

North American Datum 1927

Transverse Mercator Projection

MAGNETIC DECLINATION 25°06' EAST

AT CENTRE OF MAP 1961 Annual change (decreasing) 5'

River with bridge.....

Depression contours....

.... Rivière avec pont...

..... Courbes de cuvette......

Lake intermittent; indefinite...... Lac intermittent; rive imprécise...........

Stream, intermittent or dry Cours d'eau intermittent, ou à sec . . .

trail or portage..... sentier ou portage.....

Power transmission line...... Ligne de transport d'énergie...

Mine or Open cut Mine ou fosse à ciel ouvert

Horizontal control point, with elevation. Point géodésique avec cote

Railway, normal gauge, single track.... Chemin de fer, voie unique (écartement normal) siding station voie d'évitement gare

......454 △

SCALE 1:50,000 ÉCHELLE

Miles 1 0

Metres 1000 500 0 1000 2000

GENERAL COMMENTS

Deposit Number	Material	Reserves (1000 m³)		Additional Comments	Texture (%)			(%)	Overburden Thickness	Deposit Thickness	Deposit Area	Deposit Genesis	is Additional Comments
	Description	Gravel			Gravel		Fines	Wear	(m)	(m) (ha)	(ha)	Deposit Comodic	Additional Comments
1	Clean sand	.*?	500	It is possible that the esker is cored with coarser material and could, for that reason, warrant further investigation.	-	-	_	-	-	up to 10	12	Esker	About one km long.
2	Dirty sandy gravel	-	-	Occasional small pockets of dirty, sandy outwash gravel were observed in this area. Useful only for local road use. Larger, thicker deposits are not expected to be present.	-	-	-	-	-	<1	(215)	Outwash	
3	Clean sandy gravel	-	_	Sand lenses up to 1.5 m thick, which pinch out over short distances, make up less than 20% of the deposit. Sand within the gravel approximately 25%. Sub-surface testing will be required to determine the areal extent and continuity of this deposit.	60	38	2	-	0	?	8	Outwash	Gravel size material varies from subangular to rounded and is composed predominantly of quartzite clasts with minor sandstone, carbonate and granitic clasts.
4	Dirty to very dirty gravel	-	-	Contains over 40% very coarse gravel and less than 15% sand.	77	13	10	_	0	<2	Thought to be discon- tinuous	Lag	Thought to result from the erosion and washing of till.
5	Very dirty gravel	-	-	Small pockets of material similar to deposit 4. Very little potential other than for local road usage.	-	-	-	-	- - -	<1	-7	Lag	As in deposit 4.
6	Dirty sandy gravel	30	20	Although the material has a desirable gradation for a variety of uses, it is felt that it would not meet the physical requirements for many uses due to internal clast weaknesses.	53	41	6	-	0	?	6	Glacial deformation	Many of the broken clasts are in an "in situ" position. Broken clasts, which appear to have been of a hard, durable quartzite composition range in degree of disintegration from being broken into two pieces to being completely pulverized to sand size and finer material.
7	Dirty gravel	ī	-	The unfavourable characteristics of the deposit — dirty and very coarse — limit its potential for future development.	78	- 16	6	-	0	?	20	Lag or outwash	The material consists of subangular to rounded quartzite clasts and minor durable sandstone, carbonate and granitic clasts. Over 30% is very coarse gravel up to 30 cm.

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.

3 Deposit number

Assumed boundary

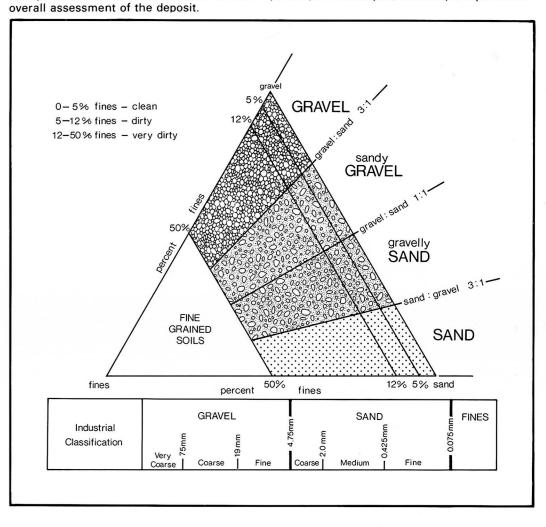
Active or inactive pit

▲ Sand or gravel exposure

Alberta Geological Survey test hole

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







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. Alberta Energy and Natural Resources provides financial support for the Aggregate Inventory.

Geology by B.N. Peterson, 1978. Compilation by W.A.D. Edwards and M. Price, 1982. Additional information from D.A. St. Onge, 1975.

AGGREGATE RESOURCES CARSON LAKE 83J/5