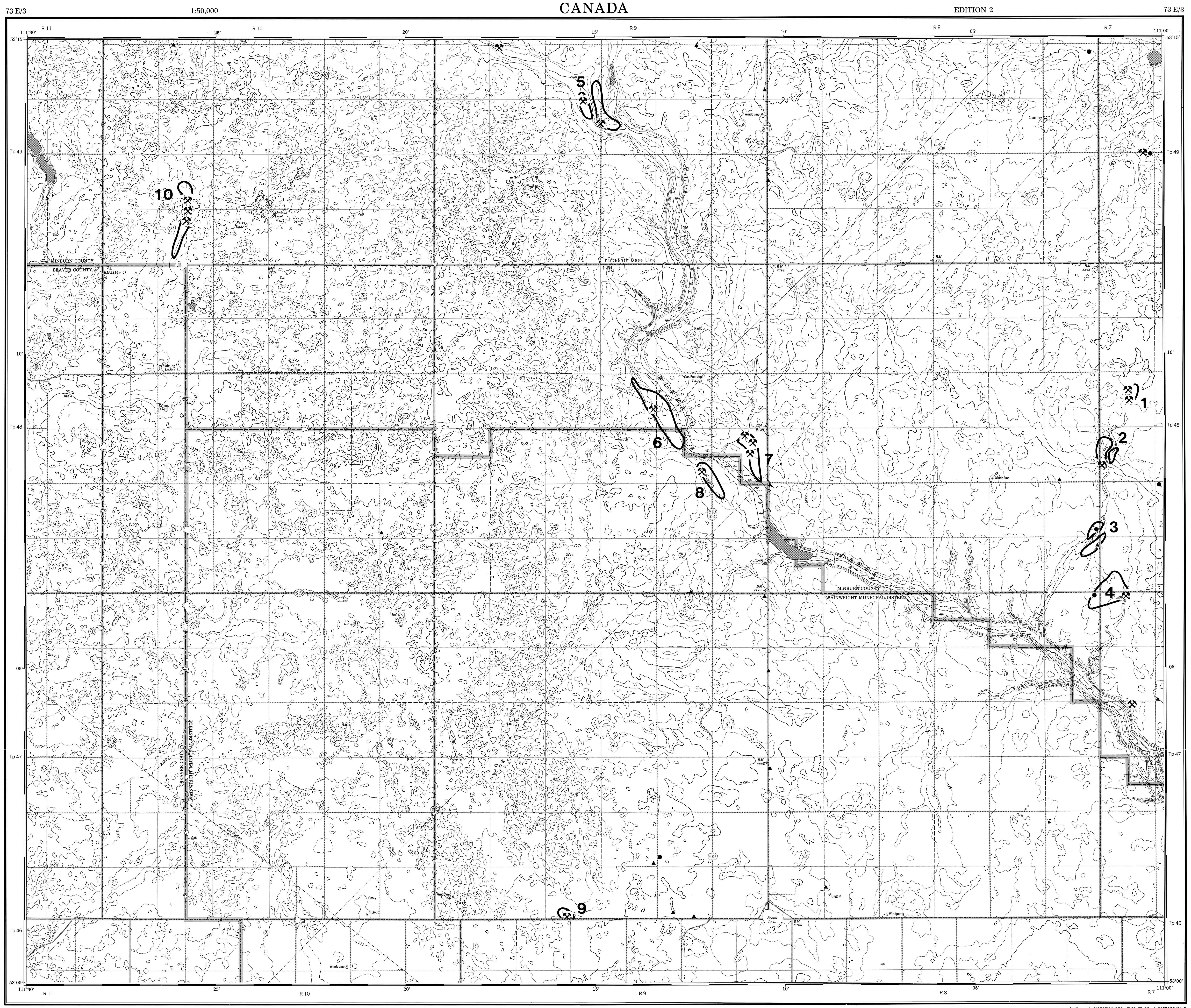
73E/3

73 E/3 1:50,000 **CANADA** EDITION 2 73 E/3



Produced by the SURVEYS AND MAPPING BRANCH, DEPARTMENT OF ENERGY, MINES AND RESOURCES. Updated from aerial photographs taken in 1970. Culture check 1974. Printed 1975.

Copies may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa, or your nearest map dealer.

Roads:	Routes:		
hard surface, all weather	pavée, toute saison	dual highway / 2 chaussées séparées	more than 2 lanes / plus de 2 voies
hard surface, all weather	pavée, toute saison	2 lanes / 2 voies	less than 2 lanes / moins de 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 unclassified streets	de gravier, temps sec et rues hors classe		
cart track	de terre		
trail or portage	sentier ou portage		

BUFFALO CREEK

ALBERTA

WEST OF FOURTH MERIDIAN - OUEST DU QUATRIÈME MÉRIDIEN

Scale 1:50,000 Échelle

Miles 1 0 1 2 3 Milles
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 ouvrages en 1974. Imprimée en 1975.

Ces cartes sont en vente au Bureau des Cartes du Canada, ministère de l'Énergie, des Mines et des Ressources, Ottawa, ou chez le vendeur le plus près.

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 gravelly sand	75	85	Discontinuous, therefore, difficult to work. Semi-active pits.	45	50-55	<5	-	0.3	1.0-3.0	8.1	Outwash	No very coarse gravel, otherwise well graded.
2	Clean sandy gravel	400	300	Inactive pit.	55-60	40	<5	-	0.2	2.0	35.2	Outwash	Little very coarse gravel or coarse sand. Thin.
3	Clean gravelly sand	170	360	Discontinuous.	30-35	65	<5	-	0.5	1.0-3.0	35.4	Outwash	No very coarse gravel, very little coarse gravel or coarse sand. Principally fine sand. Thin.
4	Clean gravelly sand	400	1000	Discontinuous. Semi-active pit.	25-30	70	<5	-	0.1	1.0-4.0	72.8	Outwash	No very coarse gravel. Thin. Large percent of medium sand.
5	Clean gravelly sand	640	2000	Active pits. Easy access.	25-30	70	<5	-	1.0	2.0-9.0	66.7	Outwash Terrace	Principally medium sand. Alternating layers of sand and gravelly sand.
6	Clean sandy gravel	1000	330	Discontinuous. Abandoned pit. High water table.	70	25-30	<5	-	-	0.0-3.0	89.1	Outwash	Thin.
7	Gravelly sand and sandy gravel	500-850	750-400	Two distinct units present but sandy gravel is more widespread, and is present in 2 out of the 3 pits. Pits are active.	45-70	50-25	<5	-	0.1	4.0-5.0	31.4	Outwash	Petrographic #148 for sandy gravel: principally hard sandstones and carbonates.
8	Clean gravelly sand	380	410	High water table; susceptible to flooding. Easy access, inactive pit.	45	50-55	<5	-	0.5	2.0-8.0	20.1	Outwash	No very coarse gravel.
9	Clean gravelly sand	45	100	High water table; susceptible to flooding. Limited extent. Active pit.	30-35	65	<5	-	0.1	1.0-2.5	7.6	Outwash	Little very coarse gravel.
10	Clean sandy gravel	420	260	High water table. Active pits.	60	35-40	<5	-	0.3	1.0-3.0	47.3	Esker	Little very coarse gravel or coarse sand, but high percent of coarse gravel.

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.

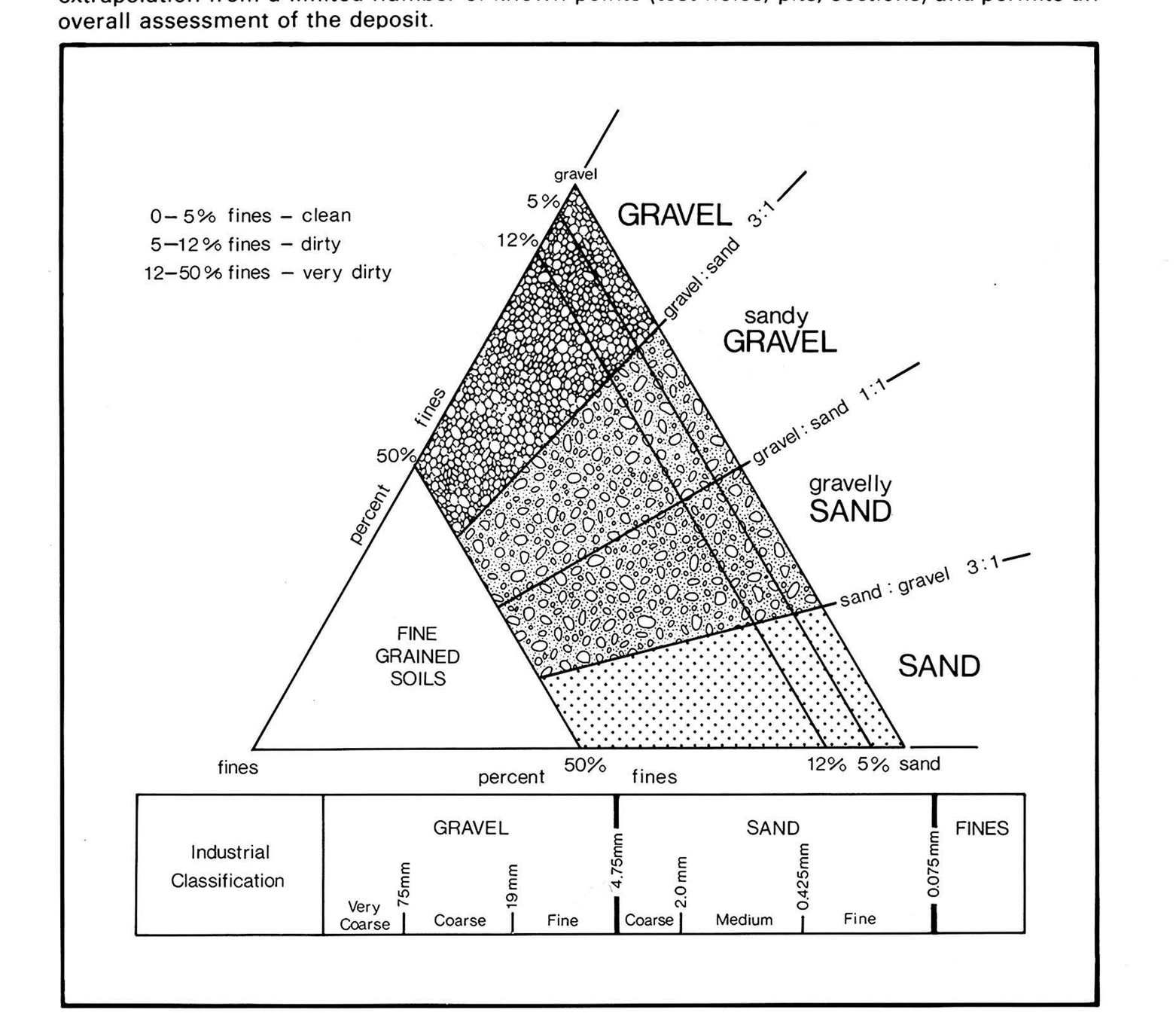
Texture — The texture of the sediment refers to the percentage of particles of various sizes. For mineral aggregate, the most important fractions are the gravel and sand. The actual dimensions of the clasts and particles in these fractions are given in the figure. The values given for a particular deposit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

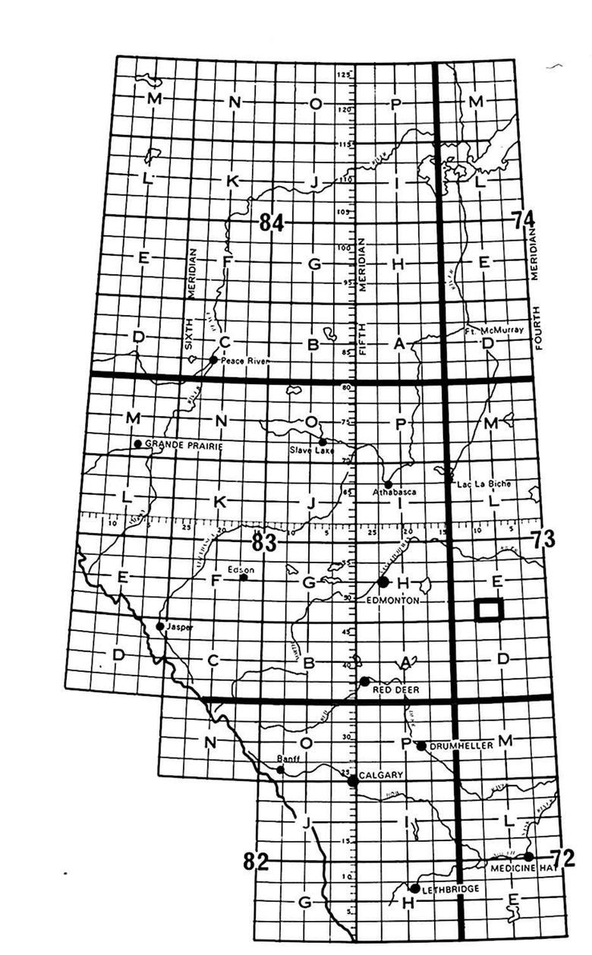
Deposit Area — Deposits in this study were delineated by interpretation of aerial photographs and the contacts should be considered approximate. Information is precise only where test holes, or geological sections, are indicated.

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

AGGREGATE RESOURCES

BUFFALO CREEK 73E/3