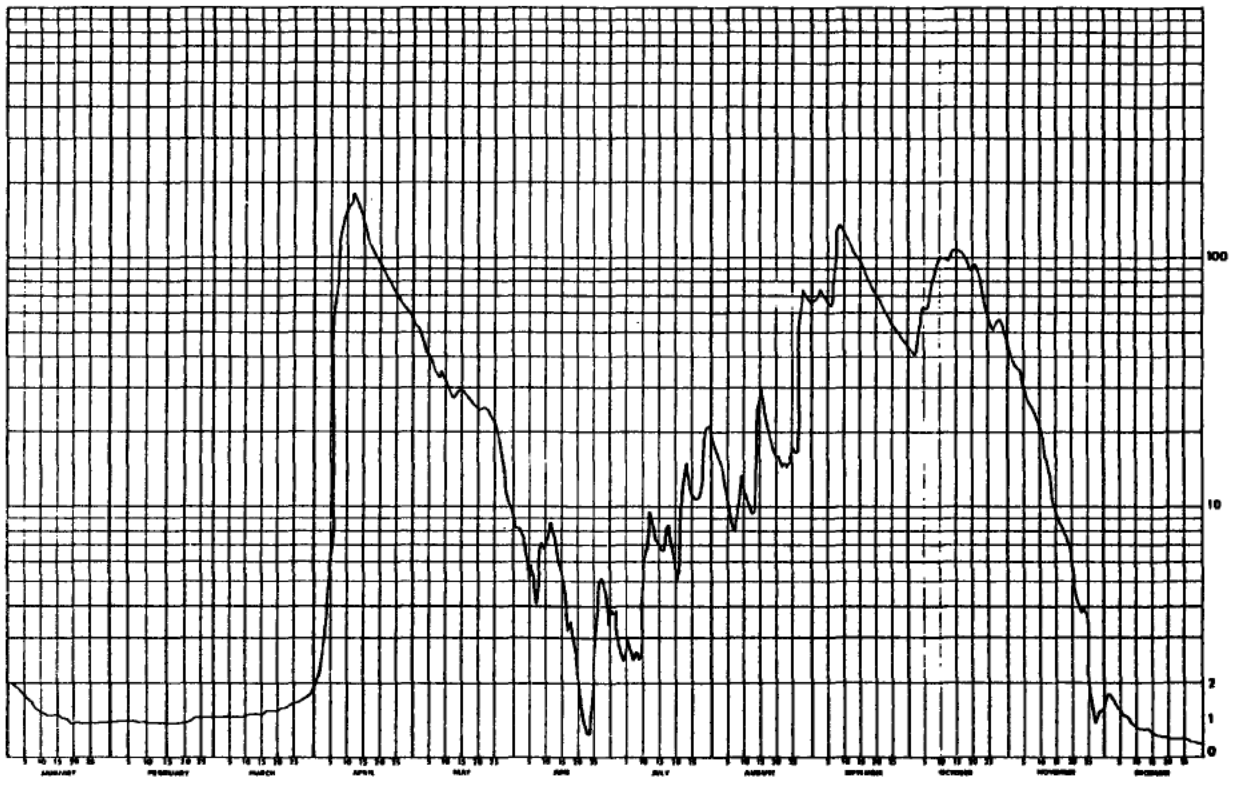
DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1.9 B	.80 B	.90 B	2.0 B	53.1	8.2	3.7	18.3	66.4	42.3	40.9 B	1.5 B	1
2	1.8 B	.80 B	.90 B	2.4 B	53.2	8.3	3.8	15.6	70.8	40.6	36.1 B	1.4 B	2
3	1.7 B	.80 B	.90 B	3.0 B	48.1	7.7	2.5	13.4	73.1	46.4	36.2 B	1.5 B	3
4	1.6 B	.80 B	.90 B	4.0 B	43.8	6.4	2.4	11.2	69.1	57.9	35.1 B	1.3 B	4
5	1.5 B	.80 B	.90 B	8.0 B	40.2	5.0	3.2	9.8	65.8	63.6	32.6 B	1.0 B	5
6	1.4 B	.80 B	.90 B	53.2 B	36.6	5.8	2.8	8.4	63.0	62.1	28.6 B	1.0 B	6
7	1.3 B	.80 B	.90 B	80.3 B	35.5	4.0	2.5	7.0	88.7	65.4	26.7 B	.90 B	7
8	1.2 B	.80 B	.90 B	109 B	33.0	4.7	2.6	10.9	129	82.7	24.6 B	.80 B	8
9	1.1 B	.80 B	.97 B	134 B	34.5	7.1	2.5	13.4	135	93.0	21.9 B	.71 B	9
10	1.0 B	.77 B	1.0 B	146 B	30.6	6.6	4.3	12.2	128	98.9	19.9 B	.70 B	10
11	1.0 B	.80 B	1.0 B	172 B	29.8	7.6	6.7	11.4	122	99.3	17.2 B	.60 B	11
12	1.0 B	.80 B	1.0 B	178 B	27.4	8.7	9.5	9.5	115	98.4	14.8 B	.60 B	12
13	1.0 B	.80 B	1.0 B	167	27.5	7.5	7.7	9.5	108	97.4	12.8 B	.60 B	13
14	.91 B	.80 B	1.0 B	156	28.9	6.0	7.1	24.6	103	106	10.7 B	.60 B	14
15	.90 B	.80 B	1.0 B	142	29.1	5.4	6.9	29.8	98.4	109	8.7 B	.50 B	15
16	.90 B	.80 B	1.1 B	127	28.6	5.1	6.5	24.8	90.9	109	9.0 B	.50 B	16
17	.90 B	.80 B	1.1 B	115	27.3	3.3	8.1	21.4	83.9	106	8.2 B	.50 B	17
18	.80 B	.80 B	1.1 B	108	26.6	3.5	8.4	18.6	78.0	101 B	8.0 B	.50 B	18
19	.80 B	.80 B	1.1 B	99.6	26.5	2.7	6.7	16.2	72.6	98.0 B	6.7 B	.50 B	19
20	.80 B	.80 B	1.1 B	92.8	24.3	1.9	5.1	16.0	68.2	88.8 B	5.8 B	.50 B	20
21	.80 B	.80 B	1.2 B	88.6	24.8	1.2	5.5	14.8	64.7	93.7 B	4.8 B	.40 B	21
22	.80 B	.90 B	1.2 B	82.9	24.8	.67	12.0	15.1	60.7	88.4 B	3.9 B	.40 B	22
23	.80 B	.90 B	1.2 B	78.9	24.3	.52	14.7	14.4	57.3	76.3 B	3.8 B	.40 B	23
24	.80 B	.90 B	1.3 B	76.0	24.0	1.3	11.9	14.9	54.5	65.2 B	4.0 B	.40 B	24
25	.80 B	.90 B	1.3 B	73.4	22.0	2.8	10.8	17.1	52.9	55.0 B	3.3 B	.40 B	25
26	.80 B	.90 B	1.4 B	70.0	19.6	4.7	10.7	16.6	50.8	52.6 B	1.8 B	.40 B	26
27	.80 B	.90 B	1.4 B	66.4	17.3	5.2	10.7	52.0	49.3	51.4 B	.76 B	.30 B	27
28	.80 B	.90 B	1.5 B	63.4	13.5	4.5	13.6	73.5	47.8	54.6 B	.83 B	.30 B	28
29	.80 B	.90 B	1.6 B	60.0	11.0	3.4	20.4	72.4	46.0	57.5 B	1.1 B	.30 B	29
30	.80 B		1.7 B	56.8	10.4	3.9	20.8	67.4	44.0	50.8 B	1.1 B	.30 B	30
31	.80 B		1.8 B		8.7		21.0	65.7		47.4 B		.30 B	31
TOTAL	32.31	23.97	35.27	2615.7	885.0	143.69	255.1	725.9	2356.9	2358.7	429.89	20.31	TOTAL
MEAN	1.0	.83	1.1	87.2	28.5	4.8	8.2	23.4	78.6	76.1	14.3	.66	MEAN
AC-FT	64.1	47.5	70.0	5190	1760	285	506	1440	4670	4680	853	40.3	AC-FT
MAX	1.9	.90	1.8	178	53.2	8.7	21.0	73.5	135	109	40.9	1.6	MAX
MIN	.80	.77	.90	2.0	8.7	.52	2.8	7.0	44.0	40.6	.76	.30	MIN

SUMMARY FOR THE YEAR 1976

MEAN DISCHARGE, 27.0 CFS
TOTAL DISCHARGE, 19600 AC-FT
MAXIMUM DAILY DISCHARGE, 178 CFS ON APR 12
MINIMUM DAILY DISCHARGE, .30 CFS ON DEC 27

B-ICE CONDITIONS

MAXIMUM INSTANTANEOUS DISCHARGE, CFS AT ON NOT DETERMINED



5.22 HORSE RIVER AT ABASANDS PARK

STATION NAME: Horse River at Abasands Park

STATION NUMBER: 07CC001

LOCATION: Latitude: 56°42'29" Longitude: 111°23'40"

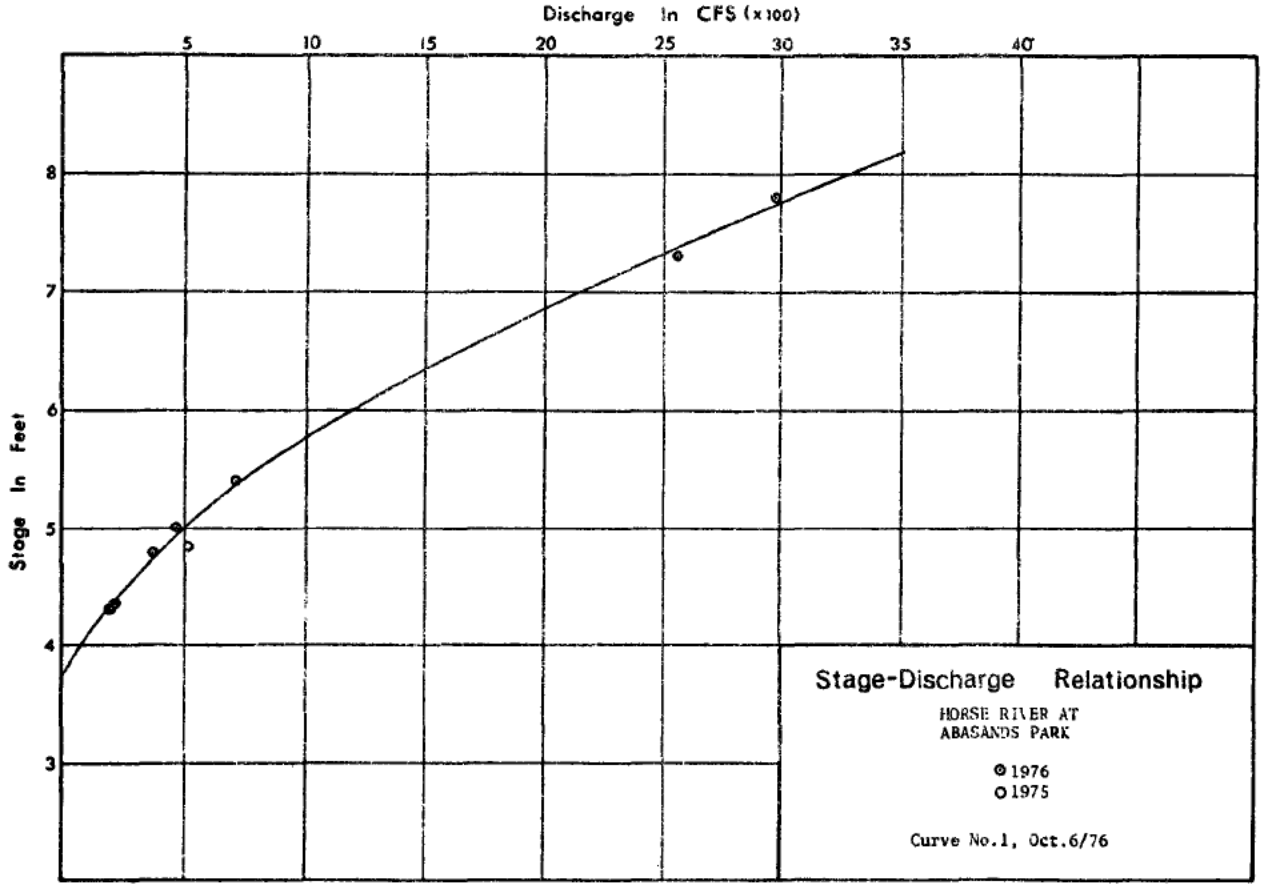
NE08-89-09-W4

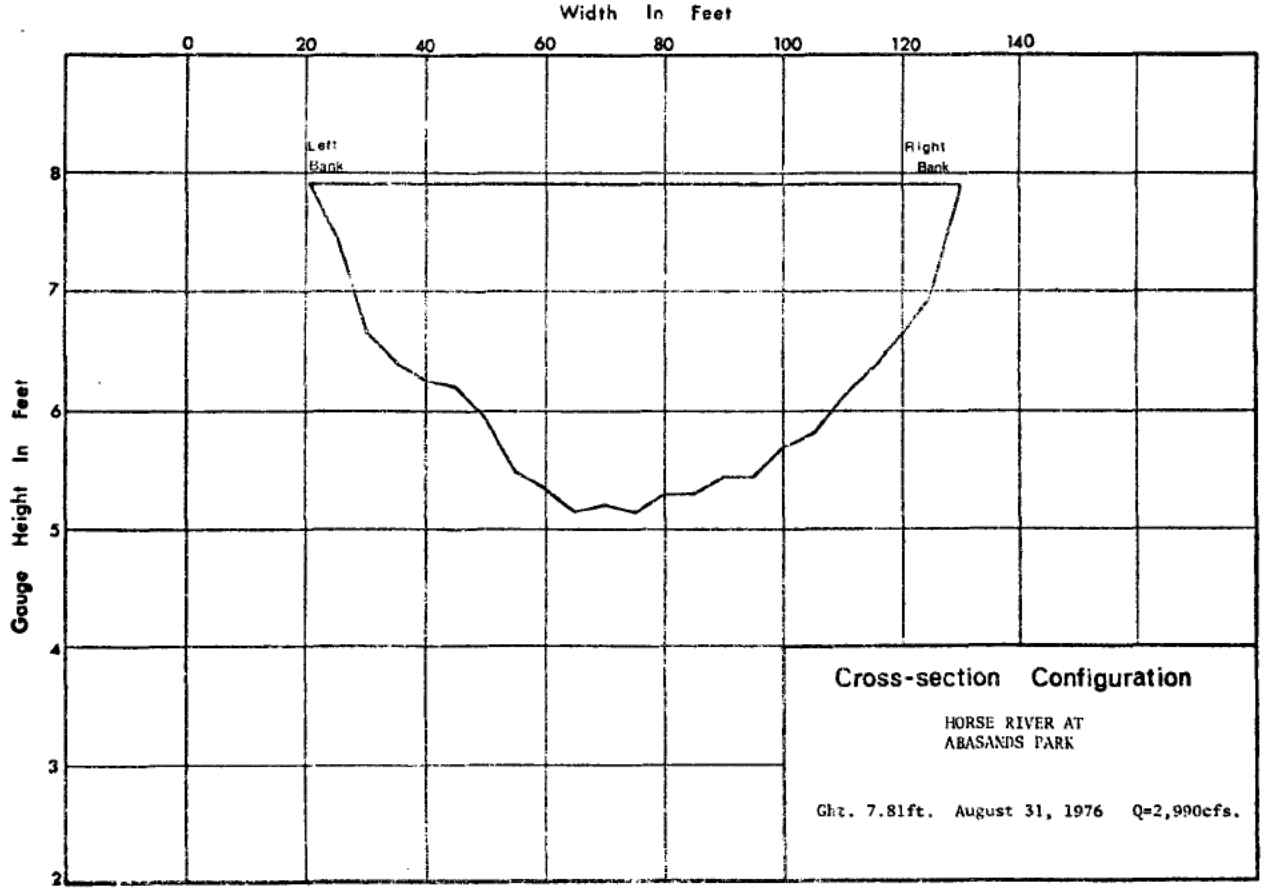
DRAINAGE AREA: 842 square miles(2,180 km^2)

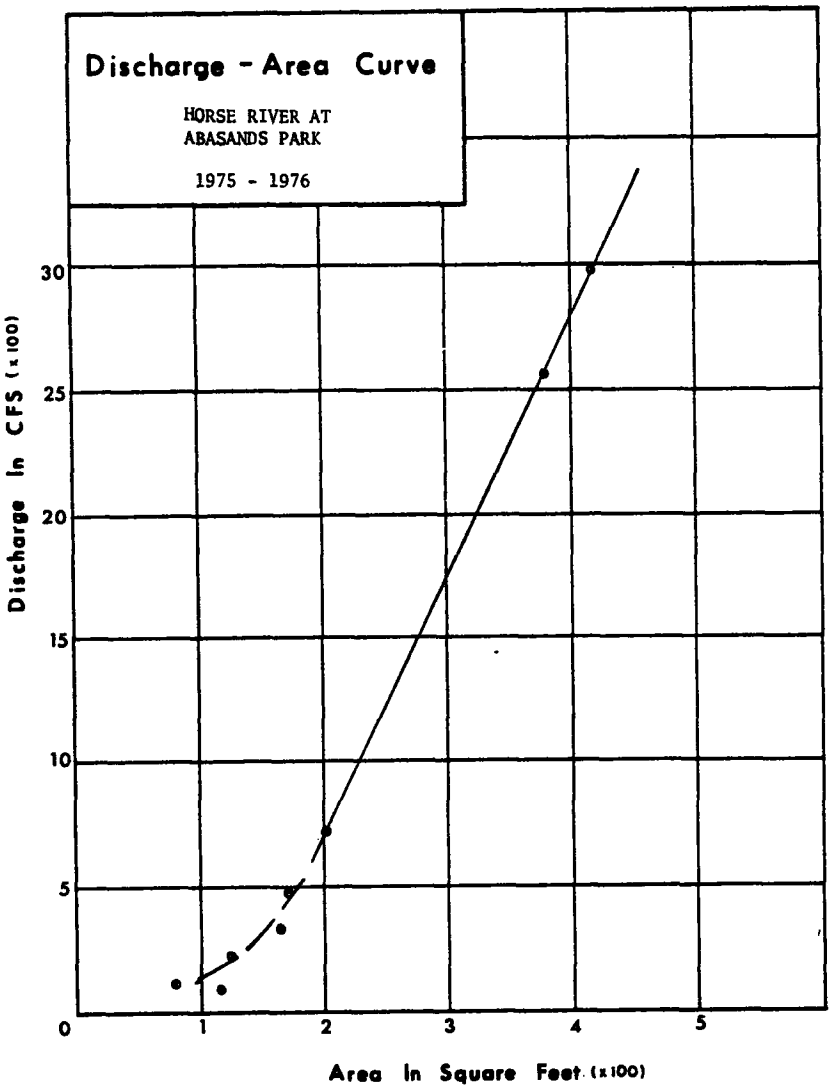
PERIOD OF RECORD: The gauge was established on September 25, 1975 but discharge data is only available on a continuous basis for 1976.

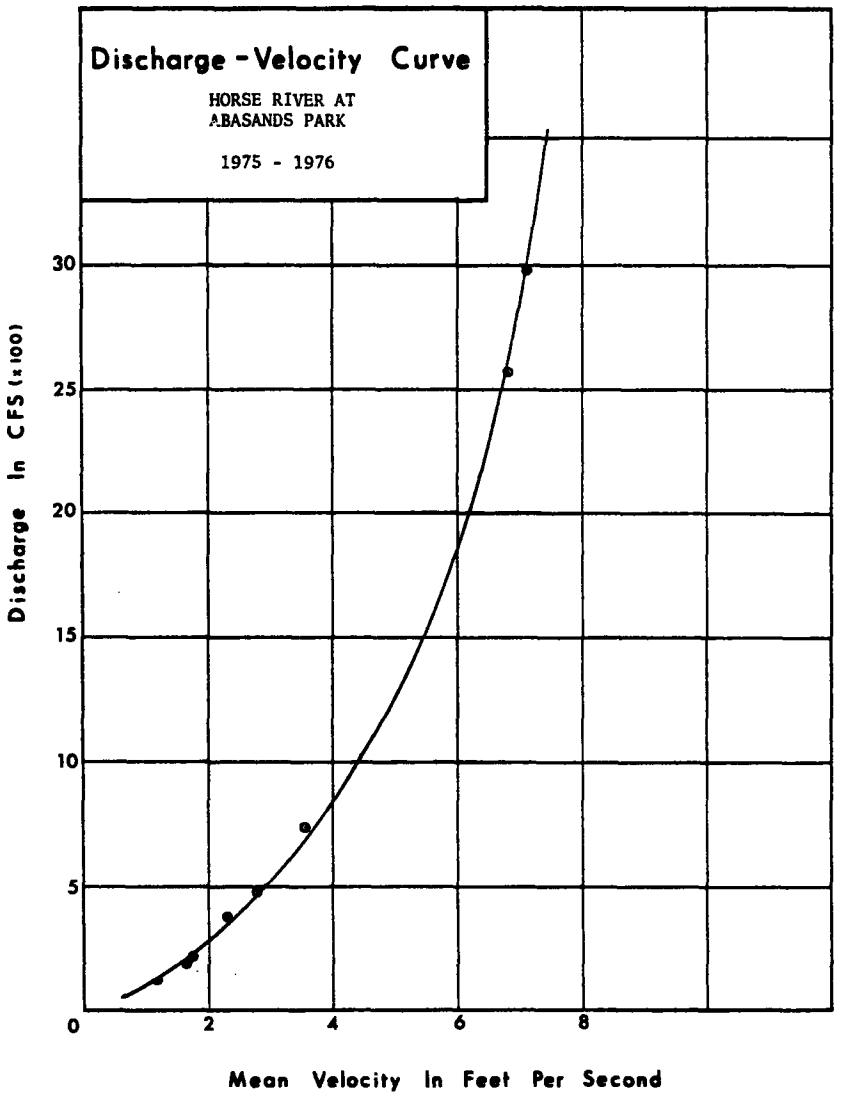
SITE DESCRIPTION: The gauge is located on the right bank approximately two miles (3.2 km) above its confluence with the Athabasca River. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder.
A cableway was completed at this site in September,1976. Prior to that, open water discharge measurements were made by wading or by boat.

GENERAL: A peak discharge of 3,430 cfs (4.1 cfs/mi^2) was recorded at this site on August 29, 1976. The drainage basin shares a common boundary with the Hangingstone River yet there is a marked difference in the peak characteristics for this storm event. The Hangingstone River displayed a much sharper peak and also considerably higher yield per square mile. The Hangingstone peaked at 4,500 cfs (12.8 cfs/mi^2) on August 28. A plausible reason for the difference is that the Hangingstone River draws a good portion of its drainage from a height of land called Stony Mountain, which probably caught more precipitation. In addition the runoff from the Horse River would be slowed by the extensive muskeg areas it drains.


Discharge In CFS (x100)
5
10
15
20
25
30
35
40
Stage In Feet
8
7
6
5
4
3
Stage-Discharge Relationship
HORSE RIVER AT
ABASANDS PARK
1976
1975
Curve No.1, Oct.6/76


Width In Feet
0
20
40
60
80
100
120
140
Gauge Height In Feet
8
7
6
5
4
3
2
Left Bank
Right Bank
Cross-section Configuration
HORSE RIVER AT
ABASANDS PARK
Ght. 7.81ft. August 31, 1976 Q=2,990cfs.


Discharge - Area Curve
HORSE RIVER AT
ABASANDS PARK
1975 - 1976
Discharge In CFS (x100)
0
5
10
15
20
25
30
1
2
3
4
5
Area In Square Feet (x100)


Discharge - Velocity Curve
HORSE RIVER AT
ABASANDS PARK
1975 - 1976
Discharge In CFS (x100)
0
5
10
15
20
25
30
2
4
6
8
Mean Velocity In Feet Per Second

WATER SURVEY OF CANADA
FEB 16 1977 PAGE 10
CALGARY, ALTA.

HORSE RIVER AT ABASANDS PARK

STATION NO. 07CC001

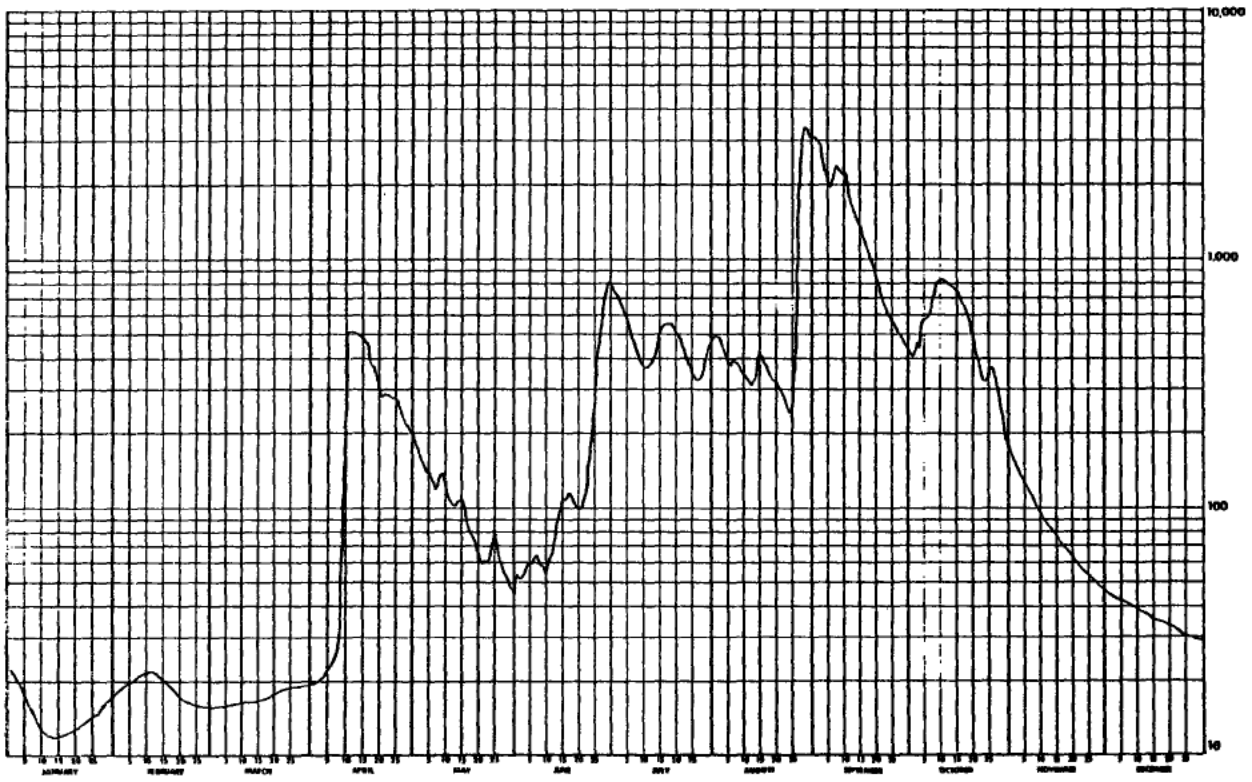
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	22.0 B	18.0 B	16.0 B	19.9 B	179	53.0	756	498	3130	415	171 B	46.0 B	1
2	21.0 B	18.5 B	16.0 B	20.0 B	161	51.5	721	490	3080	400	155 B	45.0 B	2
3	20.0 B	19.0 B	16.0 B	20.5 B	151	53.9	670 E	466	2830	458	150 B	44.0 B	3
4	19.0 B	19.5 B	16.1 B	21.0 B	140	58.9	620 E	435	2480	536	142	43.0 B	4
5	17.5 B	20.0 B	16.2 B	22.0 B	139	58.7	570 E	399	2170	567	130 B	42.0 B	5
6	16.0 B	20.5 B	16.2 B	23.0 B	128	60.7	540 E	369	1940	566	125 B	41.0 B	6
7	15.0 B	21.0 B	16.3 B	24.0 B	117	55.0	497 A	399	2080	579	120 B	40.0 B	7
8	14.0 B	21.2 B	16.3 B	34.0 B	130	48.3	444	385	2370	684	110 B	40.0 B	8
9	13.5 B	21.5 B	16.4 B	121 B	140	47.6	393	369	2350	773	105 B	39.0 B	9
10	13.0 B	21.8 B	16.4 B	500 B	122	45.9	373	348	2190	817	100 B	39.0 B	10
11	12.5 B	22.0 B	16.4 B	510 B	110	50.7	364	338	2170	829	94.0 B	38.0 B	11
12	12.0 B	22.1 B	16.5 B	510 B	104	56.1	378	320	1750	802	90.0 B	38.0 B	12
13	12.0 B	21.5 B	16.5 B	500 B	102	68.6	402	319	1620	787	86.0 B	37.0 B	13
14	11.9 B	21.1 B	16.6 B	490 B	105	101	421	336	1520	789	82.0 B	36.0 B	14
15	12.0 B	20.0 B	16.7 B	470 B	106	109	504	411	1400	764	79.0 B	36.0 B	15
16	12.0 B	19.5 B	16.9 B	460 B	92.6	109	536	403	1280	727	75.0 B	35.0 B	16
17	12.0 B	19.0 B	17.1 B	385 A	81.7	117	554	367	1180	689	72.0 B	35.0 B	17
18	12.5 B	18.0 B	17.4 B	377	77.5	114	557	343	1080	636	68.0 B	34.0 B	18
19	12.5 B	17.5 B	17.8 B	309	71.6	106	545	335	968	595	66.0 B	34.0 B	19
20	12.7 B	17.0 B	18.0 B	274	65.5	99.9	522	325	864	549	63.0 B	33.0 B	20
21	13.0 B	16.9 B	18.1 B	288	59.5	98.6	493	302	779	463 B	61.0 B	32.0 B	21
22	13.2 B	16.7 B	18.3 B	287	60.8	111	451	283	714	395 B	60.0 B	32.0 B	22
23	13.5 B	16.4 B	18.5 B	279	60.1	130	412	267	654	389 B	58.0 B	31.0 B	23
24	13.9 B	16.2 B	18.7 B	280	63.0 A	187	380	247	603	322 B	56.0 B	31.0 B	24
25	14.2 B	16.1 B	18.8 B	277	76.0 A	264	349	245	569	327 B	54.0 B	30.0 B	25
26	14.6 B	16.0 B	18.9 B	247	66.1	355	332	375	535	362 B	52.0 B	30.0 B	26
27	15.0 B	15.9 B	19.0 B	214	57.5	480	329	1650	506	352 B	50.0 B	30.0 B	27
28	15.5 B	15.9 B	19.2 B	213	54.9	659	349	2870	483	319 B	49.0 B	29.0 B	28
29	16.0 B	15.9 B	19.4 B	204	51.2	787	393	3340	464	252 B	48.0 B	29.0 B	29
30	16.5 B		19.6 B	189	47.0	803	436	3260	436	205 B	47.0 B	29.0 B	30
31	17.0 B		19.8 B		43.9		477	3060		190 B		29.0 B	31
TOTAL	455.3	544.7	540.1	7568.4	2964.9	5337.4	14768	23554	44195	16538	2618.0	1107.0	TOTAL
MEAN	14.7	18.8	17.4	252	95.6	178	476	760	1470	533	87.3	35.7	MEAN
AC-FT	903	1080	1070	15000	5880	10600	29300	46700	87700	32800	5190	2200	AC-FT
MAX	22.0	22.1	19.8	510	179	803	756	3340	3130	829	171	46.0	MAX
MIN	11.9	15.9	16.0	19.9	43.9	43.9	329	245	436	190	47.0	29.0	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 328 CFS
TOTAL DISCHARGE, 238000 AC-FT
MAXIMUM DAILY DISCHARGE, 3340 CFS ON AUG 29
MINIMUM DAILY DISCHARGE, 11.9 CFS ON JAN 14

MAXIMUM INSTANTANEOUS DISCHARGE, 3430 CFS AT 1750 MST ON AUG 29

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



5.23 JOSLYN CREEK NEAR FORT MacKAY

STATION NAME: Joslyn Creek near Fort MacKay

STATION NUMBER: 07DA016

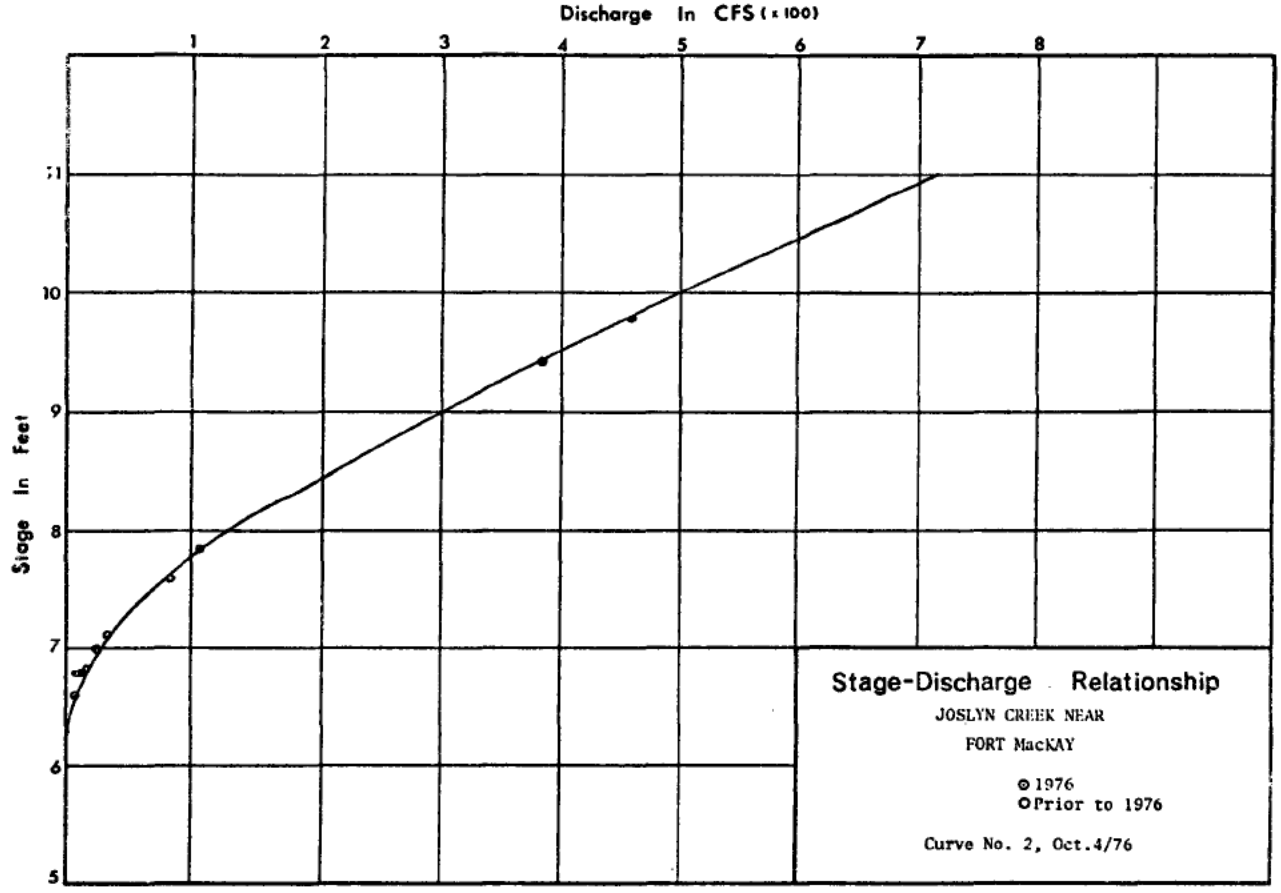
LOCATION: Latitude: 57°16'27" Longitude: 111°44'30"

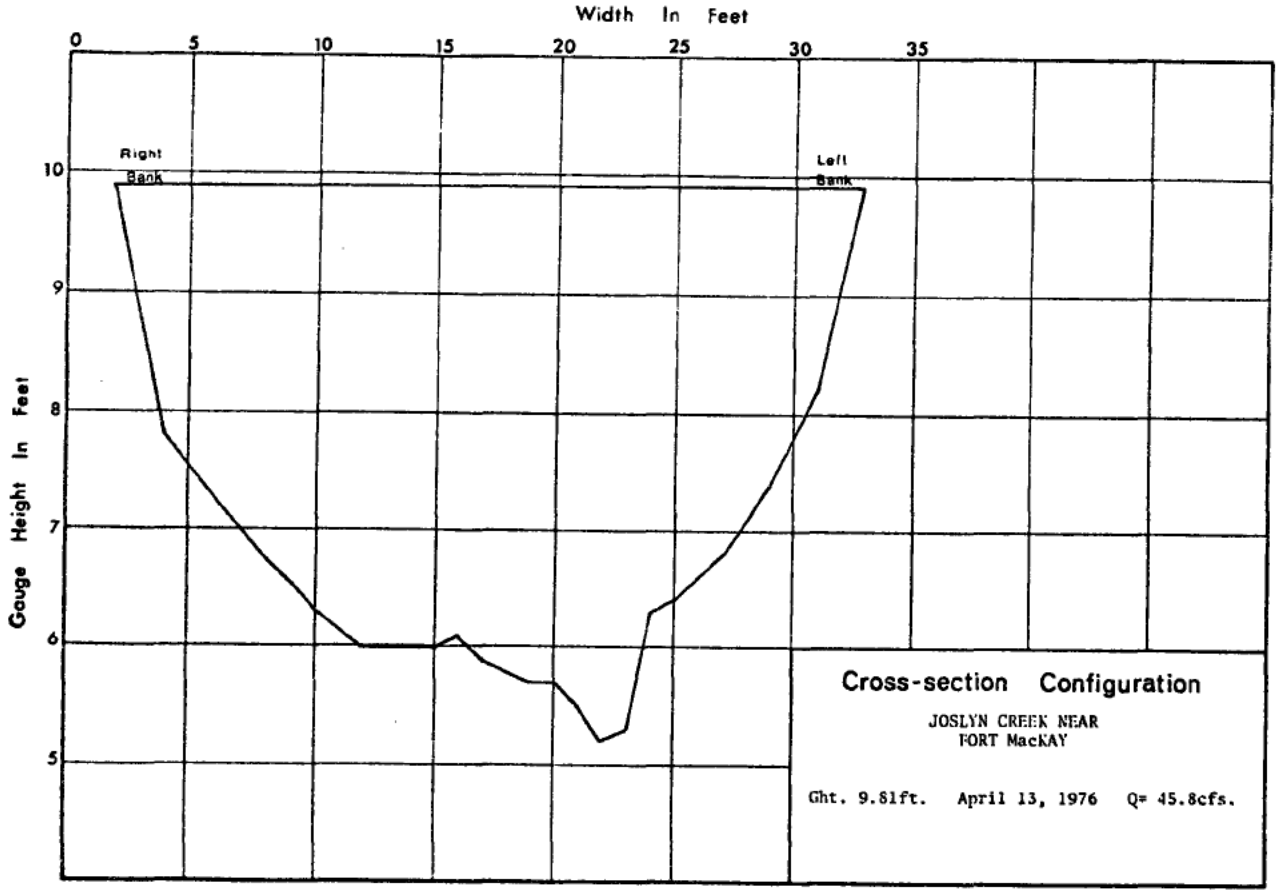
DRAINAGE AREA: 95.7 square miles (248 km^2)

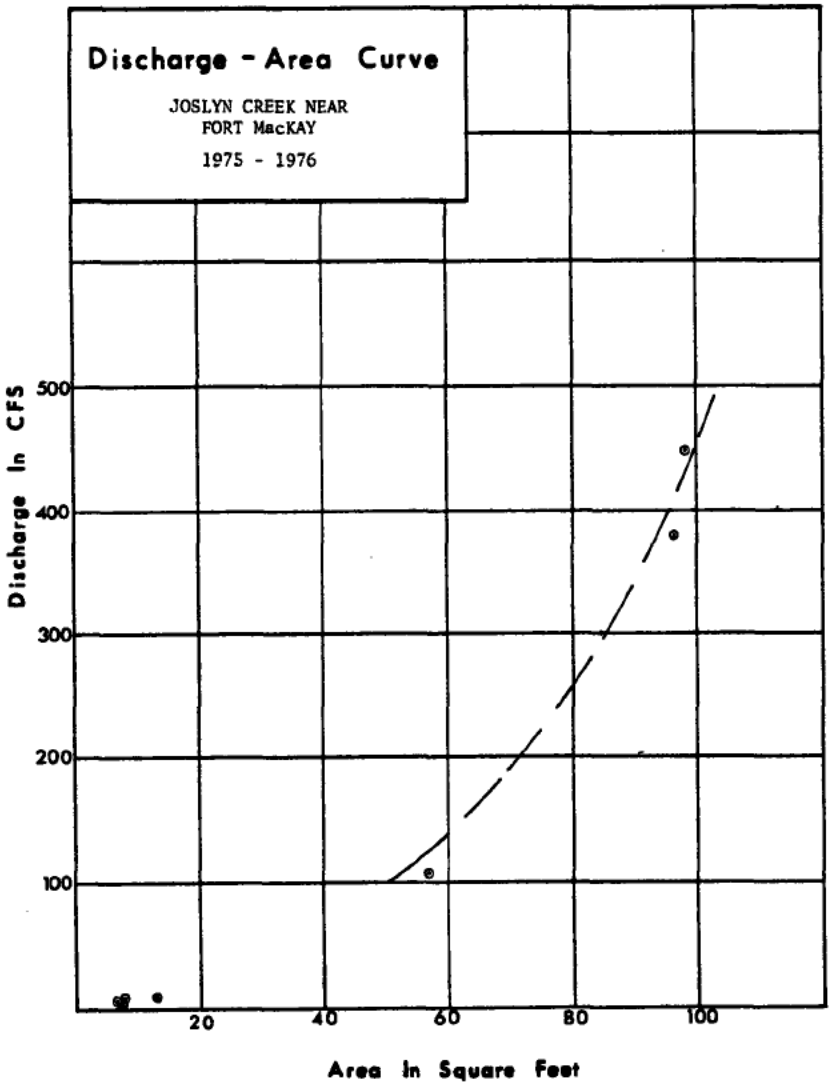
PERIOD OF RECORD: The gauge was established on July 28, 1975. Discharge data is available on a more or less continuous basis to December, 1976.

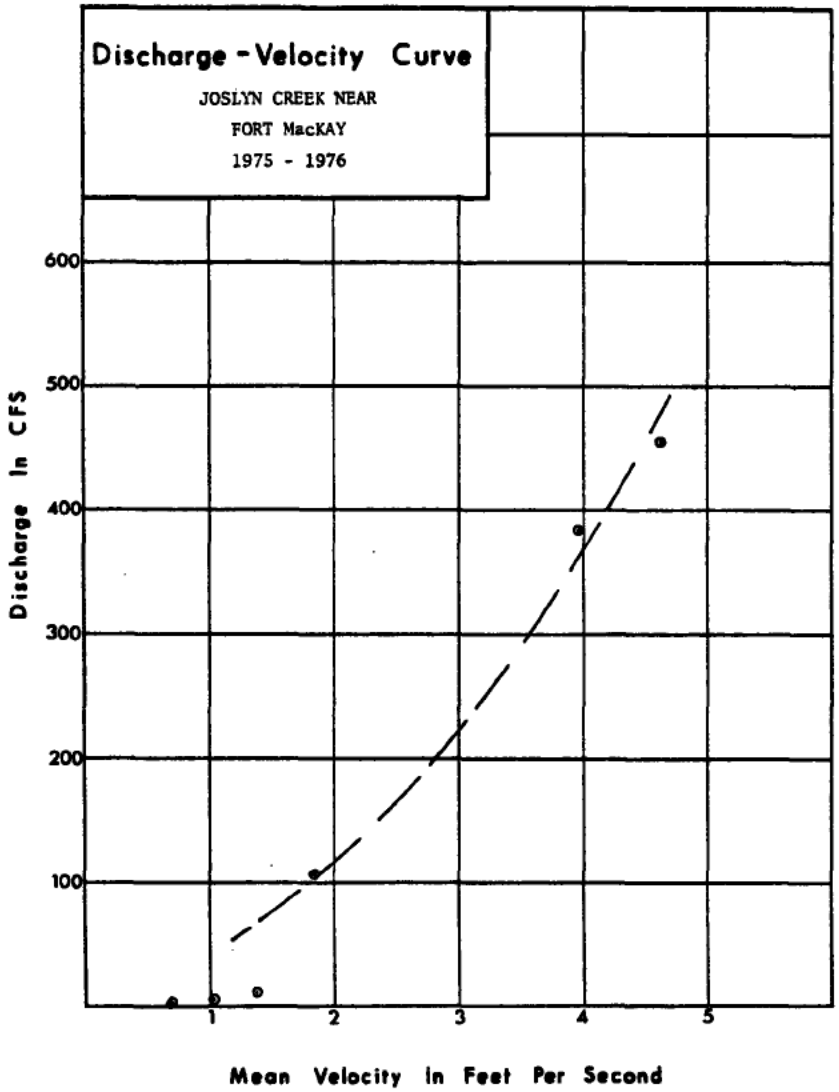
SITE DESCRIPTION: The gauge is located on the left bank approximately two miles (3.2 km) above its confluence with the Ells River and seven air miles (11.3 km) northwest of Fort MacKay. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water discharge measurements are made by wading at various locations near the gauge or from the cableway immediately above the gauge.

GENERAL:


Discharge In CFS (x 100)
1
2
3
4
5
6
7
8
Stage In Feet
11
10
9
8
7
6
5
Stage-Discharge Relationship
JOSLYN CREEK NEAR
FORT MacKAY
● 1976
○ Prior to 1976
Curve No. 2, Oct.4/76


Width In Feet
0
5
10
15
20
25
30
35
Gauge Height In Feet
10
9
8
7
6
5
Right Bank
Left Bank
Cross-section Configuration
JOSLYN CREEK NEAR
FORT MacKAY
Ght. 9.81ft. April 13, 1976 Q= 45.8cfs.


Discharge - Area Curve
JOSLYN CREEK NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS
500
400
300
200
100
20
40
60
80
100
Area In Square Feet


Discharge - Velocity Curve
JOSLYN CREEK NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS
600
500
400
300
200
100
1
2
3
4
5
Mean Velocity In Feet Per Second

WATER SURVEY OF CANADA
MAY 14 1976 PAGE 253
CALGARY, ALTA.

JOSLYN CREEK NEAR FORT MACKAY — STATION NO. 07DA016

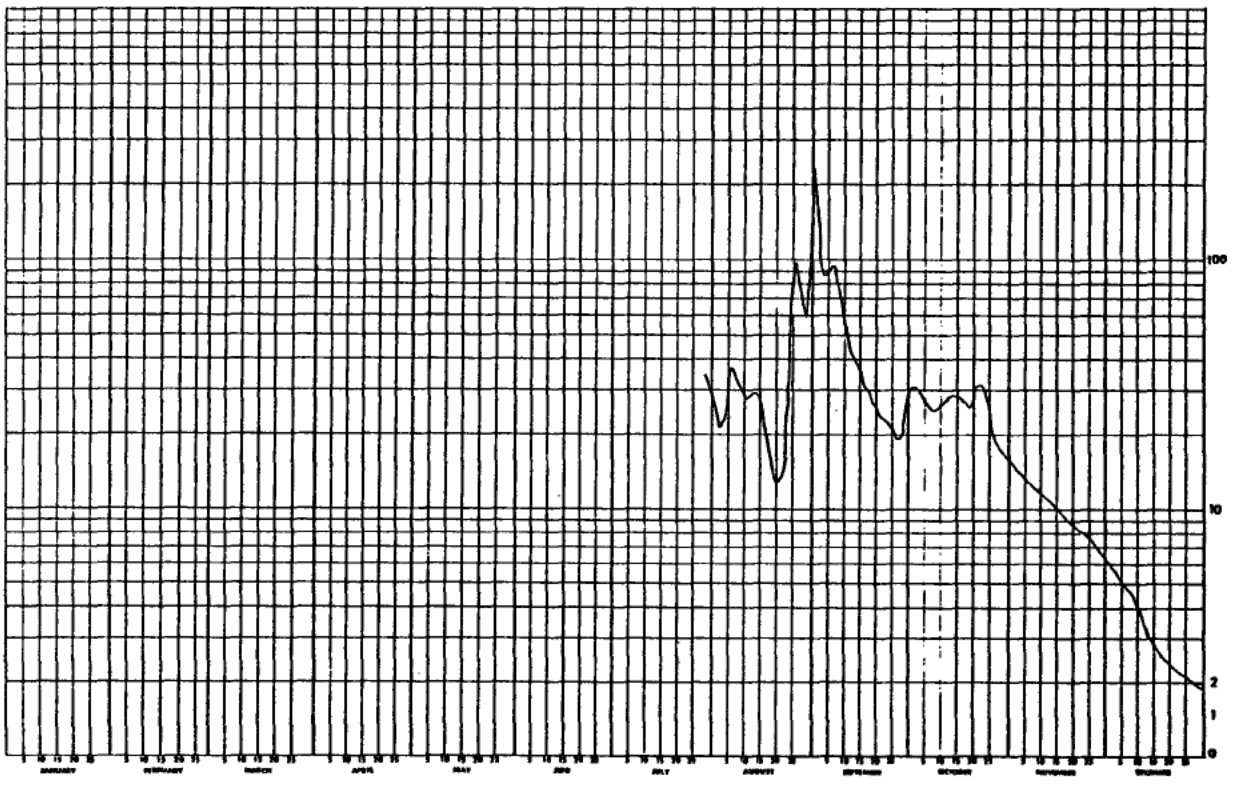
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	24.1	190	30.1	15.5 B	6.2 B	1
2	---	---	---	---	---	---	---	21.3	130	30.3	15.0 B	5.9 B	2
3	---	---	---	---	---	---	---	21.7	89.9	29.6	14.5 B	5.5 B	3
4	---	---	---	---	---	---	---	22.5	85.7	27.7	14.0 B	5.4 B	4
5	---	---	---	---	---	---	---	32.4	88.6	26.5	14.0 B	5.1 B	5
6	---	---	---	---	---	---	---	37.8	94.4	25.7	13.5 B	4.9 B	6
7	---	---	---	---	---	---	---	34.6	94.8	25.5	13.0 B	4.7 B	7
8	---	---	---	---	---	---	---	32.1	78.9	25.3	12.5 B	4.4 B	8
9	---	---	---	---	---	---	---	28.7	65.9	25.2	12.8 B	4.2 B	9
10	---	---	---	---	---	---	---	27.4	56.4	24.8	12.0 B	4.0 B	10
11	---	---	---	---	---	---	---	27.8	48.6	25.7	11.5 B	3.8 B	11
12	---	---	---	---	---	---	---	28.8	42.0	27.8	11.0 B	3.5 B	12
13	---	---	---	---	---	---	---	28.6	40.2	28.2	11.0 B	3.2 B	13
14	---	---	---	---	---	---	---	28.4	36.2	28.6	10.5 B	3.0 B	14
15	---	---	---	---	---	---	---	26.2	32.2	28.7	10.0 B	2.8 B	15
16	---	---	---	---	---	---	---	21.0	31.4	28.0	9.8 B	2.7 B	16
17	---	---	---	---	---	---	---	18.3	29.5	27.3	9.5 B	2.6 B	17
18	---	---	---	---	---	---	---	16.1	28.4	26.4	9.3 B	2.5 B	18
19	---	---	---	---	---	---	---	13.9	26.1	25.9	9.0 B	2.4 B	19
20	---	---	---	---	---	---	---	12.7	24.4	29.5	8.8 B	2.4 B	20
21	---	---	---	---	---	---	---	13.0	23.4	31.8	8.6 B	2.3 B	21
22	---	---	---	---	---	---	---	14.0	22.9	31.8	8.3 B	2.3 B	22
23	---	---	---	---	---	---	---	24.1	22.8	30.8	8.1 B	2.2 B	23
24	---	---	---	---	---	---	---	68.3	21.4	28.5	7.8 B	2.2 B	24
25	---	---	---	---	---	---	---	91.2	20.2	26.2	7.6 B	2.1 B	25
26	---	---	---	---	---	---	---	99.0	18.9	20.0 B	7.4 B	2.1 B	26
27	---	---	---	---	---	---	---	83.8	19.0	19.0 B	7.1 B	2.0 B	27
28	---	---	---	---	---	---	34.9 A	69.1	19.8	18.0 B	6.9 B	1.9 B	28
29	---		---	---	---	---	34.1	58.7	26.2	17.0 B	6.6 B	1.9 B	29
30	---		---	---	---	---	38.4	47.2	28.9	16.5 B	6.4 B	1.8 B	30
31	---		---		---		27.8	228		16.0 B		1.8 B	31
TOTAL	---	---	---	---	---	---	---	1339.4	1536.9	802.2	311.2	101.8	TOTAL
MEAN	---	---	---	---	---	---	---	43.2	51.3	25.9	10.4	3.3	MEAN
AC-FT	---	---	---	---	---	---	---	2660	3050	1590	617	202	AC-FT
MAX	---	---	---	---	---	---	---	228	190	31.8	15.5	6.2	MAX
MIN	---	---	---	---	---	---	---	12.7	18.9	16.0	6.4	1.8	MIN

A-MANUAL GAUGE
B-ICE CONDITIONS

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 16 27 N
LONG 111 44 30 W
DRAINAGE AREA 93.7 SQ MILES

NATURAL FLOW



WATER SURVEY OF CANADA
JAN 28 1977 PAGE 8
CALGARY, ALTA.

JOSLYN CREEK NEAR FORT MACKAY

STATION NO. 07DA016

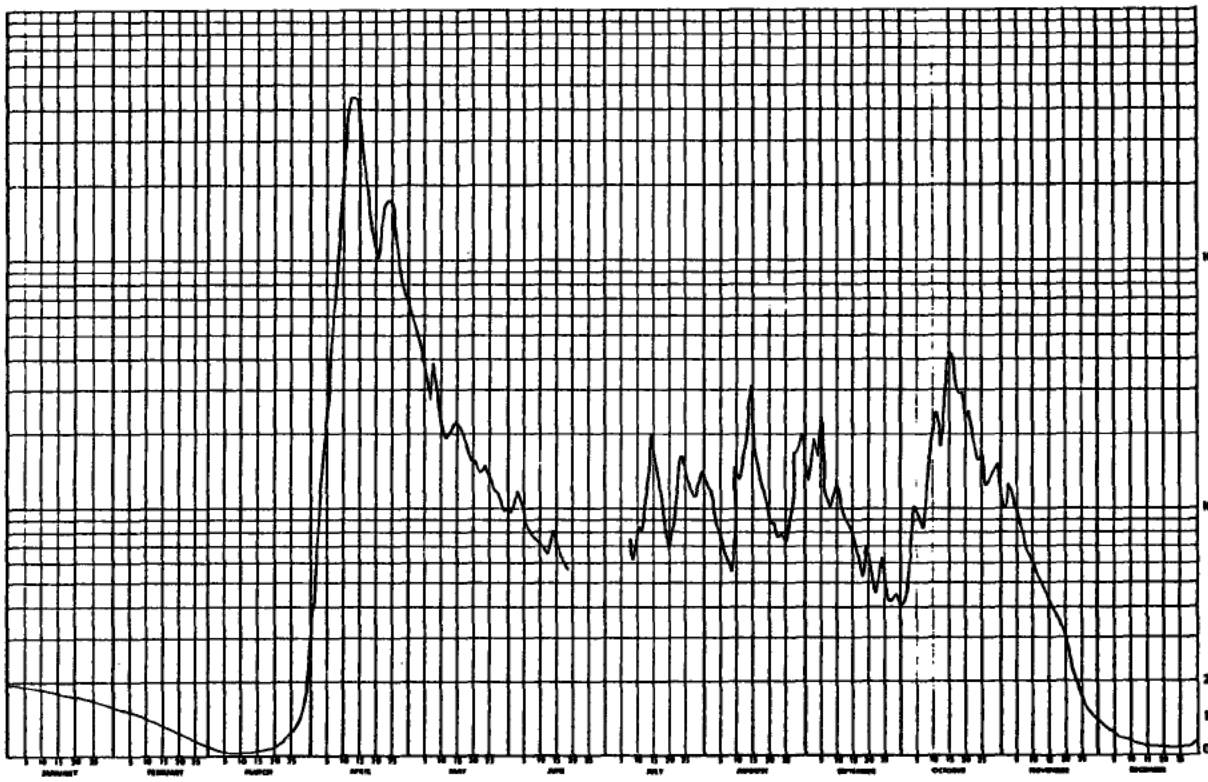
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1.9 B	1.2 B	.20 B	5.0 B	59.9	9.6		12.1	13.0	4.1	10.4 B	.80 B	1
2	1.9 B	1.2 B	.20 B	7.4 B	53.4	10.2		10.7	16.5	4.5	13.0 B	.70 B	2
3	1.8 B	1.1 B	.10 B	11.0 B	47.3	11.6		8.9	19.3	6.8	12.9 B	.60 B	3
4	1.8 B	1.1 B	.10 B	17.0 B	41.8	11.1		8.0	16.1	10.0	10.6 B	.60 B	4
5	1.8 B	1.1 B	.10 B	25.0 B	35.9	10.0		7.4	23.8	10.3	9.7 B	.50 B	5
6	1.8 B	1.0 B	.10 B	37.0 B	31.4	8.9		7.2	11.9	8.6	8.8 B	.50 B	6
7	1.8 B	1.0 B	.10 B	56.0 B	27.2	8.3		6.5	10.8	8.2	7.9 B	.40 B	7
8	1.8 B	1.0 B	.10 B	80.7 B	38.3	8.1	7.0 A	5.5	10.2	10.3	7.2 B	.40 B	8
9	1.8 B	.90 B	.10 B	130 B	25.7	7.8	6.1	14.8	11.2	16.4	6.7 B	.40 B	9
10	1.7 B	.90 B	.10 B	220 B	22.6	7.4	6.6	13.8	12.3	21.6	6.1 B	.30 B	10
11	1.7 B	.85 B	.10 B	366 B	19.9	7.1	8.3	13.0	10.8	24.3	5.7 B	.30 B	11
12	1.7 B	.80 B	.10 B	420 B	19.1	6.7	8.2	15.7	9.5	22.9	5.4 B	.30 B	12
13	1.7 B	.80 B	.10 B	458 A	19.7	6.6	11.0	20.6	8.9	25.6	5.1 B	.25 B	13
14	1.7 B	.80 B	.10 B	508	21.5	7.8	19.5	31.7	8.7	35.1	4.8 B	.20 B	14
15	1.6 B	.80 B	.10 B	383 A	22.3	8.1	15.7	22.3	7.8	41.9	4.4 B	.20 B	15
16	1.6 B	.70 B	.10 B	274	21.8	7.3	13.9	16.2	7.0	39.0 B	4.1 B	.20 B	16
17	1.6 B	.70 B	.10 B	217	20.0	6.6	12.3	14.6	6.0	30.4 B	3.9 B	.20 B	17
18	1.6 B	.60 B	.10 B	165	17.2	6.2	10.2	12.3	5.0	29.2 B	3.6 B	.20 B	18
19	1.5 B	.60 B	.20 B	132	16.1	5.6	7.9	10.8	7.2	29.5 B	3.3 B	.20 B	19
20	1.5 B	.50 B	.20 B	108 A	15.4		6.9	8.8	6.1	23.5 B	3.0 B	.20 B	20
21	1.5 B	.50 B	.20 B	103	15.7		6.9	8.8	5.2	20.9 B	2.7 B	.20 B	21
22	1.5 B	.40 B	.30 B	122	14.2		8.1	7.9	4.5	20.3 B	2.4 B	.20 B	22
23	1.4 B	.40 B	.30 B	167	13.9		14.1	7.7	5.0	17.9 B	2.2 B	.20 B	23
24	1.4 B	.30 B	.40 B	172	15.0		16.2	7.8	6.3	15.6 B	1.8 B	.20 B	24
25	1.4 B	.30 B	.50 B	172	14.1		14.5	7.2	5.1	16.5 B	1.5 B	.20 B	25
26	1.4 B	.30 B	.60 B	133	13.1		13.4	8.4	4.3	12.5 B	1.3 B	.20 B	26
27	1.3 B	.20 B	.80 B	106	11.9		12.0	16.8	4.2	13.1 B	1.1 B	.20 B	27
28	1.3 B	.20 B	1.0 B	89.0	11.8		11.0	16.6	4.4	13.6 B	1.0 B	.20 B	28
29	1.3 B	.20 B	1.3 B	78.1	10.4		12.8	16.8	4.5	16.6 B	.90 B	.20 B	29
30	1.3 B		2.2 B	68.4	9.7		14.0	19.8	4.1	15.8 B	.83 B	.30 B	30
31	1.2 B		3.3 B		10.0		13.0	15.1		11.8 B		.30 B	31
TOTAL	49.3	20.45	13.30	4830.6	716.3			393.6	269.7	578.8	152.33	9.85	TOTAL
MEAN	1.6	.71	.43	161	23.1			12.7	9.0	18.7	5.1	.32	MEAN
AC-FT	97.8	40.6	26.4	9580	1420			781	535	1150	302	19.5	AC-FT
MAX	1.9	1.2	3.3	508	59.9			31.7	23.8	41.9	13.0	.80	MAX
MIN	1.2	.20	.10	5.0	9.7			5.5	4.1	4.1	.83	.20	MIN

SUMMARY FOR THE MONTHS JAN TO MAY
MEAN DISCHARGE, 37.0 CFS
TOTAL DISCHARGE, 11200 AC-FT
MAXIMUM DAILY DISCHARGE, 508 CFS ON APR 14
MINIMUM DAILY DISCHARGE, .10 CFS ON MAR 3

MAXIMUM INSTANTANEOUS DISCHARGE, 560 CFS AT 01:00 MST ON APR 14

A-MANUAL GAUGE
B-ICE CONDITIONS



5.24 LOST CREEK NEAR THE MOUTH

STATION NAME: Lost Creek near the Mouth

STATION NUMBER: 07DC002

LOCATION: Latitude: 57°17'20" Longitude: 110°27'50"

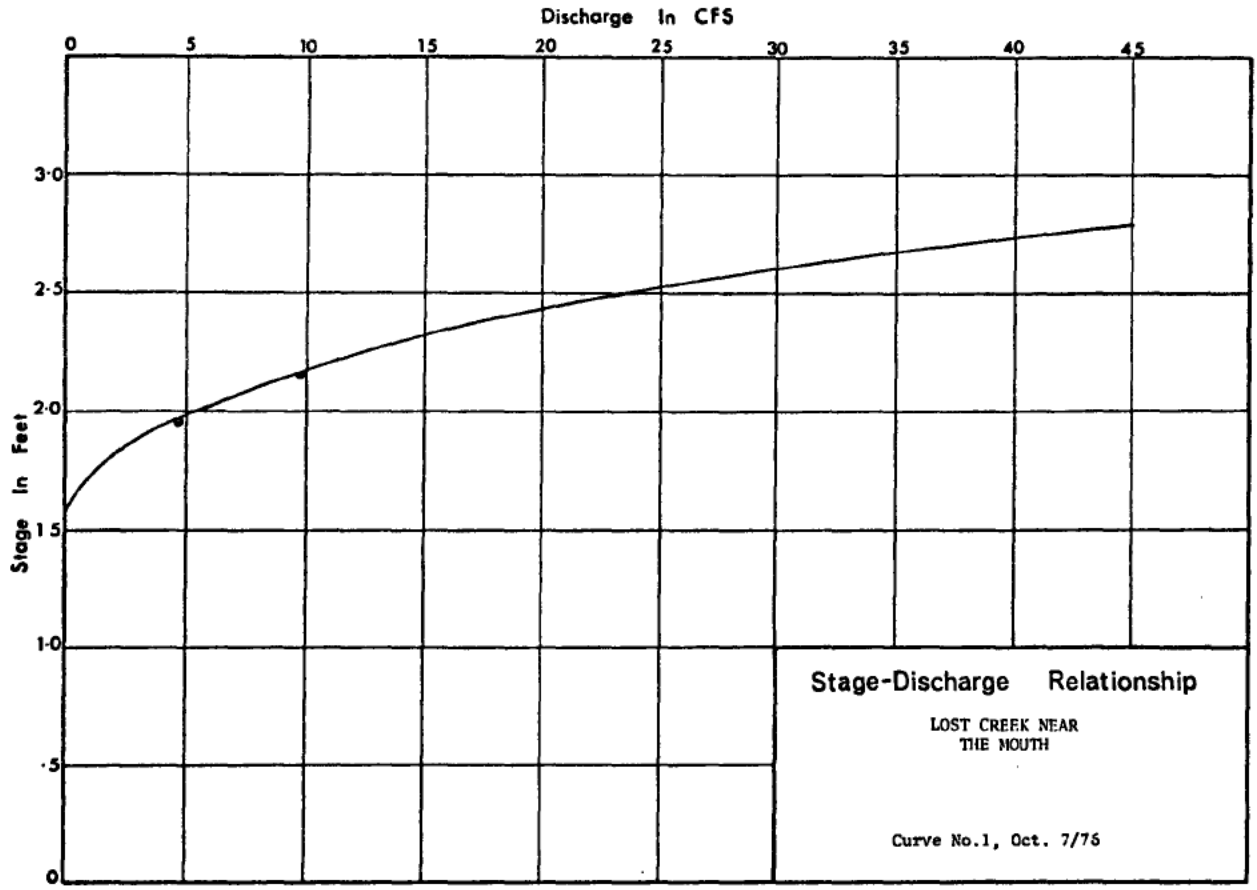
NW32-95-03-W4

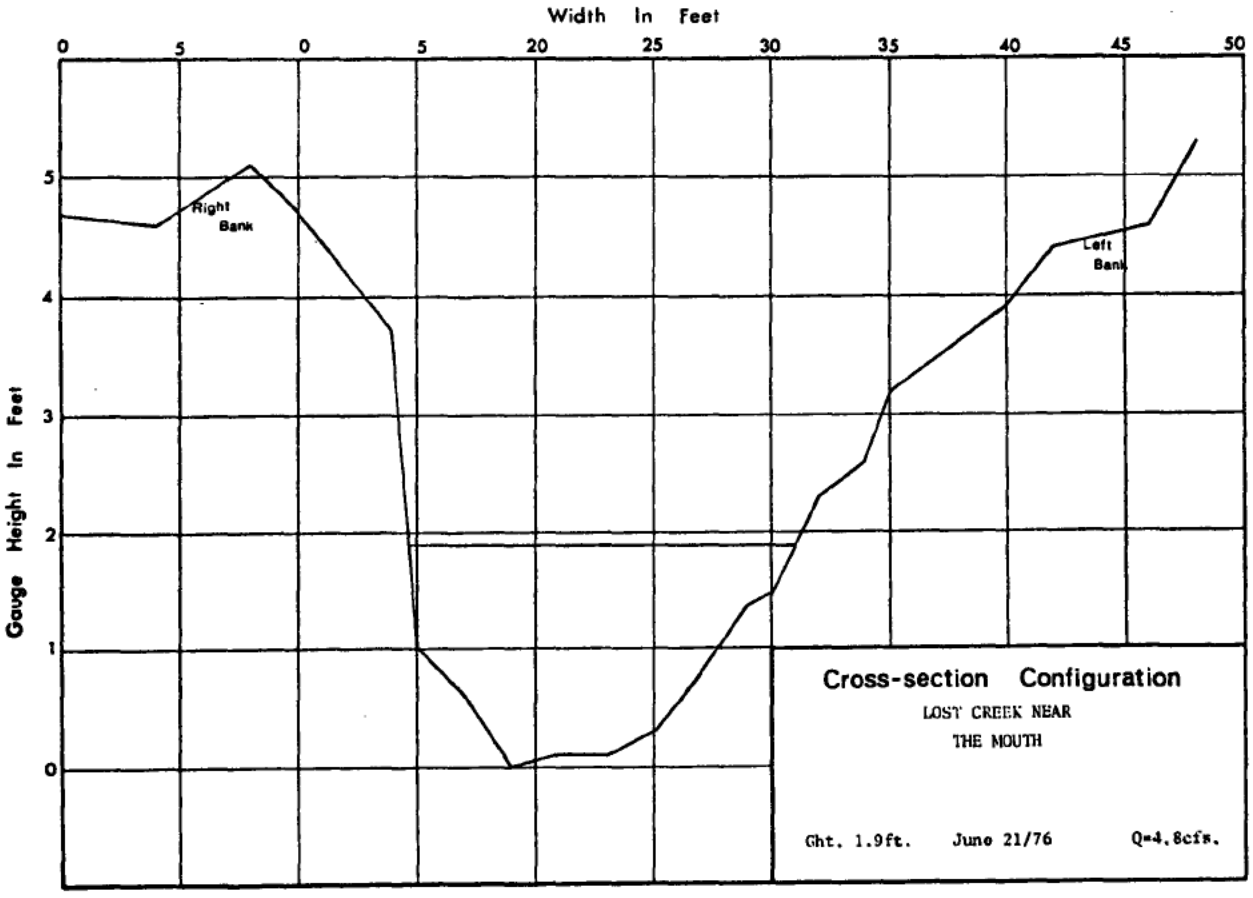
DRAINAGE AREA: 23.1 square miles (59.8 km^2)

PERIOD OF RECORD: The station was established on July 21, 1976. Discharge data is available on a continuous basis to December, 1976.

SITE DESCRIPTION: The gauge is located on the left bank about one-half mile (0.8 km) above the mouth and 44 air miles (71 km) northeast of Fort MacKay. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water measurements are made by wading or from a measuring bridge immediately above the gauge.

GENERAL:


Discharge In CFS
0
5
10
15
20
25
30
35
40
45
3·0
2·5
2·0
1·5
1·0
·5
0
Stage In Feet
Stage-Discharge Relationship
LOST CREEK NEAR
THE MOUTH
Curve No.1, Oct. 7/76


Width In Feet
0
5
0
5
20
25
30
35
40
45
50
5
4
3
2
1
0
Gauge Height In Feet
Right
Bank
Left
Bank
Cross-section Configuration
LOST CREEK NEAR
THE MOUTH
Ght. 1.9ft.
June 21/76
Q=4.8cfs.

WATER SURVEY OF CANADA
JAN 12 1976 P E 6
CALGARY, ALTA.

LOST CREEK NEAR THE MOUTH

STATION NO. 07DC002

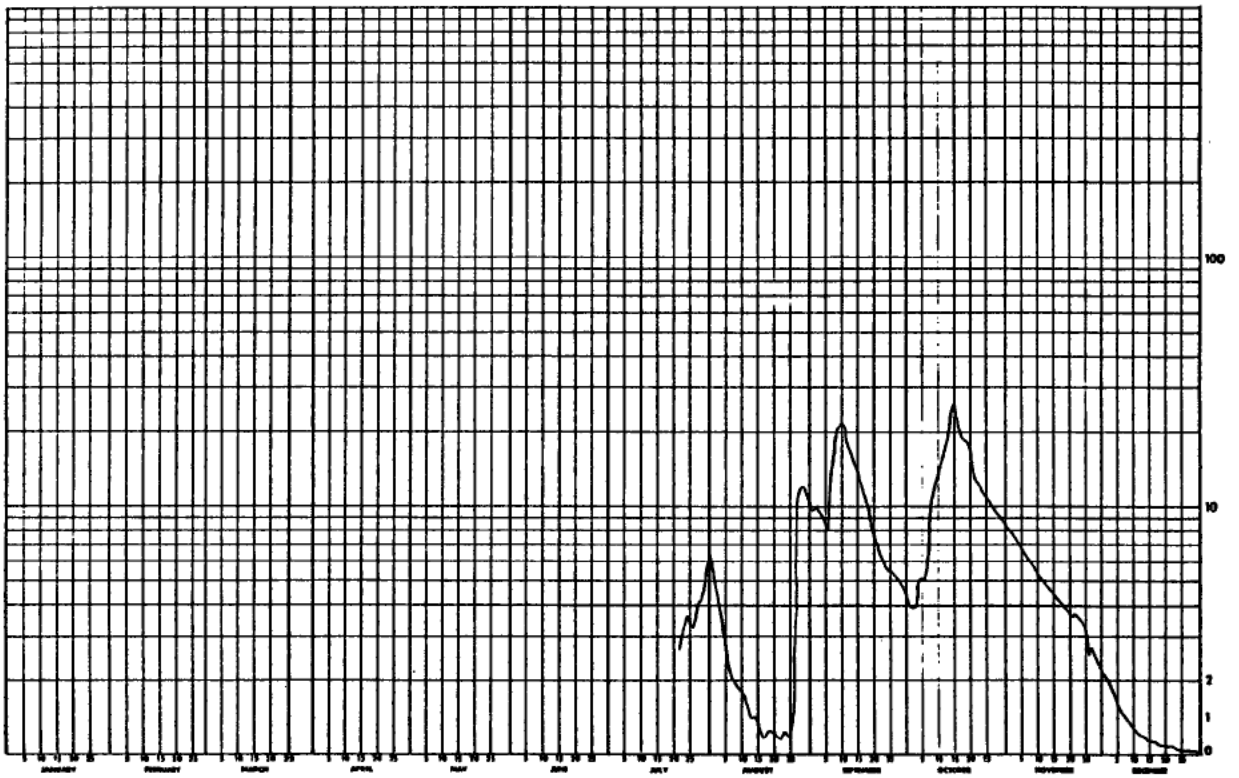
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1								5.5	9.7	4.0	8.3 B	2.1 B	1
2								4.8	9.9	3.9	8.1 B	2.0 B	2
3								4.1	9.8	4.0	7.6 B	1.8 B	3
4								3.2	9.0	4.9	7.3 B	1.6 B	4
5								2.6	8.5	5.1	6.9 B	1.4 B	5
6								2.3	8.2	5.0	6.6 B	1.2 B	6
7								2.1	15.2	5.5	6.3 B	1.0 B	7
8								1.8	18.9	9.4	5.9 B	.90 B	8
9								1.8	21.0	11.2	5.7 B	.74 B	9
10								1.6	21.1	12.7	5.4 B	.60 B	10
11								1.3	18.5	14.0	5.1 B	.50 B	11
12								.92	16.7	16.2	4.8 B	.40 B	12
13								.77	15.4	17.3	4.7 B	.40 B	13
14								.93	14.0	24.1	4.6 B	.30 B	14
15								.59	13.0	25.2	4.4 B	.30 B	15
16								.35	12.2	21.5 B	4.3 B	.30 B	16
17								.36	11.1	20.0 B	4.1 B	.30 B	17
18								.47	9.3	18.0 B	3.9 B	.20 B	18
19								.50	7.9	18.1 B	3.8 B	.20 B	19
20								.43	7.5	16.0 B	3.8 B	.20 B	20
21							2.6 A	.36	7.0	13.0 B	3.5 B	.20 B	21
22							2.7	.37	6.6	12.5 B	3.7 B	.20 B	22
23							3.2	.47	5.8	12.0 B	3.6 B	.20 B	23
24							3.6	.39	5.5	11.5 B	3.2 B	.10 B	24
25							3.4	.36	5.5	11.0 B	3.0 B	.10 B	25
26							3.2	1.9	5.2	10.5 B	2.5 B	.10 B	26
27							3.5	10.1	5.1	10.0 B	2.7 B	.10 B	27
28							4.1	11.7	4.8	9.6 B	2.5 B	.10 B	28
29							4.1	12.0	4.8	9.2 B	2.4 B	.10 B	29
30							5.1	11.7	4.2	8.9 B	2.3 B	.10 B	30
31							6.7	10.7		8.6 B		0 B	31
TOTAL								96.47	311.4	372.9	141.0	17.74	TOTAL
MEAN								3.1	10.4	12.0	4.7	.57	MEAN
AC-FT								191	618	740	280	35.2	AC-FT
MAX								12.0	21.1	25.2	8.3	2.1	MAX
MIN								.35	4.2	3.9	2.3	0	MIN

SUMMARY FOR THE MONTHS AUG TO DEC
MEAN DISCHARGE, 6.1 CFS
TOTAL DISCHARGE, 1860 AC-FT
MAXIMUM DAILY DISCHARGE, 25.2 CFS ON OCT 15
MINIMUM DAILY DISCHARGE, 0 CFS ON DEC 31

A=MANUAL GAUGE
B=ICE CONDITIONS

MAXIMUM INSTANTANEOUS DISCHARGE, 26.0 CFS AT 1500 ON OCT 15



5.25 MacKAY RIVER NEAR FORT MacKAY

STATION NAME: MacKay River near Fort MacKay

STATION NUMBER: 07DB001

LOCATION: Latitude: 57°12'38" Longitude: 111°41'36"

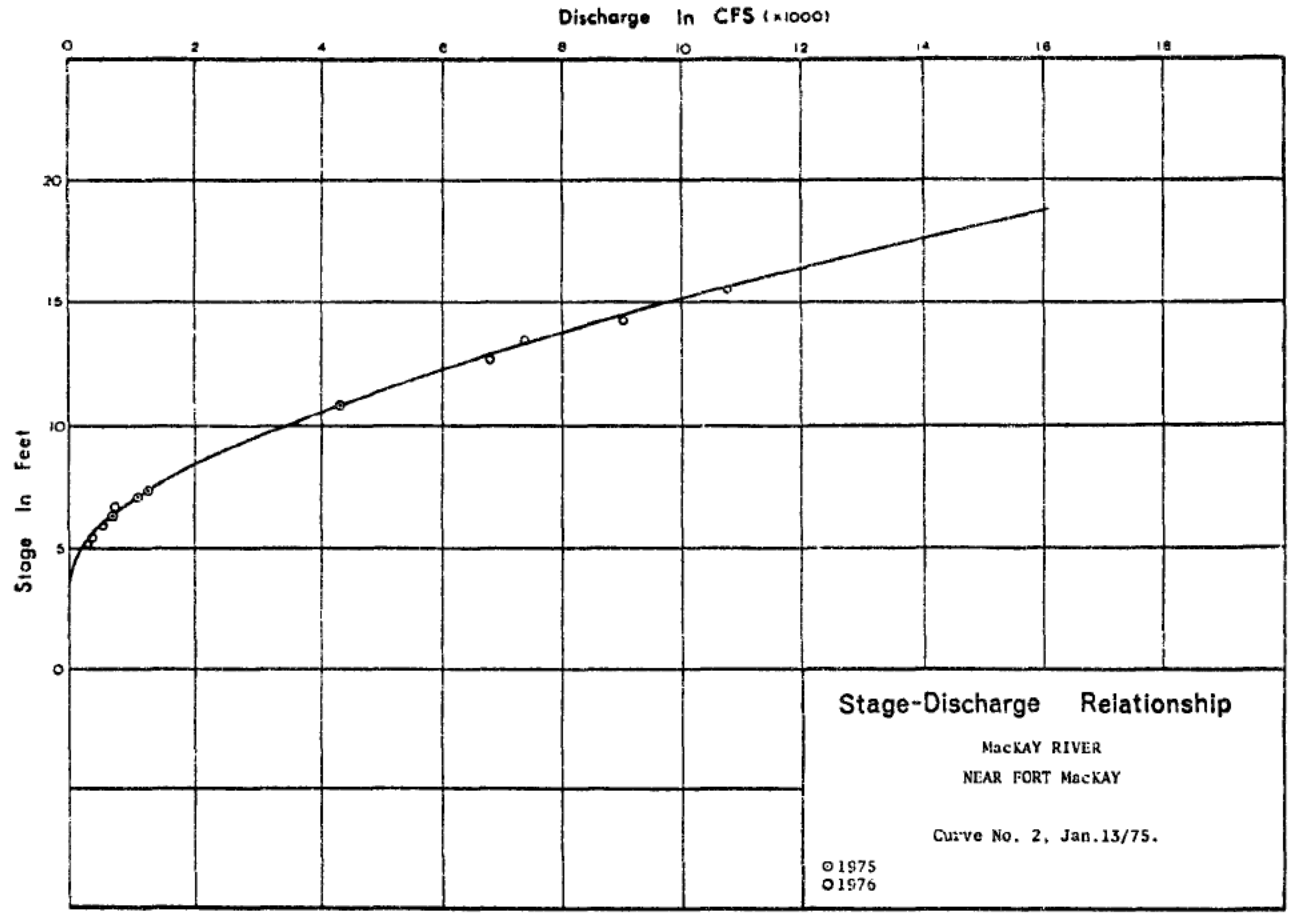
SE03-95-11-W4

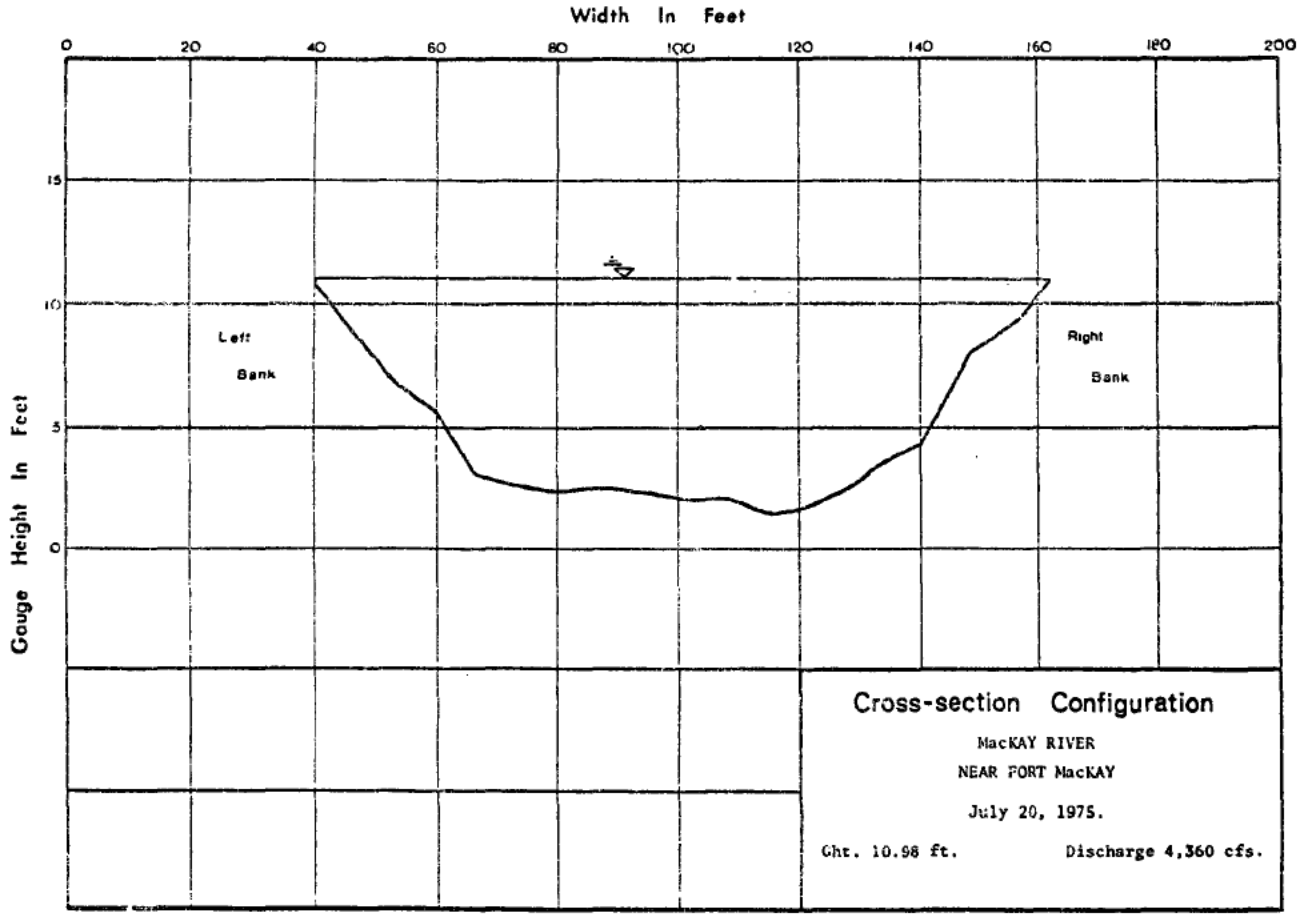
DRAINAGE AREA: 2,020 square miles(5,230 km^2)

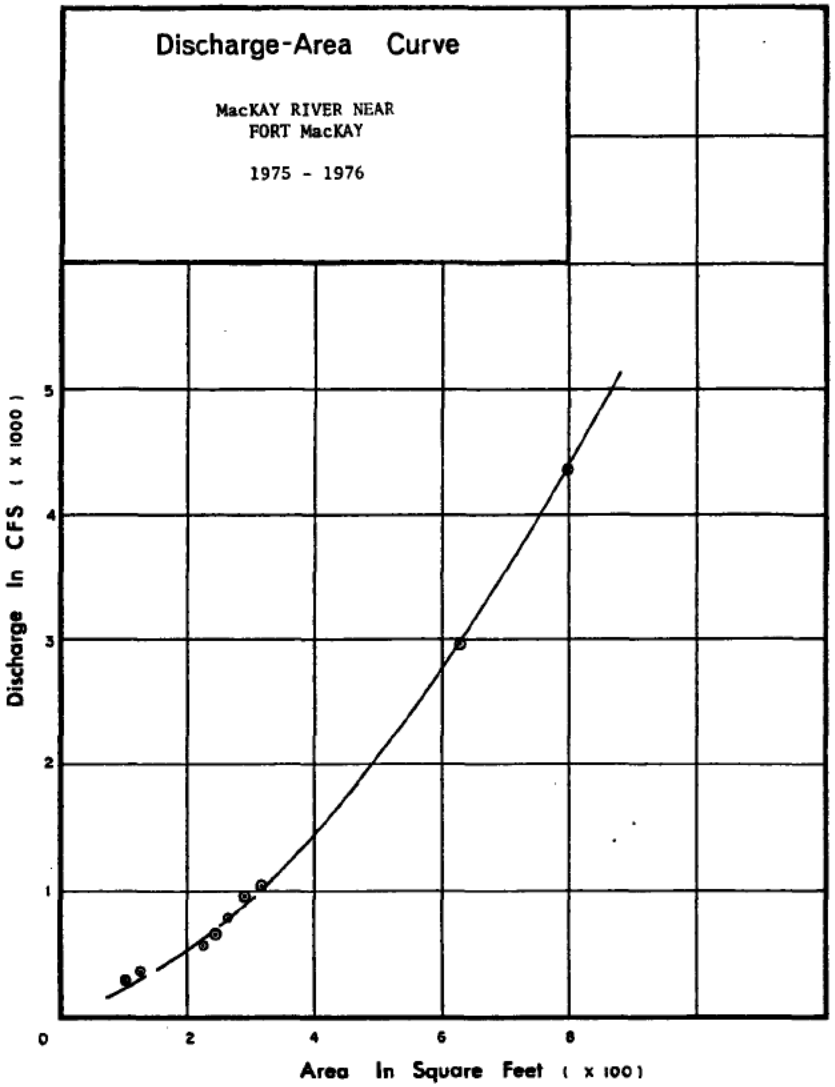
PERIOD OF RECORD: This station was established on June 29, 1972. Discharge data is available on a continuous basis to December,1976.

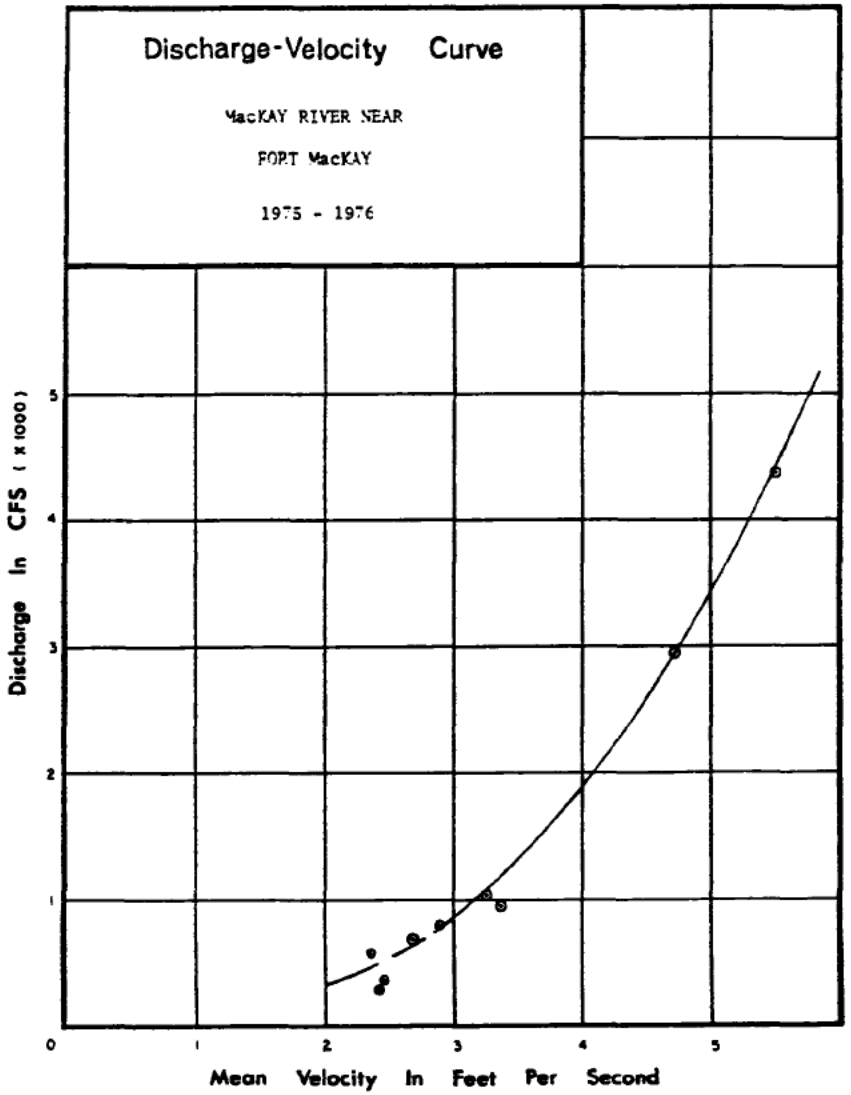
SITE DESCRIPTION: The gauge is located on the left bank approximately five miles (8 km) above the confluence with the Athabasca River and about three air miles (5 km) northwest of Fort MacKay. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder.
A cableway was constructed at this site about 200 feet (60 m) below the gauge in June,1975. Prior to that, discharge measurements were made by boat, wading or from the Forestry road bridge near the mouth.

GENERAL:


Discharge In CFS (x1000)
0
2
4
6
8
10
12
14
16
18
Stage In Feet
0
5
10
15
20
Stage-Discharge Relationship
MacKAY RIVER
NEAR FORT MacKAY
Curve No. 2, Jan.13/75.
⊙1975
○1976


Width In Feet
0
20
40
60
80
100
120
140
160
180
200
Gauge Height In Feet
0
5
10
15
Left
Bank
Right
Bank
Cross-section Configuration
MacKAY RIVER
NEAR FORT MacKAY
July 20, 1975.
Ght. 10.98 ft.
Discharge 4,360 cfs.


Discharge-Area Curve
MacKAY RIVER NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS (x 1000)
Area In Square Feet (x 100)
0
1
2
3
4
5
2
4
6
8


Discharge-Velocity Curve
MacKAY RIVER NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS (x 1000)
Mean Velocity In Feet Per Second
0
1
2
3
4
5

WATER SURVEY OF CANADA
JUL 15 1973 PAGE 265
CALGARY, ALTA.

MACKAY RIVER NEAR FORT MACKAY

STATION NO. 07DD001

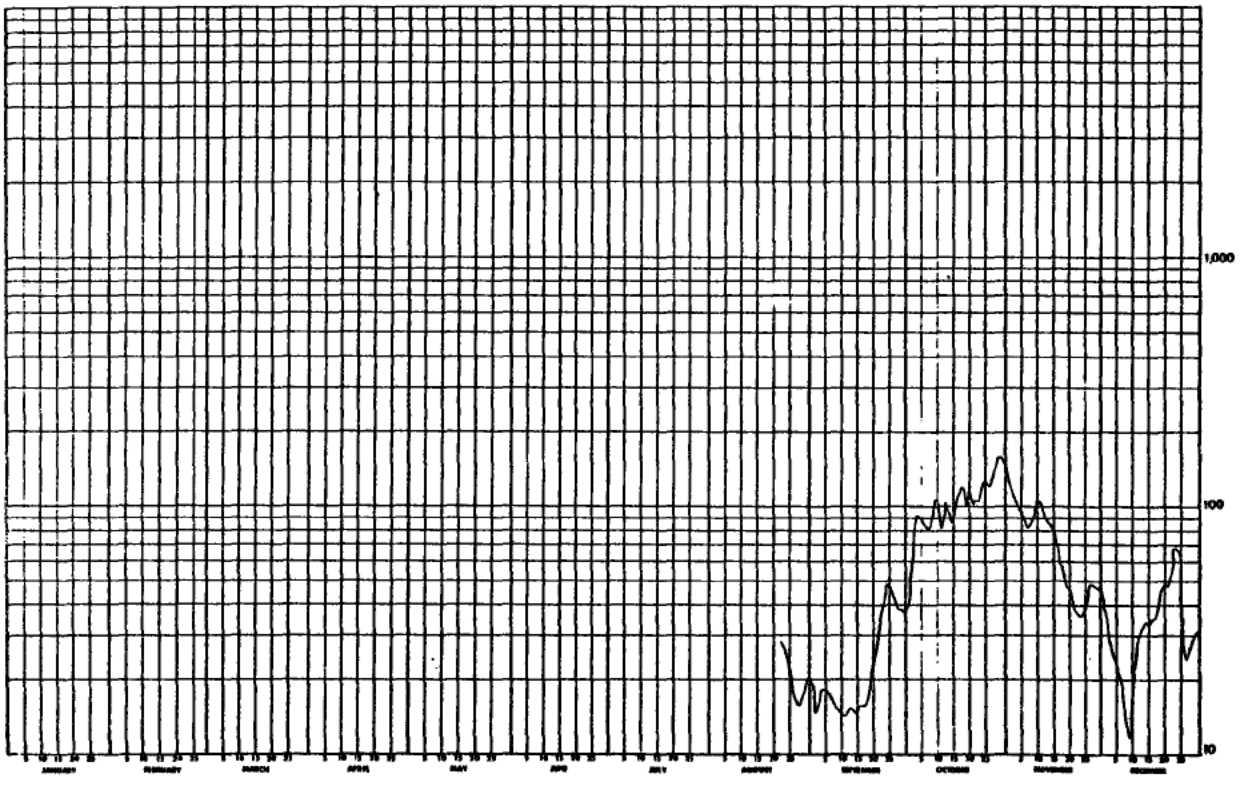
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1972

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	11600	---	379	---	19.4	38.4	133 B	44.8 B	1
2	---	---	---	---	---	---	367	---	14.8	57.2	120 B	36.8 B	2
3	---	---	---	---	---	---	349	---	16.4	86.4	108 B	30.4 B	3
4	---	---	---	---	---	---	316	---	18.2	93.6	106 B	25.8 B	4
5	---	---	---	---	---	---	292	---	18.2	88.8	93.6 B	23.0 B	5
6	---	---	---	---	6360	---	292	---	18.2	84.2	86.4 B	21.2 B	6
7	---	---	---	---	---	538 A	286	---	17.0	82.0	82.0 B	20.0 B	7
8	---	---	---	---	---	---	266	---	15.8	82.0	86.4 B	13.4 B	8
9	---	---	---	---	---	---	266	---	15.2	106	93.6 B	11.7 B	9
10	---	---	---	---	---	---	310	---	14.3	106 B	103 B	15.8 B	10
11	---	---	---	---	3910 A	---	446	---	14.3	79.8 B	106 B	24.8 B	11
12	---	---	---	---	---	---	478	---	14.8	93.6 B	98.4 B	30.4 B	12
13	---	---	---	---	---	---	502	---	15.2	103 B	88.8 B	30.4 B	13
14	---	---	---	---	---	---	490	---	15.2	86.4 B	84.2 B	33.6 B	14
15	---	---	9.3	---	---	---	562	---	14.8	98.4 B	79.8 B	35.2 B	15
16	---	---	---	---	---	---	538	---	15.2	101 B	73.2 B	33.6 B	16
17	---	---	---	---	---	---	506	---	15.8	115 B	64.4 B	35.2 B	17
18	---	---	---	---	---	---	482	---	15.8	120	57.2 B	35.2 B	18
19	---	---	---	---	---	---	450	---	16.4	101 B	48.2 B	46.2 B	19
20	---	---	---	---	---	---	486	---	23.0	115 B	46.4 B	58.8 B	20
21	---	---	---	---	---	---	361	---	23.0	101 B	44.8 B	46.4 B	21
22	---	---	---	---	---	---	331	28.6 A	33.6	106 B	38.4 B	51.8 B	22
23	---	---	---	---	---	915 A	301	25.8	38.4	103 B	36.8 B	62.6 B	23
24	---	---	---	---	---	---	277	24.0	48.2	118 B	36.8 B	68.8 B	24
25	---	---	---	---	---	---	239	20.6	48.2	128 B	36.8 B	60.8 B	25
26	---	---	---	---	---	---	208	18.8	46.4	118 B	44.8 B	29.5 B	26
27	---	---	---	---	---	---	184 A	16.4	41.6	125 B	50.8 B	24.8 B	27
28	---	---	---	---	---	---	---	15.8	38.4	123 B	48.2 B	25.8 B	28
29	---	---	---	---	---	450 A	---	16.4	38.4	138 B	48.2 B	27.6 B	29
30	---		---	---	---	412	---	18.8	36.8	155 B	48.2 B	28.6 B	30
31	---		---		---		---	20.8		141 B		32.8 B	31
TOTAL	---	---	---	---	---	---	---	---	721.5	3193.8	2191.6	1056.6	TOTAL
MEAN	---	---	---	---	---	---	---	---	24.1	103	73.1	34.1	MEAN
AC-FT	---	---	---	---	---	---	---	---	1430	6330	4350	2100	AC-FT
MAX	---	---	---	---	---	---	---	---	48.2	155	133	68.8	MAX
MIN	---	---	---	---	---	---	---	---	14.3	38.4	36.8	11.7	MIN

A-MANUAL GAUGE
B-ICE CONDITIONS

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 12 45 N
LONG 111 41 38 W

NATURAL FLOW



WATER SURVEY OF CANADA
MAY 15 1974 PAGE 283
CALGARY, ALTA.

MACKAY RIVER NEAR FORT MACKAY

STATION NO. 07OB001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1973

DAY	JAN		FEB		MAR		APR		MAY		JUN	JUL	AUG	SEP	OCT	NOV		DEC		DAY
1	36.8	B	6.9	B	8.9	B	33.6	B	2000		1310	2760	995	518	355	851		113	B	1
2	46.4	B	6.7	B	8.8	B	32.0	B	1890		2970	2460	950	478	378	805		113	B	2
3	51.6	B	6.5	B	8.8	B	26.7	B	1820		3520	2150	905	438	382	618	B	101	B	3
4	49.4	B	6.1	B	8.9	B	29.5	B	1750		3720	1910	846	409	334	542	B	101	B	4
5	45.2	B	5.8	B	1.4	B	32.8	B	1688		3690	1750	759	396	415	478	B	95.8	B	5
6	41.0	B	5.1	B	1.8	B	25.8	B	1600		3640	1550	920	376	438	415	B	79.8	B	6
7	36.8	B	4.3	B	2.8	B	35.7	B	1540		3880	1580	1440	358	482	378	B	84.2	B	7
8	32.6	B	3.8	B	2.4	B	45.5	B	1520		4990	1660	1510	355	536	328	B	88.4	B	8
9	28.4	B	3.4	B	2.8	B	55.4	B	1520		5820	1490	1428	328	713	289	B	79.8	B	9
10	24.2	B	3.2	B	3.4	B	62.6	B	1558		6418	1388	1358	298	791	268	B	73.2	B	10
11	20.0	B	2.8	B	3.5	B	198	B	1610		6360	1330	1278	266	842	234	B	68.8	B	11
12	15.8	B	2.3	B	3.6	B	333	B	1660		5960	1688	1168	254	855	216	B	64.4	B	12
13	14.8	B	1.9	B	3.6	B	468	B	1680		5380	1698	1088	257	855	199	B	62.6	B	13
14	14.3	B	1.7	B	3.6	B	603	B	1670		4960	1528	1028	254	837	184	B	57.2	B	14
15	14.8	B	1.6	B	3.4	B	738	B	1618		4718	1338	958	245	809	170	B	55.4	B	15
16	15.8	B	1.5	B	3.9	B	873	B	1540		6940	1240	851	228	785	161	B	53.6	B	16
17	14.3	B	1.5	B	4.1	B	1010	B	1458		9358	1268	808	228	759	158	B	57.2	B	17
18	14.2	B	1.6	B	4.3	B	1148	B	1368		10788	1238	773	222	758	141	B	53.6	B	18
19	19.4	B	2.2	B	4.3	B	1288	B	1278		10488	1188	773	218	727	135	B	53.8	B	19
20	20.6	B	2.7	B	4.4	B	1418	B	1198		9558	1128	791	208	713	138	B	53.8	B	20
21	19.4	B	3.2	B	4.6	B	1558	B	1168		8688	1078	832	199	784	125	B	53.8	B	21
22	18.8	B	3.8	B	4.7	B	1688		1148		7738	1018	842	199	681	128	B	53.8	B	22
23	17.6	B	3.9	B	4.8	B	1788		1108		6768	955	832	196	685	115	B	53.8	B	23
24	16.4	B	4.4	B	5.4	B	1768		1068		5778	905	823	213	699	118	B	55.4	B	24
25	15.8	B	4.7	B	6.5	B	1828		1018		4998	855	805	245	727	186	B	53.6	B	25
26	14.8	B	4.8	B	7.6	B	1758		945		4488	918	796	268	745	101	B	57.2	B	26
27	13.9	B	4.3	B	9.2	B	1728		918		3968	968	754	286	759	96.8	B	63.8	B	27
28	13.4	B	1.7	B	10.2	B	1888		915		3528	1018	699	298	759	91.2	B	62.6	B	28
29	11.2	B			13.4	B	1918		975		3388	1058	653	322	777	96.8	B	64.4	B	29
30	9.5	B			18.8	B	2048		995		3038	1058	618	337	791	91.2	B	59.8	B	30
31	7.9	B			28.6	B			970			1028	578		842			53.6	B	31
TOTAL	721.1		102.4		169.7		26161.8		43098		166468	42985	28779	8867	21028	7719.4		2161.8		TOTAL
MEAN	23.3		3.7		5.5		872		1398		5558	1398	928	296	678	257		69.7		MEAN
AC-FT	1438		203		337		51988		85588		330888	85388	57188	17688	41788	15388		4298		AC-FT
MAX	53.6		6.9		28.6		2048		2888		10788	2768	1518	518	855	851		113		MAX
MIN	7.9		1.5		8.8		25.8		918		1318	855	578	196	355	91.2		53.6		MIN

SUMMARY FOR THE YEAR 1973

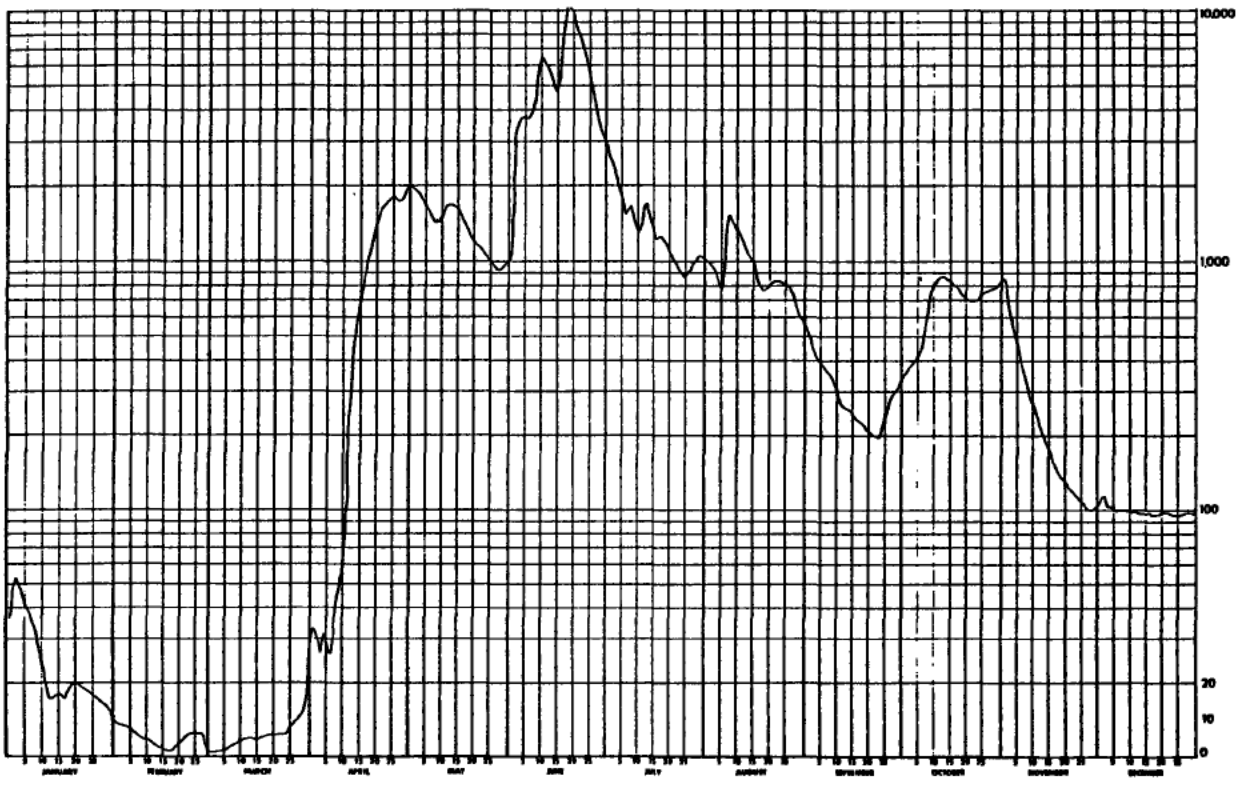
MEAN DISCHARGE, 954 CFS
TOTAL DISCHARGE, 691000 AC-FT
MAXIMUM DAILY DISCHARGE, 10700 CFS ON JUN 18
MINIMUM DAILY DISCHARGE, 0.8 CFS ON MAR 2

MAXIMUM INSTANTANEOUS DISCHARGE
10800 CFS AT 1830 MST ON JUN 18

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 12 45 N
LONG 111 41 38 W

B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA
JUL 14 1975 P3CF 204
CALGARY, ALTA.

MACKAY RIVER NEAR FORT MACKAY

STATION NO. 07DD001

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1974

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	43.0 B	33.7 B	29.5 B	18.2 B	6760	1250	448	1480	338	177 E	74.6 B	51.0 B	1
2	43.5 B	33.4 B	29.7 B	19.6 B	6350	1190	417	1390	303	184	75.0 B	51.0 B	2
3	43.4 B	33.1 B	29.1 B	20.1 B	6140	1150	379	1250	276	175	74.3 B	50.1 B	3
4	43.2 B	33.4 B	29.9 B	19.0 B	5940	1100	356	1190	264	169	73.5 B	49.3 B	4
5	43.6 B	33.1 B	29.7 B	18.2 B	5610	1040	362	994	231	172	72.8 B	48.7 B	5
6	43.6 B	33.5 B	29.4 B	22.8 B	4850	1010	365	840	217	185	71.9 B	48.0 B	6
7	43.8 B	33.9 B	29.0 B	30.8 B	4510	1030	371	744	218	175	71.6 B	47.3 B	7
8	44.6 B	33.9 B	27.8 B	42.9 B	4290	1020	375	699	219	165	70.2 B	46.2 B	8
9	44.5 B	33.1 B	26.1 B	56.6 B	4090	1010	345	695	208	166	69.5 B	46.2 B	9
10	44.6 B	34.5 B	25.7 B	82.8 B	3700	1040	426	572	193	162	68.7 B	45.6 B	10
11	44.6 B	35.7 B	25.4 B	123 B	3510	1090	468	452	181	161	67.9 B	45.0 B	11
12	43.9 B	34.3 B	25.6 B	200 B	3260	1030	594	393	172	154	67.1 B	44.5 B	12
13	43.2 B	33.9 B	25.9 B	323 B	3070	1020	1020	348	163	148	66.2 B	43.9 B	13
14	42.7 B	32.6 B	26.3 B	781 B	2860	976	1610	313	157	145	65.5 B	43.2 B	14
15	42.1 B	32.7 B	23.8 B	426 B	2630	850	1970	298	148	139	64.7 B	42.7 B	15
16	41.6 B	32.5 B	23.5 B	1190 B	2530	776	1950	249	142	136	63.9 B	42.1 B	16
17	41.1 B	32.2 B	23.2 B	1500 B	2330	789	1948	233	142	132	63.1 B	41.5 B	17
18	40.6 B	32.0 B	22.9 B	2500 B	2230	617	1910	227	137	126	62.3 B	40.9 B	18
19	40.0 B	31.6 B	22.6 B	4080 B	2150	547	2130	218	124	117	61.5 B	40.2 B	19
20	39.5 B	31.6 B	22.3 E	9360	2070	530	2330	198	121	115	60.7 B	39.8 B	20
21	39.0 B	31.1 B	20.9 B	8670	1970	457	2270	172	120	115	59.9 B	39.1 B	21
22	38.4 B	31.1 B	19.7 B	8590	1890	425	2240	158	118	110	59.0 B	38.6 B	22
23	37.7 B	30.7 B	17.5 E	8070	1790	443	2240	151	119	107	58.2 B	37.9 B	23
24	37.4 B	30.7 B	16.6 B	9260	1690	478	2070	162	125 E	101	57.4 B	37.3 B	24
25	36.9 B	30.6 B	13.2 E	9160	1610	595	1900	231	133 E	94.1	56.2 B	36.8 B	25
26	36.1 B	30.2 B	14.6 E	8670	1540	693	1730	281	140 E	89.8	55.8 B	36.2 B	26
27	35.5 B	30.8 B	14.2 E	8130	1440	531	1560	391	147 E	85.4 B	55.0 B	35.5 B	27
28	35.3 B	29.6 B	13.2 E	7740	1470	593	1410	711	155 E	81.6 B	54.2 B	34.9 B	28
29	34.9 B		15.5 B	7470	1510	510	1320	346	162 E	78.7 B	53.4 B	34.3 B	29
30	34.2 B		16.9 B	7050	1460	525	1230	374	169 E	59.8 B	52.6 B	33.8 B	30
31	33.7 B		19.1 B		1340		1210	359		61.6 B		33.2 B	31
TOTAL	1247.2	837.3	708.0	104370.8	95480	24140	39166	15345	5128	4124.2	1928.8	1306.2	TOTAL
MEAN	41.5	31.9	22.8	3478	3080	805	1260	496	178	133	64.3	42.1	MEAN
AC-FT	2560	1770	1480	207000	189000	47900	77700	30500	10400	8180	3830	2590	AC-FT
MAX	44.6	35.7	29.9	9360	6760	1250	2270	1480	338	189	76.6	51.8	MAX
MIN	33.7	29.6	13.2	18.2	1340	425	362	151	118	68.6	52.6	33.2	MIN

SUMMARY FOR THE YEAR 1974

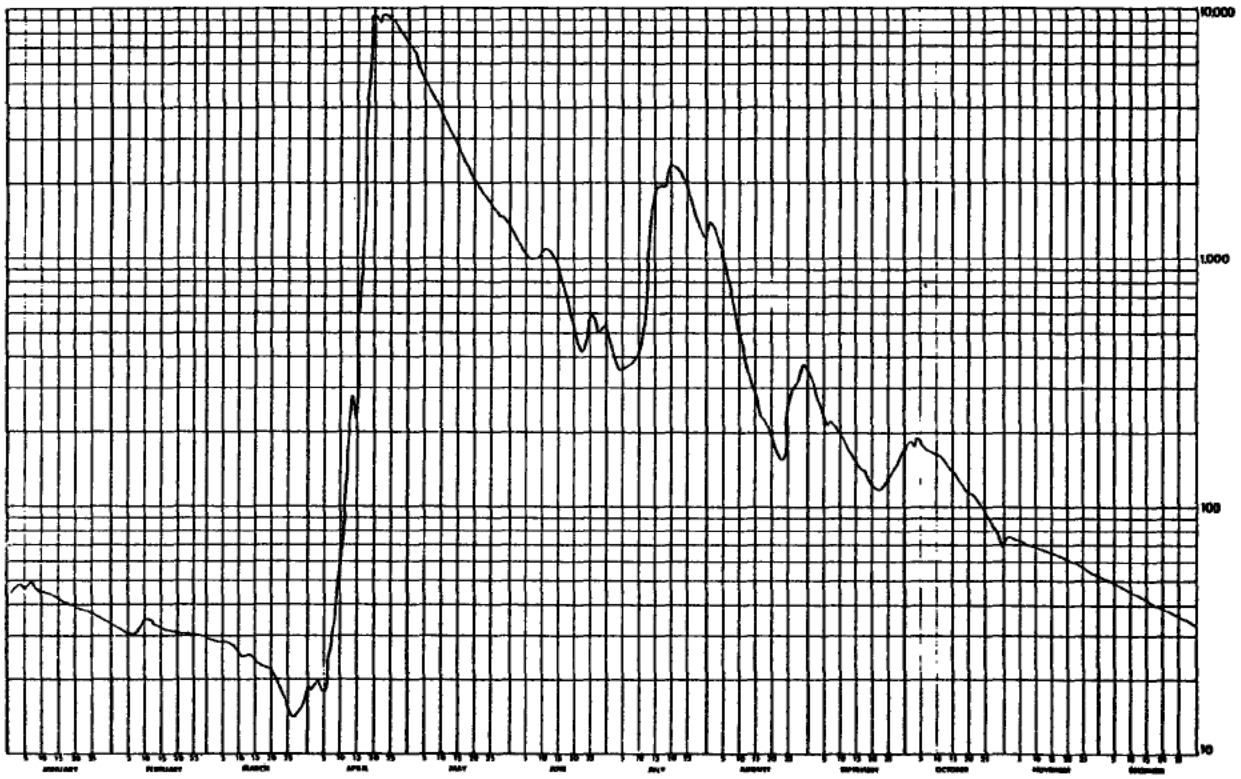
MEAN DISCHARGE, 806 CFS
TOTAL DISCHARGE, 583700 AC-FT
MAXIMUM DAILY DISCHARGE, 9360 CFS ON APR 28
MINIMUM DAILY DISCHARGE, 14.2 CFS ON MAR 27

MAXIMUM INSTANTANEOUS DISCHARGE
9830 CFS AT 0500 MST ON APR 28

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 12 45 N
LONG 111 41 30 W

B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA — MACKAY RIVER NEAR FORT MACKAY — STATION NO. 07088001
MAY 14 1976 PAGE 296
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DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN.		FEB		MAR		APR		MAY	JUN	JUL	AUG	SEP	OCT	NOV		DEC		DAY
1	32.9	B	16.8	B	15.7	B	17.8	B	1620	903	3440	1720	2900	1060	514		124	B	1
2	31.8	B	16.7	B	15.7	B	17.9	B	1640	879	3140	1550	2760	1040	330	B	115	B	2
3	29.5	B	16.6	B	15.8	B	18.0	B	1640	835	2750	1370	2710	1010	290	B	110	B	3
4	28.5	B	16.5	B	15.8	B	18.2	B	1700	842	2460	1625	2430	965	270	B	106	B	4
5	27.5	B	16.4	B	15.9	B	18.4	B	1700	880	2258	1570	2990	947	250	B	100	B	5
6	26.5	B	16.3	B	15.9	B	18.7	B	1710	861	2060	1560	3150	922	230	B	94.0	B	6
7	25.8	B	16.2	B	16.8	B	19.1	B	1690	837	1860	1550	3150	940	210	B	90.0	B	7
8	25.0	B	16.1	B	16.0	B	19.6	B	1670	815	1700	1460	2950	1040	190	B	87.0	B	8
9	24.4	B	16.1	B	16.1	B	20.1	B	1630	871	1560	1380	2720	1050	180	B	83.0	B	9
10	23.6	B	16.0	B	16.1	B	21.0	B	1530	915	1390	1300	2610	1070	170	B	79.0	B	10
11	23.0	B	16.0	B	16.2	B	22.0	B	1430	902	1240	1220	2480	1090	170	B	76.0	B	11
12	22.5	B	15.9	B	16.2	B	23.0	B	1350	902	1050	1120	2350	1110	160	B	73.0	B	12
13	22.0	B	15.9	B	16.3	B	24.4	B	1350	901	840	1070	2220	1390	150	B	70.0	B	13
14	21.5	B	15.8	B	16.4	B	26.0	B	1360	897	1170	1000	2080	1060	150	B	67.0	B	14
15	21.0	B	15.8	B	16.4	B	27.8	B	1390	896	2360	934	1960	1030	140	B	65.0	B	15
16	20.5	B	15.7	B	16.5	B	42.7	B	1250	924	2800	872	1890	979	140	B	62.0	B	16
17	20.0	B	15.7	B	16.5	B	84.5	B	1240	1000	3750	806	1860	931	135	B	60.0	B	17
18	19.8	B	15.6	B	16.6	B	118	B	1210	1040	4300	741	1760	903	130	B	58.0	B	18
19	19.4	B	15.6	B	16.7	B	556	B	1160	1060	4470	695	1650	896	130	B	56.0	B	19
20	19.0	B	15.6	B	16.8	B	562	B	1118	1060	4470	647	1530	909	130	B	54.0	B	20
21	18.8	B	15.6	B	16.9	B	586	B	1060	1020	3930	665	1410	928	130	B	52.0	B	21
22	18.5	B	15.6	B	17.0	B	595	B	966	991	3450	711	1260	959	130	B	50.0	B	22
23	18.1	B	15.6	B	17.1	B	605	B	898	977	3120	1200	1150	982	135	B	48.0	B	23
24	17.9	B	15.6	B	17.1	B	451		872	986	2820	1640	1040	971	135	B	47.0	B	24
25	17.7	B	15.6	B	17.2	B	506		924	976	2660	1870	954	927	140	B	45.0	B	25
26	17.6	B	15.6	B	17.2	B	725		957	1030	2390	1900	889	819	140	B	44.0	B	26
27	17.4	B	15.6	B	17.3	B	1460		953	1240	2180	1848	838	706	140	B	42.0	B	27
28	17.2	B	15.6	B	17.4	B	1530		944	1720	2120	1750	808	568	135	B	41.0	B	28
29	17.1	B			17.5	B	1670		919	2570	2230	1840	933	549	135	B	39.0	B	29
30	17.0	B			17.6	B	1623		899	3400	2060	2340	1040	609	130	B	38.0	B	30
31	16.9	B			17.7	B			941		1893	2760		568			37.0	B	31
TOTAL	676.7		446.1		513.6		11375.2		39643	33178	77890	42921	58992	28690	5419		2108.0		TOTAL
MEAN	21.8		15.9		16.6		379		1280	1100	2518	1388	1970	925	181		68.0		MEAN
AC-FT	1340		885		1020		22610		78640	65800	154000	85100	117000	56900	10700		4180		AC-FT
MAX	32.0		16.8		17.7		1620		1710	3400	4470	2760	3150	1110	514		124		MAX
MIN	16.9		15.6		15.7		17.8		872	815	840	647	808	549	130		37.0		MIN

SUMMARY FOR THE YEAR 1975

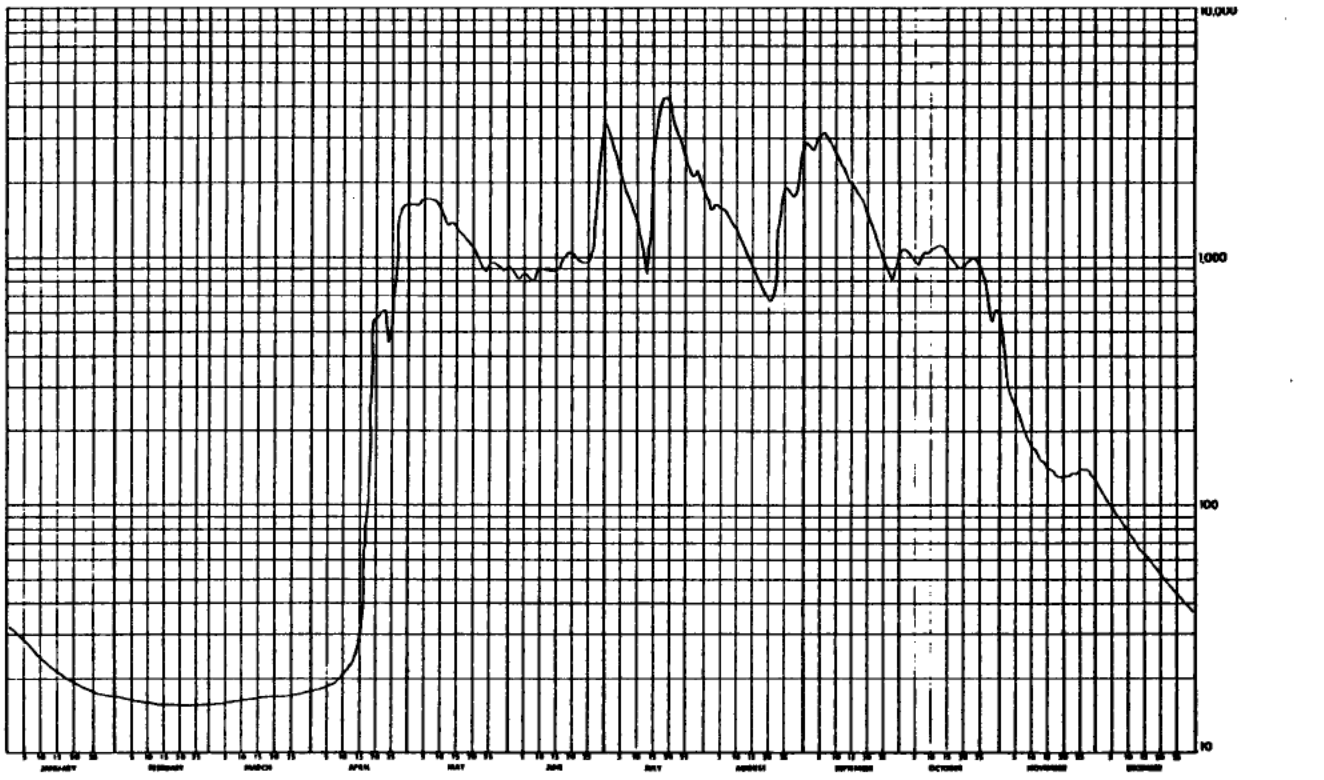
MEAN DISCHARGE, 877 CFS
TOTAL DISCHARGE, 636000 AC-FT
MAXIMUM DAILY DISCHARGE, 4470 CFS ON JUL 19
MINIMUM DAILY DISCHARGE, 15.6 CFS ON FEB 18

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 12 38 N
LONG 111 41 36 W

B-ICE CONDITIONS

NATURAL FLOW

MAXIMUM INSTANTANEOUS DISCHARGE
4590 CFS AT 0100 MST ON JUL 20



SURVEY OF CANADA
/4 1977 PAGE 10
ARY, ALTA.

MACKAY RIVER NEAR FORT MACKAY

STATION NO. 07DB001

(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

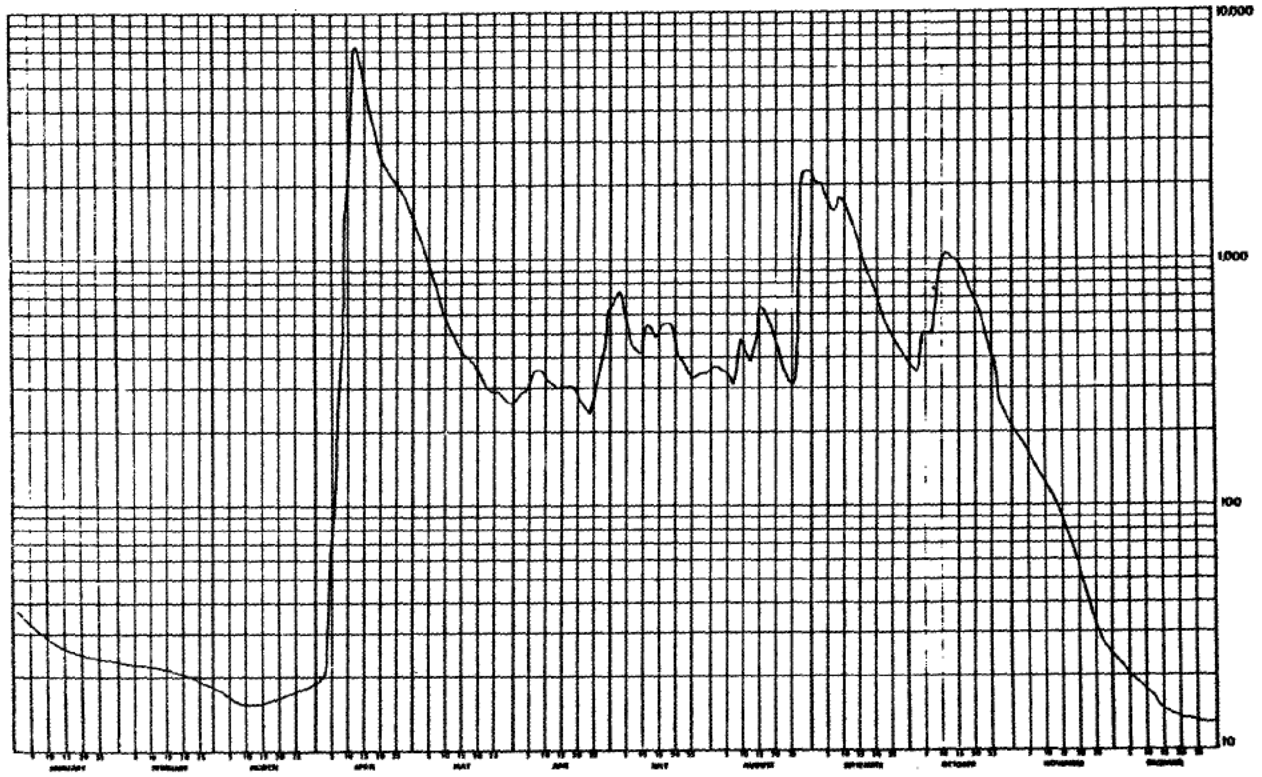
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
	36.5 A	22.8 B	17.7 B	19.0 B	1330	265	669	360	2040	360	205 B	23.8 B	1
	35.5 B	22.7 B	17.3 B	19.5 B	1210 E	279	723	358	2030	342	195 B	23.0 B	2
	34.0 A	22.6 B	17.0 B	23.0 B	1110 E	289	744	355	1970	385	185 B	22.5 B	3
	33.0 B	22.5 B	16.8 B	42.0 B	1010 E	291	651	358	1810	470	175 B	21.5 B	4
	32.0 B	22.4 B	16.5 B	80.0 B	930 E	309	563	342	1700	587	165 B	21.0 B	5
6	31.5 A	22.3 B	16.2 B	160 B	850 E	343	497	328	1580	499	155 B	20.5 B	6
7	30.5 B	22.2 B	16.0 B	300 B	780 E	354	443	313	1590	497	145 B	20.0 B	7
8	30.0 B	22.1 B	15.8 B	544 B	700 E	354	429	418	1760	660	140 B	19.0 B	8
9	29.0 B	22.0 B	15.6 B	1350 B	630 E	335	422	479	1740	870	130 B	18.0 B	9
10	28.0 B	22.0 B	15.3 B	2600 B	570 E	321	421	450	1660	1000	120 B	17.5 B	10
11	27.5 B	21.9 B	15.4 B	5590 B	520 E	313	533	406	1550	1060	115 B	16.5 B	11
12	27.0 B	21.8 B	15.5 B	7390 B	490 E	306	566	387	1430	1030	105 B	16.0 B	12
13	26.3 B	21.7 B	15.5 B	6500 B	460 E	305	510	404	1310	1000	100 B	15.5 B	13
14	26.0 B	21.6 B	15.6 B	5580 A	440 E	305	484	531	1200	1020	95.0 B	15.0 B	14
15	25.8 B	21.5 B	15.7 B	4800 E	420 E	306	526	651	1090	1010	86.0 B	14.5 B	15
16	25.5 B	21.3 B	15.8 B	4100 E	410 E	306	540	631	1010	938	80.0 B	14.1 B	16
17	25.2 B	21.1 B	15.9 B	3500 E	399	306	584	576	900	866	73.0 B	14.0 B	17
18	25.0 B	20.9 B	16.0 B	3000 E	383	306	541	545	814	796	66.0 B	14.0 B	18
19	24.8 B	20.5 B	16.1 B	2700 E	370	294	509	484	745	724	59.0 B	14.0 B	19
20	24.6 B	20.1 B	16.2 B	2500 E	347	277	453	438	677	695	54.0 B	13.5 B	20
21	24.4 B	20.0 B	16.4 B	2350 E	322	264	412	398	620	619	49.0 B	13.5 B	21
22	24.2 B	19.8 B	16.6 B	2270 A	308	251	395	374	572	559	45.0 B	13.5 B	22
23	24.0 B	19.6 B	16.8 B	2220	294	235	372	346	528	516	40.0 B	13.5 B	23
24	23.8 B	19.2 B	17.0 B	2110	290	238	346	325	500	455	36.0 B	13.5 B	24
25	23.6 B	19.0 B	17.1 B	1990	290	255	332	312	477	391 B	32.0 B	13.0 B	25
26	23.5 B	18.7 B	17.4 B	1860	287	291	335	338	456	352 B	29.0 B	13.0 B	26
27	23.3 B	18.4 B	17.6 B	1740	281	342	339	1450	435	270 B	27.5 B	13.0 B	27
28	23.4 B	18.1 B	17.8 B	1630	271	494	339	2270	414	255 B	26.5 B	13.0 B	28
29	23.0 B	17.9 B	17.9 B	1510	263	613	344	2270	395	240 B	25.5 B	13.0 B	29
30	23.0 B		18.0 B	1410	259	649	355	2250	377	230 B	24.5 B	13.0 B	30
31	22.9 B		18.5 B		259		361	2110		215 B		13.0 B	31
TOTAL	836.8	606.7	513.0	69887.5	16483	9796	14698	21253	33380	18831	2783.0	498.9	TOTAL
MEAN	27.0	20.9	16.5	2330	532	327	474	686	1110	607	92.8	16.1	MEAN
AC-FT	1660	1200	1020	139000	32700	19400	29200	42200	66200	37400	5520	990	AC-FT
MAX	36.5	22.8	18.5	7390	1330	649	744	2270	2040	1060	205	23.8	MAX
MIN	22.9	17.9	15.3	19.0	259	235	332	312	377	215	24.5	13.0	MIN

SUMMARY FOR THE YEAR 1976

MEAN DISCHARGE, 518 CFS
TOTAL DISCHARGE, 376000 AC-FT
MAXIMUM DAILY DISCHARGE, 7390 CFS ON APR 12
MINIMUM DAILY DISCHARGE, 13.0 CFS ON DEC 25

MAXIMUM INSTANTANEOUS DISCHARGE, CFS AT ON Not Determined

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



5.26 MUSKEG RIVER NEAR FORT MacKAY

STATION NAME: Muskeg River near Fort MacKay

STATION NUMBER: 07DA008

LOCATION: Latitude: 57°11'30" Longitude: 111°34'05"

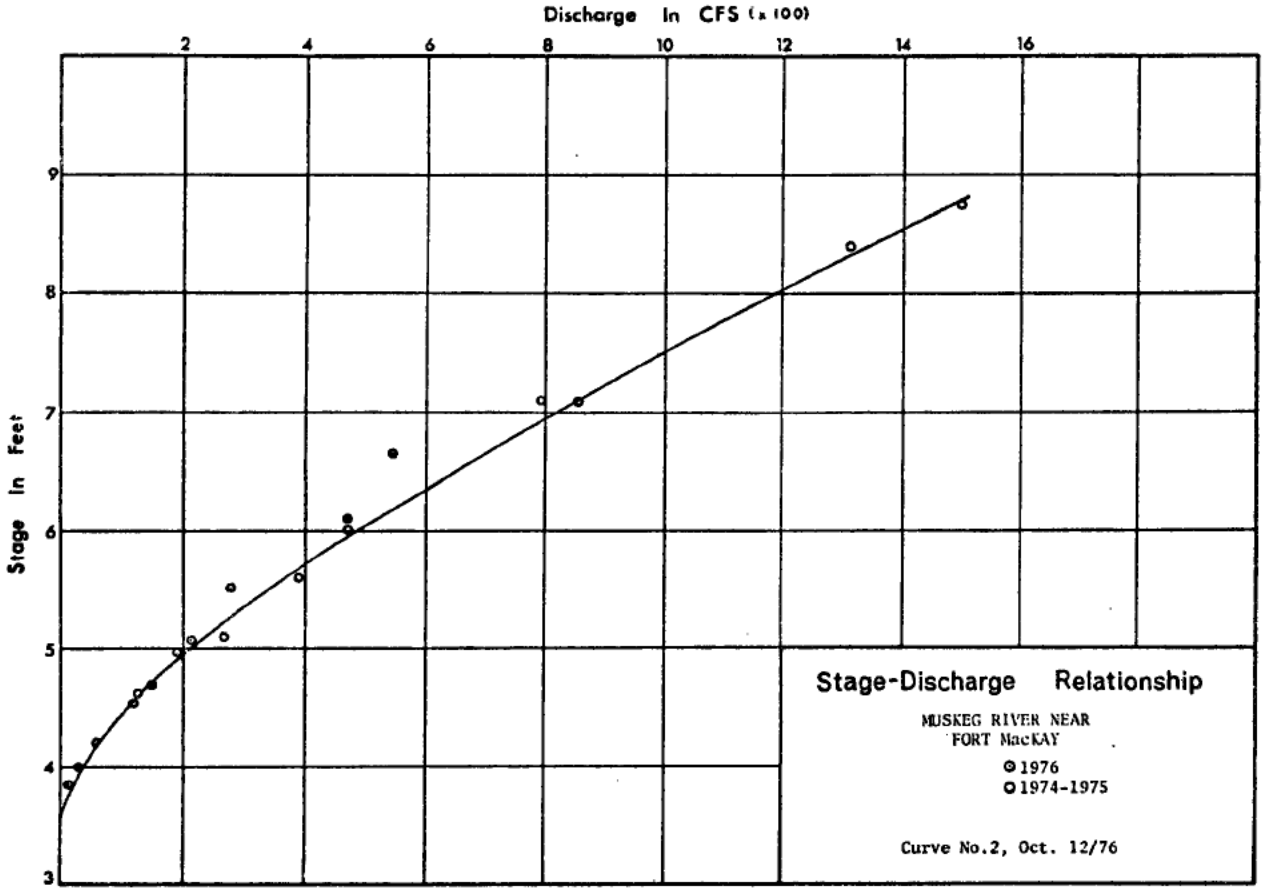
NE29-94-10-W4

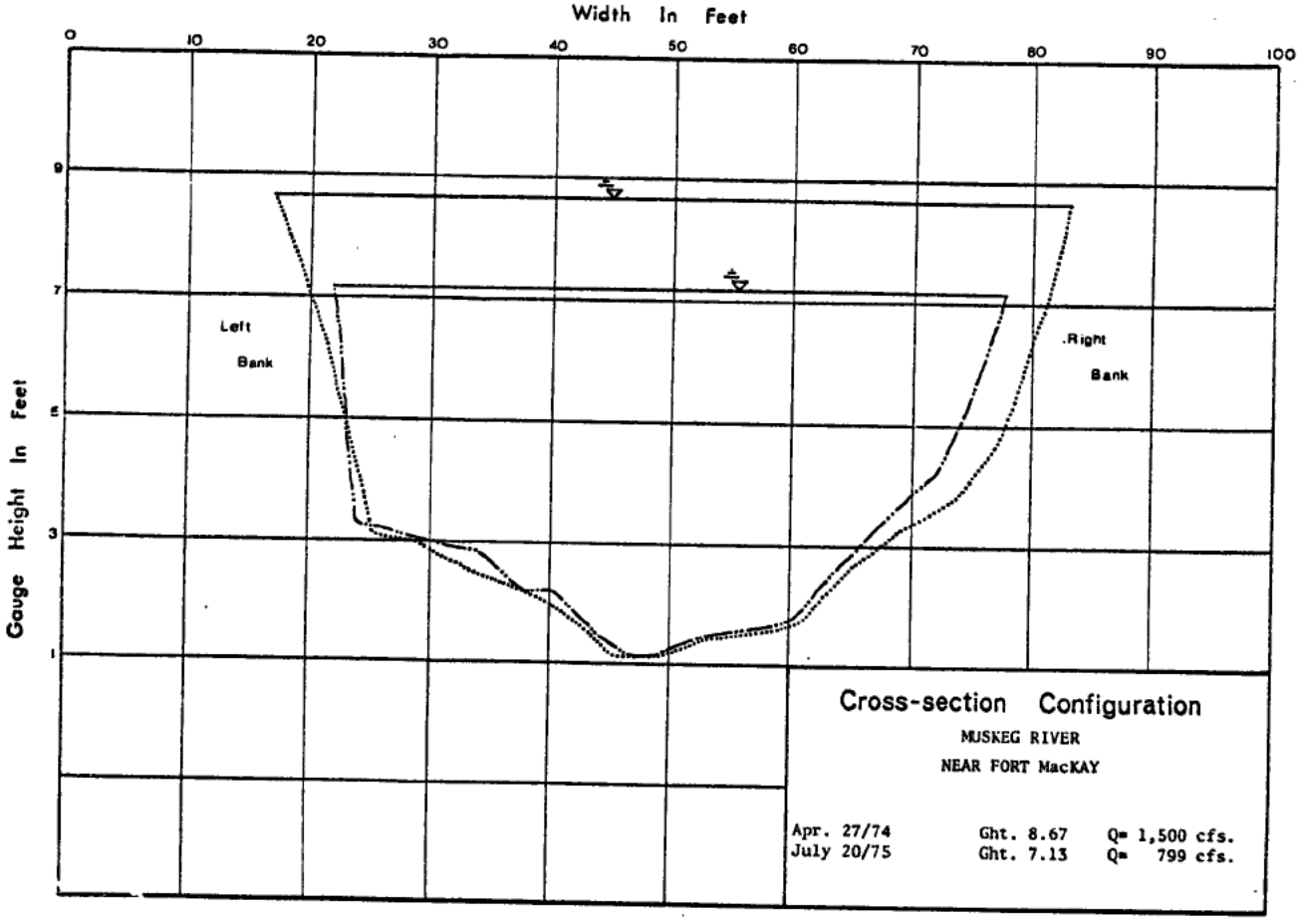
DRAINAGE AREA: 562 square miles(1,460 km^2)

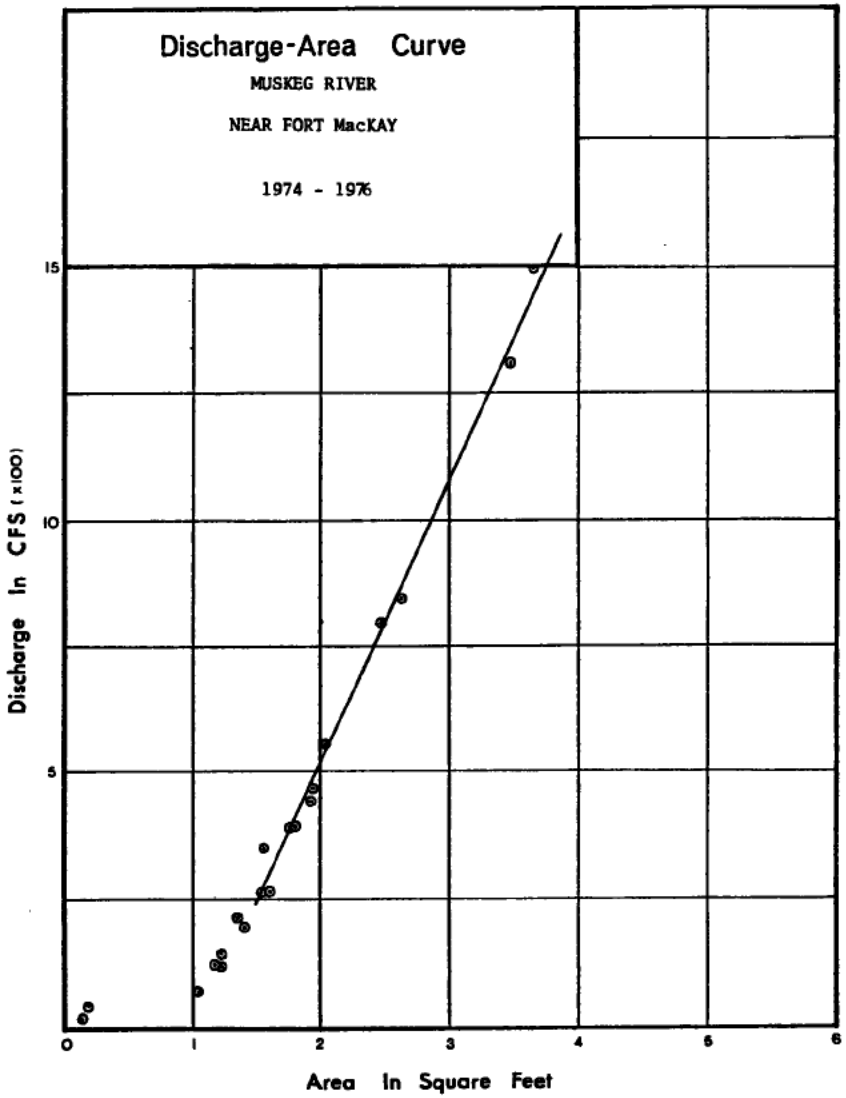
PERIOD OF RECORD: This station was established on November 5, 1973. Discharge data is available from January,1974 to December,1976.

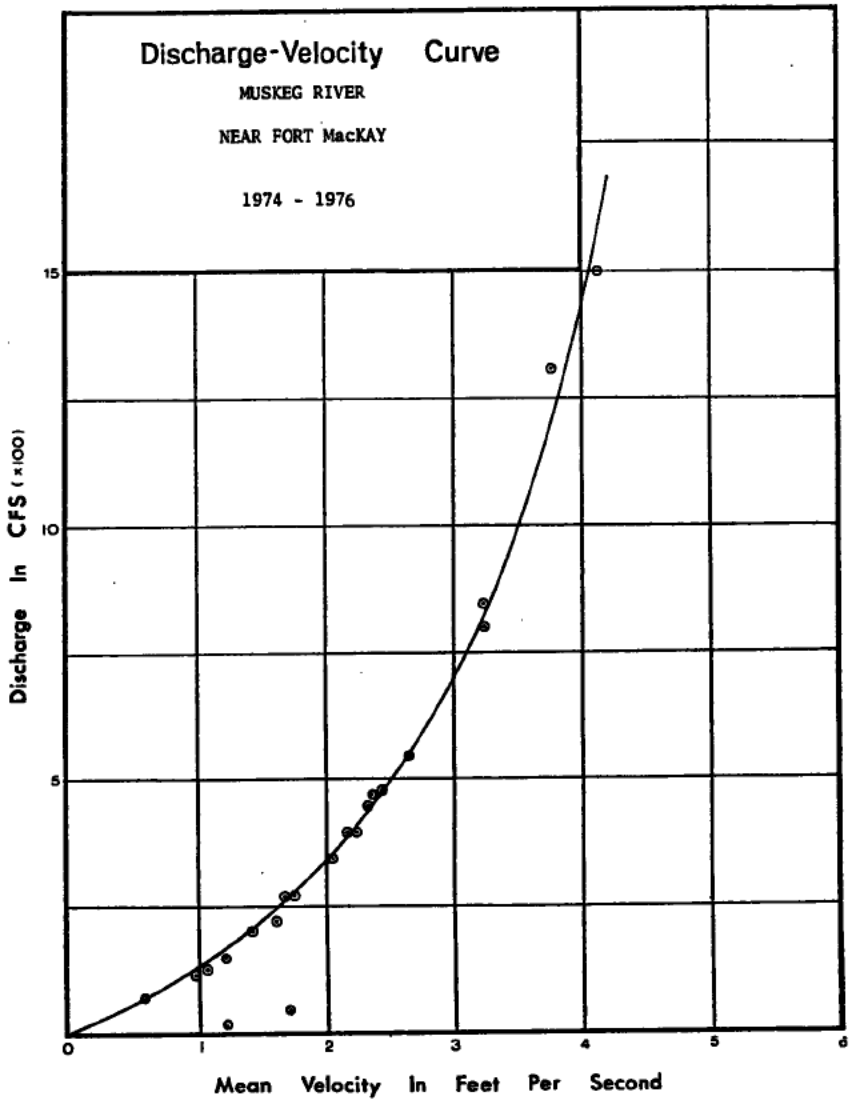
SITE DESCRIPTION: The gauge is located on the left bank about seven miles (11 km) above the confluence with the Athabasca River and two and one-half air miles (4 km) east of Fort MacKay. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder.
Open water discharge measurements are made by wading or from the cableway 50 feet (15 m) above the gauge.

GENERAL:


Discharge In CFS (x 100)
2
4
6
8
10
12
14
16
Stage In Feet
9
8
7
6
5
4
3
Stage-Discharge Relationship
MUSKEG RIVER NEAR
FORT MacKAY
⊙ 1976
○ 1974-1975
Curve No.2, Oct. 12/76


Width In Feet
0
10
20
30
40
50
60
70
80
90
100
Gauge Height In Feet
9
7
5
3
1
Left
Bank
Right
Bank
Cross-section Configuration
MUSKEG RIVER
NEAR FORT MacKAY
Apr. 27/74 Ght. 8.67 Q= 1,500 cfs.
July 20/75 Ght. 7.13 Q= 799 cfs.


Discharge-Area Curve
MUSKEG RIVER
NEAR FORT MacKAY
1974 - 1976
Discharge In CFS (x100)
Area In Square Feet
0
1
2
3
4
5
6
5
10
15


Discharge-Velocity Curve
MUSKEG RIVER
NEAR FORT MacKAY
1974 - 1976
Discharge In CFS (x100)
Mean Velocity In Feet Per Second
0
1
2
3
4
5
6
5
10
15

WATER SURVEY OF CANADA
JUL 14 1975 PAGE 239
CALGARY, ALTA.

MUSKEG RIVER NEAR FORT MACKAY

STATION NO. 07CA005

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1974

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	28.4 B	17.5 B	17.0 B	6.0 B	1760	441	417 E	355 E	132	117	92.2 B	27.3 B	1
2	24.6 B	17.4 B	16.9 B	9.6 B	1240	445	437 E	345 E	125	116	88.4 B	26.2 B	2
3	22.9 B	17.4 B	16.4 B	7.1 B	1170	445	457 E	330 E	121	114	88.1 B	25.7 B	3
4	25.9 B	17.4 B	16.9 B	6.6 B	1010	437	477	350 E	117	117	84.6 B	24.5 B	4
5	28.9 B	17.4 B	16.7 B	6.2 B	904	421	457	345 E	110	110	78.9 B	25.2 B	5
6	23.4 B	17.4 B	15.9 B	6.0 B	893	408	464	310 E	106	113	71.9 B	23.3 B	6
7	22.6 B	18.3 B	15.9 B	6.3 B	840	401	473	295 E	106	112	65.9 B	22.9 B	7
8	19.7 B	19.1 B	15.6 B	11.1 B	808	392	462	291 A	109	115	86.5 B	25.1 B	8
9	19.7 B	20.6 B	14.7 B	15.9 B	840	389	427	217	108	121	79.1 B	24.5 B	9
10	19.7 B	20.2 B	14.6 B	25.1 B	905	400	427	203	104	125	71.4 B	23.0 B	10
11	20.1 B	18.7 B	14.6 B	45.4 B	918	392	425	209	102	122	63.5 B	22.7 B	11
12	23.7 B	17.8 B	15.1 B	53.6 B	977	375	445	209	100	118	51.8 B	21.8 B	12
13	21.8 B	16.5 B	15.1 B	36.1 B	905	354	477	198	98.4	121	47.0 B	20.5 B	13
14	21.5 B	17.1 B	14.8 B	65.2 B	870	337	496	171	94.9	120	43.2 B	19.7 B	14
15	24.1 B	16.0 B	14.9 B	96.8 B	813	315	507	159	90.7	117	40.5 B	18.9 B	15
16	25.6 B	17.1 B	14.9 B	277 B	765	295	499 A	140	85.4	124	37.8 B	19.2 B	16
17	28.2 B	19.2 B	14.9 B	546 B	716	267	508 E	151	83.6	132	35.9 B	19.6 B	17
18	23.4 B	17.9 B	13.1 B	709 B	679	239	516 E	165	82.4	135	33.4 B	21.1 B	18
19	21.9 B	16.7 B	15.1 B	872 B	625	221	545 E	167	81.4	134	30.3 B	24.0 B	19
20	21.0 B	16.5 B	15.1 B	1160 B	589	197	550 E	166	78.9	131	28.7 B	23.7 B	20
21	21.7 B	16.3 B	15.1 B	1100	562	217 E	545 E	155	77.4	130	27.4 B	23.3 B	21
22	21.3 B	16.5 B	14.3 B	1210	530	237 E	540 E	143	76.8	129	26.1 B	23.8 B	22
23	21.4 B	16.4 B	13.4 B	1320	500	257 E	528 E	134	79.0	125	25.5 B	22.7 B	23
24	21.9 B	16.7 B	12.3 B	1350	469	277 E	490 E	133	86.7	123	25.6 B	22.4 B	24
25	20.6 B	16.9 B	11.7 B	1390	441	297 E	440 E	143	94.4	120	26.2 B	22.0 B	25
26	19.5 B	17.1 B	11.6 B	1420	414	317 E	405 E	157	105	119	24.4 B	21.7 B	26
27	19.1 B	17.1 B	11.3 B	1460	389	337 E	360 E	156	126	113 B	25.8 B	21.4 B	27
28	19.2 B	17.0 B	11.8 B	1490	364	357 E	325 E	149	129	103 B	26.0 B	21.1 B	28
29	19.6 B		11.7 B	1480	373	377 E	300 E	143	126	106 B	26.8 B	20.7 B	29
30	17.3 B		10.6 E	1430	408	397 E	310 E	140	121	96.3 B	27.8 B	20.4 B	30
31	17.7 B		10.2 E		471		330 E	145		98.3 B		20.1 B	31
TOTAL	709.2	494.3	442.4	17605.9	22596	10241	14812	5414	3050.0	3681.6	1479.9	697.7	TOTAL
MEAN	22.9	17.3	14.3	587	729	341	492	207	102	119	49.3	22.5	MEAN
AC-FT	1410	981	877	34900	45000	20300	29400	10700	6060	7300	2940	1380	AC-FT
MAX	31.9	20.6	17.0	1490	1340	445	550	370	132	135	92.2	27.3	MAX
MIN	17.3	15.1	10.2	6.0	358	197	308	133	76.8	96.3	24.4	18.9	MIN

SUMMARY FOR THE YEAR 1974

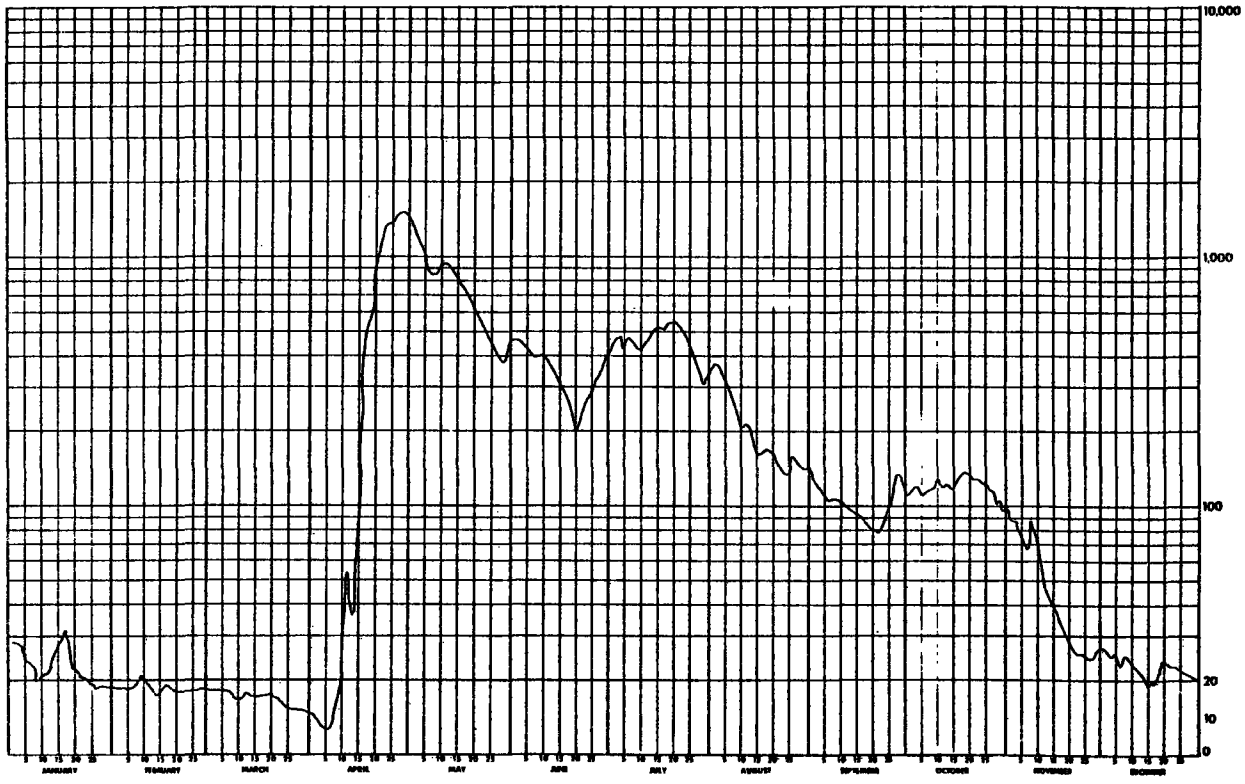
MEAN DISCHARGE, 223 CFS
TOTAL DISCHARGE, 162000 AC-FT
MAXIMUM DAILY DISCHARGE, 1490 CFS ON APR 28
MINIMUM DAILY DISCHARGE, 6.0 CFS ON APR

MAXIMUM INSTANTANEOUS DISCHARGE
1570 CFS AT 1800 MST ON APR 28

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 11 30 N
LONG 111 34 05 W

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



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JUN 02 1976 PAGE 105
CALGARY, ALTA.

MUSKEG RIVER NEAR FORT MACKAY

STATION NO. 07DA008

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	13.0 A	12.3 B	12.5 A	15.0 B	266	185	804	445	578	475	220 B	33.0 B	1
2	17.3 A	12.3 B	12.5 B	15.2 B	275	177	560	374	648	483	200 B	33.0 B	2
3	16.0 B	12.3 B	12.9 B	15.4 B	277	169	476	313	721	495	180 B	29.0 B	3
4	15.0 B	12.1 B	12.9 B	15.6 B	281	167	445	287	798	492	170 B	28.0 B	4
5	14.4 B	12.1 B	12.9 B	16.0 B	283	165	414	271	862	468	165 B	27.0 B	5
6	13.8 A	12.1 B	13.0 A	16.2 B	277	173	371	249	907	453	155 B	26.0 B	6
7	13.3 A	12.1 B	13.0 A	16.5 B	274	177	316	234	929	456	145 B	25.0 B	7
8	13.0 B	12.1 B	13.1 A	17.5 B	277	179	268	212	918	472	140 B	24.0 B	8
9	12.8 A	12.1 A	13.1 A	18.8 B	272	204	231	190	846	487	135 B	24.0 B	9
10	12.7 A	12.2 A	13.2 A	20.0 B	264	224	199	175	854	498	130 B	24.0 B	10
11	12.5 A	12.2 B	13.2 B	22.5 B	253	253 E	171	164	821	507	125 A	24.0 B	11
12	12.4 B	12.2 B	13.3 A	28.4 B	241	270 E	147	155	792	510	120 B	24.0 B	12
13	12.3 A	12.2 A	13.3 B	33.4 B	227	290 E	132	153	756	512	115 B	24.0 B	13
14	12.2 A	12.2 B	13.4 B	81.8 A	212	290 E	130	152	720	507	110 B	25.0 B	14
15	12.2 B	12.2 B	13.5 B	96.2 B	199	305 E	157	144	683	493	110 B	25.0 B	15
16	12.2 A	12.3 B	13.6 A	97.0 B	189	310 E	246	143	642	477	105 B	25.0 B	16
17	12.1 A	12.3 B	13.6 B	95.0 B	184	315 E	426	138	616	461	105 B	25.0 B	17
18	12.1 A	12.3 B	13.7 B	93.0 B	146	310 E	576	130	608	447	100 A	25.5 B	18
19	12.1 B	12.4 B	13.8 B	96.0 B	140	305 E	656	126	603	439	95.0 B	26.0 B	19
20	12.0 B	12.4 B	13.8 A	110 B	172	300 E	780	124	587	430	93.0 B	26.0 B	20
21	12.0 A	12.4 B	13.9 B	127 B	161	290 E	902	128	562	419	88.0 B	26.5 B	21
22	12.0 A	12.5 A	14.0 A	150 A	151	243 E	966	135	537	438	84.0 B	26.5 B	22
23	12.0 A	12.5 B	14.1 A	137 B	143	270 E	968	175	515	391	80.0 B	26.5 B	23
24	12.0 A	12.5 B	14.2 B	145 B	143	266 A	927	258	490	372	74.0 A	26.5 B	24
25	12.0 B	12.6 B	14.3 A	191	151	254	873	323	463	348	68.0 B	26.5 B	25
26	12.0 A	12.6 B	14.4 B	134	171	260	812	333	439	325	62.0 B	26.5 B	26
27	12.0 A	12.7 B	14.5 A	191	190	298	746	322	427	296	56.0 A	26.5 B	27
28	12.0 A	12.7 B	14.6 B	149	199	313	680	305	417	275 B	48.0 B	26.5 B	28
29	12.0 B		14.7 B	219	202	385	613	307	425	265 B	40.0 B	26.0 B	29
30	12.0 A		14.8 A	249	199	465	562	394	457	255 B	35.0 B	26.0 B	30
31	12.0 B		14.9 B		193		508	508		235 B		25.5 B	31
TOTAL	421.4	344.0	423.3	2820.2	6696	7863	15712	7360	19663	13131	3353.0	869.0	TOTAL
MEAN	12.9	12.3	13.7	94.3	216	262	507	238	655	424	112	28.1	MEAN
AC-FT	796	682	840	5590	13280	15600	31200	14600	39000	26000	6650	1600	AC-FT
MAX	19.0	12.7	14.9	249	283	465	968	508	929	512	220	33.0	MAX
MIN	12.0	12.0	12.9	15.0	143	167	130	124	417	235	35.0	24.0	MIN

SUMMARY FOR THE YEAR 1975

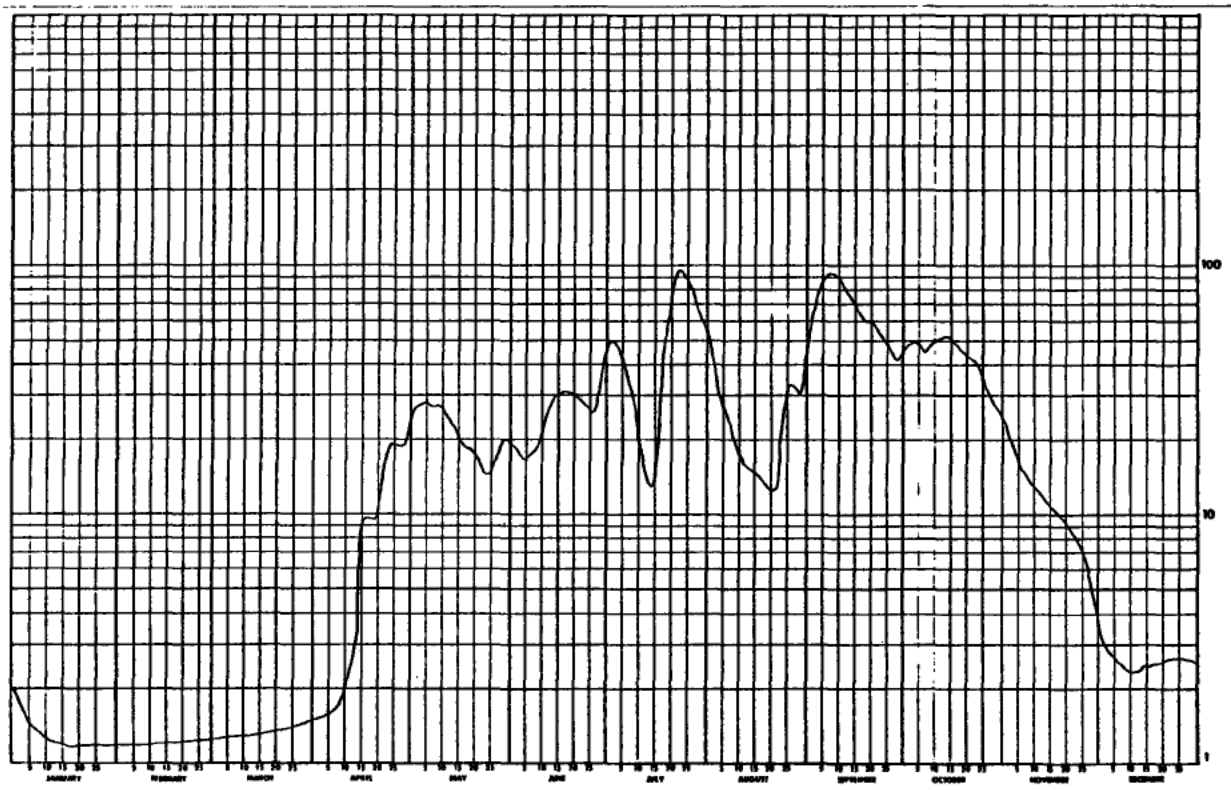
MEAN DISCHARGE, 215 CFS
TOTAL DISCHARGE, 156000 AC-FT
MAXIMUM DAILY DISCHARGE, 968 CFS ON JUL 23
MINIMUM DAILY DISCHARGE, 12.0 CFS ON JAN 20

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 11 30 N
LONG 111 36 05 W

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW

MAXIMUM INSTANTANEOUS DISCHARGE
975 CFS AT 2100 MST ON JUL 22



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CALGARY, ALTA.

MUSKEG RIVER NEAR FORT MAC KAY

STATION NO. 07DA008

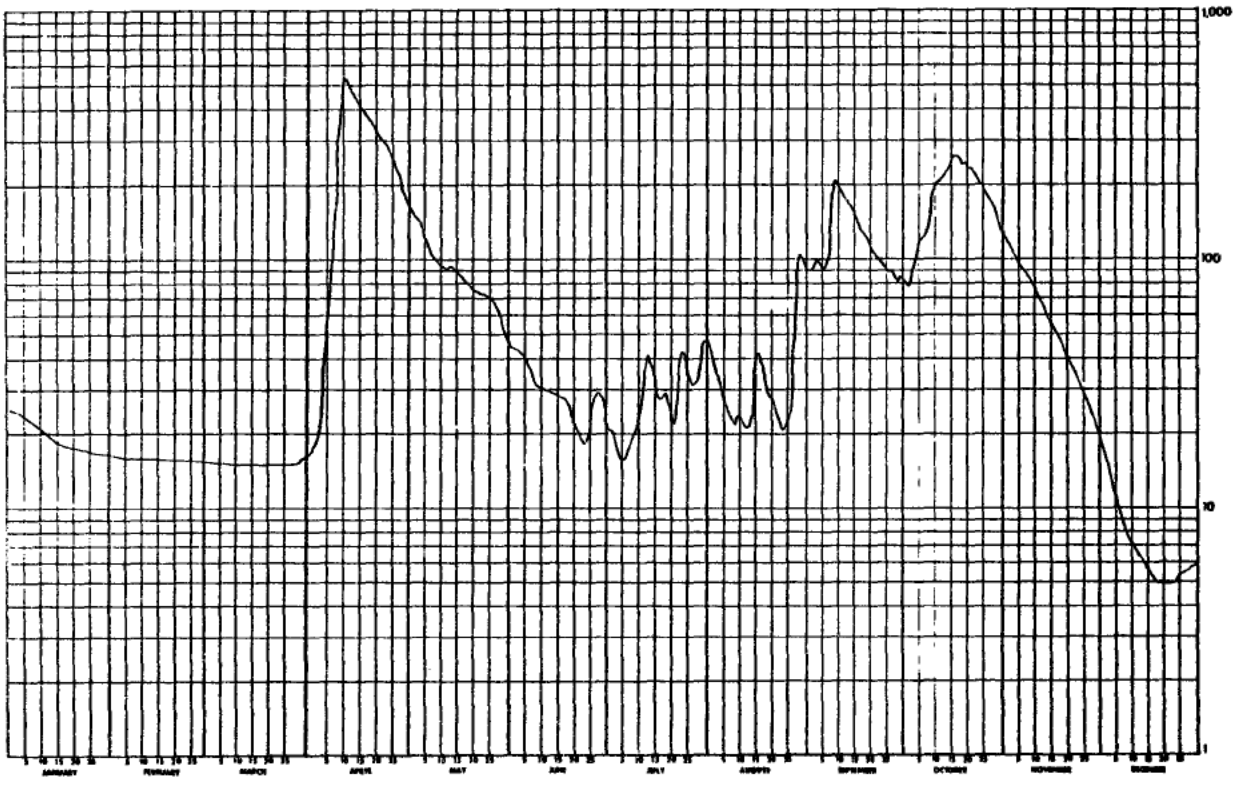
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	25.3 B	16.3 B	15.5 B	16.8 B	161	45.8	20.9	42.6	89.4	78.0	120 B	18.0 B	1
2	24.8 B	16.2 B	15.5 B	17.5 B	158	46.2	20.3	38.0	92.9	75.7	116 B	16.0 B	2
3	24.4 B	16.1 B	15.5 B	20.0 B	148	44.4	18.5	34.5	99.6	85.1	110 B	14.0 B	3
4	24.0 B	16.1 B	15.4 B	40.0 B	139	42.3	16.8	31.6	97.3	114	105 B	12.0 B	4
5	23.6 B	16.0 B	15.4 B	60.0 B	129	39.3	15.9	28.1	91.6	120	100 B	11.0 B	5
6	23.2 B	16.0 B	15.4 B	80.0 B	115	37.4	15.7	25.4	88.9	120	96.0 B	10.0 B	6
7	22.7 B	15.9 B	15.4 B	150 B	107	36.0	17.6	23.6	104	123	92.0 B	9.0 B	7
8	22.0 B	15.9 B	15.4 B	250 B	103	31.4	19.5	21.9	186	152	88.0 B	8.0 B	8
9	21.3 B	15.8 B	15.4 B	340 B	102	30.8	20.3	23.2	205	179	84.0 B	7.6 B	9
10	20.7 B	15.8 B	15.4 B	420 B	99.4	30.6	22.4	23.5	195	195	80.0 B	7.5 B	10
11	20.1 B	15.8 B	15.4 B	543 A	94.9	30.1	25.4	22.0	186	202	75.0 B	7.0 B	11
12	19.7 B	15.8 B	15.4 B	500 A	92.3	29.5	33.7	20.4	178	207	70.0 B	6.5 B	12
13	19.2 B	15.8 B	15.4 B	463 A	94.7	29.2	40.4	20.8	168	221	66.0 B	6.0 B	13
14	18.8 B	15.8 B	15.4 B	450 A	92.1	29.0	38.4	22.6	159	235	60.0 B	5.8 B	14
15	18.5 B	15.7 B	15.4 B	430 E	91.0	28.8	31.3	41.4	152	252	56.0 B	5.5 B	15
16	18.3 B	15.7 B	15.3 B	410 E	87.5	28.2	28.3	41.3	145	256	53.0 B	5.2 B	16
17	18.1 B	15.7 B	15.3 B	400 E	83.4	27.3	27.6	36.2	133	253	50.0 B	5.0 B	17
18	17.9 B	15.7 B	15.3 B	380 E	81.4	26.6	26.5	30.9	125	242	47.0 B	5.0 B	18
19	17.8 B	15.7 B	15.3 B	360 E	77.5	24.0	26.0	28.3	116	240	44.0 B	5.0 B	19
20	17.6 B	15.7 B	15.3 B	349 A	75.4	22.0	23.2	27.3	112	234	42.0 B	5.0 B	20
21	17.4 B	15.6 B	15.3 B	330 E	75.4	20.4	21.6	25.6	106	235 B	40.0 B	5.0 B	21
22	17.3 B	15.6 B	15.2 B	310 E	74.4	19.3	25.7	23.2	101	230 B	37.0 B	5.0 B	22
23	17.2 B	15.6 B	15.3 B	300 E	74.4	18.1	42.3	20.3	98.1	220 B	35.0 B	5.0 B	23
24	17.1 B	15.6 B	15.3 B	280 E	73.1	18.3	41.0	20.6	98.0	210 B	31.0 B	5.1 B	24
25	17.0 B	15.6 B	15.3 B	260 E	70.0	20.3	35.3	22.6	91.0	200 B	29.0 B	5.2 B	25
26	16.9 B	15.6 B	15.3 B	240 E	65.6	27.5	31.3	26.0	88.2	190 B	27.0 B	5.3 B	26
27	16.8 B	15.5 B	15.4 B	227 A	63.6	29.2	30.9	43.1	88.1	175 B	25.0 B	5.5 B	27
28	16.7 B	15.5 B	15.4 B	195	58.9	28.9	32.7	97.0	79.5	160 B	23.0 B	5.6 B	28
29	16.6 B	15.5 B	15.4 B	183	52.3	26.8	40.4	103	64.7	150 B	22.0 B	5.7 B	29
30	16.5 B		15.6 B	173	49.6	22.6	46.8	95.7	80.6	140 B	20.0 B	5.8 B	30
31	16.4 B		16.0 B		45.5		45.9	90.7		130 B		5.9 B	31
TOTAL	603.9	457.6	477.3	8177.3	2830.4	889.7	884.0	1151.4	3634.9	5623.8	1843.0	228.2	TOTAL
MEAN	19.5	15.8	15.4	273	91.3	29.7	28.5	37.1	121	181	61.4	7.4	MEAN
AC-FT	1200	904	947	16200	5610	1760	1750	2280	7210	11200	3660	453	AC-FT
MAX	25.3	16.3	16.0	543	161	46.2	46.8	103	205	256	120	18.0	MAX
MIN	16.4	15.5	15.2	16.8	45.5	18.1	15.7	20.3	79.5	75.7	20.0	5.0	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 73.2 CFS
TOTAL DISCHARGE, 53200 AC-FT
MAXIMUM DAILY DISCHARGE, 543 CFS ON APR 11
MINIMUM DAILY DISCHARGE, 5.0 CFS ON DEC 17

MAXIMUM INSTANTANEOUS DISCHARGE, CFS AT ON *NOT DETERMINED*

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



5.27 NAMUR LAKE AT BIRCH MOUNTAINS LODGE

STATION NAME: Namur Lake at Birch Mountains Lodge

STATION NUMBER: 07DA021

LOCATION: Latitude: 57°22'10" Longitude: 112°45'30"

DRAINAGE AREA:

PERIOD OF RECORD: This station was established May 29, 1976. Water levels are available for the 1976 open water period.

SITE DESCRIPTION: A staff gauge is located near Birch Mountains Lodge and is read about every third day by a paid observer.

GENERAL: Water levels are referred to an assumed datum.

WATER SURVEY CANADA
DEC 20 1976 PAGE 8
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NAMUR LAKE AT BIRCH MOUNTAINS LODGE

STATION NO. 07DA021

(PRELIMINARY) DAILY WATER LEVEL IN FEET FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1						93.86				93.99			1
2								94.12					2
3						93.86				93.99			3
4													4
5						93.86	94.01	94.13		93.98			5
6							93.99						6
7						93.87				93.98			7
8													8
9						93.88	94.03	94.14		93.97			9
10													10
11						93.87	94.06	94.15		93.96			11
12							94.04		94.08				12
13						93.89				93.96			13
14													14
15								94.15	94.07	93.96			15
16						93.90	94.06						16
17						93.89			94.05				17
18								94.14					18
19						93.89	94.05		94.04				19
20								94.15		93.98			20
21						93.89			94.04				21
22							94.09			93.98			22
23									94.03				23
24								94.15		93.98			24
25						93.92	94.07		94.01				25
26										93.96			26
27							94.09		94.01				27
28						93.97							28
29					93.83		94.09		94.00				29
30						93.98							30
31													31

SUMMARY FOR THE YEAR 1976

MAXIMUM DAILY WATER LEVEL, 94.15 FEET ON Aug 11

MINIMUM DAILY WATER LEVEL, 93.83 FEET ON May 29

WATER LEVELS ARE REFERRED TO AN ASSUMED DATUM

5.28 PIERRE RIVER NEAR FORT MacKAY

STATION NAME: Pierre River near Fort MacKay

STATION NUMBER: 07DA013

LOCATION: Latitude: 57°27'55" Longitude: 111°39'14"

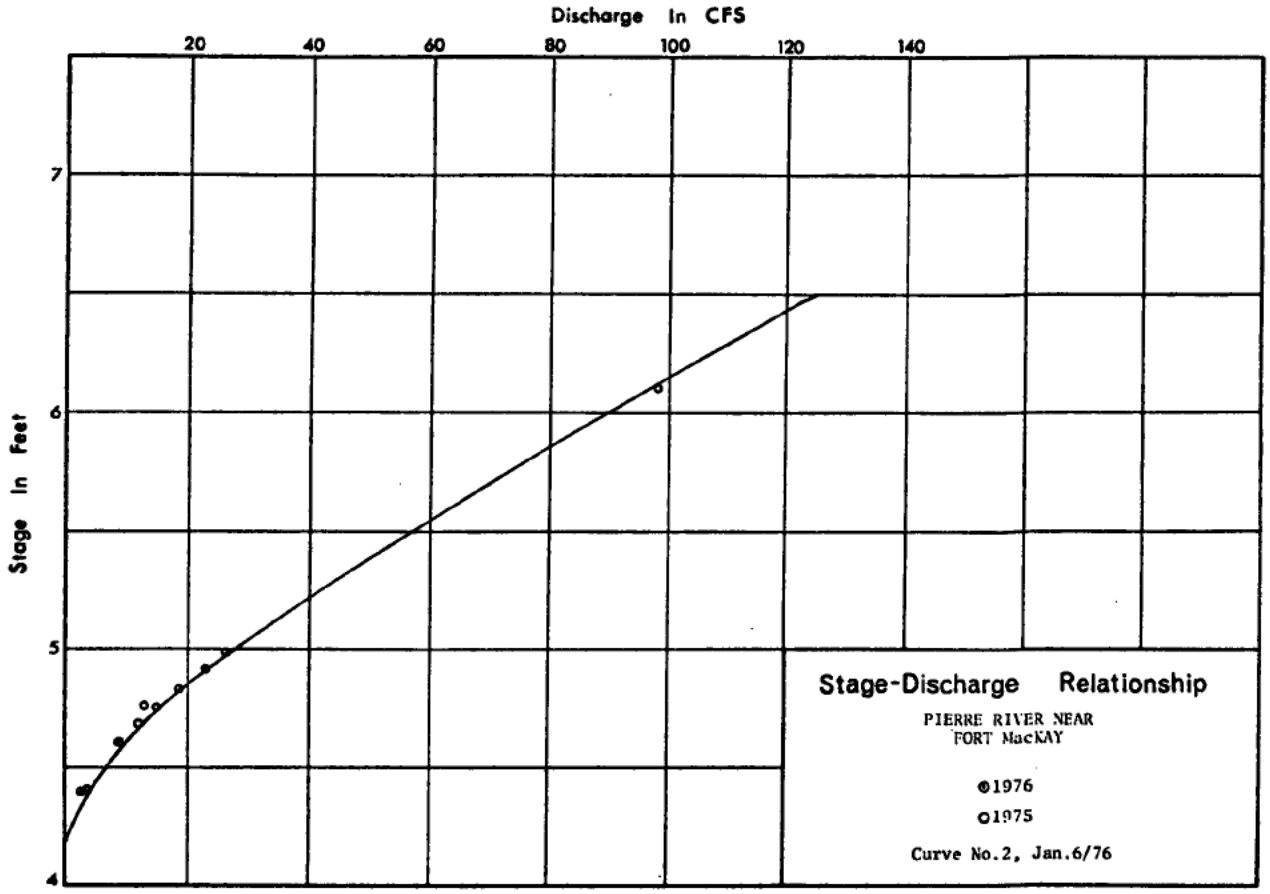
NW36-97-11-W4

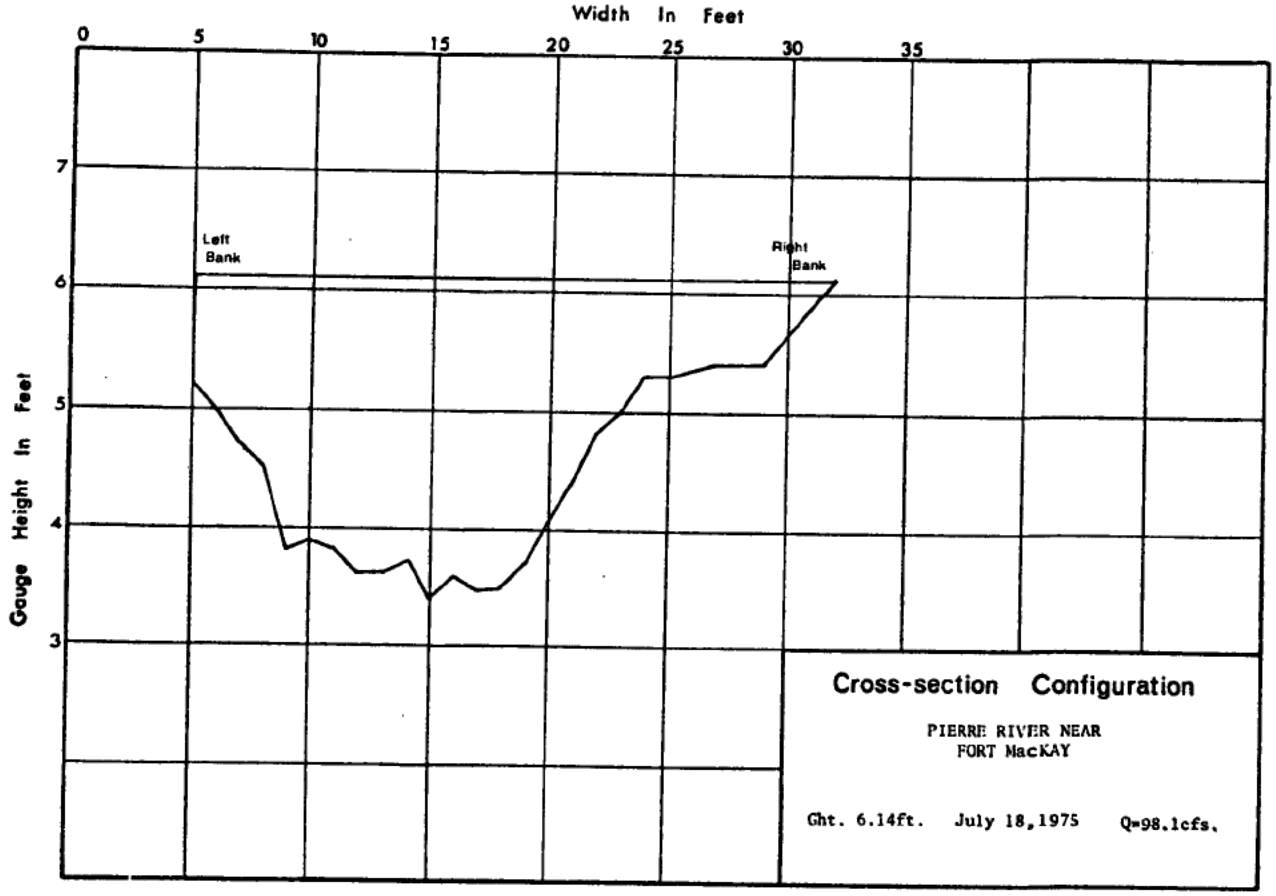
DRAINAGE AREA: 50.2 square miles (130 km^2)

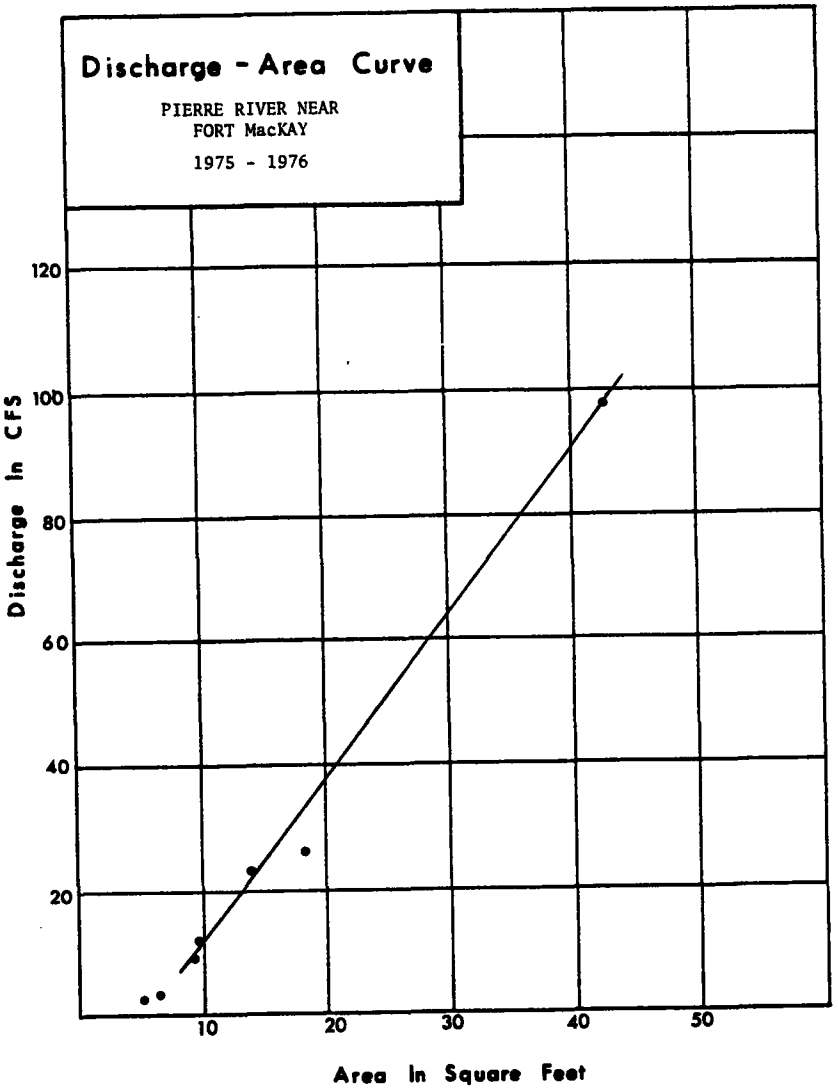
PERIOD OF RECORD: This station was established on July 18, 1975. Discharge data is available to December,1976.

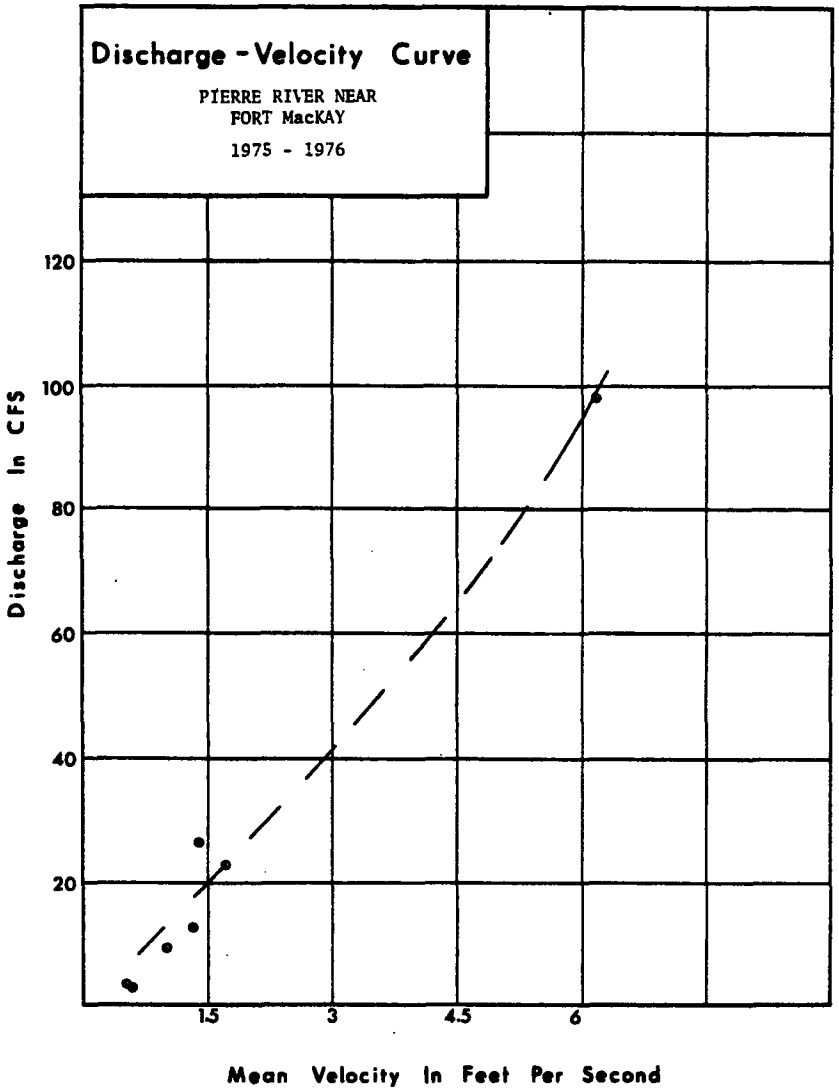
SITE DESCRIPTION: The gauge is located on the left bank immediately below the Forestry bridge approximately 20 air miles (32 km) north of Fort MacKay. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder.
Open water discharge measurements are made by wading or from the bridge.

GENERAL: Zero flow has been observed during both winters of operation.


Discharge In CFS
20
40
60
80
100
120
140
Stage In Feet
7
6
5
4
Stage-Discharge Relationship
PIERRE RIVER NEAR
FORT MacKAY
●1976
○1975
Curve No.2, Jan.6/76


Width In Feet
0
5
10
15
20
25
30
35
Gauge Height In Feet
7
6
5
4
3
Left Bank
Right Bank
Cross-section Configuration
PIERRE RIVER NEAR
FORT MacKAY
Ght. 6.14ft. July 18,1975 Q=98.1cfs.


Discharge - Area Curve
PIERRE RIVER NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS
120
100
80
60
40
20
10
20
30
40
50
Area In Square Feet


Discharge - Velocity Curve
PIERRE RIVER NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS
120
100
80
60
40
20
1.5
3
4.5
6
Mean Velocity In Feet Per Second

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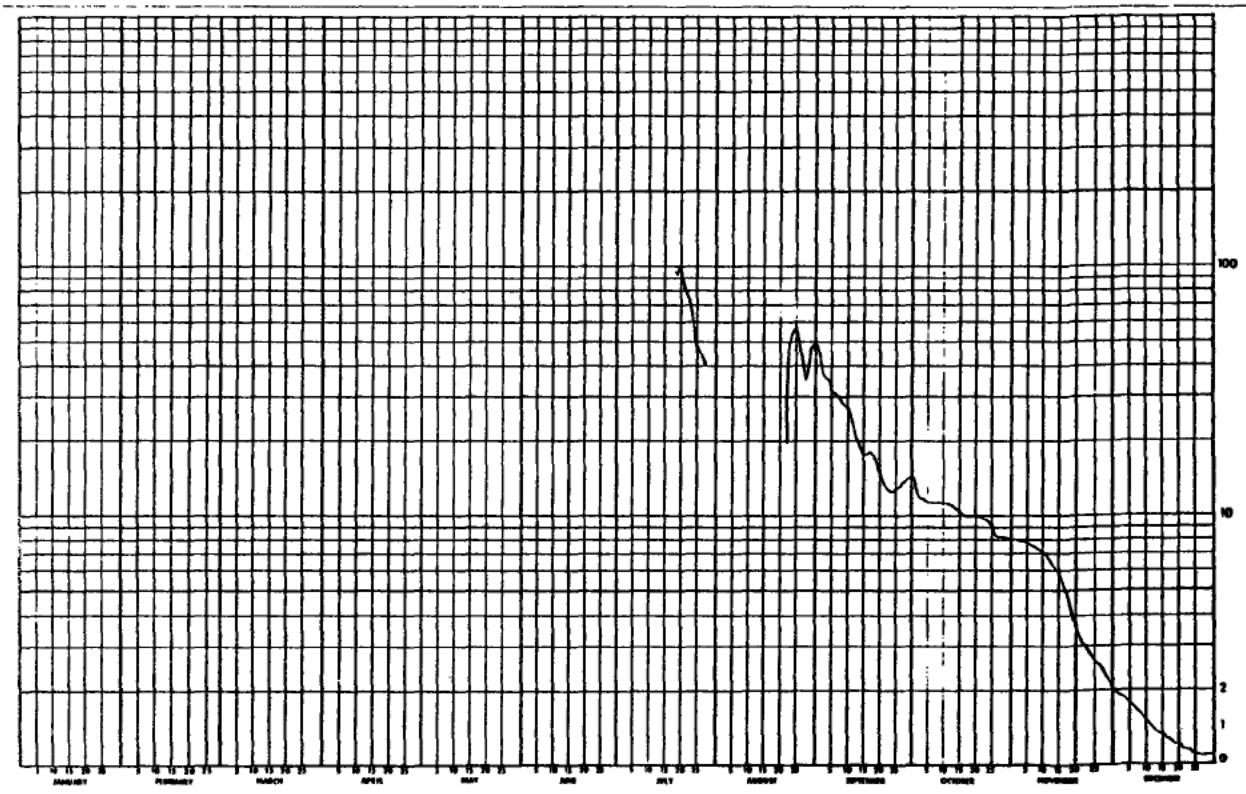
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	---	49.4	13.7	8.1 B	1.9 B	1
2	---	---	---	---	---	---	---	---	41.6	12.4	8.0 B	1.8 B	2
3	---	---	---	---	---	---	---	---	36.5	11.7	8.0 B	1.7 B	3
4	---	---	---	---	---	---	---	---	35.6	11.7	7.9 B	1.6 B	4
5	---	---	---	---	---	---	---	---	31.8	11.5	7.8 B	1.5 B	5
6	---	---	---	---	---	---	---	---	31.3	11.4	7.7 B	1.4 B	6
7	---	---	---	---	---	---	---	---	31.0	11.4	7.5 B	1.3 B	7
8	---	---	---	---	---	---	---	---	30.8	11.4	7.4 B	1.2 B	8
9	---	---	---	---	---	---	---	---	27.7	11.4	7.2 B	1.1 B	9
10	---	---	---	---	---	---	---	---	27.0	11.2	7.0 B	1.0 B	10
11	---	---	---	---	---	---	---	---	25.0	11.2	6.8 B	0.90 B	11
12	---	---	---	---	---	---	---	---	22.2	11.2	6.6 B	0.80 B	12
13	---	---	---	---	---	---	---	---	20.6	11.1	6.4 B	0.70 B	13
14	---	---	---	---	---	---	---	---	19.1	10.6	6.0 B	0.70 B	14
15	---	---	---	---	---	---	---	---	17.9	10.3	5.7 B	0.60 B	15
16	---	---	---	---	---	---	---	---	17.5	9.9	5.3 B	0.60 B	16
17	---	---	---	---	---	---	---	---	18.1	9.8	4.9 B	0.50 B	17
18	---	---	---	---	---	---	95.9 A	---	17.9	9.8	4.4 B	0.50 B	18
19	---	---	---	---	---	---	92.2	---	16.8	9.7	4.0 B	0.40 B	19
20	---	---	---	---	---	---	101	---	15.2	9.7	3.6 B	0.40 B	20
21	---	---	---	---	---	---	84.8	19.8 A	14.1	9.7	3.2 B	0.30 B	21
22	---	---	---	---	---	---	77.8	20.3	13.1	9.7	3.1 B	0.30 B	22
23	---	---	---	---	---	---	69.9	47.1	12.7	9.6	2.9 B	0.30 B	23
24	---	---	---	---	---	---	54.6	52.3	12.5	9.5	2.7 B	0.20 B	24
25	---	---	---	---	---	---	47.8	55.9	12.8	9.2	2.6 B	0.20 B	25
26	---	---	---	---	---	---	45.2	51.4	13.0	8.2	2.5 B	0.20 B	26
27	---	---	---	---	---	---	40.6 A	43.6	13.4	8.2	2.3 B	0.20 B	27
28	---	---	---	---	---	---	---	35.1	13.8	8.2	2.2 B	0.20 B	28
29	---		---	---	---	---	---	36.1	14.2	8.2	2.1 B	0.20 B	29
30	---		---	---	---	---	---	48.5	14.4	8.0	2.0 B	0.20 B	30
31	---		---		---		---	49.2		8.0		0.20 B	31
TOTAL	---	---	---	---	---	---	---	---	665.4	317.0	155.9	23.10	TOTAL
MEAN	---	---	---	---	---	---	---	---	22.2	10.3	5.2	0.75	MEAN
AC-FT	---	---	---	---	---	---	---	---	1320	630	309	45.8	AC-FT
MAX	---	---	---	---	---	---	---	---	49.4	13.7	8.1	1.9	MAX
MIN	---	---	---	---	---	---	---	---	12.5	8.0	2.0	0.20	MIN

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 27 50 N
LONG 111 39 20 W

A-MANUAL GAUGE
B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA
JAN 12 1977 PAGE 7
CALGARY, ALTA.

PIERRE RIVER NEAR FORT MACKAY

STATION NO. 07DA013

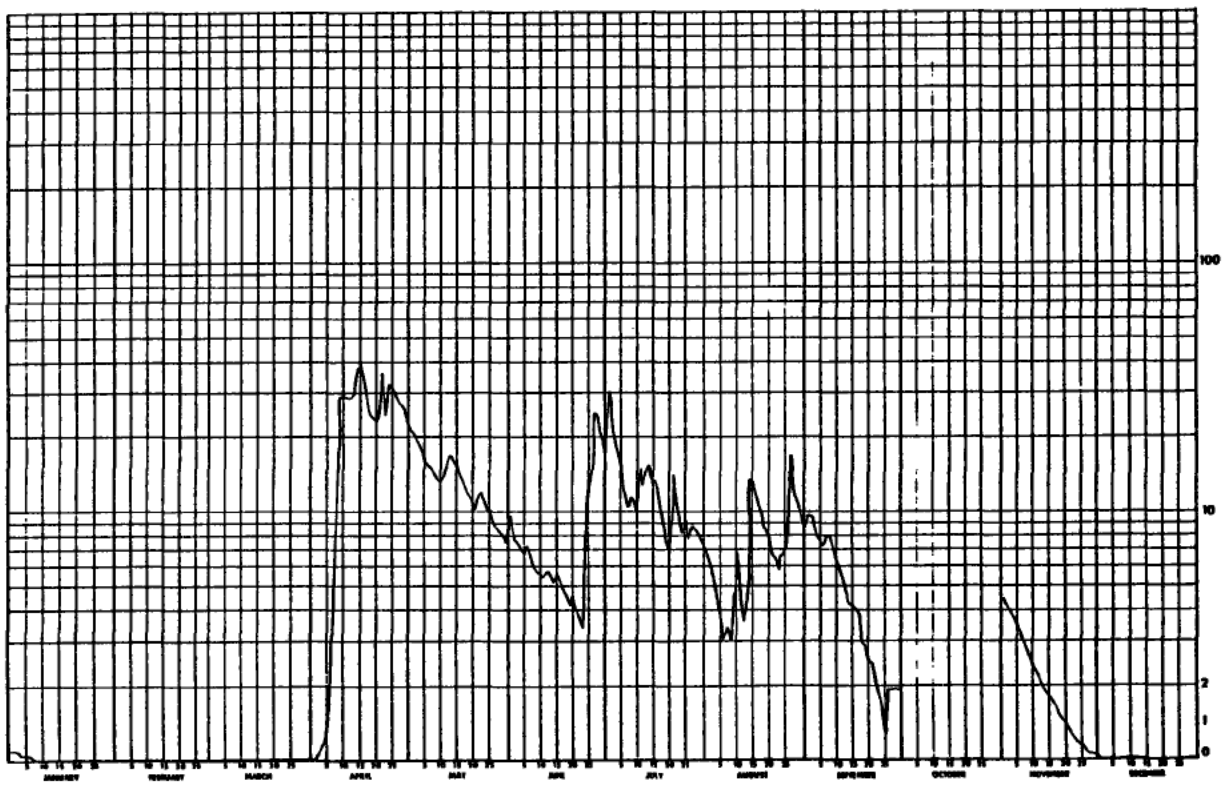
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	.20 B	0 B	0 B	0 B	21.3	9.5	24.9	6.7	8.6		4.4 B	0 B	1
2	.20 B	0 B	0 B	.10 B	20.2	7.8	31.5	6.2	9.7		4.2 B	0 B	2
3	.10 B	0 B	0 B	.20 B	19.4	7.8	23.0	5.1	9.3		4.0 B	0 B	3
4	.10 B	0 B	0 B	.30 B	18.0	7.0	17.8	4.2	8.2		3.7 B	0 B	4
5	.10 B	0 B	0 B	.40 B	16.3	6.6	14.9	3.5	7.5		3.5 B	0 B	5
6	.10 B	0 B	0 B	2.0 B	15.3	7.1	12.4	3.1	7.2		3.2 B	0 B	6
7	0 B	0 B	0 B	5.6 B	15.1	6.6	10.5	3.4	7.9		3.0 B	0 B	7
8	0 B	0 B	0 B	14.0 B	14.8	5.9	11.3	3.0	8.0		2.8 B	0 B	8
9	0 B	0 B	0 B	29.6 B	13.7	5.7	11.3	4.4	7.1		2.6 B	0 B	9
10	0 B	0 B	0 B	29.0 B	13.3	5.3	10.0	6.9	6.4		2.4 B	0 B	10
11	0 B	0 B	0 B	27.5 B	13.5	5.6	14.9	4.9	5.6		2.3 B	0 B	11
12	0 B	0 B	0 B	23.0 B	15.9	5.8	12.7	3.5	5.0		2.1 B	0 B	12
13	0 B	0 B	0 B	28.4 B	16.5	5.9	14.4	4.0	4.3		2.0 B	0 B	13
14	0 B	0 B	0 B	32.5 B	15.5	5.2	15.5	13.2	4.3		1.8 B	0 B	14
15	0 B	0 B	0 B	41.9 B	14.6	5.6	13.0	13.7	4.3		1.6 B	0 B	15
16	0 B	0 B	0 B	38.0 B	13.6	5.3	13.5	12.8	4.0		1.4 B	0 B	16
17	0 B	0 B	0 B	26.0 B	13.0	4.7	11.5	11.0	3.8 A		1.2 B	0 B	17
18	0 B	0 B	0 B	25.0 B	12.3	4.4	9.4	8.8	2.7 A		1.0 B	0 B	18
19	0 B	0 B	0 B	23.6 B	11.4	4.2	7.6	8.5	2.7 A		.80 B	0 B	19
20	0 B	0 B	0 B	22.8 B	10.6	4.6	6.7	7.8	2.3 A		.70 B	0 B	20
21	0 B	0 B	0 B	24.0 B	10.2	4.0	10.1	6.7	2.3 A		.60 B	0 B	21
22	0 B	0 B	0 B	36.4	11.5	3.8	13.6	6.5	1.7 A		.50 B	0 B	22
23	0 B	0 B	0 B	24.8	12.1	3.4	9.7	5.7	1.7 A		.40 B	0 B	23
24	0 B	0 B	0 B	31.1	10.4	9.2	8.1	6.6	1.4 A		.30 B	0 B	24
25	0 B	0 B	0 B	32.0	9.9	13.2	9.8	6.7	.60 A		.30 B	0 B	25
26	0 B	0 B	0 B	30.3	9.3	15.3	7.7	7.3	1.9 A		.20 B	0 B	26
27	0 B	0 B	0 B	27.5	8.6	25.1	8.2	16.7	1.9 A		.10 B	0 B	27
28	0 B	0 B	0 B	25.1	8.3	24.2	8.7	11.5	1.9 E		.10 B	0 B	28
29	0 B	0 B	0 B	26.7	8.2	21.2	8.4	10.8	1.9 E		.10 B	0 B	29
30	0 B		0 B	22.2	7.4	17.2	7.9	9.4	1.9 E		.04 B	0 B	30
31	0 B		0 B		7.9		7.4	8.7				0 B	31
TOTAL	.80	0	0	646.00	407.3	256.3	386.4	231.3	136.10		51.34	0	TOTAL
MEAN	.03	0	0	21.5	13.1	8.5	12.5	7.5	4.5		1.7	0	MEAN
AC-FT	1.6	0	0	1280	808	508	766	459	270		102	0	AC-FT
MAX	.20	0	0	41.9	21.3	25.1	31.5	16.7	9.7		4.4	0	MAX
MIN	0	0	0	0	7.4	3.4	6.7	3.8	.60		.04	0	MIN

SUMMARY FOR THE MONTHS JAN TO SEP
MEAN DISCHARGE, 7.5 CFS
TOTAL DISCHARGE, 4090 AC-FT
MAXIMUM DAILY DISCHARGE, 41.9 CFS ON APR 15
MINIMUM DAILY DISCHARGE, 0 CFS ON JAN 7

MAXIMUM INSTANTANEOUS DISCHARGE, CFS AT ON NOT DETERMINED

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



5.29 POPLAR CREEK NEAR FORT McMURRAY

STATION NAME: Poplar Creek near Fort McMurray

STATION NUMBER: 07DA007

LOCATION: Latitude: 56°54'50" Longitude: 111°27'35"

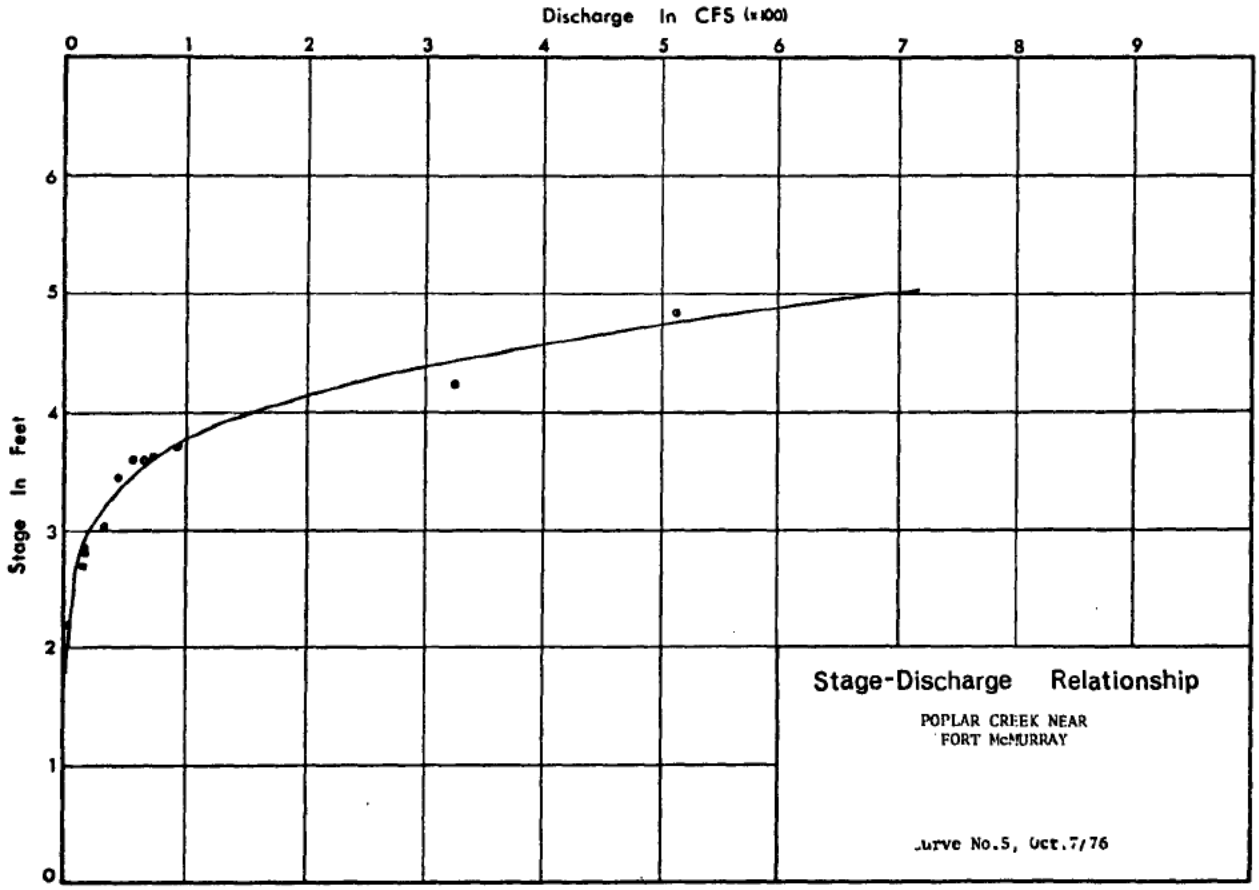
NE24-91-10-W4

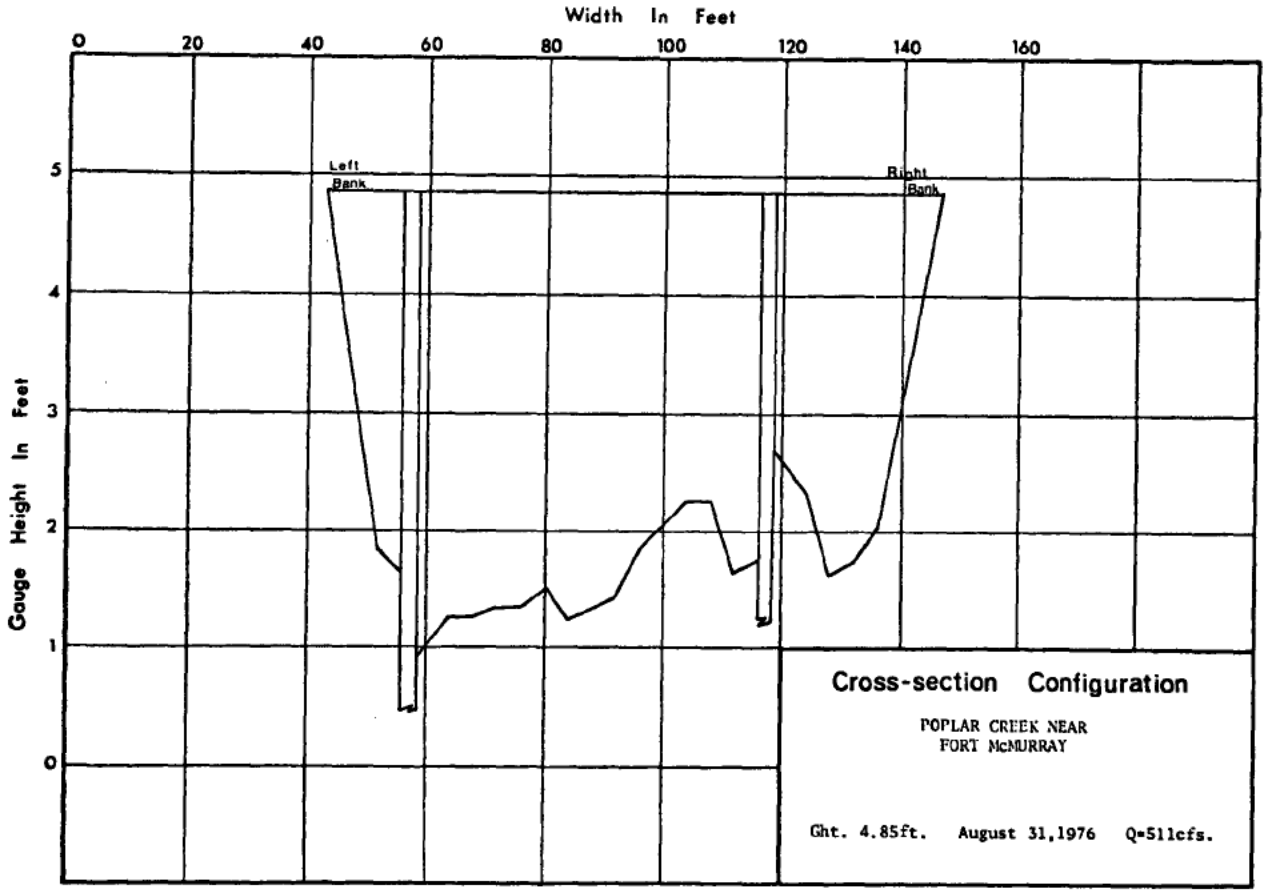
DRAINAGE AREA: 58.3 square miles (151 km^2)

PERIOD OF RECORD: This station was established on November 10, 1972. Miscellaneous discharge data is available during 1972 and continuous discharge data is available from January,1973 to December,1976.

SITE DESCRIPTION: The gauge was located on the left bank 160 feet (49 m) above Highway 63 until August 14, 1975 at which time the gauge was removed due to construction activities in the channel. The gauge was re-located on April 16, 1976, 200 feet (60 m) below the new bridge on the right bank. This station is equipped with a float operated Stevens A-71 water level recorder.
Open water measurements were made by wading or from the cableway prior to the location change and are presently made by wading or from the highway bridge.

GENERAL: Channel improvements were made to allow for the diversion of the Beaver River. Water from this diversion appears to have started to flow down the Poplar River in mid July, 1976.


Discharge In CFS (x100)
0
1
2
3
4
5
6
7
8
9
Stage In Feet
0
1
2
3
4
5
6
Stage-Discharge Relationship
POPLAR CREEK NEAR
FORT McMURRAY
Curve No.5, Oct.7/76


Width In Feet
0
20
40
60
80
100
120
140
160
Gauge Height In Feet
0
1
2
3
4
5
Left Bank
Right Bank
Cross-section Configuration
POPLAR CREEK NEAR
FORT McMURRAY
Ght. 4.85ft. August 31,1976 Q=511cfs.

WATER SURVEY OF CANADA
MAY 15 1974 PAGE 282
CALGARY, ALTA.

POPLAR CREEK NEAR FORT MCMURRAY

STATION NO. 07DA007

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1973

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1.1 B	0.4 B	2.9 B	16.7 B	26.1	79.8	71.8	8.0	9.8	16.4	31.8	3.2 B	1
2	1.2 B	0.3 B	3.3 B	17.1 B	23.5	144	57.5	7.2	8.4	16.9	27.8 B	3.1 B	2
3	1.2 B	0.3 B	3.8 B	17.6 B	24.0	141	43.4	8.8	7.6	17.4	22.8 B	3.1 B	3
4	1.1 B	0.3 B	4.2 B	18.8 B	23.5	126	35.7	7.6	7.2	16.4	17.8 B	3.0 B	4
5	1.0 B	0.3 B	4.7 B	14.0 B	22.5	112	33.3	7.4	6.5	15.8	13.9 B	2.9 B	5
6	0.9 B	0.3 B	5.1 B	10.8 B	22.8	99.8	29.7	47.5	5.9	17.1	11.5 B	2.9 B	6
7	0.9 B	0.3 B	5.5 B	13.4 B	20.5	99.5	43.4	105	5.6	21.1	11.8 B	2.8 B	7
8	0.8 B	0.3 B	6.0 B	16.8 B	22.8	136	63.5	117	5.4	44.3	10.2 B	2.7 B	8
9	0.7 B	0.3 B	6.4 B	20.2 B	22.8	154	55.8	98.6	5.2	49.5	9.7 B	2.7 B	9
10	0.6 B	0.3 B	6.9 B	23.6 B	18.5	153	43.8	77.6	4.8	48.5	9.1 B	2.6 B	10
11	0.6 B	0.3 B	7.3 B	27.0 B	18.4	134	71.8	61.5	3.9	46.5	8.5 B	2.5 B	11
12	0.5 B	0.3 B	7.8 B	30.4 B	17.4	112	118	49.8	5.7	44.7	8.8 B	2.5 B	12
13	0.5 B	0.3 B	8.2 B	42.4 B	14.4	92.8	118	39.1	6.6	40.4	7.5 B	2.4 B	13
14	0.5 B	0.3 B	8.7 B	44.3 B	11.8	78.7	95.3	31.4	6.3	36.5	7.8 B	2.3 B	14
15	0.5 B	0.3 B	9.1 B	46.2 B	9.2	112	76.4	24.8	6.8	32.2	6.7 B	2.3 B	15
16	0.5 B	0.2 B	9.5 B	48.1 B	7.9	178	68.5	20.5	5.9	29.7	6.4 B	2.2 B	16
17	0.5 B	0.2 B	10.0 B	50.1 B	6.6	194	65.8	20.2	5.6	28.4	6.2 B	2.2 B	17
18	0.5 B	0.2 B	10.4 B	52.0 B	5.8	169	58.8	19.9	5.7	27.5	5.7 B	2.1 B	18
19	0.4 B	0.2 B	10.9 B	53.9 B	4.8	141	44.7	18.6	5.4	25.8	5.4 B	2.0 B	19
20	0.4 B	0.2 B	11.3 B	50.7 B	4.2	121	36.1	16.1	5.2	24.5	5.1 B	2.0 B	20
21	0.4 B	0.2 B	11.8 B	47.5 B	8.8	96.9	28.8	14.0	4.8	23.3	4.9 B	1.9 B	21
22	0.4 B	0.2 B	12.2 B	44.3 B	8.8	76.6	23.9	12.4	4.8	23.3	4.6 B	1.8 B	22
23	0.4 B	0.2 B	12.7 B	41.2 B	7.5	59.2	22.6	11.2	4.8	25.4	4.3 B	1.8 B	23
24	0.4 B	0.6 B	13.1 B	38.0 B	5.3	49.0	21.7	11.2	7.2	24.2	4.1 B	1.7 B	24
25	0.4 B	1.1 B	13.6 B	34.8 B	3.6	64.5	18.6	12.7	12.1	25.4	3.9 B	1.6 B	25
26	0.4 B	1.5 B	14.0 B	31.2	2.1	65.5	17.1	13.3	11.8	26.7	3.7 B	1.6 B	26
27	0.4 B	2.8 B	14.4 B	28.1	1.9	59.5	14.9	11.2	12.1	25.4	3.5 B	1.5 B	27
28	0.4 B	2.4 B	14.9 B	28.6	2.7	47.8	14.0	9.9	12.1	25.8	3.4 B	1.4 B	28
29	0.4 B		15.3 B	27.1	26.6	82.9	11.5	9.3	12.1	26.7	3.3 B	1.4 B	29
30	0.4 B		15.8 B	26.1	36.8	81.8	10.2	9.6	12.4	30.1	3.3 B	1.3 B	30
31	0.4 B		16.2 B		37.3		8.7	10.9		32.7		1.2 B	31
TOTAL	19.0	13.8	296.8	959.4	469.9	3259.7	1419.6	910.3	216.3	898.6	266.9	68.7	TOTAL
MEAN	0.61	0.49	9.5	32.0	15.8	109	45.8	29.4	7.2	28.7	8.9	2.2	MEAN
AC-FT	37.7	27.4	587	1900	924	6470	2820	1810	429	1770	529	136	AC-FT
MAX	1.3	2.4	16.2	53.9	37.3	194	118	117	12.4	49.5	31.8	3.2	MAX
MIN	0.4	0.2	2.9	10.8	1.9	47.8	8.7	7.2	3.9	15.8	3.3	1.2	MIN

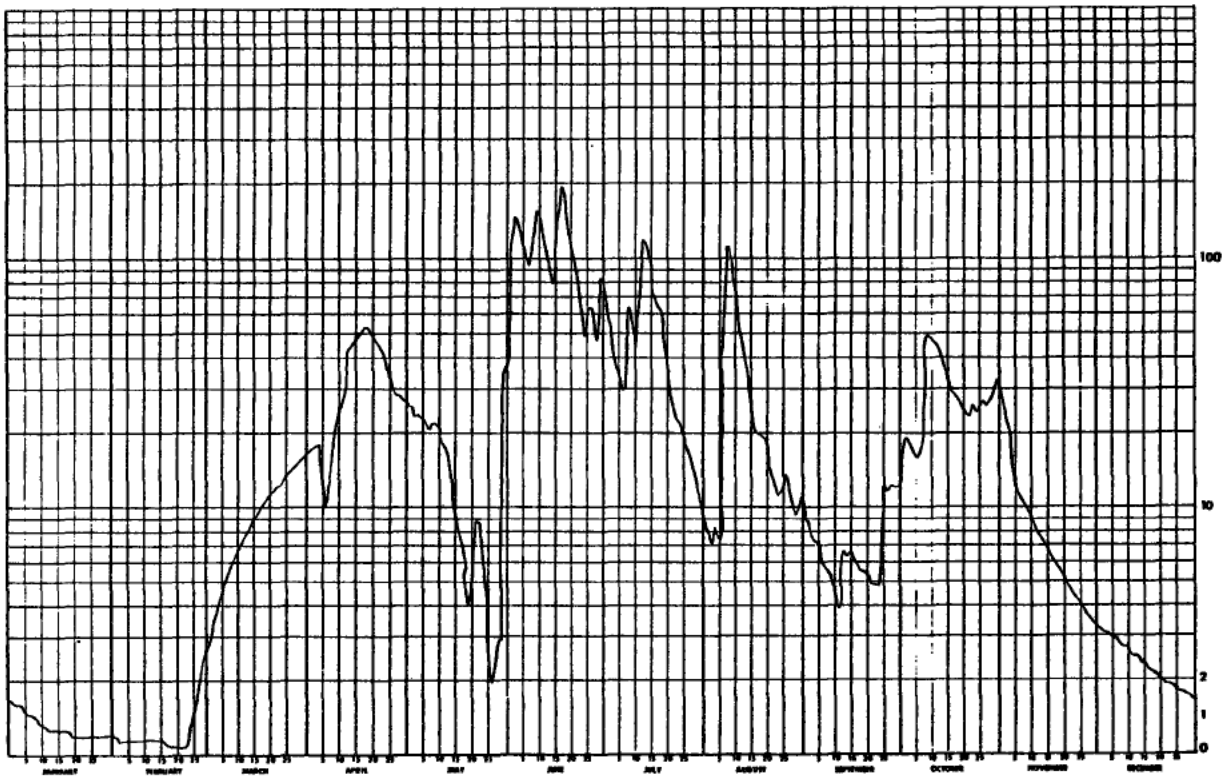
SUMMARY FOR THE YEAR 1973

MEAN DISCHARGE, 24.1 CFS
TOTAL DISCHARGE, 17400 AC-FT
MAXIMUM DAILY DISCHARGE, 194 CFS ON JUN 17
MINIMUM DAILY DISCHARGE, 0.2 CFS ON FEB 16

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 54 58 N
LONG 111 27 58 W

A-MANUAL GAUGE
B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA — POPLAR CREEK NEAR FORT MCMURRAY — STATION NO. 07CA007
JUL 14 1975 PAGE 002
CALGARY, ALTA.
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1974

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1.2 B	0.30 B	0.20 B	0.70 B	92.7	24.7	17.4	37.5	7.7	4.7	4.8 B	2.8 B	1
2	1.1 B	0.30 B	0.20 B	0.80 B	84.0	24.6	15.9	35.4	7.5	5.1	4.9 B	2.7 B	2
3	1.0 B	0.30 B	0.20 B	0.90 B	76.2	27.1	14.8	30.9	8.5	5.5	4.7 B	2.6 B	3
4	1.1 B	0.30 B	0.20 B	1.0 B	70.0	26.3	15.1	25.7	8.6	5.9	4.6 B	2.5 B	4
5	0.90 B	0.30 B	0.20 B	2.0 B	66.2	25.5	16.1	21.4	4.6	6.3	4.6 B	2.5 B	5
6	0.80 B	0.30 B	0.20 B	2.5 B	63.4	29.3	15.4	16.9	5.8	7.2	4.5 B	2.4 B	6
7	0.80 B	0.30 B	0.20 B	1.5 B	61.0	27.8	14.7	14.5	7.7	6.6	4.4 B	2.4 B	7
8	0.70 B	0.30 B	0.20 B	5.8 B	58.8	24.8	13.7	11.6	7.5	6.5	4.4 B	2.3 B	8
9	0.60 B	0.30 B	0.20 B	7.0 B	105	40.2	15.4	9.8	6.8	6.5	4.3 B	2.3 B	9
10	0.60 B	0.30 B	0.20 B	10.0 B	109	58.1	17.6	8.8	5.7	6.4	4.2 B	2.2 B	10
11	0.50 B	0.30 B	0.30 B	17.0 B	107	66.9	16.5	8.9	4.8	6.3	4.2 B	2.2 B	11
12	0.50 B	0.30 B	0.30 B	38.0 B	94.0	58.3	29.7	7.3	4.9	6.3	4.1 B	2.1 B	12
13	0.50 B	0.30 B	0.30 B	47.0 B	84.3	51.5	36.5	6.4	4.9	6.7	4.0 B	2.1 B	13
14	0.50 B	0.30 B	0.30 B	74.0 B	75.5	42.4	42.4	5.4	5.5	6.1	3.9 B	2.0 B	14
15	0.50 B	0.30 B	0.30 B	100 B	69.8	37.7	41.0	4.7	7.0	6.0	3.9 B	2.0 B	15
16	0.50 B	0.30 B	0.40 B	126 B	59.1	34.6	38.5	4.8	3.4	6.0	3.8 B	1.9 B	16
17	0.50 B	0.30 B	0.40 B	150 B	51.8	38.9	35.8	7.0	3.0	5.9	3.7 B	1.9 B	17
18	0.50 B	0.30 B	0.40 B	165 B	46.1	36.8	31.2	8.3	2.7	5.8	3.7 B	1.8 B	18
19	0.50 B	0.30 B	0.40 B	166 B	49.7	33.3	27.4	7.8	2.8	5.8	3.6 B	1.8 B	19
20	0.50 B	0.30 B	0.40 B	166 B	39.5	29.8	26.1	6.8	2.2	5.7	3.5 B	1.7 B	20
21	0.40 B	0.30 B	0.40 B	167 B	36.6	27.7	22.7	5.3	2.9	5.6	3.5 B	1.7 B	21
22	0.40 B	0.30 B	0.40 B	173	34.3	26.3	20.5	4.4	2.3	5.6	3.4 B	1.6 B	22
23	0.40 B	0.30 B	0.40 B	183	32.3	25.7	17.2	4.2	1.7	5.5	3.3 B	1.6 B	23
24	0.40 B	0.30 B	0.40 B	188	29.5	23.8	14.2	5.7	1.9	5.4	3.2 B	1.5 B	24
25	0.40 B	0.30 B	0.50 B	178	25.3	22.8	11.5	12.2	2.3	5.3	3.2 B	1.5 B	25
26	0.40 B	0.30 B	0.50 B	164	24.5	19.8	9.8	11.7	2.7	5.3	3.1 B	1.4 B	26
27	0.40 B	0.30 B	0.50 B	143	22.8	17.6	8.3	10.2	3.1	5.2 B	3.0 B	1.4 B	27
28	0.40 B	0.30 B	0.40 B	132	23.7	16.1	7.6	9.5	3.5	5.1 B	3.0 B	1.3 B	28
29	0.30 B		0.50 B	128	24.2	18.7	8.0	9.5	3.9	5.1 B	2.9 B	1.3 B	29
30	0.30 B		0.60 B	186	29.2	18.3	8.6	10.9	4.3	5.0 B	2.9 B	1.2 B	30
31	0.30 B		0.50 B		26.4		24.2	10.0		4.9 B		1.2 B	31
TOTAL	17.90	5.40	10.40	2617.40	1791.1	893.6	642.3	373.5	127.0	178.8	115.1	59.9	TOTAL
MEAN	0.57	0.21	0.35	87.0	57.8	29.8	20.4	12.0	4.2	5.8	3.8	1.9	MEAN
AC-FT	35.5	11.1	21.4	5210	3560	1770	1250	741	252	355	228	119	AC-FT
MAX	1.2	0.30	0.60	188	109	66.9	42.4	37.5	8.7	7.2	4.8	2.8	MAX
MIN	0.30	0.20	0.20	0.70	22.7	16.1	7.6	4.2	1.7	4.7	2.9	1.2	MIN

SUMMARY FOR THE YEAR 1974

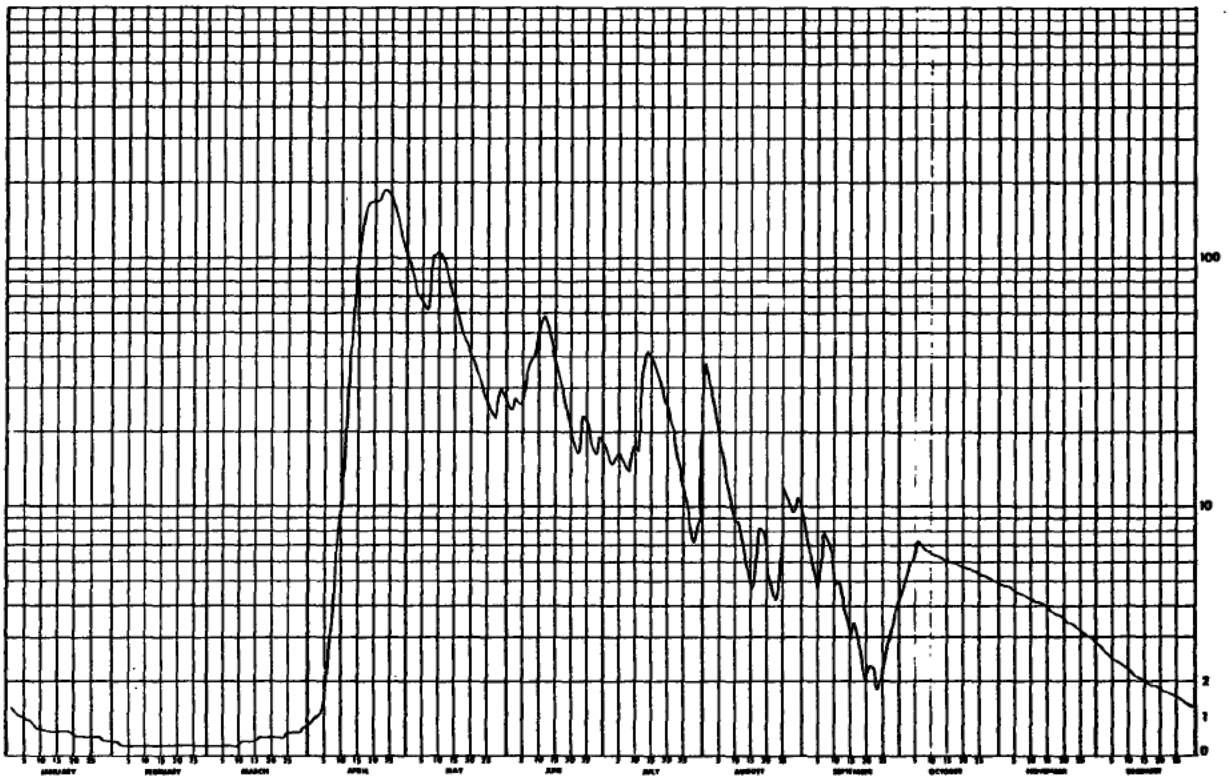
MEAN DISCHARGE, 14.4 CFS
TOTAL DISCHARGE, 14601 AC-FT
MAXIMUM DAILY DISCHARGE, 188 CFS ON APR 24
MINIMUM DAILY DISCHARGE, 0.20 CFS ON FEB 3

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 54 50 N
LONG 111 27 58 W

B-ICE CONDITIONS

NATURAL FLOW

MAXIMUM INSTANTANEOUS DISCHARGE
234 CFS AT 0000 MST ON APR 22



WATER SURVEY OF CANADA
JUN 02 1976 PAGE 147
CALGARY, ALTA.

POPLAR CREEK NEAR FORT MCMURRAY

STATION NO. 07DA007

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1.1 B	0.65 B	0.65 B	0.70 B	35.0 E	37.8	95.2	18.3	78.0 E	36.0 E	14.0 E	2.5 B	1
2	1.1 B	0.65 B	0.65 B	0.80 B	40.0 E	39.4	76.0	17.6	88.0 E	34.0 E	14.0 E	2.5 B	2
3	1.0 B	0.65 B	0.65 B	0.90 B	45.0 E	35.6	56.8	29.7	94.0 E	32.0 E	13.0 E	2.6 B	3
4	1.0 B	0.65 B	0.65 B	0.90 B	42.0 E	38.2	45.3	37.0	95.5 A	30.0 E	12.0 E	2.3 B	4
5	0.90 B	0.65 B	0.65 B	0.80 B	40.0 E	38.4	38.9	28.5	90.0 E	32.0 E	11.5 E	2.2 B	5
6	0.80 B	0.65 B	0.65 B	0.70 B	38.0 E	38.2	29.3	25.0	80.0 E	35.0 E	10.0 B	2.1 B	6
7	0.80 B	0.65 B	0.65 B	0.70 B	36.0 E	36.4	21.5	18.9	76.0 E	39.0 E	9.4 B	2.0 B	7
8	0.80 B	0.65 B	0.65 B	0.70 B	34.0 E	33.2	17.0	15.7	64.0 E	45.0 E	9.0 B	1.9 B	8
9	0.72 B	0.65 B	0.65 B	0.90 B	32.0 E	41.8	13.5	15.3	56.0 E	42.0 E	8.6 B	1.7 B	9
10	0.80 B	0.65 B	0.65 B	1.0 B	30.0 E	40.5	11.5	14.0	52.0 E	40.0 E	8.0 B	1.5 B	10
11	0.80 B	0.65 B	0.65 B	1.3 B	31.0 E	43.6	9.1	13.3	46.0 E	38.0 E	7.4 B	1.4 B	11
12	0.90 B	0.65 B	0.65 B	1.6 B	46.0 E	47.1	8.2	15.1	42.0 E	36.0 E	6.9 B	1.2 B	12
13	0.80 B	0.65 B	0.65 B	2.0 B	50.0 E	40.3	7.4	18.8	39.0 E	34.0 E	6.8 B	1.1 B	13
14	0.80 B	0.65 B	0.65 B	2.1 B	43.0 E	35.9	17.9	19.2 A	37.0 E	33.0 E	6.2 B	0.90 B	14
15	0.84 B	0.65 B	0.65 B	2.3 B	41.0 E	32.2	25.1	14.0 E	35.0 E	31.0 E	5.8 B	0.80 B	15
16	0.70 B	0.65 B	0.65 B	2.6 B	39.0 E	35.9	36.4	12.0 E	33.0 E	30.0 E	5.6 B	0.70 B	16
17	0.70 B	0.65 B	0.65 B	3.0 B	38.0 E	37.2	96.9	14.0 E	31.0 E	29.0 E	5.2 B	0.60 B	17
18	0.64 B	0.65 B	0.65 B	3.6 B	36.0 E	33.6	113	12.0 E	29.0 E	27.0 E	5.0 B	0.50 B	18
19	0.64 B	0.65 B	0.65 B	7.4 B	34.0 E	29.4	109	10.0 E	28.0 E	26.0 E	4.8 B	0.40 B	19
20	0.60 B	0.65 B	0.65 B	15.9 B	33.0 E	25.2	85.9	11.0 E	26.0 E	25.0 E	4.5 B	0.40 B	20
21	0.60 B	0.65 B	0.65 B	31.7 B	32.0 E	21.9	72.6	13.0 E	25.0 E	24.0 E	4.2 B	0.30 B	21
22	0.64 B	0.65 B	0.65 B	34.3 B	30.0 E	18.6	58.2	16.9 A	24.0 E	23.0 E	4.0 B	0.30 B	22
23	0.65 B	0.65 B	0.65 B	34.5 B	27.0 E	16.3	51.5	19.0 E	22.0 E	22.0 E	3.8 B	0.20 B	23
24	0.65 B	0.65 B	0.65 B	25.2 B	48.0 E	18.6	41.3	23.0 E	20.0 E	21.0 E	3.6 B	0.20 B	24
25	0.65 B	0.65 B	0.65 B	17.9 B	60.0 E	20.0	35.6	27.4 A	23.0 E	20.0 E	3.4 B	0.20 B	25
26	0.65 B	0.65 B	0.81 B	20.0 E	89.5 A	25.3	26.4	32.0 E	30.5 A	19.0 E	3.2 B	0.10 B	26
27	0.65 B	0.65 B	0.10 B	23.0 E	88.0	81.6	22.2	37.0 E	37.0 E	18.0 E	3.1 B	0.10 B	27
28	0.65 B	0.65 B	0.10 B	25.0 E	75.0	60.6	34.5	44.0 E	42.0 E	17.0 E	2.9 B	0.10 B	28
29	0.65 B		0.20 B	28.0 E	61.2	94.1	32.0	52.0 E	45.0 E	16.0 E	2.8 B	0 B	29
30	0.65 B		0.20 B	32.0 E	51.4	107	25.5	60.0 E	40.0 E	16.0 E	2.6 B	0 B	30
31	0.65 B		0.20 B		42.7		19.9	76.0 E		15.0 E		0 B	31
TOTAL	25.05	1.40	2.15	316.40	1372.6	1171.9	1329.4	761.7	1422.0	895.0	201.5	30.60	TOTAL
MEAN	0.82	0.05	0.07	10.2	44.3	39.1	42.9	24.6	47.4	28.9	6.72	0.99	MEAN
AC-FT	25.9	2.8	4.3	632	2720	2320	2640	1510	2820	1760	400	60.7	AC-FT
MAX	1.1	0.65	0.20	34.3	89.5	107	113	76.0	95.5	45.0	14.0	2.5	MAX
MIN	0.64	0.65	0.65	0.70	29.0	16.3	7.4	10.0	20.0	15.0	2.6	0	MIN

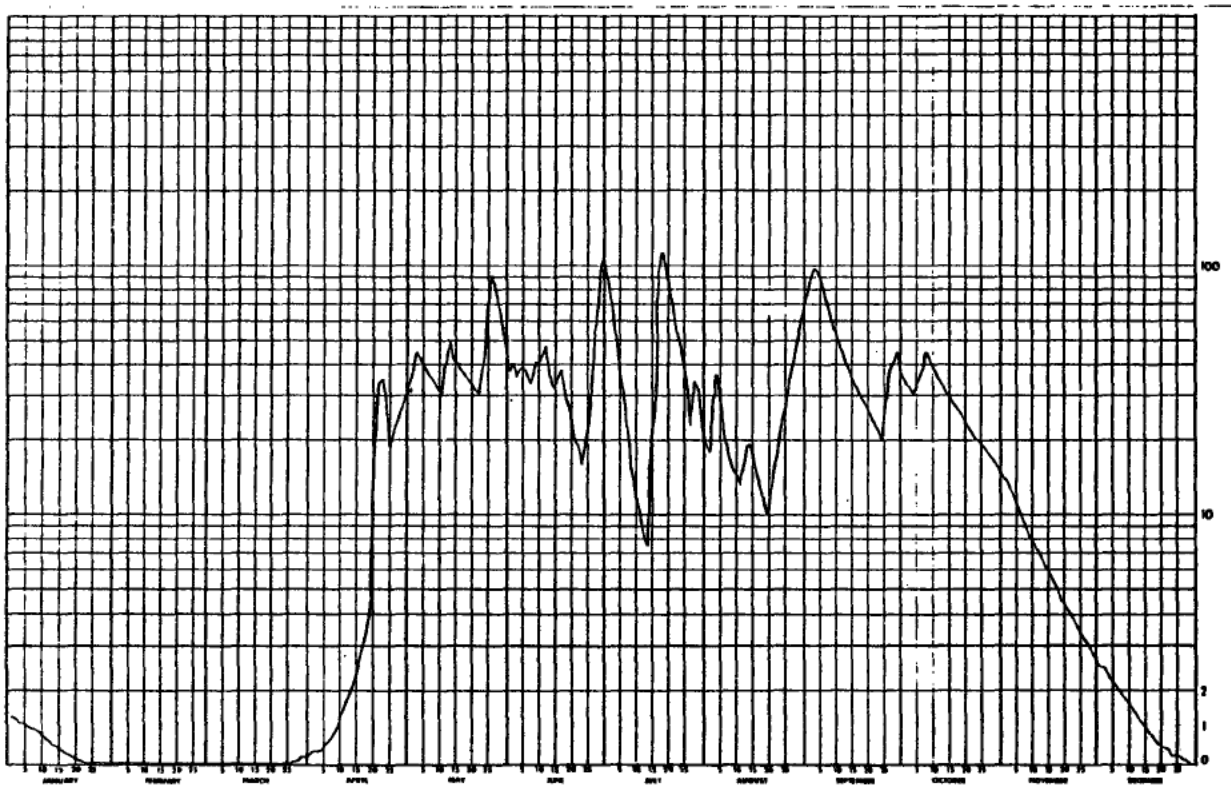
SUMMARY FOR THE YEAR 1975

MEAN DISCHARGE, 26.5 CFS
TOTAL DISCHARGE, 19201 AC-FT
MAXIMUM DAILY DISCHARGE, 113 CFS ON JUL 18
MINIMUM DAILY DISCHARGE, 0 CFS ON DEC 29

TYPE OF GAUGE - RECORDING
LOCATION - LAT 56 54 50 N
LONG 111 27 50 W
DRAINAGE AREA 58.3 SQ MILES

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



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FEB 14 1977 PAGE 8
CALGARY, ALTA.

POPLAR CREEK NEAR FORT MCMURRAY

STATION NO. 07DA007

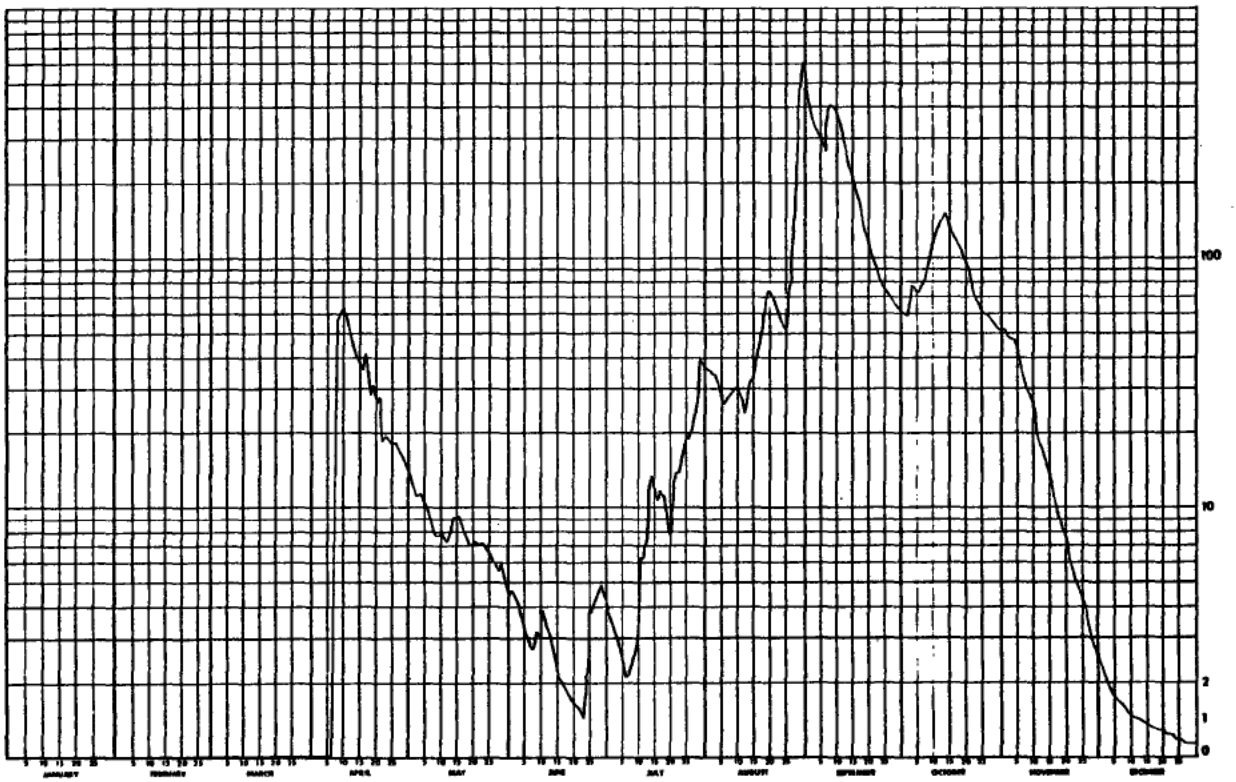
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	0 M	0 B	0 B	0 B	12.6	4.8	3.9	36.5	383	58.6	52.3	2.3 B	1
2	0 B	0 M	0 B	0 B	11.5	4.6	3.7	34.8	354	57.8	48.4	2.1 B	2
3	0 M	0 M	0 B	0 B	11.0	4.0	3.3	34.5	336	76.4	47.4	2.0 B	3
4	0 M	0 B	0 B	0 B	11.3	3.6	2.8	31.3	323	73.9	47.9	1.7 B	4
5	0 M	0 B	0 B	0 B	10.6	3.2	2.4	28.2	292	71.3	44.8 A	1.6 B	5
6	0 B	0 B	0 M	0 B	9.5	3.0	2.1	26.3	266	72.2	38.0 E	1.4 B	6
7	0 M	0 B	0 B	16.0 E	8.8	2.8	2.1	27.3	365	79.9	34.0 E	1.3 B	7
8	0 M	0 M	0 B	55.8 A	7.8	2.7	2.3	28.9	406	89.8	31.0 E	1.2 B	8
9	0 M	0 M	0 B	60.0 E	7.5	3.2	2.7	30.0	398	98.6	28.0 E	1.1 B	9
10	0 B	0 B	0 B	63.4 A	8.0	3.0	2.9	30.1	376	111	25.0 B	1.0 B	10
11	0 M	0 B	0 B	55.0 E	7.6	3.9	6.2	27.7	336	128	22.0 B	.90 B	11
12	0 M	0 M	0 B	49.0 E	7.1	3.4	6.3	23.8	293	135	20.0 B	.90 B	12
13	0 M	0 M	0 B	43.6 A	8.3	3.0	10.9	27.0	255	139	17.5 B	.80 B	13
14	0 B	0 B	0 B	41.0 E	9.2	2.5	13.6	32.3	230	152	16.0 B	.80 B	14
15	0 M	0 B	0 B	38.5 E	9.0	2.2	12.0	32.3	206	137	14.0 B	.70 B	15
16	0 M	0 B	0 B	35.6 A	9.1	2.1	10.7	38.0	185	130	12.5 B	.70 B	16
17	0 M	0 B	0 M	40.4	8.3	2.0	11.7	45.9	164	123	11.0 B	.70 B	17
18	0 M	0 B	0 M	28.0	7.8	1.8	11.3	61.2	140	115	9.4 B	.60 B	18
19	0 M	0 B	0 B	30.1	7.1	1.6	9.0	71.6	126	110	8.8 B	.60 B	19
20	0 B	0 B	0 B	25.7	7.0	1.4	7.7	74.2	113	100	7.6 B	.60 B	20
21	0 B	0 B	0 B	27.4	7.1	1.2	9.1	70.8	99.9	87.5	6.9 B	.50 B	21
22	0 B	0 M	0 B	18.8	7.0	1.2	14.8	65.0	90.1	77.1	6.1 B	.50 B	22
23	0 M	0 B	0 B	19.1	7.1	.95	13.9	60.3	83.7	70.1	5.4 B	.50 B	23
24	0 M	0 B	0 B	18.7	6.7	2.4	16.5	55.2	77.3	66.7	4.8 B	.40 B	24
25	0 M	0 B	0 B	18.1	6.4	3.9	19.3	52.0	74.2	61.1	4.4 B	.40 B	25
26	0 M	0 B	0 B	18.2	6.1	3.7	18.8	76.0	69.5	59.2	4.0 B	.40 B	26
27	0 M	0 M	0 B	17.0	6.1	4.3	20.8	132	67.3	59.5	3.5 B	.30 B	27
28	0 B	0 B	0 B	17.0	5.6	4.8	27.4	213	65.1	58.3	3.1 B	.30 B	28
29	0 B	0 M	0 B	14.8	5.6	4.9	39.3	418	63.0	55.0	2.8 B	.30 B	29
30	0 B		0 M	13.9	4.9	4.3	37.3	611	60.7	52.3	2.5 B	.30 B	30
31	0 M		0 B		4.3		37.1	523		51.5		.30 B	31
TOTAL	0	0	0	764.7	246.2	90.45	381.9	3018.4	6297.8	2756.8	578.7	27.20	TOTAL
MEAN	0	0	0	25.5	7.9	3.0	12.3	97.4	210	88.9	19.3	.88	MEAN
AC-FT	0	0	0	1520	488	179	757	5990	12500	5470	1150	54.0	AC-FT
MAX	0	0	0	63.4	12.6	4.9	39.3	611	406	152	52.3	2.3	MAX
MIN	0	0	0	0	4.3	.95	2.1	23.8	60.7	51.5	2.5	.30	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 38.7 CFS
TOTAL DISCHARGE, 28100 AC-FT
MAXIMUM DAILY DISCHARGE, 611 CFS ON AUG 30
MINIMUM DAILY DISCHARGE, 0 CFS ON JAN 1

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

MAXIMUM INSTANTANEOUS DISCHARGE, 629 CFS AT 1230 MST ON AUG 30



5.30 RICHARDSON RIVER NEAR THE MOUTH

STATION NAME: Richardson River near the Mouth

STATION NUMBER: 07DD002

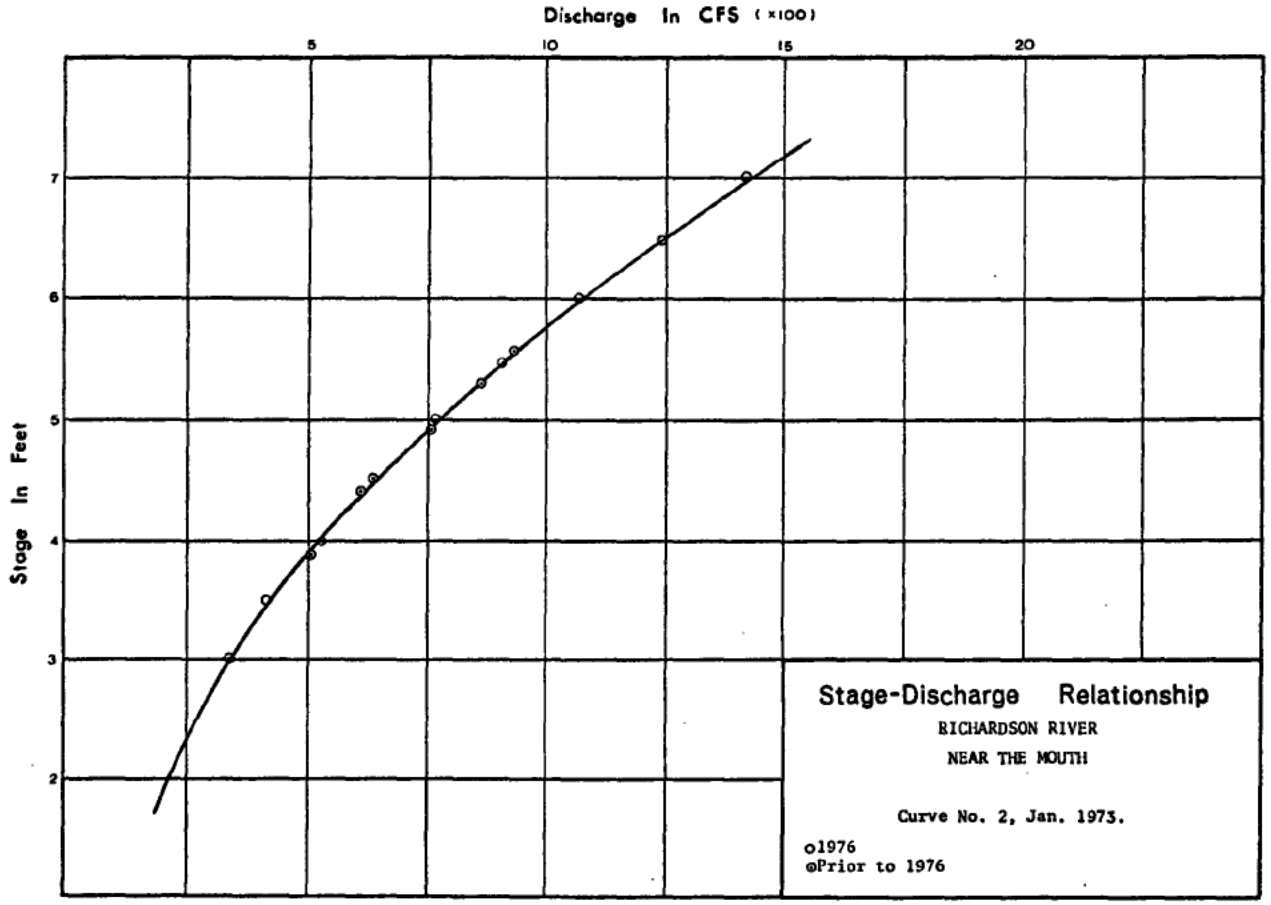
LOCATION: Latitude: 58°21'48" Longitude: 111°14'14"

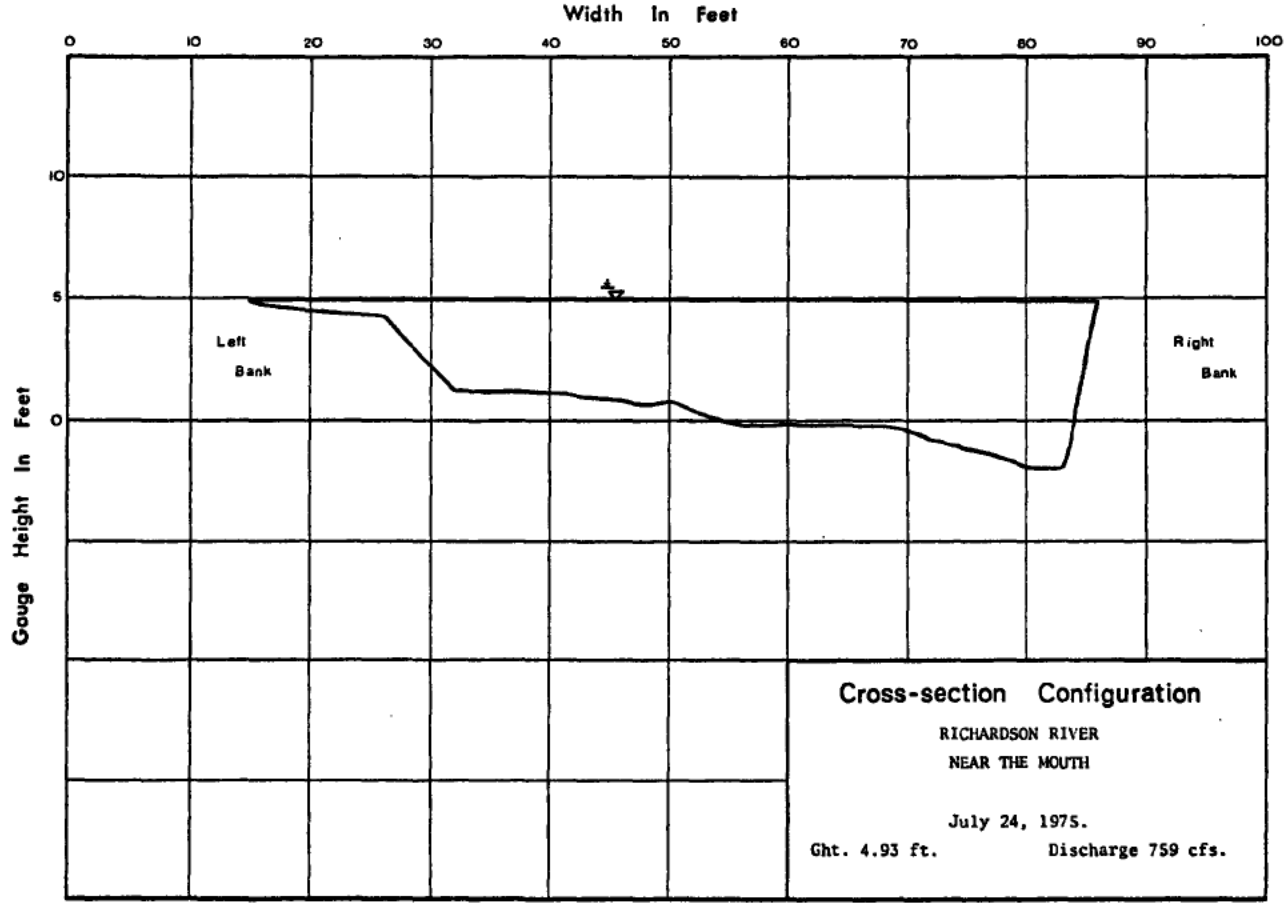
DRAINAGE AREA: 1,140 square miles(2,950 km^2)

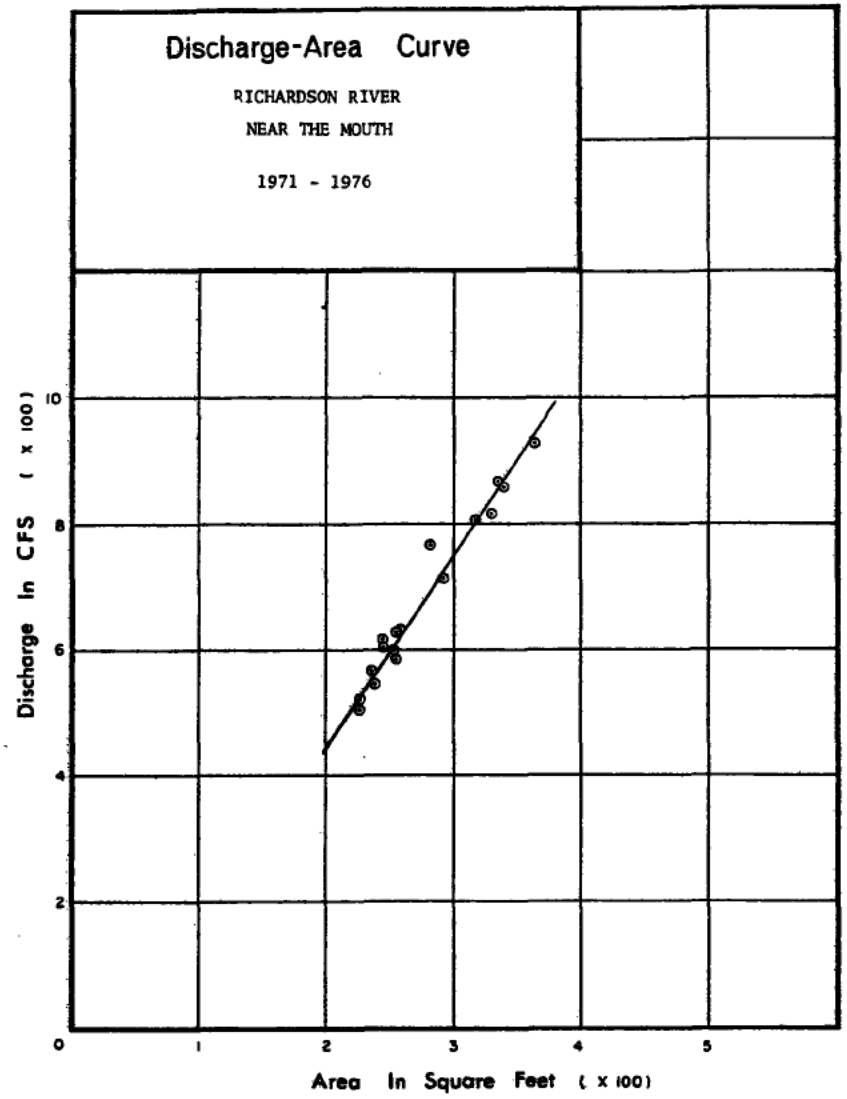
PERIOD OF RECORD: This station was established June 14, 1970. Discharge data is available on a continuous basis to December,1976.

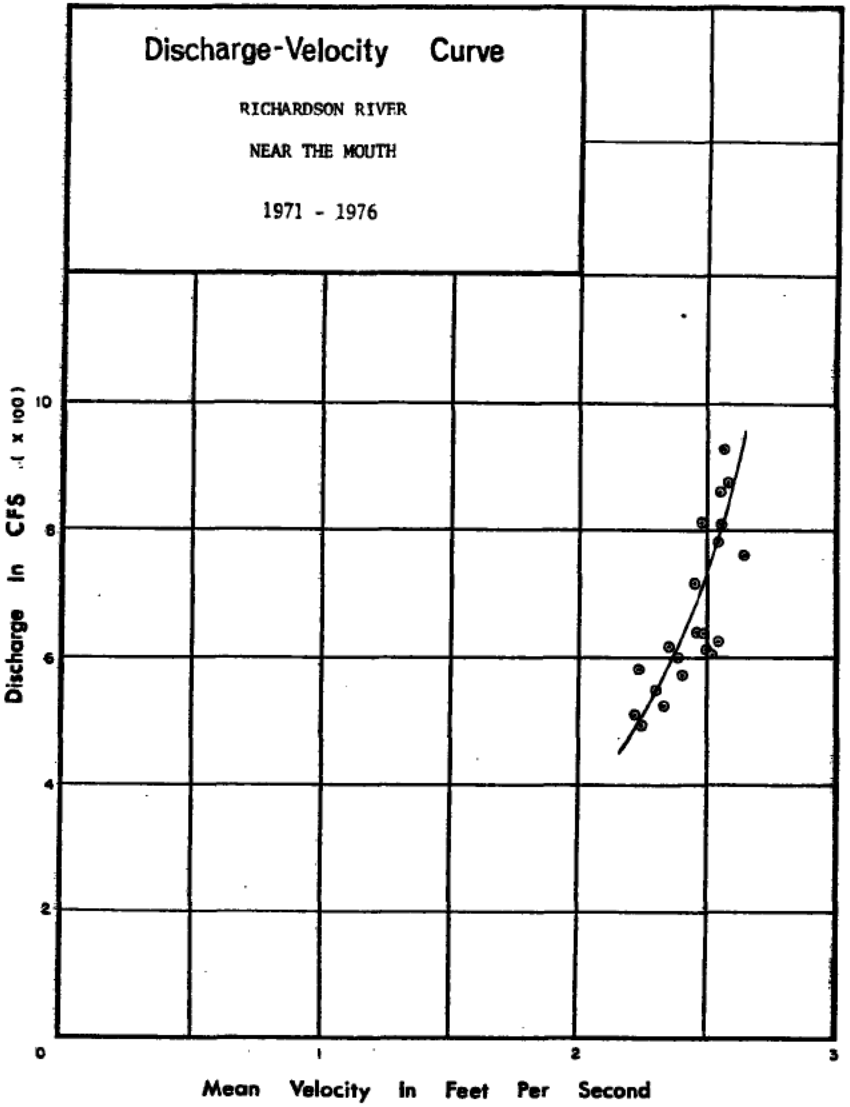
SITE DESCRIPTION: The gauge is located on the right bank approximately seven and one-half miles (12 km) above its confluence with the Athabasca River and 25 air miles (40 km) south of Fort Chipewyan. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water discharge measurements are made by boat at the gauge.

GENERAL: This stream contains a great deal of lake storage and as a result its hydrograph is quite unique compared with other streams in the area. The summer peaks are generally lower, the winter flows are higher and it is normally slow to react to storm events. The range in stage during open water has been very limited; approximately four feet (1.2 m).


Discharge In CFS (×100)
5
10
15
20
Stage In Feet
2
3
4
5
6
7
Stage-Discharge Relationship
RICHARDSON RIVER
NEAR THE MOUTH
Curve No. 2, Jan. 1973.
o1976
⊕Prior to 1976


Width In Feet
0
10
20
30
40
50
60
70
80
90
100
Gauge Height In Feet
10
5
0
Left Bank
Right Bank
Cross-section Configuration
RICHARDSON RIVER
NEAR THE MOUTH
July 24, 1975.
Ght. 4.93 ft.
Discharge 759 cfs.


Discharge-Area Curve
RICHARDSON RIVER
NEAR THE MOUTH
1971 - 1976
Discharge In CFS (x 100)
Area In Square Feet (x 100)
0
1
2
3
4
5
2
4
6
8
10


Discharge-Velocity Curve
RICHARDSON RIVER
NEAR THE MOUTH
1971 - 1976
Discharge In CFS (x 100)
Mean Velocity In Feet Per Second
0
1
2
3
2
4
6
8
10

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RICHARDSON RIVER NEAR THE MOUTH

STATION NO. 07DD002

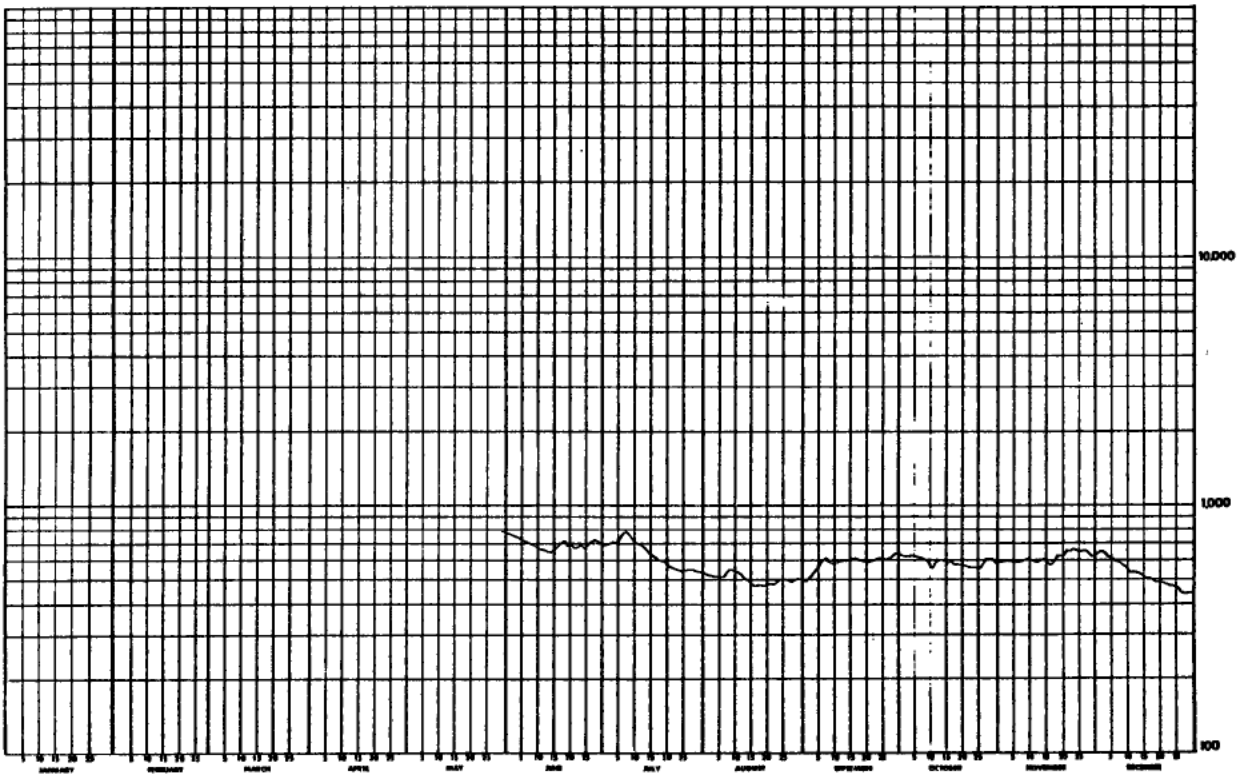
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1972

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	758 E	698	525	495	628	593 B	640 B	1
2	---	---	---	---	---	750 E	703	523	498	625	593 B	645 B	2
3	---	---	---	---	---	741 E	703	525	520	620	588 B	643 B	3
4	---	---	---	---	---	732 E	713	523	528	618	583 B	628 B	4
5	---	---	---	---	---	723 E	710	520	550	618	583	615 B	5
6	---	---	---	---	---	714 E	758	513	570	615	598	608 B	6
7	---	---	---	---	---	705 E	760	520	600	610	593	598 B	7
8	---	---	---	---	---	696 E	763	550	598	605	600 B	585 B	8
9	---	---	---	---	---	687 E	733	550	590	593	605 B	568 B	9
10	---	---	---	---	---	679 E	708	543	588	568	603 B	555 B	10
11	---	---	---	---	---	670 E	693	528	590	560	593	543 B	11
12	---	---	---	---	---	661 E	670	518	590	590	578 B	538 B	12
13	---	---	---	---	---	652 E	658	505	595	603	583 B	530 B	13
14	---	---	---	---	---	643	648	495	600	595	593 B	523 B	14
15	---	---	---	---	---	668	640	483	605	585	590 B	518 B	15
16	---	---	---	---	---	690	628	475	605	583	580 B	513 B	16
17	---	---	---	---	---	695	613	473	603	578	573 B	508 B	17
18	---	---	---	---	---	710	600	475	598	575	608 B	498 B	18
19	---	---	---	---	---	685	585	475	598	573	628 B	490 B	19
20	---	---	---	---	---	685	575	475	595	570	620 B	485 B	20
21	---	---	---	---	---	678	565	478	593	563	643 B	481 B	21
22	---	---	---	---	---	678	558	483	595	565	648 B	477 B	22
23	---	---	---	---	---	683	548	480	603	565	658 B	472 B	23
24	---	---	---	---	---	673	548	493	603	565	653 B	468 B	24
25	---	---	---	---	---	678	555	503	605	565	650 B	464 B	25
26	---	---	---	---	---	695	555	503	605	578	648 B	460 B	26
27	---	---	---	---	---	720	553	508	618	600	653 B	455 B	27
28	---	---	---	---	---	720	548	498	623	620	640 B	451 B	28
29	---		---	---	785 A	710	545	500	630	600	633 B	447 B	29
30	---		---	---	776 E	698	540	503	630	588	635 B	443 B	30
31	---		---		767 E		533	500		590 B		438 B	31
TOTAL	---	---	---	---	---	20877	19624	15635	17613	16311	18338	16279	TOTAL
MEAN	---	---	---	---	---	696	633	504	587	591	611	525	MEAN
AC-FT	---	---	---	---	---	41400	38908	31000	34900	36300	36400	32300	AC-FT
MAX	---	---	---	---	---	758	780	550	630	628	658	645	MAX
MIN	---	---	---	---	---	643	533	473	495	560	573	438	MIN

SUMMARY FOR THE MONTHS JUN TO DEC

MEAN DISCHARGE, 592 CFS
TOTAL DISCHARGE, 291800 AC-FT
MAXIMUM DAILY DISCHARGE, 780 CFS ON JUL 7
MINIMUM DAILY DISCHARGE, 438 CFS ON DEC 31

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



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RICHARDSON RIVER NEAR THE MOUTH

STATION NO. 07DD002

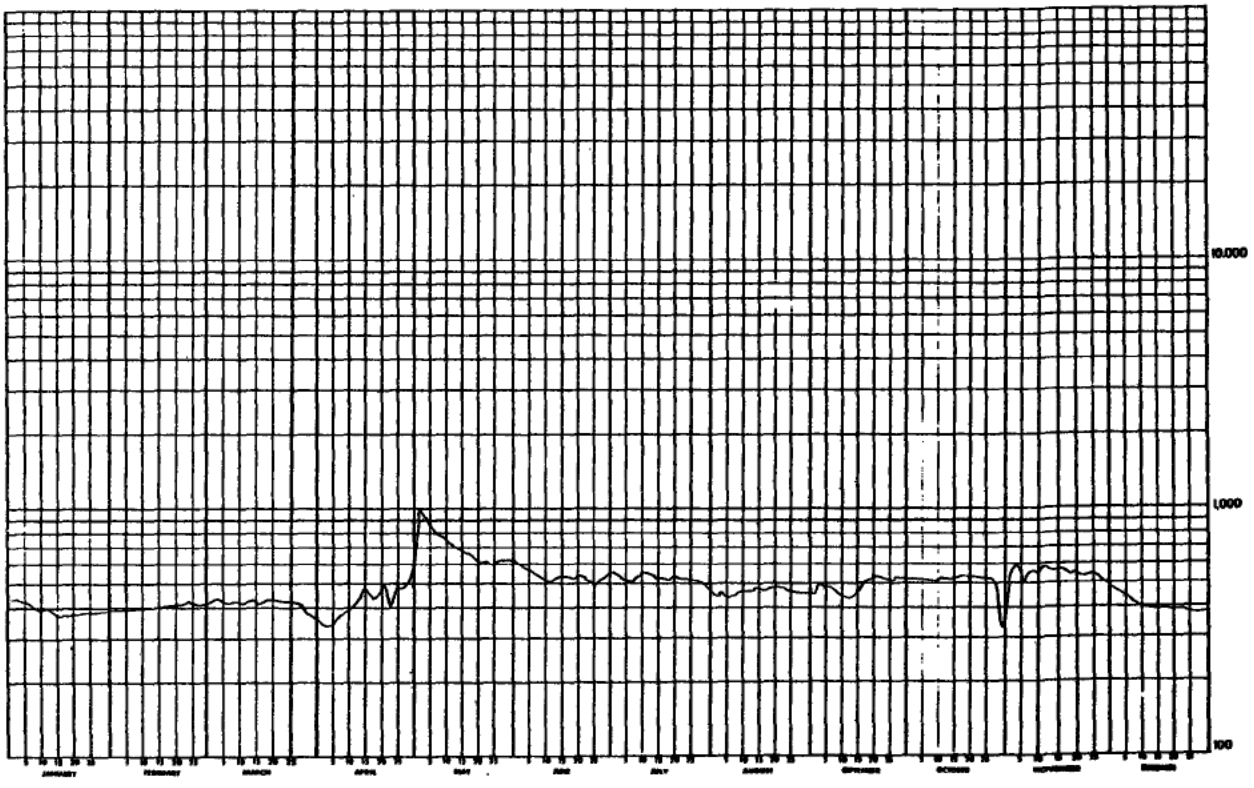
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1971

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	434 B	388 B	418 B	350 B	843 B	610	558	463	458	520	486	476 B	1
2	430 B	389 B	425 B	350 B	1000 B	603	553 A	455	468	518	578	466 B	2
3	426 B	390 B	426 B	348 B	938	585	543	453	498	515	595	457 B	3
4	421 B	391 B	420 B	345 B	900	580	525	458	483	513	575	447 B	4
5	417 B	391 B	415 B	345 B	853	570	523 E	448	485	513	525	437 B	5
6	413 B	392 B	413 B	355 B	803	563 A	518	445	478	513	503 B	427 B	6
7	408 B	393 B	420 B	378 B	805 A	553 A	515	448	478	515	538 B	417 B	7
8	398 B	394 B	423 B	378 B	790	543 A	533 A	458	463	515	543 B	408 B	8
9	388 B	395 B	420 B	385 B	765 A	533 A	530	460	453	515	553 B	398 B	9
10	388 B	396 B	420 B	384 B	745 A	523 A	533	460	445	518	550 B	388 B	10
11	390 B	397 B	420 B	403 B	730	518 A	548	478	443	523	553 B	388 B	11
12	393 B	398 B	423 B	410 B	715	515 A	545	473	443	523	573 B	387 B	12
13	395 B	399 B	423 B	423 B	698	518 A	543	473	440	523	560 B	387 B	13
14	395 B	399 B	423 B	455 B	683	533	535	468	445	528	560 B	386 B	14
15	375 B	400 B	423 B	488 B	675	538	530	480	475	525	558 B	386 B	15
16	375 B	401 B	420 B	475 B	665	535 A	528	473	490	530	563 B	386 B	16
17	375 B	402 B	425 B	490 B	658 A	528 A	525	475	498	535	553 B	385 B	17
18	375 B	403 B	430 B	443 B	648 A	528 A	525	475	510	535	538 B	385 B	18
19	378 B	398 B	430 B	455 B	638	525 A	523	473	528	533	540 B	384 B	19
20	378 B	408 B	425 B	473 B	628	545 A	528	483	523	533	540 B	384 B	20
21	378 B	413 B	423 B	495 B	618 A	543 A	530	485	520	530	535 B	384 B	21
22	380 B	418 B	425 B	475 B	613	523 A	528	483	520	525	533 B	383 B	22
23	380 B	415 B	425 B	410 B	613	520 A	525	475	518	525	533 B	383 B	23
24	381 B	423 B	425 B	455 B	600	510 A	520	465	513	523	533 B	382 B	24
25	382 B	418 B	423 B	483 B	598	493 A	520	455	515	523	535 B	382 B	25
26	383 B	413 B	415 B	488 B	618	495 E	518	460	523	520	525 B	382 B	26
27	384 B	415 B	413 B	495 B	613	515 E	513	460	523	523	515 B	381 B	27
28	384 B	415 B	395 B	500 B	608	528 E	503	458	528	513	506 B	381 B	28
29	385 B		378 B	538 B	620	538	495	458	518	380	496 B	380 B	29
30	386 B		380 B	668 B	628	558	485	458	528	328	486 B	380 B	30
31	387 B		355 B		613		473	455		368		380 B	31
TOTAL	12152	11246	12886	13080	21906	16169	16263	14483	14664	15698	16175	12377	TOTAL
MEAN	392	402	416	436	707	539	525	465	489	506	539	399	MEAN
AC-FT	24110	22300	25600	25900	43500	32100	32300	28600	29100	31100	32100	24500	AC-FT
MAX	434	423	430	668	1000	610	558	485	525	535	595	476	MAX
MIN	375	388	355	345	598	493	473	445	440	328	486	380	MIN

SUMMARY FOR THE YEAR 1971

MEAN DISCHARGE, 485 CFS
TOTAL DISCHARGE, 351 000 AC-FT
MAXIMUM DAILY DISCHARGE, 1000 CFS ON MAY 2
MINIMUM DAILY DISCHARGE, 328 CFS ON OCT 30

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



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CALGARY, ALTA.

RICHARDSON RIVER NEAR THE MOUTH

STATION NO. 07OOOO2

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1972

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	379 B	367 B	345 B	450 B	523 B	695	693	555	480	595	738 B	460 B	1
2	379 B	366 B	345 B	448 B	843 B	678	665	545	480	595	730 B	460 B	2
3	376 B	366 B	348 B	443 B	1100 B	673	660	543	480	593	688 B	453 B	3
4	378 B	366 B	348 B	435 B	1320 B	663	648	535	485	615	675 B	450 B	4
5	378 B	365 B	348 B	435 B	1330 B	650	650	530	498	630	670 B	438 B	5
6	377 B	365 B	350 B	430 B	1350	653	670	530	500	633	645 B	433 B	6
7	377 B	364 B	348 B	428 B	1350	635	685	540	495	640	620 B	423 B	7
8	376 B	364 B	340 B	423 B	1350	620	683	540	500	638	633 B	418 B	8
9	376 B	364 B	335 B	420 B	1340	610	710	550	503	640	648 B	410 B	9
10	376 B	363 B	340 B	413 B	1310	600	780	573	498	633	623 B	400 B	10
11	375 B	363 B	338 B	480 B	1260	595	825 A	570	485	663	608 B	398 B	11
12	375 B	362 B	346 B	368 B	1180	590	853	575	485	630	610 B	390 B	12
13	374 B	362 B	350 B	375 B	1120	615	855	580	485	623	605 B	390 B	13
14	374 B	362 B	358 B	378 B	1070	640	858	573	483	618	633 B	390 B	14
15	374 B	361 B	365 B	383 B	1020	705	848	568	490	658	638 B	388 B	15
16	373 B	361 B	370 B	390 B	983	798	818	570	505	670	630 B	390 B	16
17	373 B	360 B	380 B	388 B	955	840	783	570 A	508	653	630 B	398 B	17
18	372 B	360 B	398 B	383 B	935	833	755	570	513	623	638 B	405 B	18
19	372 B	360 B	413 B	383 B	913	805	740	565	518	578 A	605 B	408 B	19
20	372 B	359 B	435 B	375 B	903	793	728	565	535	575	593 B	410 B	20
21	371 B	359 B	448 B	373 B	893	795	708	563	553	628	580 B	410 B	21
22	371 B	358 B	473 B	365 B	878	778	688	555	563	678	565 B	403 B	22
23	370 B	358 B	493 B	363 B	855	748	668	550	583	665	545 B	395 B	23
24	370 B	355 B	508 B	363 B	835	725	648	545	595	653	538 B	393 B	24
25	370 B	353 B	508 B	378 B	813	705	633	540	595	653 B	533 B	395 B	25
26	369 B	350 B	513 B	403 B	798	695	618	533	590	683 B	525 B	398 B	26
27	369 B	350 B	513 B	438 B	775	700	605	523	598	678 B	530 B	398 B	27
28	368 B	348 B	503 B	463 B	755	698	590	518	603	693 B	500 B	395 B	28
29	368 B	348 B	483 B	483 B	738	710	585	500	598	698 B	485 B	395 B	29
30	368 B		458 B	503 B	723	718	580	495	595	703 B	470 B	400 B	30
31	367 B		448 B		710		570	488		720 B		400 B	31
TOTAL	11509	10439	12547	12320	30928	20963	21800	16965	15802	19947	18131	12694	TOTAL
MEAN	373	360	405	411	998	699	703	547	527	643	604	409	MEAN
AC-FT	22830	20700	24900	24400	61300	41600	43200	33700	31300	39600	36000	25200	AC-FT
MAX	379	367	518	503	1350	840	858	580	603	720	738	460	MAX
MIN	367	348	335	363	523	590	570	488	480	575	470	388	MIN

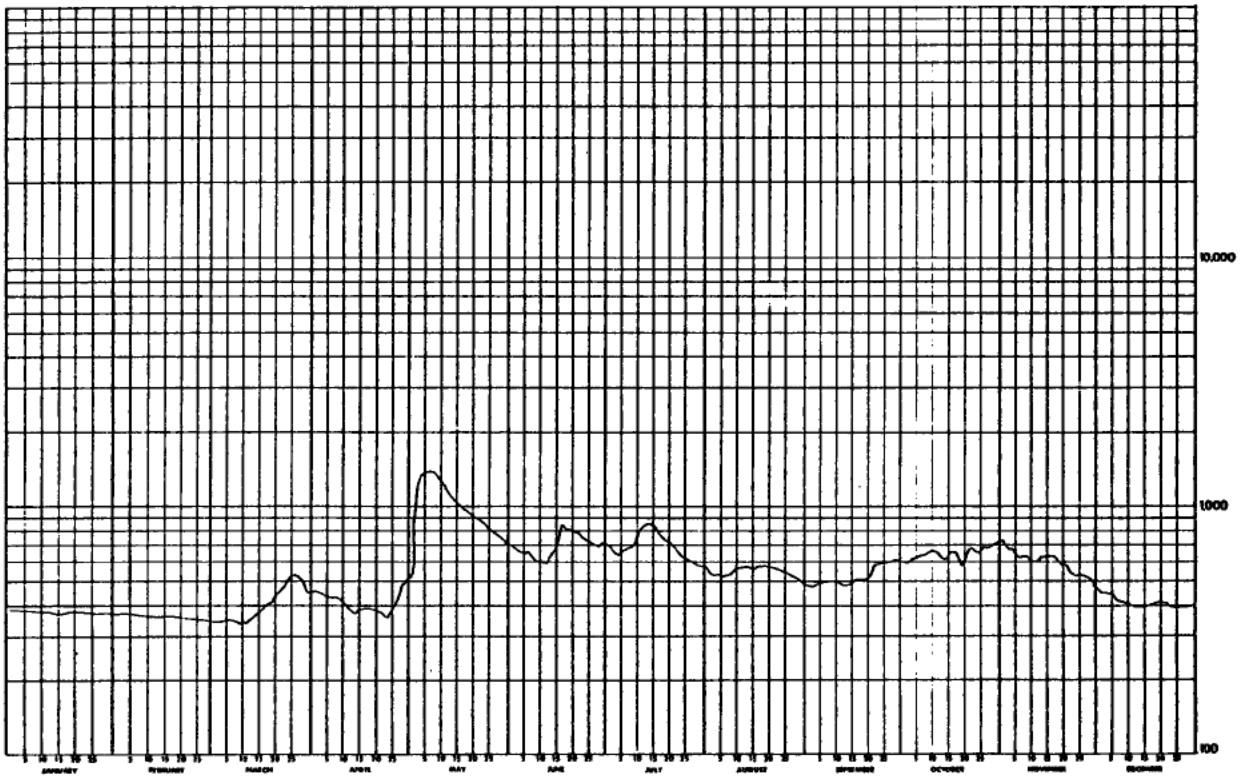
SUMMARY FOR THE YEAR 1972

MEAN DISCHARGE, 558 CFS
TOTAL DISCHARGE, 405000 AC-FT
MAXIMUM DAILY DISCHARGE, 1350 CFS ON MAY 6
MINIMUM DAILY DISCHARGE, 335 CFS ON MAR 9

TYPE OF GAUGE - RECORDING
LOCATION - LAT 58 21 48 N
LONG 111 14 25 W
DRAINAGE AREA 1148 SQ MILES

A-MANUAL GAUGE
B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA
MAY 15 1974 PAGE 294
CALGARY, ALTA.

RICHARDSON RIVER NEAR THE MOUTH

STATION NO. 07QD002

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1973

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	401 B	418 B	401 B	450 B	735	588	495	593	675	610	683	527 B	1
2	403 B	416 B	401 B	460 B	733	593	498	603	668	605	680 B	524 B	2
3	405 B	414 B	402 B	470 B	730	579	498	638	665	598	675 B	520 B	3
4	408 B	412 B	402 B	480 B	725	570	484	638	665	595	665 B	518 B	4
5	410 B	410 B	403 B	490 B	723	561	480	653	665	598	660 B	515 B	5
6	412 B	409 B	403 B	505 B	723	555	476	683	665	586	655 B	511 B	6
7	414 B	408 B	403 B	520 B	715	548	525	708	663	591	650 B	508 B	7
8	416 B	406 B	404 B	530 B	713	544	638	740	658	610	642 B	506 B	8
9	418 B	405 B	404 B	549 B	705	550	643	806	653	628	636 B	503 B	9
10	420 B	404 B	405 B	569 B	700	555	655	875	648	630	630 B	500 B	10
11	423 B	404 B	406 B	590 B	693	555	683	947	633	645	622 B	498 B	11
12	425 B	403 B	407 B	610 B	683	555	761	1000	618	655	617 B	496 B	12
13	428 B	402 B	408 B	640 B	678	548	761	1040	605	655	611 B	494 B	13
14	430 B	401 B	409 B	670 B	660	550	749	1030	595	648	605 B	492 B	14
15	432 B	400 B	410 B	700 B	650	531	723	971	588	643	603 B	490 B	15
16	434 B	400 B	410 B	730 B	638	526	797	905	581	640	595 B	489 B	16
17	436 B	399 B	410 B	770 B	630	524	806	875	575	635	590 B	489 B	17
18	438 B	399 B	411 B	810 B	623	520	791	839	568	633	585 B	488 B	18
19	439 B	398 B	411 B	850 B	615	513	755	815	566	625	580 B	487 B	19
20	440 B	397 B	412 B	900 B	615	508	728	794	561	615	575 B	486 B	20
21	438 B	397 B	413 B	960 B	620	502	695	776	557	633	571 B	486 B	21
22	436 B	398 B	415 B	1000	625	491	665	749	555	633	567 B	486 B	22
23	435 B	398 B	417 B	920	630	487	643	728	553	635	563 B	486 B	23
24	433 B	399 B	418 B	866	650	484	615	708	564	638	559 B	486 B	24
25	432 B	400 B	419 B	800	650	478	603	703	595	648	555 B	486 B	25
26	430 B	400 B	420 B	755	628	468	683	700	618	640	550 B	485 B	26
27	428 B	400 B	423 B	746	610	466	620	683	623	643	545 B	485 B	27
28	426 B	401 B	429 B	767	600	456	618	680	623	648	540 B	485 B	28
29	424 B		434 B	767	586	466	605	685	628	668	535 B	485 B	29
30	422 B		440 B	747	579	487	593	680	615	640	530 B	485 B	30
31	420 B		445 B		579		588	678		605		485 B	31
TOTAL	13156	11298	12795	20617	20449	15759	19845	23915	18430	19582	18871	15381	TOTAL
MEAN	424	404	413	687	660	525	640	771	614	632	602	496	MEAN
AC-FT	26100	22400	25400	40900	40600	31300	39400	47400	36600	38800	35800	30500	AC-FT
MAX	440	418	445	1000	735	593	806	1040	675	685	683	527	MAX
MIN	401	397	401	450	579	456	476	593	553	581	530	485	MIN

SUMMARY FOR THE YEAR 1973

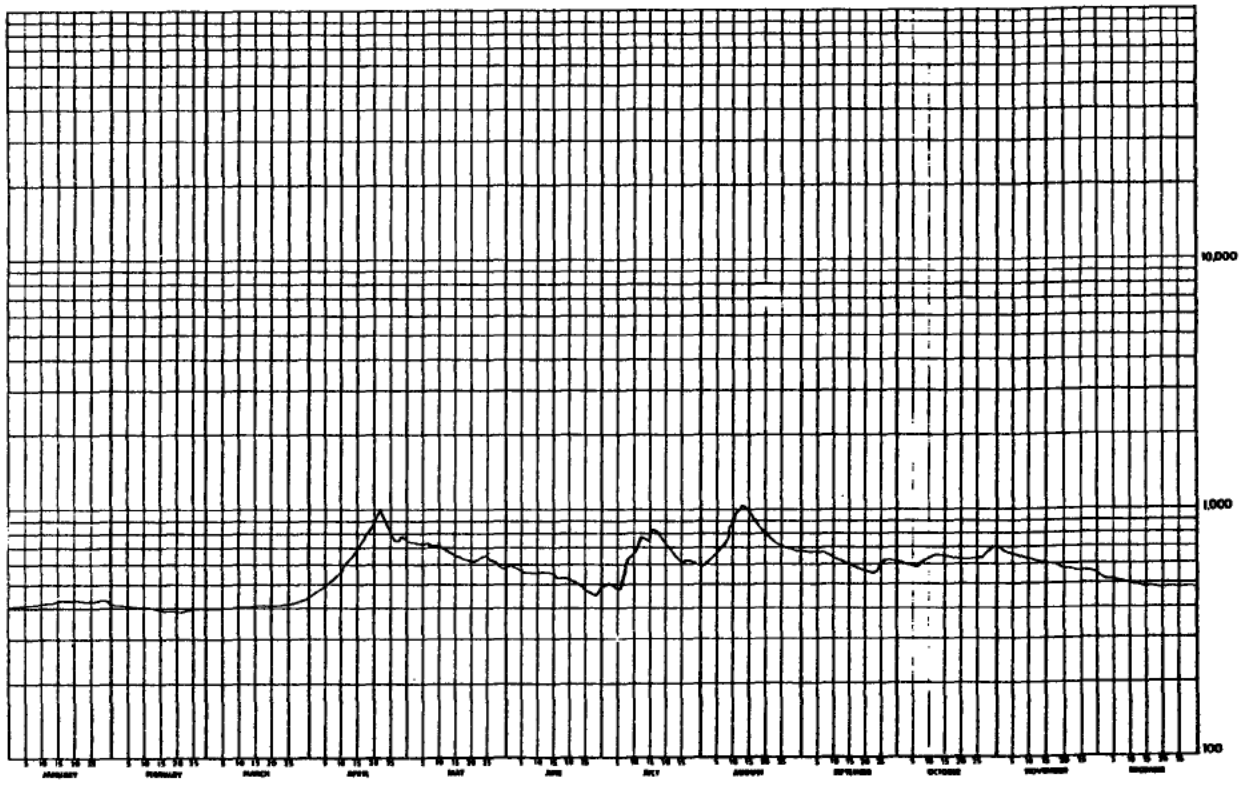
MEAN DISCHARGE, 573 CFS
TOTAL DISCHARGE, 415000 AC-FT
MAXIMUM DAILY DISCHARGE, 1040 CFS ON AUG 13
MINIMUM DAILY DISCHARGE, 397 CFS ON FEB 20

MAXIMUM INSTANTANEOUS DISCHARGE
1060 CFS AT 1500 MST ON AUG 13

TYPE OF GAUGE - RECORDING
LOCATION - LAT 58 21 48 N
LONG 111 14 25 W
DRAINAGE AREA 1140 SQ MILES

B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA
JUL 1- 1975 PAGE 237
CALGARY, ALTA.

RICHARDSON RIVER NEAR THE MOUTH

STATION NO. 07DD002

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1974

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	439 B	466 B	441 B	566 B	1360	835	699 E	668	576	515	451	481 B	1
2	441 B	465 B	441 B	590 B	1380	864	699 E	677	562	519	494	490 B	2
3	440 B	464 B	444 B	614 B	1280	892	679 E	642	550	529	491	479 B	3
4	438 B	462 B	446 B	633 B	1060	923	659 E	642	542	520	489	477 B	4
5	443 B	461 B	446 B	654 B	1030	951	659 E	669	536	520	475	475 B	5
6	444 B	461 B	448 B	676 B	975	946	650 E	648	528	522	478 B	474 B	6
7	443 B	459 B	444 B	699 B	947	1010	640 E	625	522	501	474 B	472 B	7
8	447 B	459 B	445 B	723 B	976	1010	630 E	608	515	514	494 B	471 B	8
9	436 B	456 B	449 B	757 B	942	931	620 A	589	509	528	493 B	470 B	9
10	436 B	455 B	447 B	789 B	906	977	603	593	510	540	493 B	469 B	10
11	445 B	454 B	441 B	858 B	997	958	667	576	506	526	476 B	468 B	11
12	446 B	453 B	439 B	923 B	971	921	772	572	500	517	480 B	466 B	12
13	444 B	452 B	440 B	991 B	946	836	748	566	493	514	474 B	464 B	13
14	442 B	450 B	441 B	1040 B	919	875	773	563	486	510	476 B	462 B	14
15	442 B	448 B	442 B	1100 B	891	857	745	572	517	499	469 B	461 B	15
16	447 B	448 B	446 B	1140 B	870	847 E	802	583	512	505	478 B	460 B	16
17	441 B	447 B	446 B	1220 B	856	837 E	806	588	512	509	505 B	459 B	17
18	438 B	445 B	448 B	1340 B	893	827 E	748	588	511	516	504 B	458 B	18
19	443 B	444 B	452 B	1410 B	881	817 E	779	581	541	522	503 B	456 B	19
20	439 B	443 B	457 B	1460 B	796	808 E	748	567	547	527	501 B	454 B	20
21	438 B	442 B	458 B	1470 B	752	798 E	748	567	546	526	500 B	453 B	21
22	439 B	441 B	468 B	1438	748	788 E	796	552	540	521	499 B	452 B	22
23	437 B	439 B	475 B	1398	733	779 E	795	544	536	517	497 B	451 B	23
24	436 B	438 B	484 B	1358	721	768 E	785	554	533	509	495 B	450 B	24
25	437 B	437 B	493 B	1340	708	759 E	767	555	529	495	492 B	449 B	25
26	438 B	445 B	462 B	1340	700	748 E	739	553	540	506	490 B	449 B	26
27	432 B	445 B	476 B	1358	702	734 E	718	559	539	499	489 B	448 B	27
28	431 B	444 B	481 B	1378	709	729 E	693	572	535	495	488 B	447 B	28
29	433 B		487 B	1398	714	719 E	667	587	534	479	486 B	446 B	29
30	434 B		494 B	1340	703	709 E	641	596	526	477	483 B	445 B	30
31	437 B		546 B		737		649	548		441		444 B	31
TOTAL	13912	12821	14162	32185	27711	25606	22354	18390	15849	15859	14398	14290	TOTAL
MEAN	449	451	457	1076	894	854	721	593	528	512	478	461	MEAN
AC-FT	27600	25400	28100	63800	55000	50800	44300	36500	31400	31500	28600	28300	AC-FT
MAX	439	455	546	1470	1358	1010	806	642	574	540	505	481	MAX
MIN	447	447	439	FEB	708	709	620	548	486	477	414	444	MIN

SUMMARY FOR THE YEAR 1974

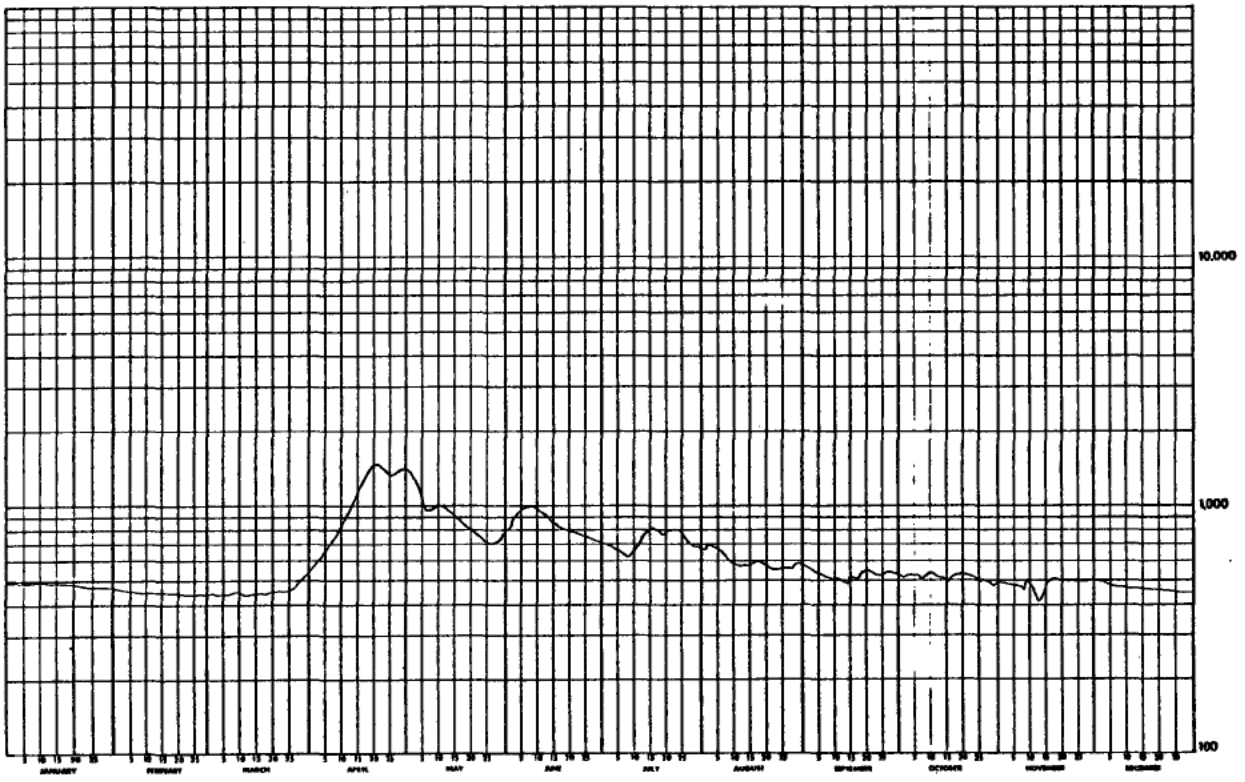
MEAN DISCHARGE, 625 CFS
TOTAL DISCHARGE, 452970 AC-FT
MAXIMUM DAILY DISCHARGE, 1470 CFS ON APR 21
MINIMUM DAILY DISCHARGE, 414 CFS ON NOV 17

MAXIMUM INSTANTANEOUS DISCHARGE
1540 CFS AT 1120 MST ON APR 21

TYPE OF GAUGE - RECORDING
LOCATION - LAT 58 21 48 N
LONG 111 14 25 W
DRAINAGE AREA 1140 SQ MILES

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW



WATER SURVEY OF CANADA — RICHARDSON RIVER NEAR THE MOUTH — STATION NO. 07OD002
MAY 14 1976 PAGE 301
CALGARY, ALTA.

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN.	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	444 B	416 B	388 B	405 B	848	633	762	698	859	795	740 B	430 B	1
2	443 B	413 B	392 B	399 B	872	612	843	691	845	821	740 B	401 B	2
3	442 B	410 B	392 B	391 B	883	597	898	678	844	839	740 B	395 B	3
4	441 B	408 B	391 B	383 B	866	585	889	649	833	843	735 B	380 B	4
5	440 B	407 B	386 B	379 B	840	583	852	681	826	839	730 B	370 B	5
6	439 B	401 B	384 B	375 B	822	596	823	637	821	831	725 B	365 B	6
7	438 B	394 B	385 B	376 B	809	608	805	643	818	815	720 B	360 B	7
8	437 B	389 B	389 B	377 B	796	602	764	633	804	804	715 B	355 B	8
9	437 B	388 B	394 B	380 B	786	597	719	648	798	807	710 B	350 B	9
10	436 B	389 B	394 B	389 B	778	594	695	644	788	815	700 B	350 B	10
11	436 B	388 B	390 B	408 B	766	606	698	638	771	814	690 B	350 B	11
12	435 B	386 B	388 B	434 B	750	634	678	647	755	811	680 B	350 B	12
13	434 B	384 B	387 B	464 B	733	689	659	638	744	812	670 B	355 B	13
14	433 B	382 B	388 B	487 B	713	728	631	604	733	807	660 B	360 B	14
15	432 B	382 B	388 B	514 B	696	745	605	606	724	798	650 B	370 B	15
16	432 B	380 B	381 B	556 B	679	763	609	623	718	796	640 B	380 B	16
17	431 B	375 B	384 B	588 B	660	761	614	606	712	785	630 B	390 B	17
18	431 B	372 B	385 B	610 B	649	758	637	632	707	795	615 B	400 B	18
19	431 B	371 B	389 B	640 B	644	744	670	599	710	805	600 B	410 B	19
20	429 B	370 B	395 B	680 B	632	727	710	598	714	804	590 B	420 B	20
21	426 B	369 B	399 B	720 B	625	714	736	598	716	793	580 B	425 B	21
22	434 B	373 B	399 B	750 B	616	721	748	606	713	791	570 B	430 B	22
23	415 B	377 B	404 B	780 B	608	721	751	639	707	791	555 B	435 B	23
24	417 B	377 B	412 B	815 B	605	742	762	664	704	790	540 B	440 B	24
25	423 B	376 B	417 B	850 B	625	739	810	692	698	775	530 B	445 B	25
26	425 B	374 B	426 B	880 B	655	692	802	720	696	760	515 B	450 B	26
27	424 B	376 B	430 B	920	662	687	764	779	708	736	500 B	450 B	27
28	423 B	382 B	431 B	944	668	696	754	824	710	753	480 B	450 B	28
29	421 B		431 B	944	667	724	757	841	734	704	460 B	450 B	29
30	421 B		427 B	872	662	733	741	854	766	729	445 B	445 B	30
31	420 B		410 B		658		734	871		735		440 B	31
TOTAL	13371	10810	12328	17732	22265	20328	22912	20851	22670	24653	18855	12401	TOTAL
MEAN	431	386	398	590	718	678	739	673	756	795	629	400	MEAN
AC-FT	26500	21400	24500	35100	44200	40300	45400	41400	45000	48900	37400	24600	AC-FT
MAX	444	416	431	944	883	763	898	871	859	843	740	450	MAX
MIN	415	369	380	375	605	583	605	598	696	729	445	350	MIN

SUMMARY FOR THE YEAR 1975

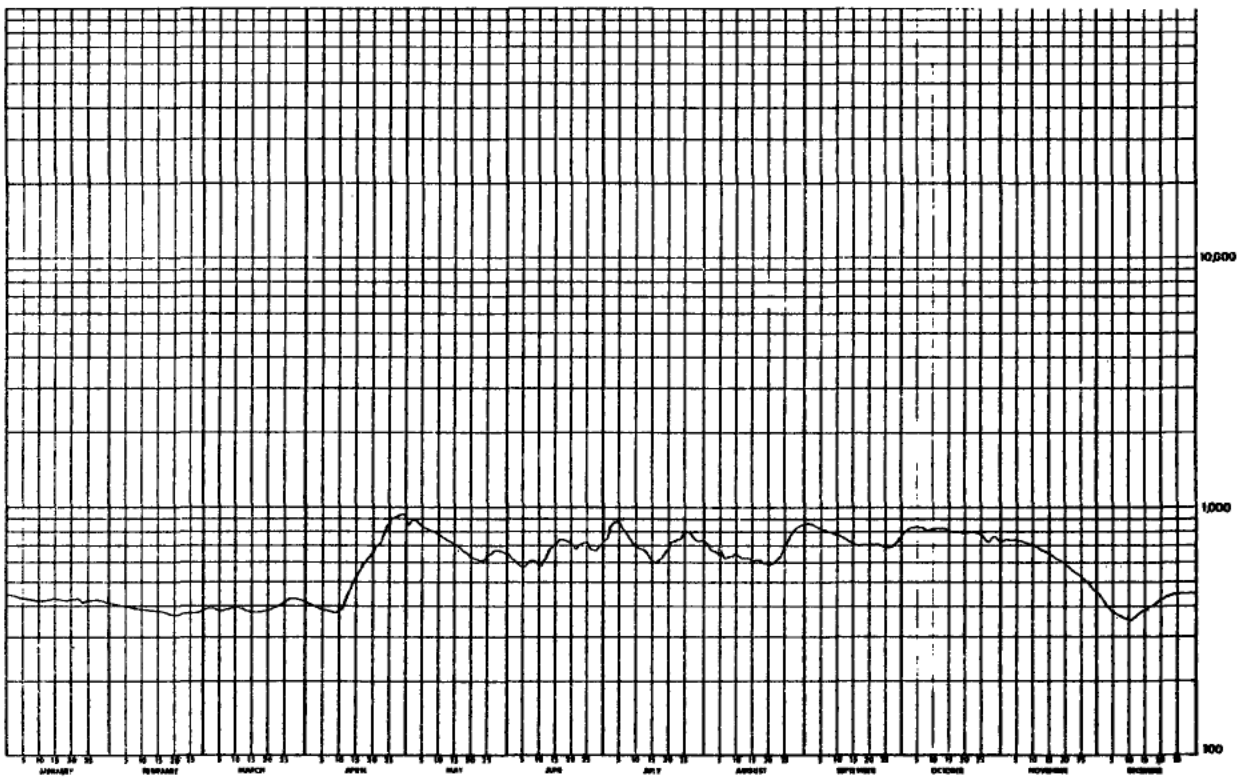
MEAN DISCHARGE, 686 CFS
TOTAL DISCHARGE, 435000 AC-FT
MAXIMUM DAILY DISCHARGE, 944 CFS ON APR 28
MINIMUM DAILY DISCHARGE, 350 CFS ON DEC 9

MAXIMUM INSTANTANEOUS DISCHARGE
962 CFS AT 1900 MST ON APR 28

TYPE OF GAUGE - RECORDING
LOCATION - LAT 68 21 48 N
LONG 111 14 14 W
DRAINAGE AREA 1140 SQ MILES

B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA
FEB 7 1977 PAGE 9
CALGARY, ALTA.

RICHARDSON RIVER NEAR THE MOUTH

STATION NO. 07DC002

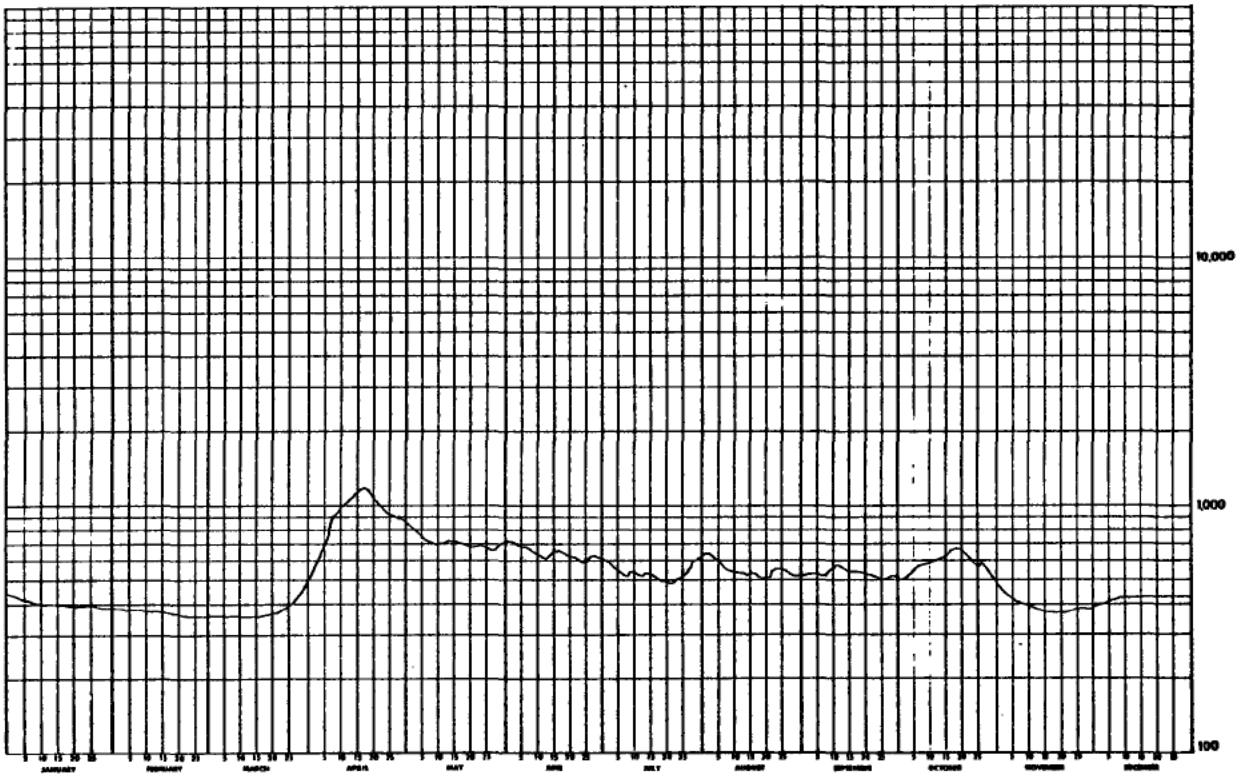
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	440 B	384 B	360 B	516 B	827	715	592	648	525	508	460 B	392 B	1
2	435 B	383 B	368 B	580 B	804	708	582	643	528	504	450 B	396 B	2
3	430 B	382 B	359 B	572 B	781	693	568	623	526	515	440 B	401 B	3
4	425 B	381 B	359 B	610 B	761	695	558	602	522	539	438 B	406 B	4
5	420 B	380 B	358 B	656 B	741	690	546	584	520	551	422 B	410 B	5
6	417 B	380 B	358 B	702 B	729	676	533	570	519	559	415 B	415 B	6
7	410 B	379 B	358 B	774 B	721	663	524	558	520	572	410 B	418 B	7
8	403 B	378 B	359 B	847 B	708	649	531	546	527	583	405 B	420 B	8
9	400 B	377 B	359 B	910 B	703	646	540	543	543	584	395 B	421 B	9
10	400 B	376 B	359 B	964 B	697	636	532	544	557	591	390 B	422 B	10
11	399 B	375 B	360 B	1000 B	694	631	524	542	568	598	387 B	423 B	11
12	399 B	374 B	360 B	1030 B	717	631	522	536	567	601	384 B	423 B	12
13	399 B	373 B	361 B	1060 B	717	636	534	528	559	606	380 B	424 B	13
14	398 B	371 B	361 B	1070 B	724	641	534	534	551	628	378 B	424 B	14
15	398 B	370 B	362 B	1100 B	730	651	518	537	547	635	375 B	424 B	15
16	397 B	369 B	362 B	1140 B	726	660	509	527	541	647	374 B	424 B	16
17	396 B	368 B	363 B	1160 B	718	650	507	513	505	663	372 B	424 B	17
18	395 B	367 B	363 B	1180	709	642	498	508	551	665	371 B	424 B	18
19	394 B	366 B	364 B	1120	697	636	489	514	540	659	370 B	424 B	19
20	392 B	365 B	365 B	1060	684	633	482	508	533	649	371 B	424 B	20
21	391 B	365 B	368 B	1010	682	621	484	518	527	634 B	371 B	423 B	21
22	390 B	364 B	370 B	987	690	605	495	543	522	605 B	372 B	423 B	22
23	390 B	364 B	375 B	955	685	586	495	549	518	601 B	373 B	423 B	23
24	389 B	363 B	380 B	937	679	591	505	547	514	549 B	374 B	423 B	24
25	389 B	363 B	385 B	923	675	604	530	542	512	569 B	375 B	423 B	25
26	389 B	362 B	395 B	914	673	620	533	538	510	583 B	378 B	422 B	26
27	388 B	362 B	410 B	909	671	623	550	532	511	575 B	380 B	422 B	27
28	387 B	361 B	420 B	895	671	623	567	521	512	550 B	382 B	422 B	28
29	386 B	361 B	440 B	877	701	618	590	519	511	525 B	385 B	422 B	29
30	385 B		470 B	854	709	607	612	520	510	505 B	388 B	422 B	30
31	385 B		503 B		706		644	523		480 B		422 B	31
TOTAL	12416	10763	11726	27272	22130	19280	16648	16960	15936	18033	11765	12986	TOTAL
MEAN	401	371	378	909	714	643	537	547	531	582	392	419	MEAN
AC-FT	24600	21300	23300	54100	43900	38200	33000	33600	31600	35800	23300	25800	AC-FT
MAX	440	384	503	1180	827	715	644	648	568	665	460	424	MAX
MIN	385	361	358	516	671	586	482	508	510	480	370	392	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 535 CFS
TOTAL DISCHARGE, 389000 AC-FT
MAXIMUM DAILY DISCHARGE, 1180 CFS ON APR 18
MINIMUM DAILY DISCHARGE, 358 CFS ON MAR 5

B-ICE CONDITIONS

MAXIMUM INSTANTANEOUS DISCHARGE, 1270 CFS AT 1240 MST ON APR 17



5.31 STEEPBANK RIVER NEAR FORT McMURRAY

STATION NAME: Steepbank River near Fort McMurray

STATION NUMBER: 07DA006

LOCATION: Latitude: 57°00'17" Longitude: 111°24'53"

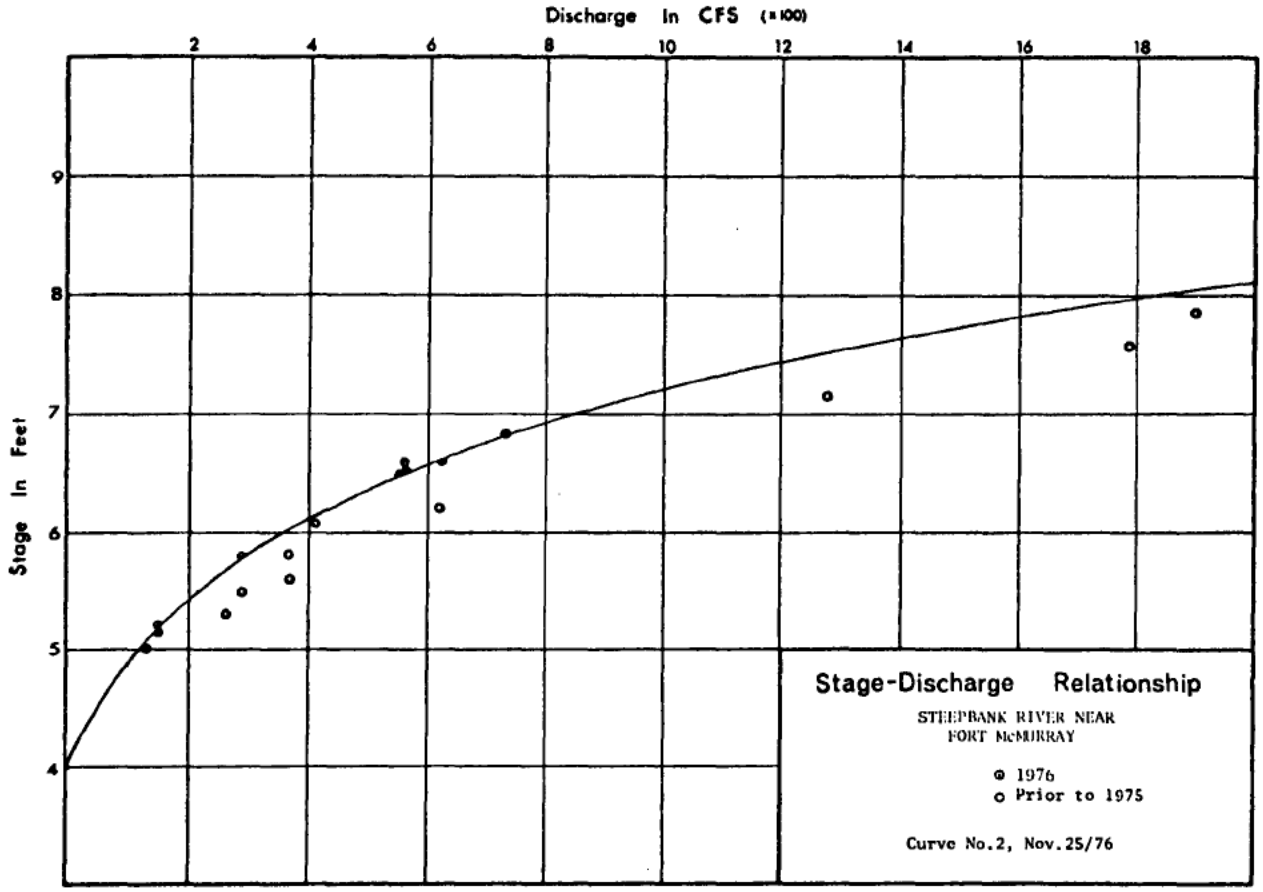
SW29-92-09-W4

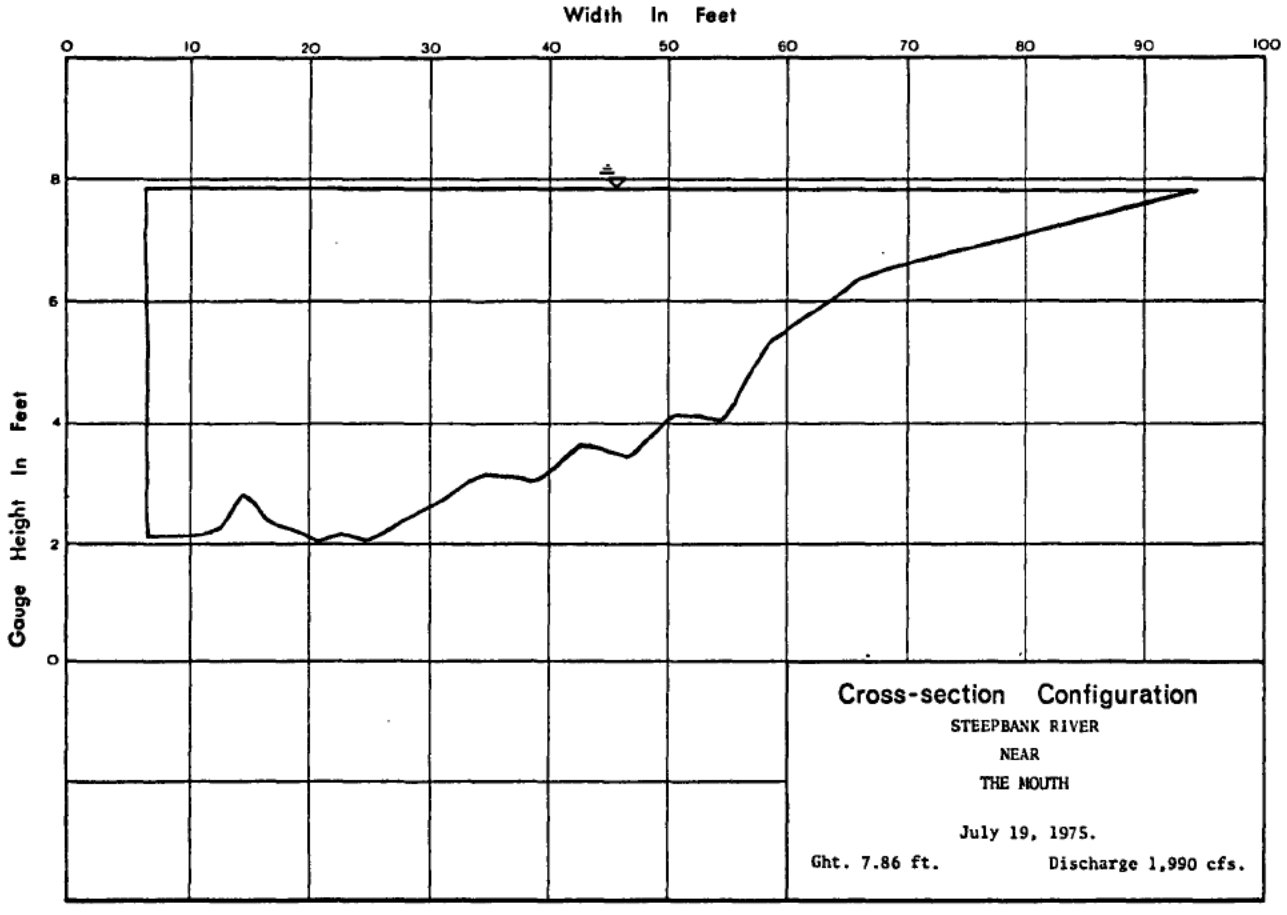
DRAINAGE AREA: 530 square miles(1,370 km^2)

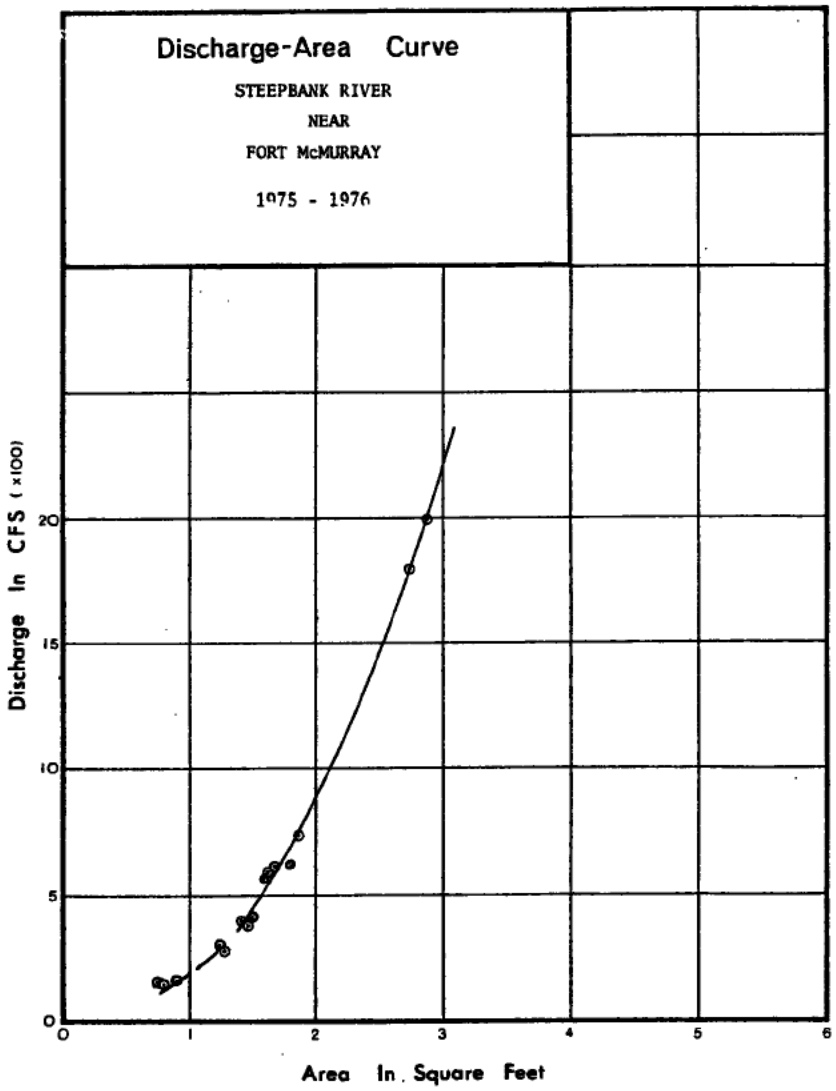
PERIOD OF RECORD: This station was established on September 20, 1972. Miscellaneous discharges are available for 1972 and 1973. Continuous discharge data is available from January,1974 to December,1976.

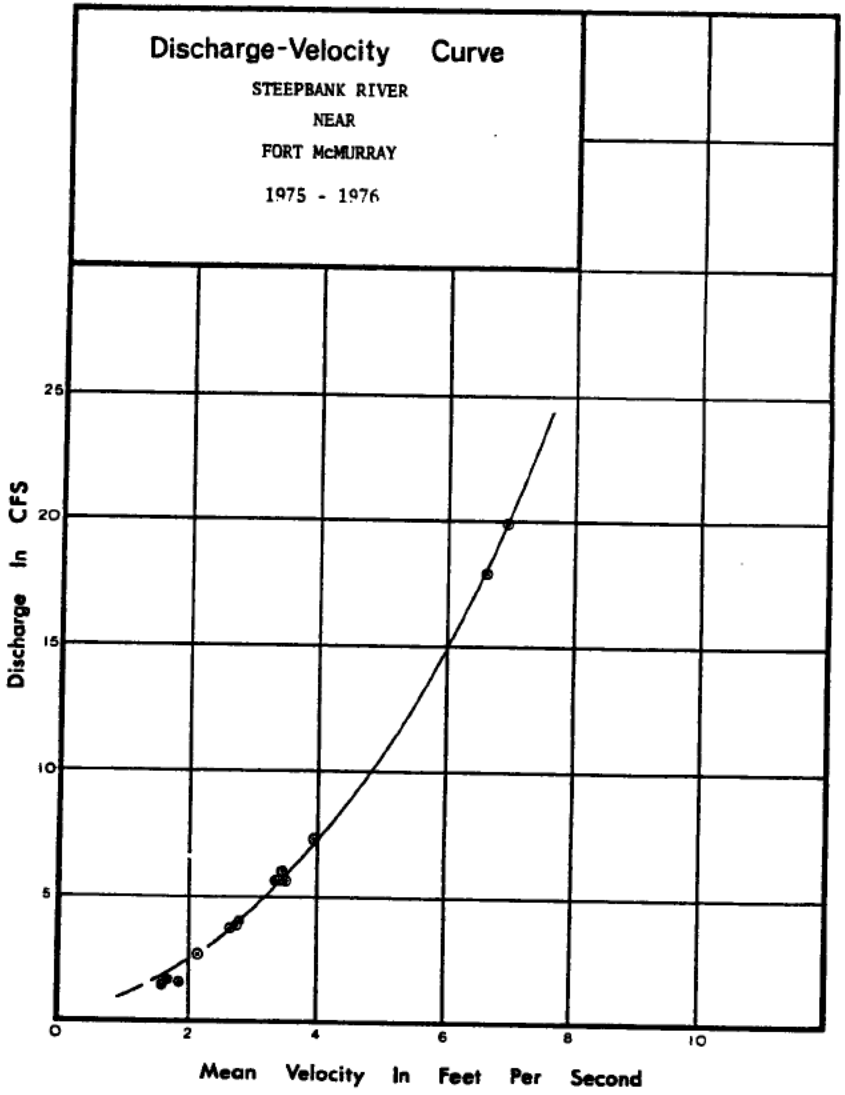
SITE DESCRIPTION: The gauge was initially established on the left bank approximately four and one-half miles (7.2 km) above the confluence with the Athabasca River and 15 air miles (24 km) southeast of Fort MacKay. On September 19, 1975 the gauge was moved directly across the river. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water discharge measurements are presently made by wading or from the cableway. Prior to the construction of the cableway in June, 1975 measurements were made by boat.

GENERAL: The high, steep, left bank made it difficult as a result to keep the orifice line in place so that considerable lost record occurred particularly during high flows. Hence the gauge was relocated to the right bank in 1975.


Discharge In CFS (x100)
2
4
6
8
10
12
14
16
18
Stage In Feet
9
8
7
6
5
4
Stage-Discharge Relationship
STEEPBANK RIVER NEAR
FORT McMURRAY
⊙ 1976
o Prior to 1975
Curve No.2, Nov.25/76


Width In Feet
0
10
20
30
40
50
60
70
80
90
100
Gauge Height In Feet
8
6
4
2
0
Cross-section Configuration
STEEPBANK RIVER
NEAR
THE MOUTH
July 19, 1975.
Ght. 7.86 ft.
Discharge 1,990 cfs.


Discharge-Area Curve
STEEPBANK RIVER
NEAR
FORT McMURRAY
1975 - 1976
Discharge In CFS (x100)
0
5
10
15
20
0
1
2
3
4
5
6
Area In Square Feet


Discharge-Velocity Curve
STEEPBANK RIVER
NEAR
FORT McMURRAY
1975 - 1976
Discharge In CFS
0
5
10
15
20
25
0
2
4
6
8
10
Mean Velocity In Feet Per Second

WATER SURVEY OF CANADA
JUL 19 1973 PAGE 263
CALGARY, ALTA.

STEEPBANK RIVER NEAR FORT MCMURRAY

STATION NO. 07DA006

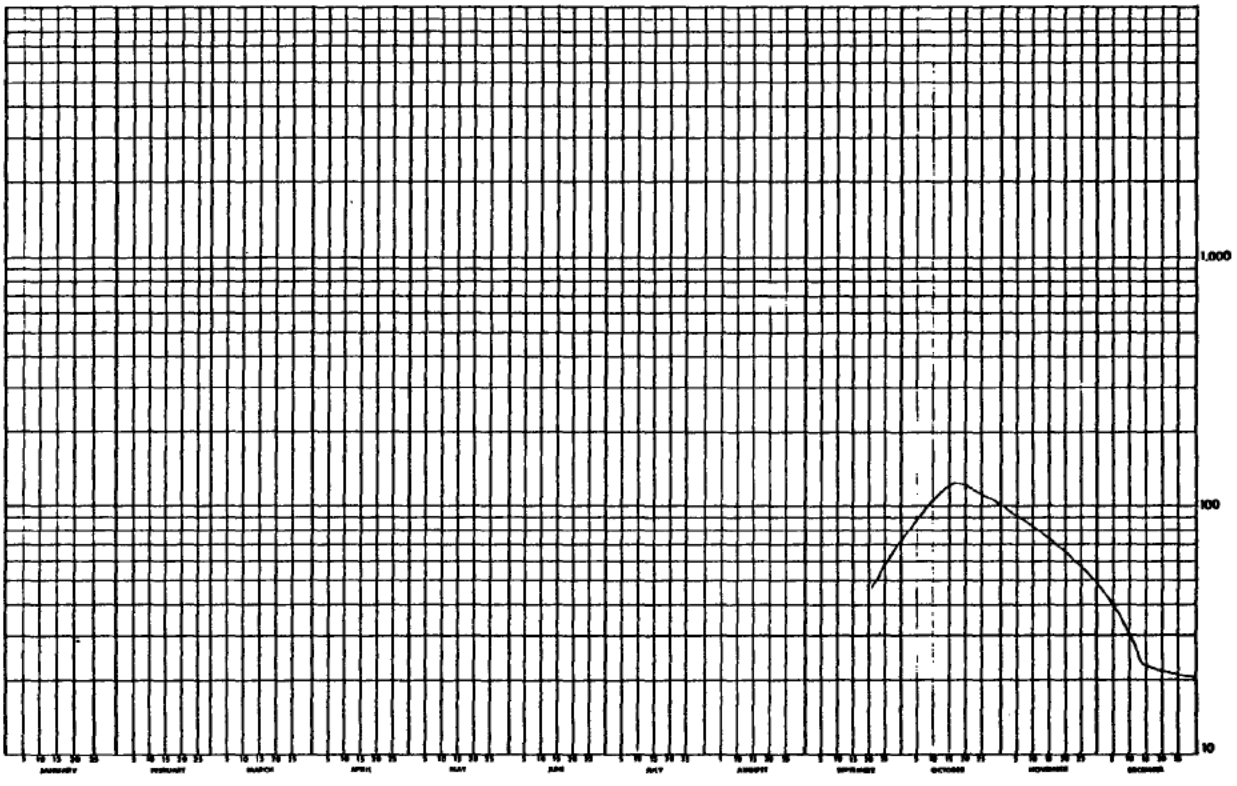
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1972

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	---	---	77.2	99.2 B	45.5 B	1
2	---	---	---	---	---	---	---	---	---	80.3	97.4 B	43.8 B	2
3	---	---	---	---	---	---	---	---	---	83.3	95.6 B	42.8 B	3
4	---	---	---	---	---	---	---	---	---	86.4	93.8 B	40.2 B	4
5	---	---	---	---	---	---	---	---	---	89.4	92.8 B	38.4 B	5
6	---	---	---	---	---	---	---	---	---	92.5	90.2 B	36.6 B	6
7	---	---	---	---	---	---	---	---	---	95.5	88.5 B	34.8 B	7
8	---	---	---	---	---	---	---	---	---	98.6	86.7 B	33.0 B	8
9	---	---	---	---	---	---	---	---	---	102	84.9 B	31.2 B	9
10	---	---	---	---	---	---	---	---	---	105	83.1 B	29.4 B	10
11	---	---	---	---	---	---	---	---	---	108 B	81.3 B	27.7 B	11
12	---	---	---	---	---	---	---	---	---	111 B	79.5 B	25.9 B	12
13	---	---	---	---	---	---	---	---	---	114 B	77.7 B	24.1 B	13
14	---	---	---	---	---	---	---	---	---	117 B	75.9 B	22.3 B	14
15	---	---	---	---	---	---	---	---	---	120 B	74.1 B	22.2 B	15
16	---	---	---	---	---	---	---	---	---	123 B	72.4 B	22.1 B	16
17	---	---	---	---	---	---	---	---	---	126 B	70.6 B	21.9 B	17
18	---	---	---	---	---	---	---	---	---	124 B	68.8 B	21.8 B	18
19	---	---	---	---	---	---	---	---	---	122 B	67.0 B	21.7 B	19
20	---	---	---	---	---	---	---	---	43.7 A	121 B	65.2 B	21.6 B	20
21	---	---	---	---	---	---	---	---	46.7	119 B	63.4 B	21.4 B	21
22	---	---	---	---	---	---	---	---	49.8	117 B	61.6 B	21.3 B	22
23	---	---	---	---	---	---	---	---	52.8	115 B	59.8 B	21.2 B	23
24	---	---	---	---	---	---	---	---	55.9	113 B	58.1 B	21.1 B	24
25	---	---	---	---	---	---	---	---	58.9	112 B	56.3 B	20.9 B	25
26	---	---	---	---	---	---	---	---	62.0	110 B	54.5 B	20.8 B	26
27	---	---	---	---	---	---	---	---	65.0	108 B	52.7 B	20.7 B	27
28	---	---	---	---	---	---	---	---	68.1	106 B	50.9 B	20.6 B	28
29	---	---	---	---	---	---	---	---	71.1	105 B	49.1 B	20.4 B	29
30	---		---	---	---	---	---	---	74.2	103 B	47.3 B	20.3 B	30
31	---		---		---		---	---		101 B		20.2 B	31
TOTAL	---	---	---	---	---	---	---	---	---	3385.2	2197.6	835.1	TOTAL
MEAN	---	---	---	---	---	---	---	---	---	107	73.3	26.9	MEAN
AC-FT	---	---	---	---	---	---	---	---	---	6560	4360	1660	AC-FT
MAX	---	---	---	---	---	---	---	---	---	126	99.2	45.5	MAX
MIN	---	---	---	---	---	---	---	---	---	77.2	47.3	20.2	MIN

A-MANUAL GAUGE
B-ICE CONDITIONS

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 00 20 N
LONG 111 25 10 W

NATURAL FLOW



WATER SURVEY OF CANADA
MAY 15 1974 PAGE 281
CALGARY, ALTA.

STEEPBANK RIVER NEAR FORT MCMURRAY

STATION NO. 07DA005

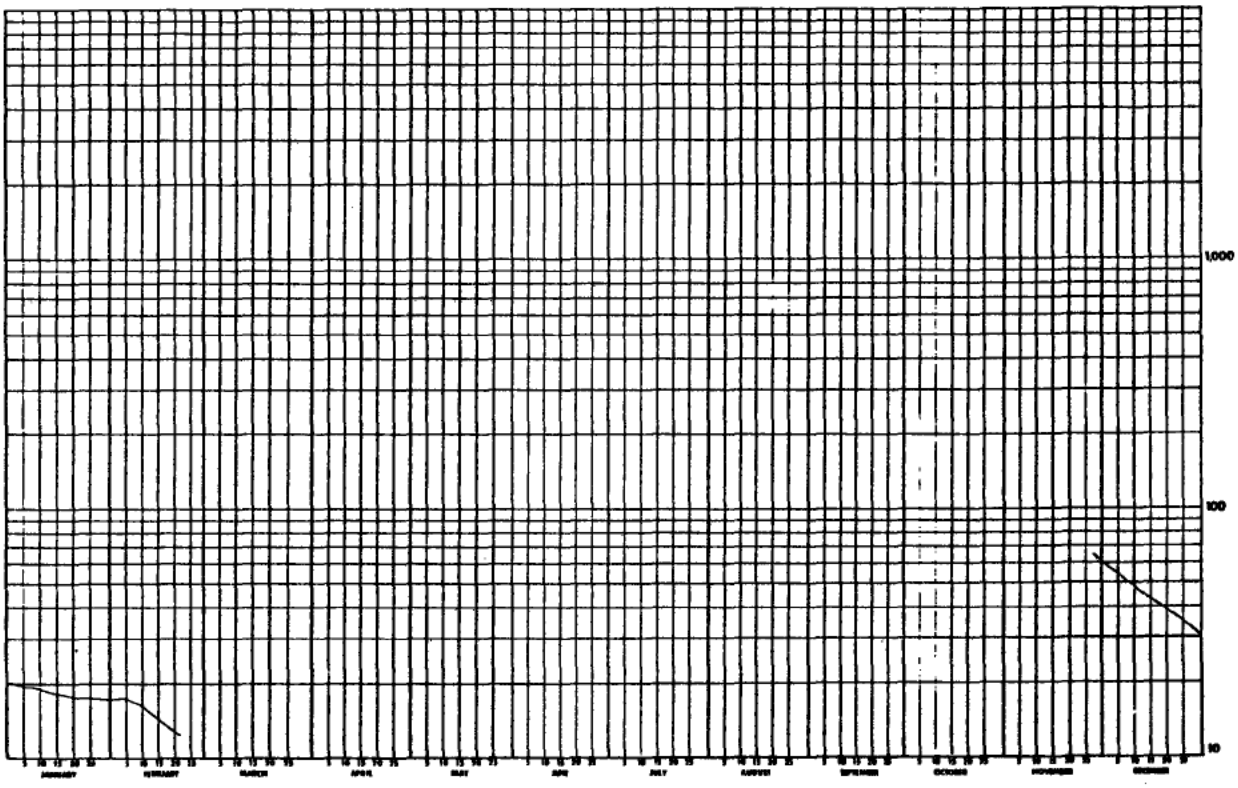
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1973

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	20.1 B	17.3 B	---	---	---	---	---	---	---	---	---	61.4 B	1
2	19.9 B	17.3 B	---	---	---	---	---	---	---	---	---	60.3 B	2
3	19.8 B	17.3 B	---	---	---	---	---	---	---	---	---	59.3 B	3
4	19.7 B	17.3 B	---	---	---	---	---	---	---	---	---	58.2 B	4
5	19.6 B	17.3 B	---	---	---	---	---	---	---	---	---	57.2 B	5
6	19.4 B	16.9 B	---	---	---	347 A	---	---	---	---	---	56.2 B	6
7	19.3 B	16.7 B	---	---	---	---	---	---	---	---	---	55.1 B	7
8	19.2 B	16.4 B	---	---	---	---	---	---	---	---	---	54.1 B	8
9	19.1 B	16.1 B	---	---	---	---	---	---	---	---	---	53.0 B	9
10	19.0 B	15.8 B	---	---	458 A	---	---	---	---	411 A	---	52.0 B	10
11	18.8 B	15.5 B	---	---	---	---	---	---	---	---	---	51.0 B	11
12	18.7 B	15.2 B	---	---	---	---	---	---	---	---	---	49.9 B	12
13	18.6 B	14.9 B	---	---	---	---	---	---	---	---	---	48.9 B	13
14	18.4 B	14.6 B	---	---	---	---	1520 A	---	---	---	---	47.8 B	14
15	18.3 B	14.3 B	---	---	---	---	---	---	---	---	---	46.8 B	15
16	18.2 B	14.0 B	---	---	---	---	---	---	---	---	---	45.8 B	16
17	18.1 B	13.8 B	---	---	---	---	---	---	---	---	---	44.7 B	17
18	17.9 B	13.5 B	---	---	---	725	---	---	---	---	---	43.7 B	18
19	17.8 B	13.2 B	---	---	---	---	---	---	---	---	---	42.6 B	19
20	17.7 B	12.9 B	---	---	---	---	---	---	---	---	---	41.6 B	20
21	17.6 B	12.6 B	---	---	---	---	---	---	---	---	---	40.6 B	21
22	17.4 B	12.3 B	---	---	---	---	---	---	---	---	---	39.5 B	22
23	17.3 B	---	---	---	---	---	461 A	---	---	---	---	37.4 B	23
24	17.3 B	---	---	---	---	---	---	---	---	---	---	36.4 B	24
25	17.3 B	---	---	---	---	---	---	---	---	---	---	35.4 B	25
26	17.3 B	---	---	---	---	---	---	---	---	---	---	34.3 B	26
27	17.3 B	---	---	---	---	---	---	---	---	---	65.4 B	33.3 B	27
28	17.3 B	---	---	---	---	---	---	---	---	---	64.5 B	32.2 B	28
29	17.3 B		---	---	---	---	---	---	---	---	63.4 B	31.2 B	29
30	17.3 B		---	---	---	---	---	---	---	---	62.4 B	30.2 B	30
31	17.3 B		---		---		---	---		---			31
TOTAL	564.2	---	---	---	---	---	---	---	---	---	---	1418.6	TOTAL
MEAN	18.3	---	---	---	---	---	---	---	---	---	---	45.8	MEAN
AC-FT	1130	---	---	---	---	---	---	---	---	---	---	2810	AC-FT
MAX	20.1	---	---	---	---	---	---	---	---	---	---	61.4	MAX
MIN	17.3	---	---	---	---	---	---	---	---	---	---	30.2	MIN

A-MANUAL GAUGE
B-ICE CONDITIONS

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 00 20 N
LONG 111 25 10 W

NATURAL FLOW



WATER SURVEY OF CANADA
JUL 14 1975 PAGE 231
CALGARY, ALTA.

STEEPBANK RIVER NEAR FORT MCMURRAY — STATION NO. 07CA006

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1974

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	20.0 B	21.0 B	21.5 B	19.3 A	1540	648	275	508	227	147	129	39.0 B	1
2	20.0 B	21.0 B	21.5 B	19.7 A	1430	547	285	536	207	244	98.1	39.0 B	2
3	20.0 B	21.0 B	21.5 B	20.0 A	1250	673	249	508	191	244	106	39.0 A	3
4	20.0 B	21.0 B	21.5 B	19.7 A	1160	675	247	557	176	247	132	38.4 B	4
5	20.0 B	21.5 B	21.5 B	19.3 B	1190	644	283	495	167	254	119	38.0 B	5
6	20.0 B	21.5 B	21.4 B	20.0 A	1060	618	279	474	152	252	113	38.0 B	6
7	20.1 B	21.5 B	22.1 B	20.0 A	1020	626	247	372	151	232	86.2	37.0 B	7
8	20.0 B	21.5 B	21.7 B	21.0 A	1070	622	291	318	151	206	95.5	37.0 B	8
9	20.0 B	21.5 B	20.5 B	22.0 A	1270	691	291	272	151	185	81.4	36.0 B	9
10	20.0 B	21.5 B	20.0 B	23.0 A	1270	659	270	243	153	185	64.8	36.0 B	10
11	20.0 B	21.5 B	21.0 B	26.0 A	1280	645	296	233	144	189	47.9 B	36.0 B	11
12	19.5 B	21.5 B	21.6 B	32.0 B	1220	540	317	225	138	193	49.0 B	35.0 B	12
13	19.5 B	21.5 B	21.7 B	37.0 A	1140	514	360	211	128	173	50.0 B	35.0 B	13
14	19.7 B	21.5 B	22.0 B	44.0 A	1070	480	341	191	122	165	52.0 B	35.0 B	14
15	19.5 B	21.5 B	21.1 B	50.0 A	974	463	345	175	119	159	53.0 B	34.0 B	15
16	19.5 B	21.5 B	19.9 B	57.0 A	903	439	379	168	119	170	51.0 B	34.0 B	16
17	19.5 B	21.5 B	20.2 E	74.0 A	840	419	388	165	117	185	51.0 B	34.0 B	17
18	19.5 B	21.5 B	20.3 E	98.0 A	790	376	366	163	111	198	49.0 B	33.0 B	18
19	20.0 B	21.5 B	21.2 E	460 A	778	344	348	154	104	199	45.8 B	33.0 B	19
20	20.1 B	21.5 B	22.9 B	950 A	697	315	409	166	101	197	41.0 B	32.0 B	20
21	21.1 B	21.5 B	22.6 B	1500 A	674	296	441	156	98.8	193	41.0 B	32.0 B	21
22	20.0 B	21.5 B	13.2 E	1570 E	618	263	416	149	96.1	191	41.0 B	32.0 B	22
23	20.0 B	21.5 B	19.8 E	1400 E	575	235	388	145	95.6	188	40.0 B	31.0 B	23
24	20.5 B	21.5 B	19.6 E	1720 A	540	225	333	151	107	163	40.0 B	31.0 B	24
25	21.5 B	21.5 B	19.8 E	1820	507	222	298	218	104	169	40.0 B	30.0 B	25
26	20.5 B	21.5 B	19.3 E	2120	447	216	255	254	152	143	40.0 B	30.0 B	26
27	21.5 B	21.5 B	17.6 E	2150	491	195	236	264	194	152	40.0 B	30.0 B	27
28	20.5 B	21.5 B	17.7 E	2010	519	134	214	258	214	147	39.0 B	29.0 B	28
29	21.0 B		18.6 E	1940	554	249	206	235	204	154	39.0 B	29.0 B	29
30	21.1 B		19.1 E	1760	498	266	286	234	181	164	39.0 B	29.0 B	30
31	21.1 B		19.2 E		649		246	243		139		28.0 B	31
TOTAL	666.9	609.0	631.5	20332.0	28804	13099	9702	8575	4366.5	5835	1912.1	1049.4	TOTAL
MEAN	21.5	21.4	20.3	678	993	437	313	275	146	188	63.7	33.9	MEAN
AC-FT	1320	1210	1250	40380	57130	26000	19200	17010	8660	11570	3790	2080	AC-FT
MAX	20.0	21.5	22.1	2150	1540	675	441	598	227	254	132	39.0	MAX
MIN	19.5	21.0	17.6	19.3	447	134	206	145	95.6	139	39.8	28.0	MIN

SUMMARY FOR THE YEAR 1974

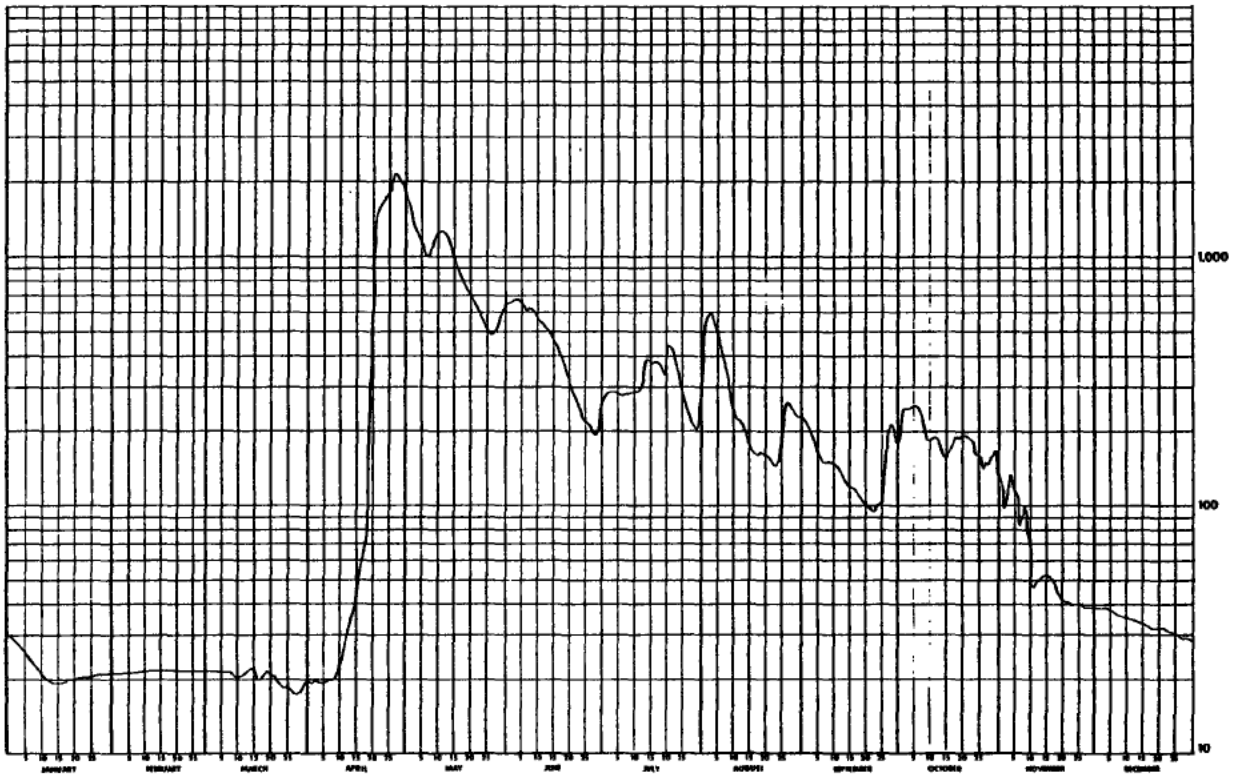
MEAN DISCHARGE, 249 CFS
TOTAL DISCHARGE, 180260 AC-FT
MAXIMUM DAILY DISCHARGE, 2150 CFS ON APR 27
MINIMUM DAILY DISCHARGE, 17.6 CFS ON MAR 27

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 08 20 N
LONG 111 25 10 W

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW

MAXIMUM INSTANTANEOUS DISCHARGE
2190 CFS AT 1035 PST ON APR 27



WATER SURVEY OF CANADA
JUN 02 1976 PAGE 106
CALGARY, ALTA.

STEEPBANK RIVER NEAR FORT MCMURRAY — STATION NO. 07DA006

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN		FEB		MAR		APR		MAY	JUN	JUL	AUG	SEP		OCT		NOV		DEC		DAY
1	25.0	B	17.0	B	14.0	B	16.6	B	648	441	1020	530	1660	E	800		190	B	34.5	B	1
2	27.5	B	17.8	B	14.0	B	16.8	B	696	416	997	681	1730	E	779	A	180	B	33.0	B	2
3	27.0	B	17.6	B	13.9	B	17.3	B	615	379	913	517	1790	E	860	E	175	B	32.0	B	3
4	26.6	B	17.2	B	14.0	B	17.2	B	542	364	819	523	1810	E	840	E	170	B	30.4	B	4
5	26.2	B	17.0	B	14.0	B	17.6	B	551	403	736	477	1790	A	900	E	160	B	30.0	B	5
6	25.7	B	16.8	B	14.0	B	18.0	B	529	445	788	469	1780	E	910	E	150	B	29.7	B	6
7	25.3	B	16.6	B	14.0	B	18.3	B	532	462	647	465	1650	E	920	E	145	B	29.2	B	7
8	25.0	B	16.4	B	14.0	B	18.6	B	536	468	570	404	1550	E	930	E	140	B	28.4	B	8
9	24.7	B	16.2	B	14.0	B	18.9	B	540	517	504	409	1480	E	940	E	130	B	27.7	B	9
10	24.3	B	16.0	B	14.0	B	19.3	B	520	552	442	382	1360	E	930	E	120	B	27.1	B	10
11	23.9	B	15.9	B	14.1	B	19.7	B	501	552	381	374	1270	E	920	E	115	B	26.7	B	11
12	23.5	B	15.6	B	14.2	B	19.9	B	481	543	349	352	1140	E	900	E	110	B	26.3	B	12
13	23.2	B	15.4	B	14.2	B	20.1	B	473	529	314	342	1100	E	760	E	100	B	26.0	B	13
14	22.9	B	15.2	B	14.3	B	20.3	B	467	516	291	372	1020	E	660	E	96.0	B	25.5	B	14
15	22.6	B	15.0	B	14.3	B	20.5	B	426	499	947	333	960	E	620	E	91.0	B	25.0	B	15
16	22.3	B	14.9	B	14.4	B	21.0	B	415	468	1240	330	920	E	590	E	87.0	B	24.6	B	16
17	22.0	B	14.8	B	14.5	B	21.5	B	408	447	1690	300	870	E	555	A	82.0	B	24.1	B	17
18	21.8	B	14.7	B	14.6	B	22.5	B	398	438	1890	E	270		796	E	544		77.0	B	23.8	B	18
19	21.5	B	14.6	B	14.7	B	24.0	B	378	434	1970	A	262	A	735	A	524		72.0	B	23.5	B	19
20	21.3	B	14.5	B	14.8	B	26.0	B	363	411	1920		320	E	680	E	502		67.0	B	23.1	B	20
21	21.1	B	14.4	B	14.8	B	34.0	B	337	394	1790		460	E	620	E	496		64.0	B	22.8	B	21
22	20.9	B	14.3	B	14.9	B	46.0	B	317	358	1580		550	E	555	A	483		60.0	B	22.5	B	22
23	20.6	B	14.2	B	15.0	B	66.0	B	306	316	1380		580	E	550		460		56.0	B	22.2	B	23
24	20.2	B	14.1	B	15.1	B	90.0	B	361	361	1170		620	E	522		433		52.0	B	22.0	B	24
25	19.9	B	14.0	B	15.3	B	120	B	425	364	980		650	E	498		320	B	48.0	B	21.8	B	25
26	19.7	B	14.0	B	15.4	B	170	B	554	479	830		690	E	538		270	B	45.0	B	21.5	B	26
27	19.4	B	14.0	B	15.6	B	240	B	638	626	715		730	E	590		250	B	42.0	B	21.2	B	27
28	19.1	B	14.0	B	15.8	B	477		661	722	705		940	E	616		235	B	40.0	B	21.0	B	28
29	18.9	B			16.0	B	564		669	916	753		1100	E	741		220	B	38.0	B	20.8	B	29
30	18.5	B			16.2	B	610		533	1020	714		1200	E	808		210	B	36.0	B	20.6	B	30
31	18.3	B			16.4	B			498		601		1350	E			200	B			20.5	B	31
TOTAL	701.7		433.0		454.5		2806.8		15162	14832	29066		16882		31993		19001		2934.6		747.5		TOTAL
MEAN	22.6		15.5		14.7		93.5		489	494	963		542		1070		613		97.9		25.4		MEAN
AC-FT	1390		859		932		5563		30066	29400	57600		33300		63400		37700		5830		1560		AC-FT
MAX	28.0		19.0		16.4		610		648	1020	1970		1350		1810		940		190		34.5		MAX
MIN	18.3		14.0		13.9		16.6		306	316	314		262		498		200		36.0		20.5		MIN

SUMMARY FOR THE YEAR 1975

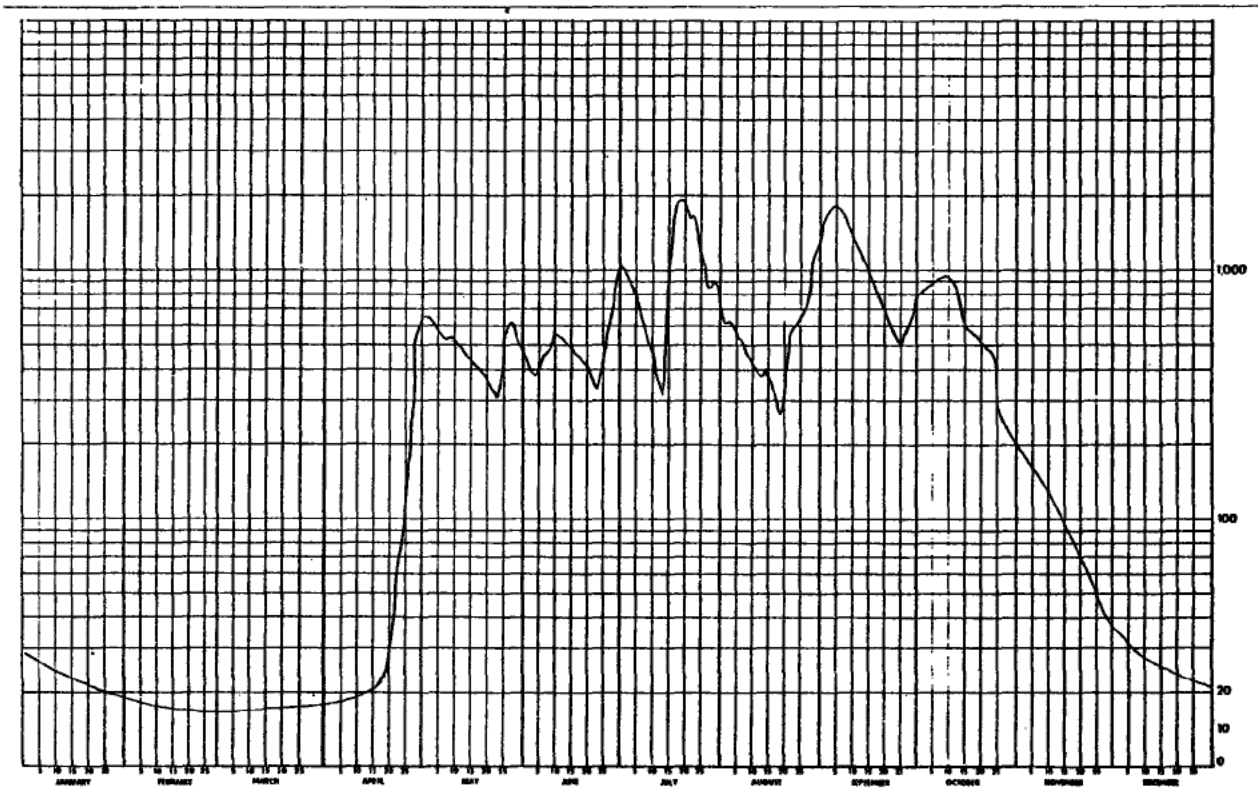
MEAN DISCHARGE, 372 CFS
TOTAL DISCHARGE, 269600 AC-FT
MAXIMUM DAILY DISCHARGE, 1970 CFS ON JUL 19
MINIMUM DAILY DISCHARGE, 13.9 CFS ON MAR 3

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 00 17 N
LONG 111 24 53 W

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED

NATURAL FLOW

MAXIMUM INSTANTANEOUS DISCHARGE
2300 CFS AT 1030 MST ON JUL 19



WATER SURVEY OF CANADA
FEB 4 1977 PAGE 10
CALGARY, ALTA.

STEEPBANK RIVER NEAR FORT MCMURRAY

STATION NO. 07DA006

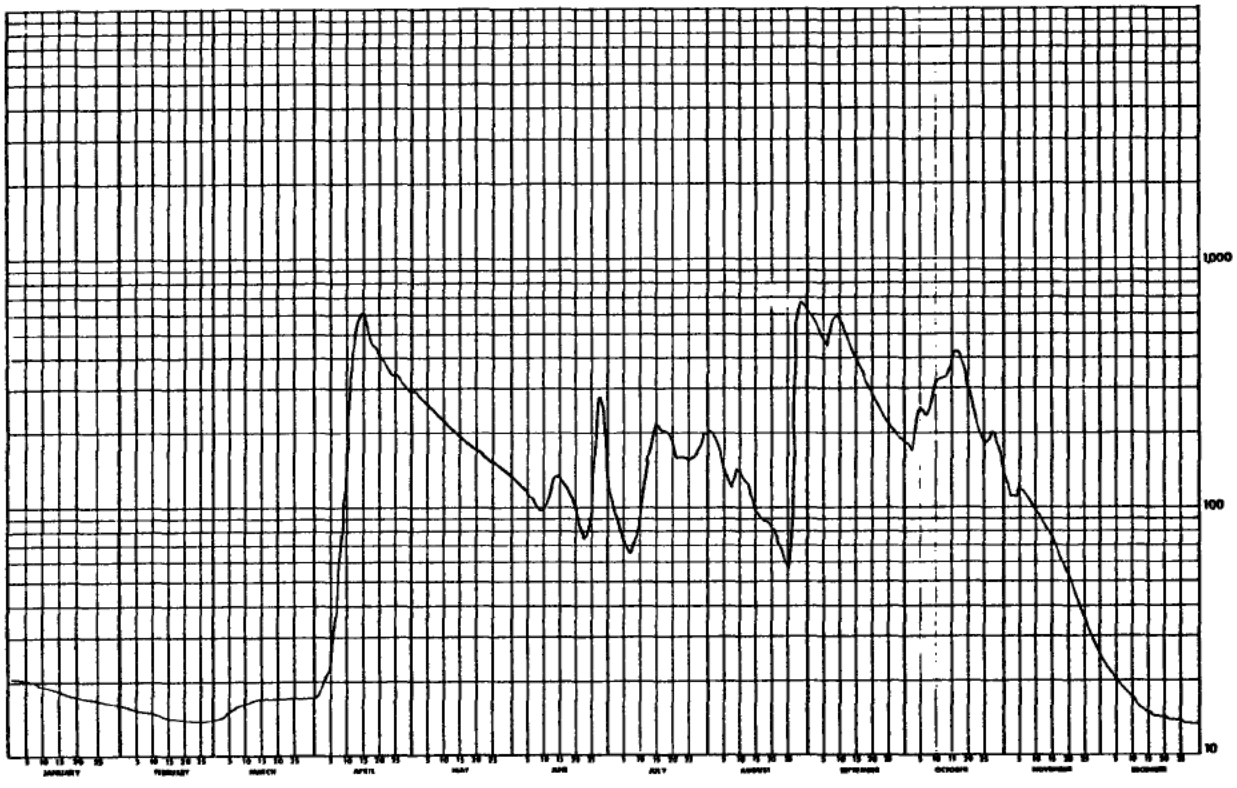
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	20.8 B	15.9 B	14.5 B	18.0 B	295 E	135	106	202	595	179	125 B	24.0 B	1
2	20.3 B	15.8 B	14.6 B	19.0 B	285 E	130	97.5	189	557	167	110 B	23.0 B	2
3	20.2 B	15.7 B	14.8 B	20.0 B	275 E	125	88.6	175	547	167	112 B	22.0 B	3
4	20.1 B	15.6 B	14.9 B	21.0 B	265 E	119	79.3	161	510	231	110 B	21.5 B	4
5	20.0 B	15.5 B	15.0 B	22.0 B	260 E	112	73.2	142	468	252	116 B	21.0 B	5
6	19.9 B	15.4 B	15.3 B	28.0 B	250 E	113	69.0	130	442	245	116 B	20.0 B	6
7	19.8 B	15.3 B	15.7 B	44.0 B	240 E	102	66.5	122	519	235	112 B	19.0 B	7
8	19.7 B	15.2 B	16.0 B	63.6 B	235 E	99.8	73.9	137	577	257	109 B	18.5 B	8
9	19.6 B	15.1 B	16.3 B	110 B	228 E	99.7	81.6	144	582	296	104 B	17.5 B	9
10	19.5 B	14.9 B	16.4 B	170 B	223 E	98.7	97.9	138	555	327	99.0 B	17.0 B	10
11	19.3 B	14.7 B	16.6 B	300 B	218 E	100	117	128	522	336	93.0 B	16.5 B	11
12	19.2 B	14.5 B	16.7 B	455 B	210 E	120	151	119	482	337	90.0 B	16.0 B	12
13	18.9 B	14.4 B	16.8 B	552 B	204 E	133	174	112	441	334	85.0 B	15.3 B	13
14	18.6 B	14.3 B	16.9 B	600 B	199 E	137	207	103	416	365	80.0 B	15.0 B	14
15	18.2 B	14.2 B	17.0 B	602 A	192 E	133	218	95.5	390	414	75.0 B	15.0 B	15
16	18.0 B	14.2 B	17.0 B	533	188 E	127	206	92.0	364	435	70.0 B	14.5 B	16
17	17.9 B	14.2 B	17.0 B	482	185 E	123	203	88.6	338	416 B	64.0 B	14.5 B	17
18	17.8 B	14.1 B	17.0 B	471	180 E	116	203	87.4	315	378 B	59.0 B	14.5 B	18
19	17.7 B	14.1 B	17.1 B	427	178 E	108	192	87.8	298	351 B	55.0 B	14.5 B	19
20	17.6 B	14.1 B	17.1 B	397	175 E	98.8	169	82.8	283	310 B	51.0 B	14.5 B	20
21	17.5 B	14.1 B	17.1 B	395	172 E	83.9	161	74.8	266	280 B	47.0 B	14.0 B	21
22	17.4 B	14.1 B	17.2 B	377	170 E	77.9	159	68.9	252	250 B	44.0 B	14.0 B	22
23	17.3 B	14.2 B	17.2 B	354	166 E	74.0	160	64.6	239	210 B	40.0 B	14.0 B	23
24	17.2 B	14.2 B	17.2 B	346	162 E	84.5	159	60.3	227	195 B	38.0 B	14.0 B	24
25	17.0 B	14.2 B	17.3 B	349	158 E	99.8	159	57.4	216	185 B	35.0 B	14.0 B	25
26	16.8 B	14.3 B	17.3 B	339	155 E	116	159	107	208	185 B	32.0 B	13.5 B	26
27	16.5 B	14.3 B	17.3 B	321	152 E	127	164	505	200	204 B	30.0 B	13.5 B	27
28	16.3 B	14.4 B	17.4 B	309	148 A	128	179	637	194	199 B	29.0 B	13.5 B	28
29	16.2 B	14.4 B	17.4 B	295 A	141	125	197	668	190	175 B	27.0 B	13.5 B	29
30	16.1 B		17.6 B	300 E	139	114	194	687	185	155 B	25.0 B	13.5 B	30
31	16.0 B		17.8 B		137		207	617		135 B		13.5 B	31
TOTAL	567.0	425.4	513.5	8719.6	6185	3362.1	4571.5	6042.7	11374	8225	2182.0	504.8	TOTAL
MEAN	18.3	14.7	16.6	291	200	112	147	195	379	265	72.7	16.3	MEAN
C-FT	1120	844	1020	17300	12300	6670	9070	12000	22600	16300	4330	1000	AC-FT
MX	20.8	15.9	17.8	602	295	137	218	668	595	435	125	24.0	MAX
MN	16.0	14.1	14.5	18.0	137	74.0	66.5	57.4	185	135	25.0	13.5	MIN

SUMMARY FOR THE YEAR 1976
MEAN DISCHARGE, 144 CFS
TOTAL DISCHARGE, 105000 AC-FT
MAXIMUM DAILY DISCHARGE, 668 CFS ON AUG 29
MINIMUM DAILY DISCHARGE, 13.5 CFS ON DEC 26

MAXIMUM INSTANTANEOUS DISCHARGE, 675 CFS AT 0940 MST ON AUG 29

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



5.32 TAR RIVER NEAR FORT MacKAY

STATION NAME: Tar River near Fort MacKay

STATION NUMBER: 07DA015

LOCATION: Latitude: 57°21'14" Longitude: 111°45'29"

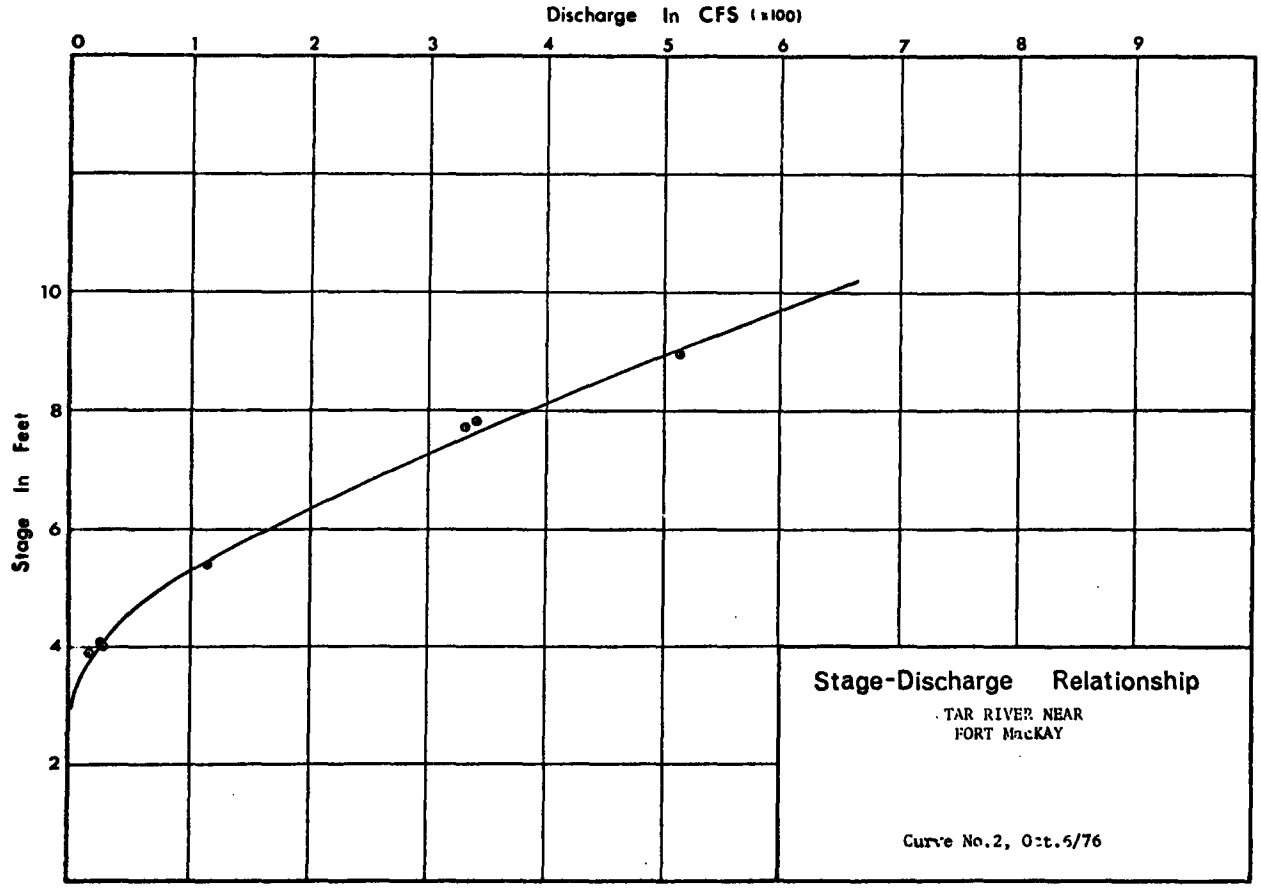
SW29-96-11-W4

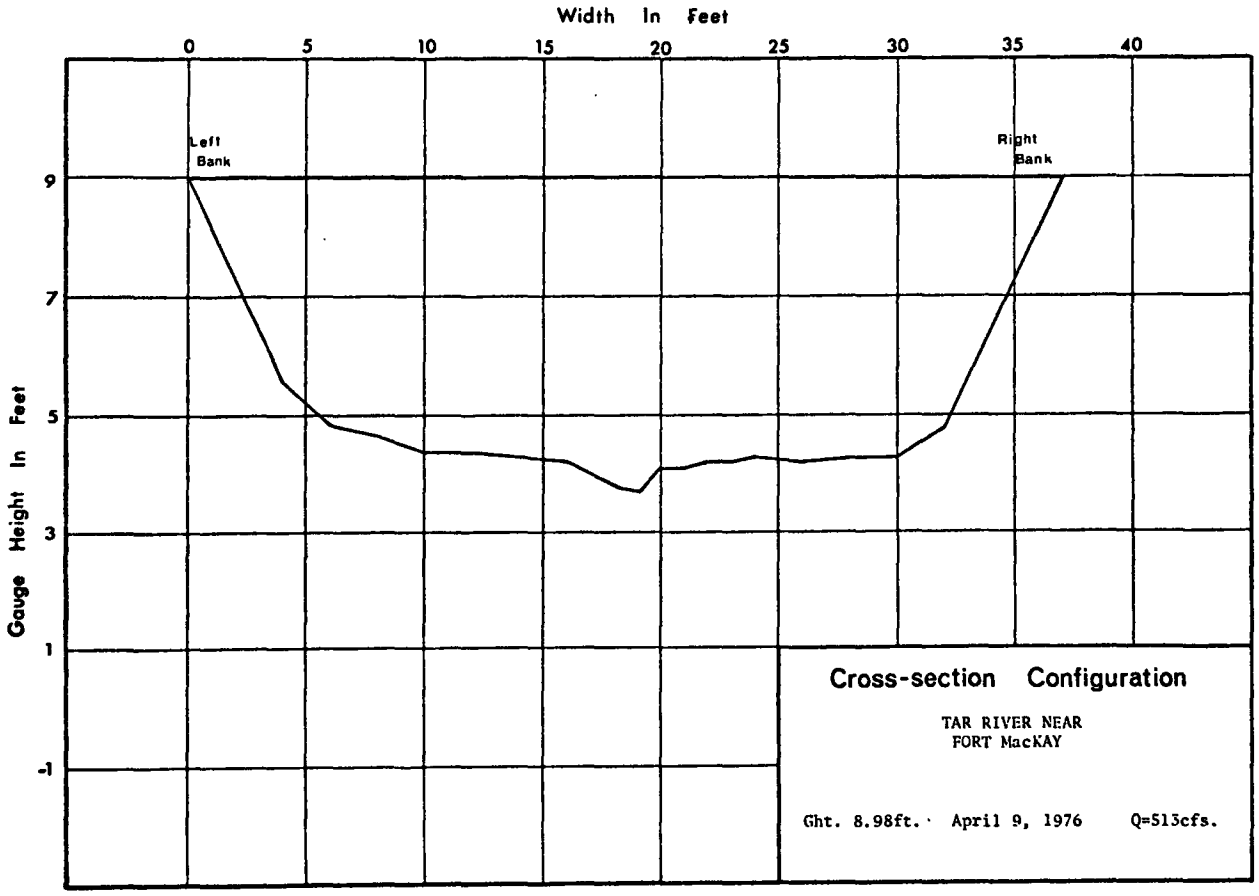
DRAINAGE AREA: 121 square miles (313 km^2)

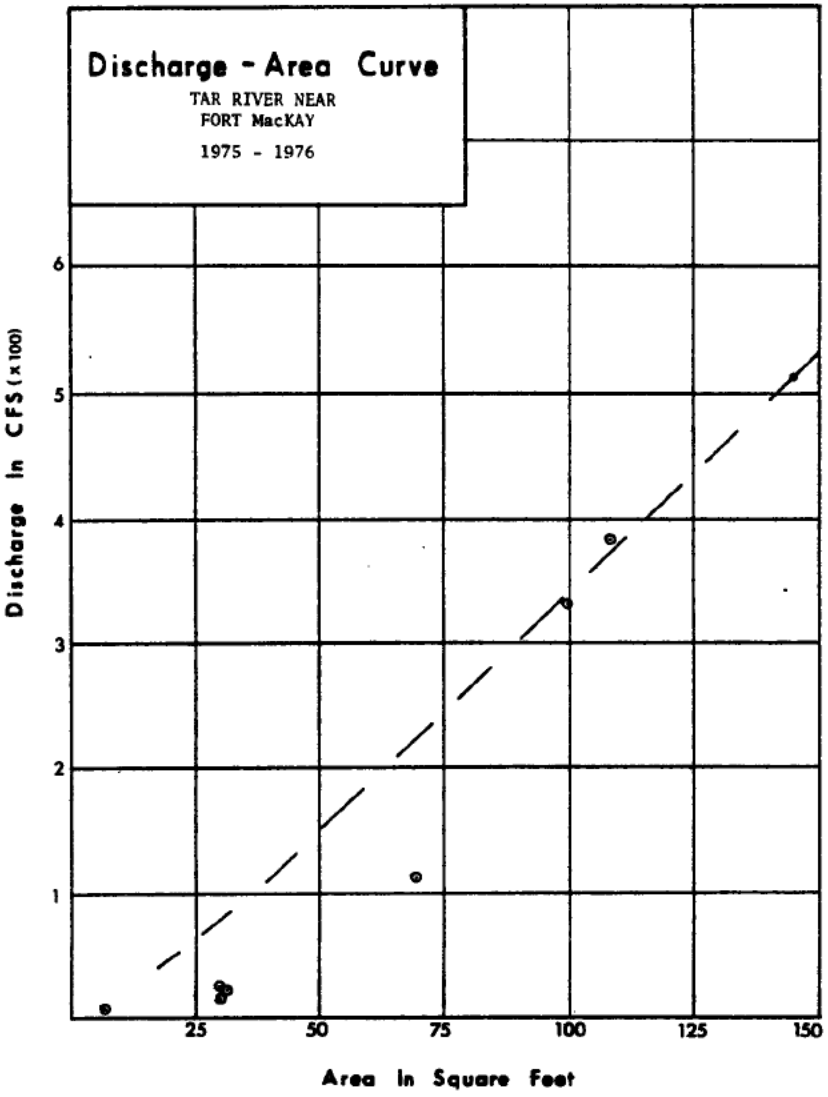
PERIOD OF RECORD: This station was established on July 23, 1975. Discharge data is available on a continuous basis from August, 1975 to December, 1976.

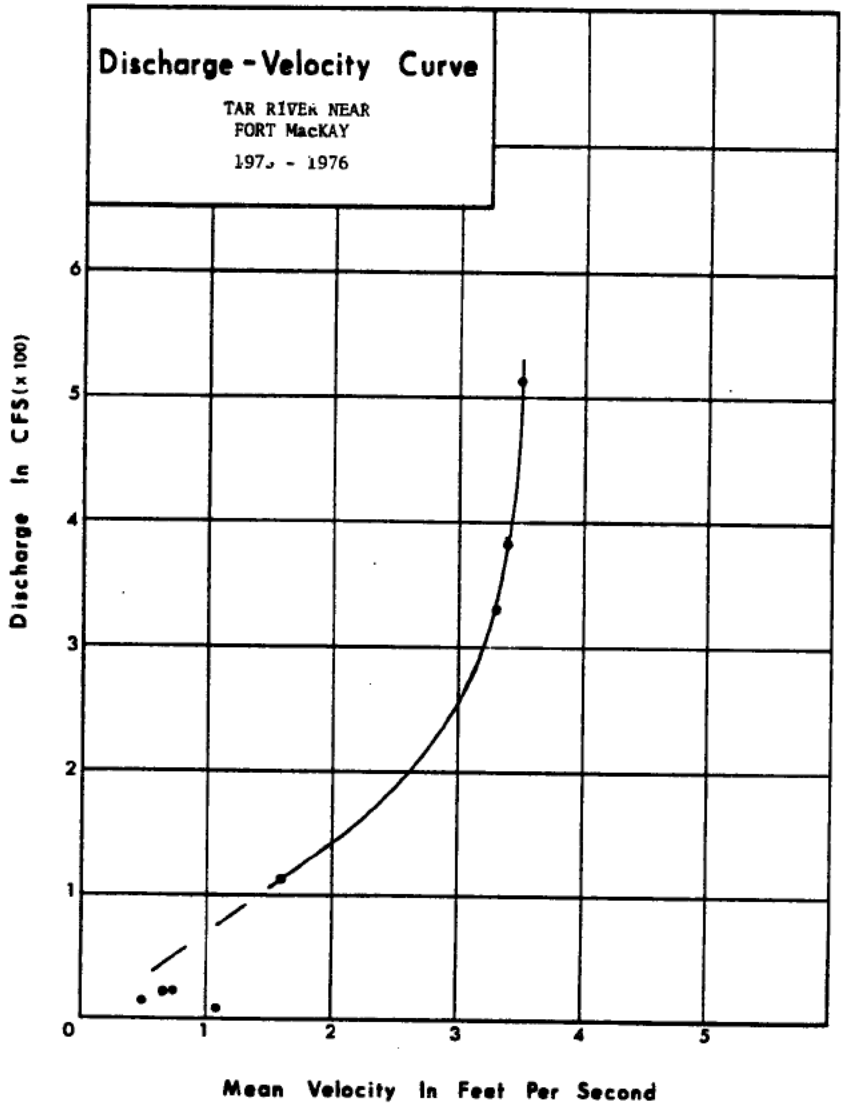
SITE DESCRIPTION: The gauge shelter is attached to the left downstream corner of a forestry bridge 13 air miles (21 km) north of Fort MacKay. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water discharge measurements are made by wading at various locations near the gauge or from the bridge during periods of high flow.

GENERAL: Zero flow has been observed during both winters of operation.


Discharge In CFS (x100)
0
1
2
3
4
5
6
7
8
9
Stage In Feet
10
8
6
4
2
Stage-Discharge Relationship
TAR RIVER NEAR
FORT MacKAY
Curve No.2, Oct.6/76


Width In Feet
0
5
10
15
20
25
30
35
40
Gauge Height In Feet
9
7
5
3
1
-1
Left
Bank
Right
Bank
Cross-section Configuration
TAR RIVER NEAR
FORT MacKAY
Ght. 8.98ft. April 9, 1976 Q=513cfs.


Discharge - Area Curve
TAR RIVER NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS (x 100)
1
2
3
4
5
6
25
50
75
100
125
150
Area In Square Feet


Discharge - Velocity Curve
TAR RIVER NEAR
FORT MacKAY
1975 - 1976
Discharge In CFS (x 100)
0
1
2
3
4
5
6
Mean Velocity In Feet Per Second

WATER SURVEY OF CANADA — TAR RIVER NEAR FORT MACKAY — STATION NO. 07DA015
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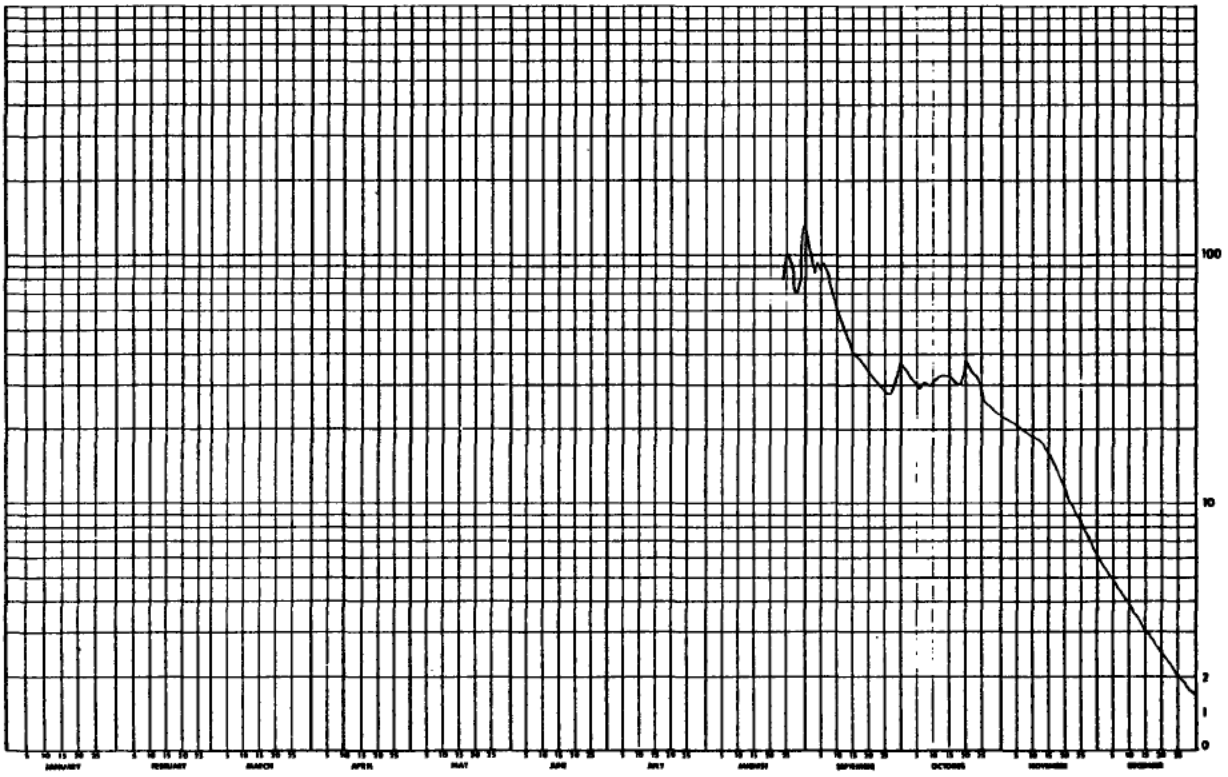
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	---	114	34.9	22.5 B	6.0 B	1
2	---	---	---	---	---	---	---	---	94.6	33.8	22.0 B	5.7 B	2
3	---	---	---	---	---	---	---	---	85.0	31.7	21.5 B	5.3 B	3
4	---	---	---	---	---	---	---	---	91.6	30.5	21.0 B	5.1 B	4
5	---	---	---	---	---	---	---	---	86.7	29.5	20.5 B	4.9 B	5
6	---	---	---	---	---	---	---	---	92.1	29.6	20.0 B	4.6 B	6
7	---	---	---	---	---	---	---	---	85.3	30.2	19.5 B	4.4 B	7
8	---	---	---	---	---	---	---	---	75.0	29.9	19.5 B	4.2 B	8
9	---	---	---	---	---	---	---	---	65.7	30.3	19.0 B	4.0 B	9
10	---	---	---	---	---	---	---	---	60.7	30.2	18.5 B	3.9 B	10
11	---	---	---	---	---	---	---	---	55.9	31.9	18.0 B	3.7 B	11
12	---	---	---	---	---	---	---	---	51.3	32.0	17.5 B	3.5 B	12
13	---	---	---	---	---	---	---	---	47.1	32.5	17.0 B	3.3 B	13
14	---	---	---	---	---	---	---	---	42.9	32.2	16.0 B	3.2 B	14
15	---	---	---	---	---	---	---	---	40.3	31.6	15.5 B	3.0 B	15
16	---	---	---	---	---	---	---	---	39.4	30.7	14.5 B	2.9 B	16
17	---	---	---	---	---	---	---	---	38.4	30.1	14.0 B	2.8 B	17
18	---	---	---	---	---	---	---	---	37.1	29.8	13.0 B	2.7 B	18
19	---	---	---	---	---	---	---	---	35.1	32.5	12.5 B	2.6 B	19
20	---	---	---	---	---	---	---	---	33.3	37.5	11.5 B	2.5 B	20
21	---	---	---	---	---	---	---	---	32.2	35.1	11.0 B	2.4 B	21
22	---	---	---	---	---	---	---	---	31.0	33.5	10.0 B	2.3 B	22
23	---	---	---	---	---	---	---	---	29.7	32.3	9.6 B	2.2 B	23
24	---	---	---	---	---	---	---	79.3	28.9	31.1	9.0 B	2.1 B	24
25	---	---	---	---	---	---	---	112	28.0	27.0 B	8.6 B	2.0 B	25
26	---	---	---	---	---	---	---	102	27.7	26.0 B	8.1 B	1.9 B	26
27	---	---	---	---	---	---	---	84.4	27.9	25.0 B	7.6 B	1.8 B	27
28	---	---	---	---	---	---	---	71.1	28.9	24.0 B	7.2 B	1.6 B	28
29	---		---	---	---	---	---	74.6	33.5	24.0 B	6.7 B	1.5 B	29
30	---		---	---	---	---	---	108	36.6	23.5 B	6.2 B	1.4 B	30
31	---		---		---		---	128		23.0 B		1.3 B	31
TOTAL	---	---	---	---	---	---	---	---	1575.9	935.1	437.5	98.8	TOTAL
MEAN	---	---	---	---	---	---	---	---	52.5	30.2	14.6	3.2	MEAN
AC-FT	---	---	---	---	---	---	---	---	3130	1850	868	196	AC-FT
MAX	---	---	---	---	---	---	---	---	114	37.5	22.5	6.0	MAX
MIN	---	---	---	---	---	---	---	---	27.7	23.0	6.2	1.3	MIN

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 21 14 N
LONG 111 45 29 W

B-ICE CONDITIONS

NATURAL FLOW



WATER SURVEY OF CANADA
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TAR RIVER NEAR FORT MACKAY

STATION NO. 07DA015

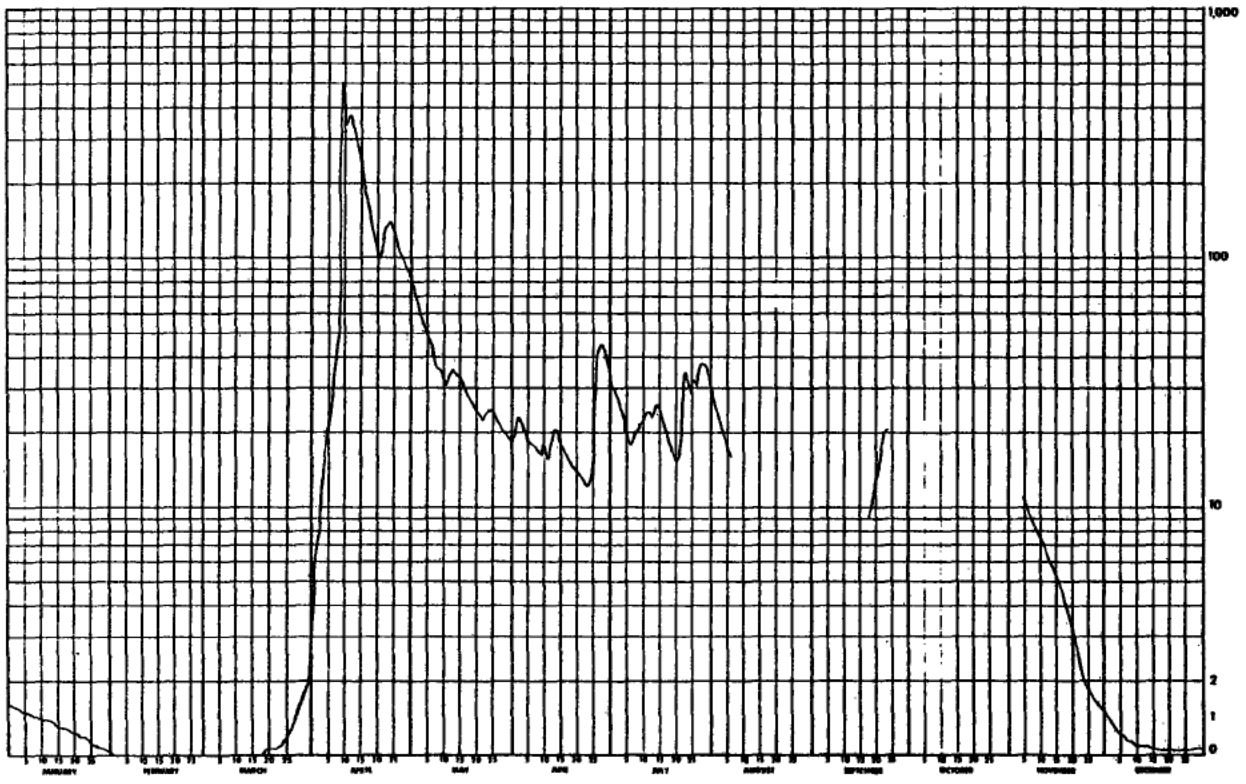
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1.2 B	0 B	0 B	4.4 B	73.9	19.9	30.2	27.9				.80 B	1
2	1.2 B	0 B	0 B	6.6 B	63.1	23.1	28.7	25.1				.70 B	2
3	1.1 B	0 B	0 B	10.0 B	57.4	22.9	25.0	22.6				.60 B	3
4	1.0 B	0 B	0 B	15.0 B	52.2	20.9	21.6	19.8			11.1 B	.50 B	4
5	1.0 B	0 B	0 B	21.0 B	46.5	19.0	18.7	17.4			10.5 B	.40 B	5
6	1.0 B	0 B	0 B	28.0 B	44.2	18.0	17.7	15.2 A			9.8 B	.40 B	6
7	.90 B	0 B	0 B	40.0 B	37.9	17.5	17.7	14.3 A			9.2 B	.30 B	7
8	.88 B	0 B	0 B	60.8 B	36.6	17.1	21.8				8.7 B	.30 B	8
9	.80 B	0 B	0 B	513 A	35.1	16.0	21.3				8.2 B	.20 B	9
10	.80 B	0 B	0 B	329 A	32.6	18.4	22.2				7.6 B	.20 B	10
11	.80 B	0 B	0 B	355 E	31.4	15.4	24.3				7.1 B	.20 B	11
12	.80 B	0 B	0 B	383 A	33.0	17.6	24.3				6.6 B	.20 B	12
13	.80 B	0 B	0 B	335 E	35.5	20.6	22.6				6.1 B	.16 B	13
14	.70 B	0 B	0 B	270 E	34.8	20.3	25.7				5.7 B	.10 B	14
15	.70 B	0 B	0 B	230 E	33.4	18.0	25.6				5.3 B	.10 B	15
16	.60 B	0 B	0 B	190 E	30.8	16.9	22.9				4.9 B	.10 B	16
17	.60 B	0 B	0 B	160 E	29.1	16.0	21.4				4.3 B	.10 B	17
18	.60 B	0 B	0 B	135 E	26.8	15.3	18.4		9.4 A		3.9 B	.10 B	18
19	.50 B	0 B	.10 B	120 E	26.0	14.1	16.4		10.8		3.6 B	.10 B	19
20	.50 B	0 B	.10 B	109 A	23.9	13.8	15.5		12.8		3.2 B	.10 B	20
21	.40 B	0 B	.10 B	99.7	23.0	13.2	15.9		14.4		2.8 B	.10 B	21
22	.40 B	0 B	.20 B	129	22.6	12.8	22.6		17.7		2.5 B	.10 B	22
23	.40 B	0 B	.20 B	140	23.1	12.3	35.5		20.1		2.2 B	.10 B	23
24	.30 B	0 B	.30 B	143	25.0	13.7	31.8		20.6		2.0 B	.10 B	24
25	.30 B	0 B	.40 B	135	24.2	26.0	27.6				1.7 B	.10 B	25
26	.20 B	0 B	.60 B	118	23.2	39.5	32.2				1.5 B	.10 B	26
27	.20 B	0 B	.80 B	108	21.6	44.6	31.6				1.3 B	.10 B	27
28	.20 B	0 B	1.2 B	99.4	20.0	47.4	37.0				1.1 B	.10 B	28
29	.10 B	0 B	1.6 B	92.4	19.8	39.3	36.8				1.0 B	.10 B	29
30	.10 B		2.1 B	79.1	19.0	32.5	35.4				.98 B	.10 B	30
31	.10 B		3.0 B		18.5		31.9					.10 B	31
TOTAL	19.18	0	10.70	4458.4	1024.2	642.1	779.9					6.76	TOTAL
MEAN	.62	0	.35	149	33.0	21.4	25.2					.22	MEAN
AC-FT	38.0	0	21.2	8840	2030	1270	1550					13.4	AC-FT
MAX	1.2	0	3.0	513	73.9	47.4	37.0					.80	MAX
MIN	.10	0	0	4.4	18.5	12.3	15.5					.10	MIN

SUMMARY FOR THE MONTHS JAN TO JUL
MEAN DISCHARGE, 32.6 CFS
TOTAL DISCHARGE, 13700 AC-FT
MAXIMUM DAILY DISCHARGE, 513 CFS ON APR 9
MINIMUM DAILY DISCHARGE, 0 CFS ON FEB 1

MAXIMUM INSTANTANEOUS DISCHARGE, *NOT* CFS AT *DETERMINED* ON

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



5.33 TAR RIVER (UPPER) NEAR FORT MacKAY

STATION NAME: Tar River (Upper) near Fort MacKay

STATION NUMBER: 07DA019

LOCATION: Latitude: 57°29'05" Longitude: 112°01'10"

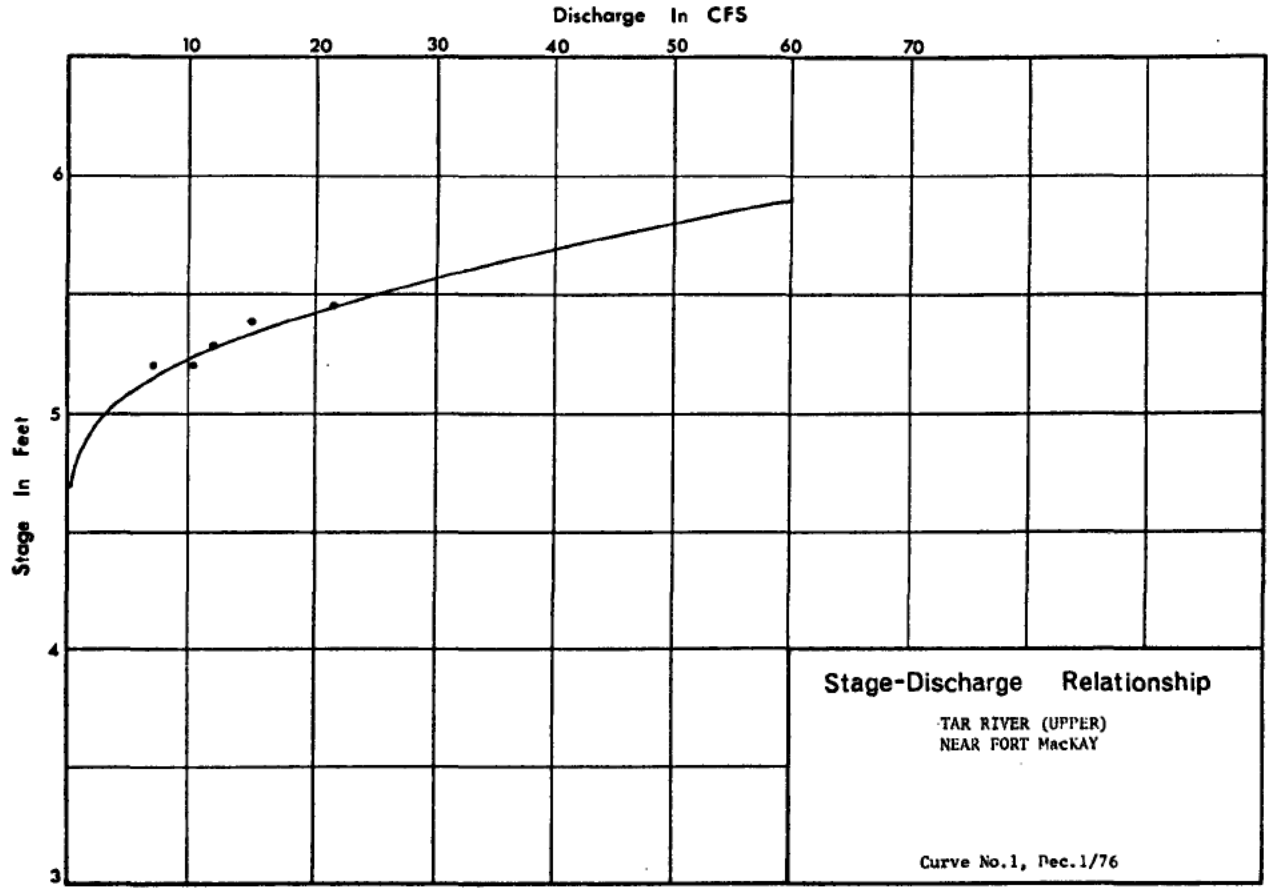
SE10-98-13-W4

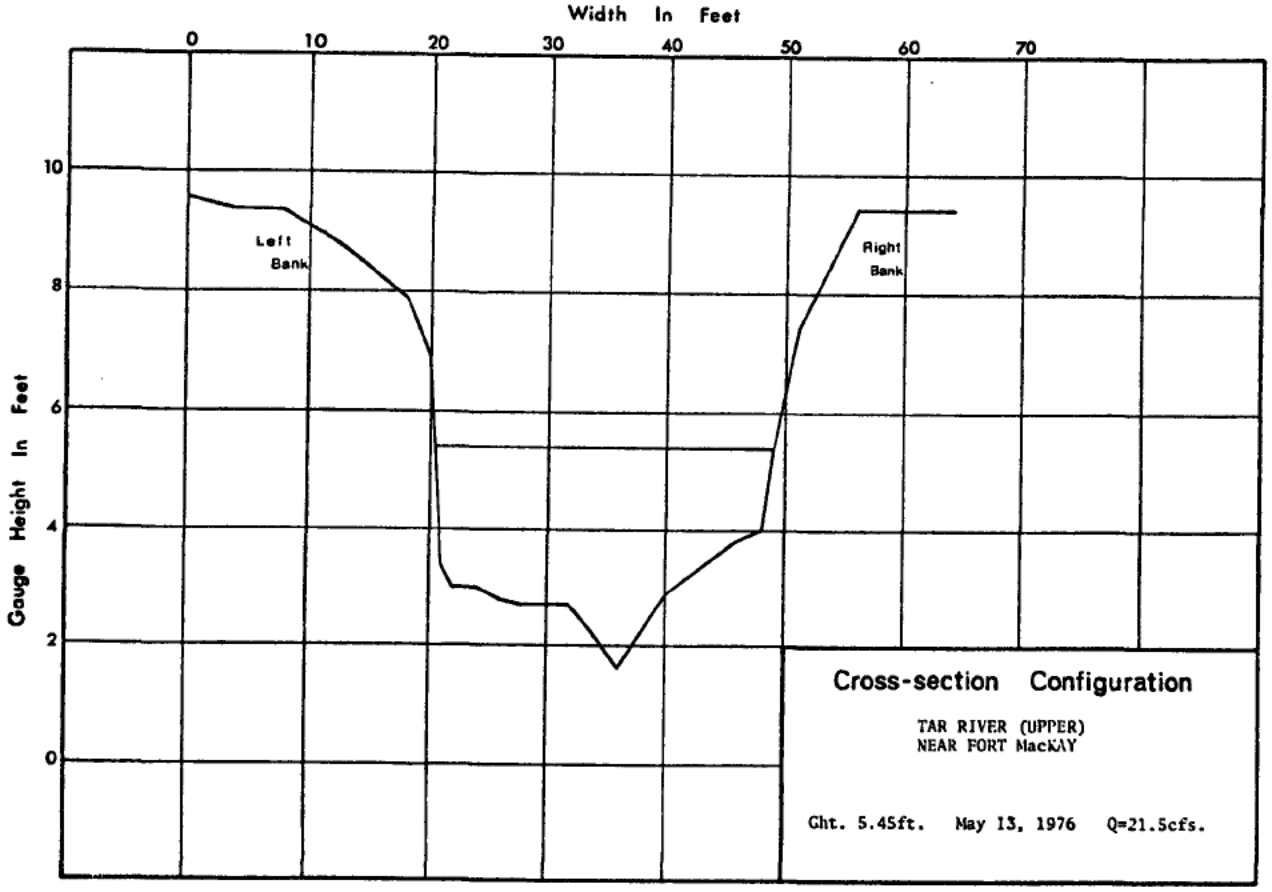
DRAINAGE AREA: 37.6 square miles (97.4 km^2)

PERIOD OF RECORD: This station was established May 14, 1976. Intermittent discharge data is available for 1976.

SITE DESCRIPTION: The gauge is located on the right bank 26 air miles (42 km) northwest of Fort MacKay. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water discharge measurements are made by wading or from a measuring bridge 300 feet (91 m) above the gauge.

GENERAL: This installation was plagued by equipment malfunctions during most of the summer resulting in a good deal of lost record.


Discharge In CFS
10
20
30
40
50
60
70
Stage In Feet
6
5
4
3
Stage-Discharge Relationship
TAR RIVER (UPPER)
NEAR FORT MacKAY
Curve No.1, Dec.1/76


Width In Feet
0
10
20
30
40
50
60
70
Gauge Height In Feet
10
8
6
4
2
0
Left Bank
Right Bank
Cross-section Configuration
TAR RIVER (UPPER)
NEAR FORT MacKAY
Ght. 5.45ft. May 13, 1976 Q=21.5cfs.

WATER SURVEY OF CANADA
FEB 21 1977 PAGE 6
CALGARY, ALTA.

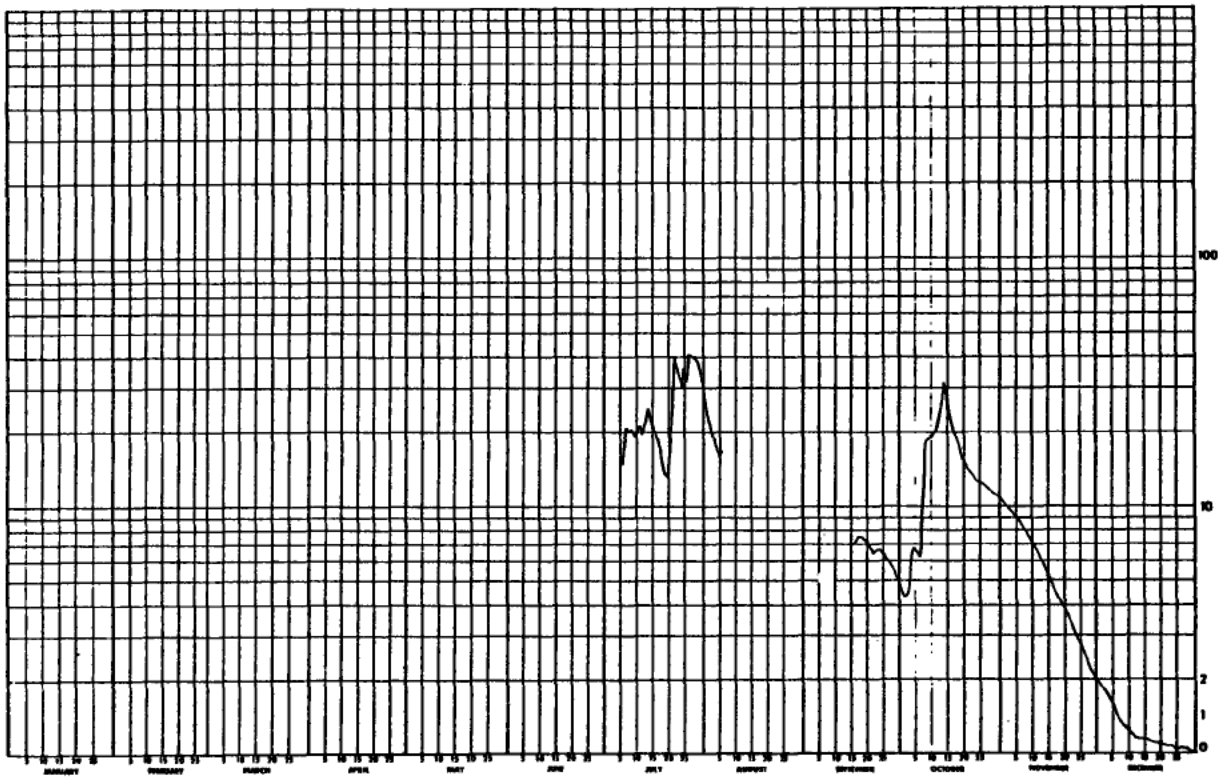
TAR RIVER (UPPER) NEAR FT. MACKAY

STATION NO. 07DA019

(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1								27.6		4.5	10.3 B	1.8 B	1
2								22.7		4.3	13.0 B	1.7 B	2
3								20.8		6.2	9.7 B	1.5 B	3
4								18.1		6.7	9.4 B	1.3 B	4
5								15.1 A		6.5	9.0 B	1.1 B	5
6							18.5 A	16.7 A		6.2	8.7 B	.90 B	6
7							21.0			10.5	8.3 B	.70 B	7
8							20.1			16.7	7.9 B	.60 B	8
9							20.4			18.8	7.4 B	.50 B	9
10							19.3			19.0	7.1 B	.40 B	10
11							21.5			19.5	6.8 B	.40 B	11
12							19.6			22.1	6.4 B	.30 B	12
13					21.5 A		23.1			24.1	6.0 B	.30 B	13
14					21.5 A		25.3		7.0 A	31.7	5.7 B	.30 B	14
15							21.9		6.9	26.2 B	5.4 B	.25 B	15
16							20.3		7.2	22.0 B	5.0 B	.25 B	16
17							17.8		7.5	20.0 B	4.7 B	.20 B	17
18							15.0		7.5	18.0 B	4.4 B	.20 B	18
19							13.3		7.4	16.0 B	4.1 B	.15 B	19
20							13.1		7.2	14.5 B	3.9 B	.15 B	20
21							22.4		6.9	14.0 B	3.6 B	.10 B	21
22							39.1		6.5	13.5 B	3.3 B	.10 B	22
23							36.1		6.5	13.0 B	3.1 B	.10 B	23
24							29.7		6.7	12.6 B	2.9 B	.05 B	24
25							36.1		6.6	12.2 B	2.8 B	.05 B	25
26							32.6		6.2	12.0 B	2.6 B	.05 B	26
27					10.4 A		41.1		6.1	11.7 B	2.4 B	.05 B	27
28							48.8		5.8	11.5 B	2.3 B	.05 B	28
29							39.2		5.5	11.2 B	2.2 B	0 B	29
30							36.7		4.8	10.8 B	2.0 B	0 B	30
31							32.1			10.5 B		0 B	31
TOTAL										448.5	167.4	13.55	TOTAL
MEAN										14.5	5.6	.44	MEAN
AC-FT										890	332	26.9	AC-FT
MAX										31.7	10.3	1.8	MAX
MIN										4.3	2.0	0	MIN

A-MANUAL GAUGE
B-ICE CONDITIONS



5.34 THICKWOOD CREEK NEAR FORT MacKAY

STATION NAME: Thickwood Creek near Fort MacKay

STATION NUMBER: 07DB004

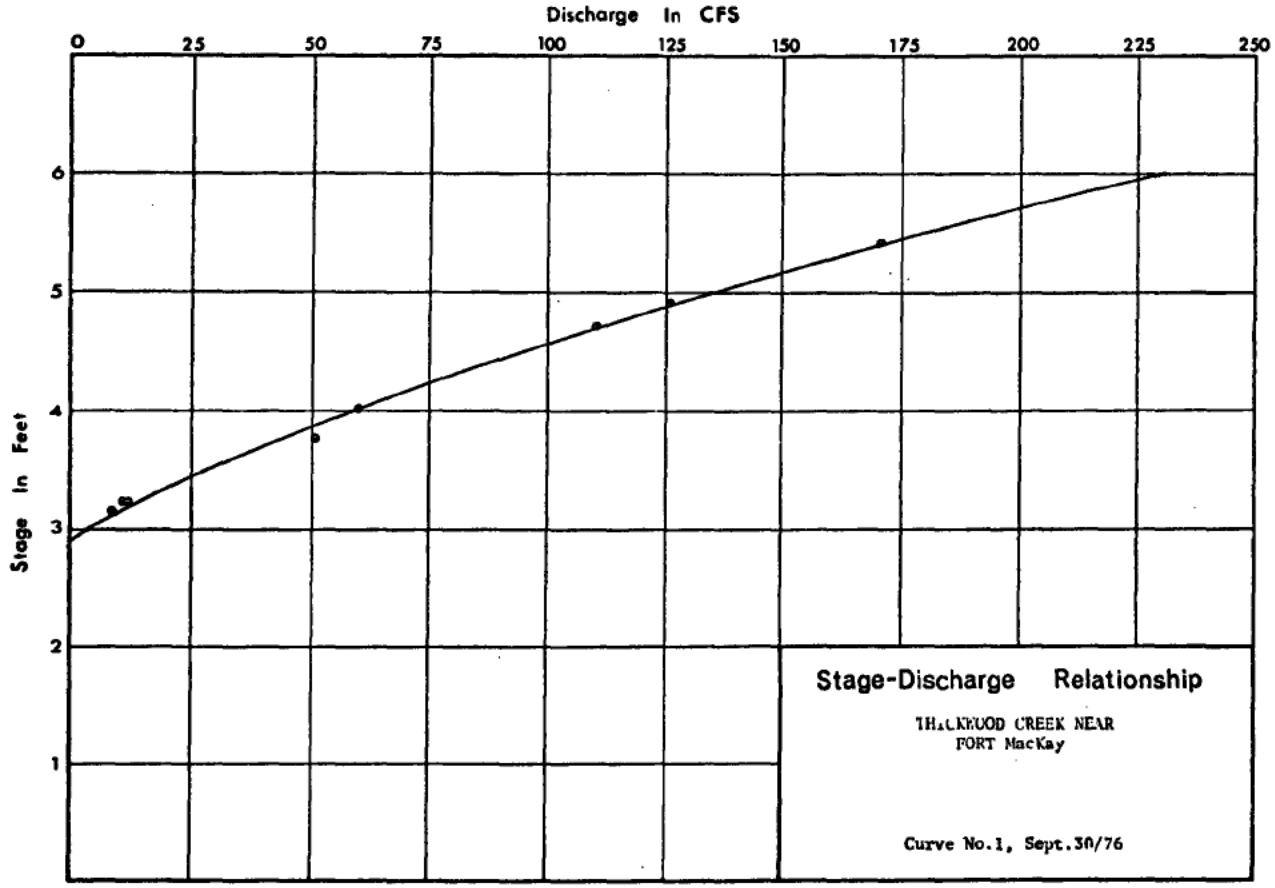
LOCATION: Latitude: 56°53'55" Longitude: 112°10'15"

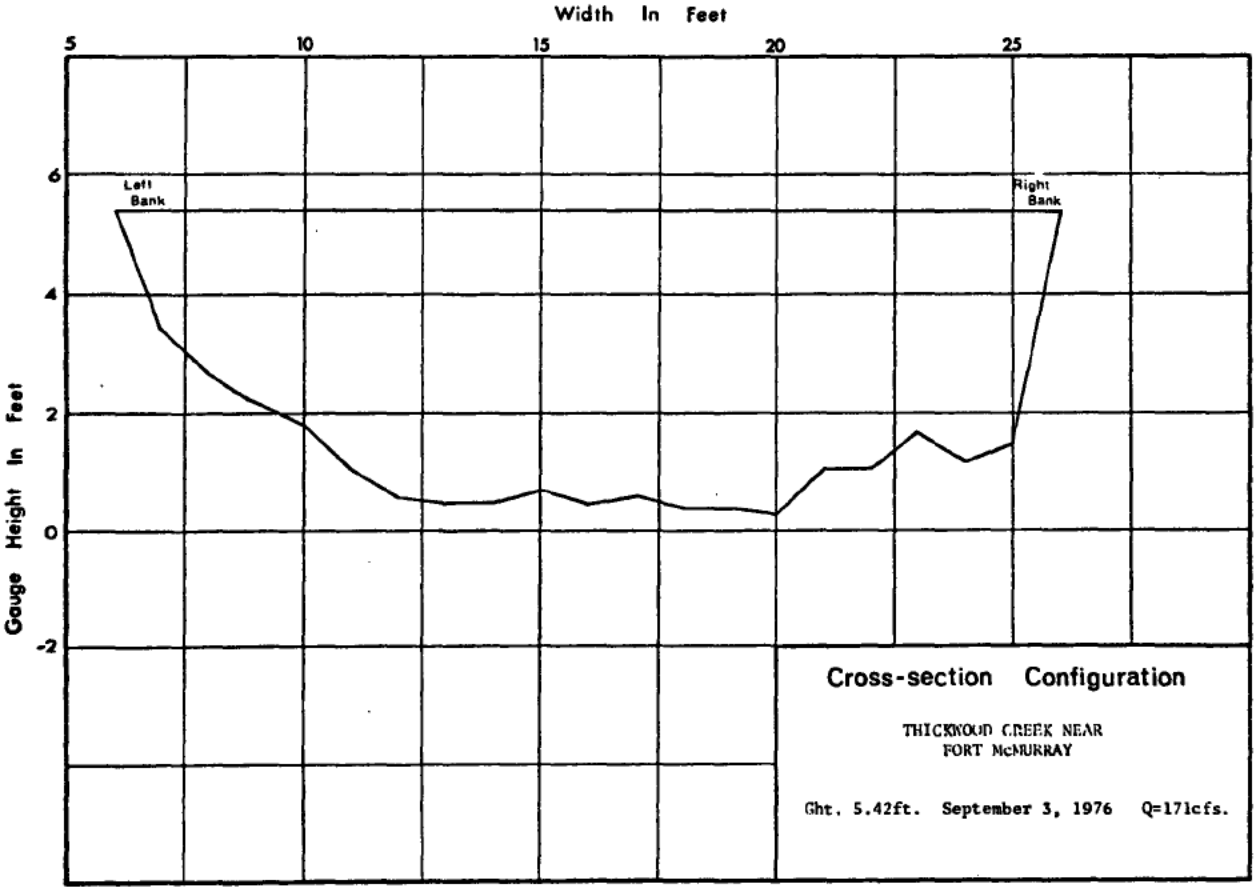
DRAINAGE AREA: 65.5 square miles (170 km^2)

PERIOD OF RECORD: This station was established on May 8, 1976. Discharge data is available on an intermittent basis to December, 1976.

SITE DESCRIPTION: The gauge is located on the left bank approximately one mile (1.6 km) above the confluence with the MacKay River and approximately 34 air miles (55 km) southwest of Fort MacKay. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder. Open water discharge measurements are made by wading or from a measuring bridge 100 feet (30 m) downstream from the gauge.

GENERAL:


Discharge In CFS
0
25
50
75
100
125
150
175
200
225
250
Stage In Feet
6
5
4
3
2
1
Stage-Discharge Relationship
THICKWOOD CREEK NEAR
FORT MacKay
Curve No.1, Sept.30/76


Width In Feet
5
10
15
20
25
Gauge Height In Feet
6
4
2
0
-2
Left Bank
Right Bank
Cross-section Configuration
THICKWOOD CREEK NEAR
FORT McMURRAY
Ght. 5.42ft. September 3, 1976 Q=171cfs.

WATER SURVEY - CANADA
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CALGARY, ALTA.

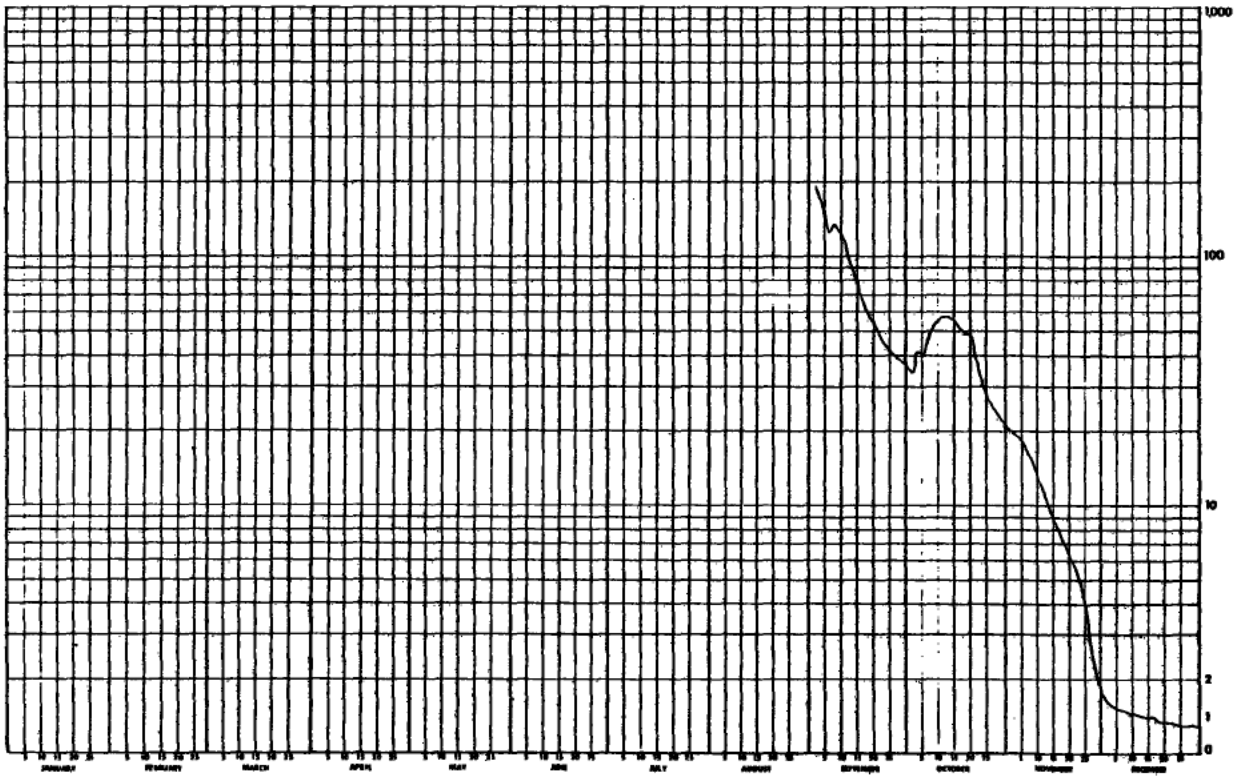
THICKWOOD CREEK NEAR FT. MACKAY — STATION). 07DB004

(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1						8.9	21.6	11.9		34.7	20.5 B	1.4 B	1
2						8.2	21.2	11.6	192 A	33.8	20.0 B	1.3 B	2
3						6.7	19.0	11.5 A	176	40.0	19.0 B	1.2 B	3
4						5.8	14.6		156	41.8	18.5 B	1.1 B	4
5						5.2	13.4		139	41.0	17.8 B	1.1 B	5
6						4.9	12.6		124	40.3	17.0 B	1.0 B	6
7						5.4	11.6		129	45.0	16.0 B	1.0 B	7
8					11.5 A	5.4	12.4		136	52.4	15.0 B	1.0 B	8
9					11.3	5.2	11.9	19.7 A	130	54.0	14.0 B	.90 B	9
10					10.6	4.2	13.7		123	55.9	13.0 B	.90 B	10
11					9.8	5.6	16.6	19.1 A	113	56.5	12.0 B	.90 B	11
12					9.7	6.5	15.4	22.1 A	101	56.4	11.0 B	.90 B	12
13					9.4	5.7	15.3	62.1 A	90.8	57.1	10.0 B	.80 B	13
14					9.7	5.0	15.8		81.9	57.1	9.6 B	.80 B	14
15					10.2	4.7	14.8		74.7	55.0	9.0 B	.80 B	15
16					9.5	3.8	13.9		68.8	53.4	8.5 B	.78 B	16
17					9.9	2.8	14.2		63.6	51.3	8.0 B	.75 B	17
18					8.9	2.0	13.5		58.6	49.5	7.5 B	.75 B	18
19					8.7	1.5	12.0		54.9	48.1	7.0 B	.70 B	19
20					9.1	1.7	10.9		52.2	47.9	6.6 B	.70 B	20
21					9.4	1.1	10.7		49.9	41.0 B	6.2 B	.70 B	21
22					10.0	1.1	10.1		46.8	37.0 B	5.6 B	.70 B	22
23					10.0	.86	8.8		44.6	33.0 B	5.1 B	.65 B	23
24					9.7	6.0	8.2		43.2	30.0 B	4.6 B	.65 B	24
25					9.2	8.0	8.1		42.0	27.5 B	3.9 B	.65 B	25
26					8.6	11.4	7.6		40.6	26.0 B	3.2 B	.65 B	26
27					7.9	18.2	8.1		40.5	24.5 B	2.8 B	.60 B	27
28					8.1	20.7	8.3		38.7	23.5 B	2.4 B	.60 B	28
29					7.6	21.8	8.8		38.1	22.5 B	2.0 B	.60 B	29
30					6.5	19.9	9.3		36.6	21.5 B	1.6 B	.60 B	30
31					7.0		10.6			21.0 B		.55 B	31
TOTAL						208.46	393.0			1278.7	297.4	25.73	TOTAL
MEAN						6.9	12.7			41.2	9.9	.83	MEAN
AC-FT						413	780			2540	590	51.0	AC-FT
MAX						21.8	21.6			57.1	20.5	1.8	MAX
MIN						.86	7.6			21.0	1.6	.55	MIN

MAXIMUM INSTANTANEOUS DISCHARGE 222 CFS IN SEP (FROM HIGH WATER MARK)

A=MANUAL GAUGE
B=ICE CONDITIONS



5.35 UNNAMED CREEK NEAR FORT MacKAY

STATION NAME: Unnamed Creek near Fort MacKay

STATION NUMBER: 07DA011

LOCATION: Latitude: 57°39'31" Longitude: 111°31'11"

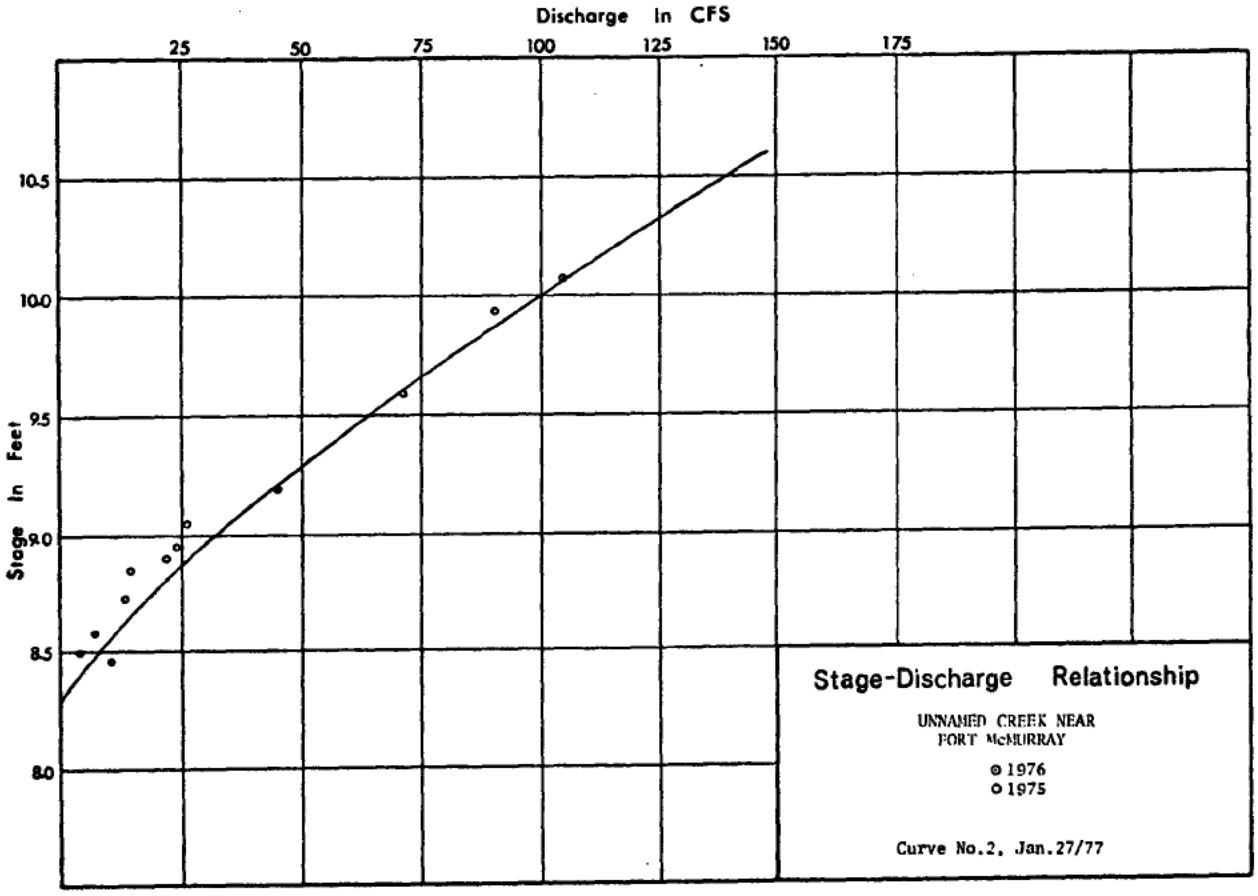
SE11-100-10-W4

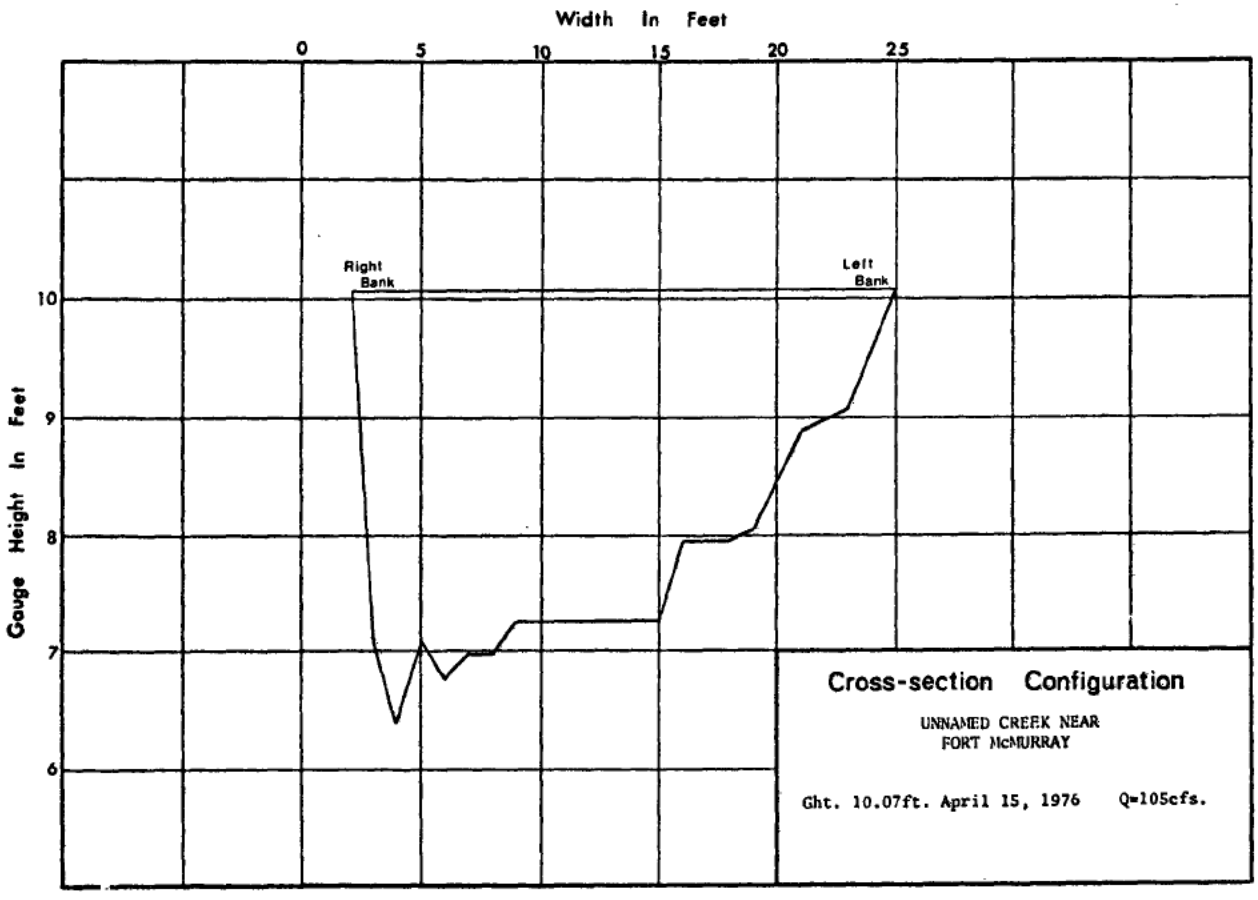
DRAINAGE AREA: 108 square miles (280 km^2)

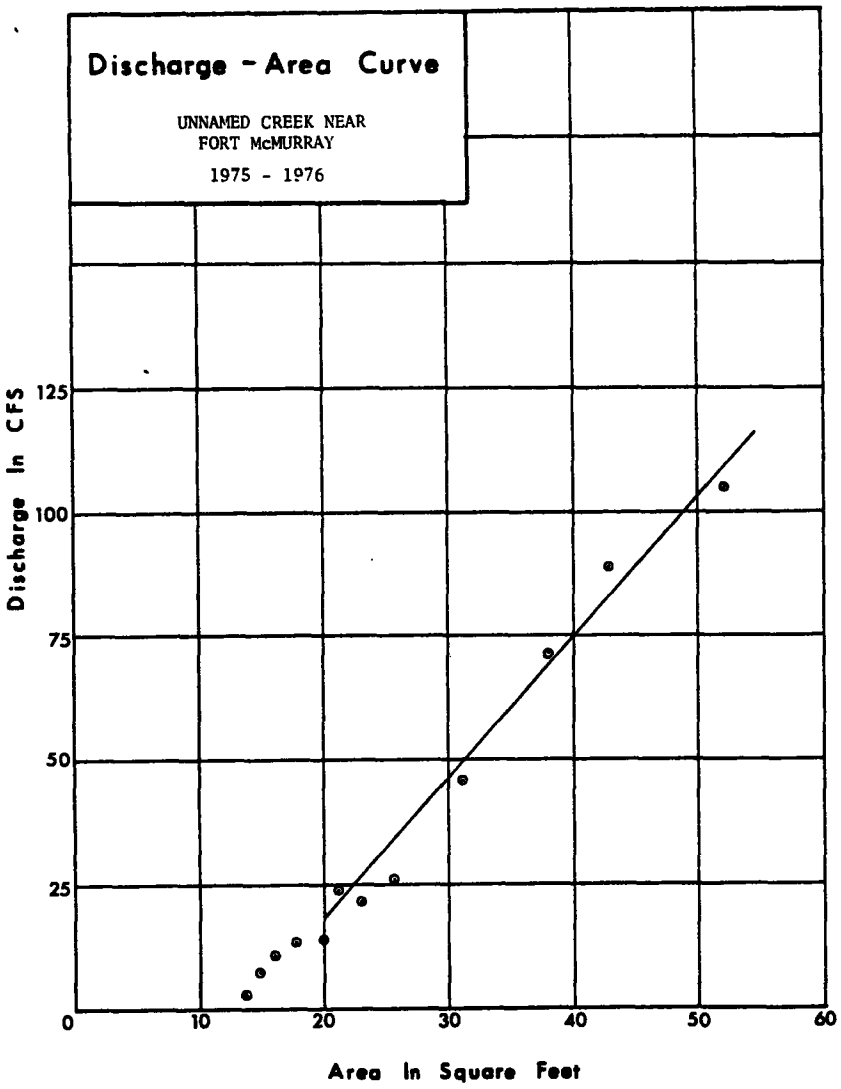
PERIOD OF RECORD: This station was established on July 8, 1975. Discharge data is available on a continuous basis from September, 1975 to December, 1976.

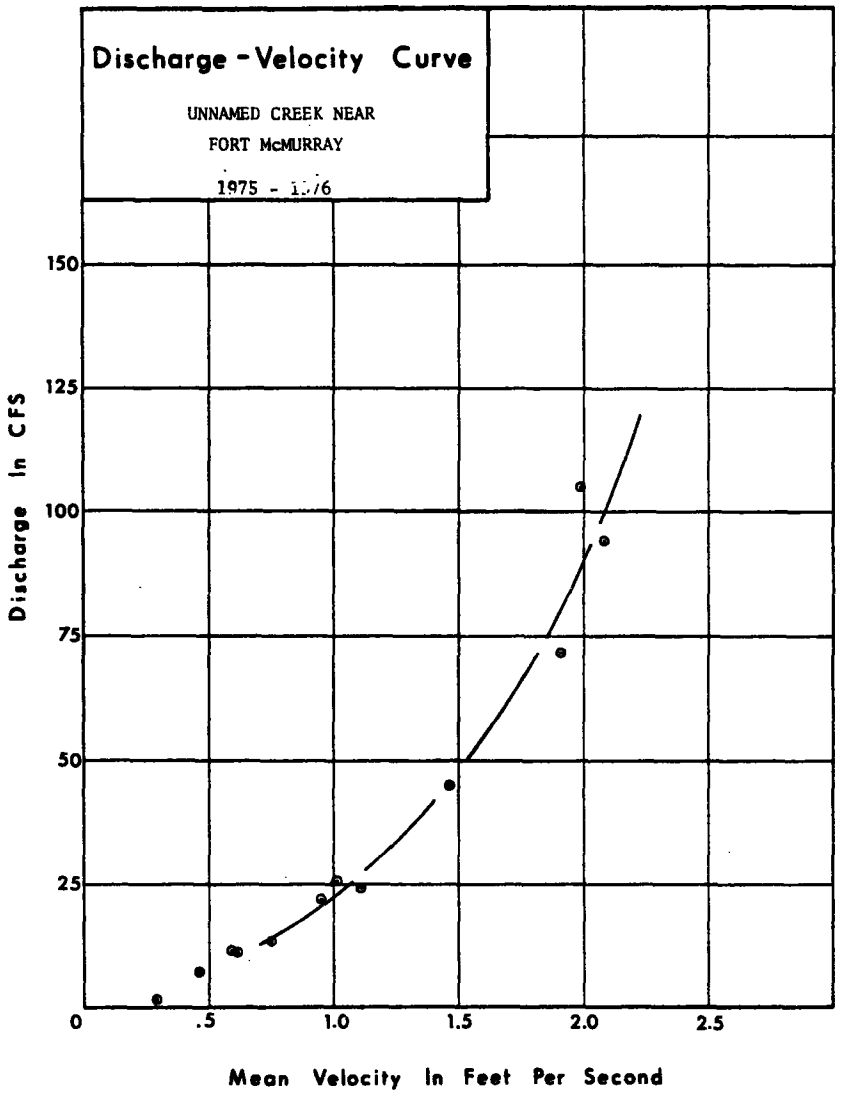
SITE DESCRIPTION: The gauge is located on the left bank immediately below a small unnamed tributary and approximately 34 air miles (55 km) north of Fort MacKay. This station is instrumented with a Stacom manometer linked to a Stevens A-71 water level recorder.
Open water discharge measurements are made by wading or from the cableway immediately above the gauge.

GENERAL: The winter flows at this site have remained higher than expected when compared to other streams in the area. To date they have not fallen below 1.0 cfs. The ice is normally quite thin and bridged and the summer water temperatures are usually cooler than those of neighbouring streams which seems to indicate that it derives a good deal of its flow from groundwater.


Discharge In CFS
25
50
75
100
125
150
175
10.5
10.0
9.5
9.0
8.5
8.0
Stage In Feet
Stage-Discharge Relationship
UNNAMED CREEK NEAR
FORT McMURRAY
⊙ 1976
○ 1975
Curve No.2, Jan.27/77


Width In Feet
0
5
10
15
20
25
10
9
8
7
6
Gauge Height In Feet
Right Bank
Left Bank
Cross-section Configuration
UNNAMED CREEK NEAR
FORT McMURRAY
Ght. 10.07ft. April 15, 1976 Q=105cfs.


Discharge - Area Curve
UNNAMED CREEK NEAR
FORT McMURRAY
1975 - 1976
Discharge In CFS
125
100
75
50
25
0
10
20
30
40
50
60
Area In Square Feet


Discharge - Velocity Curve
UNNAMED CREEK NEAR
FORT McMURRAY
1975 - 1976
Discharge In CFS
150
125
100
75
50
25
0
.5
1.0
1.5
2.0
2.5
Mean Velocity In Feet Per Second

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MAY 14 1976 PAGE 288
CALGARY, ALTA.

UNNAMED CREEK NEAR FORT MACKAY

STATION NO. 07DA011

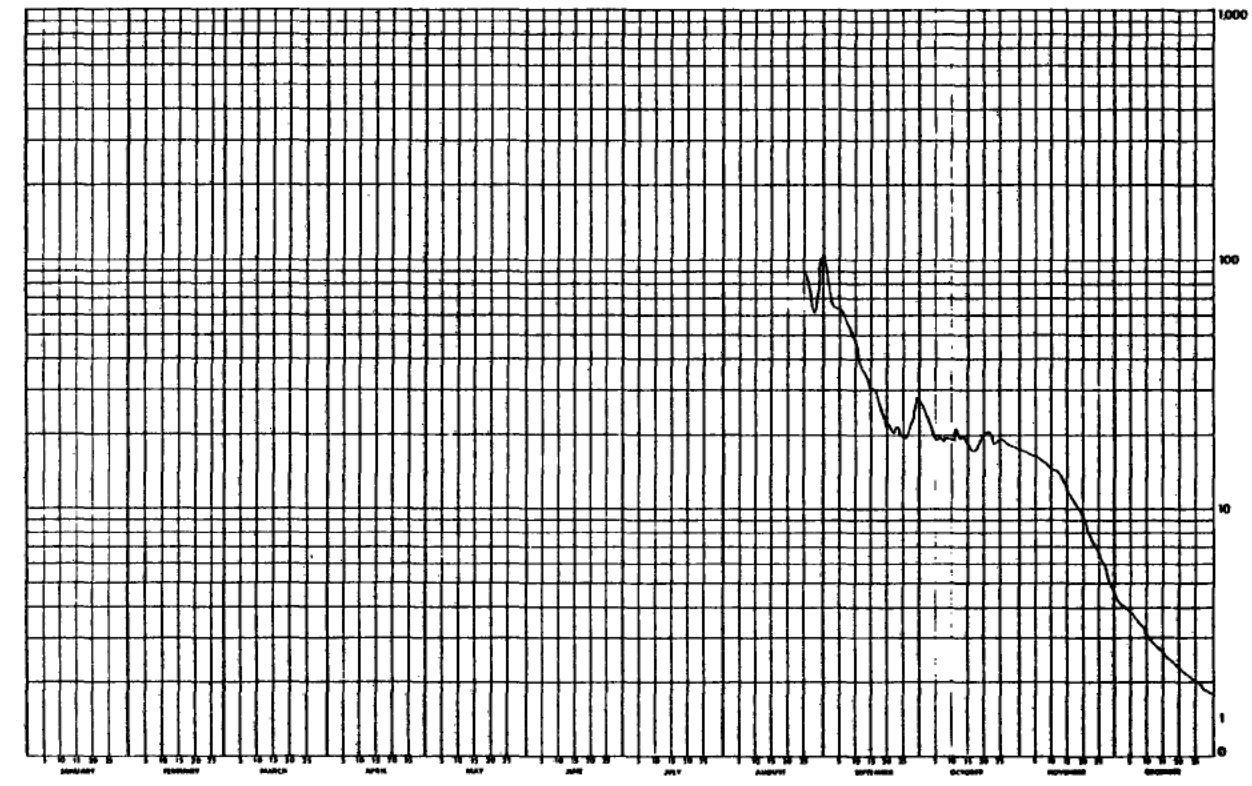
DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1975

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	---	---	85.9	25.7	17.0 B	4.4 B	1
2	---	---	---	---	---	---	---	---	71.9	24.0	17.0 B	4.2 B	2
3	---	---	---	---	---	---	---	---	65.1	22.0	16.5 B	4.0 B	3
4	---	---	---	---	---	---	---	---	64.9	20.8	16.5 B	3.9 B	4
5	---	---	---	---	---	---	---	---	65.1	18.9	16.0 B	3.7 B	5
6	---	---	---	---	---	---	---	---	62.2	19.3	16.0 B	3.6 B	6
7	---	---	---	---	---	---	---	---	56.5	19.0	15.5 B	3.5 B	7
8	---	---	---	---	---	---	24.8 A	20.0 A	53.2	19.4	15.5 B	3.4 B	8
9	---	---	---	---	---	---	---	17.9	49.8	19.7	15.0 B	3.3 B	9
10	---	---	---	---	---	---	---	21.5 A	43.6	19.1	14.5 B	3.1 B	10
11	---	---	---	---	---	---	---	---	38.8	21.1	14.5 B	3.8 B	11
12	---	---	---	---	---	---	---	---	37.0	19.5	14.0 B	2.9 B	12
13	---	---	---	---	---	---	---	---	34.4	19.4	13.5 B	2.8 B	13
14	---	---	---	---	---	---	---	---	30.8	19.5	13.0 B	2.7 B	14
15	---	---	---	---	---	---	---	---	30.9	18.1	12.5 B	2.6 B	15
16	---	---	---	---	---	---	---	---	30.9	17.6	12.0 B	2.5 B	16
17	---	---	---	---	---	---	---	---	27.7	17.6	11.0 B	2.4 B	17
18	---	---	---	---	---	---	---	---	24.1	17.6	10.5 B	2.3 B	18
19	---	---	---	---	---	---	---	---	21.7	16.8	10.0 B	2.3 B	19
20	---	---	---	---	---	---	72.3 A	---	22.2	20.6	9.3 B	2.2 B	20
21	---	---	---	---	---	---	---	---	21.3	20.6	8.6 B	2.2 B	21
22	---	---	---	---	---	---	---	---	20.3	20.2	8.0 B	2.1 B	22
23	---	---	---	---	---	---	---	---	21.6	18.7	7.4 B	2.1 B	23
24	---	---	---	---	---	---	---	---	19.9	16.5 A	6.9 B	2.0 B	24
25	---	---	---	---	---	---	---	90.2 A	19.5	19.0 B	6.5 B	1.9 B	25
26	---	---	---	---	---	---	---	62.8	19.5	19.0 B	6.0 B	1.8 B	26
27	---	---	---	---	---	---	---	69.7	22.2	18.5 B	5.6 B	1.7 B	27
28	---	---	---	---	---	---	---	61.3	22.7	18.0 B	5.3 B	1.6 B	28
29	---		---	---	---	---	---	64.1	28.1	18.0 B	5.0 B	1.6 B	29
30	---		---	---	---	---	---	99.9	27.1	17.5 B	4.6 B	1.5 B	30
31	---		---		---		---	106		17.5 B		1.4 B	31
TOTAL	---	---	---	---	---	---	---	---	1138.9	661.2	343.7	82.7	TOTAL
MEAN	---	---	---	---	---	---	---	---	38.0	19.4	11.5	2.7	MEAN
AC-FT	---	---	---	---	---	---	---	---	2260	1190	682	164	AC-FT
MAX	---	---	---	---	---	---	---	---	85.9	25.7	17.0	4.4	MAX
MIN	---	---	---	---	---	---	---	---	19.5	16.5	4.6	1.4	MIN

A-MANUAL GAUGE
B-ICE CONDITIONS

TYPE OF GAUGE - RECORDING
LOCATION - LAT 57 39 31 N
LONG 111 31 11 W

NATURAL FLOW



WATER SURVEY OF CANADA
FEB 9 1977 PAGE 8
CALGARY, ALTA.

UNNAMED CREEK NEAR FORT MACKAY

STATION NO. 07DA011

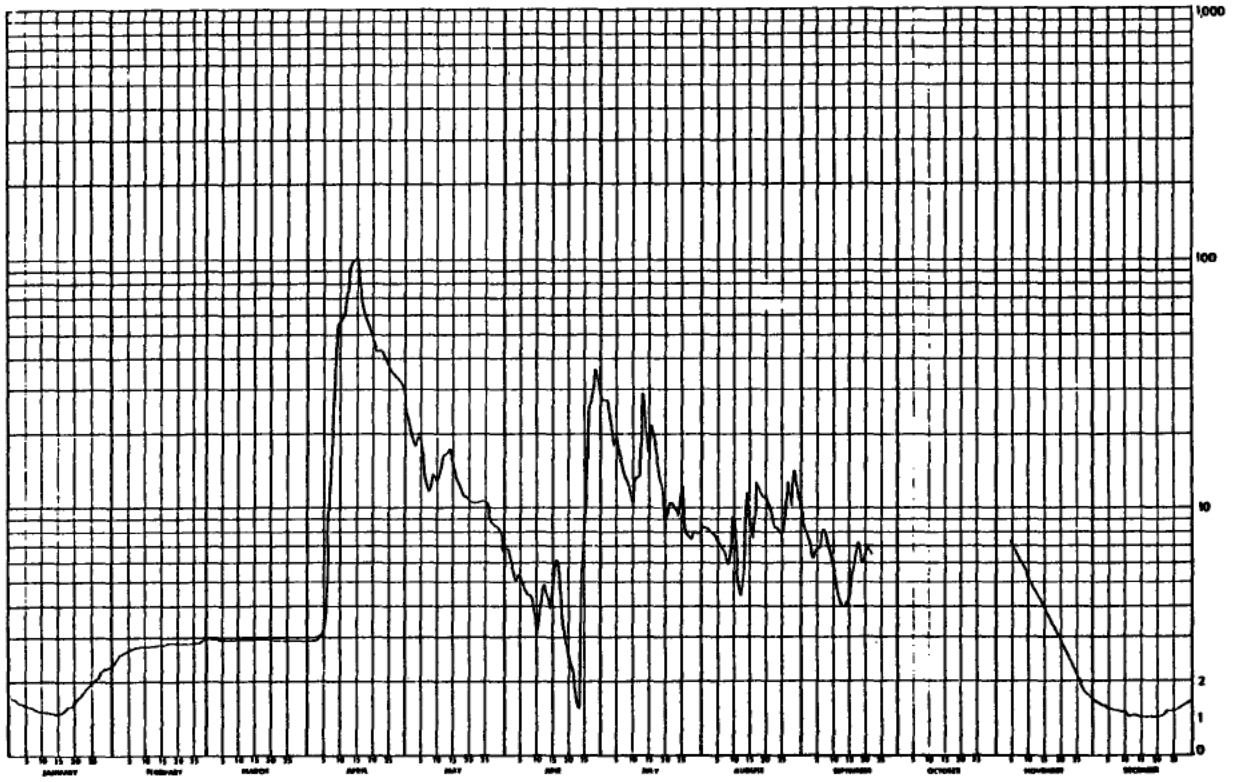
(PRELIMINARY) DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1976

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	1.4 B	2.5 B	3.0 B	3.0 B	22.9	6.8	27.3	8.3 E	8.3			1.3 B	1
2	1.3 B	2.5 B	3.0 B	3.0 B	19.5	5.9	27.1	8.2 E	7.9			1.3 B	2
3	1.3 B	2.6 B	3.0 B	3.0 B	17.7	5.1	20.6	8.0 E	6.3			1.2 B	3
4	1.2 B	2.6 B	3.0 B	3.1 B	19.8	5.4	17.7	7.7 E	6.2		7.5 B	1.2 B	4
5	1.2 B	2.6 B	3.0 B	3.2 B	16.0	5.2	18.8	7.2 A	6.8		7.3 B	1.1 B	5
6	1.2 B	2.7 B	3.0 B	6.4 B	13.0	4.7	16.0	7.3	6.8		6.9 B	1.1 B	6
7	1.2 B	2.7 B	3.0 B	14.0 B	11.5	4.4	13.2	6.8	8.2		6.6 B	1.1 B	7
8	1.1 B	2.7 B	3.0 B	28.0 B	12.5	4.5	13.5	5.7	7.6		6.2 B	1.0 B	8
9	1.1 B	2.7 B	3.0 B	55.3 B	13.8	3.7	12.2	6.3	6.4		5.8 B	1.0 B	9
10	1.0 B	2.8 B	3.0 B	56.0 B	12.7	3.1	10.2	9.3	5.9		5.5 B	1.0 B	10
11	1.0 B	2.8 B	3.0 B	56.1 B	13.1	4.0	13.3	6.0	5.3		5.2 B	.90 B	11
12	1.0 B	2.8 B	3.0 B	74.0 B	16.1	4.9	13.1	4.4	4.4		4.8 B	.90 B	12
13	1.0 B	2.8 B	3.0 B	96.3 B	16.1	4.3	29.4	4.6	4.0		4.5 B	.90 B	13
14	1.0 B	2.8 B	3.0 B	100 B	17.4	3.8	19.5	11.8	3.9		4.2 B	.93 B	14
15	1.0 B	2.8 B	3.0 B	105 A	15.1	5.3	16.4	8.8	4.2		4.0 B	.90 B	15
16	1.0 B	2.9 B	3.0 B	87.3	14.0	6.1	21.5	7.4	5.1		3.7 B	.90 B	16
17	1.1 B	2.9 B	3.0 B	63.9	12.4	4.2	17.6	12.9	6.3		3.5 B	.90 B	17
18	1.2 B	2.9 B	3.0 B	58.9	11.2	3.4	13.3	11.9	7.1		3.3 B	.90 B	18
19	1.2 B	2.9 B	3.0 B	53.3	11.1	2.7	10.9	11.2	6.1		3.1 B	.90 B	19
20	1.3 B	2.9 B	3.0 B	46.2	10.7	2.4	8.0	11.2	6.1		2.9 B	.90 B	20
21	1.4 B	2.9 B	3.0 B	42.8	10.3	2.3	10.0	10.3	6.9		2.7 B	.90 B	21
22	1.5 B	2.9 B	3.0 B	43.4	10.4	1.6	10.6	9.0	6.5		2.6 B	.90 B	22
23	1.6 B	2.9 B	3.0 B	42.9	10.5	1.1	10.0	8.2			2.4 B	1.0 B	23
24	1.8 B	2.9 B	3.0 B	38.6	10.4	0.3	9.2	8.3			2.3 B	1.0 B	24
25	1.9 B	2.9 B	3.0 B	36.6	10.5	9.4	11.0	7.6			2.1 B	1.0 B	25
26	2.0 B	2.9 B	3.0 B	35.5	10.2	24.1	7.9	8.1			1.9 B	1.1 B	26
27	2.1 B	2.9 B	3.0 B	33.7	8.6	28.5	7.7	12.9			1.7 B	1.1 B	27
28	2.2 B	3.0 B	3.0 B	33.5	8.4	36.6	7.4	9.8			1.6 B	1.2 B	28
29	2.3 B	3.0 B	3.0 B	31.3	8.3	34.4	8.0	14.4			1.5 B	1.2 B	29
30	2.3 B		3.0 B	26.0	6.7	27.8	7.7	12.1			1.4 B	1.3 B	30
31	2.4 B		3.0 B		6.7		8.2	9.0				1.3 B	31
TOTAL	44.3	81.2	93.0	1280.3	397.6	262.0	437.3	274.7				32.33	TOTAL
MEAN	1.4	2.8	3.0	42.7	12.8	8.7	14.1	8.9				1.0	MEAN
AC-FT	87.9	161	184	2540	789	520	867	545				64.1	AC-FT
MAX	2.4	3.0	3.0	105	22.9	36.6	29.8	14.4				1.3	MAX
MIN	1.0	2.5	3.0	3.0	6.7	1.1	7.4	4.4				.90	MIN

SUMMARY FOR THE MONTHS JAN TO AUG
MEAN DISCHARGE, 11.8 CFS
TOTAL DISCHARGE, 5690 AC-FT
MAXIMUM DAILY DISCHARGE, 105 CFS ON APR 15
MINIMUM DAILY DISCHARGE, 1.0 CFS ON JAN 10

MAXIMUM INSTANTANEOUS DISCHARGE, 132 CFS AT 1150 MST ON APR 16

A-MANUAL GAUGE
B-ICE CONDITIONS
E-ESTIMATED



6. AOSERP RESEARCH REPORTS

1.		AOSERP First Annual Report, 1975
2.	AF 4.1.1	Walleye and Goldeye Fisheries Investigations in the Peace-Athabasca Delta
3.	HE 1.1.1	Structure of a Traditional Baseline Data System
4.	VE 2.2	A Preliminary Vegetation Survey of the Alberta Oil Sands Environmental Research Program Area
5.	HY 3.1	The Evaluation of Wastewaters from an Oil Sand Extraction Plant
6.		Housing for the North--The Stackwall System
7.	AF 3.1.1	A Synopsis of the Physical and Biological Limnology and Fisheries Programs within the Alberta Oil Sands Area
8.	AF 1.2.1	The Impact of Saline Waters Upon Freshwater Biota (A Literature Review and Bibliography)
9.	ME 3.3	Preliminary Investigation into the Magnitude of Fog Occurrence and Associated Problems in the Oil Sands Area
10.	HE 2.1	Development of a Research Design Related to Archaeological Studies in the Athabasca Oil Sands Area
11.	AF 2.2.1	Life Cycles of Some Common Aquatic Insects of the Athabasca River, Alberta
12.	ME 1.7	Very High Resolution Meteorological Satellite Study of Oil Sands Weather, a Feasibility Study
13.	ME 2.3.1	Plume Dispersion Measurements from an Oil Sands Extraction Plant
14.	HE 2.4	Athabasca Oil Sands Historical Research Design (3 volumes)
15.	ME 3.4	Climatology of Low Level Air Trajectories in the Alberta Oil Sands Area
16.	ME 1.6	The Feasibility of a Weather Radar near Fort McMurray, Alberta
17.	AF 2.1.1	A Survey of Baseline Levels of Contaminants in Aquatic Biota of the AOSERP Study Area
18.	HY 1.1	Alberta Oil Sands Region Stream Gauging Data
19.	ME 4.1	Calculations of Annual Average Area Sulphur Dioxide Concentrations at Ground Level in the AOSERP Study Area
20.	HY 3.1.1	Evaluation of Organic Constituents

21.		AOSERP Second Annual Report, 1976-77
22.	HE 2.3	Maximization of Technical Training and Involvement of Area Manpower
23.	AF 1.1.2	Acute Lethality of Mine Depressurization Water on Trout, Perch and Rainbow Trout
24.	ME 4.2.1	Review of Dispersion Models and Possible Applications in the Alberta Oil Sands Area
25.	ME 3.5.1	Review of Pollutant Transformation Processes relevant to the Alberta Oil Sands Area
26.	AF 4.5.1	Interim Report on an Intensive Study of the Fish Fauna of the Muskeg River Watershed of Northeastern Alberta
27.	ME 1.5.1	Meteorology and Air Quality Winter Field Study, March 1976