

## Station Information

Site ID	2JE6R
River Name	Montreal River
Site Name	Matabitchuan
Region	Northeastern
District	North Bay
Drainage Area	979 km <sup>2</sup>
Owner	OPG

Flow metrics are provided for the waterpower facility based on regulated flows measured by the facility owner. The target metrics provided are described in the *Aquatic Ecosystem Guidelines* (MNR 2002) and the *Waterpower Science Strategy* (MNR 2002). Metrics are based on regulated daily flow from 1973 to 2002 (30 yrs). Other descriptive metrics have been included in the data sheet to provide a more complete description of the ranges of streamflow on the river system and to facilitate comparisons between river systems.

## Annual (1973 - 2002):

## I. Streamflow Time Series

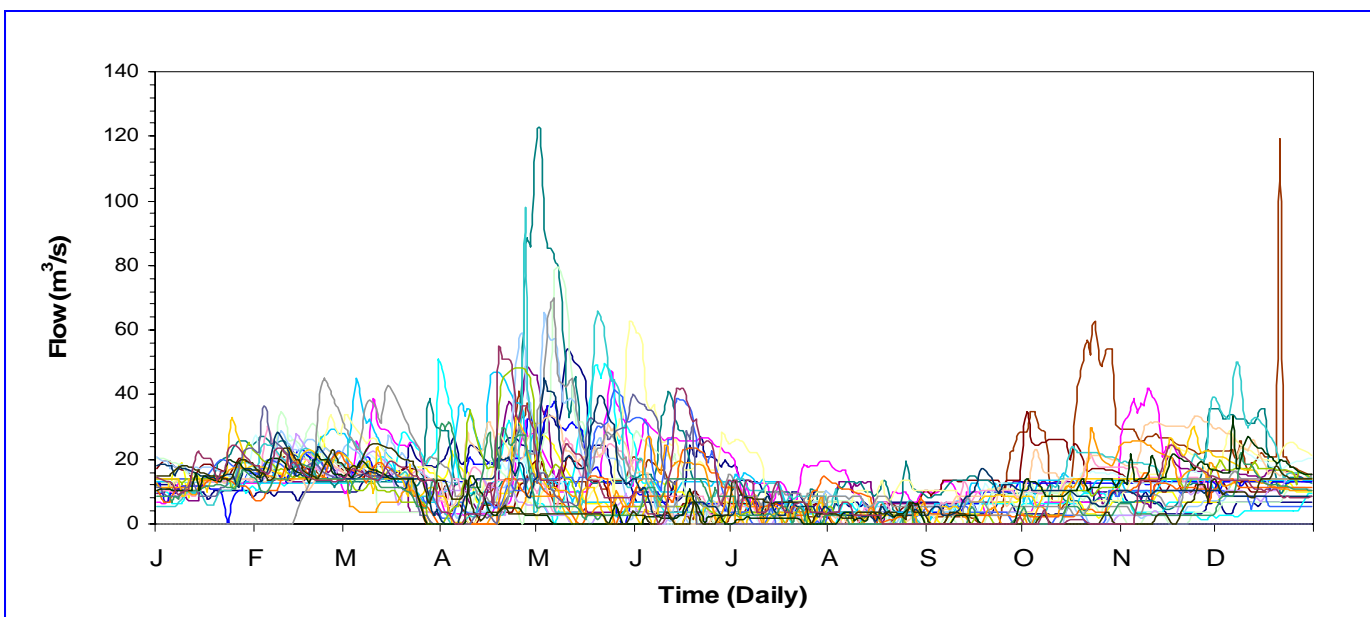


Figure 1: Annual daily flow hydrographs from 1973 to 2002.

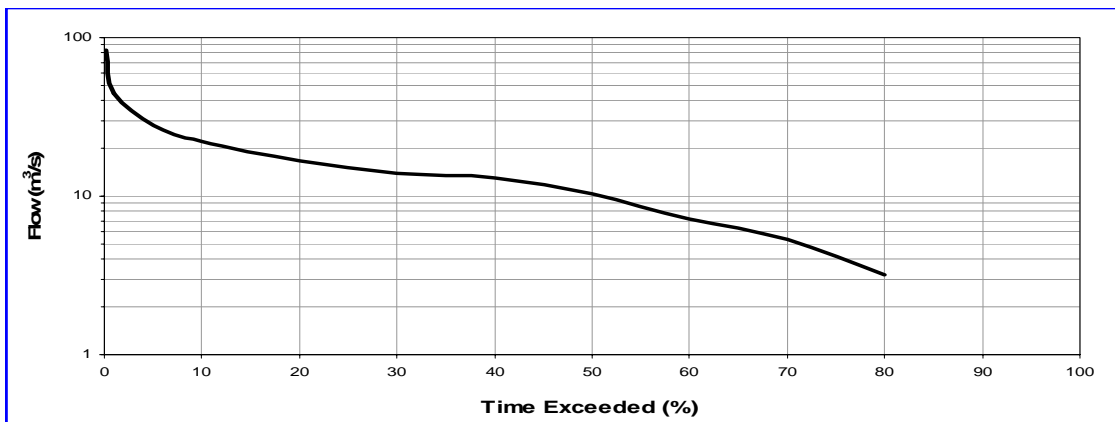
Descriptive Metric	Value
Mean Annual Flow	11.2 m <sup>3</sup> /s
20% Time Exceeded Flow	16.8 m <sup>3</sup> /s
Median Flow	10.4 m <sup>3</sup> /s
80% Time Exceeded Flow	3.2 m <sup>3</sup> /s
Month of Max. Median Flow	February
Month of Min. Median Flow	August
Mean Rising Rate of Change of Flow	2.6 m <sup>3</sup> /s/day
Mean Falling Rate of Change of Flow	-1.7 m <sup>3</sup> /s/day
<b>Extreme Low Flow Conditions:</b>	
7-day-average low flow in 2-year return period, 7Q <sub>2</sub>	0.3 m <sup>3</sup> /s
7-day-average low flow in 10-year return period, 7Q <sub>10</sub>	- m <sup>3</sup> /s
7-day-average low flow in 20-year return period, 7Q <sub>20</sub>	- m <sup>3</sup> /s
Target Metrics	Value
Riparian Flow s (Q <sub>2</sub> - Q <sub>20</sub> )	41 - 109 m <sup>3</sup> /s
Bankfull Flow s (Q <sub>1.5</sub> - Q <sub>1.7</sub> )	34 - 37 m <sup>3</sup> /s

Table 1: Annual flow metrics based on 30 years of data.



## II. Flow Duration

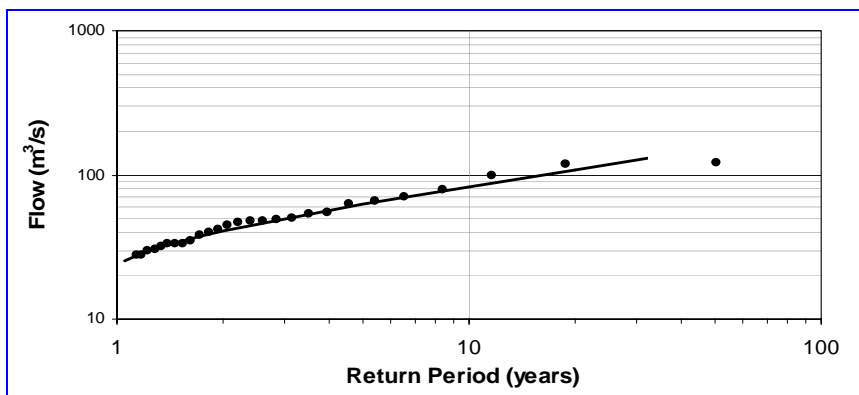
Time Exceeded %	Flow $m^3/s$
0.10	83.50
1.00	44.40
5.00	27.70
10.00	22.00
20.00	16.80
30.00	14.00
40.00	13.00
50.00	10.40
60.00	7.20
70.00	5.30
80.00	3.20
90.00	0.00
95.00	0.00
99.00	0.00
99.90	0.00



**Table 2 & Figure 2:** Flow duration table and curve displaying flow vs. percent time exceeded over 30 years.

## III. Flood Frequency Analysis

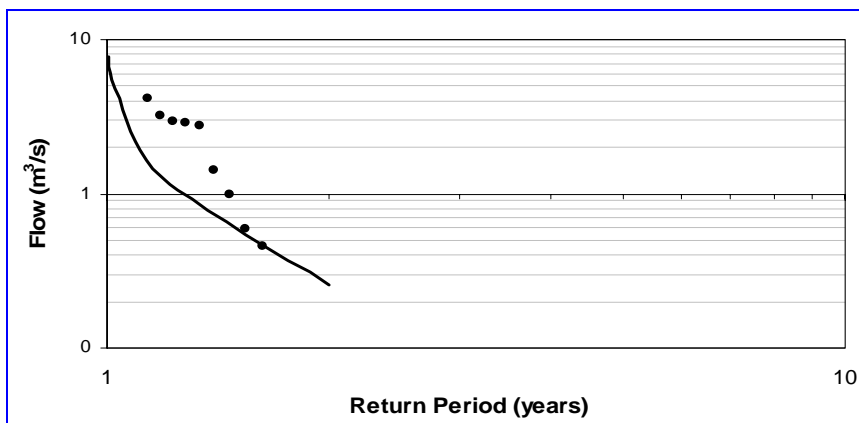
Return Period yrs	Flow $m^3/s$
1.05	25
1.25	30
1.50	34
1.70	37
2	41
5	62
10	83
20	109
50	155
100	201



**Table 3 and Figure 3 :** Flood frequency analysis and curve fitted by the *Log Pearson Type III* probability distribution.

## IV. Low Flow Frequency Analysis (Performed using 7-day-average low flow)

Return Period yrs	Flow $m^3/s$
1.005	7.7
1.01	6.1
1.11	1.9
1.25	1.1
2	0.3
5	-
10	-
20	-
50	-
100	-



**Table 4 and Figure 4:** 7-day-average low flow frequency analysis and curve fitted by the *Gumble III* probability distribution.

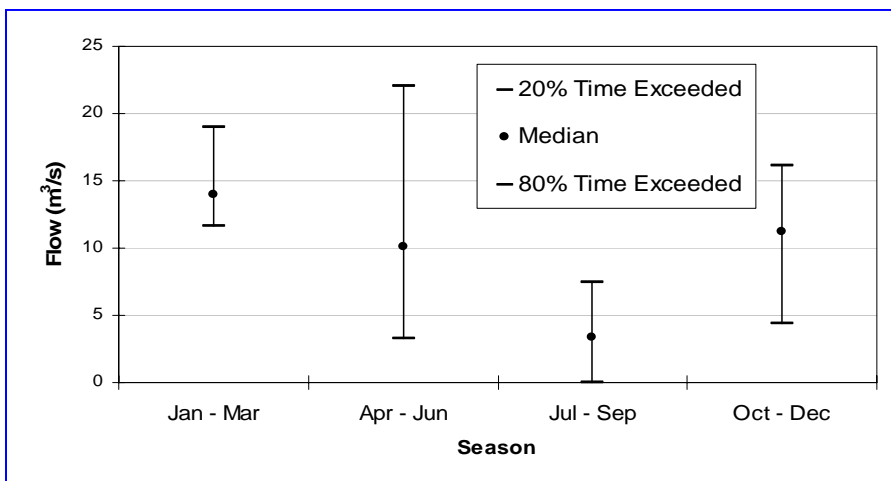


## Seasonal:

### I. Flow Duration

**Table 5 and Figure 5:** Seasonal median flow duration for determining minimum flow targets.

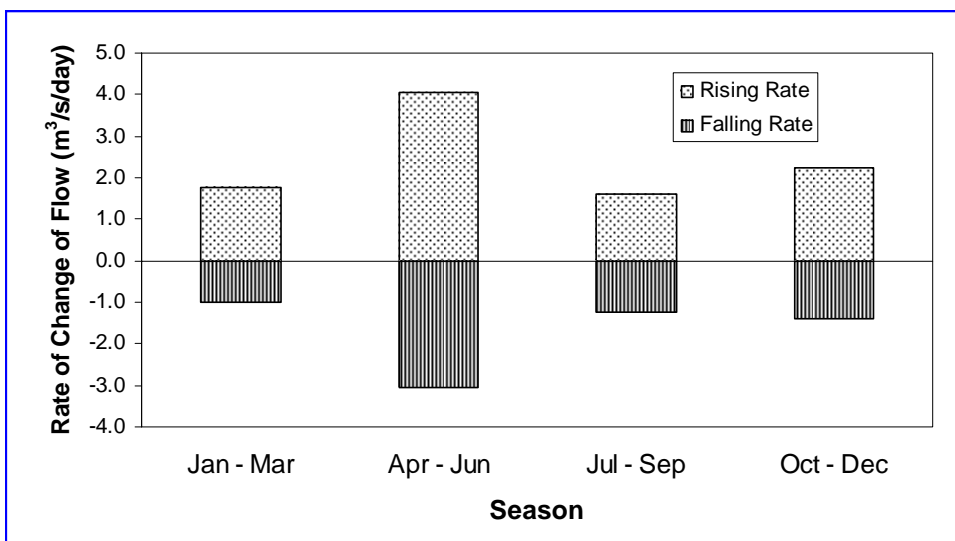
Season	20% Time Exceeded $m^3/s$	Median $m^3/s$	80% Time Exceeded $m^3/s$
Jan - Mar	19.0	14.0	11.6
Apr - Jun	22.0	10.1	3.3
Jul - Sep	7.5	3.4	0.0
Oct - Dec	16.1	11.2	4.4



### II. Rate of Change of Flow

**Figure 6 and Table 6:** Seasonal rising and falling rates of change of flow for determining ramping rate targets.

Season	Rising Rate $m^3/s/day$	Falling Rate $m^3/s/day$
Jan - Mar	1.8	-1.0
Apr - Jun	4.0	-3.1
Jul - Sep	1.6	-1.2
Oct - Dec	2.2	-1.4

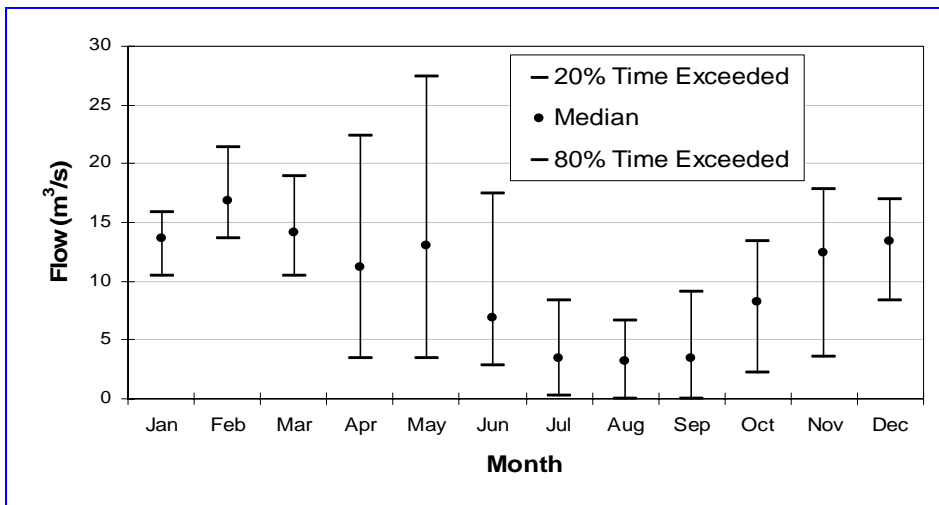


## Monthly:

### I. Flow Duration

**Table 7 and Figure 7:** Monthly median flow duration for determining minimum flow targets.

Month	20% Time Exceeded $m^3/s$	Median $m^3/s$	80% Time Exceeded $m^3/s$
Jan	15.9	13.6	10.5
Feb	21.4	16.8	13.6
Mar	18.9	14.1	10.5
Apr	22.4	11.2	3.4
May	27.4	13.0	3.4
Jun	17.4	6.9	2.8
Jul	8.4	3.5	0.2
Aug	6.6	3.2	0.0
Sep	9.1	3.5	0.0
Oct	13.4	8.2	2.2
Nov	17.8	12.4	3.6
Dec	17.0	13.4	8.4



### II. Rate of Change of Flow

**Figure 8 and Table 8:** Monthly rising and falling rates of change of flow for determining ramping rate targets.

Month	Rising Rate $m^3/s/day$	Falling Rate $m^3/s/day$
Jan	1.4	-0.8
Feb	1.9	-1.0
Mar	1.9	-1.2
Apr	4.6	-3.3
May	3.9	-3.4
Jun	3.0	-2.1
Jul	1.2	-1.2
Aug	1.8	-1.5
Sep	1.9	-0.9
Oct	2.3	-1.7
Nov	2.1	-1.1
Dec	2.3	-1.5

