LEGEND

PLEISTOCENE AND HOLOCENE, UNDIVIDED

1 — EOLIAN DEPOSIT: fine and medium-grained sand and silt; up to 7 m thick; longitudinal and parabolic dunes scoured by blowouts; undulating to rolling topography.

LACUSTRINE DEPOSIT: sand silt and clay, with local ice-rafted stones; up to 40 m thick; deposited mainly in proglacial lakes, but includes also undifferentiated recent lake sediment; flat to gently undulating topography.

2a — Coarse sediment: sand and silt; undulating surface in places modified by wind.

2b — Fine sediment: silt and clay; flat to gently undulating surface.

FLUVIAL DEPOSIT: gravel, sand, silt and clay, includes local till and bedrock exposures; up to 20 m thick; present on floors and terraces of river valleys and meltwater channels, and in deltas; flat to undulating topography.

3a — Coarse sediment: gravel and sand, minor silt beds.

3b — Fine sediment: fine sand, silt and clay, minor gravel beds.

4 — STREAM AND SLOPEWASH ERODED DEPOSIT: exposed till and bedrock, local slump material; slopes of river valleys and meltwater channels, in places badland type terrain; 4a - mostly bedrock.

PLEISTOCENE

5 — CRYOTURBATED EOLIAN (LOESS) AND FLUVIAL DEPOSIT: mixed fine sand, silt and gravel, local clay; up to 3 m thick; overlies preglacial gravel and sand on the unglaciated Cypress Hills and Del Bonita uplands; flat to gently undulating topography.

ICE-CONTACT LACUSTRINE DEPOSIT: sand, silt and clay, local till; up to 20 m thick; deposited in supraglacial and ice-walled lakes or in proglacial lakes floored by ice; undulating to hummocky topography.

6a — Coarse sediment: sand and silt.

6b — Fine sediment: silt and clay.

ICE-CONTACT FLUVIAL DEPOSIT: gravel, sand, silt and clay, local till; up to 25 m thick; deposited in ice-walled and supraglacial streams, or in ice-front fans and deltas; undulating to hummocky topography.

7a — Coarse sediment: gravel and sand, minor silt beds.

7b — Fine sediment: fine sand, silt and clay.

8 — ICE-CONTACT LACUSTRINE AND FLUVIAL DEPOSITS, UNDIVIDED: gravel, sand, silt and clay, local till; up to 25 m thick; deposited in intermittent supraglacial lakes and streams, or at margins of ice-floored proglacial lakes; undulating to hummocky topography.

GLACIAL DEPOSIT: (Units 9 through 12): till consisting of unsorted mixture of clay, silt, sand and gravel, with local water-sorted material and bedrock; thickness is generally less than 25 m on uplands, but may reach as much as 100 m in buried valleys; flat, undulating, hummocky or ridged topography.

9 — DRAPED MORAINE: till of even thickness, with minor amounts of water-sorted material and local bedrock exposures; up to 5 m thick; includes local areas of undifferentiated subglacially molded deposit with streamlined features; flat to undulating surface reflecting topography of underlying bedrock and other deposits.

STAGNATION MORAINE: till of uneven thickness, local water-sorted material; up to 30 m thick; undulating to hummocky topography reflecting variations in till thickness.

10a — Undulating topography, with local relief generally less than 3 m.

10b — Hummocky topography moderately to weakly developed, with irregularly shaped and poorly defined knobs and kettles; local relief 3 to 10 m.

10c — Hummocky topography strongly developed, with generally round, well-defined knobs, dimpled knobs, doughnut-shaped hills and kettles; local relief 5 to 15 m.

10d — Mixed hummocky and moraine plateau topography: flat-topped irregularly shaped hills with a cover of stratified sand, silt and clay, interspersed with mounds composed of till; local relief 5 to 20 m.

11 — RIDGED END MORAINE: till, gravel and silt deposited in ridges at or near a glacier margin; up to 15 m thick; typically forms a series of subparallel ridges.

12 — ICE-THRUST MORAINE: mixed and contorted bedrock, till and water-sorted material translocated by ice in a more or less intact state as thrust blocks, or deformed into thrust slabs and folds; topography consists of ridges, irregularly shaped hills and depressions.

GLACIAL AND FLUVIAL DEPOSITS, UNDIVIDED: mixed till, sand, silt and gravel, local bedrock exposures; flat to hummocky topography.

13a — Draped moraine interspersed with fluvial deposit; up to 5 m thick; flat to undulating topography.

13b — Stagnation moraine interspersed with fluvial deposit; the thickness unknown; rolling to hummocky topography locally strongly modified by stream erosion.

CRETACEOUS, TERTIARY AND PLEISTOCENE, UNDIVIDED

BEDROCK AND GLACIAL DEPOSIT, UNDIVIDED: bedrock, discontinuous till, slump material, minor sand and gravel; flat, undulating, hummocky and ridged topography.

14a — Draped moraine on bedrock uplands and plains: discontinuous till over bedrock surface slightly modified by ice and stream erosion; till is generally less than 3 m thick; flat to undulating topography.

14b — Stagnation moraine on bedrock uplands: discontinuous till over bedrock surface strongly modified by ice and stream erosion; till is up to 10 m thick; hummocky to ridged topography.

LATE TERTIARY AND EARLY PLEISTOCENE

15 — FLUVIAL DEPOSIT: gravel and sand, minor silt beds; found overlying bedrock in upland areas, but generally covered by loess or till, and exposed only along crests of the upland slopes.

CRETACEOUS AND TERTIARY, UNDIVIDED

16 — BEDROCK: sandstone, siltstone, mudstone, and shale, minor ironstone, limestone and coal beds; includes slump material; 16a - unglaciated bedrock; 16b - bedrock exposed by erosion.

Surface modified by lake and stream erosion and deposition

Stagnation moraine under a cover of lacustrine sediment

End moraine ridge

Linear feature parallel to ice movement: flutes, drumlins

Linear feature transverse to ice movement: small ridges, elongated hummocks and depressions

Ice-thrust ridge

Ice-thrust block

Source depression of ice-thrust block

Esker

Major meltwater channel

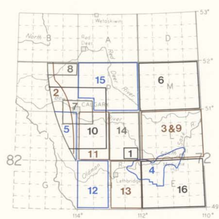
Minor meltwater channel

Meltwater channel partly buried by glacial deposit

Meltwater delta

Ice-contact meltwater delta or fan

Alluvial fan



SCALE 1:500 000

Kilometres 10 0 10 20 30 40 50 60

Miles 10 0 10 20 30 40

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Quaternary Geology, Southern Alberta

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Any revisions or additional geological information would be welcomed by the Alberta Research Council.

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