83-I/4   R 27   1:50,000   CANADA   Joins 83-I/5   EDITION 2   R 24   83-I/4

WESTLOCK
ALBERTA
WEST OF FOURTH MERIDIAN - OUEST DU QUATRIÈME MÉRIDIEN

Scale 1:50,000 Échelle

CONTOUR INTERVAL 25 FEET
Elevations in Feet above Mean Sea Level
North American Datum 1927
Transverse Mercator Projection

ÉQUIDISTANCE DES COURBES 25 PIEDS
Élévations en pieds au-dessus du niveau moyen de la mer
Système de référence géodésique nord-américain, 1927
Projection transverse de Mercator

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	Clean sand	-	1,530	Fine sand.	-	90	10	-	0	2.5	68	Ice-contact	Deposit continues on NTS 83I/3.
2	Clean sand	-	900	Fine sand.	-	90	10	-	0	1.0	100	Lacustrine	
3	Clean sand	-	2,308	Very fine and fine sand.	-	90	10	-	0	1.5	171	Lacustrine	
4	Clean sand	-	2,835	Fine sand.	-	90	10	-	0	1.5	210	Lacustrine	
5	Clean sand	-	1,728	Fine sand.	-	90	10	-	0	2.0	165	Eolian	70% of area is dunes up to 3 m in height, remaining 30% is sand plain.
6	Clean sand	-	1,120	Very fine and fine sand.	-	90	10	-	0	1.5	83	Lacustrine	
7	Clean sand	-	738	Fine sand.	-	90	10	-	0	2.0	41	Lacustrine	
8	Clean sand	-	7,582	Fine sand.	-	90	10	-	0	2.5	342	Lacustrine	
9	Clean sand	60	1,080	Fine, medium and coarse sand. Clasts up to 10 cm.	5	90	5	-	0	3.0	40	Glaciofluvial	Outwash deposit. Major part of deposit is on NTS 83I/3.
10	Clean sand	282	5,076	Fine, medium and coarse sand. Clasts up to 10 cm.	5	90	5	-	0	3.0	193	Glaciofluvial	Outwash deposit. Deposit continues on NTS 83I/3.
11	Clean sand	1,822	9,720	Fine sand with patches of dirty sand and gravelly coarse sand. Clasts up to 40 cm.	15	80	5	-	0.5	5.0	293	Glaciofluvial	Outwash deposit. Deposit continues on NTS 83I/3.
12	Clean sand	756	23,211	Fine sand with clasts up to 10 cm. Coarsens to the east and south.	3	92	5	-	0	3.0	841	Glaciofluvial	Outwash deposit. Deposit continues on NTS 83I/3 and 83I/5.
13	Clean sand	-	14,990	Very fine and fine sand. Fine sand dominates.	-	90	10	-	0	2.0	1810	Eolian	90% of area is dunes up to 3 m in height, remaining 10% is sand plain.
14	Clean sand	-	1,134	Fine sand.	-	90	10	-	0	2.0	63	Eolian	

* from field estimates

GENERAL COMMENTS

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 (m³) = 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 values given for a particular deposit are 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.
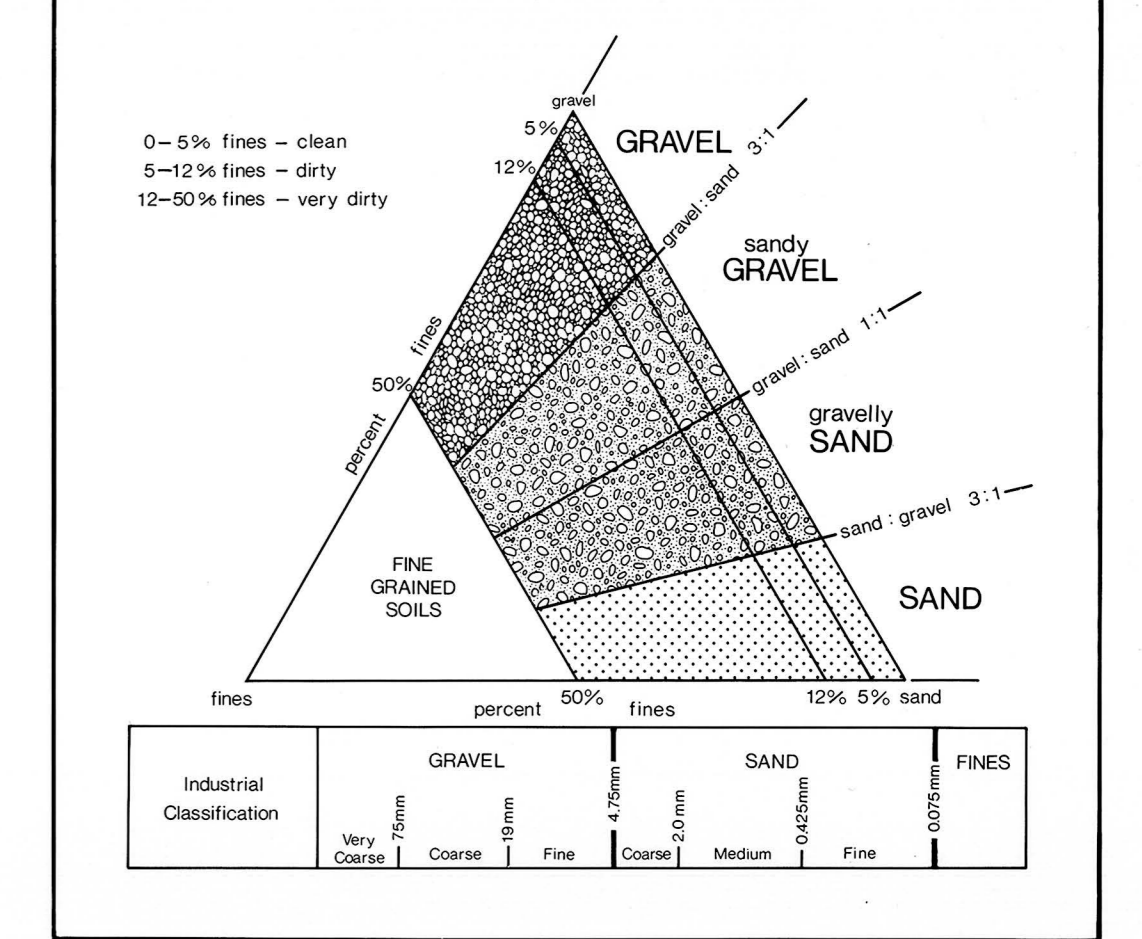
Map Legend

3 — Deposit number
— Assumed boundary
— Active or inactive pit
● Alberta Geological Survey test hole
▲ Sand or gravel exposure
// Buried sand or Gravel deposit

Alberta
RESEARCH COUNCIL
Natural Resources Division
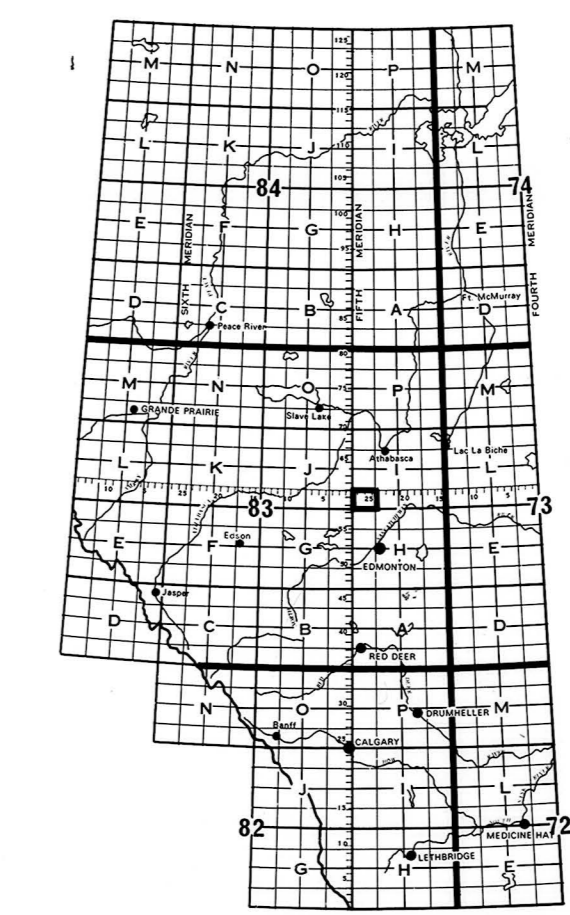
Alberta Geological Survey

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 delineation of deposits and calculation of reserves are approximations only.

References:
Geology and compilation by K.G. Steele, 1982. Additional information from S.H. Richard, 1979.

AGGREGATE RESOURCES
WESTLOCK 83I/4