

COMPILATION INVENTORY
OF
GRANULAR MATERIAL RESOURCES INFORMATION
WITHIN
CAMERON HILLS AREA



D002151

J D MOLLARD AND ASSOCIATES LIMITED

CONSULTING CIVIL ENGINEERS AND ENGINEERING GEOLOGISTS



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1.0 TERMS OF REFERENCE FOR STUDY

- To review known aerial photographic studies and associated reports of the two study areas.
- Identify potential granular resource materials from the information sources researched.
- Provide copies (non-reduced) of existing maps (photomosaic base, wherever possible) or air photos with 2-3 reference points in UTM or Lat/Long which delineate potential granular resource materials.
- Provide a table or deposit summary which includes, where possible, information on the landform, potential volume of granular material, an indication of geological constraints (i.e. frozen or unfrozen, possible massive bodies of ice) and any additional comments.
- Prepare a brief report on each of the study areas.

2.0 PROSPECT VS DEPOSIT

This study extracts information from existing airphoto mapping studies (circa 1960-1993) done for other clients by J D Mollard and Associates Limited and centered in northern Alberta and the Northwest Territories. Only a few of these office airphoto-mapped prospects have been field-checked by ourselves though many may have been field checked by other private companies or government agencies. Accordingly, source areas shown on the inventory maps in this study are not classified specifically as a prospect (unproven airphoto-mapped prospect area) or as a deposit (a mapped prospect that has been field checked and proven positive

respect the presence of aggregate). Rather, we have simply regarded all site areas as undifferentiated and called them prospects in our inventory tables.¹⁾

3.0 UTM COORDINATES OF PROSPECTS AND DEPOSITS

Where a prospect area is small a single UTM coordinate only is shown in the inventory table. Where a prospect covers a larger area, and where the approximate shape of the prospect area can be meaningfully shown on the NTS maps, then either 2 or 3 UTM coordinate locations are shown in order to define the location.

4.0 LANDFORM

Many of the prospect landforms in the study area are complex, hence more than one landform type may be shown in the inventory table. For example, there are many esker-kame complexes where these two landforms occur together within a single mapped prospect area. Similarly there may be eskers that have outwash aprons associated with them. In these cases both landforms will be shown against the prospect number in the inventory table.

5.0 SURFACE TOPOGRAPHY OF PROSPECT OR DEPOSIT

The surface topography of prospect areas shown in inventory tables is derived mainly from the known common topography of the specific landform in question; this

¹ For purposes of this study the word prospect will be used in the remainder of this report to discuss all numbered site-areas.

because the present study is done without aid of re-examination by stereoscopic viewing. For this reason the surface topographies shown for the various prospects should be regarded as approximate.

Where more than one surface topography is shown in the inventory tables there may be two discrete topographic reliefs present. For example, an esker-kame complex would be shown as being a ridge and a hill. Similarly, a sloping beach ridge may be shown as a ridge and a slope.

It is difficult to define the probable landform topography precisely but this column in the tables will at least give the user an approximate "feel" of the landscape forms in the prospect area.

6.0 ESTIMATE OF PROSPECT SIZE

A PROSPECT SIZE column is shown on the inventory table of each NTS sheet. Prospects are simply categorized as to order-of-magnitude; this rather than attempting to make a more precise estimate -- an estimate that one would have to attempt without the aid of stereoscopic airphoto examination.

Categories used: (M³):

Small - tens of thousands to hundreds of thousands

Medium - hundreds of thousands to millions

Large - millions to tens of millions

7.0 COMMENTS COLUMN IN INVENTORY TABLES

The last column in the inventory tables marked COMMENTS is needed only occasionally. There are a few landforms such as beaches that are not shown in the inventory table format and these are noted under this column. As well, where the landform is uncertain or no record of landform is available in the old studies, then this fact is noted.

8.0 EXPECTED PERMAFROST CONDITIONS

We do not have precise data with respect to permafrost on any of the prospects shown in this study; nor, most likely, will anyone. But we can group the prospects into zones and say something about the probability of permafrost conditions being present in each of those zones. Further, the chance of permafrost conditions being present -- particularly in the continuous and widespread discontinuous permafrost zones (north of the Cameron Hills area and mainly in the Izok Lake corridor) -- is a function of tree cover and organic cover conditions, sun exposure and aspect, and finally, topography.

In general, we can say the following about the probability of permafrost conditions being present in granular prospects in the Cameron Hills region:

Location: Between the south end of the study area near the Cameron Hills and the Fort Providence/Great Slave Lake latitude

This area lies within the southern fringe of the permafrost region. The presence of permafrost in this zone is expected to be very spotty and discontinuous. In this

5.

region particularly, permafrost presence will depend on tree cover and organic cover thickness, exposure to the sun (*i.e.* south- vs north-facing) and depth of overburden over the potential granular deposit. The southerly-facing slopes of eskers, kames, and ice-contact prospects are expected to nearly all be permafrost-free within this zone. Flat-lying prospects such as outwash, if covered by trees and/or a thick organic layer, may well house some permafrost conditions.

TABLES

TABLE I
SUMMARY OF GRANULAR PROSPECTS

[illegible]

TABLE 2
SUMMARY OF GRANULAR PROSPECTS

NTS <u>84 M</u>		ZONE <u>IIV</u>								SHEET <u>1</u> of <u>2</u>									
		GEOLOGIC LANDFORM								SURFACE TOPOGRAPHY					DEPOSIT SIZE			COMMENTS	
PROSPECT	UTM GRID	Esker	Kame	Outwash	Ice-contact deposit	Terrace	Delta	Cone or fan	Talus	Ridge	Hill	Plain	Slope	Bench	Small	Medium	Large		
1	MS4303		X								X							Landform unknown Spotty kames mixed with hummocky moraine Spotty kames mixed with hummocky moraine Landform uncertain Landform uncertain Landform uncertain Landform uncertain X X X	

TABLE 2
SUMMARY OF GRANULAR PROSPECTS

[illegible]

TABLE 3
SUMMARY OF GRANULAR PROSPECTS

NTS <u>84 N</u>		ZONE <u>II V</u>								SHEET <u>1</u> of <u>3</u>								
		GEOLOGIC LANDFORM								SURFACE TOPOGRAPHY					DEPOSIT SIZE			COMMENTS
PROSPECT	UTM GRID	Esker	Kame	Outwash	Ice-contact deposit	Terrace	Delta	Cone or fan	Talus	Ridge	Hill	Plain	Slope	Bench	Small	Medium	Large	
1	MS4413 MS4515 MS4817		X								X						X	Kames in hummocky moraine environment
2	MS4407 MS4409 MS4610		X			X					X			X			X	Two landforms in this area of Cameron Hills
3	MS9212 MS9314			X								X			X			<div>↑</div> <p>Prospects and known deposits from 3 to 21 are all sandy to gravelly outwash located along the Hay River between Meander River and 60th parallel. Overburden depth variable. Many open pits already exist along this reach of Hay River</p> <div>↓</div>
4	MS9415 MS9516			X								X			X			
5	MS9614 MS9717			X								X				X		
6	MS9617 MS9619			X								X				X		
7	MS9316 MS9518			X								X				X		
8	MS9418 MS9520			X								X				X		
9	MS9722 MS9824			X								X			X			
10	MS9825			X								X			X			
11	MS9926 MS9928			X								X			X			
12	MS9931			X								X			X			
13	MS9832			X								X			X			
14	NS1049			X								X			X			
15	NS0849			X								X			X			
16	NS0850 NS0950			X								X			X			
17	NS1151			X								X			X			
18	MR5946 MR5948			X								X				X		
19	MR6959 MR6961 MR7262 MR7464 MR7666 MR7869 MR7972 MR8174 MR8278 MR8381 MR8584 MR8889 MR8991 MR9092 MR9193			X								X					X	
20	MR9094 MR9195			X								X			X			
21	MR9096 MR9197			X								X			X			

TABLE 3
SUMMARY OF GRANULAR PROSPECTS

NTS <u>84 N</u>		ZONE <u>II V</u>								SHEET <u>2</u> of <u>3</u>								
		GEOLOGIC LANDFORM								SURFACE TOPOGRAPHY					DEPOSIT SIZE			COMMENTS
PROSPECT	UTM GRID	Esker	Kame	Outwash	Ice-contact deposit	Terrace	Delta	Cone or fan	Talus	Ridge	Hill	Plain	Slope	Bench	Small	Medium	Large	
22	MR 5541 MR 5642			X								X			X			
23	MR 5845 MR 5748			X								X			X			
24	MR 5850			X								X			X			
25	MR 6141 MR 6045 MR 6050 MR 6152 MR 6355 MR 6758			X								X						X
26	MR 8885 MR 8786 MR 8986			X								X			X			
27	MR 9295 MR 9297			X								X			X			
28	MR 8997 MR 8999 MS 8901 MS 8903			X								X				X		
29	MS 8905 MS 9109 MS 9212			X								X			X			
30	MS 9622 MS 9724			X								X				X		
31	MS 9921 NS 0023 NS 0125			X								X				X		
32	NS 0511 NS 0815 NS 0919 NS 1022 NS 0814			X								X			X			
33	MS 9625 MS 9728 MS 9929 MS 9932			X								X			X			
34	NS 0026 NS 0128 NS 0131			X								X				X		
35	MS 9935			X								X			X			
36	MS 9936 NS 0342			X								X			X			
37	MS 9939 NS 0044			X								X				X		
38	NS 0445 NS 0647 NS 0948 NS 1149 NS 1251			X								X						X
39	NS 1350 NS 1451			X								X			X			

TABLE 3
SUMMARY OF GRANULAR PROSPECTS

[illegible]

TABLE 4
SUMMARY OF GRANULAR PROSPECTS

NTS <u>85C</u>		ZONE <u>II V</u>										SHEET <u>1</u> of <u>3</u>						
		GEOLOGIC LANDFORM								SURFACE TOPOGRAPHY					DEPOSIT SIZE			COMMENTS
PROSPECT	UTM GRID	Esker	Kame	Outwash	Ice-contact deposit	Terrace	Delta	Cone or fan	Talus	Ridge	Hill	Plain	Slope	Bench	Small	Medium	Large	
1	NSI 553			X								X			X			(?) May be dunes
2	NSI 151			X								X			X			
3	NSO 554			X								X			X			
4	NSO 956			X								X			X			
5	NSI 058			X								X			X			
6	NSO 959			X								X			X			
7	NSI 658			X								X			X			
8	NSI 858			X								X			X			
9	NSI 861			X								X			X			
10	NSI 761			X								X			X			
11	NSI 762			X								X			X			
12	NSI 464			X		X						X		X	X			
13	NSI 365 NSI 568											X	X		X			Beach ridge ?
14	NSI 772			X								X			X			Beach ridge ?
15	NSI 471 NSI 275 NSI 779											X	X			X		
16	NSI 478														X			Beach ridge ?
17	NSI 379 NSI 281											X	X		X			Beach ridge ?
18	NS2075 NS2176			X		X						X		X	X			
19	NS2677			X								X			X			
20	NS2678			X								X			X			
21	NS2678			X								X			X			
22	NS2680			X								X			X			
23	NS2681			X								X			X			
24	NS2581 NS2683			X		X						X		X		X		
25	NS2582			X		X						X		X		X		
26	NS2583			X								X			X			
27	NS2381			X								X			X			
28	NS2482			X								X			X			
29	NS2382			X								X			X			
30	NS2483			X								X			X			
31	NS2383			X								X			X			
32	NS2783			X								X			X			
33	NS2884			X								X			X			
34	NS2986			X								X			X			
35	NS3186			X								X			X			
36	NS3286			X								X			X			
37	NS3487			X								X			X			
38	NS3287			X								X			X			
39	NS3188			X								X			X			

TABLE 4
SUMMARY OF GRANULAR PROSPECTS

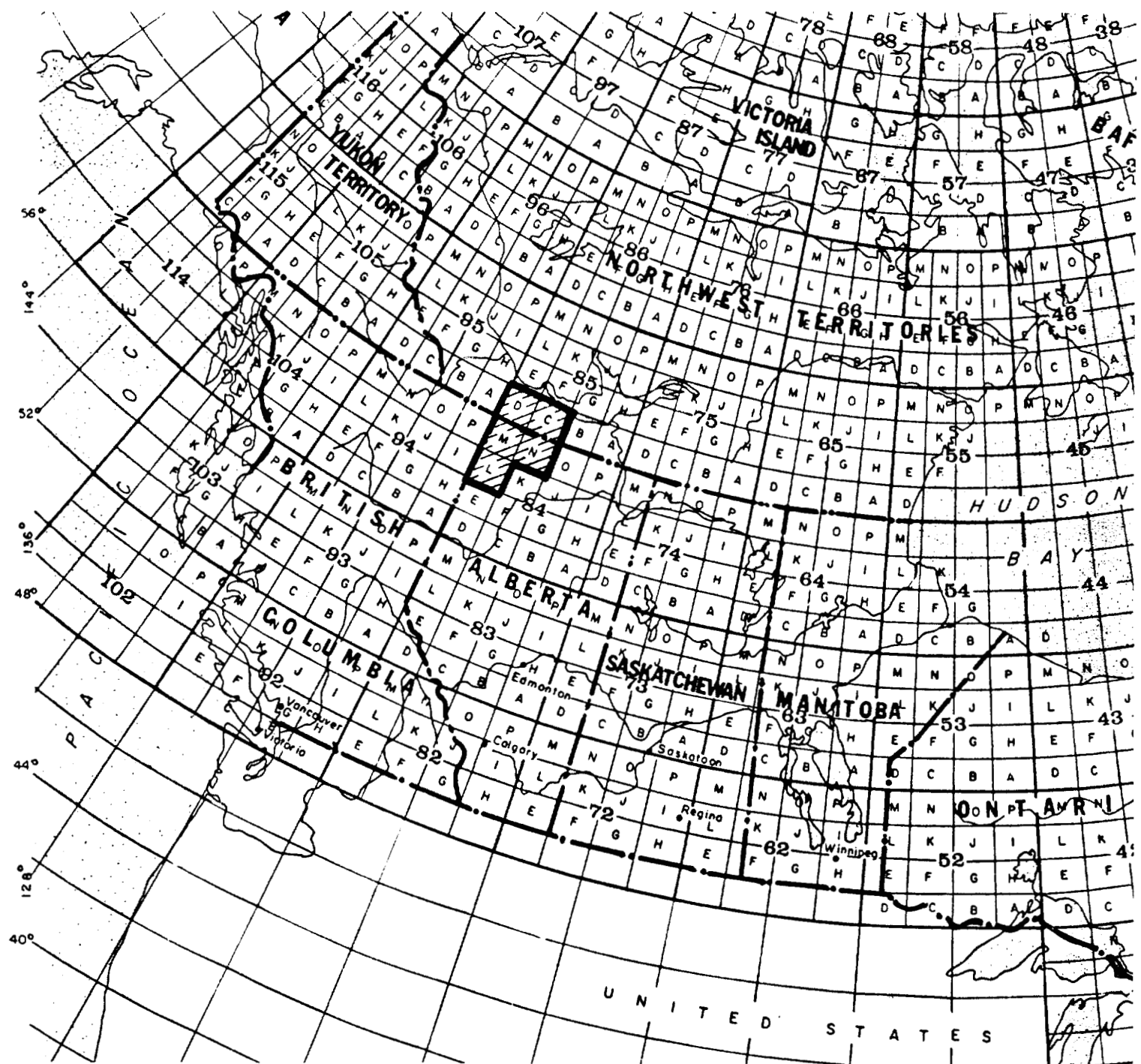
NTS <u>85C</u>		ZONE <u>II V</u>									SHEET <u>2</u> of <u>3</u>							
		GEOLOGIC LANDFORM								SURFACE TOPOGRAPHY					DEPOSIT SIZE			COMMENTS
PROSPECT	UTM GRID	Esker	Kame	Outwash	Ice-contact deposit	Terrace	Delta	Cone or fan	Talus	Ridge	Hill	Plain	Slope	Bench	Small	Medium	Large	
40	NS3289			X								X			X			Beach ridge Beach ridge <

TABLE 4
SUMMARY OF GRANULAR PROSPECTS

[illegible]

TABLE 5
SUMMARY OF GRANULAR PROSPECTS

[illegible]



CAMERON HILLS AREA

KEY MAP SHOWING STUDY AREA AND NTS SHEETS