

GENERAL COMMENTS

DEPOSIT CHARACTERISTICS

Deposit Number	Material Description	Reserves (1000 m <sup>3</sup> )		Additional Comments	Texture (%)		Wear (%)	Overburden Thickness (m)	Deposit Thickness (m)	Deposit Area (ha)	Deposit Genesis	Additional Comments
		Gravel	Sand		Gravel	Fines						
1	Very dirty sand	-	22,550	Deposit contains fine-grained sand; poor quality	82	18	-	2.0	5.0	550	Glaciofluvial	Limited data available.
2	Clean sand	2,358	16,506	Hummocky relief; discontinuous deposit; parts contain higher % of gravel	12	84	4	3.0	3.0	1310	Glacially thrust	Contains igneous clasts.
3	Clean sand	120	11,880	Discontinuous deposit; good silica fine sand; high water table in some areas.	1	96	3	2.5	5.0	240	Ice contact	Quartzite and Precambrian clasts common; maximum size up to 30 cm.
4	Clean gravel to sandy gravel	1,480	480	Hummocky relief; high quality aggregate; active pit.	73	24	3	3.0	4.0	50	Fluvial (Pre-glacial)	Fractured clasts; high % of quartzite; well-rounded; maximum size up to 20 cm.
5	Clean gravel	34,240	7,846	Near surface water table makes extraction difficult.	80	18	2	3.0	8.0	535	Alluvial floodplain	Very high % of quartzite maximum size up to 15 cm; Deposit extends onto MS 83 J/2 Paragraph number is <100.
6	Clean sand	-	8,148	Hummocky relief; deposit contains medium-grained sand.	-	97	3	1.0	6.0	140	Glaciofluvial	Deltaic deposit.

**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 bedding 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<sup>3</sup>) = area (ha) × thickness (m) × 10,000 × % gravel; the same formula was used for sand.

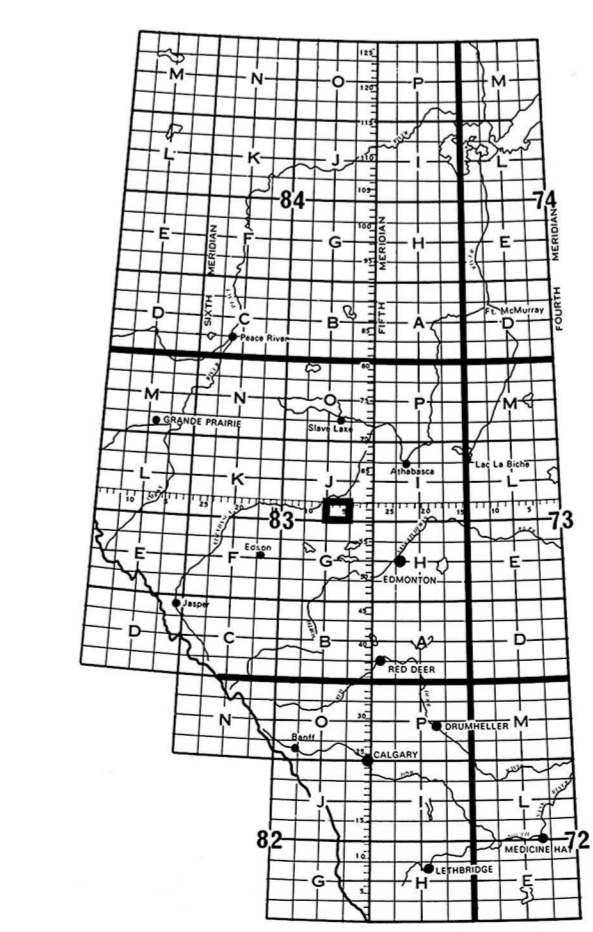
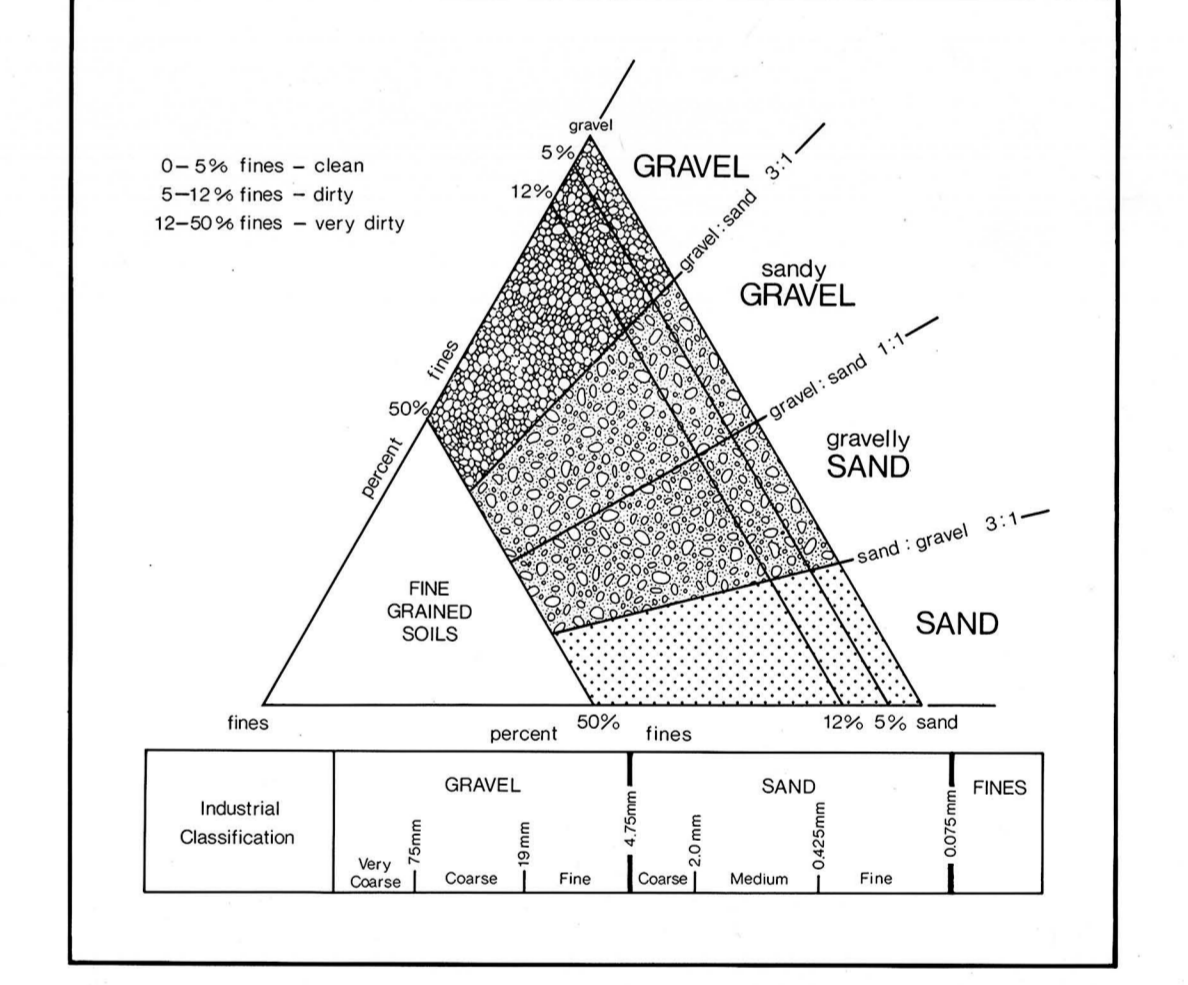
**Texture** — The texture of the sediment refers to the percentage of particles of various sizes. For mineral aggregate, the most important fractions are the gravel and sand. The actual dimensions of the clasts and particles in these fractions are given in the figure. The values given for a particular 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
  - Sand or gravel exposure
  - Buried sand or Gravel deposit

### Aggregate Resources

83 J/2 Thunder Lake

P. Sham  
Published 1984  
Geology and compilation 1982. Additional information from D.A. St. Onge, 1975.

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, and management or aggregate reservation. Please note that the delineation of deposits and calculation of reserves are approximations only. Alberta Energy and Natural Resources provides financial support for the Aggregate Inventory.



Produced by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF ENERGY, MINES AND RESOURCES, 10155 146th Avenue, Edmonton, Alberta T5K 2L6, Canada.

Roads:  
roads or stabilized surface, all-weather  
de gravel, dry weather and  
unclassified roads  
canal  
trail or portage

Scale 1:50,000 Echelle  
Meters 1000 2000 3000 4000  
Yards 1000 2000 3000 4000

This Provisional Map is equivalent to a standard map of the same scale.  
Certe carte provisoire équivaut à une carte régulière de la même échelle.

Contour Interval, 50 Feet  
Elevations in Feet above Mean Sea Level  
North American Datum 1927  
Transverse Mercator Projection

Échelle 1:50 000  
Certe carte provisoire équivaut à une carte régulière de la même échelle.  
Certe carte provisoire équivaut à une carte régulière de la même échelle.  
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83 J/2