

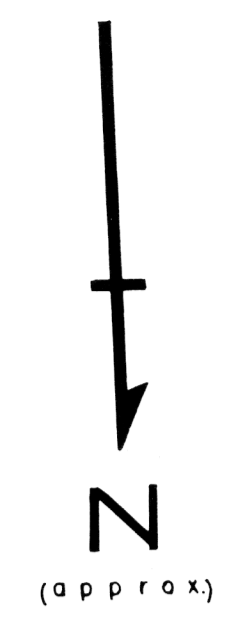
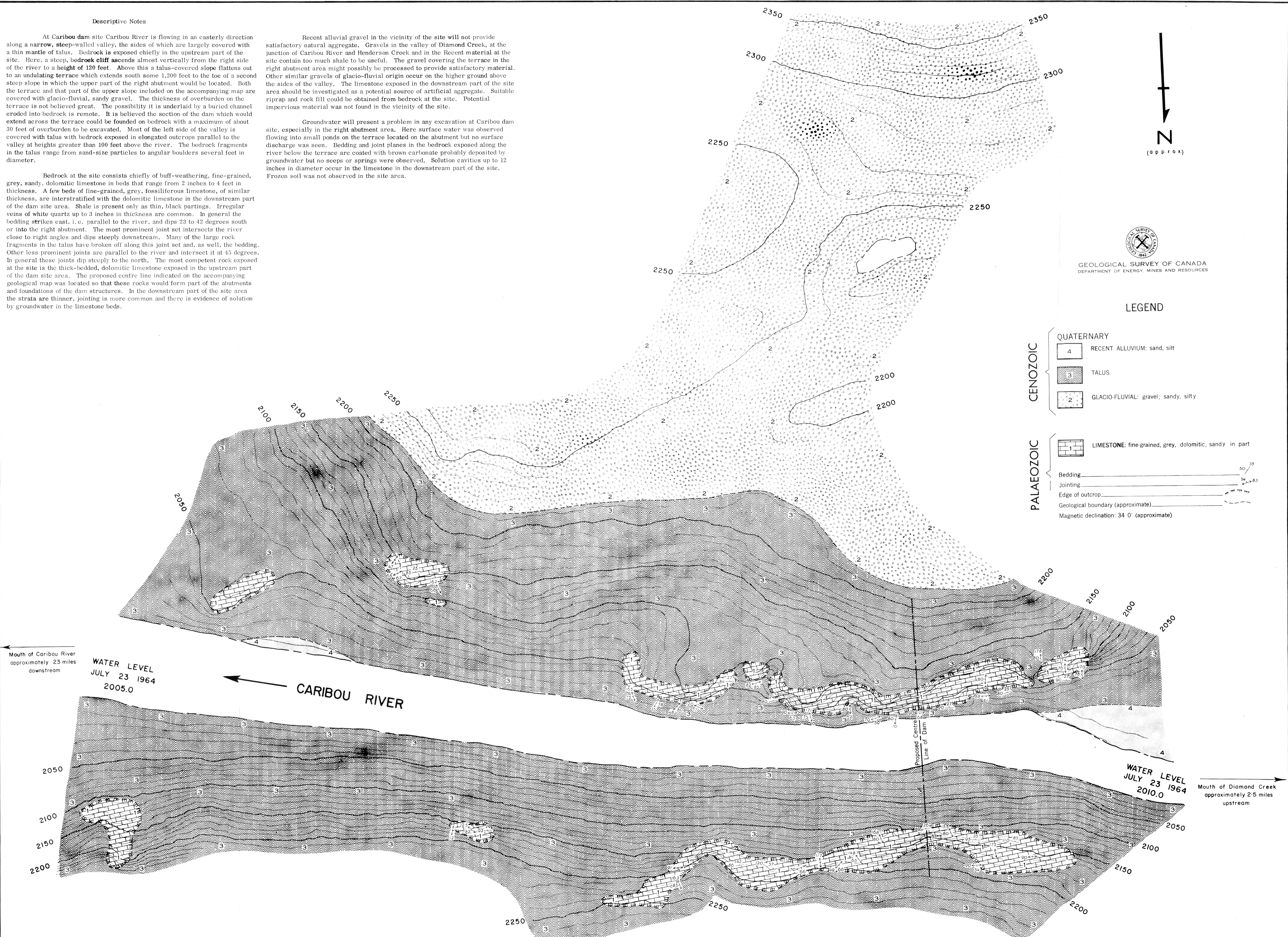
Descriptive Notes

At Caribou dam site Caribou River is flowing in an easterly direction along a narrow, steep-walled valley, the sides of which are largely covered with a thin mantle of talus. Bedrock is exposed chiefly in the upstream part of the site. Here, a steep, bedrock cliff ascends almost vertically from the right side of the river to a height of 120 feet. Above this a talus-covered slope flattens out to an undulating terrace which extends south some 1,200 feet to the toe of a second steep slope in which the upper part of the right abutment would be located. Both the terrace and that part of the upper slope included on the accompanying map are covered with glacio-fluvial, sandy gravel. The thickness of overburden on the terrace is not believed great. The possibility it is underlain by a buried channel eroded into bedrock is remote. It is believed the section of the dam which would extend across the terrace could be founded on bedrock with a maximum of about 30 feet of overburden to be excavated. Most of the left side of the valley is covered with talus with bedrock exposed in elongated outcrops parallel to the valley at heights greater than 100 feet above the river. The bedrock fragments in the talus range from sand-size particles to angular boulders several feet in diameter.

Bedrock at the site consists chiefly of buff-weathering, fine-grained, grey, sandy, dolomitic limestone in beds that range from 2 inches to 4 feet in thickness. A few beds of fine-grained, grey, fossiliferous limestone, of similar thickness, are interstratified with the dolomitic limestone in the downstream part of the dam site area. Shale is present only as thin, black partings. Irregular veins of white quartz up to 3 inches in thickness are common. In general the bedding strikes east, i.e. parallel to the river, and dips 23 to 42 degrees south or into the right abutment. The most prominent joint set intersects the river close to right angles and dips steeply downstream. Many of the large rock fragments in the talus have broken off along this joint set and, as well, the bedding. Other less prominent joints are parallel to the river and intersect it at 45 degrees. In general these joints dip steeply to the north. The most competent rock exposed at the site is the thick-bedded, dolomitic limestone exposed in the upstream part of the dam site area. The proposed centre line indicated on the accompanying geological map was located so that these rocks would form part of the abutments and foundations of the dam structures. In the downstream part of the site area the strata are thinner, jointing is more common and there is evidence of solution by groundwater in the limestone beds.

Recent alluvial gravel in the vicinity of the site will not provide satisfactory natural aggregate. Gravels in the valley of Diamond Creek, at the junction of Caribou River and Henderson Creek and in the Recent material at the site contain too much shale to be useful. The gravel covering the terrace in the right abutment area might possibly be processed to provide satisfactory material. Other similar gravels of glacio-fluvial origin occur on the higher ground above the sides of the valley. The limestone exposed in the downstream part of the site area should be investigated as a potential source of artificial aggregate. Suitable riprap and rock fill could be obtained from bedrock at the site. Potential impervious material was not found in the vicinity of the site.

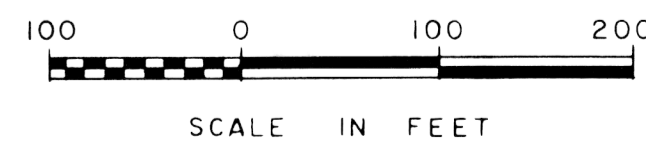
Groundwater will present a problem in any excavation at Caribou dam site, especially in the right abutment area. Here surface water was observed flowing into small ponds on the terrace located on the abutment but no surface discharge was seen. Bedding and joint planes in the bedrock exposed along the river below the terrace are coated with brown carbonate probably deposited by groundwater but no seeps or springs were observed. Solution cavities up to 12 inches in diameter occur in the limestone in the downstream part of the site. Frozen soil was not observed in the site area.



GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF ENERGY MINES AND RESOURCES

LEGEND

- QUATERNARY**
- 4 RECENT ALLUVIUM: sand, silt
 - 3 TALUS
 - 2 GLACIO-FLUVIAL: gravel; sandy, silty
- PALEOZOIC**
- LIMESTONE: fine-grained, grey, dolomitic, sandy in part
 - Bedding:
 - Jointing:
 - Edge of outcrop:
 - Geological boundary (approximate):
 - Magnetic declination: 34° (approximate)



MACKENZIE RIVER DRAINAGE BASIN
SITE NO. 21
CARIBOU DAM SITE
TO ACCOMPANY TOPICAL REPORT NO. 119
GEOLOGY BY E.B. OWEN, 1964