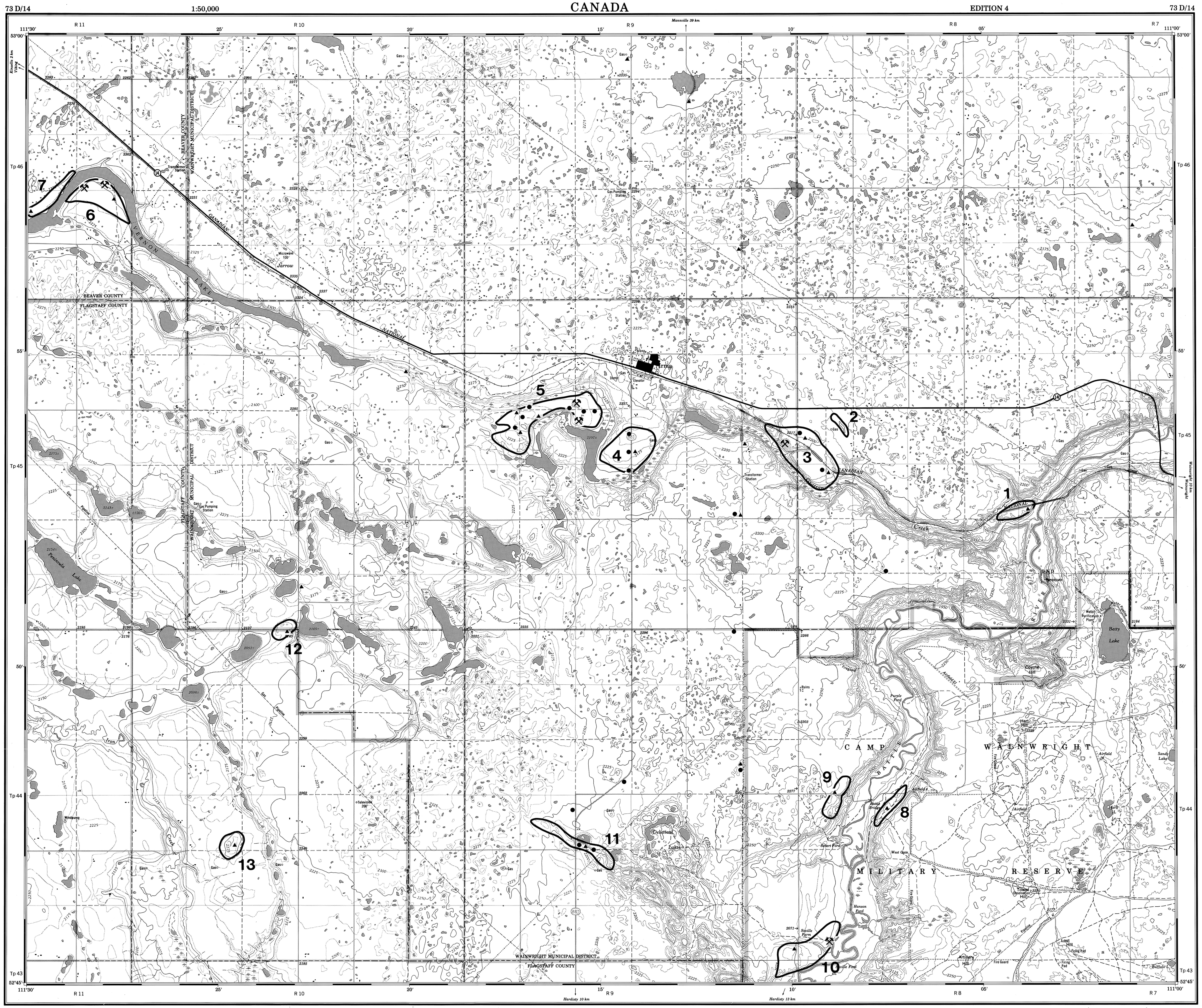


IRMA

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

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	Very dirty sandy gravel	270	110	Not easily accessible. Low quality, coarse gravel deposit. Due to limited data, the reserve and texture estimates are very speculative.	60	25	5	-	0.3	1.0	45.4	Outwash Terrace	Very dirty. Thin. Principally coarse gravel and medium sand.
2	Sand and gravel	-	-	Very limited data. Poor quality. Abandoned pit.	-	-	-	-	0.2	0.0-3.0	11.7	Esker	Probably very dirty. Variable thickness but generally thin.
3	Clean gravelly sand	2000	2750	Used for road maintenance. Moderately extensive deposit. Easy access.	40	55	5	-	0.0-3.0	3.0	156.3	Outwash Terrace	Variable overburden thickness, but can be up to 3.0 m.
4	Very dirty sandy gravel	3950	2150	Some deleterious material (soft sandstones and ironstones).	55	30	15	-	0.5	4.0-7.0	131.0	Outwash Terrace	Poorly sorted.
5	Clean sandy gravel	5450	2500	Concrete quality. Used by Wainwright Municipal District. Low % of deleterious material.	65	30	5	-	0.1	2.5-.50	211.6	Outwash Terrace	Granitic clasts.
6	Clean sandy gravel	2750	2000	Concrete quality. Moderate extent and thickness.	55	40	5	-	0.2	4.0-5.0	111.4	Outwash Terrace	Granitic clasts.
7	Clean sandy gravel	825	600	Good quality, similar to #6.	55	40	5	-	0.1	3.0-4.0	42.8	Outwash Terrace	Coarse gravel and sand.
8	Dirty sand	90	330	Moderate quality. Limited extent.	20	70	10	-	0.5-1.5	1.5	31.2	Outwash Terrace	Slighly dirty. Mainly medium to coarse sand. Crystalline clasts. Poorly sorted.
9	Dirty sand and gravel	450	560	Numerous soft sandstones and siltstones. On the military reserve.	40	50	10	-	0.3	2.5	45.0	Outwash Terrace	Slightly dirt. Generally thin.
10	Clean sandy gravel	2380	850	High % of soft sandstones, siltstones, and ironstones, thus lowering the quality. Used by the military for roads.	70	25	5	-	0.2	3.0	113.4	Outwash Terrace	High % of coarse gravel; low % of very coarse gravel.
11	Dirty sand	1090	8720	Abundant reserves but limited uses due to paucity of gravel.	10	80	10	-	4.0-8.0	12.0-17.0	73.1	Esker	Principally medium to coarse sand, some fine gravel. Thick overburden of fine sand.
12	Very dirty sandy gravel	410	170	High % of soft siltstones and ironstones. Low potential. Limited extent. Poor access.	60	25	15	-	0.1	2.0-4.0	22.7	Kame	Dirty. Variable texture: beds of sand silt and sandy gravel alternate stratigraphically.
13	Clean sand	80	420	Occasionally used by owner. Low economic potential.	15	80	5	-	0.2	2.0	26.3	Kame	Slightly dirty in places.

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.

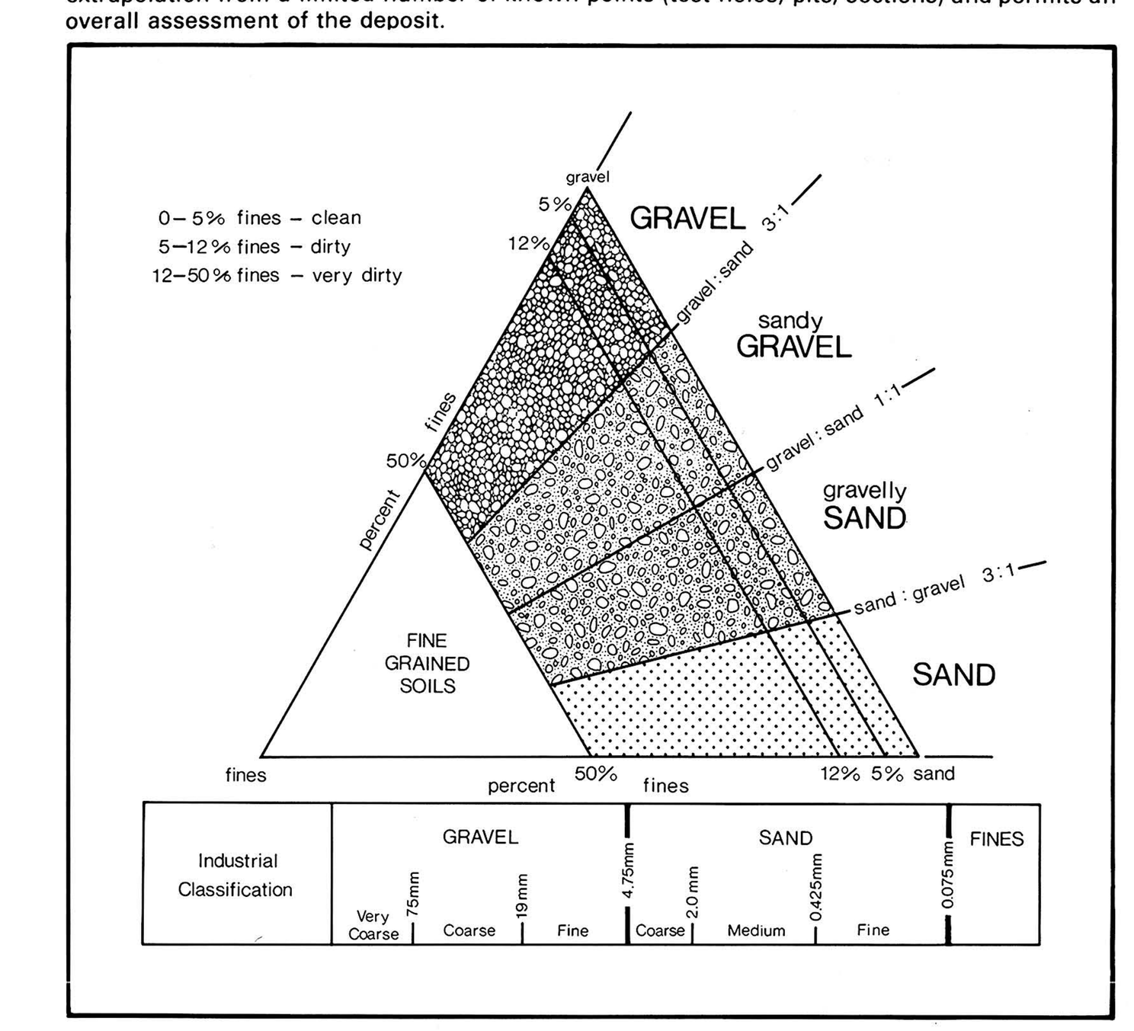
Texture — The texture of the sediment refers to the percentage of particles of various sizes. For mineral aggregate, the most important fractions are the gravel and sand. The actual dimensions of the clasts and particles in these fractions are given in the figure. The values given for a particular deposit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

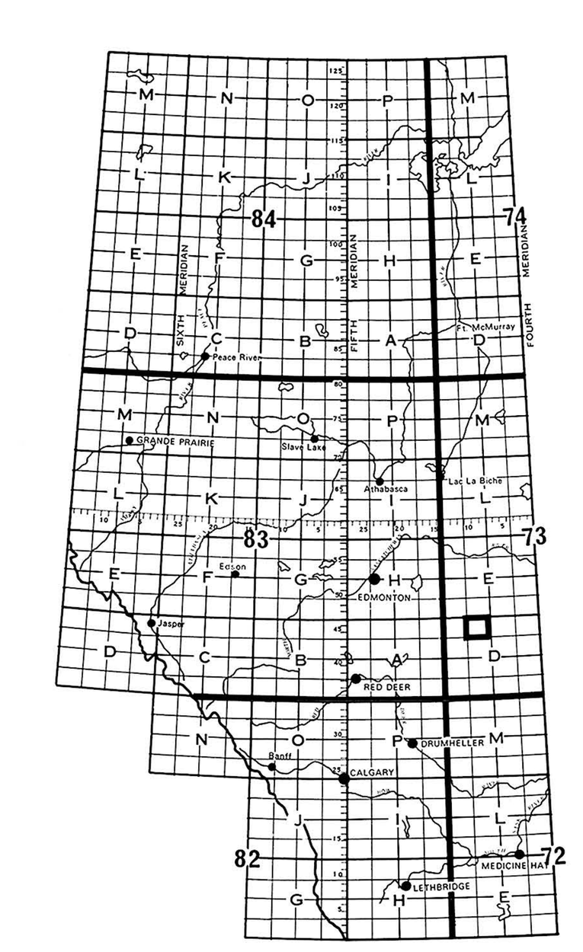
Deposit Area — Deposits in this study were delineated by interpretation of aerial photographs and the contacts should be considered approximate. Information is precise only where test holes, or geological sections, are indicated.

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.

REFERENCES

Geology by B.N. Peterson and N.K. Jones, 1980. Compilation by N.K. Jones, 1980. Additional information from C.P. Gravenor and R.B. Ellwood, 1957.

AGGREGATE RESOURCES

IRMA 73D/14