Hydrometeorological Data from the Saqvaqjuac Project, N.W.T., 1981

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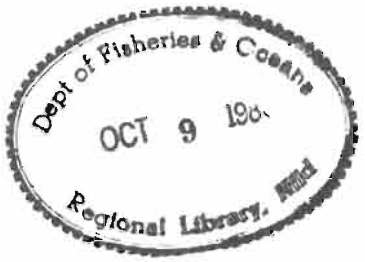

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by

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Allan, C., and G.K. McCullough. 1986. Hydrometeorological data from the Saqvaqjuac project, N.W.T., 1981. Can. Data Rep. Fish. Aquat. Sci. 584: iv + 32 p.

From 1977 to 1981 hydrometeorological data were collected at the Saqvaqjuac project, located near Chesterfield Inlet, N.W.T., Canada, in support of biological and limnological studies. This report presents data for 1981 and supplements Canadian Data Report of Fisheries and Aquatic Sciences No. 273 by J.A. Dalton which covers the period 1977 to 1980. Discharge data are reported for one 15.4 ha terrestrial watershed, 3 lakes (36 ha drainage area each) and the 607 km^2 Savqvaqjuac River watershed. Additional data include: bathymetric maps, lake levels, lake surface temperatures, depth to frost surveys, air temperature, precipitation, relative humidity, wind speed and pan evaporation.

Key words: hydrometeorology; hydrology; climatology; watersheds; arctic; permafrost.

RÉSUMÉ

Allan, C., and G.K. McCullough. 1986. Hydrometeorological data from the Saqvaqjuac Project, N.W.T., 1981. Can. Data Rep. Fish. Aquat. Sci. 584: iv + 32 p.

Des données hydrométéorologiques ont été recueillies de 1977 à 1981 sur les lieux du projet Saqvaqjuac, près de Chesterfield Inlet (T.-N.-O.), au Canada, dans le cadre d'études biologiques et limnologiques. Ce rapport présente les données pour l'année 1981 et complète le Canadian Data Report of Fisheries and Aquatic Sciences nº 273 de J.A. Dalton, portant sur la période de 1977 à 1980. Les données sur le débit d'eau sont présentées pour une surface de réception sans lac de 15.4 ha, 3 lacs (surface drainée dans chaque cas: 36 ha) et le bassin hydrographique de la Saqvaqjuac, de 607 km^2. D'autres données s'y trouvent également, dont des cartes bathymétriques, des chiffres sur le niveau des lacs, la température superficielle des lacs, l'épaisseur de la couche de sol dégelé, la température de l'air, les précipitations, l'humidité relative, la vitesse du vent et l'évaporation dans le bac.

Mots-clés: hydrométéorologie; hydrologie; climatologie; bassins hydrographiques; Arctique; pergélisol.

INTRODUCTION

The Saqvaqjuac Project was established in 1977 by the Freshwater Institute to conduct research on freshwater systems in the central Canadian Arctic. The primary objective of the hydrological studies program at Saqvaqjuac was support of limnological (Welch 1985; Bergmann and Welch 1985) and geochemical studies, by determining, within a water budget framework, the quantities of water entering and leaving small headwater lakes in the study area. Hydrometeorological data collected from May, 1977 to November, 1980 were reported by Dalton (1981).

Many Saqvaqjuac area place names used in this report are unofficial. A map (Fig. 1) is included to locate all sites named.

SITE DESCRIPTION

Saqvaqjuac Inlet is an irregular bay on the northwest coast of Hudson Bay, 36 km north of the settlement of Chesterfield Inlet (Fig. 2). The research station, operated by the Western Region, Department of Fisheries and Oceans, is located beside the western arm of this inlet about 10 km inland from Hudson Bay, at 63°39'N, 90°39'WPM.

Local relief, in rolling igneous bedrock-dominated terrain, is under 50 m. The site has previously been described by Dalton (1981):

> "Numerous irregularly shaped small lakes visually dominate the landscape here even more than in other parts of the Precambrian Shield because of the lack of trees. The lakes which occupy a large portion of the area, are surrounded by exposed boulder-strewn granitic bedrock rising steeply from the water, or by more gently sloped, vegetated areas with shallow overburden of clays, gravels and boulders. Vegetation is typically shrub-heath tundra, including dwarf willow, dwarf birch, perennial vascular plants, grasses, mosses, and lichens. Exposed lichen-covered bedrock dominates the gently sloping tops of the hills; more abundant and larger plants are found in the meadows and valleys in the sheltered lowland areas near the lakes. Soil development is minimal, attaining a maximum thickness of approximately 20 cm in isolated topographic saddles and depressions. In such low-lying areas where overburden exists, this thin soil layer covers a mixture of clay, sand, gravel, and boulders. The clay occasionally is forced by frost action to the surface forming small, circular, initially vegetation-free frost boils.
>
> The study area is in the arctic climatic zone and is underlain by continuous permafrost."

Summaries of recorded temperature and precipitation at the Chesterfield Inlet climate station have been published by the Atmospheric Environment Service (1982). The values tabulated below are for the period of record: 1951 to 1980. Wind was measured at 13.7 m above ground level.

	January	July	Annual
Temperature			
Mean daily (°C)	-31.5	8.9	-11.6
Standard deviation of mean (°C)	3.5	1.3	1.1
Mean daily minimum (°C)	-35.2	4.6	-15.2
Mean daily maximum (°C)	-27.8	13.1	- 7.9
Wind			
Prevailing[a]	NW(47.7)	NW(14.3)	NW(27.9)
Mean speed ($km \cdot h^{-1}$)	22.9	17.3	22.3
Maximum hourly speed ($km \cdot h^{-1}$)	69	65	95

[a] Most frequent direction of 16 compass points. Figure following direction is frequency (%).

	Mean annual	24 hour maximum[b]	Days with measurable precipitation
Precipitation			
Total (mm)	258.9[a]	57.9	100
Rainfall (mm)	145.5	57.9	36
Snowfall (cm)	112.5	27.9	66

[a] Standard deviation = 63.6 mm.

[b] Period of record for 24 hour maximum (48 yr)

METHODS AND RESULTS

The methods summarized below were previously described in greater detail by Dalton (1981). Any deviations from his techniques are noted.

Where appropriate, the hydrometeorological data collection methods used were similar to those practised across Canada by Water Survey of Canada and the Canadian Atmospheric Environment Service.

BATHYMETRIC MAPS

Lake shorelines were traced from enlargements of 1976 aerial photographs (original scale, approximately 1:9600). Lakes were sounded along shore-to-shore transects with a Furuno recording depth sounder. Isobaths were hand-drawn between points of equal depth on adjacent transects. Measured areas within isobaths were used in the conic formula described by Hutchinson (1957, p. 167) to calculate volumes.

LAKE LEVELS

Lake level data for Far Lake, P&N Lake and Jade Lake are summarized in Tables 2-4. Levels

before break-up were determined by rod and level survey at holes chopped in ice. They are reported in the accompanying tables with the times of the observations. Daily midnight levels were read from charts off Stevens Type F float-activated continuous water level recorders located in stilling wells at sheltered positions along the lakes shores. A recorder was operated on Jade Lake only for the period 22 June to 2 July. Levels were referred to previously installed benchmarks and are directly comparable to levels reported by Dalton (1981).

DISCHARGE

Mean daily outflows are reported in Table 5 for Far Lake, P&N Lake and the Meadow terrestrial watershed and in Table 6 for the Saqvaqjuac River watershed. At all stations zero flow conditions were observed until flow began in June. Flow continued beyond the end of the period of record at all stations except P&N Lake.

During the spring snowmelt period, hydrographs were constructed for the lake outflows from frequent manual flow measurements using an Ott Type C2 flowmeter. When the outflow channel cross-sections had stabilized after the initial snowmelt, manual flow measurements were correlated with lake levels to develop stage-discharge rating curves for each outflow.

Outflow from the Meadow watershed was computed from levels recorded by a Stevens Type F float-activated recorder on a weir pond with a 120° V-notch outlet. The stage-discharge relationship determined by Dalton (1981) was checked by manual flow measurements made throughout the summer. Some leakage was observed below the weir notch from early June until repaired on 22 July. The volume of leakage was estimated periodically and ranged to a maximum of 4.7 $L \cdot s^{-1}$ (40% of total flow) during spring runoff and was as high as 50% of total flow as discharge receded through July. Corrections for leakage based on periodic manual flow measurements are incorporated into the reported daily discharge. None-the-less, the reported mean daily discharges before 22 July must be regarded with great uncertainty.

Mean daily discharge of the Saqvaqjuac River was determined from the stage, initially from daily manual observations, and, after 23 June, recorded with a Stevens A71 float-activated level recorder at the rapids locations described by Dalton (1981). Discharge was calculated from the stage record using the stage-discharge curve calculated by Dalton who reported a correlation coefficient (r) of 0.998 for 11 paired measurements of river stage and discharge ranging from 1.85 to 38.4 $m^3 \cdot s^{-1}$.

LAKE SURFACE TEMPERATURE

Surface water temperatures were measured with a small field thermometer or an electric temperature probe from a boat near the lake centre, in the upper 2 cm of the water column. Instrument and reading accuracy are estimated to be within 1°C. Dalton (1981) reported that the observed aerial variation in lake surface temperature never exceeded 1°C where lake depth was greater than 1 m. Time of measurement is noted with each reading. Users of this data should be aware that lake surface temperatures can vary considerably diurnally. Data collected by Dalton on Far Lake in 1979, using a Ryan Peabody floating temperature recorder, indicate that during a 12 day period in early July, daily water temperature fluctuations were as large as 5.7°C (mean = 2.8°C, s.d. = 1.6°C) with minimums occuring between 04:00 and 11:00 CDST (mean = 08:00, s.d. = 1.8 h) and maximums occuring between 14:00 and 22:00 CDST (mean = 18:00, s.d. = 2.3 h). During the same period, daily air temperature fluctuations averaged 11.7°C (s.d. = 5.0°C). During a 12 day period, in mid-August, when daily air temperature range was narrower (mean = 6.4°C, s.d. = 2.7°C), the largest daily surface water temperature fluctuation was only 1.4°C (mean = 0.5°C, s.d. = 0.3°C). This latter was a period of gradual atmospheric cooling from about 10°C to 4°C; daily water temperature minimums most often occurred at midnight, simultaneous with, and equal to the maximum of the following day. Nonetheless, a diurnal pattern with slightly lower morning and higher afternoon temperatures is apparent within the general declining trend in August.

DEPTH TO FROST SURVEY

Depth to frost was measured approximately biweekly from 27 June to 31 August at sites in the Meadow watershed previously selected by Dalton (1981, Fig. 9). Measurements were made by manually driving a steel rod into the ground until frozen material was encountered. Experience suggested that this method gave results reproducable within 1 cm. Even within a small area, minor differences in physiography, geology, groundwater movement, vegetation cover, and animal burrows caused considerably higher variability.

AIR TEMPERATURE

Temperature was measured with Zeal maximum and minimum thermometers housed in a Stevenson screen set 1.5 m above ground surface on Radio Tower Hill (approximately 10 m MSL) adjacent to the research camp. Maximum temperatures reported are the higher of observations at 20:00 CDST of the day in question and 08:30 the following morning. Minimum temperatures are the lower of observations at 08:30 and 20:00 CDST of the same day. Mean daily values are calculated as the average of the reported maximum and minimum. Temperature was also recorded continuously on a Richard-Pekly recording thermohygrograph for the same period of record as the relative humidity data tabulated in this report and in Dalton (1981). Temperature data was not abstracted; however original charts are stored at the Freshwater Institute (501 University Crescent, Winnipeg, Manitoba, R3T2N6. Contact: Greg McCullough or Dr. Harold Welch). Although the thermometers used are normally accurate to 0.5°C, measurement of air temperature is strongly dependent on site

conditions and height above ground. The methodology described above is in accordance with standard Atmospheric Environment Service practise and should produce comparable data.

PRECIPITATION

Daily precipitation from three stations is reported in Table 10, and hourly precipitation from Far Lake and the Meadow watershed in Table 11. Hourly precipitation values for 1978 to 1980, recorded by Dalton and not previously published, are included.

Precipitation was measured at Far Lake and P&N Lake watersheds, near the research camp, and at the Meadow watershed. The records from only Far Lake, the camp, and the Meadow watershed are reported.

An Atmospheric Environment Service (AES) type B standard metric rain gauge was located in a sheltered meadow near the camp, with its orifice set at approximately 0.4 m above the ground surface. It was checked twice daily at 08:30 and 22:00 CDST. Daily values reported for the camp area are for the 24 hour period from 08:30 CDST of the day reported to 08:30 for the following day. Observed daily precipitation of less than 0.2 mm is reported as a trace (T). Because observations were made twice daily at the camp area station, the record of trace events is more complete there than at the Far Lake and Meadow watershed stations.

At Far Lake and at the Meadow watershed, precipitation was recorded using standard AES tipping bucket rain gauges manufactured by Sangamo Limited. Chart values were corrected to totals measured weekly at manual rain gauges located nearby. An AES type B standard metric rain gauge with orifice approximately 0.55 m above ground surface was used at the Meadow watershed. At Far Lake, values were corrected to observations at one AES standard metric and two AES standard copper (English system) gauges (orifices at approximately 0.4 m and 0.3 m, respectively, above ground surface). The daily values reported in Table 10, for the Far Lake and Meadow Meadow watershed stations, are for the 24 hour period from midnight to midnight. Hourly precipitation recorded by Dalton in 1978-1980 are reported with 1981 data in Table 11.

The common occurrence of high wind speeds during precipitation, together with lack of protective forest cover in the Arctic, cause problems of undercatch using standard unshielded rain gauges. Data in this report are not corrected for such errors. A detailed account of suitable corrections is contained in Rodda (1971).

RELATIVE HUMIDITY

Mean daily relative humidity reported in Table 12 was determined using a Richard-Pekly recording thermohygrograph, housed in a Stevenson screen set 1.5 m above ground surface on Radio Tower Hill adjacent to the research camp. Reported means for each day were abstracted from the recorder charts using a polar planimeter, measuring between successive midnights. Occasional checks for accuracy were made with a standard Meteorological Service of Canada (now Atmospheric Environment Service) sling psychrometer. The recording thermohygrograph is rated accurate to within 5%.

WIND SPEED

The mean daily wind speed reported in Table 13 was measured using a Belfort 3-cup totalizing anemometer installed 2.2 m above ground on Radio Tower Hill adjacent to the research camp. Reported values are the mean speed from 08:30 CDST of the day reported to 08:30 of the following day. Wind speeds reported herein for 1981 are thus directly comparable to wind speeds reported by Dalton (1981) for 1979 and 1980. Radio Tower Hill (approx. 10 m MSL) lies in the wind shadow of a larger hill (40 m MSL) about 350 m to the north and northwest. The damping affect of this hill on mean recorded wind speeds is briefly described by Dalton (1981).

PAN EVAPORATION

Daily evaporation reported in Table 14 was measured in a Meteorological Service of Canada (now Atmospheric Environment Service) Class A galvanized steel evaporation pan 1.21 m in diameter and 0.255 m deep, mounted on an open wooden frame platform over bedrock on Radio Tower Hill adjacent to the research camp. Daily water loss or gain was observed at 08:30 CDST each day by adding or removing water to a level indicated by a point gauge. The net water loss reported is determined by summing the water added to (+) or removed from (-) the pan, and any precipitation observed at the adjacent rain gauge. By measuring the volume of water added it is possible to determine water level change in the pan to 0.1 mm accuracy. (Rainfall is reported to 0.2 mm). Mean water temperature reported is the mean of temperature observed for the period on Zeal maximum and minimum thermometers set in the pan. Mean air temperature is the mean of temperatures recorded for the period on maximum and minimum thermometers in the adjacent Stevenson screen. Mean wind speed reported is based on the daily wind run observed on a Belfort 3-cup anemometer set on an adjacent tower at 2.2 m above the ground. (Wind speed reported should be adjusted for instrument height for comparison with wind records for evaporation at Atmospheric Environment Service stations. Standard anemometer height for evaporation records is 0.65 m above the ground).

SOLAR RADIATION

Solar radiation was recorded at Saqvaqjuac using a Belfort Instrument Company recording pyrheliometer. Data has not been abstracted from charts and is not reported. However, the original charts are in storage at the Freshwater Institute (501 University Crescent, Winnipeg, Manitoba, R3T 2N6. Contact: Greg McCullough or Dr. Harold Welch). The period of record is:

1979: 31 May - 29 August
1980: 16 May - 16 August
1981: 12 August - 24 August

Photosynthetically active radiation (PAR) data was also collected. Data from a Licor 185 2π (cosine-corrected) sensor was continuously recorded on charts and is available at the Freshwater Institute (contact Dr. H.E. Welch).

ACKNOWLEDGMENTS

The Water Survey of Canada and the Canadian Atmospheric Environment Service loaned some of the equipment used in this study. Hydrometeorological studies at Saqvaqjuac have been enthusiastically supported by Dr. H.E. Welch and Dr. R.W. Newbury (Freshwater Institute). Assistance when needed was freely given by personnel at the camp. Particular thanks are due to J. Arthur Dalton who developed and maintained this hydrometeorological program in the four preceding years and who gave generous advice during the course of the 1981 field season to help maintain continuity. The authors also thank Sharon Ryland for the organization of the data tables in this report.

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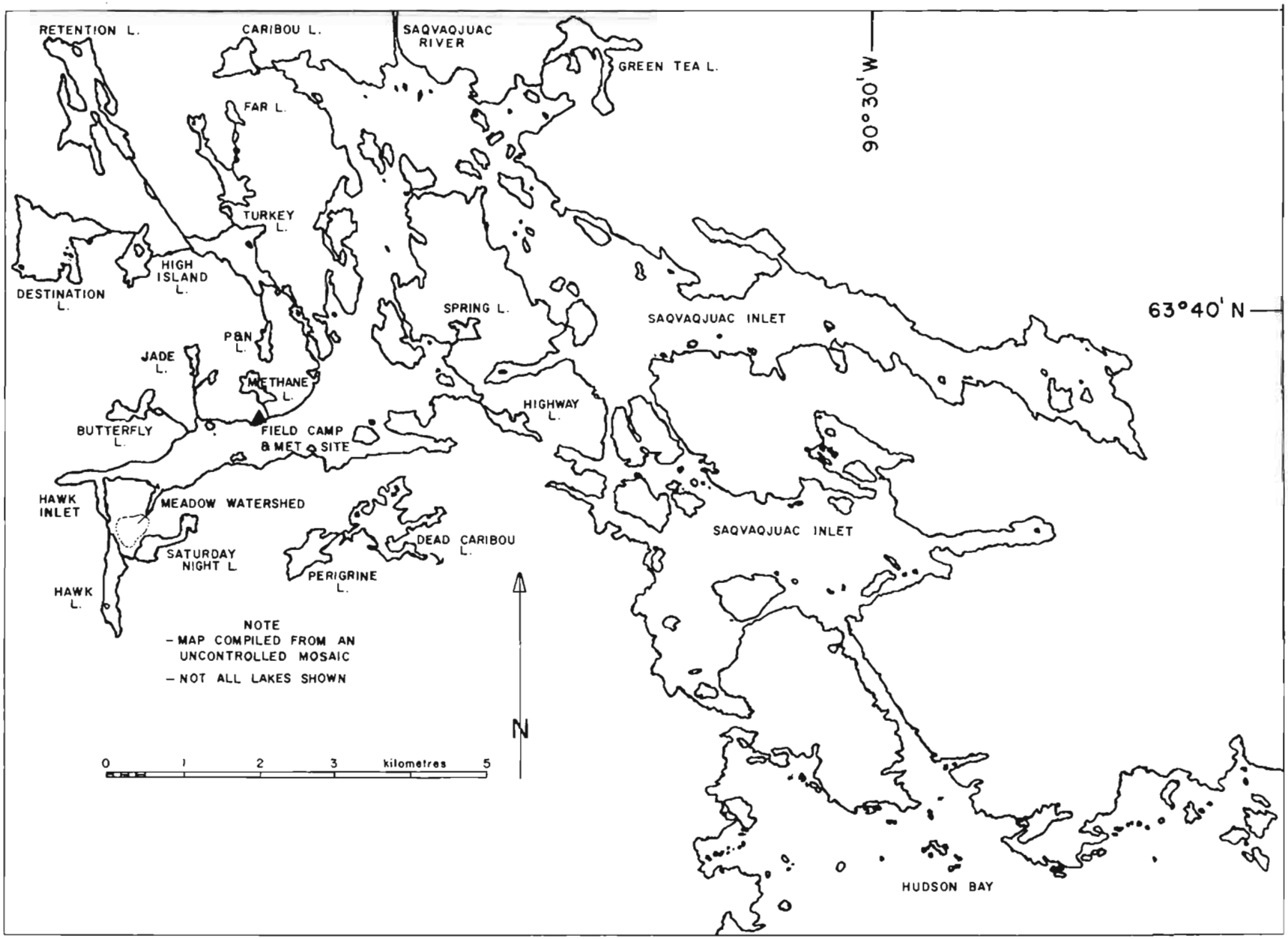


Fig. 1. Location map of the Saqvaqjuac inlet region.

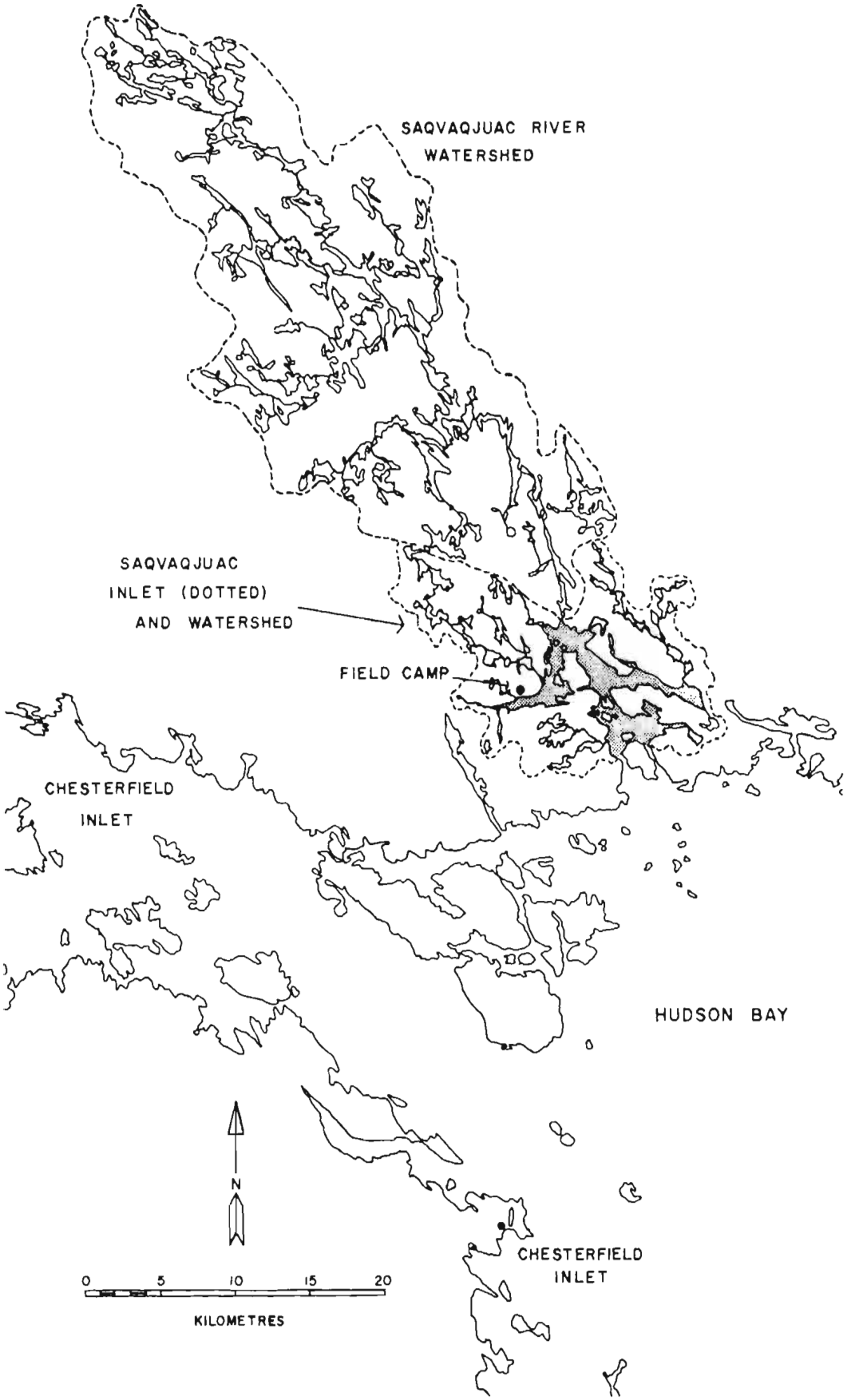
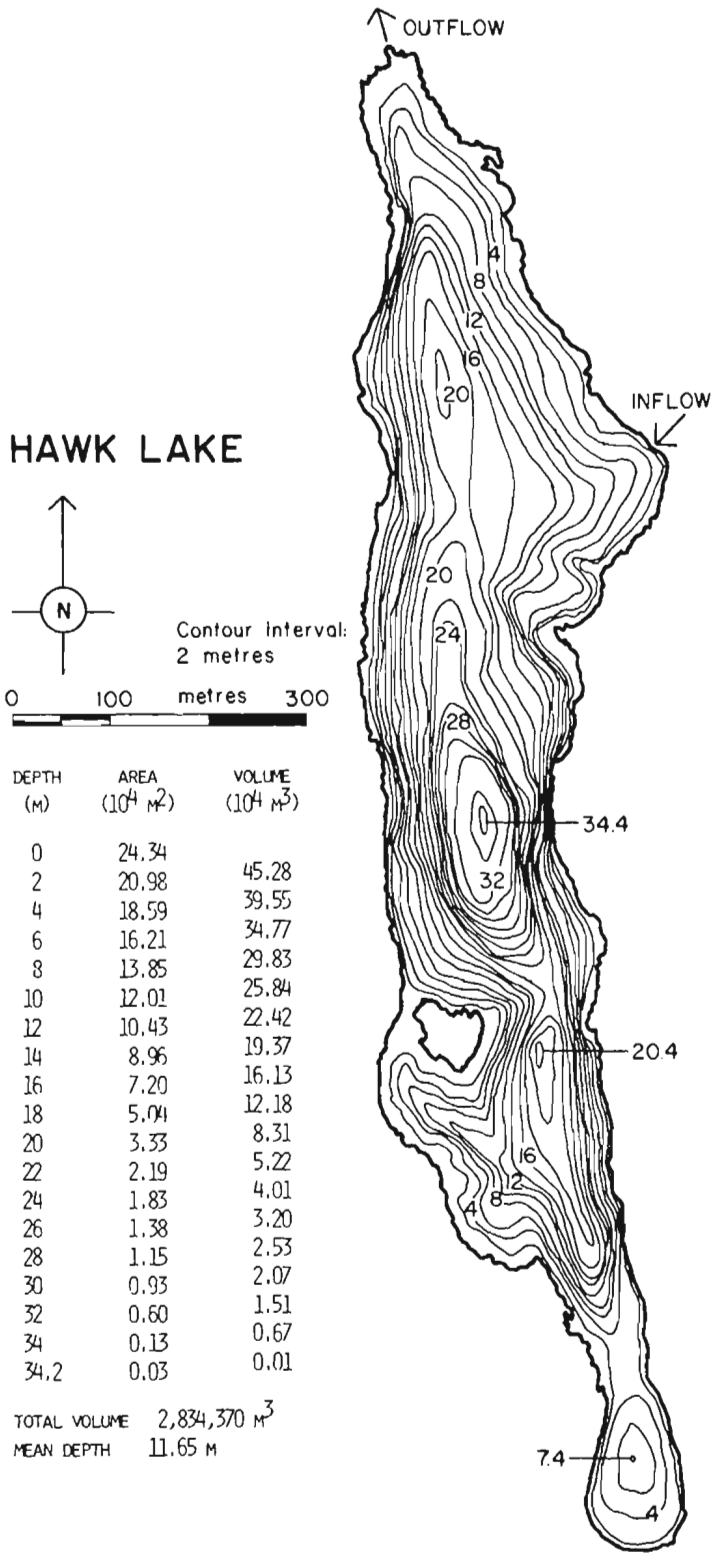


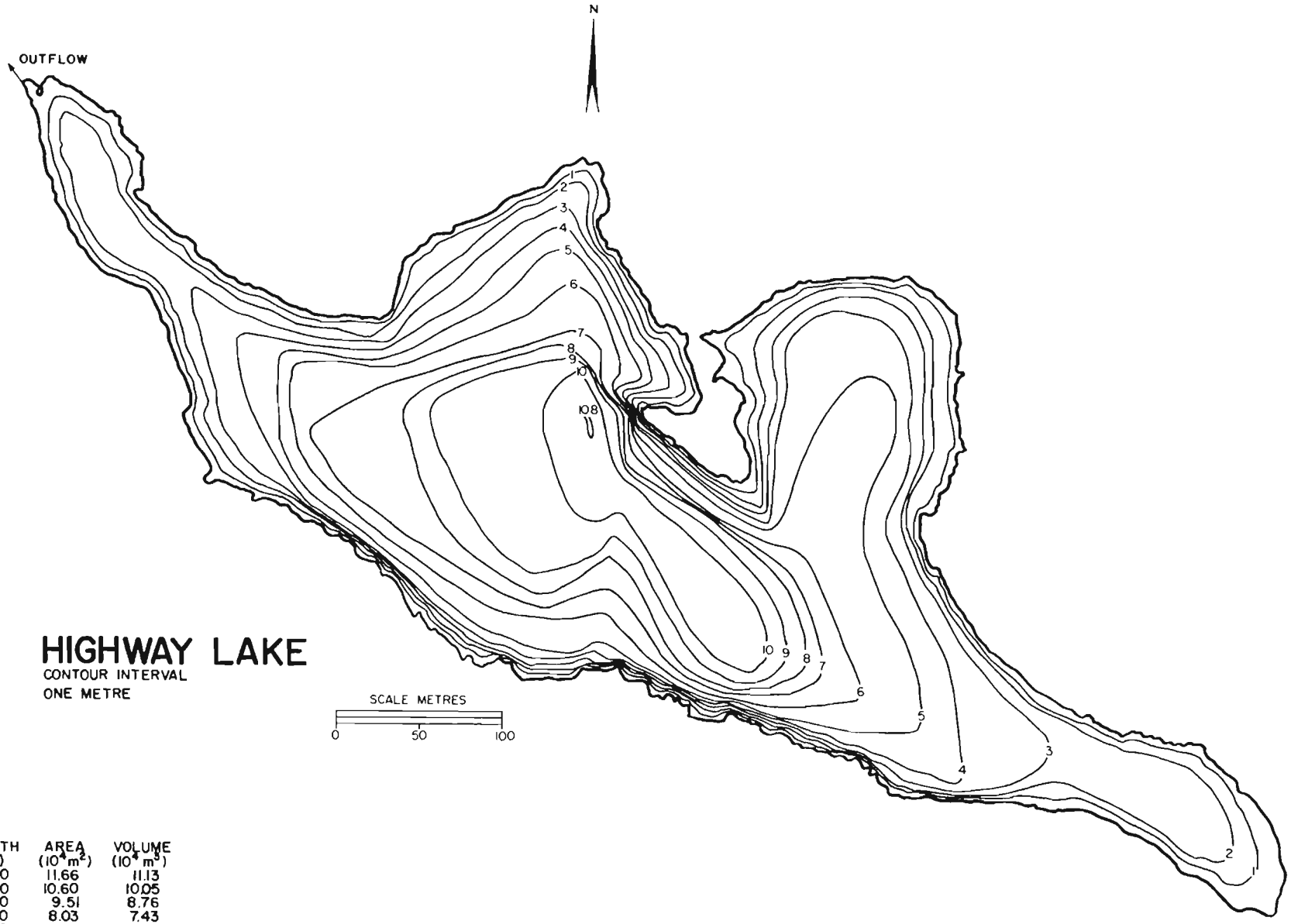
Fig. 2. Map of the adjacent Hudson Bay coast with the Saqvaqjuac River watershed.



DEPTH (M)	AREA (10^4 M^2)	VOLUME (10^4 M^3)
0	24.34	
2	20.98	45.28
4	18.59	39.55
6	16.21	34.77
8	13.85	29.83
10	12.01	25.84
12	10.43	22.42
14	8.96	19.37
16	7.20	16.13
18	5.04	12.18
20	3.33	8.31
22	2.19	5.22
24	1.83	4.01
26	1.38	3.20
28	1.15	2.53
30	0.93	2.07
32	0.60	1.51
34	0.13	0.67
34.2	0.03	0.01

TOTAL VOLUME 2,834,370 M^3
MEAN DEPTH 11.65 M

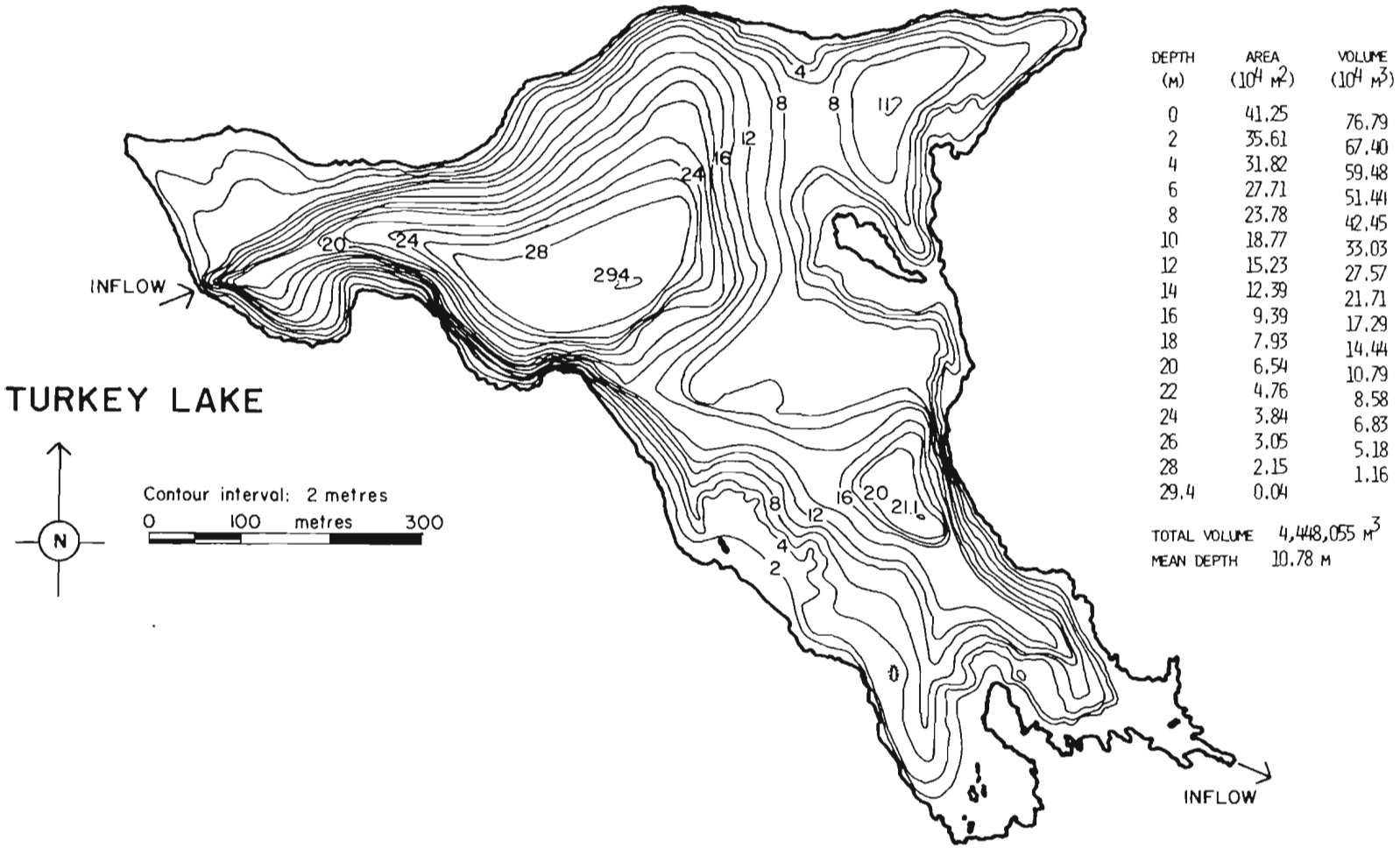
Fig. 3. Bathymetric map of Hawk Lake



DEPTH (m)	AREA ($10^4 m^2$)	VOLUME ($10^4 m^3$)
0.0	11.66	11.13
1.0	10.60	10.05
2.0	9.51	8.76
3.0	8.03	7.43
4.0	6.85	6.12
5.0	5.42	4.63
6.0	3.89	3.49
7.0	3.02	2.62
8.0	2.23	1.94
9.0	1.66	1.11
10.0	.64	.19
10.8	.01	

TOTAL VOLUME = 591,689 m^3
MEAN DEPTH = 5.07 m

Fig. 4: Bathymetric map of Highway Lake



DEPTH (M)	AREA (10^4 M^2)	VOLUME (10^4 M^3)
0	41.25	76.79
2	35.61	67.40
4	31.82	59.48
6	27.71	51.41
8	23.78	42.45
10	18.77	33.03
12	15.23	27.57
14	12.39	21.71
16	9.39	17.29
18	7.93	14.44
20	6.54	10.79
22	4.76	8.58
24	3.84	6.83
26	3.05	5.18
28	2.15	1.16
29.4	0.04	

TOTAL VOLUME 4,448,055 M^3
MEAN DEPTH 10.78 M

Fig. 5. Bathymetric map of Turkey Lake

Table 1. Lake elevations, drainage areas, lake areas, and lake volumes for several Saqvaqjuac lakes and streams.

	Lake Surface Elevation[a] (m MSL)	Drainage Area[b] (ha)	Lake Area (ha)	Lake Volume (m^3)
Far Lake	18*	20.3	3.70	134,000
P&N Lake	16*	35.7	7.09	233,000
Methane Lake	19*	28.00	8.65	410,000
Spring Lake	-$^{\nabla}$	57.6[c]	6.9	187,000
Upper Spring Lake	-	-	3.4	-
Jade Lake	-$^{\nabla}$	31.5	3.63	66,000
Hawk Lake	4†	323.7	24.3	2,830,000
Highway Lake	-$^{\nabla}$	50.6	11.7	592,000
Turkey Lake	-$^{\nabla}$	3766	41.2	4,450,000
Meadow Watershed	-	15.4	-	-
Saqvaqjuac River	-	60700	-	-

[a]Elevations are from various sources and of different reliability, as estimated below:

*from field level surveys by J. Arthur Dalton (pers. comm.). Accuracy ≈ ± 0.3 m.

†from photogrammetric maps at 1 m contour interval. Accuracy ≈ ± 1 m.

$^{\nabla}$by airphoto parallax measurement: Highway Lake and Spring Lake have been estimated to be within 3 m of sea level; Turkey Lake to be between 5 m to 8 m above sea level; and Jade Lake to be between 25 m to 35 m above sea level.

[b]Drainage area includes lake areas.

[c]This value is based on recent mapping of the Spring Lake drainage boundary and supercedes the value previously reported by Dalton (56.0 ha, Table 1, 1981).

Table 2. Far Lake levels, 1981[a].

Date	JUN Elevation (m)	JUN Time (CDST)	JUL Elevation (m)	JUL Time (CDST)	AUG Elevation (m)
1	---	---	29.133		29.013
2	29.107	13:30	29.127		29.009
3	---	---	29.127		29.003
4	---	---	29.123		28.997
5	29.136	19:11	29.120		28.996
6	---	---	29.117		28.994
7	---	---	29.113		28.991
8	---	---	29.111		28.988
9	29.276	10:00	29.107		28.985
10	---	---	29.107		28.977
11	29.384	16:00	---		28.963
12	29.423	14:55	29.100		28.956
13	29.648	19:55	29.097		28.956
14	---	---	29.095		28.953
15	29.171	14:07	29.092		28.950
16	---	---	29.089		28.944
17	29.150		---		28.942
18	29.150		---		28.937
19	29.149		29.074	11:40	28.931
20	29.149		---		28.937
21	29.048		---		28.936
22	29.154		---		28.932
23	29.159		---		28.929
24	29.159		29.053	10:30	28.926
25	29.162		---		28.922
26	29.159		---		28.920
27	19.149		---		28.916
28	29.145		---		28.912
29	29.145		---		28.907
30	29.137		29.026	11:47	28.903
31			29.018		28.904

[a] Values shown with time are instantaneous water levels measured at the time indicated. All other values are instantaneous midnight levels measured with a continuous water level recorder. All levels are in metres relative to a benchmark near the lake with an arbitrary elevation of 30.48 m (100.00 ft), and are directly comparable to elevations reported by Dalton (1981, Table 2) for 1977 to 1980. Actual elevation of Far Lake is 18 m ± 1 m MSL.

Table 3. P & N Lake levels, 1981[a].

Date	JUN Elevation (m)	JUN Time (CDST)	JUL Elevation (m)	AUG Elevation (m)
1	---	---	15.946	15.852
2	15.942	11:00	15.940	15.849
3	---	---	15.934	15.846
4	---	---	15.938	15.841
5	15.952	16:38	15.935	15.840
6	---	---	15.931	15.841
7	---	---	15.927	15.839
8	16.057	11:50	15.921	15.836
9	---	---	15.917	15.832
10	16.135	13:45	15.915	15.828
11	16.166	09:45	15.913	15.815
12	16.144	20:20	15.911	15.809
13	16.101	11:45	15.909	15.808
14	16.101	19:50	15.911	15.808
15	16.074	10:15	15.907	15.803
16	16.036	10:20	15.904	15.799
17	16.006	16:25	15.902	15.796
18	15.991	15:50	15.891	15.791
19	15.977	20:10	15.895	15.787
20	---	---	15.893	15.795
21	15.965	11:57	15.890	15.793
22	---		15.881	15.792
23	---		15.879	15.791
24	---		15.875	15.789
25	15.964		15.871	15.784
26	15.967		15.870	15.782
27	15.963		15.870	15.780
28	15.960		15.861	15.777
29	15.957		15.860	15.772
30	15.950		15.858	15.770
31			15.855	15.773

[a] Values shown with time are instantaneous water levels measured at the time indicated. All other values are instantaneous midnight levels measured with a continuous water level recorder. Elevations are in metres above sea level and are directly comparable to data reported by Dalton (1981, Table 3) for 1977 to 1980.

Table 4 . Jade Lake levels, 1981[a]

Date	JUN Elevation (m)	JUN Time (CDST)	JUL Elevation (m)	JUL Time (CDST)	AUG Elevation (m)	AUG Time (CDST)
1	---	---	0.393		---	---
2	0.714	16:00	0.373		---	---
3	---	---	0.419	15:45	0.321	13:05
4	---	---	0.416	16:07	---	---
5	---	---	---	---	---	---
6	---	---	0.422	14:55	---	---
7	---	---	---	---	---	---
8	---	---	---	---	---	---
9	---	---	---	---	---	---
10	---	---	0.396	11:55	---	---
11	---	---	---	---	---	---
12	---	---	---	---	---	---
13	---	---	0.392	10:30	---	---
14	---	---	---	---	0.285	17:30
15	---	---	---	---	---	---
16	0.456	14:35	0.384	11:45	---	---
17	---	---	---	---	---	---
18	---	---	---	---	---	---
19	0.456	18:40	---	---	---	---
20	---	---	0.354	09:30	0.265	10:30
21	---	---	---	---	---	---
22	0.408		---	---	---	---
23	0.483		0.344	10:45	---	---
24	0.438		---	---	---	---
25	0.484		---	---	0.271	14:00
26	0.487		---	---	---	---
27	0.488		---	---	---	---
28	0.440		---	---	---	---
29	0.442		---	---	---	---
30	0.418		0.335	09:10	---	---
31			0.331	11:45	0.265	13:00

[a] Values shown with time are instantaneous water levels measured at the time indicated. All other values are mean daily levels measured with a continuous water level recorder. Levels are reported relative to a 1.0 m staff gauge bolted to bedrock, and are comparable to values reported by Dalton (1981, Table 8) for 1979. To calculate actual elevation above mean sea level, add 28.377 m.

Table 5. Mean daily discharge ($L \cdot s^{-1}$) from the Far Lake and P&N Lake outflows, and the Meadow watershed, 1981

	Far Lake Outflow			P & N Lake Outflow			Meadow Watershed		
DATE	JUN	JUL	AUG	JUN	JUL	AUG	JUN	JUL	AUG
1	0	12	0.61	0	12	0.13	0[a]	3.7	0.02[b]
2	0	10	0.57	0	11	0.11	0.05[a]	2.8	0.03[b]
3	0	9.0	0.51	0	9.0	0.09	0.47[a]	2.7	0.02[b]
4	0	8.6	0.46	0	7.9	0.08	1.9[a]	2.7	0.02[b]
5	0	7.3	0.44	0	6.9	0.07	4.0[a]	2.7	0.01[b]
6	0	6.6	0.44	0	6.1	0.07	15[a]	2.4	0.02[b]
7	0	5.8	0.44	0	5.2	0.06	35[a]	2.2	0.05[b]
8	0	5.4	0.44	0	4.3	0.05	14	1.9	0.07[b]
9	0	4.8	0.44	0	3.4	0.04	12	3.0	0.09
10	0	4.3	0.44	0	2.7	0.03	23	2.1	0.09
11	0[a]	4.1	0.43	2.9[a]	2.5	0.03	16	1.9	0.09
12	5.8[a]	3.4	0.43	68[a]	2.3	0.07	18	0.52	0.07
13	92[a]	2.9	0.43	94[a]	2.2	0	22	0.15	0.08
14	94[a]	2.9	0.43	81[a]	2.1	0	24	0.44	0.10
15	46[a]	2.6	0.43	58[a]	2.0	0	11	0.36	0.10
16	33[a]	2.3	0.43	52[a]	1.8	0	7.5	0.34	0.12
17	29[a]	2.2	0.43	40[a]	1.6	0	5.5	0.37	0.09
18	20	2.0	0.43	32[a]	1.2	0	6.4	0.09	0.10
19	20	1.7	0.43	26[a]	1.0	0	5.3	0.13	0.09
20	17	1.5	0.43	22[a]	0.95	0	6.2	0.13	0.24
21	20	1.4	0.43	17[a]	0.89	0	6.2	0.09	0.77
22	21	1.3	0.43	12[a]	0.74	0	8.1	0.04[b]	0.55
23	28	1.3	0.43	20	0.57	0	8.2	0.02[b]	0.45
24	25	1.2	0.43	22	0.53	0	6.3	0.01[b]	0.45
25	31	1.1	0.43	26	0.44	0	10	0.007[b]	0.36
26	31	1.1	0.43	28	0.38	0	11	0.004[b]	0.34
27	23	0.96	0.43	26	0.37	0	8.4	0.003[b]	0.36
28	18	0.89	0.42	22	0.35	0	5.4	0.002[b]	0.41
29	18	0.80	0.42	19	0.25	0	5.3	0.002[b]	0.44
30	15	0.74	0.42	16	0.19	0	4.5	0.002[b]	0.41
31		0.68	0.42		0.16	0		0.003[b]	0.42
Total[c]	586.8	110.87	13.78	683.9	91.02	0.83	300.72	30.813	6.46
Mean	20	3.6	0.44	22	2.9	0.03	10	0.99	0.21
Max	94	12	0.61	94	12	0.13	35	3.7	0.77
Min	0	0.68	0.42	0	0.16	0	0	0.002	0.01

[a] Based on manual discharge measurements.

[b] Based on daily manual gauge measurements. All other values are mean daily discharge calculated from continuous lake (Far Lake and P & N Lake) or weir pond (Meadow watershed) stage records.

[c] Total for period of record: 1 June to 31 August, 1981. Zero flow conditions were observed until spring runoff began in June. Flow continued at Far Lake and the Meadow watershed after the period of record.

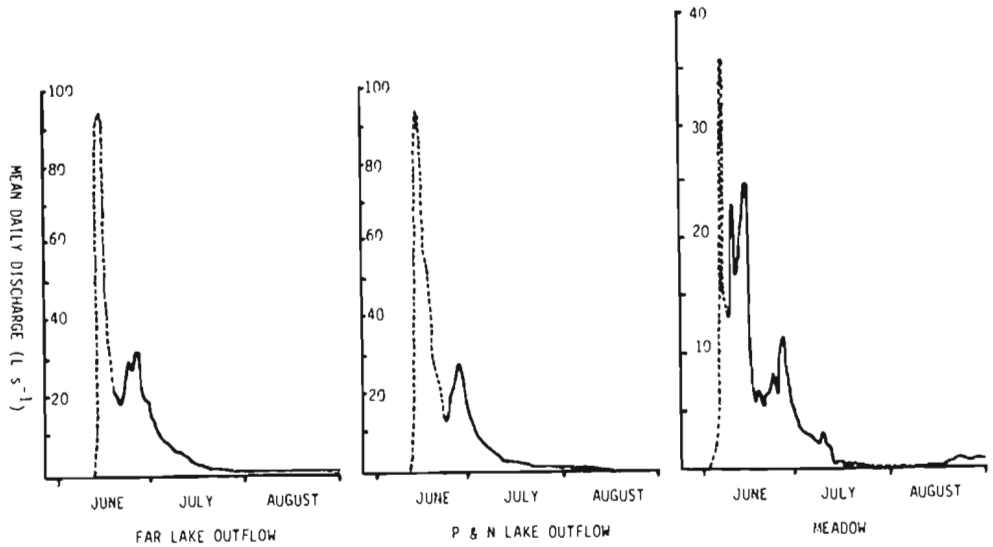


Fig. 6. Hydrographs based on mean daily discharges for Far Lake outflow, P&N Lake outflow, and the Meadow watershed. Dashed lines indicate data based on once daily manual gauge measurements.

Table 6. Mean daily discharge ($m^3 s^{-1}$) for the Saqvaqjuac River, 1981

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DAY
1	---	---	---	---	---	---	31.1	3.9	---	---	---	---	1
2	---	---	---	---	---	---	28.3	3.7	---	---	---	---	2
3	---	---	---	---	---	---	26.4	3.5	---	---	---	---	3
4	---	---	---	---	---	0	24.4	3.2	---	---	---	---	4
5	---	---	---	---	---	0	22.8	3.1	---	---	---	---	5
6	---	---	---	---	---	0	20.9	3.0	---	---	---	---	6
7	---	---	---	---	---	0	19.4	2.9	---	---	---	---	7
8	---	---	---	---	---	0	17.9	2.7	---	---	---	---	8
9	---	---	---	---	---	0.003 E	16.3	2.7	---	---	---	---	9
10	---	---	---	---	---	0.8 E	14.8	2.5	---	---	---	---	10
11	---	---	---	---	---	1.0 E	14.0	2.4	---	---	---	---	11
12	---	---	---	---	---	3.9 E	12.9	2.1	---	---	---	---	12
13	---	---	---	---	---	14.7 E	12.1	2.0	---	---	---	---	13
14	---	---	---	---	---	25.6 E	11.6	2.1	---	---	---	---	14
15	---	---	---	---	---	38.5 E	11.0	2.0	---	---	---	---	15
16	---	---	---	---	---	53.5 E	10.3	1.9	---	---	---	---	16
17	---	---	---	---	---	66.9 A	9.9	1.7	---	---	---	---	17
18	---	---	---	---	---	79.4 A	9.1	1.7	---	---	---	---	18
19	---	---	---	---	---	73.3 A	8.8	1.6	---	---	---	---	19
20	---	---	---	---	---	61.0 A	8.2	1.5	---	---	---	---	20
21	---	---	---	---	---	55.2 A	7.8	1.6	---	---	---	---	21
22	---	---	---	---	---	50.2 A	7.3	1.5	---	---	---	---	22
23	---	---	---	---	---	45.5	6.6	1.3	---	---	---	---	23
24	---	---	---	---	---	45.4	6.1	1.3	---	---	---	---	24
25	---	---	---	---	---	42.4	5.6	1.3	---	---	---	---	25
26	---	---	---	---	---	42.7	5.3	1.2	---	---	---	---	26
27	---	---	---	---	---	40.5	4.9	1.2	---	---	---	---	27
28	---	---	---	---	---	39.3	4.8	1.1	---	---	---	---	28
29	---		---	---	---	36.5	4.6	1.1	---	---	---	---	29
30	---		---	---	---	33.4	4.2	1.0	---	---	---	---	30
31	---		---		---		4.1	1.0		---		---	31
Total	---	---	---	---	---	849.7	391.5	63.9	---	---	---	---	Total
Mean	---	---	---	---	---	28.3	12.6	2.1	---	---	---	---	Mean
Max	---	---	---	---	---	79.4	31.1	3.9	---	---	---	---	Max
Min	---	---	---	---	---	0	4.1	1.0	---	---	---	---	Min

TYPE OF GAUGE - RECORDING LOCATION - LAT 63 42 02 N, LONG 90 37 12 W DRAINAGE AREA 607 km^2 A-MANUAL, E-ESTIMATED

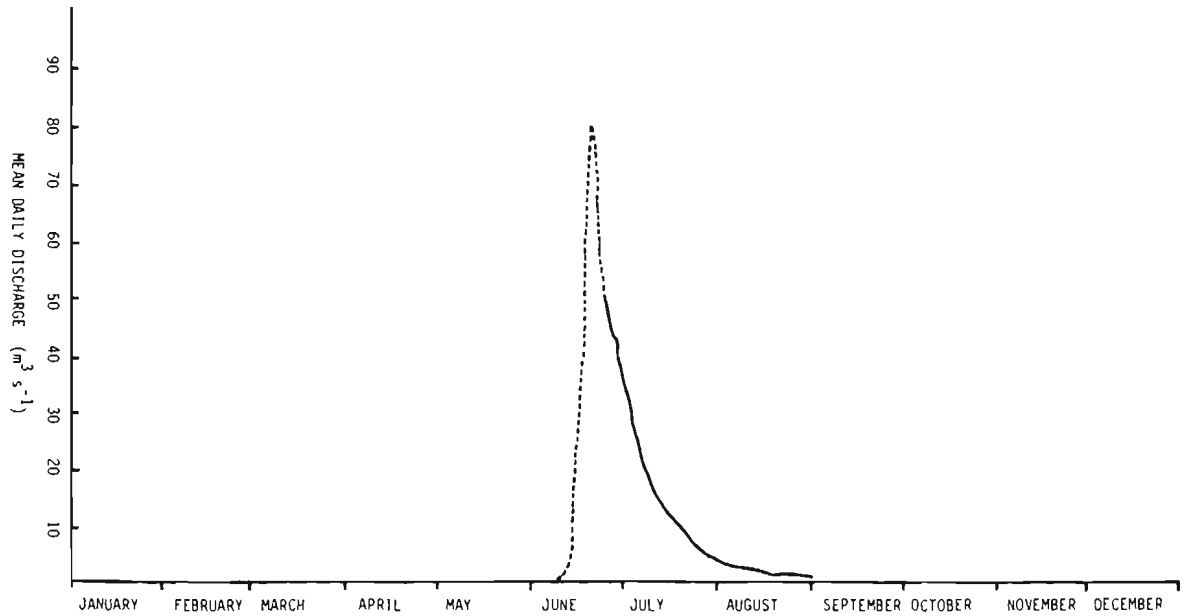


Fig. 7 Hydrograph based on mean daily discharges for the Saqvaqjuac River, 1981

Table 7. Lake surface temperatures (°C), 1981

P&N Lake

Date	Time	Temperature (°C)
Jul 6	09:00	4.8*
Jul 8	10:00	8.0*
Jul 8	18:20	7.9*
Jul 10	09:25	7.2*
Jul 13	12:00	9.2
Jul 14	15:55	9.7
Jul 17	14:00	13.8
Jul 20	11:45	10.4
Jul 21	10:30	11.0
Jul 21	17:40	12.0
Jul 23	13:30	11.4
Jul 27	14:30	14.0
Jul 27	M	14.6*
Jul 28	13:00	15.5
Jul 29	22:00	14.0
Jul 31	13:40	14.0
Aug 5	11:45	13.6
Aug 6	M	14.6
Aug 7	16:45	15.4
Aug 8	13:15	15.1
Aug 8	M	14.6*
Aug 9	14:00	11.0
Aug 15	M	12.9
Aug 16	21:55	13.6
Aug 18	09:45	13.9
Aug 19	11:00	13.5
Aug 20	10:00	13.0
Aug 21	09:50	12.8
Aug 22	12:10	11.8
Aug 24	M	12.6*
Aug 31	08:30	7.8
Aug 31	14:00	9.1*

Jade Lake

Date	Time	Temperature (°C)
Jul 10	11:58	6.5
Jul 13	M	12.1*
Jul 20	09:30	14.2
Jul 21	10:00	11.3
Jul 23	10:40	11.1
Jul 27	13:40	15.0
Jul 27	M	15.4*
Jul 31	11:45	14.0
Aug 3	13:15	13.9
Aug 6	M	15.1*
Aug 14	17:30	13.8
Aug 15	M	12.8*
Aug 20	11:00	13.0
Aug 24	M	12.6
Aug 25	14:00	12.0
Aug 31	13:00	7.0

Far Lake

Date	Time	Temperature (°C)
Jul 13	10:00	8.8*
Jul 15	11:25	10.2
Jul 19	11:12	13.6
Jul 20	10:00	10.3*
Jul 24	10:00	11.4
Jul 27	09:30	13.0
Jul 27	M	13.3*
Jul 30	12:30	13.8
Aug 3	15:46	14.1
Aug 5	15:50	14.4
Aug 6	M	15.0*
Aug 12	15:00	12.2
Aug 14	M	13.3*
Aug 18	14:30	15.0
Aug 20	11:00	12.5
Aug 24	10:00	12.1
Aug 24	15:00	12.0*
Aug 28	09:35	11.5
Aug 31	09:30	9.1

Saqvaqjuac River

Date	Time	Temperature (°C)
Jul 12	11:20	6.8
Jul 21	20:00	12.0
Jul 27	18:30	14.0
Aug 3	17:15	14.1
Aug 9	15:55	15.9
Aug 14	14:30	13.6
Aug 19	10:00	14.1
Aug 23	21:30	12.0
Aug 31	11:15	9.3

Methane Lake

Date	Time	Temperature (°C)
Jul 10	09:12	3.5
Jul 13	11:30	7.1
Jul 19	13:30	12.8
Jul 21	17:30	11.2
Jul 23	14:00	10.6
Jul 27	13:05	13.8
Jul 29	22:00	13.3
Jul 31	13:52	13.2
Aug 5	11:50	13.1
Aug 7	16:40	14.7
Aug 8	14:00	14.9
Aug 12	14:10	11.0
Aug 16	21:55	13.6
Aug 18	10:15	13.6
Aug 21	12:00	12.2
Aug 27	12:15	11.2
Aug 31	09:00	9.6

Spring Lake

Date	Time	Temperature (°C)
Jul 13	15:30	9.2*
Jul 15	13:45	9.4
Jul 20	11:00	11.0*
Jul 24	12:00	12.0
Jul 27	10:30	14.0*
Aug 3	14:34	14.5
Aug 10	09:30	15.0
Aug 11	10:00	13.4
Aug 12	10:02	11.6
Aug 13	09:57	12:5
Aug 14	09:30	12.4*
Aug 15	09:00	12.8
Aug 17	09:30	14.0
Aug 20	11:00	13.3
Aug 24	12:00	12.2*
Aug 28	10:30	11.0
Aug 31	08:50	8.8

[a]Measured with a field thermometer, usually from boat near center, unless otherwise indicated.

*Electric temperature probe near lake center.

M Missing

Table 8. Depth to frost (cm) at various locations at the Meadow watershed, 1981

Location[a]	JUN 27	JUL 17	JUL 31	AUG 15	AUG 31
A	46.2	59.1	70.1	82.1	86.5
B	39.9	72.2	87.7	109.0	112.0
C	66.4	107.8	83.4	112.1	123.0
D	33.3	82.4	113.4	113.0	122.0
E	M	92.7	91.9	97.0	121.0
F	55.8	59.4	87.9	109.8	109.5
G	32.5	88.8	127.9	139.0	139.0
H	17.8	60.5	89.5	135.0	142.0
I	42.7	75.1	89.1	117.5	131.0
Mean	41.8	77.6	93.4	112.7	120.7
Standard Deviation	14.9	16.9	17.1	17.4	16.9

[a] Sites are in gravelly-clay or clay with cobbles under shallow (<0.2 m) organic cover (fen-peat and moss), comprising the range of unconsolidated materials and degrees of near-surface water saturation to be found in the Meadow.

M Missing data.

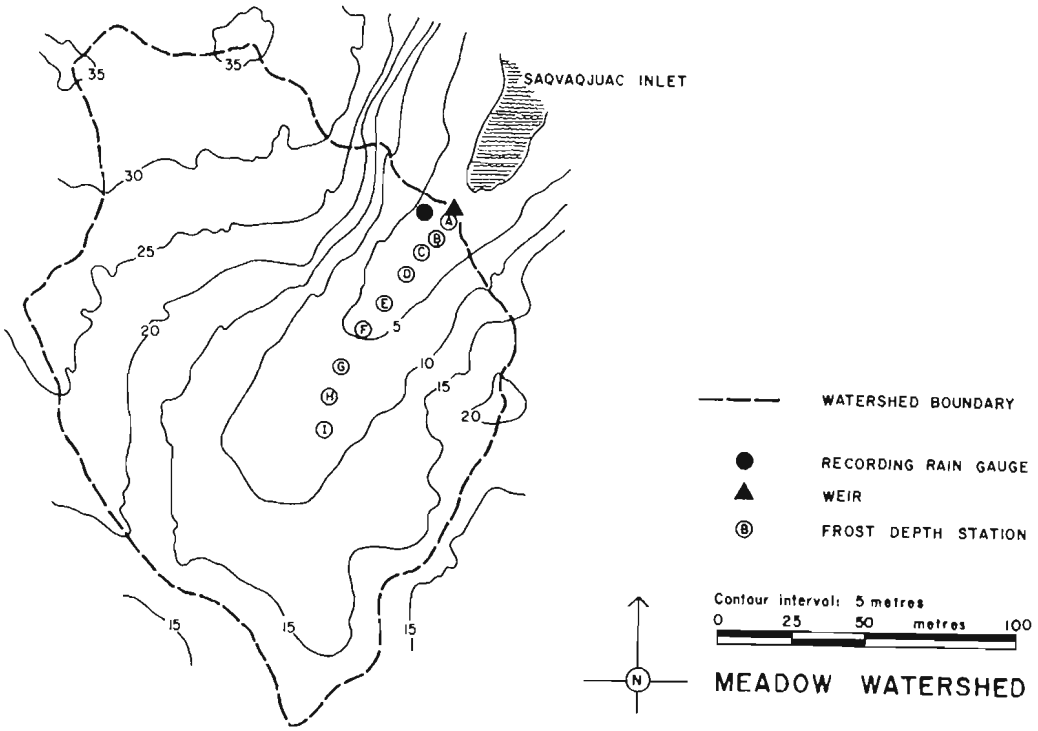


Fig. 8. Location map of depth to frost stations in the Meadow watershed

Table 9. Saqvaqjuac air temperature data (°C), 1980-81

DATE		NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	Max	-16.5	-11.5	-25.0	-29.5	-28.0	-22.0	-6.0	2.0	8.0	19.5
	Min	-23.0	-17.0	-39.0	-36.5	-32.0	-33.0	-24.0	-2.5	2.5	10.5
2	Max	-14.5	-17.0	-29.5	-22.0	-22.0	-27.0	-7.0	2.0	10.0	13.0
	Min	-24.0	-18.5	-35.0	-33.5	-37.5	-35.0	-16.0	-1.5	2.0	10.0
3	Max	-7.5	-18.5	-29.0	-17.0	-13.5	-24.5	-7.0	2.0	10.0	10.5
	Min	-24.5	-21.0	-32.5	-32.5	-36.0	-34.5	-14.5	-4.5	3.0	8.0
4	Max	-17.0	-17.5	-29.5	-15.0	-14.0	-15.5	-5.5	1.0	11.5	17.5
	Min	-20.0	-26.0	-37.5	-28.0	-24.0	-34.0	-12.0	-3.5	1.5	7.0
5	Max	-8.0	-12.5	-29.5	-25.0	-9.0	-19.0	-7.0	2.0	13.0	21.0
	Min	-24.0	-25.5	-37.5	-27.5	-10.0	-25.5	-14.5	-5.0	2.5	7.0
6	Max	-7.5	-12.5	-28.0	-27.0	-8.0	-18.5	-10.5	5.5	15.0	19.5
	Min	-23.0	-21.5	-34.5	-31.0	-29.0	-31.0	-17.5	-2.0	4.5	10.5
7	Max	-14.0	-15.5	-31.5	-27.0	-6.0	---	-10.5	6.0	14.5	15.5
	Min	-18.0	-18.5	-34.5	-35.0	-19.0	-30.0	-14.5	-1.5	7.0	10.0
8	Max	-19.5	-14.0	-32.0	-30.0	-10.0	-20.5	-5.5	2.5	11.0	16.0
	Min	-19.0	-22.5	-37.0	-34.0	-11.5	---	-18.0	0.0	6.5	8.5
9	Max	-17.0	-19.5	-26.0	-26.0	-12.0	-17.5	-4.5	4.0	9.0	19.5
	Min	-25.0	-20.0	-37.0	-35.5	-30.5	-29.5	-19.0	-1.5	4.5	11.0
10	Max	-8.0	-22.5	-23.0	-27.5	-14.5	-16.0	-2.0	2.0	6.5	16.5
	Min	-21.5	-28.0	-34.0	-30.5	-29.5	-30.0	-14.0	0.0	4.0	10.0
11	Max	-8.5	-29.0	-15.5	-35.0	-21.0	-11.5	-6.0	2.0	5.0	12.0
	Min	-18.5	-33.5	-30.0	-38.0	-31.0	-11.5	-7.0	-0.5	3.0	8.5
12	Max	-3.0	-20.0	-15.0	-38.5	-28.5	-25.5	-3.5	6.0	11.5	15.5
	Min	-11.0	-30.5	-24.0	-44.0	-33.0	-31.0	-8.0	-1.0	3.0	4.0
13	Max	-3.0	-15.0	-15.0	-36.0	-27.5	-27.5	-7.0	7.5	17.5	16.0
	Min	-8.0	-30.0	-18.0	-44.0	-35.0	-36.0	-15.0	0.5	3.5	8.5
14	Max	-3.5	-15.5	-16.0	-20.0	-20.5	-25.0	-10.5	7.5	14.5	17.5
	Min	-12.0	-27.0	-22.0	-41.0	-33.0	-36.5	-16.0	1.5	7.0	6.5
15	Max	-8.0	-17.0	-14.0	-18.0	-31.0	-20.5	-8.5	9.0	21.5	19.5
	Min	-11.0	-26.0	-28.0	-37.0	-27.5	-32.5	-19.5	2.0	7.0	8.5
16	Max	-18.0	-16.5	-9.5	-21.0	-25.0	-23.0	1.5	4.0	22.0	18.5
	Min	-20.0	-23.0	-24.5	-31.0	-33.0	-32.5	-17.0	1.5	4.5	12.0
17	Max	-3.0	-17.5	-6.0	-29.0	-17.0	-23.0	-2.5	5.5	17.5	17.5
	Min	-32.0	-36.0	-17.5	-36.5	-30.5	-34.0	-9.0	1.0	11.0	8.5
18	Max	-9.5	-21.0	-22.0	-17.5	-15.0	-22.0	0.0	7.0	9.5	17.0
	Min	-23.0	-23.5	-23.0	-37.0	-25.5	-34.0	-12.5	0.0	4.5	10.5
19	Max	-23.0	-26.0	-15.5	-20.5	-5.5	-18.5	-1.0	6.0	12.0	14.0
	Min	-25.5	-35.0	-27.0	-31.0	-18.0	-30.5	-3.5	2.0	3.5	6.0
20	Max	-26.5	-23.5	-10.5	-19.0	-5.0	-17.5	-1.5	9.5	17.5	10.0
	Min	-30.5	-37.0	-29.5	-25.0	-15.0	-27.5	-3.5	2.0	7.5	7.0
21	Max	-31.0	-35.5	-10.5	-20.0	-5.0	-7.0	1.5	10.5	20.5	9.5
	Min	-32.5	-38.5	-18.0	-22.5	-8.0	-26.0	-4.0	5.0	7.5	7.0
22	Max	-33.0	-27.0	-17.0	-16.0	-7.0	-11.5	3.0	13.0	15.0	9.5
	Min	-38.0	-41.0	-14.0	-22.0	-10.0	-21.0	-13.5	4.5	10.0	6.0
23	Max	-33.0	-29.5	-23.5	-15.0	-7.5	-5.0	3.0	5.5	14.5	13.5
	Min	-37.0	-39.0	-25.5	-31.0	-10.0	-21.5	-13.5	1.5	5.0	4.0
24	Max	-32.5	-32.0	-29.0	-17.0	-11.0	-2.0	2.0	8.5	18.0	18.0
	Min	-37.0	-38.0	-30.0	-18.0	-14.0	-14.0	-11.0	1.5	6.5	10.0
25	Max	-33.0	-32.0	-17.0	-15.5	-15.0	-1.0	1.0	15.5	16.0	16.0
	Min	-37.0	-38.0	-31.0	-19.0	-17.0	-5.5	-10.0	2.0	8.0	6.0
26	Max	-30.0	-36.0	-16.0	-20.0	-13.5	-1.0	0.0	7.0	18.5	15.5
	Min	-37.0	-39.5	-31.0	-24.5	-28.0	-5.0	-2.5	2.0	8.0	5.0
27	Max	-6.0	-35.0	-26.0	-22.0	-26.5	-2.5	-1.5	5.0	25.0	12.0
	Min	-35.5	-41.0	-29.0	-26.5	-30.0	-10.0	-5.5	2.0	8.0	7.0
28	Max	-5.0	-36.0	-23.0	-23.0	-31.0	-8.5	0.0	12.0	21.5	7.5
	Min	-34.0	-40.5	-34.0	-29.0	-37.0	-15.0	-3.5	4.5	12.5	4.0
29	Max	-7.5	-24.5	-16.0		-26.0	-8.5	-0.5	15.5	13.0	5.0
	Min	---	-41.0	-30.0		-34.5	-19.5	-5.0	3.5	5.0	2.0
30	Max	-11.0	-23.0	-20.5		-23.5	-9.5	-1.0	4.5	15.5	7.5
	Min	-13.0	-40.5	-26.5		-34.5	-19.5	-3.5	4.5	6.0	1.0
31	Max		-25.5	-31.0		-25.0		0.0		17.5	5.5
	Min		-28.5	-36.0		-33.5		-7.0		8.0	3.5
Monthly Mean		(-19.9)	-26.5	-25.1	-27.3	-21.3	(-20.6)	-7.3	3.6	10.1	10.8
Mean Max		(-15.3)	-22.5	-21.0	-23.2	-16.9	(-15.5)	-3.1	6.7	14.6	14.3
Mean Min		(-24.6)	-30.5	-29.3	-31.5	-25.7	(-25.7)	-11.4	0.5	5.7	7.3

* Temperature data for May-November, 1980 previously reported in Dalton (1981).

( ) Parentheses indicate mean monthly values calculated from incomplete data.

Table 10. Precipitation (mm) at Far Lake, Saqvaqjuac camp and Meadow watershed for 1981[a].

Date	Far Lake			Saqvaqjuac Camp				Meadow Watershed			
	Jun	Jul	Aug	May	Jun	Jul	Aug	May	Jun	Jul	Aug
1	-[b]	-	-		-	-	-		-	-	-
2	-	0.5	-		-	0.7	-		-	2.3	-
3	-	-	-		-	-	-		-	-	-
4	-	T	-		-	0.2	-		-	-	-
5	-	-	1.2		-	-	1.7		-	-	1.6
6	-	-	1.2		-	T	2.7		-	-	1.3
7	-	-	0.2		-	-	-		-	-	-
8	-	-	-		T	-	-		T	-	-
9	T	-	-		0.2[S]	-	-		T	-	-
10	1.2	-	-		2.0[S]	-	-		1.0	0.3	-
11	1.4	0.9	-		2.2[S]	0.3	0.3		3.2	2.7	-
12	-	1.7	-		1.0[S]	0.2	-		0.6	0.3	
13	-	-	0.5		-	-	0.8		-	-	0.5
14	-	2.7	-		T	2.7	-		T	2.7	-
15	-	-	-		-	-	-		-	-	-
16	-	-	-		-	-	-		-	0.2	-
17	-	1.1	-		0.4	0.7	-		0.3	0.8	-
18	-	-	-		-	T	-		-	-	-
19	0.4	3.2	-		0.7	3.9	-		-	4.1	-
20	-	-	8.3	T	-	T	8.2		-	-	9.0
21	-	-	-		-	-	T		-	-	-
22	-	-	-		0.1	-	T		-	-	-
23	3.3	-	0.2	-[b]	3.8	-	-		3.7	-	0.2
24	7.8	-	-	-	2.5	-	T		6.1	-	0.2
25	-	-	-	-	3.7	-	-	-[b]	-	-	-
26	6.9	-	-	1.4[S]	6.6	-	-	2.2[S]		-	T
27	2.7	-	-	-	2.9	-	T	-	11.6	-	
28	-	-	-	-	0.2	0.7	T	T[S]		0.6	
29	-	-	0.6	0.2	-	3.8	0.7[S]	-	-	3.5	
30	-	4.8	-	-	T	0.3	T	0.3[S]	-	0.4	
31	-	-	M[c]	-	-	T	3.7[c]	-	-	-	1.8*[c]
Total[d]	23.8	15.0	(12.2)	-	26.6	13.9	18.7	-	26.8	17.9	14.7

[a] For Far Lake and Meadow, days are calendar days ending at midnight; for Saqvaqjuac Camp days are 24 hour periods ending 08:00 the following day.

[b] Date gauge set up.

[c] Date gauge taken down.

[d] Total includes 0.1 mm for each trace event; parentheses indicate total for month calculated from incomplete data.

[S] Water equivalent of snow or mixed rain and snow.

T Trace amount assumed to be 0.1 mm.

* Total for 27 to 31 August, not recorded daily.

Table 11. Hourly precipitation data (mm) for the Saqvaqjuac area for 1978 to 1981.

Far Lake 1978 Period of record: 12:30, 27 June to 14:25, 13 September Time is Central Daylight Saving Time.

Hour:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
July 6																								0.4	24.4 a
7	0.6	0.8	0.8	0.6	1.0	2.0	1.4	0.8	1.2	1.8	1.8	1.0	0.6	1.2	0.8	0.2			0.2						16.8
8	0.2	0.2	0.4		0.2		0.2																		1.2
18												0.2		0.2	0.2		0.4	0.4	0.2						1.6
19	0.6	0.6	0.6	0.6	0.4			0.2	0.6	0.8	1.2	1.2	0.8	0.4		0.2									8.2
22																				0.6					0.6
30									0.4	0.4	0.2			1.2				0.2	0.6						3.0
August 11	0.2																								0.2
12																	0.4								0.4
14						0.4	0.2				0.2														0.8
17													0.4	0.2	0.2		0.2	0.2							1.2
18																								0.6	0.6
19	0.8	0.4	0.4	0.4	0.4	0.2		0.2																	2.8
22																			0.2	0.4	0.4				1.0
23					0.6																				0.6
27															0.2	0.2	0.2	0.2							0.8
28											0.4	0.6			0.2	0.2	0.6	0.8	0.8	1.2	1.0	0.4	0.6	0.6	7.4
29	1.6	1.0	1.4	1.4	1.2	1.2	1.6	0.8	0.6	0.6	0.4			0.4	0.6	0.2	0.2			0.2	0.2		0.2	0.2	14.0
30	0.2		0.2	0.2					0.2																0.8
September 6								0.2									0.4								0.6
7									0.2			0.2		0.4	0.6	0.8	0.2								2.4
10								0.2																	0.2

Notes: a Recorder malfunctioned. 24.0 mm fell from 00:00, 5 July to 15:15, 6 July.
Mixed rain and snow (measured as water equivalent).

Table 11 (continued). Hourly precipitation data (mm) for the Saqvaqjuac area for 1978 to 1981.

Meadow watershed 1978 Period of record: 09:35, 19 June to 11:05, 13 September Time is Central Daylight Saving Time.

Hour:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
June 22										0.6	0.2	0.4	1.2	0.2											2.6
24										0.2	0.8	1.0	0.4			0.2								0.4	3.0
25	0.2	0.2																							0.4
26															0.4	0.2	1.0	0.6			0.2		0.2	0.4	3.0
27	0.4			0.4	1.6	0.6					0.2														3.2
July 5																					0.2	0.6	1.4	1.6	19.0 a
6	3.2	1.8	0.4	0.2	0.2	2.2	1.0	1.6	0.6	0.8	1.4	0.2												0.2	13.8
7	1.0	1.2	1.0	0.6	1.2	1.4	1.4	1.4	1.0	1.8	2.0	1.0	0.6	1.0	1.2	0.2				0.2	0.2				18.4
8		0.2		0.2		0.2	0.2																		0.8
18												0.2	0.2	0.2	0.4	0.2	0.2	0.2	0.6	0.2	0.2				2.6
19	0.6	0.6	0.6	0.4	0.6		0.2		0.4	0.6	1.4	1.6	0.8	0.6											8.4
23			0.4																						0.4
25																					0.2				0.2
30										0.2		0.2	0.2		0.8	0.8				0.2					2.4
August 4																	0.4								0.4
9																	0.2								0.2
14							0.4																		0.4
17													0.2	0.2	0.4		0.2	0.2	0.2						1.4
18																							0.2	0.4	0.6
19	0.8	0.6	0.4	0.4	0.4	0.4	0.2																		3.2
22																				0.8	0.4				1.2
23					0.2	0.6		0.2																	1.0
27															0.6	0.6	0.8	0.6	0.2						2.8
28												0.8	0.4			0.2	0.8	0.8	1.2	1.4	0.8	0.6	0.4	0.6	8.0
29	1.4	1.4	0.6	0.6	1.2	0.8	1.6	1.4	0.8	0.8	0.4	0.2		0.2	0.6		0.2	0.2	0.2	0.2	0.2		0.4		13.4
30	0.2		0.2	0.2	0.2																				0.8
September 6								0.2																	0.2
7										0.2	0.2		0.6	1.2	1.2	0.6	0.4								4.4
10								0.2																	0.2

Notes: a Includes 15.2 mm of snow (measured as water equivalent) which fell and melted between 02:00 and 20:00.

Table 11 (continued). Hourly precipitation data (mm) for the Saqvaqjuac area for 1978 to 1981.

Far Lake 1979 Period of record: 15:45, 27 May to 08:30, 19 September Time is Central Daylight Saving Time.

Hour:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total	
May 27																0.2	0.6	1.0	1.0	1.4	1.0	1.0	0.4	0.2	6.8	
28				0.2			1.0	1.0				0.2	0.2						0.2	1.6					4.4	
June 1																0.2									0.2	
2								0.2	0.4	1.4	1.4	0.6	0.2												4.2	
3			0.2																						0.2	
8							1.4	2.6	1.4					0.2											5.6	s
9																		0.6							0.6	s
10													0.2												0.2	
16			0.6																						0.6	
18							0.2	0.4	0.2																0.8	s
22																	0.4								0.4	
26																0.2									0.2	
July 18			0.2																						0.2	
22																		0.4							0.4	
23									0.4		0.2									0.2					0.8	
24																0.2	0.2								0.4	
27																								0.4	0.4	
28											0.6							0.4							1.0	
29			0.4																						0.4	
31											0.2														0.2	
August 2										0.2	0.2									0.2	0.2		0.6		1.4	
3															0.6		0.4								1.0	
5																							1.4		1.4	
6													1.0	1.4	1.2	0.6	0.4	0.2		0.2	0.2				5.2	
9																			0.2	0.6	0.2	0.4	0.6		2.0	
10				0.2					0.2														0.2		0.6	
14																					0.2				0.2	
15			2.0	0.2																					2.2	
17																								0.2	0.2	

Far Lake, 1979 continued on next page.

Table 11 (continued). Hourly precipitation data (mm) for the Saqvaqjuac area for 1978 to 1981.

Far Lake 1979 Period of record: 15:45, 27 May to 08:30, 19 September Time is Central Daylight Saving Time.

Hour:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total	
August 18	0.8	1.2	0.6		0.6	0.2																			3.4	
23																	0.4		0.4	0.4		1.4	0.6	1.0	4.2	
24	1.2	1.8	1.2	1.4	1.2	0.8	4.2	2.0	0.4																14.2	
27					0.2					0.2	0.4	0.2	0.4		0.2										1.6	s
28					0.2		0.2	0.4	1.0	0.8	0.4		0.2							0.2		0.4	1.8	1.8	7.4	
29	2.4	1.4	0.2																						4.0	
30								1.8				0.2			0.2		0.2	0.4	0.8	0.2	0.6	0.2			4.6	s
31				0.8	1.0	0.8	0.4	0.2													0.2		0.2		3.6	
September 3			0.2				0.8	1.8	1.2	1.2	0.2	0.4	0.4	0.2	0.2	0.4	0.8	0.2	0.4	0.6	1.2	1.4	0.8	0.4	12.8	
4	2.0	1.2	0.2	0.2		0.2																			3.8	
5															0.2										0.2	
8					0.2	0.4	0.8																		1.4	
9			0.2																						0.2	
13																			0.4	0.8	1.0	1.0	0.4		3.6	

Notes: s Snow, or mixed rain and snow (measured as water equivalent).

Meadow watershed 1979 Period of record: 17:00, 3 June to 09:30, 18 September Time is Central Daylight Saving Time.

Hour:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total	
June 8							0.8	3.4	1.8	0.4						0.2									6.6	s
9										0.8															0.8	s
16			0.2								0.2														0.4	
18							0.2	1.0	0.8																2.0	s
25									0.6																0.6	
26															0.4										0.4	

Meadow watershed, 1979 continued on next page.

Table 11 (continued). Hourly precipitation data (mm) for the Saqvaqjuac area for 1978 to 1981.

Meadow watershed 1979 Period of record: 17:00, 3 June to 09:30, 18 September Time is Central Daylight Saving Time.

Hour:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total	
July 18									0.2																0.2	
22																			0.2						0.2	
23										0.6										0.4	0.2				1.2	
24											0.2	0.4	0.4				0.6								1.6	
25														1.6					0.6						2.2	
27														0.2											0.2	
28												0.2	0.2			0.2									0.6	
30																	0.6	0.2							0.8	
August 1																					1.0				1.0	
2														0.6										0.6	1.2	
3															0.2										0.2	
5																						0.4	1.4		1.8	
6													1.6	1.6	1.6	0.8	0.4		0.2	0.2	0.2	0.2	0.2		7.0	
9																					0.4	0.4	0.6	0.2	1.6	
12																			0.2						0.2	
15			0.6																						0.6	
17																								0.2	0.2	
18	1.4	0.6	0.4	0.6	0.6	0.2																			3.8	
23																0.2	0.6		0.6	0.4	0.6	1.2	0.6	1.2	5.4	
24	1.8	1.2	1.2	1.6	0.8	1.6	2.6	0.4	0.4							0.2									11.8	
27										0.2	0.6	0.4	0.2	0.4	0.2	0.2									2.2	s
28							0.2	0.2	1.0	1.2	0.8	0.2	0.2	0.2							0.8	1.0	2.0	2.4	10.2	
29	2.2	1.6	0.2					0.2																	4.2	
30									0.6			0.4		0.2		0.2		0.6	0.4	0.6	0.6	0.6	0.2		4.4	s
31				0.6	0.6	1.0	0.8	0.4	0.4												0.2		0.2		4.2	
September 3							0.2	0.8	1.4	0.8	0.4	0.4	0.2	0.6		0.6	0.6	0.4		0.4	1.0	1.0	0.6	0.2	9.6	
4	1.2	1.2	0.2	0.2	0.2																				3.0	
5																0.2									0.2	
8					0.2	0.4	0.6						0.2												1.4	
13																			0.8	1.4	1.4	1.4	0.4		5.4	
17													0.2												0.2	

Notes: s Snow, or mixed rain and snow (measured as water equivalent).

Table 11 (continued). Hourly precipitation data (mm) for the Saqvaqjuac area for 1978 to 1981.

Far Lake 1980 Period of record: 09:55, 20 May to 10:15, 24 August Time is Central Daylight Saving Time.

Hour:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
May 29																									6.8 s
June 7																									2.2 s
28																				1.0	0.8				1.8
29																		0.2							0.2
30						0.2																			0.2
July 1		0.2	3.1	1.3	0.4										1.0							0.4	1.3	2.7	10.4
2	3.5	2.5	2.4	1.9	2.7	1.1	1.3	1.3	1.1	0.6															18.4
6																							0.4	0.6	1.0
7	1.2	1.3	0.7		0.2			0.2	0.2	0.2	1.2	1.2	1.0	0.2	0.5						0.2	0.5	1.6	2.4	12.8
8	2.3	2.8	2.8	1.4	1.9	1.9			0.2							0.5	0.2				0.5	0.5			15.0
11																								0.6	0.6
12	0.2		0.2	0.4	0.6	0.8	0.9	1.5	0.9	1.7	1.1	1.3	1.3	1.5	0.2	0.6									13.2
13							1.3	2.2	0.9	0.2															4.6
16																				0.2		0.2			0.4
18											0.5	2.4	2.1	1.2	1.9	0.9	1.4	1.2	1.2	0.7	1.2	1.4	1.2	0.7	18.0
19	1.0	1.4	0.2																						2.6
22				0.2	0.2	0.2	0.9	0.2	0.2	0.7		0.2					4.1	0.9							7.8
24													0.2					0.2	0.2						0.6
25											0.2														0.2
26														0.2											0.2
27																					0.4	2.2	0.4		3.0
28			0.2								0.5	1.0	1.3		0.2										3.2
August 7			0.3	1.8	0.9						0.3								0.3	0.9	0.3				4.8
8																	0.4				0.4				0.8
9	0.2																								0.2
12																			0.3	0.3					0.6
17						0.5																		0.5	1.0

Far Lake, 1980 continued on next page.

Table 11 (continued). Hourly precipitation data (mm) for the Saqvaqjuac area for 1978 to 1981.

Far Lake 1980 Period of record: 09:55, 20 May to 10:15, 24 August Time is Central Daylight Saving Time.

Hour:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
August 18	0.2				0.3	0.9																			1.4
19																					0.2	0.6	0.7	0.7	2.2
20	1.1	0.4	0.4	0.4	0.6	0.4	0.6	0.7	0.6	0.4															5.6
22					0.2	0.7	0.9	0.2	2.0	4.3	8.2	7.9	7.4	3.2	0.2										35.2
23						1.6	1.2	1.7	0.5																5.0
24	0.2																								0.2

Notes: s Snow, or mixed rain and snow (measured as water equivalent). No hourly record.

Meadow watershed 1980 Period of record: 10:45, 15 May to 13:00, 2 September Time is Central Daylight Saving Time.

Hour:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total	
May 15																									0.8	s
29																									12.4	s
June 7																									2.3	s
28																				0.2	1.2				1.4	
30																			1.0	0.4					1.4	
July 1		0.2	1.6	0.6	0.4			0.4								0.8							1.0	1.8	6.8	
2	2.9	2.3	2.7	1.8	2.1	1.0	1.0	1.4	0.8	0.6	0.2														16.8	
6																							0.6	0.8	1.4	
7	0.9	1.1	0.4	0.2	0.2	0.2	0.2	0.2	1.3	1.4	0.7	0.7	0.2									0.4	2.5	2.6	13.2	
8	2.7	2.4	1.8	1.3	1.6	1.8	0.2									0.2					0.4				12.4	
11																								0.2	0.2	
12	0.4		0.2	0.4	0.8	0.6	1.7	1.7	1.5	1.8	1.7	1.1	1.9	1.5	1.1	0.2									16.6	

Meadow watershed, 1980 continued on next page.

Table 11 (continued). Hourly precipitation data (mm) for the Saqvaqjuac area for 1978 to 1981.

Meadow watershed 1980 Period of record: 10:45, 15 May to 13:00, 2 September Time is Central Daylight Saving Time.

Hour:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
July 13						1.4	3.0	0.6				0.4													5.4
16																	0.2		0.4		0.4				1.0
17	0.2																								0.2
18										0.8	3.3	1.3	1.9	1.3	1.1	1.5	0.8	0.8	0.8	0.8	0.6	0.6	0.6	0.8	17.0
19	1.2	0.2	0.2			0.4	0.2																		2.2
22			0.2	0.8	0.8	1.1	0.6	0.8		0.2	0.4				3.3	0.4	0.2								8.8
24																			0.2						0.2
27																				1.1	1.7	0.2			3.0
28											0.4	1.5	0.7												2.6
August 7				1.1	0.6						0.2						0.2		0.2	0.2	0.9				3.4
8																		0.2							0.2
9	0.2																								0.2
12																				0.6					0.6
17							0.2																		0.2
18	0.4				0.6	1.2	0.2	0.2																	2.6
19																						0.4	0.8	0.6	1.8
20	0.8	0.6	0.4	0.6	0.2	0.2	0.4	0.8	0.6	0.4															5.0
22					0.2	0.8	0.9	0.4	2.1	3.1	4.8	11.4	4.8	4.2	0.9										33.6
23						0.4	2.4	2.0	0.8		0.2	0.4													6.6 a
26																		0.6							0.6
29													0.2	1.8	1.1	0.7	1.1						1.3	1.6	7.8
30	2.3	1.8		0.4	1.1	0.2									1.6										7.4

Notes: s Snow, or mixed rain and snow (measured as water equivalent). No hourly record.
a Recorder clock stopped from 12:30, 23 August to 09:40, 26 August.
0.4 mm precipitation from 12:30 to 24:00, 23 August included in daily total.

Table 11 (continued). Hourly precipitation data (mm) for the Saqvaqjuac area for 1978 to 1981.

Far Lake 1981 Period of record: 09:45, 1 June to 09:50, 31 August Time is Central Daylight Saving Time.

Hour:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
June 10									0.3				0.3		0.6										1.2
11												0.2	0.3	0.3		0.3	0.3								1.4
19																0.2	0.2								0.4
23		0.6	0.4		1.1	0.4	0.4	0.2	0.2																3.3
24			0.2	0.2								0.4					0.7	1.1	0.2	1.2	0.7	1.8	1.3		7.8
26						0.5	0.9	1.6	3.0	0.2	0.5	0.2													6.9
27													0.9	0.9	0.7	0.2									2.7
July 3													0.3		0.2										0.5
4											0.1														0.1
11																			0.2			0.2	0.3	0.2	0.9
12		0.6	0.7	0.4																					1.7
14											1.1	0.9	0.7												2.7
17	0.4						0.7																		1.1
19	0.2	0.4	0.5	0.5	0.5	0.7	0.4																		3.2
30																									4.8 a
August 5																	0.9	0.3							1.2
6																0.2	0.3	0.3	0.2	0.2					1.2
7									0.2																0.2
13													0.1							0.4					0.5
20														0.8	4.6	1.9	1.0								8.3
23						0.2																			0.2
29			0.6																						0.6

Notes: a Recorder malfunction. 4.8 mm fell from 10:06, 24 July to 11:15, 30 July. Compare with Meadow watershed station.

Table 11 (continued). Hourly precipitation data (mm) for the Saqvaqjuac area for 1978 to 1981.

Meadow watershed 1981 Period of record: 00:00, 1 June to 16:00, 24 August Time is Central Daylight Saving Time.

Hour:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
June 10								0.2							0.6	0.2									1.0
11													0.5			0.3	0.6			0.6	0.6	0.3	0.3		3.2
12						0.3	0.3																		0.6
14				0.1																					0.1
17																0.2			0.1						0.3
23		0.9		1.7	0.2		0.9																		3.7
24		0.2	0.5														0.2	0.4	0.2	0.5	0.2	1.8	1.6	0.5	6.1
27																									11.6 a
July 2	0.2		1.8	0.2	0.1																				2.3
10																							0.3		0.3
11		0.2	0.2	0.2		0.5	0.9	0.7																	2.7
12			0.3																						0.3
14											1.0	1.7													2.7
16																								0.2	0.2
17	0.6																	0.2							0.8
19	0.4	0.8	0.9	0.6	0.6	0.6		0.2																	4.1
28	0.6																								0.6
29				0.2	0.2	0.2	0.6	1.1	0.2	0.4					0.6										3.5
30																					0.4				0.4
August 5																		1.6							1.6
6																	0.3	0.3	0.4	0.2	0.1				1.3
13													0.2	0.2						0.1					0.5
20															2.1	4.8	1.7	0.4							9.0
23						0.2																			0.2
24								0.2																	0.2

Notes: Recording rain gauge was installed 25 May; blowing snow conditions made pre-June data unuseable.

a Recorder malfunction. 11.6 mm fell on 26, 27 June. Compare with Far Lake station.

Table 12. Mean daily relative humidity (%) at Saqvaqjuac camp, 1981

Date	JUN	JUL	AUG
1		91	71
2		94	84
3		92	85
4		92	77
5	93	85	81
6	79	79	73
7	77	65	76
8	97	82	78
9	91	88	81
10	99	94	82
11	98	97	73
12	92	93	59
13	87	77	84
14	78	89	77
15	69	64	69
16	85	65	69
17	82	84	73
18	86	65	75
19	80	85	62
20	59	73	87
21	57	68	95
22	57	85	85
23	83	69	88
24	91	65	76
25	70	68	68
26	92	71	85
27	94	66	74
28	81	82	78
29	59	80	66
30	77	71	71
31		67	88
Mean[a]	(81)	79	77

[a] Parentheses indicate mean monthly values calculated from incomplete data.

Table 13. Mean daily wind speed (km h^{-1}) at the Saqvaqjuac Camp, 1980-1981[a].

DATE	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	39.8	38.7	19.9	6.7*	16.1	3.8	21.1	16.3	18.4
2	35.7	26.9	23.3	12.5	16.9	13.4	18.8	10.1	18.2
3	21.2	11.1	34.4	25.5	13.8	19.1	17.3	17.2	25.5
4	9.0	12.2	21.5	14.3	29.9	16.5	21.9	10.5	23.4
5	8.5	26.6	27.9	4.5	12.6	24.5	19.8	8.7	14.5
6	15.4	21.9	32.2	3.4	7.8	22.3	20.3[b]	10.3	10.6
7	10.1	19.5	17.0	3.0	-	23.5	34.7[b]	9.1	11.1
8	23.2	28.0	23.7	5.4	15.9*	33.9	25.7	36.5	16.1
9	29.1	34.2	22.8	5.1	8.8	23.3	26.1	39.1	29.2
10	36.4	12.5	12.1	15.5	9.2	20.7	20.1	31.2	34.3
11	32.3	11.1	9.5	20.4	30.0	13.0	9.3	15.7	37.4
12	26.9	8.3	24.2	24.4	20.9	20.7	5.7	9.3	18.0
13	22.2	9.6	29.0	12.0	26.9	14.4	11.5	11.0	8.9
14	32.3	16.2	14.3	10.7	22.7	24.5	13.4	12.2	14.4
15	21.5	4.4	17.2	23.6	16.7	14.1	11.6	20.7	30.1
16	23.2	22.0	13.0	24.4	23.6	33.1	12.5	18.8	16.1
17	27.5	33.2	11.9	19.4	18.6	6.5	8.2	23.4	25.6
18	28.1	20.7	17.3	32.5	18.2	20.2	12.1	33.6	16.6
19	27.0	6.9	24.9	-	13.5	20.8	11.6	20.4	17.4
20	28.7	31.0	19.0	31.8*	17.9	16.8	10.8	11.6	25.3
21	14.0	16.7	45.8	-	25.3	26.5	11.5	17.5	24.4
22	25.0	25.3	51.1	-	32.2	17.9	13.7	33.1	15.9
23	10.8	12.0	41.4	-	19.1	18.1	18.3	21.4	21.5
24	3.7	18.1	28.8	29.1*	20.6	10.1	21.6	17.0	21.1
25	23.1	12.9	24.3	23.1	13.9	11.7	18.6	20.1	21.9
26	11.8	22.0	28.7	-	12.7	14.9	11.2	6.0	14.4
27	22.7	16.4	11.0	-	23.2	10.4	13.1	22.1	15.7
28	15.8	9.3	-	-	16.1	24.0	20.0	25.8	16.5
29	5.5	20.1		-	11.5	36.9	18.2	18.5	20.0
30	12.5	29.4		20.8*	3.8	30.8	12.7	17.8	19.8
31	35.5	25.6		10.6		31.2		19.6	11.0
Mean	21.9	19.4	23.3	18.7	17.8	19.9	16.4	18.9	19.8

[a]Anemometer location was 2.2 m above ground on a small hill next to camp called "Radio Tower Hill". Mean daily speed is for a "wind day" from 08:30 CST to 08:30 CST the following day.

[b]Mean for partial day

* Mean for this day and previous missing day(s).

Table 14. Summary of evaporation data for Saqvaqjuac camp, 1981.

Date	JUNE Net Water Loss (mm)	JUNE Mean Wind Speed[a] (km/h)	JUNE Mean Water Temp. (°C)	JUNE Mean Air Temp. (°C)	JULY Net Water Loss (mm)	JULY Mean Wind Speed[a] (km/h)	JULY Mean Water Temp. (°C)	JULY Mean Air Temp. (°C)	AUGUST Net Water Loss (mm)	AUGUST Mean Wind Speed[a] (km/h)	AUGUST Mean Water Temp. (°C)	AUGUST Mean Air Temp. (°C)
1					4.3	16.3	8.2	5.2	8.4	18.4	14.0	15.0
2					0.3	10.1	6.0	6.0	6.9	18.2	12.8	11.5
3					3.8	17.2	9.2	6.5	3.8	25.5	9.5	9.8
4					1.8	10.5	8.2	6.5	6.1	23.4	11.2	12.2
5	Pan set up June 4, 1981				4.0	8.7	13.2	7.7	4.3	14.5	14.8	14.0
6					4.1	10.3	12.5	9.7	3.9	10.6	15.0	15.0
7	4.1	34.7	6.2	2.2	5.8	9.1	14.8	10.8	6.3	11.1	14.8	12.5
8	2.5	25.7	2.2	1.2	6.3	36.5	8.0	8.8	6.1	16.1	15.5	12.2
9	2.2	26.1	3.5	1.2	5.3	39.1	5.5	6.8	7.6	29.2	15.0	15.2
10	1.1	20.1	2.7	1.0	3.1	31.2	6.0	5.2	3.7	34.3	12.0	13.2
11	0.1	9.3	2.2	0.8	0.5	15.7	5.0	4.0	8.2	37.4	9.0	10.2
12	2.3	5.7	6.5	2.5	2.9	9.3	9.5	7.2	7.6	18.0	12.0	9.8
13	3.0	11.5	10.0	4.0	5.3	11.0	15.0	10.5	2.3	8.9	11.2	12.2
14	4.6	13.4	9.2	4.5	1.9	12.2	10.2	10.8	4.8	14.4	13.8	12.0
15	5.1	11.6	10.0	5.5	9.4	20.7	14.2	14.2	8.6	30.1	14.5	14.0
16	3.0	12.5	7.5	2.8	9.4	18.8	16.2	13.2	7.6	16.1	13.8	15.2
17	2.6	8.2	7.2	3.2	6.3	23.4	12.0	14.2	6.1	25.6	14.2	13.0
18	3.8	12.1	7.8	3.5	6.9	33.6	6.2	7.0	7.6	16.6	12.2	13.8
19	2.0	11.6	6.8	4.0	4.2	20.4	9.2	7.8	6.4	17.4	11.0	10.0
20	4.8	10.8	10.2	5.8	5.6	11.6	12.5	12.5	1.2	25.3	8.0	8.5
21	4.3	11.5	9.5	7.8	6.3	17.5	15.2	14.0	1.4	24.4	8.5	8.2
22	6.9	13.7	10.8	8.8	9.4	33.1	9.8	12.5	2.8	15.9	9.0	7.8
23	3.7	18.3	7.9	3.5	8.1	21.4	10.5	9.8	3.1	21.5	8.5	8.8
24	2.0	21.6	4.5	5.0	8.4	17.0	13.2	12.2	5.1	21.1	12.2	14.0
25	6.9	18.6	10.8	8.8	7.4	20.1	13.2	12.0	8.1	21.9	9.8	11.0
26	0.7	11.2	5.8	4.5	6.9	6.0	14.5	13.2	3.1	14.4	9.8	10.2
27	0.6	18.1	4.2	3.5	7.6	22.1	16.5	16.5	3.9	15.7	10.2	9.5
28	3.1	20.0	6.8	8.2	8.2	25.8	13.0	17.0	1.5	16.5	4.5	5.8
29	8.9	18.2	11.0	9.5	4.7	18.5	8.8	9.0	4.8	20.0	3.2	3.5
30	3.3	12.7	9.8	10.0	5.6	17.8	11.0	10.8	4.2	19.8	5.5	4.2
31					6.6	19.6	14.5	12.8	0.0[d]	11.0	2.8	4.5[c]
Total[b]	(81.6)	(377.2)	(173.1)	(111.8)	170.4	584.6	341.8	303.6	155.5	613.3	338.3	336.8
Mean[b]	(3.4)	(15.7)	(7.2)	(4.7)	5.5	18.9	11.0	9.8	5.0	19.8	10.9	10.9

[a] Wind speed measured near evaporation pan at 2.2 m above ground level.

[b] Parentheses indicate total or mean monthly values calculated from incomplete data.

[c] Pan emptied 1 September, 1981.

[d] When computed net water loss results in a negative value, zero is reported.