



LEGEND

SURFICIAL DEPOSITS

NONGLACIAL ENVIRONMENTS

- 13 Organic deposits: bog, swamp and ephemeral lake deposits composed of peat and organic and inorganic silt and clay, 1 to 10 m or more thick.
- 12 Colluvial deposits: nonsorted debris, ranging from clay to boulders in texture, soliflucted, washed or tumbled into place from up slope areas; thickness ranges from less than 1 m on upper slopes to 10 m or more near slope toes; 12a, rock glaciers; slowly moving spatulate or lobate bodies of ice corol or ice cemented, angular and coarse rock rubble restricted to high alpine valleys; 12b, talus deposits; aprons or cones of coarse rubble accumulated through episodic, free falling and cascading of rock fragments from adjacent steep slopes and cliffs, and cascading of rock fragments from adjacent steep slopes and cliffs.
- 11 Fluvial deposits: gravel, sand and minor deposits of silt and clay, 1 to 3 m thick, deposited on floodplains or alluvial fans; 11a, modern alluvium, seasonally flooded; 11b, terrace deposits above the present floodplain or active parts of alluvial fans.

GLACIAL AND PROGLACIAL ENVIRONMENTS

- Neoglacial Deposits
- 10 Neoglacial drift: sandy bouldery till lateral and end moraines adjacent to cirque glaciers and related minor deposits of sand and gravel.

Glacial Episode 4

- 9 Eisenhower Junction Drift: calcareous, stony, sand to clay loam-textured till and minor deposits of sand and gravel, restricted to areas adjacent to the continental divide (distinguished from the Bow Valley and Cammore tills by geomorphic relationships); 9a, hummocky moraine; hummocky till and kame deposits; 9b, discontinuous ground moraine; patches of till and minor sand and gravel interspersed with outcropping bedrock; 9c, outwash deposits; terraced or planar deposits of sand and gravel.
- 8 Midnapore Silts: sands and silts deposited in a lake ponded by the Laurentide Ice Sheet. It is entirely restricted to the Bow River Valley in the vicinity of the Midnapore district of Southeast Calgary below 1035 m elevation.
- 7 Cammore Drift: stony till, glaciofluvial and glaciolacustrine deposits directly underlying valley bottoms and margins over most of the Rocky Mountain Front Range. It can only be distinguished from nearby deposits of Eisenhower Junction and Bow Valley Drifts through geomorphic or stratigraphic relationships; 7a, hummocky moraine; hummocky till and kame deposits; 7b, discontinuous ground moraine; scattered areas of till and minor sand and gravel scattered in predominantly bedrock areas; 7c, outwash deposits; terraced, planar, or locally pitted deposits of sand and gravel; 7d, associated minor lacustrine deposits: fine sand, silt and clay; 7e, undivided.

Glacial Episode 3

- 6 Sheep River Silts and Clays: laminated to thick bedded clayey silts, silty clays and fine sands deposited in proglacial lakes in the Fish Creek, Sheep River and Highwood River drainage basins above 1035 m elevation; 6a, discontinuous deposits.
- 5 Erratics Train Drift: slightly stony, clayey loam and silty loam-textured till of Laurentide and Neoglacial provenance, 1-10 m thick, includes minor kame deposits of sand and gravel. It can be distinguished from Bow Valley Drift by the presence of up to 1 per cent granitic and metamorphic clasts. North of the Highwood River it grades continuously westward into Bow Valley Drift; 5a, hummocky ground moraine; hummocky till and poorly sorted sand and gravel; 5b, discontinuous ground moraine; patches of thin till in areas of bedrock or colluvium-mantled bedrock; 5c, kame deposits; ridged deposits of sand and gravel.
- 4 Bow Valley Drift: slightly stony or stony sandy loam to clay loam till and associated glaciofluvial deposits, 1-5 m thick, entirely of Rocky Mountain provenance. Includes deposits of the correlative Ernst Till and related deposits in the Livingstone River basin, grades continuously eastwards into the Erratics Train Drift. Bow Valley Drift totally lacks granitic or metamorphic pebbles in its till or outwash; 4a, hummocky ground moraine; hummocky deposits of till and kame deposits; 4b, discontinuous ground moraine; thin, discontinuous patches of till scattered over exposures of bedrock or colluvium-mantled bedrock; 4c, outwash deposits; 4d, undifferentiated deposits of till and glaciofluvial sediments.

Glacial Episode 2

- 3 Chain Lakes Clays and Silts: laminated clays and silts and minor gravels 1-50 m thick, confined to elevations above 1300 m in the Willow Creek drainage basin; 3a, thin discontinuous silts and clays in an area of Mavcroft or Munsell drift or bedrock.
- 2 Mavcroft Drift: stony, clayey loam, silty loam and loamy till of Rocky Mountain provenance and related glaciofluvial deposits, 1-10 m thick. Till lacks granitic or metamorphic clasts; 2a, hummocky moraine; hummocky till and kame deposits; 2b, discontinuous ground moraine; patches of till in areas of bedrock or colluvium-mantled bedrock; 2c, outwash; terraced or planar deposits of sand and gravel.
- 1 Munsell Drift: slightly stony, clay loam till of Laurentide provenance and minor glaciofluvial deposits; granitic and metamorphic pebbles may comprise 20 to 50 per cent of till clasts; 1a, discontinuous moraine; patches of thin till in an area of colluvium mantled bedrock; 1b, hummocky moraine; hummocky till and kame deposits; 1c, kame deposits.

PRE-QUATERNARY

Precambrian to Tertiary

- R Bedrock, undivided.
- 1 The stratigraphy of Quaternary deposits delineated on this map is summarized in the correlation chart and detailed in:
  - Jackson, L.E., Jr. 1980: Glacial history and stratigraphy of the Alberta portion of the Kananaskis Lakes map area. Canadian Journal of Earth Sciences, v. 17, p. 459-477.

**SYMBOLS**

- Oriented feature, direction unknown
- Streamlined bedrock feature: direction unknown; direction known
- Lateral moraine
- End moraine associated with Erratics Train Till
- Slope break
- Glacial drainage course
- Knick point
- Ice carved bedrock basin
- One or more Foothills Erratic greater than 1 m in diameter
- Landslide: arrows show direction of movement
- Glacier
- Patterned ground
- Areas known to be beyond the limits of glaciation
- Boundary: defined; approximate; gradational; inferred
- Sarcee Indian Reserve: mapped by airphoto interpretation only

Symbol designation (used with moraine, stream and directional features): n - neoglacial; e - associated with the Eisenhower Junction Drift; c - associated with Cammore Drift; b - associated with Bow Valley and Erratics Train Drift; m - associated with Mavcroft and Munsell Drift.

CORRELATION CHART

Glacial Episode	Rocky Mountains	Mixed	Laurentide	Provenance
Neoglacial				Neoglacial
Episode 4	Eisenhower Junction Drift, Cammore Drift			Midnapore Silts
Episode 3	Bow Valley Drift	Erratics Train Drift		None recognized in the map area
Episode 2	Mavcroft Drift			Munsell Drift

A fragmentary record exists for Glacial Episode 1. This primarily consists of erratics located in the Porcupine Hills above the limits of the deposits of Glacial Episode 2.

Geology by L.E. Jackson Jr. 1974-1976

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SURFICIAL GEOLOGY KANANASKIS LAKES 82-J (ALBERTA PORTION)



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