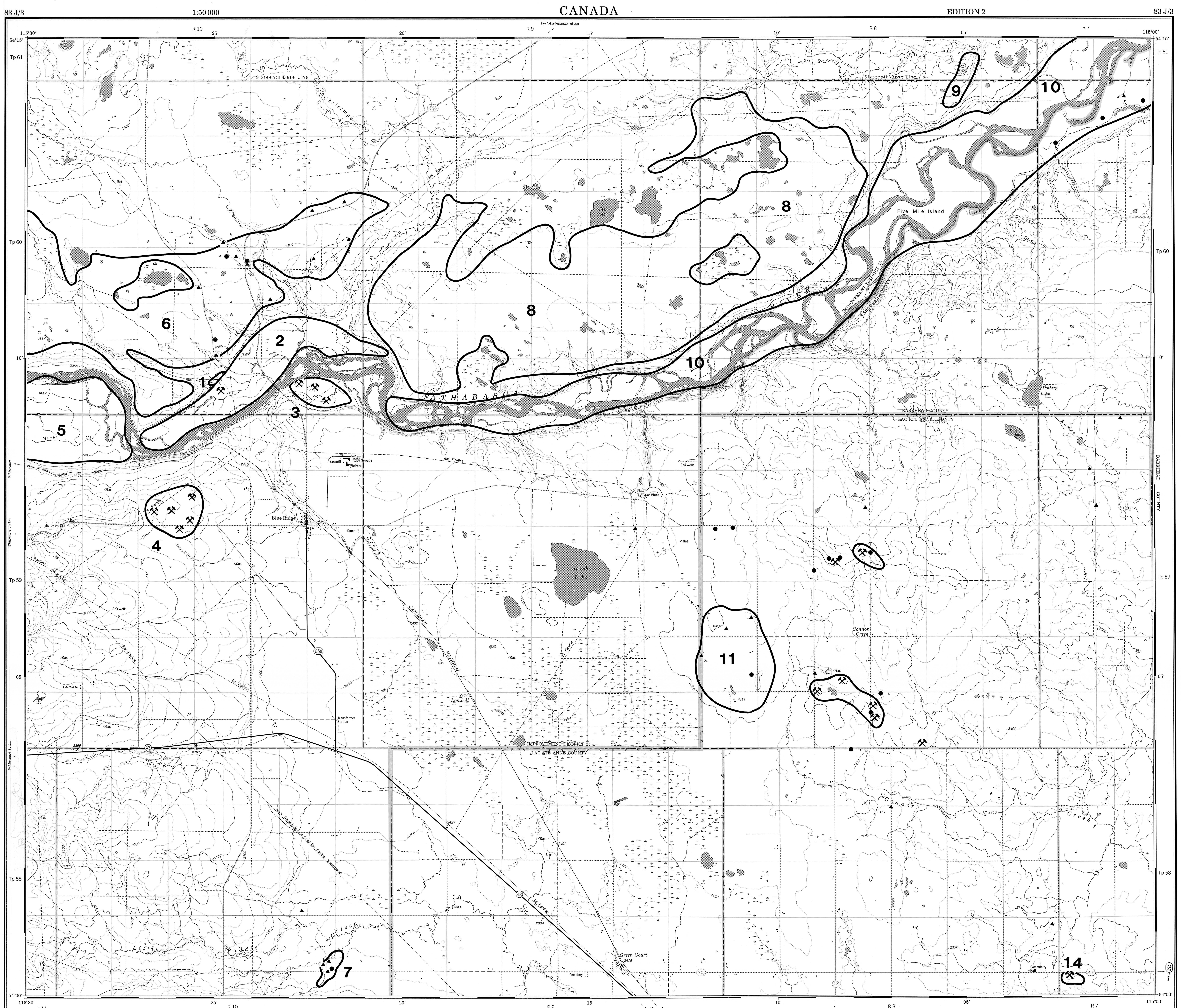
GREEN COURT 83 J/3



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	Clean gravel	70	30	Beds of fine grained sand also present in the deposit. One pit present.	70	30	–	–	1-2	up to 4	8	Alluvial, remnant terrace	Coarse quartzite gravel lies directly on sandstone bedrock.
2	Clean sandy gravel	Possibly	10,000	Near surface water table makes extraction difficult.	–	–	–	–	Silt-in some places	?	730	Alluvial flood plain	Coarse gravel and fine sand.
3	Clean gravel	4,150	650	Gravel coarse to very coarse, fines variable; gravel fines (still coarse) and better sorted downstream.	83	13	4	–	1	up to 7 m	100	Alluvial terrace	Granular material about 10 m above Athabasca River, probably on sandstone; mainly subrounded quartzite with lesser sandstone and carbonate clasts.
4	Clean to dirty gravelly sand to sandy gravel	50	50	In four known deposits gravel varies from 70% to 30%, with high contents of silty fine sand.	50	45	5	–	variable	variable	200	Glacially transported or deformed.	Gravel clasts angular to well rounded up to 50% broken by point loading others with incipient fractures.
5	Clean gravel	26,800	7,200	A few fine grained sand beds and zones of sandy gravel also present. Water table averages less than 3.5 m below surface.	75-80	20-25	–	–	3	5.5	650	Alluvial flood plain	Granular material rests on bedrock. Deposit extends onto NTS 83J/4.
6	Very dirty sand	–	55,440	Very low potential as an aggregate source.	–	77	23	–	1.0	3.0	2460	Glaciofluvial	Deltaic deposit; consists of fine sand, silt, clay and till in varying proportions.
7	Dirty gravelly sand to sand	183	570	Generally thin; proportion of gravel and sand may vary.	23	71	6	–	1.0	2.5	40	Glaciofluvial	Outwash deposit, Precambrian rocks common; subangular clasts.
8	Very dirty sand	–	160,000	Very low potential as an aggregate source.	–	70	30	0	1.0	3.0	5400	Glaciofluvial	Deltaic deposit, principally fine sand with high silt and clay content; little data available; Similar to deposit 6.
9	Gravel (?)	–	–	Poor access.	–	–	–	–	–	–	180	Glaciofluvial	Outwash deposit; no data available.
10	Clean gravel	160,000	36,000	Near surface water table makes extraction difficult.	80	18	2	–	4.0	8.0	2520	Alluvial flood plain	Very high % of quartzite; maximum size up to 15 cm. Deposit extends into NTS 83J/2.
11	Very dirty sand	–	3,800	Very low potential as an aggregate source.	–	80	20	–	1.0	3.0	380	Glaciofluvial	Deltaic deposit; high silty content.
12	Clean sandy gravel	840	600	The thicker and more gravelly areas have been depleted.	56	40	4	–		6.0	40	Glaciofluvial	Very high % quartzite maximum size up to 30 cm.
13	Clean gravelly sand to sandy gravel	1,128	1,176	Sand and gravel confined to the hummocky ridges within the outlined area.	47	49	4	–	variable	4.0	60	Glacially thrust	Both quartzite and Precambrian clasts are common, some are fractured.
14	Clean gravelly sand	240	690	Interbedded layers of sand and gravel.	25	72	3	–	2.0	8.0	12	Glacially thrust	Fractured clasts subangular to angular.

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.

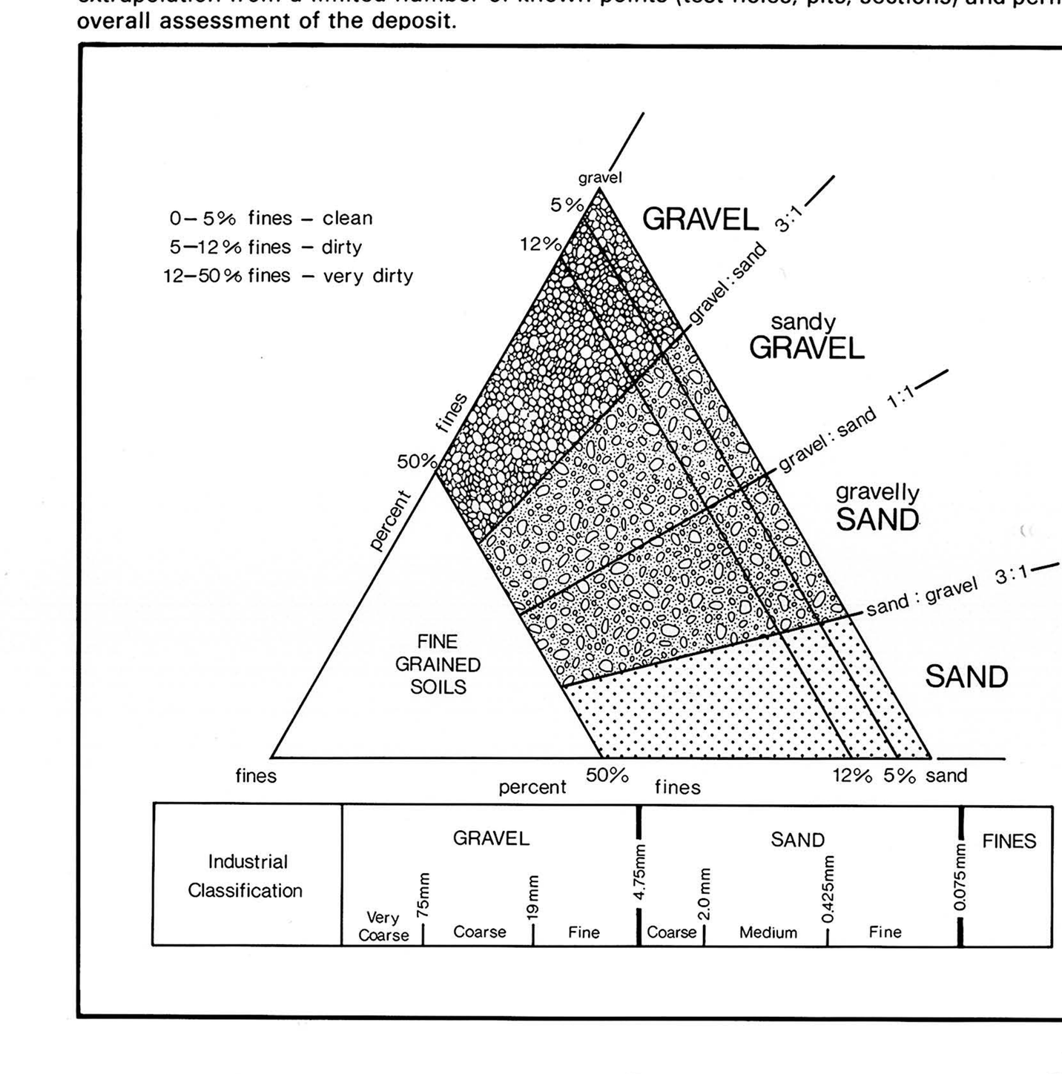
Texture — The texture of the sediment refers to the percentage of particles of various sizes. For mineral aggregate, the most important fractions are the gravel and sand. The actual dimensions of the clasts and particles in these fractions are given in the figure. The values given for a particular deposit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

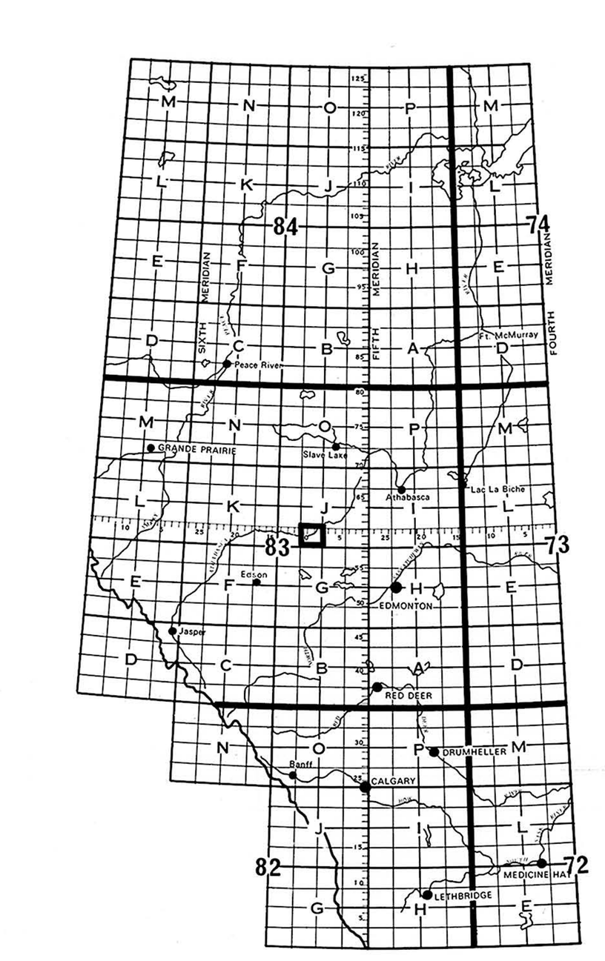
Deposit Area — Deposits in this study were delineated by interpretation of aerial photographs and the contacts should be considered approximate. Information is precise only where test holes, or geological sections, are indicated.

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
- Sand or gravel exposure
- Buried sand or Gravel deposit



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

REFERENCES

Geology and compilation by P. Sham, 1982. Additional information from B.N. Peterson, Sand and gravel resources, Whitecourt area, Alberta: Alberta Research Council, Open file report series 80-4, 1980; D.A. St. Onge, 1975.

AGGREGATE RESOURCES

GREEN COURT 83J/3