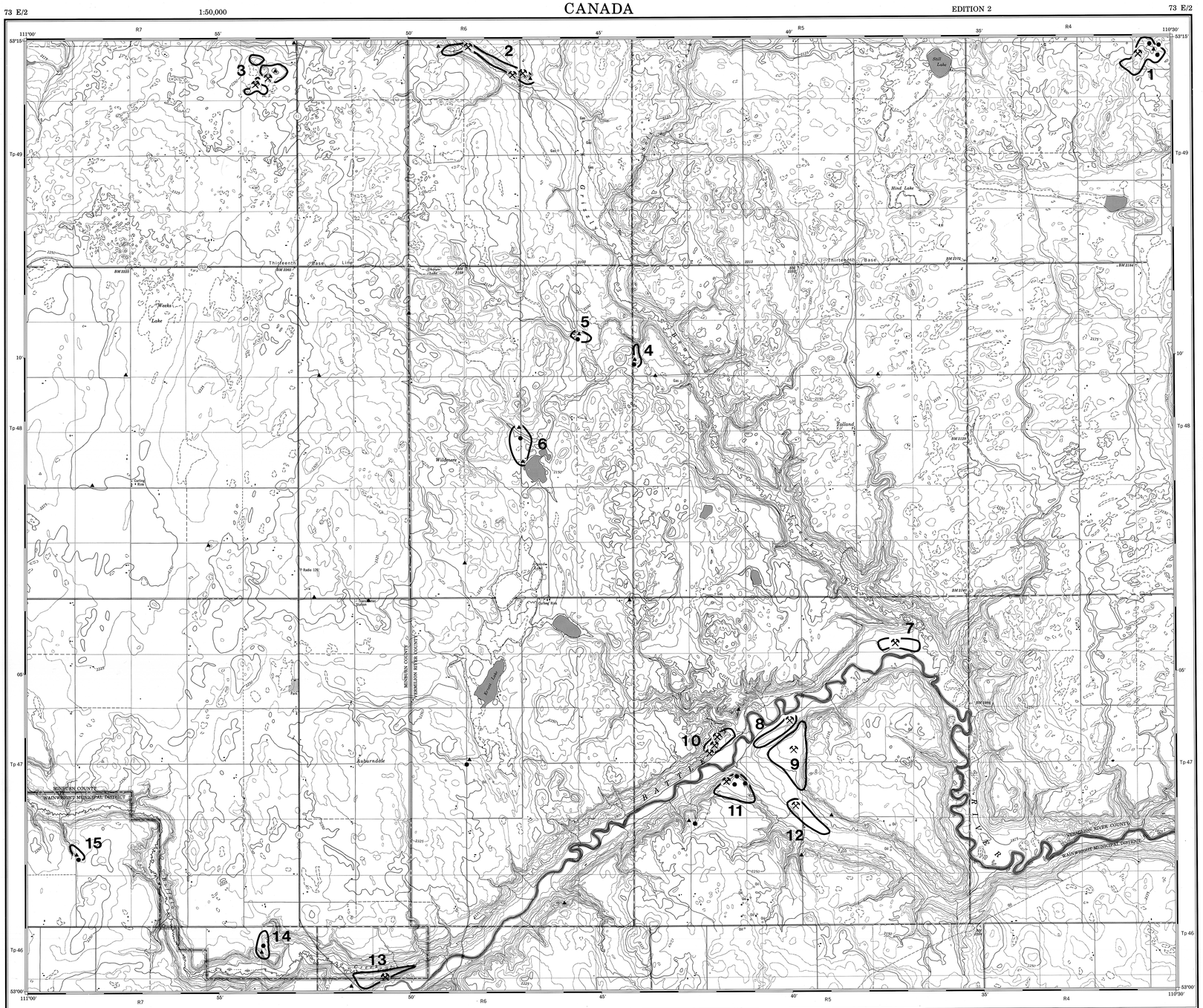


GENERAL COMMENTS

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 sand	175	650	Active pit. Generally moderate quality.	20-25	75	<5	-	0.0	0.5-5.0	56.7	Kame Moraine	Principally fine sand. Discontinuous. Variable texture and thickness.
2	Clean sand	160	1200	High water table. Susceptible to flooding. Limited uses. Inactive pits.	10-15	85	<5	-	0.3-2.5	2.7-4.0	46.8	Outwash Terrace	Principally medium sand.
3	Clean sandy gravel to gravelly sand.	≈420	≈400	Estimates are based on the material in one pit only. The other pit is situated in a different kame and contains mainly medium sand. Semi-active pits.	≈50	≈45	<5	-	0.0-3.0	1.0-6.0	41.5	Kames	Petrographic #111; mainly hard gneiss. Extremely variable texture and thickness. All estimates are averaged and are speculative. No very coarse gravel.
4	Clean sand	30	150	Limited area. Inactive pit.	15-20	80	<5	-	-	1.0-4.5	9.0	Outwash	Thin, variable texture. Mainly fine to medium sand.
5	Clean gravelly sand	30	40	Limited area. Inactive pit.	45	50-55	<5	-	-	0.0-2.4	7.6	Outwash	No very coarse gravel. Generally thin.
6	Clean gravelly sand	30	40	Below this thin layer of gravelly sand is a 9.0 m bed of fine to coarse sand. Inactive pit.	40-45	55	<5	-	-	0.6-2.0	7.6	Outwash	Little very coarse gravel. Generally poorly sorted.
7	Clean sandy gravel	530	250	Poor access. Generally good quality. Limited area. Inactive pit.	65	30-35	<5	-	0.1-0.4	0.0-3.5	40.0	Outwash Lower Terrace	Poorly sorted.
8	Clean sandy gravel	1300	850	High percentage of soft clasts. Also large number of silt fine sand and coal beds within the material.	60	35-40	<5	-	-	0.0-11.5	44.4	Outwash	Low percentage of very coarse gravel.
9	Clean sandy gravel	1400	575	Generally good quality. Active pit.	70	25-30	<5	-	0.2	0.0-5.7	102.8	Outwash Upper Terrace	Petrographic #154; mainly hard gneiss. Low percentage of coarse sand.
10	Clean gravelly sand	320	430	Poor access to pit; abandoned.	40	55-60	<5	-	0.2	0.0-5.9	38.3	Outwash Lower Terrace	No very coarse gravel. High percentage of medium sand.
11	Clean gravelly sand	380	1300	Relatively inaccessible, abandoned pit.	20-25	75	<5	-	0.6-2.3	0.9-8.4	57.7	Outwash Upper Terrace	No very coarse gravel. Principally medium sand.
12	Clean sandy gravel	400	300	Relatively inaccessible. Inactive pit. High % of sedimentary rock clasts.	55	40-45	<5	-	0.0-1.4	0.0-4.6	37.0	Outwash	Very little very coarse gravel or coarse sand.
13	Clean gravelly sand	175	300	Abandoned pit. Easy access.	35-40	60	<5	-	0.2	1.0-3.8	24.7	Outwash Lower Terrace	Poorly sorted.
14	Clean sand	10	40	Very limited reserves. Carbonaceous.	20-25	75	<5	-	-	0.0-3.0	5.0	Outwash	Thin, little or no gravel. Principally medium sand.
15	Clean gravelly sand	7	12	Limited data on this deposit.	35-40	60	<5	-	-	0.0-2.0	2.5	Outwash	Thin, localized 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 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.

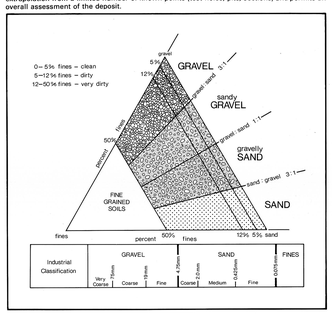
Texture — The texture of the sediment refers to the percentage of particles of various sizes. For mineral aggregate, the most important fractions are the gravel and sand. The actual dimensions of the clasts and particles in these fractions are given in the figure. The values given for a particular deposit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

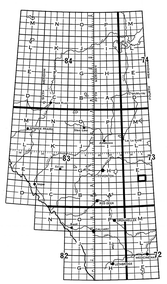
Deposit Area — Deposits in this study were delineated by interpretation of aerial photographs and the contacts should be considered approximate. Information is precise only where test holes, or geological sections, are indicated.

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



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 by B.N. Peterson and B. Hester, 1979. Compilation by N.K. Jones, 1980. Additional information from R.B. Ellwood, 1960.

AGGREGATE RESOURCES

GRIZZLY BEAR CREEK 73E/2

Produced by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF ENERGY, MINES AND RESOURCES. Updated from aerial photographs taken in 1970. Colour check 1974. Printed 1976.

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Roads: hard surface, all weather ..... pavée, toute saison ..... dual highway 2 divided lanes / chaussée séparée ..... more than 2 lanes / plus de 2 voies; hard surface, all weather ..... pavée, toute saison ..... 2 lanes / 2 voies ..... intermediate 2 lanes / intermédiaire 2 voies; loose or stabilized surface, all weather ..... gravier aggloméré, toute saison ..... 2 lanes or more / 2 voies ou plus ..... less than 2 lanes / moins de 2 voies; loose surface, dry weather and cart track ..... de gravier, temps sec et sentier charretier ..... trail or portage ..... sentier ou portage

Routes:

GRIZZLY BEAR CREEK

ALBERTA

WEST OF FOURTH MERIDIAN - OUEST DU QUATRIÈME MÉRIDIEN

Scale 1:50,000 Échelle

Miles 1 0 1 2 3 Miles

Metres 1000 0 1000 2000 3000 4000 Mètres

Yards 1000 0 1000 2000 3000 4000 Verges

CONTOUR INTERVAL 25 FEET
Elevations in feet above Mean Sea Level

ÉQUIDISTANCE DES COURBES 25 PIEDS
Élévations en pieds au-dessus du niveau moyen de la mer

Établie par la DIRECTION DES LEVÉS ET DE LA CARTOGRAPHIE, MINISTÈRE DE L'ÉNERGIE, DES MINES ET DES RESSOURCES. Mise à jour à l'aide de photographies aériennes prises en 1970. Vérification des couleurs en 1974. Imprimée en 1976.

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73E/2