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CANADA  
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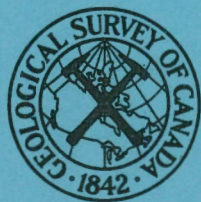
GEOLOGICAL SURVEY OF CANADA  
TOPICAL REPORT NO. 118

MACKENZIE RIVER DRAINAGE BASIN  
DAM SITE INVESTIGATION

SITE No. 19

UPPER SEAPLANE DAM SITE  
(MAP AND NOTES)

E. B. OWEN



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OTTAWA  
1966

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## Upper Seaplane Dam Site

### General Description

The examination of Upper Seaplane dam site is part of an investigation by the Water Resources Branch, Department of Energy, Mines and Resources of the hydroelectric power potential in the Mackenzie River drainage basin. Upper Seaplane dam site is situated on Flat River in the Northwest Territories about 4 and a half miles downstream from the mouth of McLeod Creek and 66 miles from the junction of the Flat and South Nahanni Rivers.

Upper Seaplane dam site is the furthest upstream of 4 potential sites on Flat River. An alternate site (Lower Seaplane) is about a mile downstream. The other two sites (Upper and Lower Direction sites) are located about 57 and 62 miles downstream respectively. Upper Seaplane dam site is included on National Topographic Series sheet No. 95E (Flat River), scale 1:250,000 and on Royal Canadian Air Force photograph A 12277-167. The geology is described in Geological Survey of Canada, Paper 64-52.<sup>1</sup>

The chief purpose of constructing a dam on Flat River is to provide additional storage for larger dams on South Nahanni River. It is doubtful if there is any great amount of storage available at either of the Seaplane sites but they are probably the best available as there is a shortage of suitable sites in the downstream parts of Flat River. From the engineering viewpoint a dam built at Lower Seaplane site would be more satisfactory than one at the Upper site. The reason for this is that, because of the additional head available, the Lower site would provide power as well as storage. Another proposal would be to construct two dams, a large one at Upper Seaplane site for storage purposes and a low-head dam at the Lower site for power. The drop of Flat River through the Lower site is about 56 feet.

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<sup>1</sup> Gabrielse, H., Roddick, J.A. and Blusson, S.L.: Flat River, Glacier Lake and Wrigley Lake, District of Mackenzie and Yukon Territory; Geol. Surv. Can.; Paper 64-52; 1965.

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Chemical Analysis of Groundwater from a Spring near  
Upper Seaplane Dam Site

(parts per million)

Location	Date	Discharge	pH	SiO <sub>2</sub>	Ca	Mg	Na	K	Fe	CO <sub>3</sub>	HCO <sub>3</sub>	SO <sub>4</sub>	Cl	F	NO <sub>3</sub>	Turbidity	Hardness as CaCO <sub>3</sub>
Left side of Flat River 300' downstream from dam site area	July 13, 1964	10 gpm  Temp. 53°F.	7.3	21	158	21	1.6	3.2	0	0	580	15.7	0.4	0.37	0.1	0	481

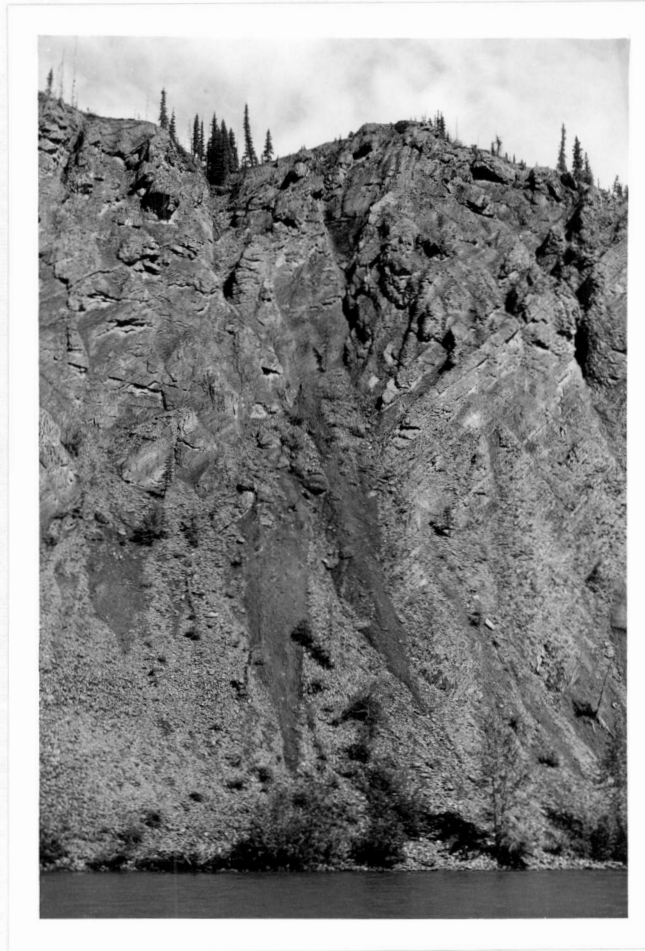


Plate 1

Left abutment Upper Seaplane dam site; bedrock is thin-bedded, dark grey to black, argillaceous limestone; talus consists of thin, platy rock fragments.

G.S.C. 1-5-64



Plate 2

Right abutment Upper Seaplane dam site; sliding is common on the steep slope where the overburden is thin; seismic data indicated the depth to bedrock on the alluvium - covered terrace at the base of slope varies from 59 to 73 feet.



Plate 3

Spring on left side of Flat River, 300 feet downstream  
from Upper Seaplane dam site; flow is 10 gpm;  
temperature 53° F.

G.S.C. 4-5-64

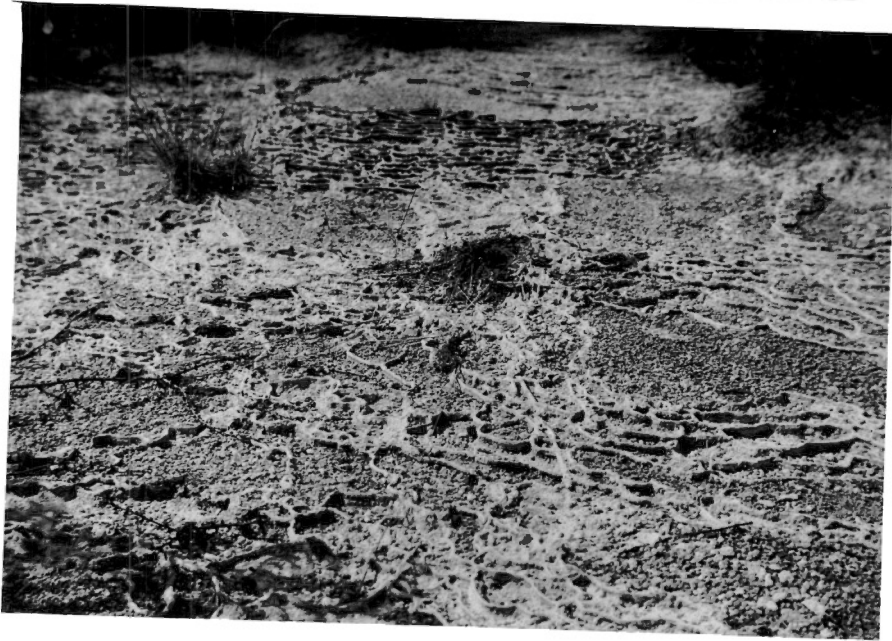
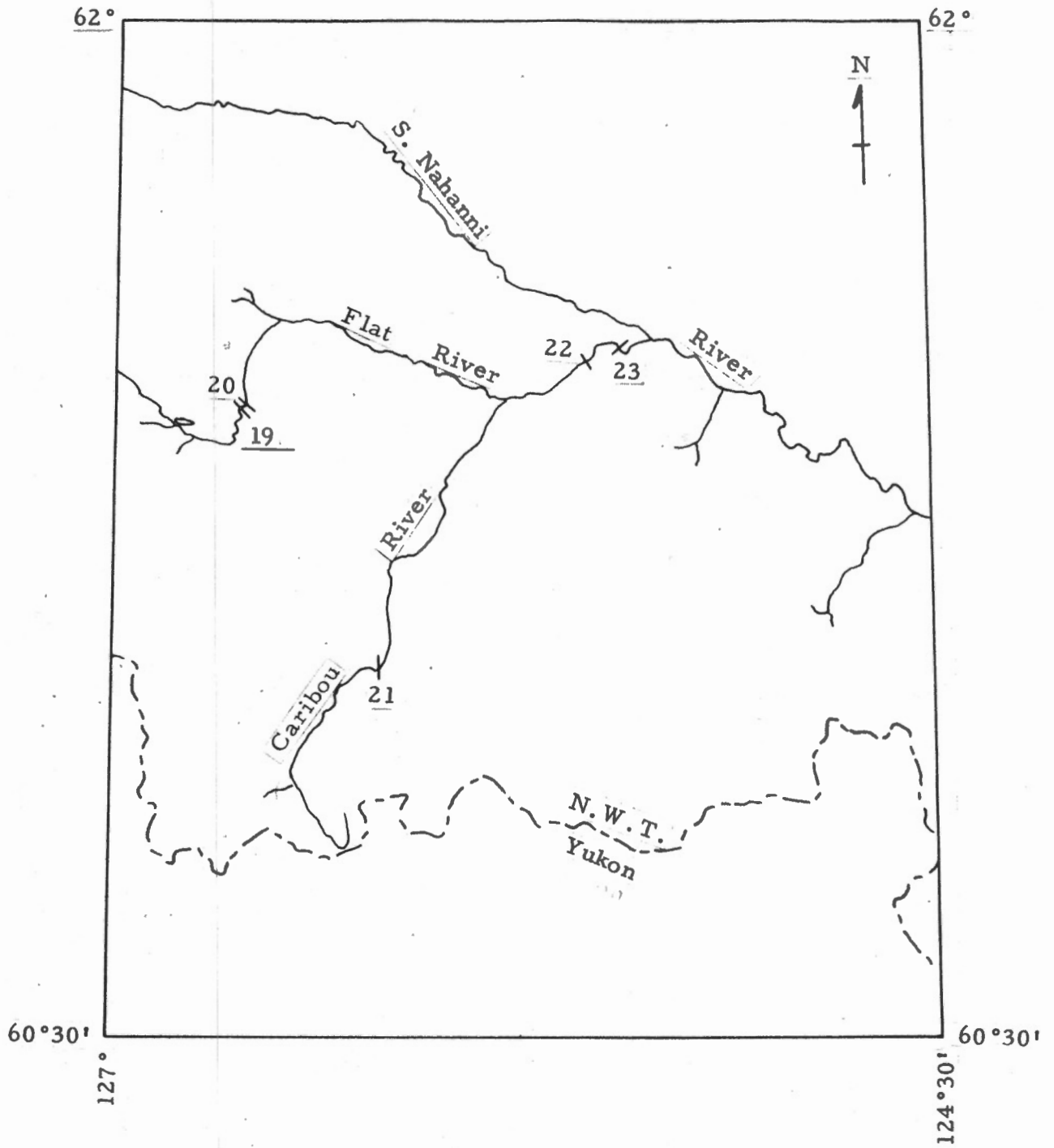


Plate 4

Calcareous tufa deposit at spring described in plate 3.

G.S.C. - 4-8-64





LOCATION OF PROPOSED DAM SITES  
MACKENZIE RIVER DRAINAGE BASIN  
Scale: 1:1,000,000

<u>Site No.</u>	<u>Name</u>	<u>River</u>
19	Upper Seaplane	Flat
20	Lower Seaplane	Flat
21	Caribou	Caribou
22	Upper Flat Canyon	Flat
23	Lower Flat Canyon	Flat