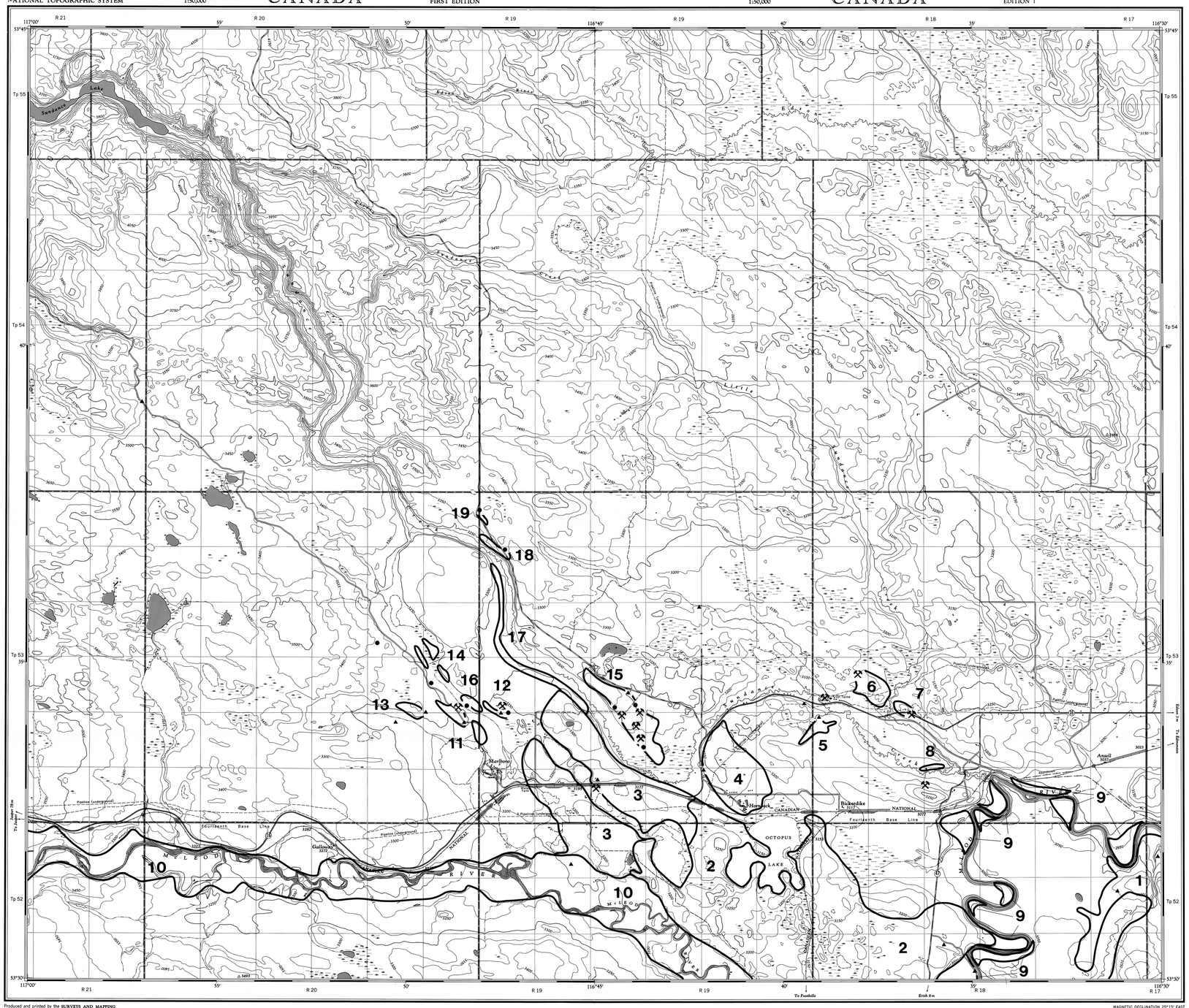
NATIONAL TOPOGRAPHIC SYSTEM 1:50,000 CANADA FIRST EDITION 1:50,000 CANADA EDITION 1



Produced and printed by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF MINES AND TECHNICAL SURVEYS, 1959, from air photographs taken in 1947 and 1948.

REFERENCE

Roads:	more than 2 lanes	dual
hard surface, all weather	2 lanes	1 lane
hard surface, all weather	2 lanes or more	less than 2 lanes
loose surface, all weather		
loose surface, dry weather		
winter; cart track	Winter road	
trail, cut line or portage		
Railways:	Station	
normal gauge, multiple track	Siding	Stop
normal gauge, single track		
narrow gauge, single track		
abandoned or under construction		
Bridges: road; railway		
Cutting; Embankment		
Boundaries:		
international, with monument		

BICKERDIKE
ALBERTA
WEST OF FIFTH MERIDIAN

SCALE 1:50,000
1.25 inches to 1 mile approximately

1 0 1 2 3 Miles
1000 500 0 1000 2000 3000 4000 Metres
1000 500 0 1000 2000 3000 4000 Yards

CONTOUR INTERVAL 50 FEET
Elevations in Feet above Mean Sea Level
North American Datum 1927
Transverse Mercator Projection

Copies may be obtained from the Map Distribution Office, Department of Mines and Technical Surveys,

MAGNETIC DECLINATION 29°15' EAST AT CENTRE OF MAP 1959
Annual magnetic change 4'30" westerly

REFERENCE

Mine or Open cut	Lighthouse
Building; Barn	School; Post Office
Church	Cemetery
Built up area	
Telephone line	
Power transmission line	
Streams:	
intermittent or dry	
indefinite	
Lake intermittent; indefinite	
Inundated land, seasonal	
Marsh or Swamp	
Foreshore flat	

GENERAL COMMENTS

DEPOSIT CHARACTERISTICS

Deposit Number	Material Description	Reserves (1000 m³) Gravel	Reserves (1000 m³) Sand	Additional Comments	Texture (%) Gravel	Texture (%) Sand	Texture (%) Fines	(%) Wear	Overburden Thickness (m)	Deposit Thickness (m)	Deposit Area (ha)	Deposit Genesis	Additional Comments
1	sand		2,600			98	2			1	530	eolian	
2	sand		8,750	High water table between dunes		~98	~2			1	3500	eolian	dune height diminishes NW, density ~25%
3	sand		3,250			98	2			1	325	eolian	
4	sand		500			98	2			2	25	eolian	dune max 6 m
5	sand		975			~98	~2			1.5	65	eolian	
6	sand		380			98	2			2	19	eolian	dunes
7				depleted								fluvial	
8				silt or sand (1 m) over gravel(?)							680	fluvial	Recent alluvium
9	sand										60	eolian	
10											2200	fluvial	Recent alluvium
11	gravelly sand		960							1.5	64	glaciofluvial	Clast max. 15 cm; quartzite, sandstone (soft and hard), some carbonate, siltstone and coal
12	sandy gravel		70	High ground water	72	27	1			1	7	glaciofluvial	Clast max. 15 cm; conglomerate, sandstone, coal; well rounded
13	sand		300			98	2			1.5	20	eolian	
14											25	glaciofluvial	
15	clean to dirty, sandy gravel to gravel			Large, active pits and worked out areas								glaciofluvial	Clast max. 25 cm; quartzite, sandstone, metamorphic, siltstone, clay balls, coal
16	sandy gravel to sand	~120	~300						0.5	3	14	glaciofluvial	Clast max. 20 cm; quartzite, sandstone, Shield, coal
17				Air photo interpretation							65	glaciofluvial	Terrace
18	dirty sandy gravel	116	63		~60	~35	>1			1	18		
19	dirty sandy gravel	45	19	Borrow pit - revegetated	~60	~25	~15			1.5	5	glaciofluvial	Esker (?)

Deposit Number — Granular deposits shown on this map may have commercial possibilities. That assumption followed from two criteria used in the mapping process: study of the area considered only granular deposits greater than one metre thick, and covering an area more than one hectare; and it only considered deposits where the mineral-aggregate thickness was greater than the overburden thickness. Although the scale of mapping did not permit investigation of all small deposits, many small deposits containing existing pits are indicated.

Material Description — Sand and gravel has a variety of applications, such as concrete for construction, asphalt concrete, subbase and base course aggregate for roads, gravel and sand for road surfaces, and pit run for fill. Gradation, rock hardness, and binding characteristics, are some of the specific qualities that are considered in aggregate towards determining its end use. This map indicates these, and other, geological qualities of the sand and gravel within each deposit, but does not indicate their potential uses. The terms used in the table are defined in the figure below.

Reserves — The method of calculating in cubic metres the aggregate reserves of deposits took four basic steps. First, the area, in hectares, of each deposit was determined using aerial photographs. Second, geological interpretation, sometimes supported by subsurface information, was assumed in determining the geometry of each deposit, to estimate an overall, average deposit thickness in metres. Third, geological study and limited sample analyses determined the texture (gradation) of sediments in the deposit, and an overall average percentage of gravel and sand. Finally, the volume was calculated as follows: reserve gravel (m^3) = area (ha) × thickness (m) × 10,000 × % gravel; the same formula was used for sand.

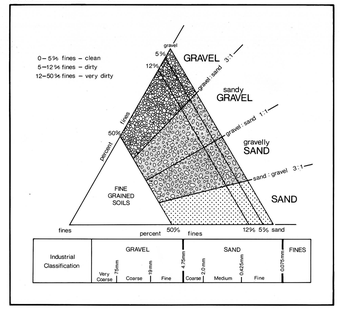
Texture — The texture of the sediment refers to the percentage of particles of various sizes. For mineral aggregate, the most important fractions are the gravel and sand. The actual dimensions of the clasts and particles in these fractions are given in the figure. The values given for a particular deposit were determined from a field estimate, or from laboratory analysis, of one or more samples from that deposit. Where more than one sample is taken the tabulated number is the mean value.

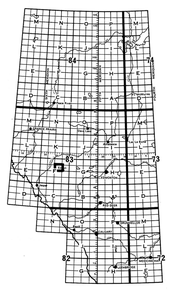
Wear — The resistance of gravel-size clasts to wear or abrasion can be measured in a laboratory test (ASTM-C131, Los Angeles Abrasion Testing). The amount of material that breaks down into smaller sizes is measured and related to the original sample weight in terms of percent wear. The higher the percentage wear the more susceptible the gravel is to breakdown under stress. Gravel with a percentage wear of less than 40 is considered very resistant.

Overburden Thickness — The thickness of non-economic material, or overburden, covering a deposit, sometimes is a limiting factor in the exploitation of an aggregate deposit. The tabulated values given are approximate overburden thicknesses as determined from geological investigations and subsurface testing.

Deposit Area — Deposits in this study were delineated by interpretation of aerial photographs and the contacts should be considered approximate. Information is precise only where test holes, or geological sections, are indicated.

Deposit Genesis — The genesis, or formation, of deposits is vital to the understanding of the gradational nature, extent and geometry of the deposit. This understanding forms the basis for extrapolation from a limited number of known points (test holes, pits, sections) and permits an overall assessment of the deposit.





Map Legend

- 3 Deposit number
- Assumed boundary
- Active or inactive pit
- Alberta Geological Survey test hole
- Site visited

Aggregate Resources

83F/10 Bickerdike

Geology by J.C. Fox

Published 1988
Compilation and review by W.A.D. Edwards 1987-88

This is a sand and gravel resource map prepared by the Alberta Geological Survey as part of a series at a scale of 1:50,000. The series represents an ongoing aggregate inventory of Alberta which provides data for general land-use planning, land management or aggregate exploration. Please note that the information is based on geological interpretations only. Alberta Energy and Natural Resources provides financial support for the Aggregate Inventory.

Cartography by Alberta Research Council, Graphic Services, J.K. Matthie.

ALBERTA RESEARCH COUNCIL
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