PROPOSED GEOTECHNICAL INVESTIGATION PLAN
POTENTIAL SAND AND GRAVEL RESERVES
INUVIALUIT SETTLEMENT REGION

Hardy BBT Limited
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Prepared for:

Indian and Northern Affairs Canada

Prepared by:

Hardy BBT Limited

Calgary, Alberta

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CG10346

SUMMARY OF RECOMMENDATIONS

The first three years of the present INAC five-year granular resources investigation plan should be devoted to the confirmation of adequate reserves for the anticipated 20-year demands of the communities of Inuvik, Aklavik, Tuktoyaktuk, Paulatuk, Sachs Harbour and Holman. During the fourth year of the program, it is suggested that funding be devoted to delineating potential granular reserves for the longer term in anticipation of increased cometition from large scale projects for granular resources. The final year of the five-year plan should be devoted to updating supply figures and demand forecasts.

Specifically, the following annual programs are recommended:

1988 - 89 - Test drill at Site 467 near Aklavik, Site I407 near Inuvik and Site 155S near Tuktoyaktuk

1989 - 90 - Complete laboratory testing and reporting for Sites 467, I407 and 155S

1990 - 91 - Complete a reconnaissance visit to Site 5 and test pitting at Sites 7 and 8 near Holman, reconnaissance at Site 12 and test pitting at Site 23 near Paulatuk, reconnaissance at Sites 3 and 4 and test pitting at Sites 1, 2, 3, 5, 9, 10 and 11 near Sachs Harbour and test pitting at Site AA near Inuvik

1991 - 92 - Test drill at Site 2.45 near Inuvik and at Sites 163, 165, 167, 170 and 177 near Tuktoyaktuk

1992 - 93 - Update supply estimates and 20-year demand forecasts

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1.0 INTRODUCTION

In February, 1989 as part of the implementation of the Inuvialuit Final Agreement, Supply and Services Canada (SSC) contracted Hardy BBT Limited (HBT) of Calgary, Alberta to carry out the present study. The Scientific Authority department representative for the project was Mr. R.J. Gowan, Geotechnical Advisor, Land Management Division of Indian and Northern Affairs Canada (INAC).

The terms of reference for the study were:

1) Review available information pertinent to the granular sources selected for further investigations.

2) Prepare and have approved a phased, multi-year, geotechnical investigation plan for the Inuvialuit Settlement Region selected granular sites.

3) Conduct the field investigations approved for the 1988/89 fiscal year.

4) Complete laboratory testing and analyze field and laboratory data.

5) Prepare a granular source evaluation report describing the work completed and presenting the laboratory testing and data analysis results.

A preliminary assessment and review of previous granular studies and other available information has now been completed. This report presents a proposed phased, multi-year program of geotechnical site investigations to more precisely define the granular reserves at selected sites near the six communities of Inuvik, Aklavik, Tuktoyaktuk, Sachs Harbour, Paulatuk and Holman. Figure 1 is a general location plan for the study area.

2.0 BACKGROUND

In order to implement certain requirements of the Inuvialuit Final Agreement, the Federal Government established a specific granular materials project as part of the IFA Implementation Program. This project, designated Task 7 - Sand and Gravel Inventories, involves a four-phase process developed in consultation with the Territorial Government and the ILA.

(1) An analysis of the projected 20-year demand for sand and gravel and an inventory of potential sources to supply this demand was carried out by EBA Engineering Consultants Ltd. This study, completed in April, 1987, made recommendations for the development of specific sources of supply.

(2) A study designed to supplement the EBA information with environmental and socio-economic information, particularly from the community level was completed by Hardy BBT Limited in 1988. It was designed to develop a plan, with community representatives and other affected parties, for the reservation and future development of granular materials for public community needs in each of the six Inuvialuit communities.

(3) This present study is designed to confirm quality and/or quantity of materials at some of the recommended sources of supply by more-detailed site investigations. These investigations will be based on the recommendations of the communities.

(4) In order to assist the Inuvialuit with the preparation and implementation of granular resource development plans which can be managed at the local level, additional studies will be undertaken each year to 1994. A proposed investigation program to meet these objectives is presented in this report.

3.0 REVIEW OF AVAILABLE INFORMATION

Section 7.0 of this document presents a reference list of reports, studies and publications reviewed during the preparation of the proposed geotechnical investigation plan. Summary information for each community has been extracted from these documents and is presented as Appendices A to F of this report. Table 1 presents a concise summary of data available on sources identified for possible further field investigations.

In addition to the published reports and maps for the region, an on-going review of the computerized granular resources borehole and test pit log data base is also being carried out. A preliminary review of this database shows the importance and usefulness of centralized information storage, and has also identified, as anticipated, a need for upgrading of the database.

4.0 SUMMARY OF COMMUNITY DEMAND DATA

4.1 INUVIK

The total forecast 20-year demand for granular materials in Inuvik is approximately 7 600 000 cubic metres (m^3), of which only 200 000 m^3 (3%) is required for public projects. As discussed in the HBT, 1988 report (I88HBT-I), Plan for the Reservation and Development of Granular Materias in the Vicinity of Inuvik, N.W.T., this forecast demand would appear to be low. Most local granular requirements will likely continue to be met from sources at Ya Ya Lakes or deposit I407 with rock from sources I402 or I403. Speculative project requirements could also require development at sources

TABLE 1

SETTLEMENT (Ref.)	SITE #	SITE NAME	GEOMORPHOLOGY	LOCATION	GRAVEL TYPES
INUVIK (RKL-72)	1407 (BEING MINED)	N. CARIBOU HILLS (KENASTOK PIT)	TERTIARY AGE S & G TERRACE REMNANT	41 KM N.W. INUVIK INUVIK 7(1)(A) LAND	CLASS 2 (4 560 000 m^3 PROB.) (15 000 000 m^3 PROS.)
AKLAVIK	467	WILLOW RIVER	KAME DELTA/TERRACE DEPOSIT	NEAR WILLOW RIVER 24 KM WEST OF AKLAVIK CROWN LAND	CLASS 3/2(?)
TUKTOYAKTUK	1558	KITTIGAZUIT CK.	KAME TERRACE/ GLACIOFLUVIAL TERRACE	60 KM S.W. OF TUKTOYAKTUK INUVIK 7(1)(B) LAND	(ESP. CLASS 2) CLASS 2, 3 & 4
TUKTOYAKTUK	177	177	GLACIOFLUVIAL OUTWASH DEPOSIT	22.4 KM SOUTH OF TUKTOYAKTUK TUKTOYAKTUK 7(1)(A) LAND	CLASS 1, 2 & 3
SACHS HARBOUR	1	MARY SACKS PIT (INSIDE BIRD SANCTUARY)	MORAINAL DEPOSIT	9 KM WEST OF SETTLEMENT	CLASS 3 (170 000 m^3 PROS.)
SACHS HARBOUR	2	2	MORAINAL DEPOSIT	6 KM WEST OF SETTLEMENT	CLASS 3 (30 000 m^3 PROS.)
SACHS HARBOUR	3	3	MORAINAL DEPOSIT	4 KM WEST OF SETTLEMENT	CLASS 3 (25 000 m^3 PROS.)
SACHS HARBOUR (EBA-87)	5(B)	5(COMMUNITY PIT) 5(A) NEARLY DEPLETED	MORAINAL DEPOSIT	EAST SIDE OF SETTLEMENT AREA	CLASS 3 (30 000 m^3 PROS.)
PAULATUK	23	PAULATUK PIT	GLACIOFLUVIAL DELTA	3 KM SOUTH OF COMMUNITY SITE	CLASS 3 (2 200 00 m^3 PROS.)
HOLMAN	5	AIRPORT PIT	RAISED BEACH DEPOSIT	WEST END OF AIRPORT	CLASS 2 (60 000 m^3 PROB.)
HOLMAN	8	JACKS BAT PIT	RAISED BEACH DEPOSIT	UNDERLIES COMMUNITY	CLASS 1 & 3 (300 000 m^3 PROB.)
INUVIK	2.45	NOELL LAKE	GLACIOFLUVIAL OUTWASH	25 KM NORTH OF INUVIK (CROWN LAND)	CLASSES (2, 3, 4, &, 5?) 25 000 000 m^3 (PROSPECTIVE)
INUVIK	1403	CAMPBELL LAKE QUARRY	LIMESTONE OUTCROP	17 KM E-S-E OF INUVIK (CROWN LAND)	1 900 000 m^3 PROB. CRUSHING MATERIAL CLASS 5
INUVIK	312	HUSKY LAKES	GLACIOFLUVIAL OUTWASH TERRACE	58 KM NORTH OF INUVIK TUKTAYAKTUK 7(1)(B)	CLASS 2 4 560. 000 m^3 PROVEN
INUVIK	R28	GULL CREEK QUARTIZITE	BEDROCK QUARTZITE DEPOSIT	20 KM SOUTH OF INUVIK CROWN LAND	CLASS 5
INUVIK	R29	GULL CREEK DOLOMITE	BEDROCK DOLOMITE DEPOSIT	20 KM SOUTH OF INUVIK	CLASS 5
INUVIK	AA	NOT NAMED	UNKNOWN	13 KM S-S-W OF INUVIK GROWN LANDS	UNLISTED
AKLAVIK	468	MT. GIFFORD	QUARTZ SANDSTONE BEDROCK RIDGE	20 KM WEST OF AKLAVIK CROWN LANDS	CLASS 2 3 800 000 m^3 PROBABLE 3 800 000 m^3 PROSPECTIVE
HOLMAN	7	UKPALIK HILL	RAISED BEACH DEPOSIT	ON ALL-WEATHER ROAD ADJACENT TO COMMUNITY INUVIALUIT 7(1)(A)	CLASS 2 75 000 m^3 PROBABLE AND PROSPECTIVE
PAULATUK	12	HORNADAY RIVER (RAT LAKE SITE)	GLACIOFLUVIAL TERRACE	10 KM E-S-E OF PAULATUK INUVIALUIT 7(1)(A)	CLASS 2 1 200 000 m^3 PROSPECTIVE
SACHS HARBOUR	4	COMMUNITY PIT WEST SIDE	GLACIOFLUVIAL MORAINE DEPOSIT	1 KM SOUTH OF COMMUNITY INUVIALUIT 7(1)(A)	CLASS 3 50 000 m^3 PROB.& PROS.
SACHS HARBOUR	7	NOT NAMED	MARINE BAYMOUTH BAR	10.5 KM WEST OF COMMUNITY INUVIALUIT 7(1)(A)	CLASS 3 20 000 m^3 PROSPECTIVE

PRIORITY SITES

SUPPLEMENTARY SITES

TABLE 1 (contd')

SETTLEMENT (Ref.)	SITE #	SITE NAME	GEOMORPHOLOGY	LOCATION	GRAVEL TYPE(S)
SACHS HARBOUR	9	NOT NAMED	GLACIOFLUVIAL ALLUVIAL BARS AND TERRACES	10 KM N-N-E OF COMMUNITY INUVIALUIT 7(1)(A)	CLASS 3 2 000 000 m^3 PROSPECTIVE
SACHS HARBOUR	10	NOT NAMED	GLACIOFLUVIAL ALLUVIAL BARS AND TERRACES	9 KM WEST OF COMMUNITY INUVIALUIT 7(1)(A)	CLASS 3 4 500 m^3 PROSPECTIVE
SACHS HARBOUR	11	NOT NAMED	GLACIOFLUVIAL ALLUVIAL BARS AND TERRACES	13 KM N-N-W OF COMMUNITY INUVIALUIT 7(1)(A)	CLASS 3 6 500 m^3 PROSPECTIVE
SACHS HARBOUR	13	NOT NAMED	GLACIOMARINE BARRIER BAR	10 KM E-S-E OF COMMUNITY INUVIALUIT 7(1)(A)	CLASS 3 30 000 m^3 PROSPECTIVE
TUKTOYAKTUK	167	ESKIMO LAKES	GLACIOFLUVIAL OUTWASH PLAIN/KAME COMPLEX	27.2 KM S.E. OF TUKTOYAKTUK 7(1)(A) - TUK	CLASS 3 1 748 000 m^3 PROBABLE
TUKTOYAKTUK	163	HUTCHISON BAY	GLACIOFLUVIAL OUTWASH PLAIN	35.2 KM NE OF TUKTOYAKTUK 7(1)(B) - TUK	CLASS 4 65 000 000 m^3 PROSPECTIVE
PROSPECTIVE					
TUKTOYAKTUK	164	ESKIMO LAKES	GLACIOFLUVIAL OUTWASH PLAIN	35.2 KM EAST OF TUKTOYAKTUK 7(1)(B) - TUK	CLASS 3 2 650 000 m^3 PROSPECTIVE
TUKTOYAKTUK	165	ESKIMO LAKES	GLACIFLUVIAL OUTWASH/KAME	32 KM SE OF TUKTOYAKTUK 7(1)(B) - TUK	CLASS 2 1 192 000 m^3 PROBABLE
TUKTOYAKTUK	170	TUK AREA	GLACIOFLUVIAL OUTWASH PLAIN	11 KM SOUTH OF TUKTOYAKTUK 7(1)(A) & 7(1)(B)	CLASS 3 4 500 000 m^3 PROBABLE

SUPPLEMENTARY SITES

NOTE: PROB. is PROBABLE
PROS. is PROSPECTIVE

312, 314, I400, R28/R29, and the DPW quarry site in additional to the sources listed above.

4.2 AKLAVIK

The total forecast 20-year demand for granular materials in Aklavik is approximately 222 000 m^3, of which 92 000 m^3 (42%) would be required for maintenance of community facilities with the remaining 130 000 m^3 (58%) reserved for local capital projects. No projection of speculative, large-scale development project granular materials demand was indicated for the Aklavik area.

It is expected that the majority of the granular requirements for Aklavik, particularly of Class 3 and 4 materials, could be met from Source 467 near Willow Creek west of Aklavik. The small volumes of Class 1 and 2 granular materials required might come the Ya Ya Lakes, I403 or I407 deposits with rock provided from either Source I402 or 468.

4.3 TUKTOYAKTUK

The total forecast 20-year demand for granular materials in Tuktoyaktuk is approximately 9 000 000 m^3, of which about 316 000 m^3 (3.5%) would be required for community maintenance and local capital projects while some 8.6 million m^3 (96.5%) could be required for speculative, large-scale development projects such as the proposed Inuvik - Tuktoyaktuk Highway.

Community granular needs are expected to be supplied primarily from Sources 155, 168, and 177 with possibly some Class 3 materials from Sources 160 and 161. Local rock requirements would likely be provided from the I403 or R28/R29 deposits. In order to meet projected speculative project granular requirements, development might also be required at some of the following sources: 163, 164, 165, 169, 170, 171, 172, 173, 312, 314 and at Parsons Lake.

4.4 SACHS HARBOUR

The 20-year forecast demand for 130 000 m^3 of granular materials in Sachs Harbour is divided between maintenance of community facilities (100 000 m^3) and local capital projects (30 000 m^3).

There are no known sources of Class 1 or Class 5 materials near Sachs Harbour. There are, however, only minimal demands anticipated for both classes. The required Class 2, 3 and 4 granular materials will likely be obtained from Sources SH-1 to 5 and possibly SH-13. The community would prefer development of this latter source only as a last resort.

4.5 PAULATUK

Community demands for maintenance (86 000 m^3) and for capital projects (290 000 m^3) comprise the 20-year forecast for granular materials in Paulatuk. A proposed new airstrip and on-going airstrip maintenance accounts for 266 000 m^3 of the projected 376 000 m^3 total granular material requirements. Sources 12 and 23 are expected to be able to supply all of the anticipated demands for granular materials, including rock.

4.6 HOLMAN

The 20-year forecast demand for granular materials in Holman of 126 000 m^3 is divided between community maintenance (98 000 m^3) and local capital projects (28 000 m^3). Most of this demand for granular materials is expected to be met from Source 8 with some Class 2 material also provided from Source 5. Estimated rock requirements of about 600 m^3 are expected to be provided from various locations around the community.

5.0 DISCUSSION

The present plan of investigations is based primarily upon the findings and recommendations presented in two recently completed studies for these six communities (EBA Engineering Consultants Ltd., 1987; Hardy BBT Limited, 1988). The first study determined the 20-year demand for granular materials and identified known granular sources available to each of the communities. The Hardy BBT study recommended a strategy for the reservation and development of supplies of sand and gravel on Inuvialuit lands for community use.

INAC and the ILA are jointly developing a comprehensive data base for granular deposits in the Mackenzie Delta region. This present program is also aimed towards upgrading and expanding this database. The review of existing information and addition of new data from a field drilling program will continue the development of this centralized information source. Readily available, current information on granular materials contained in the database can then be used for effective resource development planning in the region.

As the review and investigation work continues more and better data will be continuously made available for inclusion in the database. With this

constantly changing information base, it will be necessary to view any planning document as an evolving tool, to be revised as changing knowledge requires.

Accordingly, the investigation plan presented in this report represents one approach to obtaining sufficient granular resource information to meet anticipated community demands and to allow for rational resource development to take place. It is anticipated that feedback from INAC, ILAC, GNWT, other government agencies and from individual community representatives could result in changes and modifications to the present plan. Available funding will obviously determine the timing of any proposed investigations but should not be seen as a major constraint during the initial planning process.

6.0 PROPOSED GEOTECHNICAL INVESTIGATION PLAN

6.1 GENERAL

INAC has outlined a proposed five-year program, with anticipated budgets and tentative tasks as follows:

1988/89:	$117 000	-	limited field investigation of selected priority sites
1989/90:	$ 16 200	-	completion of reports on above sites
1990/91:	$ 56 200	-	reconnaissance survey of additional sites
1991/92:	$116 000	-	limited field investigation of additional sites
1992/93:	$ 72 000	-	update supply and 20 year demand forecasts

An additional $61 500 was made available during 1988/89 for investigations by INAC on Crown lands.

Table 2 lists the sites recommended for field investigation work as recommended by the EBA (1987) and Hardy BBT (1988) studies. Program planning for further field work has included only these sites. The following sections present proposed annual work programs and briefly discuss the rationale used to develop these programs.

6.2 1988/89 INVESTIGATION PROGRAM

Priority was given to confirming suitable granular reserves for identified community maintenance and local small to medium scale capital projects purposes. It is expected that proponents of major projects would undrtake futher investigation of any granular sources that they intend to use. As with each annual program, one primary objective will be to optimize the available funding. For 1988/89 there was an additional time constraint of finishing the majority of the work by March 31, 1989. Accordingly, the proposed work program would consist of test drilling at three to four priority sites using a helicopter - supported field program. The logistics and permitting requirements for use of a cat-camp for field work were judged to be too costly and time consuming to meet the program objectives. It was also judged that a greater volume of granular reserves could be confirmed and tested at sites near Tuktoyaktuk, Inuvik and Aklavik.

The following four sites are proposed for test drilling during 1988/89:

1) Site 467 near Willow Creek

TABLE 2

SITES RECOMMENDED FOR FIELD INVESTIGATION WORK

Community	Site Number	Location	Source Number
Aklavik	467	Near Willow Creek	Same
	468	Mt. Gifford	Same
Holman	5	Airport pit	87-H-5
	8	Jacks Bay pit and other pits adjacent to community	87-H-8
	7	Ukpalik Hill	87-H-7
Inuvik	I407	Caribou Hills	Same
	R28	Gull Creek Quartzite	Same
	R29	Gull Creek Dolomite	Same
	2.45	Noell Lake	Same
	I403	Campbell Lake Quarry	Same
	312	Husky Lakes	Same
	314	Husky Lakes	Same
	AA	Southwest of Inuvik	Same
Paulatuk	23	South of Community	87-P-23
	12	Near Rat Lake	87-P-12
Sachs Harbour	1	Mary Sachs Pit	87-SH-1
	2	Six km west	87-SH-2
	3	Four km west	87-SH-3
	5	Community pit - west side	87-SH-5
	4	Community pit - west side	87-SH-4
	7	Near mouth of Mary Sachs Creek	87-SH-7
	9	Kellett River area	87-SH-9
	10	Kellett River area	87-SH-10
	11	Kellett River area	87-SH-11
	13	Near Picnic Lake	87-SH-13
Tuktoyaktuk	155S	Kittigazuit Creek	Same
	177	22 km south	Same
	167	27 km southeast	Same
	163	35 km northeast	Same
	164	35 km east	Same
	165	32 km southeast	Same
	170	32 k m south	Same

2) Site I407 in the Caribou Hills

3) Site 155S at Kittigazuit Creek

4) Site 177 south of Tuktoyaktuk

The last location, Site 177, is an alternate investigation target that would only be test drilled if progress is better than expected at the first three sites. Table 3 presents estimated costs for the 1988/89 field program including reporting costs covered by the 1989/90 budget.

Site 467 was selected for test drilling on the basis of being projected to be able to meet all Classes 3 and 4 material requirements for the next 20 years for Aklavik. This would represent 78% of projected total requirements for Aklavik, with Classes 1 and 2 materials coming from known reserves at Ya Ya Lakes.

Site I407 has been projected to be able to supply Classes 2 and 3 materials representing 75% of the local requirements for granular materials in Inuvik. The quality of this supply, however, is somewhat questionable and requires confirmation by test drilling, sampling and laboratory testing.

Sites 155 and 155S near Tuktoyaktuk have been suggested as the possible source of all Classes 1 to 4 granular materials for this community for the next 20 years. Site 155S is seen as the logical extension of Site 155 which is already being developed. Proper planning requires the gathering of additional site specific quantity and quality data for the 155S site.

TABLE 3

ESTIMATED COSTS FOR 1988/89 FIELD INVESTIGATIONS

Community	Site Number	Test Holes	Test Pits	Field Days	Estimated Costs
Aklavik	467	10	N/A	3.5	$ 61,250.00
Inuvik	I407	10	N/A	3.0	52,500.00
Tuktoyaktuk	155S	20	N/A	4.0	70,000.00
				TOTAL	$183,750.00

6.3 1989/90 INVESTIGATION PROGRAM

Presently identified funding for 1989/90 has been dedicated to completion of testing and reporting for field work completed during 1988/89.

6.4 1990/91 INVESTIGATION PROGRAM

Funding allocated for 1990/91 is recommended to be directed towards confirmation of granular reserves at the three communities of Sachs Harbour, Holman and Paulatuk. Emphasis should be placed upon ensuring reserves for community maintenance and local capital projects.

Test pitting programs are recommended at these three communities as the most cost effective means of confirming sufficient granular reserves for projected community requirements over the next 20 years. It is also recommended that test pitting be carried out at Site AA south of Inuvik, where there is presently no firm information regarding granular potential. Table 4 lists the sites proposed for summer test pitting work during 1990/91 and presents estimated costs for completion of this work including laboratory testing and report preparation.

Site plans showing proposed test pit locations are presented as Figures 2 to 5.

6.5 1991/92 INVESTIGATION PROGRAM

It is expected that one or more major development projects may be underway by 1990, and that it would be appropriate to devote the program effort to

TABLE 4

ESTIMATED COSTS FOR 1990/91 FIELD INVESTIGATIONS

Community	Site Number	Test Holes	Test Pits	Field Days	Estimated Costs
Holman	5	N/A	Site Visit Only	0.2	$1,500.00
	7	N/A	5	1.0	5,000.00
	8	N/A	8	1.6	8,000.00
Paulatuk	12	N/A	Site Visit Only	0.2	1,500.00
	23	N/A	9	1.8	9,000.00
Sachs Harbour	1	N/A	5	1.0	5,000.00
	2	N/A	3	0.6	3,000.00
	3	N/A	3	0.6	3,000.00
	4	N/A	Site Visit Only	0.2	1,500.00
	5	N/A	3	0.6	3,000.00
	9	N/A	3	0.6	3,000.00
	10	N/A	3	0.6	3,000.00
	11	N/A	3	0.6	3,000.00
	13	N/A	Site Visit Only	0.2	1,500.00
Inuvik	AA	N/A	5	1.0	5,000.00
				TOTAL	$56,000.00

delineating additional granular reserves to ensure that longer term public demands can be satisfied with the possible increased competition resulting from major developments. Any identified granular materials on Inuvialuit lands that are surplus to public demands might be made available. for sale to any such large projects. Accordingly, Site 2.45 near Inuvik and Sites 163, 165, 167, 170 and 177 near Tuktoyaktuk are proposed for test drilling and sampling and have been prioritized in Table 5, which presents estimated costs for completion of this work. No quarry testing work is proposed at this time.

Site plans showing proposed test hole locations are presented as Figures 6 to 10.

6.6 1992/93 INVESTIGATION PROGRAM

The INAC five-year plan has set aside a budget during 1992/93 for the first of the planned five-year updates to the 20-year demand forecasts. Comments already received from community representatives as well as possible major development project construction activities suggest that significant revisions may be required to the initial demand forecasts by 1992/93. It is appropriate, therefore, to reserve adequate funding for this updating work.

7.0 CLOSURE

This report briefly outlines available information pertaining to granular resources on Inuvialuit Lands and discusses the rationale for a proposed on-going investigation program. The proposed investigation program discussed in this report is presented for review and comment by all affected parties including ILA, INAC, GNWT and the local communities.

TABLE 5

ESTIMATED COSTS FOR 1991/92 FIELD INVESTIGATIONS

Community	Site Number	Test Holes	Test Pits	Field Days	Estimated Costs
Inuvik	2.45	5	N/A	1.0	21,875.00
Tuktoyaktuk	177	6	N/A	1.2	26,250.00
	170	4	N/A	0.8	17,500.00
	165	4	N/A	0.8	17,500.00
	167	4	N/A	0.8	17,500.00
	163	3	N/A	0.6	13,125.00
				TOTAL	$113,750.00

Respectfully submitted,

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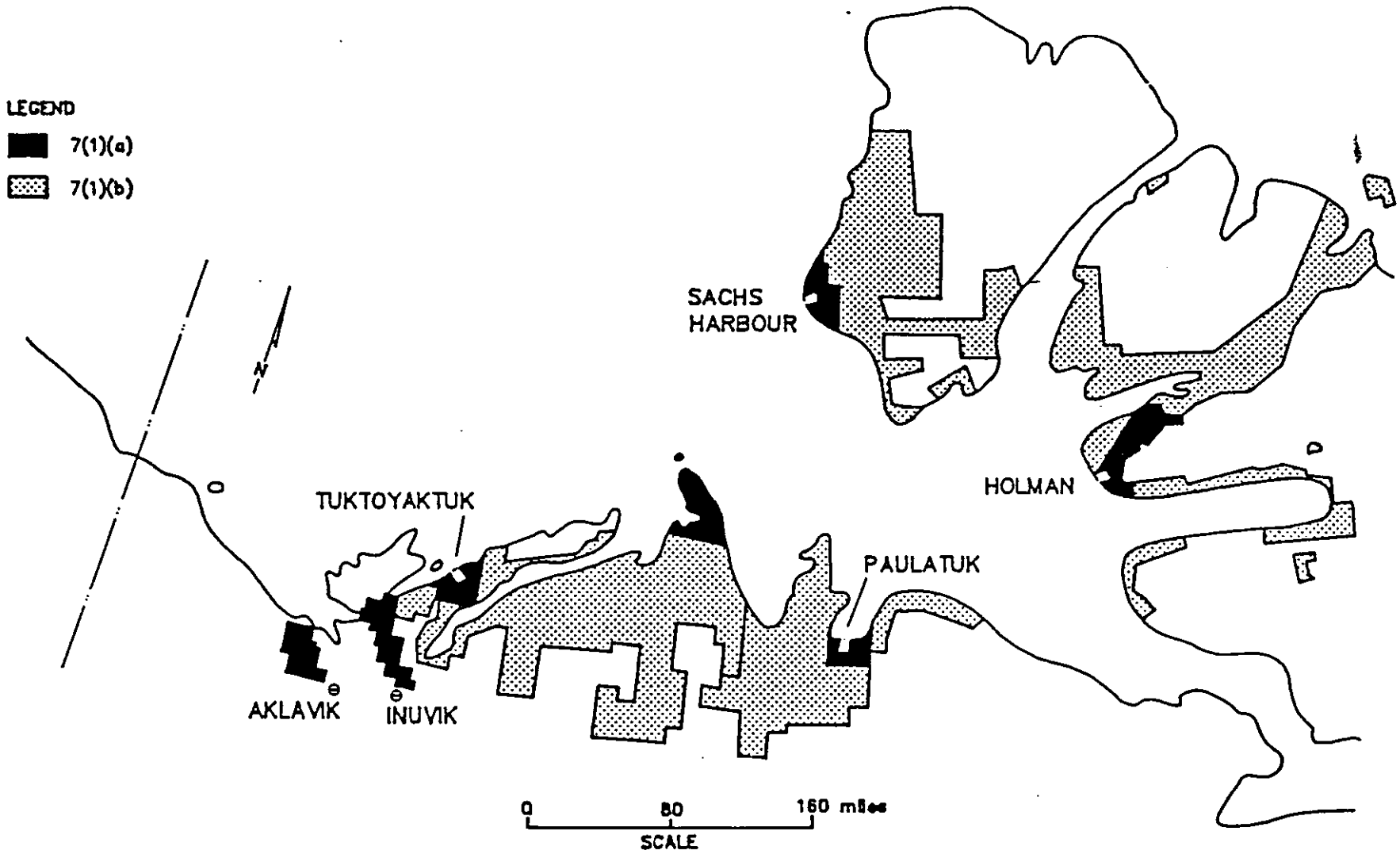

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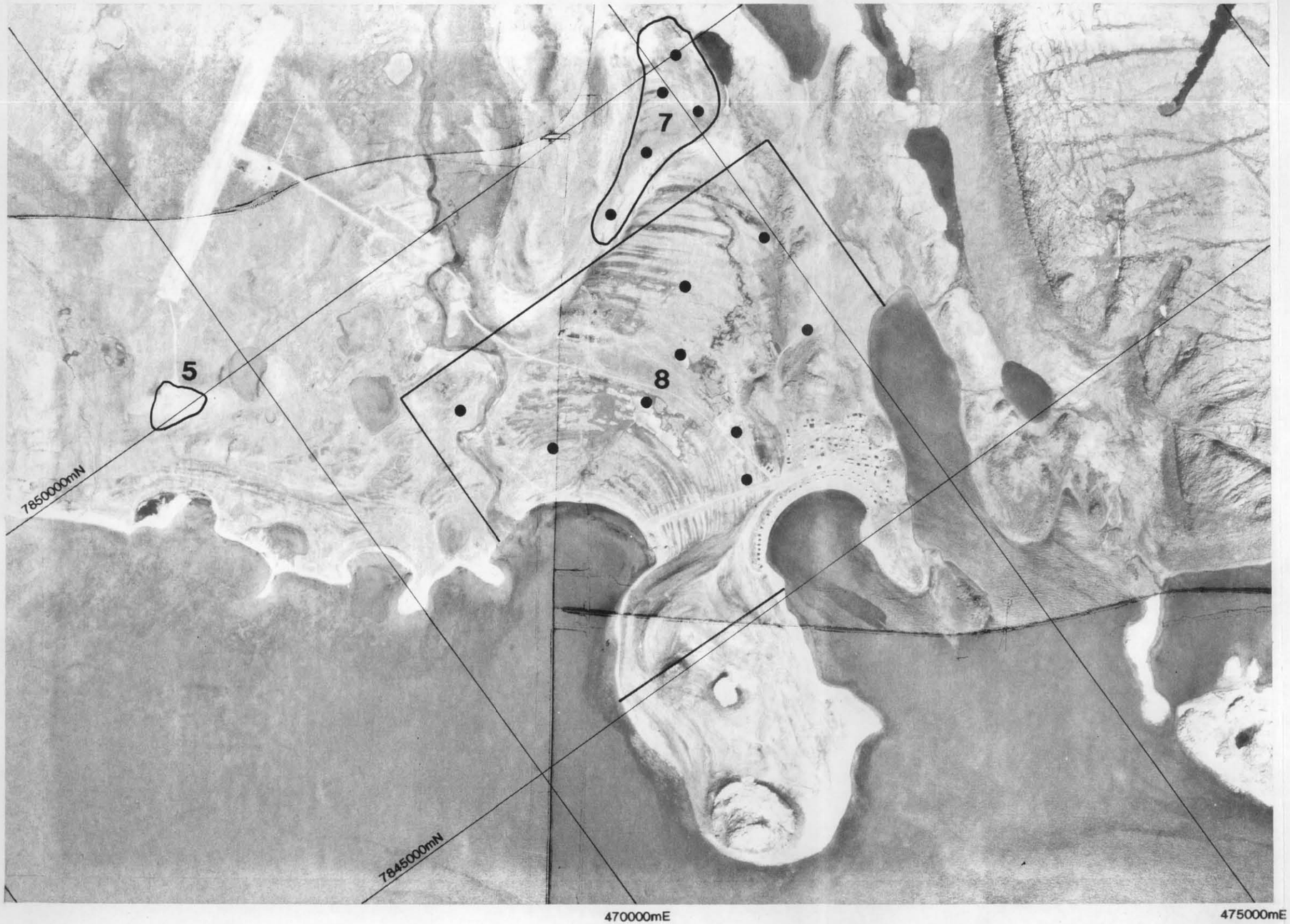
FIGURE 1. INUVIALUIT LANDS LOCATION PLAN

CG10346

HBLT 15 - 87/05



● TEST PIT LOCATION

Approx. Scale 1 : 21 000

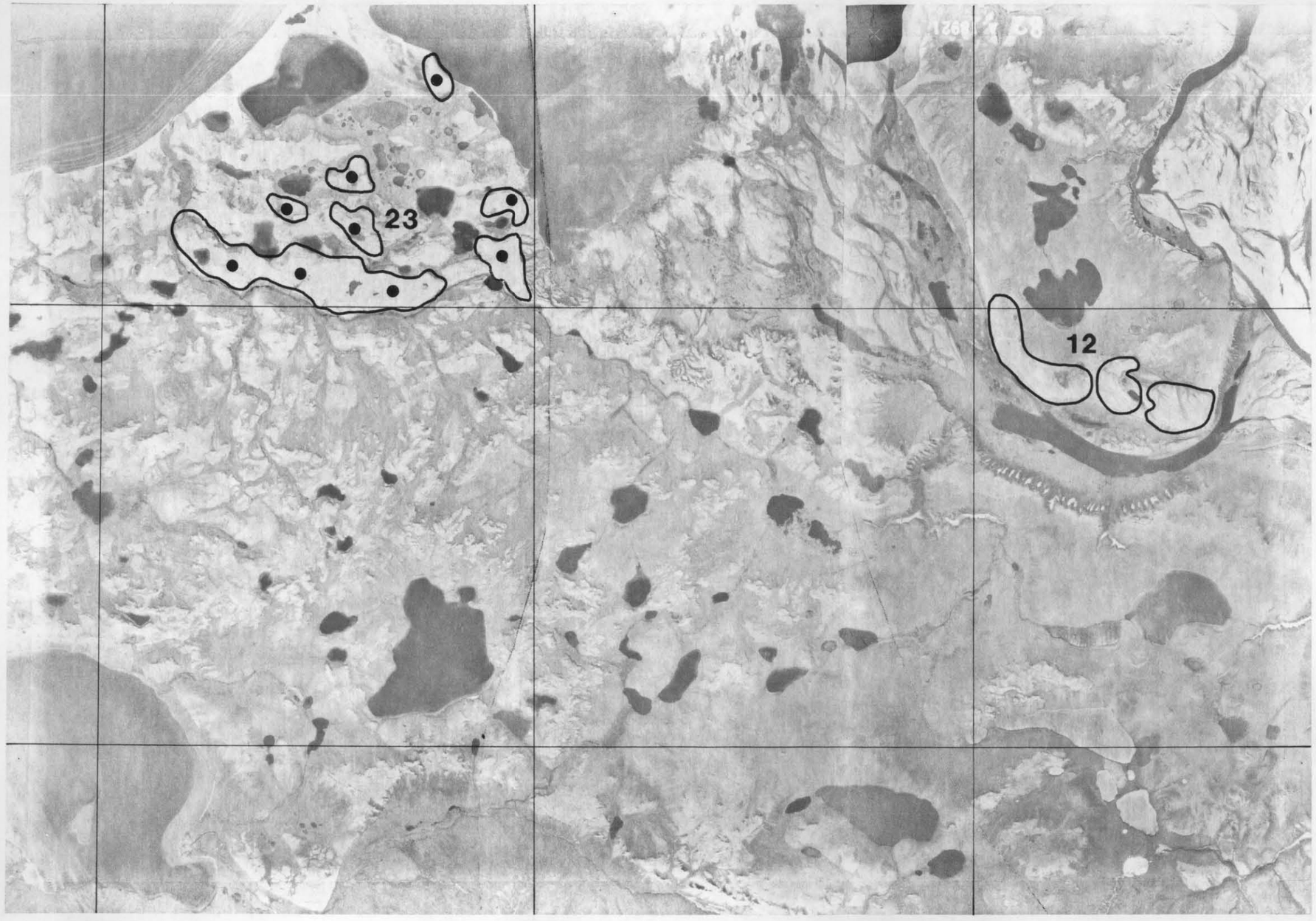
Hardy BBT Limited
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

INUVIALUIT SETTLEMENT REGION GRANULAR RESOURCES EVALUATION

PROPOSED TEST PIT LOCATIONS FOR 1990-91 FIELD INVESTIGATIONS AT SITES 5,7 & 8 HOLMAN N.W.T.

CG10346

Figure 2



● TEST PIT LOCATION

Approx. Scale 1 : 50 000

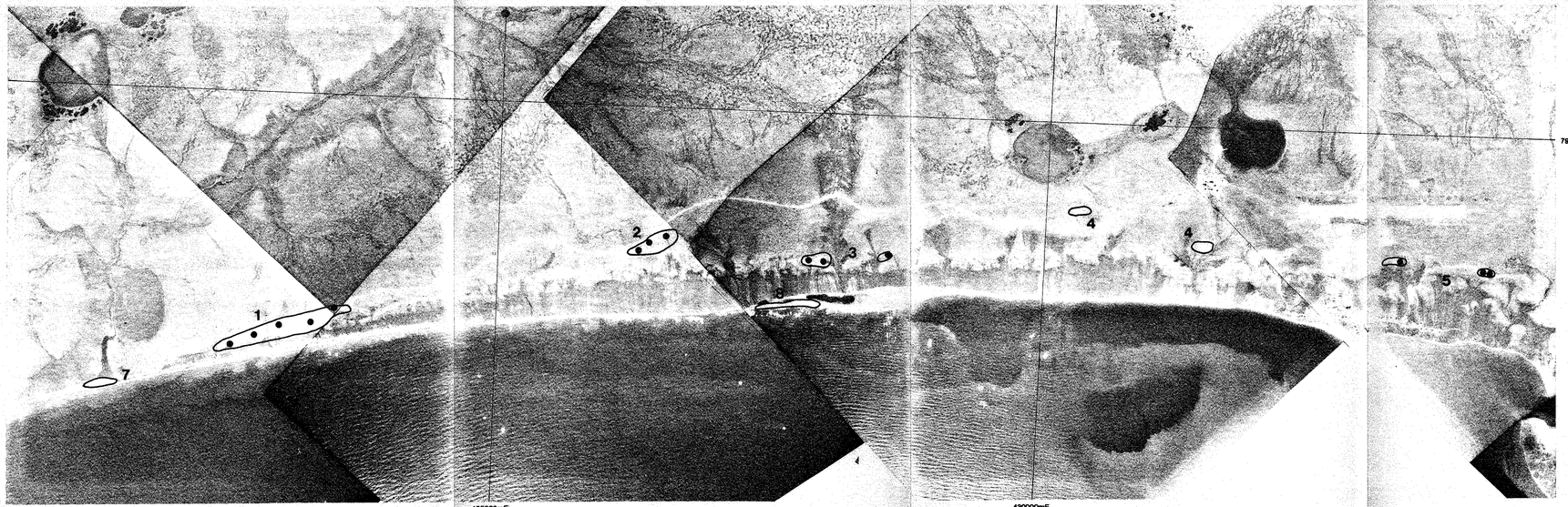
Hardy BBT Limited
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

INUVIALUIT SETTLEMENT REGION GRANULAR RESOURCES EVALUATION

PROPOSED TEST PIT LOCATIONS FOR 1990-91 FIELD INVESTIGATIONS AT SITES 12 & 23 PAULATUK N.W.T.

CG10346

Figure 3



● TEST PIT LOCATION

Approx. Scale 1 : 21 000

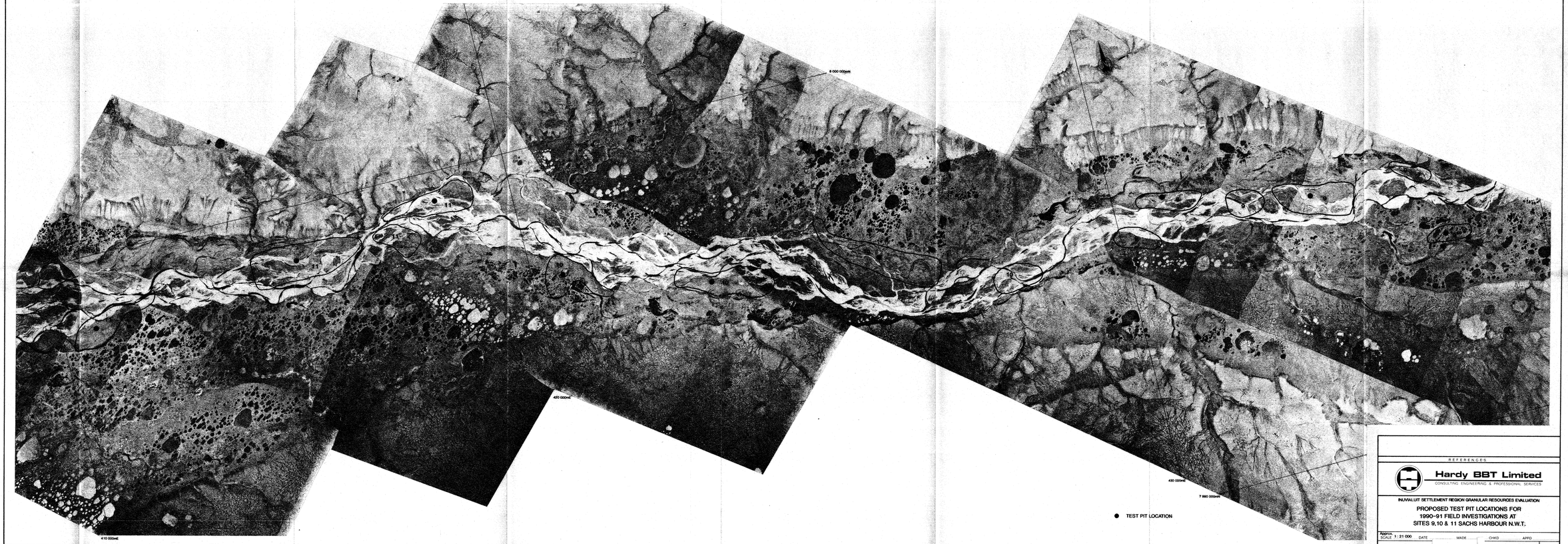
Hardy BBT Limited
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

INUVALUIT SETTLEMENT REGION GRANULAR RESOURCES EVALUATION

PROPOSED TEST PIT LOCATIONS FOR
1990-91 FIELD INVESTIGATIONS AT SITES
1,2,3,4,5,7 & 8 SACHS HARBOUR N.W.T.

CG10346

Figure 4A



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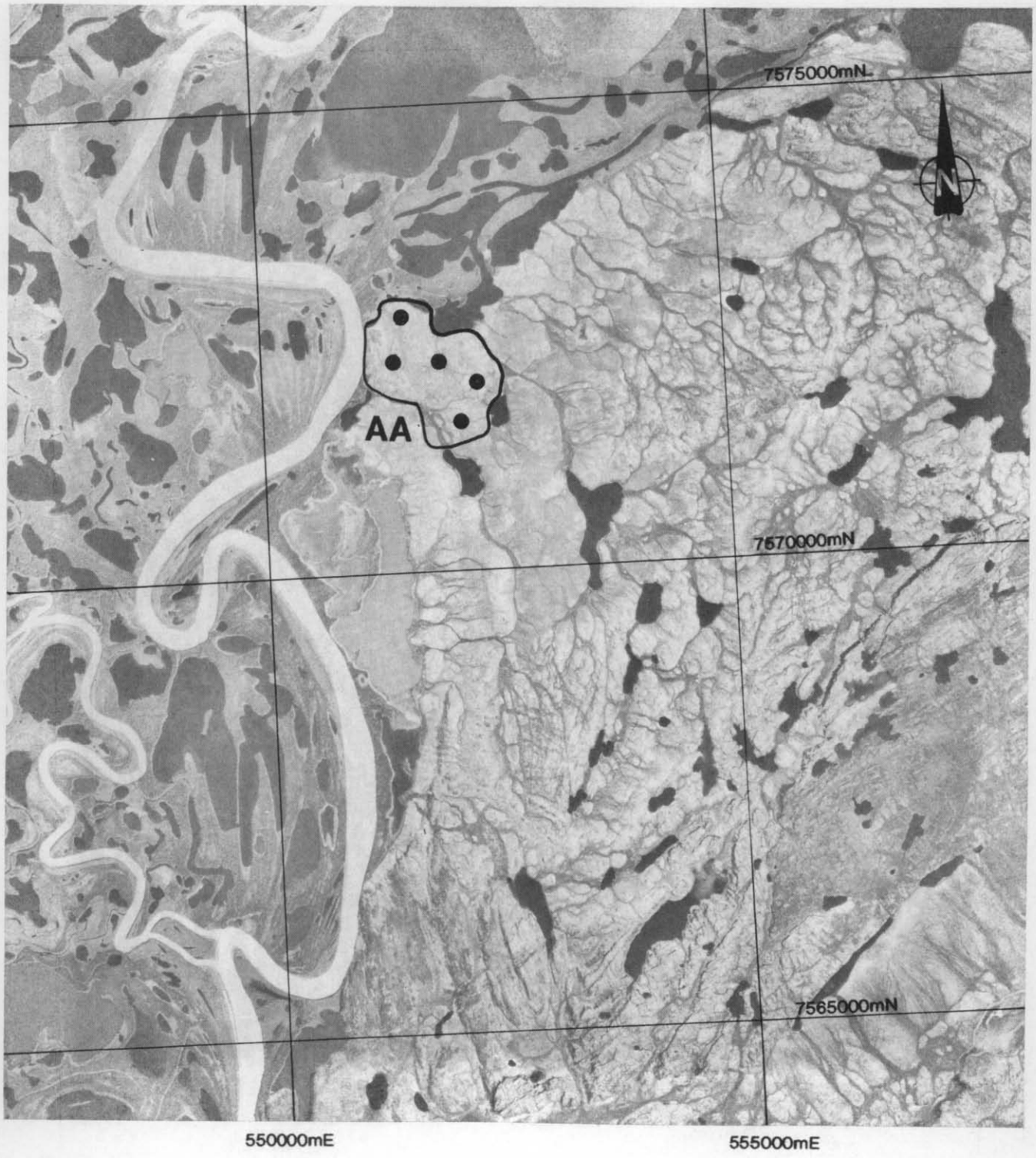
PROPOSED TEST PIT LOCATIONS FOR 1990-91 FIELD INVESTIGATIONS AT SITES 9,10 & 11 SACHS HARBOUR N.W.T.

Approx. SCALE 1:21 000 | DATE | MADE | CHKD | APPD

JOB No. OS10346 | Figure 4B | REV

HBLT 514-8111



● TEST PIT LOCATION

Approx. Scale 1 : 62 500

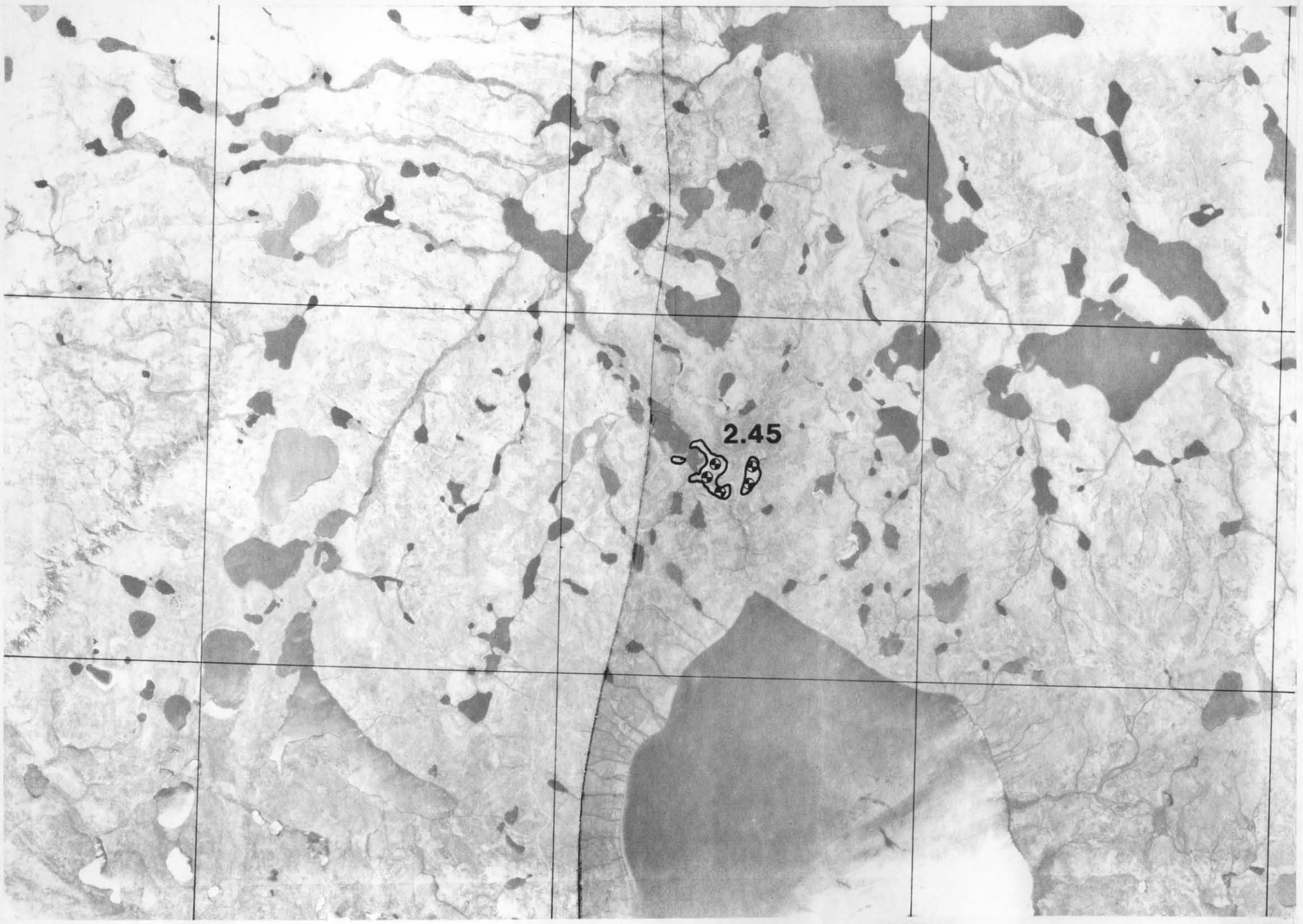
Hardy BBT Limited
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

INUVIALUIT SETTLEMENT REGION GRANULAR RESOURCES EVALUATION

PROPOSED TEST PIT LOCATIONS FOR 1990-91 FIELD INVESTIGATIONS AT SITE AA INUVIK N.W.T.

CG10346

Figure 5



N

● BOREHOLE LOCATION

Approx. Scale 1 : 60 800

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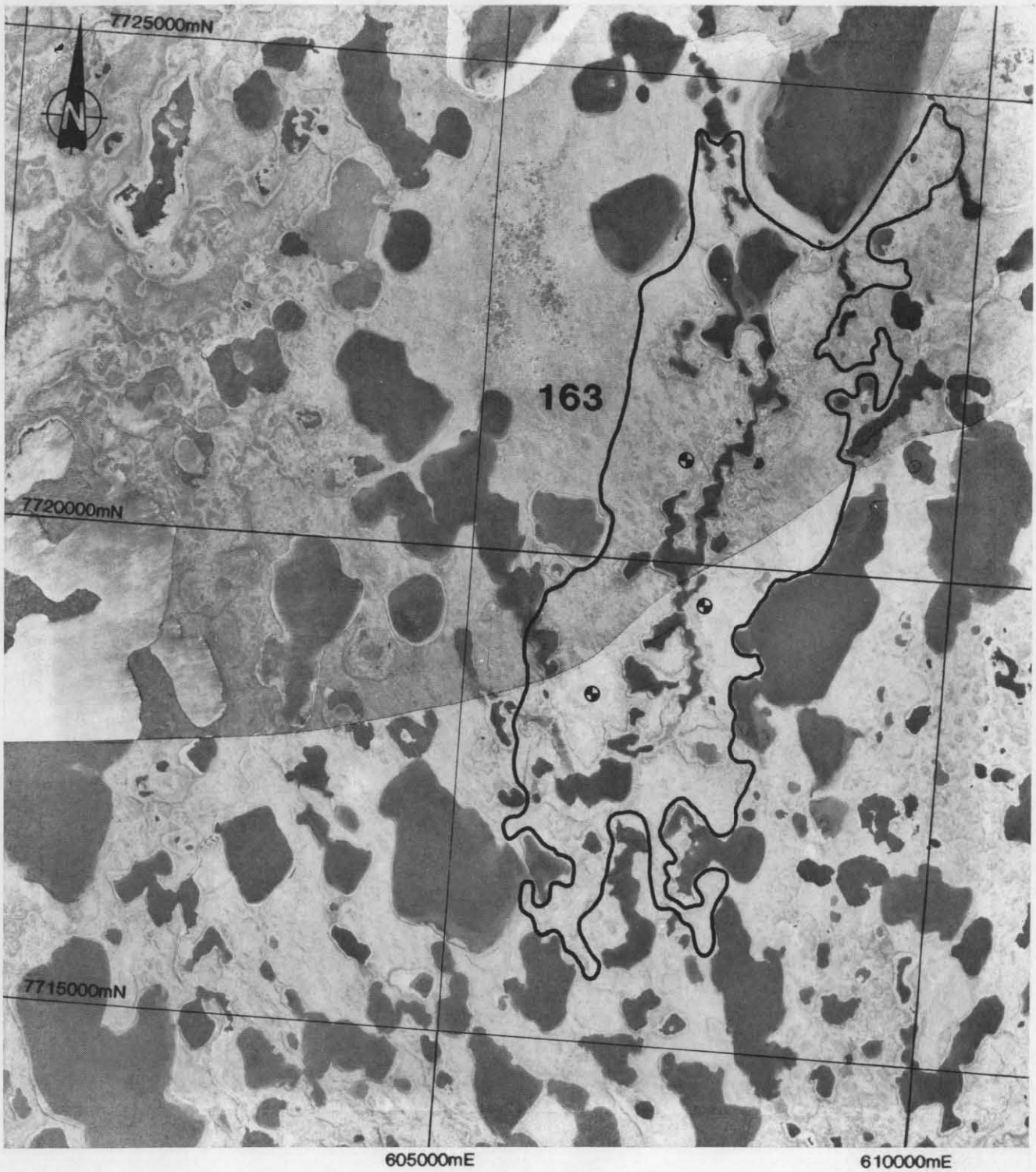
INUVIALUIT SETTLEMENT REGION GRANULAR RESOURCES EVALUATION

PROPOSED BOREHOLE LOCATIONS FOR 1991-92 FIELD INVESTIGATIONS AT SITE 2.45 INUVIK N.W.T.

CG10346

Figure 6



● BOREHOLE LOCATION

Approx. Scale 1 : 60 800

Hardy BBT Limited
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

INUVIALUIT SETTLEMENT REGION GRANULAR RESOURCES EVALUATION

PROPOSED BOREHOLE LOCATIONS FOR 1991-92 FIELD INVESTIGATIONS AT SITE 163 TUKTOYAKTUK N.W.T.

CG10346

Figure 7

N

● BOREHOLE LOCATION

Approx. Scale 1 : 61 000

Hardy BBT Limited
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

INUVIALUIT SETTLEMENT REGION GRANULAR RESOURCES EVALUATION

PROPOSED BOREHOLE LOCATIONS FOR
1991-92 FIELD INVESTIGATIONS AT
SITE 165 TUKTOYAKTUK N.W.T.

CG10346

Figure 8

BOREHOLE LOCATION

Approx. Scale 1 : 62 500

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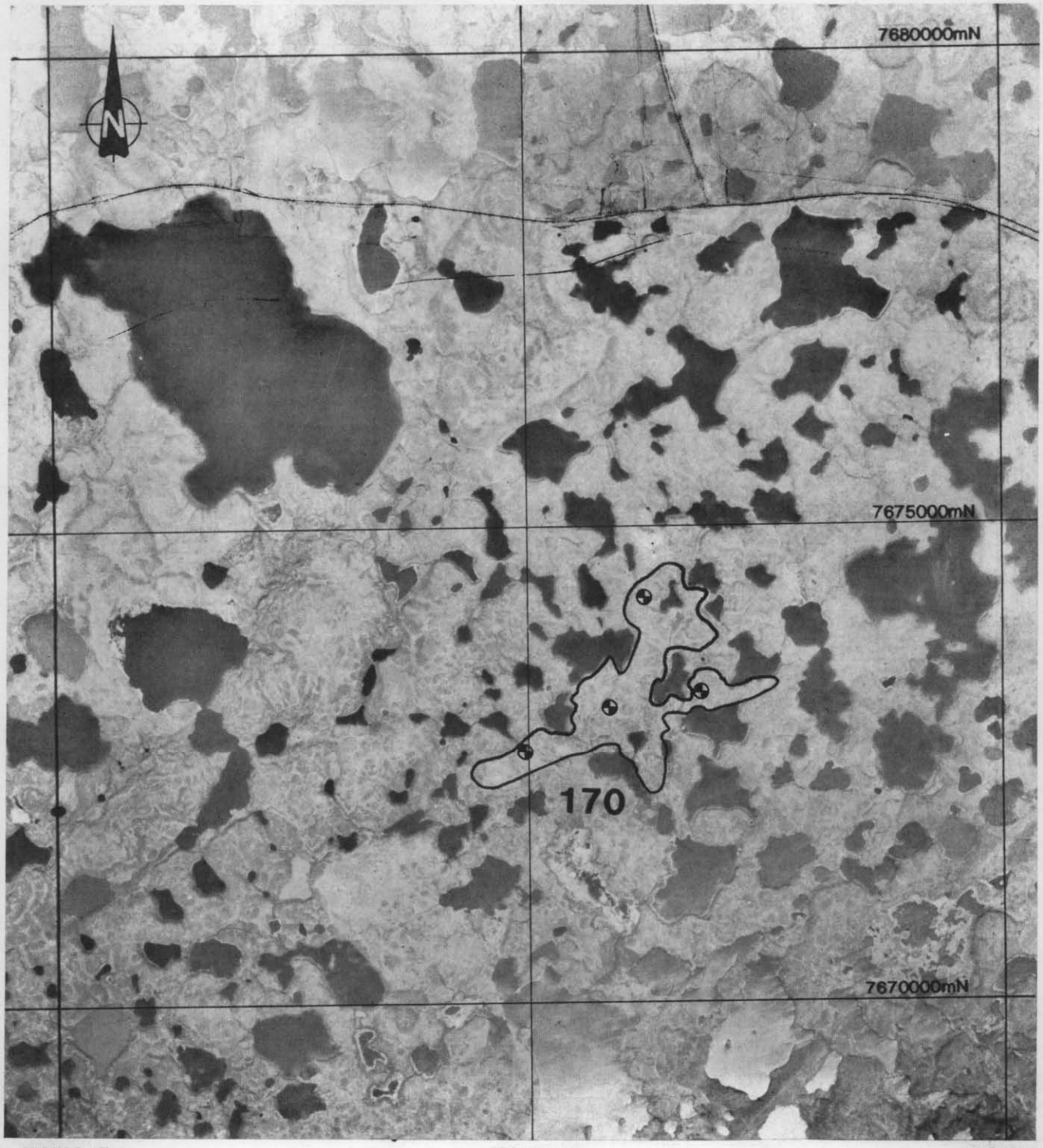
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

INUVIALUIT SETTLEMENT REGION GRANULAR RESOURCES EVALUATION

PROPOSED BOREHOLE LOCATIONS FOR
1991-92 FIELD INVESTIGATIONS AT
SITES 167 & 177 TUKTOYAKTUK N.W.T.

CG10346

Figure 9



● BOREHOLE LOCATION

Approx. Scale 1 : 62 000

Hardy BBT Limited
CONSULTING ENGINEERING & PROFESSIONAL SERVICES

INUVIALUIT SETTLEMENT REGION GRANULAR RESOURCES EVALUATION

PROPOSED BOREHOLE LOCATIONS FOR 1991-92 FIELD INVESTIGATIONS AT SITE 170 TUKTOYAKTUK N.W.T.

CG10346

Figure 10

APPENDIX A

Summary of Granular Resources Data for the Community of Inuvik

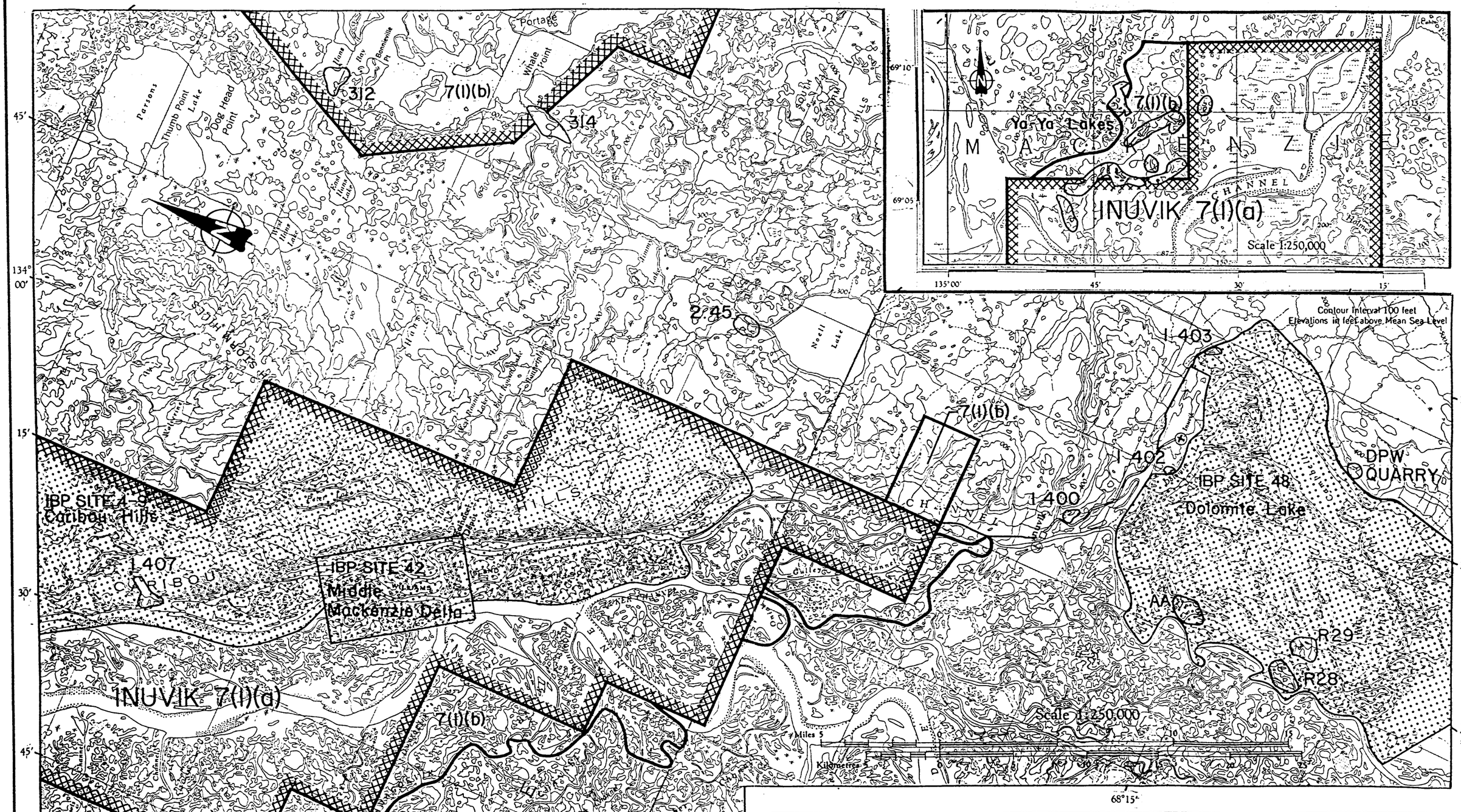


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Figure 5

Location of granular deposits, Inuvik, N.W.T.

HT 139-82/12

TABLE 1

REQUIRED VOLUMES OF GRANULAR MATERIALS (DEMAND), IN CUBIC METRES, AND RECOMMENDED SOURCES OF SUPPLY, INUVIK, 1987 - 2006, EXCLUDING SPECULATIVE PROJECTS (FROM EBA 1987)

Class	1987-91	1992-96	1997-2001	2002-06	Totals	Recommended Sources
Class 1	200	0	0	0	200	YaYa or I 403
Class 2	5 800	0	0	0	5 800	YaYa or I 407
Class 3	65 300	20 800	20 800	20 800	127 700	YaYa or I 407
Class 4	2 000	0	0	0	2 000	I 400
Class 5	18 200	8 000	8 000	8 000	42 200	I 402 I 403
				TOTAL	177 900	

NOTE: EBA figures used in this table have been rounded off to the nearest 100 cu.m.

TABLE 2

REQUIRED VOLUMES OF GRANULAR MATERIALS (DEMAND), IN CUBIC METRES, AND RECOMMENDED SOURCES OF SUPPLY, INUVIK, 1987 - 2006, INCLUDING SPECULATIVE PROJECTS (FROM EBA 1987)

Class	1987-91	1992-96	1997-2001	2002-06	Totals	Recommended Sources
Class 1	200	0	0	0	200	YaYa or I 403
Class 2	5 800	1,700 000	100 000	100 000	1 905 800	YaYa or I 407, 312,314
Class 3	65 300	20 800	20 800	20 800	127 700	YaYa or I 407
Class 4	2 000	0	0	0	2 000	I 400
Class 5	2 818 200	8 000	908 000	1 808 000	5 542 200	R28/R29 or DPW/I 403 I 402
				TOTAL	7 577 900	

Note: EBA figures used in this table have been rounded to the nearest 100 cu.m.

TABLE 3

GRANULAR MATERIAL SOURCES - INUVIK
(FROM EBA 1987)

Source No.	Location	Estimated Volume	Access	Comments
2.45	25 km northeast of Inuvik	25 million m^3 Class 2 (prospective)	Tundra/ice road in winter	On Crown lands.
312	57 km northeast of Inuvik	2.3 million m^3 Class 1 (probable) 2.3 million m^3 Class 2 (probable)	Tundra/ice road in winter	On Inuvialuit 7(1)(b) lands.
14	42 km northeast of Inuvik	2.3 million m^3 Class 2 (probable)	Tundra/ice road in winter	Partially on Inuvialuit 7(1)(b) lands, partially on Crown lands.
400	Within Inuvik	0	All-weather road	Boot Hill Pit on Town lands. Considered depleted but still used as a source for small volumes of Class 3 materials.
I 402	10 km south of Inuvik	4.6 million m^3 Class 5 (proven)	All-weather road	Transport Canada quarry. On Crown lands. Source is on the edge of the proposed Dolomite Lake-Campbell Lake IBP area.
403	18 km southeast of Inuvik	2 million m^3 Class 5 (proven)	All-weather road	Campbell Lake quarry. On Crown lands.
407	61 km northwest of Inuvik	4.6 million m^3 Class 2 (probable) 15 million m^3 Class 5 (prospective)	Ice road in winter; barge in summer	Source is in the proposed Caribou Hills IBP area, on Inuvik 7(1)(a) lands.
R28 & R29	20 km south of Inuvik	20 million m^3 Class 5 (probable)	Tundra/ice road in winter; barge in summer	On Crown lands. Source is in the proposed Dolomite Lake-Campbell Lake IBP area.
DPW Quarry	22 km southeast of Inuvik	600 000 m^3 Class 5 (proven) 3.5 million m^3 Class 5 (probable)	All-weather road	On Crown lands.
Ya-Ya Lakes	90 km northwest of Inuvik	7.5 million m^3 Class 2 (proven) 8.8 million m^3 Class 2 (probable)	Tundra/ice road in winter	On Inuvik 7(1)(a) and Inuvialuit 7(1)(b) lands.
AA	10 km southwest of Inuvik	Unknown	Tundra/ice road in winter	Potential source suggested by workshop participants. No data available.

TABLE 4

COMPARISON OF GRANULAR RESOURCE SOURCES
INUVIK

Source	Use	Environmental and Aesthetic Considerations	Wildlife and Social-Cultural Considerations	Economic Considerations	Comments	Ranking: Significance of Impacts	Ranking: Acceptability of Development
I 407	Class 2 & 3 needs	Within IBP Site 4-9; development could endanger already vulnerable plant and animal populations.	Not used for local hunting, fishing, trapping, or camping.	Inuvik-Tuktoyaktuk ice road could be used for transportation.	Workshop participants agree that development is acceptable; may be national concern if developed because of IBP status.	Insignificant (locally) Significant (nationally)	Acceptable (locally)
314	Class 2 speculative needs	Potential disruption of fish migrations; along scenic route to the Husky Lakes; massive ground ice present-development would result in thermokarst slumping.	Area used by local fishermen; development will open access to Husky Lakes.	42-km winter road required.	Partially on Tuktoyaktuk 7(1)(b) lands.	Significant	Unacceptable
2.45	Class 2 speculative needs	Potential disruption of fish migration; ground ice conditions not known.	Along local travel route to Husky Lakes; area used for fishing and camping.	25-km winter road required; lower royalty costs because not on Inuvialuit land.	Acceptable to workshop participants if western side of deposit developed and eastern side left as a buffer.	Significant	Acceptable if development restricted to western side.
I 408	Class 4 needs	Existing pit, essentially depleted.	None.	None.	Workshop participants felt than plans should be made for pit restoration.	Insignificant	Acceptable for Town's projected 2000 m^3 Class 4 needs; unacceptable for further development.
Ya-Ta	Class 1, 2, and 3 needs	Existing pit; massive ice present.	Existing pit; none identified.	90-km winter road required.	Preferred source of high-quality materials for Inuvik.	Insignificant	Acceptable
DPW Quarry I 402, I 403	Class 5 and Class 1 (crushed rock from I 403) needs; DPW Quarry and I 403 would be used for speculative Class 5 needs	Campbell Hills is part of IBP Site 48, noted for dolomite outcrops, rare plants, and endangered peregrine falcon nesting sites. Increased level of development may have negative impact on plants and falcons and on aesthetics (DPW's quarry and I 402 currently not visible from the road.	Campbell Hills is a scenic and potential tourism resource.	Sites are accessible from the Dempster Highway.	Large-scale development of the DPW Quarry and I 403 concern workshop participants.	Significant	Current level of development acceptable. Large-scale development unacceptable.
B28, B29	Class 5 speculative needs	Within IBP Site 48, noted for dolomite outcrops, rare plants, and endangered peregrine falcon nesting sites. On west side of Campbell Hills, therefore isolated from view of Dempster Highway.	Within the boundaries of a proposed territorial park.	20-km winter road required; barge in summer.	Workshop participants suggest consideration should be given to developing Source B28 only and leaving Source B29.	Significant	Acceptable
AA	Not known	None identified	Close to boundaries of proposed territorial park. Not used extensively by local hunting, fishing, or trapping economy.	Located on Crown Land and within 10 km of Inuvik; 10-km winter road required.	Workshop participants would like to see the potential source investigated further.	Insignificant	Acceptable

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 312

----------LOCATION AND STATUS----------

LOCAL NAME : ESKIMO LAKES STUDY NUMBER: 172RKL-Z3
SOURCE REFERENCE : RIPLEY, KLOHN & LEONOFF 1972
CROSS REFERENCES :
LOCATION : 58 KM N INUVIK NTS MAP SHEET: 107B/15
LOCATION MAP SCALE: 1:1700000 SITE PLAN SCALE : 1:36000
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 68-53-00N ZONE-EASTING: 8-560500
LONGITUDE: 133-25-00W AREA: 167 NORTHING: 7640500
CORRIDOR : MACKENZIE ICE ROAD
KM-POST : 0.0 OFFSET:
ACCESS : DISTANCE: 0
CONDITION : WINTER ICE ROAD;BARGE IN SUMMER
LAND TENURE: INUVIALUIT 7(1)(B)- TUK STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; DELINEATION; PRODUCTION; REVIEW
DATE: 1972 EXISTING STUDIES
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	8	0
DEPTH:		0.6-4.9-9.1	

TOPOGRAPHY: HUMMOCKY
SLOPE : GRADUAL
VEGETATION: TUNDRA;MOSS, LICHENS, DWARF SHRUBS TO 0.9 M, GRASS
DRAINAGE : MODERATE
PERMAFROST: POLYGONAL ICE WEDGES
ACTIVE LAYER : 0.6-0.9-1.2 SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : TERRACE

	MATERIAL TYPE	THICKNESS
OVERBURDEN:	SILT- organics, roots, peat	0.2-0.3-0.5
GRANULAR :	GRAVEL & SAND- trace silt	0.6-4.4-9.1
UNDERLYING:	SILT & MASSIVE ICE	

DEVELOPMENT POTENTIAL: SUITABLE
CONSTRAINTS: CRITICAL WILDLIFE AREA; RECREATIONAL AREA; SILTATION; MASSIVE ICE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 20 SIZE-ANALYSIS - NO.: 13
RESULTS: 4-14-36 OVERSIZED MATERIALS:
USC TEST - NO.: 20 GRAVEL: 0-46-80
CLASS: OL-Cl/SP-SM/GW SAND: 10-44-84
PETROGRAPHICS - NO: 1 FINES: 2-9-48
RESULTS: 150 D50: 000080-004051-011000
OTHER TESTS:

GRANULAR MATERIAL VOLUMES: PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:	
TOTAL VOLUME:	4560000	CLASS 2:	/4560000/4560000
RECOVERABLE :	4560000	CLASS 3:	
ANNUAL RECOV:	0	CLASS 4:	
		CLASS 5:	

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL IIA;*

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 314

----------LOCATION AND STATUS----------

LOCAL NAME : ESKIMO LAKES STUDY NUMBER: 172RKL-23
SOURCE REFERENCE : RIPLEY, KLOHN & LEONOFF 1972
CROSS REFERENCES :
LOCATION : 45 KM N INUVIK NTS MAP SHEET: 107B 15
LOCATION MAP SCALE: 1:1700000 SITE PLAN SCALE : 1:36000
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 68-46-00N ZONE-EASTING: 8-564000
LONGITUDE: 133-21-00W AREA: 502 NORTHING: 7626000
CORRIDOR : MACKENZIE ICE ROAD
KM-POST : 0.0 OFFSET:
DISTANCE: 0
ACCESS :
CONDITION : WINTER ICE ROAD;BARGE IN SUMMER
LAND TENURE: INUVIALUIT 7(1)(B)- TUK STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; DELINEATION; PRODUCTION; REVIEW
DATE: 1972 EXISTING STUDIES
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	3	0
DEPTH:		0.6-0.9-1.2	

TOPOGRAPHY: HUMMOCKY, ROLLING HILLS
SLOPE : GRADUAL
VEGETATION: TUNDRA;MOSS, LICHENS, DWARF SHRUBS
DRAINAGE : MODERATELY WELL
PERMAFROST: POLYGONAL ICE WEDGES
ACTIVE LAYER : 0.9-1.1-1.2 SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : TERRACE

	MATERIAL TYPE	THICKNESS
OVERBURDEN:	SILT- organic, peat	0.1-0.2-0.3
GRANULAR :	SAND- gravel	0.6-0.9-1.2
UNDERLYING:	MASSIVE ICE	

DEVELOPMENT POTENTIAL: FAIR
CONSTRAINTS: STREAM SILTATION; RECREATIONAL AREA; CRITICAL WILDLIFE AREA; MASSIVE ICE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 2 SIZE-ANALYSIS - NO.: 2
RESULTS: 2-4-6 OVERSIZED MATERIALS:
USC TEST - NO.: 2 GRAVEL: 35-45-55
CLASS: OL-SP/SW/SW SAND: 44-53-62
PETROGRAPHICS - NO: 1 FINES: 1-2-3
RESULTS: 372 D50: 002500-004500-006500
OTHER TESTS:

GRANULAR MATERIAL VOLUMES: PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:	
TOTAL VOLUME:	2280000	CLASS 2:	
RECOVERABLE :	2280000	CLASS 3:	/2280000/2280000
ANNUAL RECOV:	0	CLASS 4:	
		CLASS 5:	

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL IIA;*

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 1-400

LOCATION AND STATUS

LOCAL NAME : BOOT CREEK
STUDY NUMBER: 172RKL-IN
SOURCE REFERENCE : RIPLEY, KLOHN & LEONOFF 1972
CROSS REFERENCES :
LOCATION : 1.6 KM S INUVIK
NTS MAP SHEET: 107B/7
LOCATION MAP SCALE: 1:125000
SITE PLAN SCALE : 1:36000
DIGITIZER NO. :
DIGITIZER NO.:
LATITUDE : 68-16-00N
ZONE-EASTING: 8-554000
LONGITUDE: 133-39-00W AREA: 31
NORTHING: 7583000
CORRIDOR : INUVIK HIGHWAY
KM-POST : 1.6
OFFSET: 0
DISTANCE: 0
ACCESS :
CONDITION : YEAR ROUND ALL WEATHER ROAD
LAND TENURE: CROWN
STATUS: DEVELOPED
PAST USE : GRANULAR MATERIAL FOR COMMUNITY OF INUVIK
PERFORMANCE: UNKNOWN

SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION

INVEST. LEVEL: AIRPHOTO; RECONN; DELINEATION; PRODUCTION; REVIEW
DATE: 1972 EXISTING REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	10	0
DEPTH:		0.9-5.7-9.1	

TOPOGRAPHY: HUMMOCKY, LOTS OF PONDS
SLOPE : GENTLE
VEGETATION: SPHAGUM MOSS WITH SCATTERED BLACK SPRUCE TO 6 M
DRAINAGE : MODERATE
PERMAFROST:
ACTIVE LAYER : SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : OUTWASH

	MATERIAL TYPE	THICKNESS
OVERBURDEN:	SILT- organic, roots	0.3-0.4-0.9
GRANULAR :	SAND- some gravel, some silt	0.9-4.2-9.1
UNDERLYING:	MASSIVE ICE	

DEVELOPMENT POTENTIAL: FAIR
CONSTRAINTS: WILDLIFE RESERVES;RECREATIONAL AREA;MANAGEMENT-MINIMIZE WASTEAGE, RESTORE

LABORATORY TEST RESULTS AND MATERIAL QUANTITY

MOISTURE - NO.: 48
RESULTS: 5-20-55
USC TEST - NO.: 48
CLASS: OL-ML/Sm/GM-GW
PETROGRAPHICS - NO: 2
RESULTS: 227-242-257
OTHER TESTS:

SIZE-ANALYSIS - NO.: 17
OVERSIZED MATERIALS:
GRAVEL: 16-34-61
SAND: 23-40-72
FINES: 6-26-58
D50: 000072-002434-008200

GRANULAR MATERIAL VOLUMES:

			PROVEN/PROBABLE/PROSPECTIVE
		CLASS 1:	
TOTAL VOLUME:	190000	CLASS 2:	
RECOVERABLE :	190000	CLASS 3:	/190000/190000
ANNUAL RECOV:	0	CLASS 4:	
		CLASS 5:	

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL ILA;*

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: I-402

LOCATION AND STATUS

LOCAL NAME : INUVIK AIRPORT STUDY NUMBER: 172RKL-IN
SOURCE REFERENCE : RIPLEY, KLOHN & LEONOFF 1972
CROSS REFERENCES :
LOCATION : 1 KM W INUVIK AIRPORT NTS MAP SHEET: 107B/7
LOCATION MAP SCALE: 1:125000 SITE PLAN SCALE : 1:36000
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 68-18-00N ZONE-EASTING: 8-560500
LONGITUDE: 133-33-00W AREA: 31 NORTHING: 7577500
CORRIDOR : INUVIK AIRPORT ROAD
KM-POST : 12.9 OFFSET:
ACCESS : DISTANCE: 0
CONDITION : YEAR ROUND ROAD ACCESS
LAND TENURE: CROWN STATUS: DEVELOPED
PAST USE : QUARRY FOR INUVIK AIRSTRIP BY MOT
PERFORMANCE: GOOD

SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION

INVEST. LEVEL: AIRPHOTO; RECONN; DELINEATION; PRODUCTION; REVIEW
DATE: 1972 EXISTING REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	2	1
DEPTH:	12.2	4.0-4.3-4.6	

TOPOGRAPHY: BEDROCK EXPOSURE
SLOPE :
VEGETATION: DISCONTINUOUS COVER OF WHITE BIRCH, SPRUCE, SHRUBS AND
DRAINAGE : MOSS
PERMAFROST: MODERATE
ACTIVE LAYER : SITE DESCRIPTION DATE:
GENERIC ORIGIN: BEDROCK
LANDFORM : EXPOSURE

	MATERIAL TYPE	THICKNESS
OVERBURDEN:		
GRANULAR :	SILT- and organics, roots	0.3
UNDERLYING:	SHALE- bands of limestone	4.0-6.9-12.2

DEVELOPMENT POTENTIAL: SUITABLE
CONSTRAINTS: WILDLIFE RESERVES; ECOLOGICALLY IMPORTANT RECREATION AREA; RESTORATION

LABORATORY TEST RESULTS AND MATERIAL QUANTITY

MOISTURE - NO.: 4
RESULTS: 3-10-17
USC TEST - NO.: 4
CLASS: OL/SHALE/SHALE
PETROGRAPHICS - NO: 0
RESULTS:
OTHER TESTS:

SIZE-ANALYSIS - NO.: 1
OVERSIZED MATERIALS:
GRAVEL: 62
SAND: 29
FINES: 09
D50: 012000

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
	CLASS 1:	
	CLASS 2:	
TOTAL VOLUME: 4560000	CLASS 3:	/4560000/4560000
RECOVERABLE : 4560000	CLASS 4:	
ANNUAL RECOV: 0	CLASS 5:	

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL IIA;*

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: I-403

----------LOCATION AND STATUS----------

LOCAL NAME : INUVIK AIRPORT STUDY NUMBER: 172RKL-IN
SOURCE REFERENCE : RIPLEY, KLOHN & LEONOFF 1972
CROSS REFERENCES :
LOCATION : 6.4 KM E INUVIK AIRPORT NTS MAP SHEET: 107B/7
LOCATION MAP SCALE: 1:125000 SITE PLAN SCALE : 1:36000
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 68-19-00N ZONE-EASTING: 8-569000
LONGITUDE: 133-20-00W AREA: 21 NORTHING: 7578500
CORRIDOR : INUVIK HIGHWAY
KM-POST : 21.0 OFFSET: 0
ACCESS : DISTANCE: 0
CONDITION : ALL WEATHER ROAD
LAND TENURE: CROWN STATUS: DEVELOPED
PAST USE : MATERIAL FOR DEMPSTER HIGHWAY CONSTRUCTION
PERFORMANCE: GOOD

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; DELINEATION; PRODUCTION; REVIEW
DATE: 1972 EXISTING REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	1
DEPTH:	12		

TOPOGRAPHY: IRREGULAR, SLOPING BEDROCK EXPOSURE
SLOPE : GRADUAL TO STEEP
VEGETATION: SCATTERED ASPEN AND WHITE SPRUCE TO 6 M WITH MOSS AND
DRAINAGE : DWARF SHRUBS
PERMAFROST: WELL
ACTIVE LAYER : SITE DESCRIPTION DATE:
GENERIC ORIGIN: BEDROCK
LANDFORM : EXPOSURE
OVERBURDEN: MATERIAL TYPE THICKNESS
GRANULAR :
UNDERLYING: LIMESTONE 12.2
DEVELOPMENT POTENTIAL: SUITABLE
CONSTRAINTS: WILDLIFE RESERVES; BLASTING REQUIRED; DISTANCE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0 SIZE-ANALYSIS - NO.: 0
RESULTS: OVERSIZED MATERIALS:
USC TEST - NO.: 0 GRAVEL:
CLASS: SAND:
PETROGRAPHICS - NO: 0 FINES:
RESULTS: D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES: PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:	
TOTAL VOLUME:	1900000	CLASS 2:	/1900000/1900000
RECOVERABLE :	1900000	CLASS 3:	
ANNUAL RECOV:	0	CLASS 4:	
		CLASS 5:	

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL ILA;*

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: I-407

LOCATION AND STATUS

LOCAL NAME : N END CARIBOU HILLS STUDY NUMBER: I72RKL-1N
SOURCE REFERENCE : RIPLEY, KLOHN & LEONOFF 1972
CROSS REFERENCES :
LOCATION : 61 KM NW INUVIK NTS MAP SHEET: 107B/14
LOCATION MAP SCALE: 1:125000 SITE PLAN SCALE : 1:36000
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 68-51-00N ZONE-EASTING: 8-523000
LONGITUDE: 134-22-00W AREA: 167 NORTHING: 7563700
CORRIDOR : MACKENZIE ICE ROAD
KM-POST : 64.0 OFFSET: 0
ACCESS : DISTANCE: 0
CONDITION : WINTER ICE ROAD;BARGE IN SUMMER
LAND TENURE: INUVIALUIT 7(1)(A)- TUK STATUS: DEVELOPED
PAST USE : OIL EXPLORATION CREWS
PERFORMANCE: GOOD

SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION

INVEST. LEVEL: AIRPHOTO; RECONN; DELINEATION; PRODUCTION; REVIEW
DATE: 1972 EXISTING REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	3	1
DEPTH:	12.2	4.3-4.3-4.3	

TOPOGRAPHY: RIDGED & DISSECTED
SLOPE : COMPLEX;GRADUAL TO STEEP
VEGETATION: WHITE & BLACK SPRUCE IN GULLIES;SLOPES BARE WITH PATCHES
DRAINAGE : MOSS & SHRUBS
PERMAFROST: GOOD
ACTIVE LAYER : SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : TERRACE REMNANTS

OVERBURDEN: MATERIAL TYPE	THICKNESS
GRANULAR : SILT- organics, roots	0.2-0.3-0.3
UNDERLYING: GRAVEL-sand, SAND- some gravel	4.3-6.4-12.2

DEVELOPMENT POTENTIAL: SUITABLE
CONSTRAINTS: WILDLIFE RESERVES; SILTATION; PERMAFRAOST DISTURBANCE; PIT MNGMT & RESTORE

LABORATORY TEST RESULTS AND MATERIAL QUANTITY

MOISTURE - NO.: 15 SIZE-ANALYSIS - NO.: 6
RESULTS: 2-15-73 OVERSIZED MATERIALS:
USC TEST - NO.: 15 GRAVEL: 16-39-54
CLASS: OL-ML/SP-SM/SW SAND: 39-52-74
PETROGRAPHICS - NO: 1 FINES: 3-7-13
RESULTS: 201 D50: 001600-003250-004000
OTHER TESTS:

GRANULAR MATERIAL VOLUMES: PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:	
TOTAL VOLUME:	4560000	CLASS 2:	/4560000/4560000
RECOVERABLE :	4560000	CLASS 3:	
ANNUAL RECOV:	0	CLASS 4:	
		CLASS 5:	

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL ILA;*

INUVIK

Priority Sites

I407 (Caribou Hills):

Although this Tertiary sand and gravel terrace remnant (on Inuvialuit lands, within a proposed IBP site) has been marginally developed for Class 2 materials, it is largely unexplored. Project 7.1 recommends a limited geotechnical drilling program to prove the quantity and quality of the deposit based on projected demands for a total of approximately 135,000 cu m of Class 2 and 3 materials. Project 7.4 also recommend field investigation of this site as an interim alternative to the preferred Source 2.45 (see below).

Supplementary Sites

R28/R29 (Gull Creek Quartzite/ Dolomite):

Both Project 7.1 and Project 7.4 have recommended field investigation of these bedrock sites (on Crown lands), but the former study indicates that this work need not be completed until there is demand for large rock blocks, such as may be required for offshore hydrocarbon production structures. The latter study indicates preference for development of Source R28 based on potentially conflicting alternative land use (i.e. proposed Campbell Hills Territorial Park) in the area. However, previous reconnaissance-level geotechnical and geological studies completed by INAC indicate this source and the less accessible sites at Mt. Fitton in the northern Yukon may be the only deposits in the Western Beaufort region that are technically suitable for production of significant volumes of the largest sizes of quarry rock that may be needed for Beaufort hydrocarbon development.

2.45 (Noell Lake):

Project 7.4 has recommended field investigation to determine the quality and quantity of materials available at this glaciofluvial outwash deposit. Community representatives have indicated a preference for development of overland access to this largely unexplored potential source of relatively high quality materials on Crown lands to continued usage of more costly materials from the more distant Caribou Hills (I407) and YaYa Lakes sources.

I403 (Campbell Lake Quarry):

Project 7.1 has recommended that this existing limestone quarry (on Crown lands) be further investigated as a potential source if there is a future demand for large rock blocks for offshore hydrocarbon production structures. This study suggests that the proposed geotechnical/ geological drilling program be designed to determine the volume of material and size of blocks that might be produced from this deposit. Project 7.4 reports that community representatives do not favour an expanded scale of operations at this source.

312/314 (Husky Lakes):

Project 7.1 has recommended that a geotechnical investigation of these fluvial terrace deposits (on Inuvialuit and Crown lands) be conducted in conjunction with future construction of an Inuvik to Tuktoyaktuk highway (and provided the originally proposed Husky Lakes route was used).

AA (southwest of Inuvik):

Field investigations have been recommended also by Project 7.4 for a previously unidentified area of unknown origin located on Crown lands in the Mackenzie Delta, about 10 km southwest of the community. This potential source was identified by community representatives.

APPENDIX B

Summary of Granular Resources Data for the Community of Aklavik

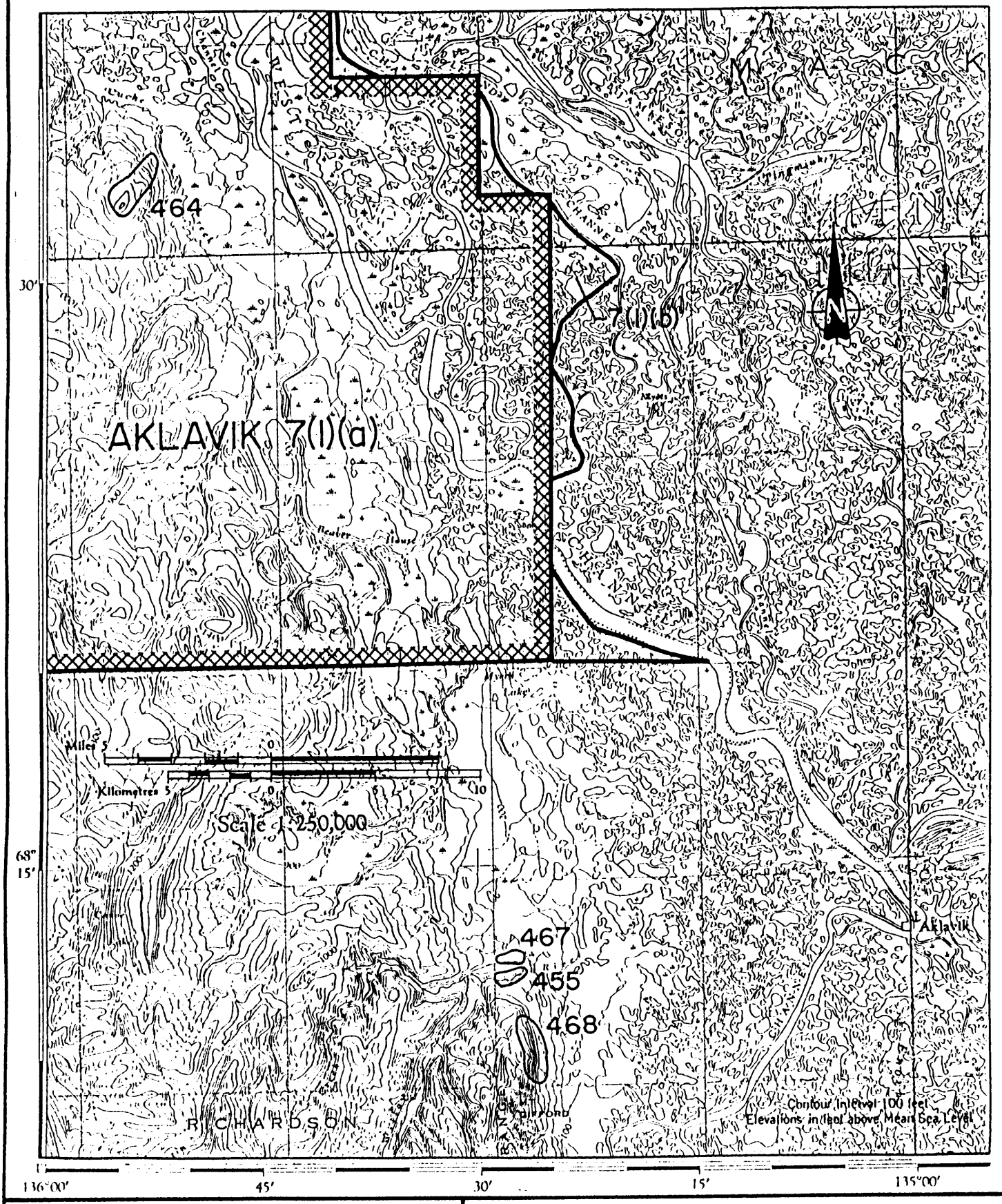

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Figure 5

Location of granular deposits, Aklavik, N.W.T.

CG10346

TABLE 1

REQUIRED VOLUMES OF GRANULAR MATERIALS (DEMAND), IN CUBIC METRES, AND RECOMMENDED SOURCES OF SUPPLY, AKLAVIK, 1987 - 2006 (FROM EBA 1987a)

Class	1987-91	1992-96	1997-2001	2002-06	Totals	Recommended Sources
Class 1	300	0	0	0	300	# YaYa or I 403
Class 2	4 900	0	0	0	4 900	# YaYa, I 407 or I 403
Class 3	42 500	40 000	40 000	40 000	162 500	# 467
Class 4	10 500	0	0	0	10 500	# 467
Class 5	34 400	3 000	3 000	3 000	43 400	# I 402 &/or 468
				TOTAL	221 600	

Note: EBA figures used in this table have been rounded to the nearest 100 cu.m.

TABLE 3

COMPARISON OF GRANULAR RESOURCE SOURCES
AKLAVIK

Source	Use	Environmental and Aesthetic Considerations	Wildlife and Social-Cultural Considerations	Economic Considerations	Comments	Ranking	
						Significance of Impacts	Acceptability of Development
455	Class 3 & 4 needs	Area used by Porcupine Caribou Herd during spring and fall migrations.	Area used for hunting. Potential area for tourism development.	24-km winter ice road required.	Community would like to see all-weather road constructed to the foothills.	Insignificant	Acceptable
464	Class 5 needs	Area used by Porcupine Caribou Herd during spring and fall migrations. If transportation by barge to Beaufort Sea, potential impacts on beluga calving in Shallow Bay and Mackenzie Bay.	Area used for hunting. If transportation by barge to Beaufort Sea, potential impacts on local fishing in the West Channel and on whaling in Shallow Bay and Mackenzie Bay.	51-km winter ice road required. If developed in conjunction with the oil industry, a crusher would likely be located at the source, supporting the use of the site as a regional source for all classes of materials.	Further assessment required once the scale of development is known.	Potentially significant	Requires further assessment.
467	Class 3 needs	Area used by Porcupine Caribou Herd during spring and fall migration.	Area used for hunting. Potential area for tourism development.	24-km winter ice road required.	Community would like to see all-weather road constructed to the foothills.	Insignificant	Acceptable
468	Class 5 needs	Area used by Porcupine Caribou Herd during spring and fall migrations.	Area used for hunting. Potential area for tourism development.	17-km winter ice road required. Site too steep for on-site crushing.	Community would like to see all-weather road constructed to the foothills. Site preparation is required if a crusher were to be located here. Further assessment required.	Insignficant at the scale required by the community; potentially significant if developed as a larger-scale, regional source of supply.	Acceptable at the community scale; regional scale requires further assessment.

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 464

----------LOCATION AND STATUS----------

LOCAL NAME : LOWER SANDSTONE DIVISION STUDY NUMBER: 176H-GYMS
SOURCE REFERENCE : HARDY & ASSOCIATES 1976
CROSS REFERENCES :
LOCATION : 6.5 KM W WEST CHANNEL NTS MAP SHEET: 107B/12
LOCATION MAP SCALE: 1:250000 SITE PLAN SCALE : 1:57600
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 68-32-00N ZONE-EASTING: 8-462000
LONGITUDE: 135-54-00W AREA: 214 NORTHING: 7603000
CORRIDOR : MACKENZIE ICE ROAD
KM-POST : 0.0 OFFSET:
ACCESS : ALONG CHANNELS OF MACKENZIE DELT DISTANCE: 0
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- AKLAVIK STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; TESTPITS
DATE: 1976
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	1
DEPTH:	9.1		

TOPOGRAPHY: IRREGULAR KNOBS & CLIFFS OF BEDROCK
SLOPE : MODERATE TO STEEP
VEGETATION: BARE;PATCHES OF MOSS, SEDGE
DRAINAGE : WELL
PERMAFROST:
ACTIVE LAYER : SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : BEDROCK

MATERIAL TYPE	THICKNESS
OVERBURDEN:	
GRANULAR : QUARTZ, SANDSTONE, ROCK RUBBLE	9.1
UNDERLYING:	

DEVELOPMENT POTENTIAL: FAIR
CONSTRAINTS: DIFFICULT ACCESS; REQUIRES BLASTING & QUARRYING; ENVIRONMENTAL HABITAT

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
RESULTS:
USC TEST - NO.: 0
CLASS:
PETROGRAPHICS - NO: 1
RESULTS: 102
OTHER TESTS: POROSITY%-01-34

SIZE-ANALYSIS - NO.: 0
OVERSIZED MATERIALS:
GRAVEL:
SAND:
FINES:
D50:

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
	CLASS 1:	
TOTAL VOLUME: 5852000	CLASS 2:	/5852000/5852000
RECOVERABLE : 5852000	CLASS 3:	
ANNUAL RECOV: 0	CLASS 4:	
	CLASS 5:	

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL ILA;*

TABLE 2

GRANULAR MATERIAL SOURCES - AKLAVIK
(FROM EBA 1987a)

Source No.	Location	Estimated Volume	Access	Comments
455	24 km west of Aklavik	500 000 m^3 Class 3 (probable)	Tundra/ice road in winter	
464	51 km northwest of Aklavik	20 million m^3 Class 5 (probable)	Tundra/ice road in winter	
467	24 km west of Aklavik	3 million m^3 Class 3 (probable)	Tundra/ice road in winter	
468	17 km west-southwest of Aklavik	10 million m^3 Class 5 (probable)	Tundra/ice road in winter	

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 467

----------LOCATION AND STATUS----------

LOCAL NAME : WILLOW RIVER CANYON STUDY NUMBER: 176II-GYMS
SOURCE REFERENCE : HARDY & ASSOCIATES 1976
CROSS REFERENCES :
LOCATION : 19.3 KM W OF AKLAVIK NTS MAP SHEET: 107B/4E
LOCATION MAP SCALE: 1:250000 SITE PLAN SCALE : 1:63600
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 68-13-00N ZONE-EASTING: 8-478000
LONGITUDE: 135-28-00W AREA: 313 NORTHING: 7567000
CORRIDOR :
KM-POST : 0.0 OFFSET:
ACCESS : ALONG GENTLES SLOPES AND WATER C DISTANCE: 0
CONDITION : WINTER ICE ROAD;STREAM COURSE SUMMER
LAND TENURE: CROWN STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; TESTPITS
DATE: 1976
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	4	1
DEPTH:	4.9-15.4-25.9	1.9-3.2-4.7	

TOPOGRAPHY: BENCH WITH ADJOINING ESCARPMENT
SLOPE : GRADUAL TO STEEP
VEGETATION: LICHENS AND SHRUBS;SOME SPRUCE ON ESCARPMENT EDGES
DRAINAGE : S- WELL;N- POOR TO MODERATE
PERMAFROST:
ACTIVE LAYER : 0.8-1.3-1.8 SITE DESCRIPTION DATE: 10/10/76
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : KAME DELTAS

	MATERIAL TYPE	THICKNESS
OVERBURDEN:	ORGANIC CLAY OR SILT	0-0.3-0.6
GRANULAR :	GRAVEL- some sand	9.1-17.5-25.9
UNDERLYING:		

DEVELOPMENT POTENTIAL: GOOD
CONSTRAINTS: DRAINAGE; NEED PIT DEVELOPMENT; EXCAVATE ALONG ESCARPMENT; WILDLIFE HABITAT

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
RESULTS:
USC TEST - NO.: 4
CLASS: Pt-Cl-ML/GW/GW
PETROGRAPHICS - NO: 1
RESULTS: 137.1
SIZE-ANALYSIS - NO.: 2
OVERSIZED MATERIALS: 3-7-10
GRAVEL: 72-72-72
SAND: 24-25-25
FINES: 3-3-4
D50: 015000-016500-018000
OTHER TESTS: ORGAN_PLATE-01-5; COAL_CONT-01-0.21; [COARSE(FINE)] ABSORPTION%-01-2.11(-01-2.54); SULPH_SD-01-4.37(-01-14.39); SPEC_G-01-25.8(-01-2.59)

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
TOTAL VOLUME:	15200000	CLASS 1:
RECOVERABLE :	15200000	CLASS 2: /15200000/15200000
ANNUAL RECOV:	9120	CLASS 3:
		CLASS 4:
LAST UPDATE:	04/17/88	CLASS 5:

COMPILER: *J. GRIMBLY, J. BICKNELL IIA;*

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 468

----------LOCATION AND STATUS----------

LOCAL NAME : MOUNT GILFORD STUDY NUMBER: 176II-GYMS
SOURCE REFERENCE : HARDY & ASSOCIATES 1976
CROSS REFERENCES :
LOCATION : 20.1 KM W OF AKLAVIK NTS MAP SHEET: 107B/4E
LOCATION MAP SCALE: 1:250000 SITE PLAN SCALE : 1:57600
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 68-10-00N ZONE-EASTING: 8-482000
LONGITUDE: 135-26-00W AREA: 428 NORTHING: 7562000
CORRIDOR :
KM-POST : 0.0 OFFSET:
ACCESS : ACROSS DELTA, STEEP SLOPES AT SI DISTANCE: 0
CONDITION : WINTER ICE ROAD
LAND TENURE: CROWN STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; TESTPITS
DATE: 1976
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	1
DEPTH:	6.1		

TOPOGRAPHY: ESCARPMENT WITH RIDGE AND TALUS FANS
SLOPE : GRADUAL TO STEEP
VEGETATION: GENERALLY BARREN, PATCHES OF TUNDRA
DRAINAGE : WELL
PERMAFROST:
ACTIVE LAYER : SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : ESCARPMENT, BEDROCK RIDGES

	MATERIAL TYPE	THICKNESS
OVERBURDEN:		
GRANULAR :	QUARTZ, SANDSTONE, ROCK RUBBLE	6.1
UNDERLYING:		

DEVELOPMENT POTENTIAL: FAIR
CONSTRAINTS: DIFFICULT ACCESS; REQUIRES BLASTING & QUARRYING; NEEDS FURTHER TESTING

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0 SIZE-ANALYSIS - NO.: 0
RESULTS: OVERSIZED MATERIALS:
USC TEST - NO.: 0 GRAVEL:
CLASS: SAND:
PETROGRAPHICS - NO: 1 FINES:
RESULTS: 102 D50:
OTHER TESTS: POROSITY%-01-22.5

GRANULAR MATERIAL VOLUMES: PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:	
TOTAL VOLUME:	3800000	CLASS 2:	3800000/3800000
RECOVERABLE :	3800000	CLASS 3:	
ANNUAL RECOV:	0	CLASS 4:	
		CLASS 5:	

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL IIA;*

PRELIMINARY RECOMMENDATIONS FOR SITE INVESTIGATION WORK

AKLAVIK

Priority Sites

467 (near Willow Creek):

A limited geotechnical drilling program has been recommended (Project 7.1) to determine the quality of granular material and prove the volumes of granular material that may be required from this kame delta/ terrace deposit (on Crown lands) over the next 20 years (Class 3 - 163,000; Class 4 - 11,000 cu m; and if available, Class 2 - 5,000 cu m). This recommendation is supported by Project 7.4.

Supplementary Sites

468 (Mt. Gifford):

Project 7.1 has recommended that this sandstone deposit (on Crown lands) be investigated as a potential source of granular material if there is a future demand for large rock blocks for offshore hydrocarbon production structures. This study suggests that the proposed geotechnical/ geological drilling program be designed to determine the volume of material and size of blocks that might be produced from this deposit. Project 7.4 has recommended reservation of this source for public community use. The latter study also recommends a comparative assessment of Sources 468, 464 (Ulagvialuk) and other deposits in the Inuvik area as potential sites for a regional source to supply both community and oil and gas industry demands. (Note: see comments on Inuvik sources I403 and R28/R29)

APPENDIX C

Summary of Granular Resources Data for the Community of Tuktoyaktuk

INUVIALUIT 7(l)(b)

TUKTOYAKTUK Community Site

Proposed Pingo Landmark Site

EXCLUDED

TUKTOYAKTUK 7(l)(a)

INUVIALUIT 7(l)(b)

CROWN LAND

ESKIMO LAKES

155 162 160 181 161 183 170 177 163 168 167 164 165

Scale 1:250,000

Miles 5 0 5 10 15

Kilometres 5 0 5 10 15 20 25

Contour Interval 100 feet
Elevations in feet above Mean Sea Level

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Figure 5
Location of granular deposits,
Tuktoyaktuk, N.W.T.

TABLE 1

REQUIRED VOLUMES OF GRANULAR MATERIALS (DEMAND), IN CUBIC METRES, AND RECOMMENDED SOURCES OF SUPPLY, TUKTOYAKTUK, N.W.T. 1987 - 2006 EXCLUDING SPECULATIVE PROJECTS (FROM EBA 1987)

Class	1987-91	1992-96	1997-2001	2002-06	Totals	Recommended Sources
Class 1	5 400	15 000	5 000	5 000	30 400	- 177, 155 - 168
Class 2	62 300	65 000	5 000	5 000	137 300	- 177, 155
Class 3	27 000	20 400	20 400	20 400	88 200	- 181, 183, 177 or 155
Class 4	0	40 000	0	0	40 000	- 177 or 155
Class 5	0	20 000	0	0	20 000	- I 403 or R 28/29 (Inuvik)
				TOTAL	315 900	

Note: EBA figures used in this table have been rounded to the nearest 100 cu.m.

TABLE 2

REQUIRED VOLUMES OF GRANULAR MATERIALS (DEMAND), IN CUBIC METRES, AND RECOMMENDED SOURCES OF SUPPLY, TUKTOYAKTUK, N.W.T. 1987 - 2006 INCLUDING SPECULATIVE PROJECTS (FROM EBA 1987)

Class	1987-91	1992-96	1997-2001	2002-06	Totals	Recommended Sources
Class 1	5 400	15 000	5 000	5 000	30 400	- 177, 155 - 168
Class 2	62 300	1,979 100	1,905 000	5 000	3,951 400	- 163, 164 or 165 - 177, 155
Class 3	1,741 100	2,911 400	120 400	120 400	4,893 300	- 168, 169, 170, 171, 172, 173, 177, 312, 314 & Parsons Lake - 181, 183, 155
Class 4	0	40 000	0	0	40 000	- 177 or 155
Class 5	0	20 000	0	0	20 000	- I 403 or R 28/29 (Inuvik)
				TOTAL	8,935 100	

Note: EBA figures used in this table have been rounded to the nearest 100 cu.m.

TABLE 3

GRANULAR MATERIAL SOURCES - TUKTOYAKTUK
(FROM EBA 1987 Unless Noted Otherwise)

Source No.	Location	Estimated Volume	Access	Comments
155	32 km southwest of Tuktoyaktuk	1 160 000 m^3 Class 3 (probable) 2 600 000 m^3 Class 3 (prospective)	Tundra/ice road in winter	330 000 m^3 Class 2, 531 000 m^3 Class 3, 42 000 m^3 Class 4 (proven - Hardy BBT Limited 1987a) on Inuvialuit 7(1)(b) lands
160/ 161	East side of Tuktoyaktuk Harbour	128 000 m^3 Class 2 (probable) 622 000 m^3 Class 3 (probable)	Tundra/ice road in winter; barge to stockpiles in summer	
162	Northern half of Tuktoyaktuk Harbour - underwater	70 000 m^3 Class 1 (probable), 1 050 000 m^3 Class 1 (prospective); 285 000 m^3 Class 3 (probable), 4 275 000 m^3 Class 3 (prospective)	Tundra/ice road in winter; barge in summer	
163	35 km northwest of Tuktoyaktuk	10 million m^3 Class 3 (probable), 150 million m^3 Class 3 (prospective)	Tundra/ice road in winter	

TABLE 3 (Continued)

GRANULAR MATERIAL SOURCES - TUKTOYAKTUK
(FROM EBA 1987 Unless Noted Otherwise)

Source No.	Location	Estimated Volume	Access	Comments
164	35 km east of Tuktoyaktuk	534 000 m^3 Class 2, (probable), 890 000 m^3 Class 2, (prospective), 1 068 000 m^3 Class 3 (probable), 1 780 000 m^3 Class 3 (prospective)	Tundra/ice road in winter	
165	32 km southeast of Tuktoyaktuk	85 000 m^3 Class 2, (probable) 1.3 million m^3 Class 2 (prospective)	Tundra/ice road in winter	
167	27 km southeast of Tuktoyaktuk	220 000 m^3 Class 2 (probable), 880 000 m^3 Class 2 (prospective); 220 000 m^3 Class 3 (probable), 880 000 m^3 Class 3 (prospective)	Tundra/ice road in winter	
168	25 km southeast of Tuktoyaktuk	70 000 m^3 Class 1 (proven), 280 000 m^3 Class 3 (proven) 530 000 m^3 Class 3 (probable)	Tundra/ice road in winter	
170	32 km south of Tuktoyaktuk	61 000 m^3 Class 1 (probable) 458 000 m^3 Class 1 (prospective) 549 000 m^3 Class 3 (probable) 4 122 000 m^3 Class 3 (prospective)	Tundra/ice road in winter	

TABLE 3 (Continued)

GRANULAR MATERIAL SOURCES - TUKTOYAKTUK
(FROM EBA 1987 Unless Noted Otherwise)

Source No.	Location	Estimated Volume	Access	Comments
177	22 km south of Tuktoyaktuk	317 000 m^3 Class 1 (probable) 634 000 m^3 Class 1 (prospective) 317 000 m^3 Class 2 (probable) 634 000 m^3 Class 2 (prospective) 317 000 m^3 Class 3 (probable) 634 000 m^3 Class 3 (prospective)	Tundra/ice road in winter	
181	8 to 12 km southeast of Tuktoyaktuk	260 000 m^3 Class 3 (proven)	Tundra/ice road in winter	
183	12 to 17 km southeast of Tuktoyaktuk	118 500 m^3 Class 3 (proven)	Tundra/ice road in winter	
Ya-Ya Lakes	85 km southwest of Tuktoyaktuk	7.5 million m^3 Class 2 (proven) 8.8 million m^3 Class 2 (probable)	Tundra/ice road in winter	On Inuvialuit 7(1)(b) lands

TABLE 4

PREFERRED GRANULAR RESOURCE SOURCES
TUKTOYAKTUK

Source	Use	Environmental and Aesthetic Considerations	Wildlife and Social-Cultural Considerations	Economic Considerations	Comments	Ranking	
						Significance of Impacts	Acceptability of Development
155	Class 1 to 4 needs (non-speculative)	Potential sedimentation of Kittizazuit Creek and subsequent damage to fish populations.	Kittizazuit Creek important for fishing, whaling, and camping, and for its archaeological and cultural significance.	32-km winter road required; economic importance of fishing and whaling activities.	Workshop participants recommend the reservation of this source for small - and medium-scale public and Inuvialuit projects.	Potentially significant	Acceptable providing mitigative measures in place.
160/161	Class 2 and 3 needs (non-speculative)	Sedimentation and contamination of Kudluk Lake - community's main water supply; potential deterioration of water quality in Water Creek.	Too many cleared areas west of Tuktoyaktuk Harbour.	Low costs of development because of location near community.	Closed to development in 1985. Hamlet requested southeast portion of Source 161 be open for residential lot development. Gravel from the source could be used for house pads. Approval given to this request because area is far enough away from water sources.	Potentially significant	Acceptable if buffer between development and water sources maintained.
162 Tuk Harbour	Class 2 and 3 needs (speculative)	Potential sedimentation of Tuktoyaktuk Harbour and subsequent damage to fish populations.	Fishing camps and fishing resources of Tuktoyaktuk Harbour are of considerable social and cultural importance to the community.	Economic importance of fishing and whaling activities.	Workshop participants recommend further investigation of developing Source 162 not be undertaken.	Significant	Unacceptable
163,164, 165	Class 2 and 3 needs (speculative)	Potential stream contamination at Source 163.	Potential interference with traditional fishing, trapping and camping activities near Husky Lakes and the trail to Husky Lakes if Sources 164 or 165 developed.	32 to 35-km winter ice road required; economic importance of trapping and fishing activities.	Impacts can be reduced to an acceptable level with proper planning.	Potentially significant	Acceptable, provided mitigative measures in place.

TABLE 4 (Continued)

PREFERRED GRANULAR RESOURCE SOURCES
TUKTOYAKTUK

Source	Use	Environmental and Aesthetic Considerations	Wildlife and Social-Cultural Considerations	Economic Considerations	Comments	Ranking	
						Significance of Impacts	Acceptability of Development
167	Class 3 needs (speculative)	Potential sedimentation and contamination of Husky Lakes.	Potential interference with traditional fishing, trapping, and camping activities near Husky Lakes.	27-km winter road required; economic importance of trapping and fishing activities.	Confirmation of quality and quantity of material required; development should be as part of a regional granular materials plan; development/environmental protection plan is required; access roads must be removed from Husky Lakes trail; access must be restricted to winter; excavation must be regularly monitored.	Potentially significant	Acceptable if conditions under "comments" are met.
168	Class 1 to 4 needs	Potential for sedimentation and contamination of Husky Lakes.	Potential interference with traditional fishing, trapping, and camping activities near Husky Lakes.	25-km winter road required a greater portion of which is on tundra than with the winter road to Source 155; economic importance of trapping and fishing activities.	Development/reclamation plan should be produced for this source; access roads must be away from Husky Lakes trail; access must be restricted to winter; excavation must be regularly monitored. Source should be reserved for future use of the community.	Potentially significant	Acceptable if conditions under "comments" are met.
170	Class 2 and 3 needs (speculative)	None identified	8-km from Husky Lakes; potential interference with traditional fishing, trapping, and camping activities in the area.	32-km winter road required; economic importance of trapping and fishing activities.	Confirmation of quality and quantity of material required; development should be part of a regional granular materials plan.	Insignificant	Acceptable if confirmed and part of regional plan.

TABLE 4 (Continued)

PREFERRED GRANULAR RESOURCE SOURCES
TUKTOYAKTUK

Source	Use	Environmental and Aesthetic Considerations	Wildlife and Social-Cultural Considerations	Economic Considerations	Comments	Ranking	
						Significance of Impacts	Acceptability of Development
177	Class 3 needs (speculative)	None identified	None identified	22-km winter road required.	Confirmation of quality and quantity of material required; development should be part of a regional granular materials plan.	Insignificant	Acceptable if confirmed and part of regional plan.
181/183	Class 3 needs	Deposits are shallow, therefore, several pits would be required and a large area disturbed.	Increased number of small pits in Tuktoyaktuk area.	8 to 17-km winter road required.	Community is opposed to development of these pits.	Significant	Unacceptable
312, 314 and Parsons Lake	Inuvik-Tuktoyaktuk highway needs	Not discussed	Potential interference with traditional fishing, trapping, and camping activities near the Husky Lakes area.	Not discussed	Not discussed at the workshop since the community is fundamentally opposed to the proposed highway routing along the Husky Lakes.	-	-
Ya-Ya Lakes	Class 1 and 2 needs	Existing pit; massive ice present.	Existing pit; none identified.	85-km winter road required.	Not discussed at workshop; Pits are the preferred source of higher quality materials for Inuvik. Quantities are such that use by Tuktoyaktuk would not effect Inuvik use.	Insignificant	Acceptable

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 155

----------LOCATION AND STATUS----------

STUDY NUMBER: 172RKL-Z1

LOCAL NAME : 155
SOURCE REFERENCE : RIPLEY, KLOHN & LEONOFF 1972
CROSS REFERENCES : 187H-1553, 186H-SI1, 186H-MS2
LOCATION : 34 KM SW OF TUK
NTS MAP SHEET: 107C/2W
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:36000
DIGITIZER NO. :
DIGITIZER NO.:
ZONE-EASTING: 8-554000
LATITUDE : 69-16-00N
LONGITUDE: 133-37-00W AREA: 125
NORTHING: 7682500
CORRIDOR : MACKENZIE ICE ROAD
KM-POST : 0.0
OFFSET:
ACCESS : ALONG KITTIGAZUIT CREEK THEN OVE DISTANCE: 0
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(B)- INUVIK STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; DELINEATION; PRODUCTION
DATE: 1972
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	2	0
DEPTH:		0-0.3-0.6	

TOPOGRAPHY: ROLLING, NUMEROUS LAKES
SLOPE : GRADUAL TO STEEP
VEGETATION: MOSS AND LICHENS, SCATTERED DWARF BIRCH AND WILLOW
DRAINAGE : WELL
PERMAFROST: MASSIVE GROUND ICE
ACTIVE LAYER : 0.6
SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : BENCH

	MATERIAL TYPE	THICKNESS
OVERBURDEN:	SILT- organic	0.3
GRANULAR :	SAND- some gravel, little silt	0.9-1.2-1.5
UNDERLYING:	MASSIVE ICE	

DEVELOPMENT POTENTIAL: POOR
CONSTRAINTS: SILTATION; ENVIRONMENTAL CONCERNS; HIGH ICE CONTENT; MACKENZIE REINDEER

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 2
RESULTS: 11-13-15
USC TEST - NO.: 2
CLASS: OL/SM-SP/Sm
PETROGRAPHICS - NO: 0
RESULTS:
OTHER TESTS:

SIZE-ANALYSIS - NO.: 2
OVERSIZED MATERIALS:
GRAVEL: 20-22-24
SAND: 55-68-80
FINES: 2-16-29
D50: 000260-000290-000320

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
		CLASS 1:
TOTAL VOLUME:	760000	CLASS 2:
RECOVERABLE :	760000	CLASS 3: /760000/760000
ANNUAL RECOV:	0	CLASS 4:
		CLASS 5:

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL ILA;*

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 155S

----------LOCATION AND STATUS----------

LOCAL NAME : KITTIGAZUIT CREEK
STUDY NUMBER: 187H-1553
SOURCE REFERENCE : HARDY BBT 1987
CROSS REFERENCES : I86H-SI1, I86H-MS2, I72RKL-Z1
LOCATION : 35 KM SW OF TUK
NTS MAP SHEET: 107C/2W
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:50000
DIGITIZER NO. :
DIGITIZER NO.:
LATITUDE : 69-12-45N
ZONE-EASTING: 8-556250
LONGITUDE: 133-34-40W AREA: 34
NORTHING: 7678550
CORRIDOR : MACKENZIE ICE ROAD
OFFSET: 10000L;7000R
KM-POST : 40.0
DISTANCE: 10000
ACCESS : 10 KM OVERLAND
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(B)- INUVIK STATUS: UNDEVELOPED
PAST USE : EXPLORATION RKL 1972;STOCKPILING GRUBEN'S 19
PERFORMANCE: UNKNOWN

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: DELINEATION; PRODUCTION DRILLING
DATE: 1987
GEOPHYSICS: UNKNOWN

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	22	1	0
DEPTH:		0.8	2.0-4.0-6.1

TOPOGRAPHY: BROAD, FLAT TOPPED RIDGES
SLOPE : MODERATE-STEEP AT PERIMTR
VEGETATION: SHRUB HEATH TUNDRA
DRAINAGE : MODERATE TO WELL
PERMAFROST: MASSIVE ICE;WELL BONDED SANDS
ACTIVE LAYER : 0.8-1.1-1.3
SITE DESCRIPTION DATE: 09/11/86
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : KAME;OUTWASH TERRACES

	MATERIAL TYPE	THICKNESS
OVERBURDEN:	PEAT- silty clay, fine sand	--2.1
GRANULAR :	SAND & GRAVEL- some silty sand	3.9
UNDERLYING:	FROZEN FINE SAND & MASSIVE ICE	

DEVELOPMENT POTENTIAL: GOOD
CONSTRAINTS: WATERWAY SILTATION; MASSIVE ICE CREATES THAW PONDS; REQUIRES PIT MANAGEMENT

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 34
SIZE-ANALYSIS - NO.: 28
RESULTS: 4-11-23
OVERSIZED MATERIALS: LOW
USC TEST - NO.: 37
GRAVEL: 15-47-88
CLASS: SP-SM/GW-GP/GW
SAND: 8-42-75
PETROGRAPHICS - NO: 4
FINES: 4-10-25
RESULTS: 144-151-158
D50: 004000-053000-380000
OTHER TESTS: LA_ABRASION-02-19.1; ORGAN_CONT-02-4.75; SOIL_SAL-03-2.2

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
	CLASS 1:	
TOTAL VOLUME: 257500	CLASS 2:	1415000/1415000/1415000
RECOVERABLE : 515000	CLASS 3:	109500/109500/109500
ANNUAL RECOV: 200000	CLASS 4:	6500/6500/6500
	CLASS 5:	

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL JLA;R. PENNEL HARDY BBT;*

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 163

----------LOCATION AND STATUS----------

LOCAL NAME : HUTCHINSON BAY
STUDY NUMBER: 177H-MS
SOURCE REFERENCE : HARDY & ASSOCIATES 1977
CROSS REFERENCES : 186H-SI1, 186H-MS2
LOCATION : 35.2 KM NE OF TUK
NTS MAP SHEET: 107C/9E
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:57600
DIGITIZER NO. :
DIGITIZER NO.:
LATITUDE : 69-37-00N
ZONE-EASTING: 8-607000
LONGITUDE: 132-14-00W AREA: 636
NORTHING: 7721000
CORRIDOR : WINTER ICE ROAD
OFFSET:
KM-POST : 35.2
DISTANCE: 0
ACCESS : OVERLAND
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(B)- TUK
STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; TESTPITS; LAB ANALYSIS
DATE: 1977
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	1	0
DEPTH:		2.1	

TOPOGRAPHY: ROLLING, HUMMOCKY
SLOPE : GRADUAL
VEGETATION: BIRCH HEATH TUNDRA
DRAINAGE : EXCELLENT
PERMAFROST:
ACTIVE LAYER : 0-0.5-0.9
SITE DESCRIPTION DATE: 07/17/77
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : OUTWASH PLAIN

MATERIAL TYPE	THICKNESS
OVERBURDEN: PEAT and silt	--0.3
GRANULAR : SAND- some silt	3.0
UNDERLYING:	

DEVELOPMENT POTENTIAL: GOOD
CONSTRAINTS: LONG DISTANCE; INVESTIGATION LEVEL

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
SIZE-ANALYSIS - NO.: 0
RESULTS:
OVERSIZED MATERIALS:
USC TEST - NO.: 0
GRAVEL:
CLASS: OL/SP/
SAND:
PETROGRAPHICS - NO: 0
FINES:
RESULTS:
D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES:

PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:
TOTAL VOLUME:	65400000	CLASS 2:
RECOVERABLE :	7296000	CLASS 3:
ANNUAL RECOV:	0	CLASS 4: /65400000/
		CLASS 5:

LAST UPDATE: 04/17/88 COMPILER: J. GRUMBLY, J. RICKNELL (EA); A. HANNA HARDY BBT;

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 164

----------LOCATION AND STATUS----------

LOCAL NAME : ESKIMO LAKES
SOURCE REFERENCE : HARDY & ASSOCIATES 1977
CROSS REFERENCES : 186H-S11
LOCATION : 35.2 KM E OF TUK
LOCATION MAP SCALE: 1:250000
DIGITIZER NO. :
LATITUDE : 69-27-00N
LONGITUDE: 132-07-00W
CORRIDOR : WINTER ICE ROAD
KM-POST : 35.2
ACCESS : OVERLAND
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(B)- TUK
PAST USE :
PERFORMANCE:

STUDY NUMBER: 177H-MS
NTS MAP SHEET: 107C 8E
SITE PLAN SCALE : 1:56400
DIGITIZER NO.:
ZONE-EASTING: 8-611000
NORTHING: 7708000
AREA: 423
OFFSET:
DISTANCE: 0
STATUS: UNDEVELOPED

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; TESTPITS; LAB ANALYSIS
DATE: 1977
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	3	0
DEPTH:		1.2-1.6-1.9	

TOPOGRAPHY: ROLLING, HUMMOCKY
SLOPE : GRADUAL
VEGETATION: BIRCH HEATH TUNDRA
DRAINAGE : EXCELLENT
PERMAFROST: MASSIVE ICE
ACTIVE LAYER : -0.9-
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : OUTWASH PLAIN

SITE DESCRIPTION DATE: 07/17/77

MATERIAL TYPE	THICKNESS
OVERBURDEN: THIN TO NONE	
GRANULAR : SAND- thin gravel	-3.1-
UNDERLYING: MASSIVE ICE	

DEVELOPMENT POTENTIAL: GOOD
CONSTRAINTS: LONG DISTANCE; INVESTIGATION LEVEL

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
RESULTS:
USC TEST - NO.: 1
CLASS: /SM-SP/GM-GW
PETROGRAPHICS - NO: 0
RESULTS:
OTHER TESTS: ORGAN_PLATE-01-4

SIZE-ANALYSIS - NO.: 1
OVERSIZED MATERIALS:
GRAVEL: 63
SAND: 29
FINES: 8
D50: 038000

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
TOTAL VOLUME:	2660000	CLASS 1:
RECOVERABLE :	2660000	CLASS 2:
ANNUAL RECOV:	0	CLASS 3: /2660000/
		CLASS 4:
		CLASS 5:

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL IIA; A. HANNA HARDY BBT;*

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 165

LOCATION AND STATUS

LOCAL NAME : ESKIMO LAKES
SOURCE REFERENCE : HARDY & ASSOCIATES 1977
CROSS REFERENCES : 186H-S11, 172RKL-Z1: 153
LOCATION : 32 KM SE OF TUK
LOCATION MAP SCALE: 1:250000
DIGITIZER NO. :
LATITUDE : 69-24-00N
LONGITUDE: 132-07-00W AREA: 105
CORRIDOR : WINTER ICE ROAD
KM-POST : 32.0
ACCESS :
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(B)- TUK
PAST USE :
PERFORMANCE:

STUDY NUMBER: 177H-MS
NTS MAP SHEET: 107C/8E
SITE PLAN SCALE : 1:56400
DIGITIZER NO.:
ZONE-EASTING: 8-610000
NORTHING: 7701000
OFFSET:
DISTANCE: 0
STATUS: UNDEVELOPED

SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION

INVEST. LEVEL: AIRPHOTO; RECONN
DATE: 1977
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: ROLLING, HUMMOCKY
SLOPE : GRADUAL
VEGETATION: DWARF BIRCH AND WILLOW
DRAINAGE : EXCELLENT
PERMAFROST: MASSIVE ICE
ACTIVE LAYER : > 0.9
SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : OUTWASH PLAIN;KAME

MATERIAL TYPE	THICKNESS
OVERBURDEN: PEAT- silt	< 0.9
GRANULAR : SAND- gravel	9.1
UNDERLYING: MASSIVE ICE	

DEVELOPMENT POTENTIAL: GOOD
CONSTRAINTS: LONG DISTANCE; INVESTIGATION LEVEL

LABORATORY TEST RESULTS AND MATERIAL QUANTITY

MOISTURE - NO.: 0
RESULTS:
USC TEST - NO.: 0
CLASS:
PETROGRAPHICS - NO: 0
RESULTS:
OTHER TESTS:

SIZE-ANALYSIS - NO.: 0
OVERSIZED MATERIALS:
GRAVEL:
SAND:
FINES:
D50:

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
	CLASS 1:	
TOTAL VOLUME: 1292000	CLASS 2:	/1292000/
RECOVERABLE : 1292000	CLASS 3:	
ANNUAL RECOV: 0	CLASS 4:	
	CLASS 5:	

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL IIA;A. HANNA HARDY BBT;*

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 167

----------LOCATION AND STATUS----------

STUDY NUMBER: 1771-MS

LOCAL NAME : ESKIMO LAKES
SOURCE REFERENCE : HARDY & ASSOCIATES 1977
CROSS REFERENCES : 172RKL-MS2: T-113
LOCATION : 27.2 KM SE OF TUK
NTS MAP SHEET: 107C/8E
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:56400
DIGITIZER NO. :
DIGITIZER NO.:
LATITUDE : 69-17-00N
ZONE-EASTING: 8-598000
LONGITUDE: 132-18-00W AREA: 106
NORTHING: 7688000
CORRIDOR : WINTER ICE ROAD
KM-POST : 27.2
OFFSET:
DISTANCE: 0
ACCESS : OVERLAND
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- TUK
STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; TESTPITS; LAB ANALYSIS
DATE: 1977
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	2	0
DEPTH:		1.2-1.4-1.5	

TOPOGRAPHY: ROLLING, HUMMOCKY
SLOPE : GRADUAL
VEGETATION: SHRUBBY TUNDRA WITH BARE PATCHES
DRAINAGE : EXCELLENT
PERMAFROST: MASSIVE ICE POSSIBILITY
ACTIVE LAYER : 0.9 >
SITE DESCRIPTION DATE: 07/24/77
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : OUTWASH PLAIN;KAME COMPLEX

	MATERIAL TYPE	THICKNESS
OVERBURDEN:	PEAT	< 0.6
GRANULAR :	SAND- gravel	6.1
UNDERLYING:		

DEVELOPMENT POTENTIAL: FAIR
CONSTRAINTS: DISTANCE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
RESULTS:
USC TEST - NO.: 0
CLASS: ML/SW-SP-SM/GW-GM
PETROGRAPHICS - NO: 0
RESULTS:
OTHER TESTS:

SIZE-ANALYSIS - NO.: 0
OVERSIZED MATERIALS:
GRAVEL:
SAND:
FINES:
D50:

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
		CLASS 1:
TOTAL VOLUME:	1748000	CLASS 2:
RECOVERABLE :	1748000	CLASS 3: /1748000/
ANNUAL RECOV:	0	CLASS 4:
		CLASS 5:

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL ILA; A. HANNA HARDY BBT;*

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 168

LOCATION AND STATUS

STUDY NUMBER: 1771I-MS

LOCAL NAME : ESKIMO LAKES
SOURCE REFERENCE : HARDY & ASSOCIATES 1977
CROSS REFERENCES : 186I-SI1, 183BBT-2S
LOCATION : 25.6 KM SE OF TUK
NTS MAP SHEET: 107C/8W
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:56400
DIGITIZER NO. :
DIGITIZER NO.:
LATITUDE : 69-17-00N
ZONE-EASTING: 8-592000
LONGITUDE: 132-37-00W AREA: 26
NORTHING: 7686000
CORRIDOR : WINTER ICE ROAD
KM-POST : 25.6
OFFSET:
DISTANCE: 0
ACCESS :
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- TUK
STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION

INVEST. LEVEL: AIRPHOTO; RECONN; TESTPITS; LAB ANALYSIS
DATE: 1977
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	2	0
DEPTH:		1.1-1.3-1.4	

TOPOGRAPHY: ROLLING, HUMMOCKY
SLOPE : GRADUAL
VEGETATION: SHRUBBY TUNDRA SOME BARE PATCHES
DRAINAGE : EXCELLENT
PERMAFROST:
ACTIVE LAYER : 0.9 >
SITE DESCRIPTION DATE: 07/23/77
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : OUTWASH PLAIN;KAME COMLPEX;ESKER RIDGE

MATERIAL TYPE	THICKNESS
OVERBURDEN: SILT	0--0.9
GRANULAR : SAND- gravel	6.1
UNDERLYING:	

DEVELOPMENT POTENTIAL: FAIR
CONSTRAINTS: DISTANCE; FURTHER INVESTIGATION

LABORATORY TEST RESULTS AND MATERIAL QUANTITY

MOISTURE - NO.: 0
RESULTS:
USC TEST - NO.: 1
CLASS: ML/SM-SW/GW
PETROGRAPHICS - NO: 0
RESULTS:
OTHER TESTS: ORGAN PLATE-01-5

SIZE-ANALYSIS - NO.: 1
OVERSIZED MATERIALS: 6.3
GRAVEL: 55
SAND: 36.6
FINES: 2.1
D50: 009000

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
	CLASS 1:	/836000/
TOTAL VOLUME: 836000	CLASS 2:	
RECOVERABLE : 836000	CLASS 3:	
ANNUAL RECOV: 0	CLASS 4:	
	CLASS 5:	

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL IIA;A. HANNA HARDY BBT;*

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 168

----------LOCATION AND STATUS----------

STUDY NUMBER: 183RBT-2S

LOCAL NAME : 168, ESKIMO LAKES
SOURCE REFERENCE : BBT GEOTECHNICAL 1983
CROSS REFERENCES : I86H-S11, I77H-MS
LOCATION : 25 KM SE TUK
NTS MAP SHEET: 107C 8W
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:50000
DIGITIZER NO. :
DIGITIZER NO.:
LATITUDE : 69-16-00N
ZONE-EASTING: 8-591500
LONGITUDE: 132-37-00W AREA: 938
NORTHING: 7684000
CORRIDOR : IMPERIAL OIL ICE ROAD
OFFSET:
KM-POST : 24.0
DISTANCE: 10500
ACCESS : PLOWED OVERLAND ACCESS TO 168
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- TUK
STATUS: PARTIALLY DEVELOPE
PAST USE : EXPLORATION RKL 1972
PERFORMANCE: FAIR

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: DELINEATION; PRODUCTION DRILLING
DATE: 1983
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	8	0	0
DEPTH:			5.4-8.3-10.5

TOPOGRAPHY: RIDGE
SLOPE : GENTLE
VEGETATION: LOW SHRUBBY TUNDRA
DRAINAGE : MODERATELY WELL
PERMAFROST: MASSIVE ICE
ACTIVE LAYER : 1.8-1.9-2.0
SITE DESCRIPTION DATE: 03/19/83
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : ESKER;KAME

MATERIAL TYPE	THICKNESS
	-1.0-
OVERBURDEN: PEAT- organic cover	4.5-7.5-10.5
GRANULAR : GRAVEL- sand, little silt	
UNDERLYING: CLAY TILL	

DEVELOPMENT POTENTIAL: GOOD
CONSTRAINTS: ENVIRONMENTAL CONCERNS; WINTER EXTRACTION ONLY
ECONOMICALLY FEASABLE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 47
RESULTS: 2-10-52
USC TEST - NO.: 47
CLASS: Cl-SM/SW-GW/GW-SW
PETROGRAPHICS - NO: 3
RESULTS: 116-213-292
OTHER TESTS: ORGAN_PLATE-10-3.8; LA_ABRASION-03-14.6; [COARSE(FINE)]
ABSORPTION%-03-0.75(-03-1.24);
SPEC_G_BSSD-03-2.62(-03-2.63);
SULPH_SD_MG/NA-02-4.4(-02-9.1)

SIZE-ANALYSIS - NO.: 38
OVERSIZED MATERIALS:
GRAVEL: 33-62-89
SAND: 10-36-67
FINES: 0.3-1-3
D50: 000650-005610-018000

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
TOTAL VOLUME:	150000000	CLASS 1: 600000/600000/150000000
RECOVERABLE :	150000000	CLASS 2:
ANNUAL RECOV:	150000	CLASS 3:
		CLASS 4:
		CLASS 5:

LAST UPDATE: 04/17/88
COMPILER: J. GRUMBLY, J. BICKNELL IIA;

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 177

----------LOCATION AND STATUS----------

STUDY NUMBER: 177H-MS

LOCAL NAME : TUK AREA
SOURCE REFERENCE : HARDY & ASSOCIATES 1977
CROSS REFERENCES : 186H-S11
LOCATION : 22.4 KM S OF TUK
NTS MAP SHEET: 107C/8W
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:57600
DIGITIZER NO. :
DIGITIZER NO.:
ZONE-EASTING: 8-581000
LATITUDE : 69-16-00N
LONGITUDE: 132-54-00W AREA: 106
NORTHING: 7685000
CORRIDOR : WINTER ICE ROAD
KM-POST : 22.4
OFFSET: 1600L
DISTANCE: 1600
ACCESS :
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- TUK
STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; TESTPITS; LAB ANALYSIS
DATE: 1977
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	5	0
DEPTH:		1.2-1.6-2.1	

TOPOGRAPHY: ROLLING, HUMMOCKY
SLOPE : GRADUAL
VEGETATION: SHRUBBY TUNDRA
DRAINAGE : EXCELLENT
PERMAFROST: MASSIVE ICE POSSIBLE
ACTIVE LAYER : 0.3-0.6-0.9
SITE DESCRIPTION DATE: 07/23/77
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : OUTWASH PLAIN

MATERIAL TYPE	THICKNESS
OVERBURDEN: PEAT- some silt	0--1.5
GRANULAR : SAND- gravel	4.6
UNDERLYING: ICE	

DEVELOPMENT POTENTIAL: GOOD
CONSTRAINTS: LIMITED EXPLORATION; DISTANCE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
SIZE-ANALYSIS - NO.: 2
RESULTS:
OVERSIZED MATERIALS:
USC TEST - NO.: 2
GRAVEL: 21-43-65
CLASS: ML/SW-SP/GP-GW
SAND: 33-54-75
PETROGRAPHICS - NO: 0
FINES: 2-3-3
D50: 000420-004800-009200
RESULTS:
OTHER TESTS: ORGAN_PLATE-03-4.3; [COARSE(FINE)]
ABSORPTION%-01-1.78(-01-1.96);
SPEC_G_BSSD-01-2.59(-01-2.68);
SULPH_SD-01-9.71(-01-9.92)

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
TOTAL VOLUME:	19000000	CLASS 1:
RECOVERABLE :	19000000	CLASS 2: /19000000/
ANNUAL RECOV:	0	CLASS 3:
		CLASS 4:
		CLASS 5:

LAST UPDATE: 04/17/88
COMPILER: J. GRUMBLY, J. BICKNELL (IAA).

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 170

----------LOCATION AND STATUS----------

LOCAL NAME : TUK AREA
STUDY NUMBER: 1771I-MS
SOURCE REFERENCE : HARDY & ASSOCIATES 1977
CROSS REFERENCES : I86H-S11
LOCATION : 32 KM S OF TUK
NTS MAP SHEET: 107C 2E
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:56400
DIGITIZER NO. :
DIGITIZER NO.:
ZONE-EASTING: 8-578000
LATITUDE : 69-10-00N
LONGITUDE: 133-00-00W AREA: 211
NORTHING: 7674000
CORRIDOR : WINTER ICE ROAD
OFFSET: 4800L
KM-POST : 32.0
DISTANCE: 4800
ACCESS : OVERLAND
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(A)&(B)- TUK STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; TESTPITS; LAB ANALYSIS; SUMMARY
DATE: 1977
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	4	0
DEPTH:		1.2-1.3-1.4	

TOPOGRAPHY: ROLLING, HUMMOCKY
SLOPE : GRADUAL
VEGETATION: DWARF BIRCH, WILLOW, MOSS
DRAINAGE : EXCELLENT
PERMAFROST:
ACTIVE LAYER : 0.3-0.6-0.9 SITE DESCRIPTION DATE: 07/22/77
GENERIC ORIGIN: GLAVIOFLUVIAL
LANDFORM : OUTWASH PLAIN

	MATERIAL TYPE	THICKNESS
OVERBURDEN:	SILT- peat with rootlets	0--1.5
GRANULAR :	SAND- thin gravel, little silt	9.1
UNDERLYING:		

DEVELOPMENT POTENTIAL: FAIR
CONSTRAINTS: DISTANCE; DETAILED EXPLORATION

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
SIZE-ANALYSIS - NO.: 1
RESULTS:
OVERSIZED MATERIALS:
USC TEST - NO.: 1
GRAVEL: 51.4
CLASS: Pt-Cl/Sm-Sp/Gp-Gm-GW
SAND: 46.9
PETROGRAPHICS - NO: 0
FINES: 1.7
RESULTS:
D50: 004600
OTHER TESTS: ORGAN_PATE-01-3

GRANULAR MATERIAL VOLUMES:

PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:
TOTAL VOLUME:	4560000	CLASS 2:
RECOVERABLE :	4560000	CLASS 3: /4560000/
ANNUAL RECOV:	0	CLASS 4:
		CLASS 5:

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL IIA;A. HANNA HARDY BBT;*

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 312

----------LOCATION AND STATUS----------

STUDY NUMBER: 172RKL-23

LOCAL NAME : ESKIMO LAKES
SOURCE REFERENCE : RIPLEY, KLOHN & LEONOFF 1972
CROSS REFERENCES :
LOCATION : 58 KM N INUVIK
NTS MAP SHEET: 107B/15
LOCATION MAP SCALE: 1:1700000
SITE PLAN SCALE : 1:36000
DIGITIZER NO. :
DIGITIZER NO.:
ZONE-EASTING: 8-560500
LATITUDE : 68-53-00N
LONGITUDE: 133-25-00W AREA: 167
NORTHING: 7640500
CORRIDOR : MACKENZIE ICE ROAD
KM-POST : 0.0
OFFSET:
DISTANCE: 0
ACCESS :
CONDITION : WINTER ICE ROAD;BARGE IN SUMMER
LAND TENURE: INUVIALUIT 7(1)(B)- TUK
STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; DELINEATION; PRODUCTION; REVIEW
DATE: 1972 EXISTING STUDIES
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	8	0
DEPTH:		0.6-4.9-9.1	

TOPOGRAPHY: HUMMOCKY
SLOPE : GRADUAL
VEGETATION: TUNDRA;MOSS, LICHENS, DWARF SHRUBS TO 0.9 M, GRASS
DRAINAGE : MODERATE
PERMAFROST: POLYGONAL ICE WEDGES
ACTIVE LAYER : 0.6-0.9-1.2
SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : TERRACE

	MATERIAL TYPE	THICKNESS
OVERBURDEN:	SILT- organics, roots, peat	0.2-0.3-0.5
GRANULAR :	GRAVEL & SAND- trace silt	0.6-4.4-9.1
UNDERLYING:	SILT & MASSIVE ICE	

DEVELOPMENT POTENTIAL: SUITABLE
CONSTRAINTS: CRITICAL WILDLIFE AREA; RECREATIONAL AREA; SILTATION; MASSIVE ICE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 20
RESULTS: 4-14-36
USC TEST - NO.: 20
CLASS: OL-Cl/SP-SM/GW
PETROGRAPHICS - NO: 1
RESULTS: 150
OTHER TESTS:

SIZE-ANALYSIS - NO.: 13
OVERSIZED MATERIALS:
GRAVEL: 0-46-80
SAND: 10-44-84
FINES: 2-9-48
D50: 000080-004051-011000

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
	CLASS 1:	
TOTAL VOLUME: 4560000	CLASS 2:	/4560000/4560000
RECOVERABLE : 4560000	CLASS 3:	
ANNUAL RECOV: 0	CLASS 4:	
	CLASS 5:	

LAST UPDATE: 04/17/88 COMPILER: *J. GRUMBLY, J. BICKNELL IIA;*

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 314

----------LOCATION AND STATUS----------

LOCAL NAME : ESKIMO LAKES
STUDY NUMBER: 172RKL-Z3
SOURCE REFERENCE : RIPLEY, KLOHN & LEONOFF 1972
CROSS REFERENCES :
LOCATION : 45 KM N INUVIK
NTS MAP SHEET: 107B/15
LOCATION MAP SCALE: 1:1700000
SITE PLAN SCALE : 1:36000
DIGITIZER NO. :
DIGITIZER NO.:
ZONE-EASTING: 8-564000
LATITUDE : 68-46-00N
LONGITUDE: 133-21-00W AREA: 502
NORTHING: 7626000
CORRIDOR : MACKENZIE ICE ROAD
KM-POST : 0.0
OFFSET:
DISTANCE: 0
ACCESS :
CONDITION : WINTER ICE ROAD;BARGE IN SUMMER
LAND TENURE: INUVIALUIT 7(1)(B)- TUK
STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONN; DELINEATION; PRODUCTION; REVIEW
DATE: 1972 EXISTING STUDIES
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	3	0
DEPTH:		0.6-0.9-1.2	

TOPOGRAPHY: HUMMOCKY, ROLLING HILLS
SLOPE : GRADUAL
VEGETATION: TUNDRA;MOSS, LICHENS, DWARF SHRUBS
DRAINAGE : MODERATELY WELL
PERMAFROST: POLYGONAL ICE WEDGES
ACTIVE LAYER : 0.9-1.1-1.2
SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : TERRACE

MATERIAL TYPE	THICKNESS
OVERBURDEN: SILT- organic, peat	0.1-0.2-0.3
GRANULAR : SAND- gravel	0.6-0.9-1.2
UNDERLYING: MASSIVE ICE	

DEVELOPMENT POTENTIAL: FAIR
CONSTRAINTS: STREAM SILTATION; RECREATIONAL AREA; CRITICAL WILDLIFE AREA; MASSIVE ICE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 2
RESULTS: 2-4-6
USC TEST - NO.: 2
CLASS: OL-SP/SW/SW
PETROGRAPHICS - NO: 1
RESULTS: 372
OTHER TESTS:

SIZE-ANALYSIS - NO.: 2
OVERSIZED MATERIALS:
GRAVEL: 35-45-55
SAND: 44-53-62
FINES: 1-2-3
D50: 002500-004500-006500

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
	CLASS 1:	
	CLASS 2:	
TOTAL VOLUME: 2280000	CLASS 3:	/2280000/2280000
RECOVERABLE : 2280000	CLASS 4:	
ANNUAL RECOV: 0	CLASS 5:	

LAST UPDATE: 04/17/88 COMPILER: J. GRUMBLY, J. BICKNELL JLA;

Priority Sites

155S (Kittigazuit Creek):

Project 7.4 has recommended that Source 155 be reserved for small- and medium-scale public community and Inuvialuit projects. The northern portion of Source 155 has been fully explored and a draft source development plan prepared by the GNWT. The southern portion, which has been partially explored, is thought to contain generally higher quality (mainly Class 2) material. Public demands for Class 2 material total about 90,000 cu m for the next 20 years. Project 7.4 has recommended further site investigation work on this series of glaciofluvial channel terrace or kame terrace deposits (on Inuvialuit lands). Project 7.1, completed before the results of the above-mentioned field work was available, recommended that Source 155 be considered as an alternative to Source 177 (below).

177 (22 km south):

Project 7.1 recommended that this glaciofluvial outwash deposit (on Inuvialuit lands) be reserved as the primary community source for the forecast 20-year demand for 393,000 cu m of most classes (1-4) of granular materials. This study recommended also that a geotechnical drilling and sampling program be conducted to fully establish the quantity and quality of material available, subject to the results of the (then-concurrent) field work at Source 155. Project 7.4 has also recommended investigation to confirm quality and quantity, but primarily as part of the development of regional granular materials plan that would include speculative projects (e.g. oil and gas, airport expansion).

Supplementary Sites

167 (27 km southeast):

Project 7.4 has recommended site investigation to confirm the quality and quantity of materials available in this kame complex (on Inuvialuit lands), but primarily as part of the development of regional granular materials plan to include speculative public and industrial projects (e.g. oil and gas onshore activities, airport expansion).

163 (35 km northeast):

Project 7.4 has recommended site investigation to confirm the quality and quantity of materials available in this glaciofluvial outwash plain deposit (on Inuvialuit lands), but primarily as a source of industrial supply, as part of a regional granular materials plan to include speculative projects (e.g. oil and gas onshore activities).

164 (35 km east):

Project 7.4 has recommended site investigation, as for Source 163, above.

165 (32 km southeast):

Project 7.4 has recommended site investigation, as for Source 163, above.

170 (32 km south):

Project 7.4 has recommended site investigation, as for Source 163, above.

APPENDIX D

Summary of Granular Resources Data for the Community of Sachs Harbour

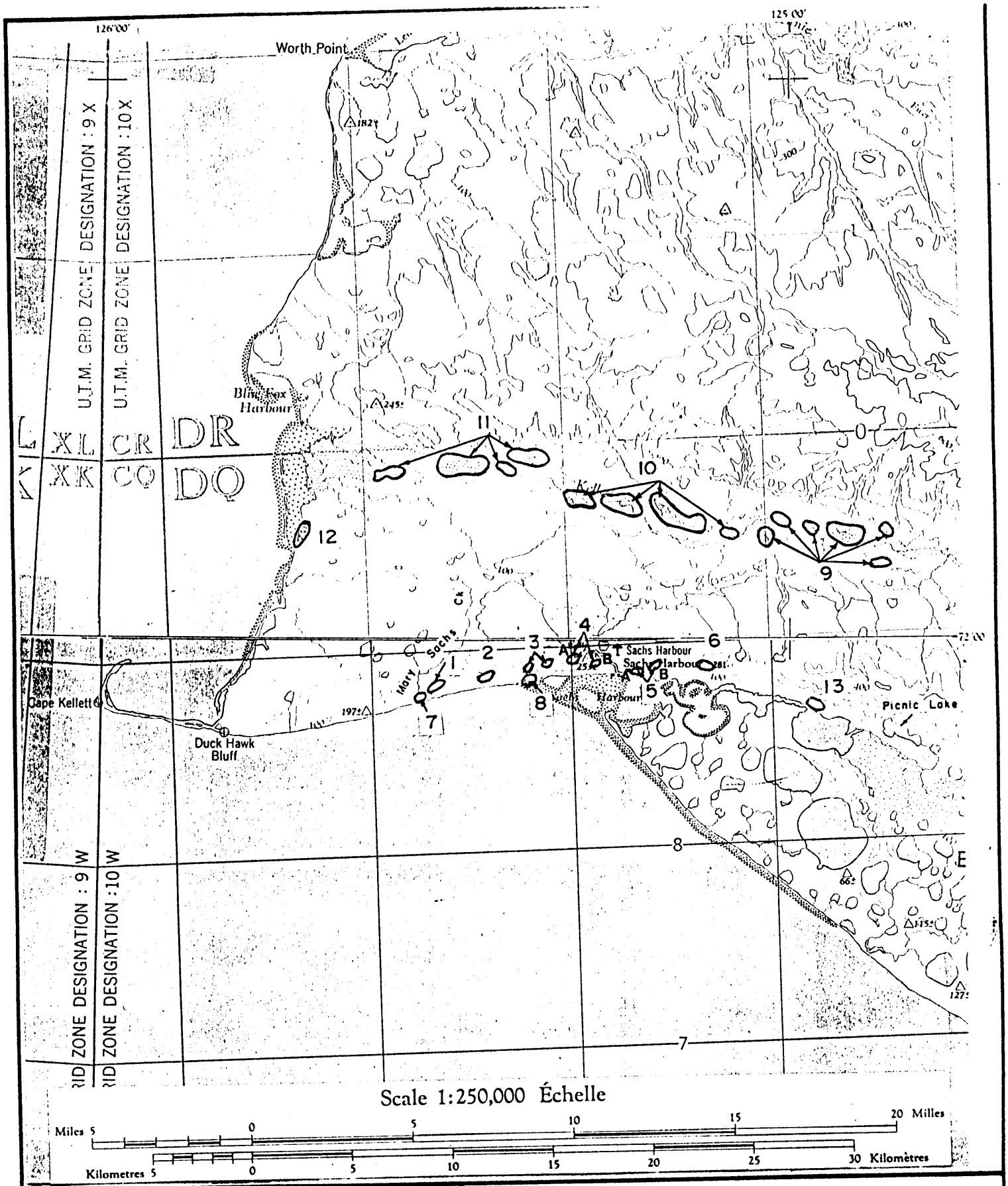

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FIGURE 5. LOCATION OF GRANULAR DEPOSITS, SACHS HARBOUR, N.W.T.

TABLE 1

REQUIRED VOLUMES OF GRANULAR MATERIALS (DEMAND), IN CUBIC METRES, AND RECOMMENDED SOURCES OF SUPPLY, SACHS HARBOUR, 1987 - 2006 (FROM EBA 1987)

Class	1987-91	1992-96	1997-2001	2002-06	Totals	Recommended Sources
Class 1	100	0	0	0	100	SH-13
Class 2	16 400	5 000	5 000	5 000	31 400	SH-13
Class 3	29 200	20 200	20 000	20 000	89 400	SH-1-5
Class 4	9 400	0	0	0	9 400	SH-1-5
Class 5	0	0	0	0	0	-
				TOTAL	130 000	

Note: EBA figures used in this table have been rounded to the nearest 100 cu.m.

TABLE 2

GRANULAR MATERIAL SOURCES - SACHS HARBOUR
(FROM EBA 1987)

Source No.	Location	Estimated Volume	Access	Comments
87-SH-1	9 km west of Sachs Harbour	170 000 m^3 Class 3 (prospective)	All-weather road	(1) Used with Source 7 to meet air strip upgrading requirements in late 1970-s - early 1980's. (2) Within Banks Island Bird Sanctuary No. 1
87-SH-2	6 km west of Sachs Harbour	30 000 m^3 Class 3 (prospective)	All-weather road	Part of area identified by Hamlet foreman as proposed granular material source (parallelling road to Mary Sachs Creek).
87-SH-3	4 km west of Sachs Harbour	25 000 m^3 Class 3 (prospective)	All-weather road	Part of area identified by Hamlet foreman as proposed granular material source (parallelling road to Mary Sachs Creek).
87-SH-4	West side of Hamlet of Sachs Harbour	50 000 m^3 Class 3 (probable)	All-weather road	Source has been depleted to meet local needs.
87-SH-5	East side of Hamlet of Sachs Harbour	30 000 m^3 Class 3 (prospective)	All-weather road to 5a; tundra road in winter to 5b	(1) Source has western (5a) and eastern (5b) components. (2) 5a is on lands administered by the Hamlet; 5b on Inuvialuit lands. (3) Source 5a is nearly depleted.
87-SH-6	4 km east of Sachs Harbour	20 000 m^3 Class 3 (prospective)	Tundra road in winter	(1) Not considered a priority source by workshop participants. (2) Possible secondary source of Class 3 materials.
87-SH-7	10.5 km west of Sachs Harbour	20 000 m^3 Class 3 (prospective)	All-weather road to Source 1	(1) Locally considered a source of sand (2) Within Banks Island Bird Sanctuary No. 1
87-SH-8	4 km west of Sachs Harbour	200 000 m^3 Class 3 (prospective)	Ice road in winter; along the beach in summer, or via all-weather road	(1) Not considered a priority source by workshop participants. (2) Potential for inclusion with other sources parallelling road to Mary Sachs Creek as next Hamlet source.

TABLE 2 (Continued)

GRANULAR MATERIAL SOURCES - SACHS HARBOUR
(FROM EBA 1987)

So ce N	Location	Estimated Volume	Access	Comments
87 H-9	10 km north-northeast of Sachs Harbour	2 000 000 m^3 Class 3 (prospective)	Tundra road in winter	Not considered a priority source by workshop participants.
87 H-10	9 km north of Sachs Harbour	4 500 000 m^3 Class 3 (prospective)	Tundra road in winter	Not considered a priority source by workshop participants.
87 H-11	13 km north-northwest of Sachs Harbour	6 500 000 m^3 Class 3 (prospective)	Tundra road in winter	Not considered a priority source by workshop participants.
87 H-12	18 km west-northwest of Sachs Harbour	100 000 m^3 Class 4 (prospective)	Tundra road in winter; barge in summer	Not considered a priority source by workshop participants.
87 H-13	10 km east-southeast of Sachs Harbour	30 000 m^3 Class 2 (prospective)	Ice road in winter; barge in summer	Considered sensitive with respect to environmental and social-cultural considerations by workshop participants.

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-SH-1

----------LOCATION AND STATUS----------

STUDY NUMBER: 187EBA-SH

LOCAL NAME : SACHS HARBOUR
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : 9 KM W SACHS HARBOUR
NTS MAP SHEET: 97G/15
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:
DIGITIZER NO. :
DIGITIZER NO.:
ZONE-EASTING: 10-413000
LATITUDE : 71-58-00N
LONGITUDE: 125-32-00W
AREA: 7
NORTHING: 7988000
CORRIDOR :
OFFSET:
KM-POST : 0.0
DISTANCE: 0
ACCESS : AT EDGE OF COMMUNITY
CONDITION : ALL WEATHER ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- SACHS
STATUS: PARTIAL DEVELOPMEN
PAST USE : TRANSPORT CANADA STUDIES
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONNAISSANCE; QUESTIONAIRE; REVIEW EXISTING
DATE: 1987 REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: CREST OF BLUFF
SLOPE : GRADUAL
VEGETATION: TUNDRA
DRAINAGE : MODERATE
PERMAFROST:
SITE DESCRIPTION DATE:
ACTIVE LAYER :
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : MORAINAL

MATERIAL TYPE	THICKNESS
OVERBURDEN:	
GRANULAR :	
UNDERLYING: MASSIVE ICE	

DEVELOPMENT POTENTIAL: FAIR
CONSTRAINTS: MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
SIZE-ANALYSIS - NO.: 0
RESULTS:
OVERSIZED MATERIALS:
USC TEST - NO.: 0
GRAVEL:
CLASS:
SAND:
PETROGRAPHICS - NO: 0
FINES:
RESULTS:
D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
	CLASS 1:	
	CLASS 2:	
TOTAL VOLUME: 170000	CLASS 3:	//170000
RECOVERABLE : 170000	CLASS 4:	
ANNUAL RECOV: 85000	CLASS 5:	

LAST UPDATE: 04/26/88 COMPILER: J. GRUMBLY, J. BICKNELL IIA;

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-SH-2

----------LOCATION AND STATUS----------

LOCAL NAME : SACHS HARBOUR STUDY NUMBER: 187EBA-SH
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : 6 KM W SACHS HARBOUR NTS MAP SHEET: 97G/15
LOCATION MAP SCALE: 1:250000 SITE PLAN SCALE : 1:
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 71-58-30N ZONE-EASTING: 10-401650
LONGITUDE: 125-22-00W AREA: 1 NORTHING: 7989000
CORRIDOR :
KM-POST : 0.0 OFFSET:
ACCESS : AT EDGE OF COMMUNITY DISTANCE: 0
CONDITION : ALL WEATHER ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- SACHS STATUS: PARTIAL DEVELOPMEN
PAST USE : TRANSPORT CANADA 1986
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONNAISSANCE; QUESTIONAIRE; REVIEW EXISTING
DATE: 1987 REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: CREST OF BLUFF
SLOPE : GRADUAL
VEGETATION: TUNDRA
DRAINAGE : MODERATE
PERMAFROST:
ACTIVE LAYER : SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : MORAINAL

	MATERIAL TYPE	THICKNESS
OVERBURDEN:		
GRANULAR :		
UNDERLYING:	MASSIVE ICE	

DEVELOPMENT POTENTIAL: FAIR
CONSTRAINTS: MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0 SIZE-ANALYSIS - NO.: 0
RESULTS: OVERSIZED MATERIALS:
USC TEST - NO.: 0 GRAVEL:
CLASS: SAND:
PETROGRAPHICS - NO: 0 FINES:
RESULTS: D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES: PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:	
TOTAL VOLUME:	30000	CLASS 2:	
RECOVERABLE :	30000	CLASS 3:	//30000
ANNUAL RECOV:	0	CLASS 4:	
		CLASS 5:	

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GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-SH-3

----------LOCATION AND STATUS----------

LOCAL NAME : SACHS HARBOUR
STUDY NUMBER: 187EBA-SH
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : 4 KM W SACHS HARBOUR
NTS MAP SHEET: 97G/15
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:
DIGITIZER NO. :
DIGITIZER NO.:
LATITUDE : 71-59-00N
ZONE-EASTING: 10-418000
LONGITUDE: 125-20-00W AREA: 1
NORTHING: 7985000
CORRIDOR :
OFFSET:
KM-POST : 0.0
DISTANCE: 0
ACCESS : AT EDGE OF COMMUNITY
CONDITION : ALL WEATHER ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- SACHS
STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONNAISSANCE; QUESTIONAIRE; REVIEW EXISTING
DATE: 1987 REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: CREST OF BLUFF
SLOPE : GRADUAL
VEGETATION: TUNDRA
DRAINAGE : MODERATE
PERMAFROST:
ACTIVE LAYER :
SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : MORAINAL

MATERIAL TYPE	THICKNESS
OVERBURDEN:	
GRANULAR :	
UNDERLYING: MASSIVE ICE	

DEVELOPMENT POTENTIAL: FAIR
CONSTRAINTS: MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE; SMALL VOLUME

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
SIZE-ANALYSIS - NO.: 0
RESULTS:
OVERSIZED MATERIALS:
USC TEST - NO.: 0
GRAVEL:
CLASS:
SAND:
PETROGRAPHICS - NO: 0
FINES:
RESULTS:
D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
	CLASS 1:	
TOTAL VOLUME: 25000	CLASS 2:	
RECOVERABLE : 25000	CLASS 3:	//25000
ANNUAL RECOV: 12500	CLASS 4:	
	CLASS 5:	

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GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-SH-4

----------LOCATION AND STATUS----------

LOCAL NAME : SACHS HARBOUR
STUDY NUMBER: I87EBA-SH
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : 1 KM S SACHS HARBOUR
NTS MAP SHEET: 97G/15
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:
DIGITIZER NO. :
DIGITIZER NO.:
ZONE-EASTING: 10-420500
LATITUDE : 71-59-00N
LONGITUDE: 125-17-00W
AREA: 4
NORTHING: 7989000
CORRIDOR :
OFFSET:
KM-POST : 0.0
DISTANCE: 0
ACCESS : AT EDGE OF COMMUNITY
CONDITION : ALL WEATHER ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- SACHS
STATUS: DEVELOPED
PAST USE : GRANULAR MATERIALS;CONSIDERABLY DEPLETED
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONNAISSANCE; QUESTIONAIRE; REVIEW EXISTING
DATE: 1987 REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: BLUFFS
SLOPE : GRADUAL
VEGETATION: TUNDRA
DRAINAGE : MODERATE
PERMAFROST:
ACTIVE LAYER :
SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : MORAINAL

MATERIAL TYPE	THICKNESS
OVERBURDEN:	
GRANULAR :	
UNDERLYING: MASSIVE ICE	

DEVELOPMENT POTENTIAL: POOR
CONSTRAINTS: MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE;SMALL VOLUME

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
SIZE-ANALYSIS - NO.: 0
RESULTS:
OVERSIZED MATERIALS:
USC TEST - NO.: 0
GRAVEL:
CLASS:
SAND:
PETROGRAPHICS - NO: 0
FINES:
RESULTS:
D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
	CLASS 1:	
TOTAL VOLUME: 50000	CLASS 2:	
RECOVERABLE : 50000	CLASS 3:	/50000/50000
ANNUAL RECOV: 50000	CLASS 4:	
	CLASS 5:	

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DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-SH-5

----------LOCATION AND STATUS----------

LOCAL NAME : SACHS HARBOUR
STUDY NUMBER: 187EBA-SH
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : 1 KM E SACHS HARBOUR
NTS MAP SHEET: 97G/15
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:
DIGITIZER NO. :
DIGITIZER NO.:
ZONE-EASTING: 10-423500
LATITUDE : 71-59-00N
LONGITUDE: 125-10-00W
AREA: 2
NORTHING: 7989000
CORRIDOR :
KM-POST : 0.0
OFFSET:
DISTANCE: 0
ACCESS : OVER TUNDRA
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- SACHS
STATUS: DEVELOPED
PAST USE : GRANULAR MATERIALS;CONSIDERABLY DEPLETED
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONNAISSANCE; QUESTIONAIRE; REVIEW EXISTING
DATE: 1987 REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: BLUFFS
SLOPE : GRADUAL
VEGETATION: TUNDRA
DRAINAGE : MODERATE
PERMAFROST:
ACTIVE LAYER :
SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOMARINE
LANDFORM : MORAINAL

	MATERIAL TYPE	THICKNESS
OVERBURDEN:		
GRANULAR :		
UNDERLYING:	MASSIVE ICE	

DEVELOPMENT POTENTIAL: POOR
CONSTRAINTS: MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE;DEPLETED

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
SIZE-ANALYSIS - NO.: 0
RESULTS:
OVERSIZED MATERIALS:
USC TEST - NO.: 0
GRAVEL:
CLASS:
SAND:
PETROGRAPHICS - NO: 0
FINES:
RESULTS:
D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES:

PROVEN/PROBABLE/PROSPECTIVE

	CLASS 1:	
TOTAL VOLUME: 30000	CLASS 2:	
RECOVERABLE : 30000	CLASS 3:	//30000
ANNUAL RECOV: 30000	CLASS 4:	
	CLASS 5:	

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GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-SH-7

----------LOCATION AND STATUS----------

STUDY NUMBER: 187EBA-SH

LOCAL NAME : SACHS HARBOUR
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : 10.5 KM W SACH HARBOUR NTS MAP SHEET: 97G/15
LOCATION MAP SCALE: 1:250000 SITE PLAN SCALE : 1:
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 71-57-30N ZONE-EASTING: 10-413000
LONGITUDE: 125-34-00W AREA: 1 NORTHING: 7987500
CORRIDOR :
KM-POST : 0.0 OFFSET:
ACCESS : OVER TUNDRA DISTANCE: 0
CONDITION : WINTER ICE ROAD;TRAIL IN SUMMER
LAND TENURE: INUVIALUIT 7(1)(A)- SACHS STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONNAISSANCE; QUESTIONAIRE; REVIEW EXISTING
DATE: 1987 REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: BAYMOUTH BAR
SLOPE : GRADUAL
VEGETATION: BARREN
DRAINAGE : MODERATE
PERMAFROST:
ACTIVE LAYER : SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : COASTAL SPIT

MATERIAL TYPE	THICKNESS
OVERBURDEN:	
GRANULAR :	
UNDERLYING: MASSIVE ICE	

DEVELOPMENT POTENTIAL: POOR
CONSTRAINTS: MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT;COASTAL EROSION;SMALL VOLUME

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
RESULTS:
USC TEST - NO.: 0
CLASS:
PETROGRAPHICS - NO: 0
RESULTS:
OTHER TESTS:

SIZE-ANALYSIS - NO.: 0
OVERSIZED MATERIALS:
GRAVEL:
SAND:
FINES:
D50:

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
	CLASS 1:	
	CLASS 2:	
TOTAL VOLUME: 20000	CLASS 3:	//20000
RECOVERABLE : 20000	CLASS 4:	
ANNUAL RECOV: 20000	CLASS 5:	

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GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-SH-9

LOCATION AND STATUS

STUDY NUMBER: 187EBA-SH

LOCAL NAME : SACHS HARBOUR
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : 10 KM NNE SACHS HARBOUR NTS MAP SHEET: 97B/1
LOCATION MAP SCALE: 1:250000 SITE PLAN SCALE : 1:
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 72-05-00N ZONE-EASTING: 10-432000
LONGITUDE: 124-57-00W AREA: 1300 NORTHING: 7995000
CORRIDOR :
KM-POST : 0.0 OFFSET:
ACCESS : OVER TUNDRA DISTANCE: 0
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- SACHS STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION

INVEST. LEVEL: AIRPHOTO; RECONNAISSANCE; QUESTIONAIRE; REVIEW EXISTING
DATE: 1987 REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: MEANDER PLAIN
SLOPE : FLAT
VEGETATION: TUNDRA
DRAINAGE : MODERATE
PERMAFROST:
ACTIVE LAYER : SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : ALLUVIAL BARS & TERRACES

MATERIAL TYPE	THICKNESS
OVERBURDEN:	
GRANULAR :	
UNDERLYING: MASSIVE ICE	

DEVELOPMENT POTENTIAL: GOOD
CONSTRAINTS: MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE;RIVER SILTATION

LABORATORY TEST RESULTS AND MATERIAL QUANTITY

MOISTURE - NO.: 0 SIZE-ANALYSIS - NO.: 0
RESULTS: OVERSIZED MATERIALS:
USC TEST - NO.: 0 GRAVEL:
CLASS: SAND:
PETROGRAPHICS - NO: 0 FINES:
RESULTS: D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES: PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:
TOTAL VOLUME:	2000000	CLASS 2:
RECOVERABLE :	2000000	CLASS 3: //2000000
ANNUAL RECOV:	2000000	CLASS 4:
		CLASS 5:

LAST UPDATE: 04/26/88 COMPILER: *J. GRUMBLY, J. BICKNELL ILA;*

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-SH-10

----------LOCATION AND STATUS----------

STUDY NUMBER: 187EBA-SH

LOCAL NAME : SACHS HARBOUR
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : 9 KM W SACHS HARBOUR
NTS MAP SHEET: 97B/2
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:
DIGITIZER NO. :
DIGITIZER NO.:
ZONE-EASTING: 10-425000
LATITUDE : 72-07-00N
LONGITUDE: 125-11-00W
AREA: 310
NORTHING: 7995500
CORRIDOR :
KM-POST : 0.0
OFFSET:
DISTANCE: 0
ACCESS : OVER TUNDRA
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- SACHS
STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONNAISSANCE; QUESTIONAIRE; REVIEW EXISTING
DATE: 1987 REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: MEANDER PLAIN
SLOPE : FLAT
VEGETATION: TUNDRA
DRAINAGE : MODERATE
PERMAFROST:
ACTIVE LAYER :
SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : ALLUVIAL BARS & TERRACES

MATERIAL TYPE	THICKNESS
OVERBURDEN:	
GRANULAR :	
UNDERLYING: MASSIVE ICE	

DEVELOPMENT POTENTIAL: GOOD
CONSTRAINTS: MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE;RIVER SILTATION

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
SIZE-ANALYSIS - NO.: 0
RESULTS:
OVERSIZED MATERIALS:
USC TEST - NO.: 0
GRAVEL:
CLASS:
SAND:
PETROGRAPHICS - NO: 0
FINES:
RESULTS:
D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES:

PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:	
TOTAL VOLUME:	4500000	CLASS 2:	
RECOVERABLE :	4500000	CLASS 3:	//4500000
ANNUAL RECOV:	4500000	CLASS 4:	
		CLASS 5:	

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GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-SH-11

----------LOCATION AND STATUS----------

STUDY NUMBER: 187EBA-SH

LOCAL NAME : SACHS HARBOUR
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : 13 KM NNW SACHS HARBOUR NTS MAP SHEET: 97B/2
LOCATION MAP SCALE: 1:250000 SITE PLAN SCALE : 1:
DIGITIZER NO. : DIGITIZER NO.:
ZONE-EASTING: 10-414500
LATITUDE : 72-04-00N NORTHING: 7998500
LONGITUDE: 125-30-00W AREA: 430
CORRIDOR :
KM-POST : 0.0 OFFSET:
DISTANCE: 0
ACCESS : OVER TUNDRA
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- SACHS STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONNAISSANCE; QUESTIONAIRE; REVIEW EXISTING
DATE: 1987 REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: MEANDER PLAIN
SLOPE : FLAT
VEGETATION: TUNDRA
DRAINAGE : MODERATE
PERMAFROST:
ACTIVE LAYER : SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : ALLUVIAL BARS & TERRACES

MATERIAL TYPE	THICKNESS
OVERBURDEN:	
GRANULAR :	
UNDERLYING: MASSIVE ICE	

DEVELOPMENT POTENTIAL: GOOD
CONSTRAINTS: MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE;RIVER SILTATION

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0 SIZE-ANALYSIS - NO.: 0
RESULTS: OVERSIZED MATERIALS:
USC TEST - NO.: 0 GRAVEL:
CLASS: SAND:
PETROGRAPHICS - NO: 0 FINES:
RESULTS: D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES: PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:
		CLASS 2:
TOTAL VOLUME:	6500000	CLASS 3: //6500000
RECOVERABLE :	6500000	CLASS 4:
ANNUAL RECOV:	6500000	CLASS 5:

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DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-SH-13

----------LOCATION AND STATUS----------

LOCAL NAME : SACHS HARBOUR
STUDY NUMBER: 187EBA-SH
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : 10 KM ESE SACHS HARBOUR
NTS MAP SHEET: 97G/15
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:
DIGITIZER NO. :
DIGITIZER.NO.:
LATITUDE : 71-57-00N
ZONE-EASTING: 10-432000
LONGITUDE: 124-57-00W AREA: 1
NORTHING: 7987500
CORRIDOR :
OFFSET:
KM-POST : 0.0
DISTANCE: 0
ACCESS : OVER TUNDRA
CONDITION : WINTER ICE ROAD;BARGE IN SUMMER
LAND TENURE: INUVIALUIT 7(1)(A)- SACHS
STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONNAISSANCE; QUESTIONAIRE; REVIEW EXISTING
DATE: 1987 REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: BEACH
SLOPE : GRADUAL
VEGETATION: BARREN
DRAINAGE : MODERATE
PERMAFROST:
SITE DESCRIPTION DATE:
ACTIVE LAYER :
GENERIC ORIGIN: GLACIOMARINE
LANDFORM : BARRIER BAR

MATERIAL TYPE	THICKNESS
OVERBURDEN:	
GRANULAR :	
UNDERLYING: MASSIVE ICE	

DEVELOPMENT POTENTIAL: POOR
CONSTRAINTS: MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE;SILTATION & EROSION

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
SIZE-ANALYSIS - NO.: 0
RESULTS:
OVERSIZED MATERIALS:
USC TEST - NO.: 0
GRAVEL:
CLASS:
SAND:
PETROGRAPHICS - NO: 0
FINES:
RESULTS:
D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
	CLASS 1:	
TOTAL VOLUME: 30000	CLASS 2:	
RECOVERABLE : 30000	CLASS 3:	//30000
ANNUAL RECOV: 15000	CLASS 4:	
	CLASS 5:	

LAST UPDATE: 04/26/88 COMPILER: J. GRUMBLY, J. BICKNELL ILA;

TABLE 3

COMPARISON OF GRANULAR RESOURCE SOURCES -
SACHS HARBOUR

Source	Use	Environmental and Aesthetic Considerations	Wildlife and Social-Cultural Considerations	Economic Considerations	Comments	Ranking	
						Significance of Impacts	Acceptability of Development
SH-1,2,3, 5,6,7,68	Class 1, 2, 3 & 4 needs	Least sensitive option: all-season access already available, no overburden stripping required.	Least sensitive option: area is not significant for wildlife, hunting, fishing or trapping. Conflicts with recreational uses not expected.	Least expensive option: accessible by existing all-weather road.	Testing program required to prove presence of material suitable for Class 1 and 2 needs. Sources 6 and 8 considered as secondary sources. Source 4 is depleted.	Insignificant	Acceptable
SH-9,10,11	Class 3 needs	Potential for erosion on Kellett River banks and on terrain exposed by vegetative stripping and overburden removal.	Not important for wildlife, fishing, or trapping. Not an important camping area.	Construction of a tundra road, 9-to-13 km long, required each winter.	Further examination of Kellett River area suggested to search for Class 2 materials.	Significant	Acceptable
SH-13	Class 2 needs	Vegetation and overburden removal required. Potential for drainage disruption and shoreline erosion.	Used in some years by nesting waterfowl. Used for fox trapping, caribou hunting, camping and fishing.	Construction of an ice road, 10 km long, required each winter.	Preferred as a last option, only if no suitable materials available in other sources.	Significant	Acceptable only as a last resort
SH-12	Class 4 needs	Not addressed.	Not addressed.	Construction of a tundra road, 18 km long required each winter; barge in summer.	Not considered a viable source because of excess volumes of Class 3 material available close to the community and long haul distance.	Significant economic considerations	Not acceptable

SACHS HARBOUR

Priority Sites

1 (Mary Sachs Pit):

Projects 7.1 and 7.4 have both recommended continued development of these two areas of morainal deposits (on Inuvialuit lands) and the following three sources, as the primary sources for the forecast 20-year demand for 100,000 cu m of Class 3 and 4 materials, until they are depleted. Although Project 7.1 does not specifically recommend site investigation work, it notes that the remaining quantities are unknown. Project 7.4 suggests that there may be areas of higher quality material in the Mary Sachs Pit and recommends field work to determine quality and quantity of the remaining resources in this and the following three sources.

2 (six km west):

Recommendations for these four isolated knobs of morainal deposits (on Inuvialuit lands) are generally the same as for Source 1, above.

3 (four km west):

Recommendations for these two small knobs of morainal deposits (on Inuvialuit lands) are generally the same as for Source 1, above.

5 (community pit - west side):

Recommendations for these five small isolated mounds of morainal deposits (on both Inuvialuit and Hamlet lands) are generally the same as for Source 1, above.

Supplementary Sites

4 (community pit - west side):

Project 7.1 includes similar recommendations for these three separate areas of morainal deposits (on both Inuvialuit and Hamlet lands). This study notes that these deposits are considerably depleted, but assigns a higher confidence level (probable) to the estimated volume of 50,000 cu m, than for any other source in the area. Project 7.4 considers this source to be depleted, but refers to only two areas.

7 (near mouth of Mary Sachs Creek):

Project 7.4 includes similar recommendations to those on the four "priority" sites, above, for this coastal spit deposit (on Inuvialuit lands) which was partially depleted for airfield reconstruction in 1981.

9-11 (Kellett River area):

Project 7.4 has recommended that these alluvial bar and terrace deposits (on Inuvialuit lands) be explored for possible higher quality materials prior to any development of Source 13. Project 7.1 recommends that these deposits, which it considers to be of lower quality, be used for any major projects that might occur, and for future demands for lower quality material. The latter study does not include any specific recommendations for site investigation work.

13 (near Picnic Lake):

Project 7.1 has recommended that this unexplored barrier bar deposit (on Inuvialuit lands) be investigated (initially at a reconnaissance level) as a potential source for the forecast demand for 32,000 cu m of higher quality material than is currently available to the community. The study recommends drilling only if demands increase. Project 7.4 has recommended, on the basis of community concerns, that this source not be considered until all others in the area have been proven inadequate or depleted.

APPENDIX E

Summary of Granular Resources Data for the Community of Paulatuk

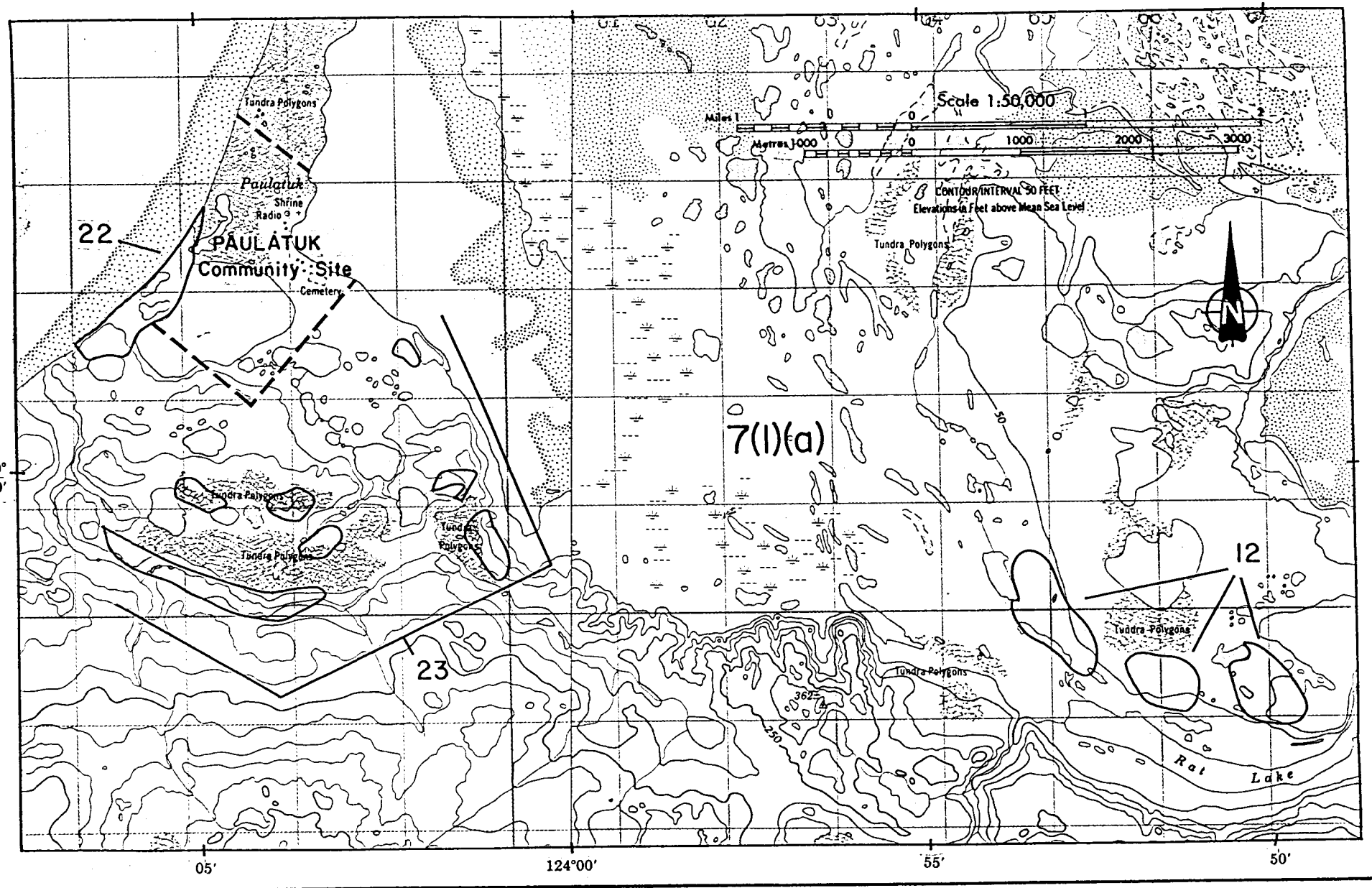

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Figure 5

Location of granular deposits,
Paulatuk, N.W.T.

TABLE 1

REQUIRED VOLUMES OF GRANULAR MATERIALS (DEMAND), IN CUBIC METRES, AND RECOMMENDED SOURCES OF SUPPLY, PAULATUK, 1987 - 2006 (FROM EBA 1987)

Class	1987-91	1992-96	1997-2001	2002-06	Totals	Recommended Sources
Class 1	700	0	0	0	700	12
Class 2	17 300	2 000	2 000	2 000	23 300	12
Class 3	270 900	20 000	20 200	20 000	331 100	23
Class 4	20 900	0	0	0	20 900	23
Class 5	100	0	0	0	100	23
				TOTAL	376 000 cu.m.	

Note: EBA figures used in this table have been rounded to the nearest 100 cu.m.

TABLE 2

GRANULAR MATERIAL SOURCES - PAULATUK
(FROM EBA 1987)

Source No.	Location	Estimated Volume	Access	Comments
12	10 km east-southeast of Paulatuk	1.2 million m^3 Class 2 (prospective)	Tundra/ice road in winter.	This source has not been examined in the field.
22	1 km west of Paulatuk	250 000 m^3 Class 4 (prospective)	Tundra/ice road in winter, summer access possible.	
23	0 - 2.5 km south of Paulatuk	2.2 million m^3 Class 3 (prospective)	Tundra/ice road in winter, summer access possible.	Currently being used as a source of granular materials for Paulatuk.

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-P-12

----------LOCATION AND STATUS----------

LOCAL NAME : PAULATUK- HORNADAY RIVER STUDY NUMBER: 187EBA-P
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : 10 KM ESE PAULATUK NTS MAP SHEET: 97D/5
LOCATION MAP SCALE: 1:250000 SITE PLAN SCALE : 1:
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 69-17-30N ZONE-EASTING: 10-465000
LONGITUDE: 123-22-00W AREA: 75 NORTHING: 7689000
CORRIDOR :
KM-POST : 0.0 OFFSET:
ACCESS : OVER TUNDRA DISTANCE: 0
CONDITION : WINTER ICE ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- PAULATUK STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO;QUESTIONAIRE
DATE: 1987
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: RAISED TERRACE
SLOPE : GRADUAL
VEGETATION: TUNDRA
DRAINAGE : MODERATE
PERMAFROST:
ACTIVE LAYER : SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : FLUVIAL TERRACE

	MATERIAL TYPE	THICKNESS
OVERBURDEN:		
GRANULAR :		
UNDERLYING:	MASSIVE ICE	

DEVELOPMENT POTENTIAL: FAIR
CONSTRAINTS: MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE;POOR ACCESS

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0 SIZE-ANALYSIS - NO.: 0
RESULTS: OVERSIZED MATERIALS:
USC TEST - NO.: 0 GRAVEL:
CLASS: SAND:
PETROGRAPHICS - NO: 0 FINES:
RESULTS: D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES: PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:	
TOTAL VOLUME:	1200000	CLASS 2:	//1200000
RECOVERABLE :	1200000	CLASS 3:	
ANNUAL RECOV:	12000000	CLASS 4:	
		CLASS 5:	

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DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-P-23

----------LOCATION AND STATUS----------

LOCAL NAME : PAULATUK
STUDY NUMBER: 187EBA-P
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : 2.5 KM S PAULATUK
NTS MAP SHEET: 97C/8
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:
DIGITIZER NO. :
DIGITIZER NO.:
LATITUDE : 69-19-00N
ZONE-EASTING: 10-458000
LONGITUDE: 124-05-00W AREA: 150
NORTHING: 7691000
CORRIDOR :
KM-POST : 0.0
OFFSET:
ACCESS : AT EDGE OF COMMUNITY
DISTANCE: 0
CONDITION : ALL WEATHER ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- PAULATUK STATUS: PARTIAL DEVELOPMEN
PAST USE : SMALL-SCALE DEVELOPMENT NORTH END FOR GRANUL
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO;QUESTIONAIRE
DATE: 1987
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: RIDGE TOPS
SLOPE : GRADUAL TO STEEP
VEGETATION: TUNDRA
DRAINAGE : MODERATELY-WELL
PERMAFROST:
ACTIVE LAYER :
SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOFLUVIAL
LANDFORM : DELTA

	MATERIAL TYPE	THICKNESS
OVERBURDEN:		
GRANULAR :		
UNDERLYING:	MASSIVE ICE	

DEVELOPMENT POTENTIAL: GOOD
CONSTRAINTS: MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
SIZE-ANALYSIS - NO.: 0
RESULTS:
OVERSIZED MATERIALS:
USC TEST - NO.: 0
GRAVEL:
CLASS:
SAND:
PETROGRAPHICS - NO: 0
FINES:
RESULTS:
D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES:

			PROVEN/PROBABLE/PROSPECTIVE
		CLASS 1:	
TOTAL VOLUME:	2200000	CLASS 2:	
RECOVERABLE :	2200000	CLASS 3:	//2200000
ANNUAL RECOV:	2200000	CLASS 4:	
		CLASS 5:	

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TABLE 3

PREFERRED GRANULAR RESOURCE SOURCES - PAULATUK
(FROM EBA 1987)

Source	Use	Environmental and Aesthetic Considerations	Wildlife and Social-Cultural Considerations	Economic Considerations	Comments	Ranking	
						Significance of Impacts	Acceptance of Development
12	Class 1&2 needs	None identified	Potential minor disturbance to the Bluenose Caribou Herd during spring and fall migrations.	10-km winter road required.	Workshop participants would prefer this source be developed only if Source 23 cannot supply the community's higher class needs.	Potentially significant. Could be mitigated by prohibiting development activities during periods of use by the Bluenose Herd.	Acceptable if Source 23 cannot meet Class 1 & 2 needs.
22	Class 4 needs	Development would lead to erosion of community's western shoreline.	Development would cut off access to the area southwest of the community in which the new waste disposal site is planned.	1-km winter road required.		Significant	Unacceptable
23	Class 3-5 needs	None identified	None identified	2.5-km winter or all-weather road required.	Preferred source of community needs.	Insignificant	Acceptable

PAULATUK

Priority Sites

23 (south of Community):

The northern portion of this glaciofluvial delta, which consists of at least seven separate areas (on Inuvialuit lands), supplies currently all of the community's granular resources. Project 7.1 suggests that geotechnical drilling is required only in conjunction with the proposed relocation of the airstrip (demand of 260,000 cu m). However, Project 7.4 has recommended confirmation of the quality and quantity of material available prior to establishment of reserves for public community use (total forecast 20-year demand is 376,000 cu m).

Supplementary Sites

12 (near Rat Lake):

Project 7.1 has suggested that this newly identified fluvial terrace deposit (on Inuvialuit lands) be developed to supply the forecast demand for 24,000 cu m of higher quality materials than those available currently. This study recommends that geotechnical drilling to determine the quality and quantity of materials available be conducted prior to the proposed airstrip relocation. Project 7.4 has recommended that this source be explored subsequent to, and dependant upon the results of, site investigation work at Source 23.

APPENDIX F

Summary of Granular Resources Data for the Community of Holman

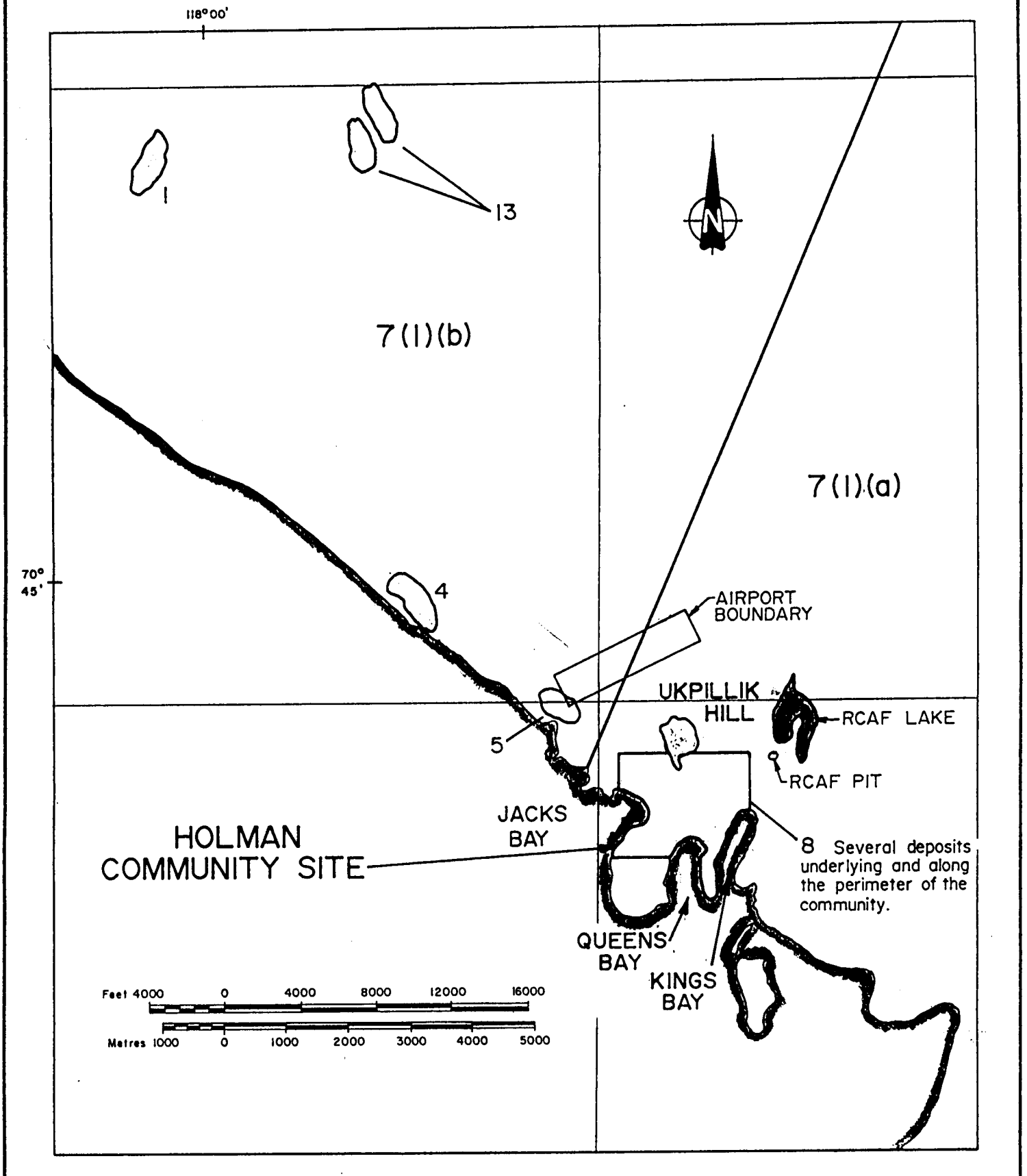

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Figure 5

Location of granular deposits, Holman, N.W.T.

HBLT 14 - 87/05

TABLE 1

REQUIRED VOLUMES OF GRANULAR MATERIALS (DEMAND), IN CUBIC METRES, AND RECOMMENDED SOURCES OF SUPPLY, HOLMAN, 1987 - 2006 (FROM EBA 1987)

Class	1987-91	1992-96	1997-2001	2002-06	Totals	Recommended Sources
Class 1	200	0	0	0	200	8
Class 2	10 600	5 800	5 000	5 000	26 400	5 and 8
Class 3	26 600	20 000	20 000	20 000	86 600	8
Class 4	14 000	0	0	0	14 000	8
Class 5	600	0	0	0	600	general area of the community
				TOTAL	127 800	

Note: EBA figures used in this table have been rounded to the nearest 100 cu.m.

TABLE 2

GRANULAR MATERIAL SOURCES - HOLMAN
(FROM EBA 1987)

Source No.	Location	Estimated Volume	Access	Comments
5	At southwestern end of Holman airstrip	60 000 m^3 Class 2 (probable)	All-weather road	
7	Nose of Ukpillik Hill, immediately north of the Hamlet	75 000 m^3 Class 3* (probable)	All-weather road	
8	Several deposits located under and along the perimeter of the Hamlet	3000 m^3 Class 1 (proven) 300 000 m^3 Class 3 (probable)	All-weather road	Extent of the deposit has not been accurately mapped.

* Source 7 was rated Class 2 in EBA's supply summary but Class 3 in their text and table on Class 3 granular resources. The Class 3 rating has been assumed for this document.

DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-H-5

----------LOCATION AND STATUS----------

LOCAL NAME : HOLMAN STUDY NUMBER: 187EBA-H
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : SW END HOLMAN AIRSTRIP NTS MAP SHEET: 87F/15
LOCATION MAP SCALE: 1:250000 SITE PLAN SCALE : 1:
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 70-43-30N ZONE-EASTING: 11-469500
LONGITUDE: 117-50-00W AREA: 5 NORTHING: 7850000
CORRIDOR :
KM-POST : 0.0 OFFSET:
ACCESS : ROAD ADJACENT TO COMMUNITY DISTANCE: 0
CONDITION : ALL WEATHER ROAD
LAND TENURE: INUVIALUIT 7(1)(B)- HOLMAN STATUS: DEVELOPED
PAST USE : MATERIAL FOR AIRSTRIP
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONNAISSANCE; QUESTIONAIRE; REVIEW EXISTING
DATE: 1987 REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: COASTAL SLOPE
SLOPE : GENTLE
VEGETATION: TUNDRA
DRAINAGE : MODERATE
PERMAFROST:
ACTIVE LAYER : SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOMARINE
LANDFORM : RAISED BEACH

	MATERIAL TYPE	THICKNESS
OVERBURDEN:		
GRANULAR :		
UNDERLYING:		

DEVELOPMENT POTENTIAL: POOR
CONSTRAINTS: MOSTLY DEPLETED;MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0 SIZE-ANALYSIS - NO.: 0
RESULTS: OVERSIZED MATERIALS:
USC TEST - NO.: 0 GRAVEL:
CLASS: SAND:
PETROGRAPHICS - NO: 0 FINES:
RESULTS: D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES: PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:	
TOTAL VOLUME:	60000	CLASS 2:	/60000/60000
RECOVERABLE :	60000	CLASS 3:	
ANNUAL RECOV:	60000	CLASS 4:	
		CLASS 5:	

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GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-H-7

----------LOCATION AND STATUS----------

LOCAL NAME : HOLMAN
STUDY NUMBER: 187EBA-H
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : NOSE OF LIMESTONE HILL
NTS MAP SHEET: 87F/10
LOCATION MAP SCALE: 1:250000
SITE PLAN SCALE : 1:
DIGITIZER NO. :
DIGITIZER NO.:
LATITUDE : 70-44-00N
ZONE-EASTING: 11-471000
LONGITUDE: 117-48-30W
AREA: 8
NORTHING: 7849500
CORRIDOR :
OFFSET:
KM-POST : 0.0
DISTANCE: 0
ACCESS : ROAD ADJACENT TO COMMUNITY
CONDITION : ALL WEATHER ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- HOLMAN
STATUS: UNDEVELOPED
PAST USE :
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONNAISSANCE; QUESTIONAIRE; REVIEW EXISTING
DATE: 1987 REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: BEDROCK RIDGE
SLOPE : GRADUAL
VEGETATION: BARREN
DRAINAGE : MODERATE
PERMAFROST:
SITE DESCRIPTION DATE:
ACTIVE LAYER :
GENERIC ORIGIN: GLACIOMARINE
LANDFORM : RAISED BEACH

	MATERIAL TYPE	THICKNESS
OVERBURDEN:		
GRANULAR :		
UNDERLYING:		

DEVELOPMENT POTENTIAL: FAIR
CONSTRAINTS: MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0
SIZE-ANALYSIS - NO.: 0
RESULTS:
OVERSIZED MATERIALS:
USC TEST - NO.: 0
GRAVEL:
CLASS:
SAND:
PETROGRAPHICS - NO: 0
FINES:
RESULTS:
D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES:

		PROVEN/PROBABLE/PROSPECTIVE
	CLASS 1:	
TOTAL VOLUME: 75000	CLASS 2:	/75000/75000
RECOVERABLE : 75000	CLASS 3:	
ANNUAL RECOV: 75000	CLASS 4:	
	CLASS 5:	

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DSS File No. 38ST.A7134-8-0053

GRANULAR DEPOSIT SUMMARY
INUVIALUIT SETTLEMENT REGION

SOURCE NUMBER: 87-H-8

----------LOCATION AND STATUS----------

LOCAL NAME : HOLMAN COMMUNITY STUDY NUMBER: 187LBA-H
SOURCE REFERENCE : EBA ENGINEERING 1987
CROSS REFERENCES :
LOCATION : UNDER THE TOWN OF HOLMAN NTS MAP SHEET: 87F/10
LOCATION MAP SCALE: 1:250000 SITE PLAN SCALE : 1:
DIGITIZER NO. : DIGITIZER NO.:
LATITUDE : 70-43-30N ZONE-EASTING: 11-471500
LONGITUDE: 117-48-00W AREA: 15 NORTHING: 7847000
CORRIDOR :
KM-POST : 0.0 OFFSET:
ACCESS : ROAD ADJACENT TO COMMUNITY DISTANCE: 0
CONDITION : ALL WEATHER ROAD
LAND TENURE: INUVIALUIT 7(1)(A)- HOLMAN STATUS: PARTIALLY DEVELOPE
PAST USE : GRANULAR MATERIAL
PERFORMANCE:

----------SOURCE INVESTIGATION AND DESCRIPTIVE INFORMATION----------

INVEST. LEVEL: AIRPHOTO; RECONNAISSANCE; QUESTIONAIRE; REVIEW EXISTING
DATE: 1987 REPORTS
GEOPHYSICS:

	BOREHOLES	TESTPITS	EXPOSURES
NUMBER:	0	0	0
DEPTH:			

TOPOGRAPHY: HEAD OF A BAY
SLOPE : GRADUAL TO STEEP
VEGETATION: TUNDRA
DRAINAGE : MODERATE
PERMAFROST:
ACTIVE LAYER : SITE DESCRIPTION DATE:
GENERIC ORIGIN: GLACIOMARINE
LANDFORM : RAISED BEACHES

	MATERIAL TYPE	THICKNESS
OVERBURDEN:		
GRANULAR :		
UNDERLYING:		

DEVELOPMENT POTENTIAL: GOOD
CONSTRAINTS: LOCATION UNDER TOWN;MASSIVE ICE;NEEDS CAREFUL PIT MANAGEMENT & DRAINAGE

----------LABORATORY TEST RESULTS AND MATERIAL QUANTITY----------

MOISTURE - NO.: 0 SIZE-ANALYSIS - NO.: 0
RESULTS: OVERSIZED MATERIALS:
USC TEST - NO.: 0 GRAVEL:
CLASS: SAND:
PETROGRAPHICS - NO: 0 FINES:
RESULTS: D50:
OTHER TESTS:

GRANULAR MATERIAL VOLUMES: PROVEN/PROBABLE/PROSPECTIVE

		CLASS 1:	3000/3000/3000
TOTAL VOLUME:	300000	CLASS 2:	
RECOVERABLE :	300000	CLASS 3:	/300000/300000
ANNUAL RECOV:	300000	CLASS 4:	
		CLASS 5:	

LAST UPDATE: 04/25/88 COMPILER: *J. GRUMBLY, J. BICKNELL IAA;*

TABLE 3

COMPARISON GRANULAR RESOURCE SOURCES-
HOLMAN

Source	Use	Environmental and Aesthetic Considerations	Wildlife and Social-Cultural Considerations	Economic Considerations	Comments	Ranking	
						Significance of Impacts	Acceptability of Development
1	Class 2 needs	Not addressed	Not addressed	14-km winter road required	Recommended by EBA for any future large-scale projects requiring Class 2 materials.	Not determined	Not determined
4	Class 2 needs	Not addressed	Not addressed	5.5-km winter road required.	Recommended by EBA for any future large-scale projects requiring Class 2 materials.	Not determined	Not determined
5	Class 2 needs	None identified	None identified	Existing pit serviced by all-weather road.	Currently being used exclusively by Transport Canada for airport maintenance.	Insignificant	Acceptable
7	Class 3 needs	Situated adjacent to existing dump.	None identified	Minimal vegetative cover and overburden. Access by existing all-weather road.	Workshop participants recommend development of this source after Source 5 and Jacks Bay portion of Source 8 are depleted.	Insignificant	Acceptable
8	Class 1, 2, and 3 needs	Potential for coastal erosion if buffer not maintained.	Portions are under developed areas in Hamlet	Portions under developed areas are unavailable. Minimal vegetative cover and overburden. Year-round access. Jacks Bay area proposed for future development.	Jacks Bay portion currently being mined. Hamlet would like this area completely mined prior to opening additional pits.	Insignificant	Acceptable
13	Class 2 needs	Not addressed	Not addressed	12.5-km winter road required	Recommended by EBA for any future large-scale projects requiring Class 2 materials	Not determined	Not determined

PRELIMINARY RECOMMENDATIONS FOR SITE INVESTIGATION WORK

HOLMAN

Priority Sites

5 (Airport pit):

Continued development of this raised beach deposit (on Inuvialuit lands) is recommended by both Project 7.1 and Project 7.4. The former study states that geotechnical/ geological site investigation would be of little benefit due to the current extent of site development; whereas the latter includes a general recommendation for site investigation to determine more reliably the quality and quantity of materials. An initial summer, reconnaissance-level should be considered. The total forecast 20-year granular material demand for the community is 126,000 cu m.

8 (Jacks Bay pit and other pits adjacent to community):

Continued development of these raised beach deposits (primarily on Hamlet lands) is recommended by Project 7.1, and Project 7.4 has recommended specifically the existing pit at Jacks Bay. The former study states that geotechnical/ geological site investigation would be of little benefit due to the current extent of site development; whereas the latter includes a general recommendation for site investigation to determine more reliably the quality and quantity of remaining materials. An initial summer, reconnaissance-level should be considered.

Supplementary Sites

7 (Ukpalik Hill):

Project 7.4 has recommended future development of this raised beach deposit (primarily on Inuvialuit lands) when the above sources are depleted. This study includes a general recommendation for site investigation to determine more reliably the quality and quantity of materials.