

EBA Engineering Consultants Ltd.

Civil, Geotechnical and Materials Engineers

INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

TUKTOYAKTUK, N.W.T.

PREPARED FOR



**INDIAN AND NORTHERN AFFAIRS
CANADA**

APRIL 1987

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1987a**



INUVIALUIT SETTLEMENT SAND AND GRAVEL
INVENTORY AND RECOMMENDATIONS
FOR DEVELOPMENT

TUKTOYAKTUK

REPORT SUBMITTED TO
INDIAN AND NORTHERN AFFAIRS CANADA

SUBMITTED BY
EBA ENGINEERING CONSULTANTS LTD.

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EXECUTIVE SUMMARY

This report presents the results of a study, conducted under the terms of the Inuvialuit Final Agreement, to determine the supply of granular materials and the 20-year demand for granular materials in the community of Tuktoyaktuk. Development scenarios and recommendations designed to optimize the utilization of resources for the anticipated demand are presented.

In summary, the 20-year demand for granular materials in the community is nearly 9.0 million cubic metres. Ninety-six percent of the demand is for projects of a speculative nature, such as construction of the Inuvik-Tuktoyaktuk highway and large-scale onshore petroleum production. The remainder of the demand is for local capital projects (200,000 cubic metres) and maintenance of community facilities (116,000 cubic metres).

In general, granular materials sufficient to meet the forecast demand are available in the Tuktoyaktuk region although not in the immediate vicinity of the community. , In some cases, the demand must be met with material of a slightly lower grade. This would be the case for the construction of facilities for petroleum production because the requested materials have not been identified in the Tuktoyaktuk vicinity. An alternative to using lower class material is to import the required granular material from another region. High-grading, where a higher class of granular material then required is used for a project, commonly occurs in the Tuktoyaktuk area. This practice should be avoided where possible since it results in the early depletion of high quality granular material which is already in short supply.

The community needs a good convenient source of all types of granular material. Such a source would provide a substantial portion of Tuktoyaktuk's public demand and would ensure that borrow materials are reserved for use on community projects. Deposits 155 and 177 are thought to have the potential to be such sources. Geotechnical exploration is currently underway at Source 155, located 32 kilometres south of Tuktoyaktuk. If this deposit is found to contain substantial amounts of quality granular resources, then it could be developed as an all-round community granular material source. If it does not have sufficient potential, then consideration should be given to investigating the potential of Source 177.



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1.0 INTRODUCTION

1.1 Background

The Inuvialuit Final Agreement provided that Canada grant to the Inuvialuit, fee simple title to a land quantum of 90,650 square kilometres (35,000 square miles) in the Western Arctic Region. The Agreement further specified that the land be sub-divided into two categories, that with mineral rights and that without. For purposes of classification, the two categories have become known as 7(1)(a) and 7(1)(b) lands, respectively. The former includes 12,950 square kilometres (5,000 square miles) of lands; the latter 77,700 square kilometres (30,000 square miles). The 7(1)(a) lands are generally located adjacent to each of the six communities (Aklavik, Holman, Inuvik, Paulatuk, Sachs Harbour and Tuktoyaktuk, Figure 1) considered in the Final Agreement. The 7(1)(b) lands generally surround the 7(1)(a) lands and extend outward from the communities.

The Agreement recognized that most of the proven granular resources of acceptable quality within reasonable distance of the communities were located on Inuvialuit 7(1)(a) lands. In order to ensure that adequate reserves of granular material were maintained at a regulated cost, the Agreement granted control of the 7(1)(a) granular resources to the Inuvialuit, subject to certain provisions.

For purposes of the project described in this report, the provisions concern the supply of, and the demand for, granular resources. Under the terms of the provisions, the Inuvialuit agreed to maintain granular material reserves of appropriate quality sufficient to meet the projected 20-year demand as determined by the Inuvialuit Land Administration [ILA] and appropriate levels of government. The demand for granular materials was to be formed on the basis of estimates of requirements in each community.

In order to ensure that adequate supplies of sand and gravel of appropriate quality remained available within reasonable distance of the communities, the provisions stipulated that the supply of granular materials should be prioritized according to end use as determined by the 20-year demand. The first priority was established as the need of the community, the second priority is the need of the Inuvialuit and the third priority is the need of others.

Indian and Northern Affairs Canada [INAC], on behalf of the ILA, has undertaken to develop a granular resources inventory and management plan to fulfill these initial



LEGEND

7(1)(a)

7(1)(b)

NOTE:
PLAN OBTAINED FROM ANNEX C
OF WESTERN ARCTIC CLAIM,
INUVIALUIT FINAL AGREEMENT

TUKTOYAKTUK
AKLAVIK
INUVIK

SACHS
HARBOUR

HOLMAN

PAULATUK

0 80 160 miles
SCALE

EBA Engineering Consultants Ltd.

CLIENT

INDIAN AND NORTHERN AFFAIRS CANADA

PROJECT

GRANULAR RESOURCES INVENTORY
AND MANAGEMENT PLAN

TITLE

INUVIALUIT LANDS LOCATION PLAN
WESTERN ARCTIC AGREEMENT

DATE 87/02/24

DWN EBR

CHKD BAB

JOB NO. 0101-4575

4575-001

obligations. This report presents the resource inventory as it is currently known together with certain development recommendations for the community of Tuktoyaktuk.

1.2 Project Authorization

This study was authorized by Supply and Services Canada [SSC] through Contract No. 25ST.A7134-6-0014, awarded to EBA Engineering Consultants Ltd. [EBA]. The Scientific Advisor for the project was Mr. R. J. Gowan, Geotechnical Advisor for the Northern Renewable Resources Directorate of INAC.

1.3 Project Scope

The project scope, as defined by SSC and INAC in the contract, included the following:

- a) Development of granular resource supply models for each of the six communities by examination of all existing reports describing granular material deposits.
- b) Development of a granular resource demand model for each community through consultation with private and public sector users.
- c) Development of a recommended resource development scenario for each community to ensure reserves are established according to the priorities outlined in the Inuvialuit Final Agreement.
- d) Preparation of appropriate development recommendations for those sources with the best development prospects.

The following task was subsequently added to the project through a contract amendment:

- e) Development of a geotechnical data base consisting of historic borehole information from the study area.



2.0 EVALUATION OF GRANULAR RESOURCES

2.1 Classification

2.1.1 General

A standard for the classification of granular borrow material does not exist within the study area. The first granular resource inventories in the region, carried out in the early 1970's, classified potential borrow material encountered during exploration according to the Unified Classification System [USC]. However, this general classification proved inadequate because there was no direct reference to the end use of the material.

Several years ago, the Government of the Northwest Territories [GNWT] initiated a classification system whereby potential granular borrow was graded according to its most suitable application. The territorial government's system provided the following five material groups:

- Concrete Aggregate [CA],
- Surfacing Material [SM],
- Base [B],
- Subbase [SB],
- Embankment [E] and
- Rip-Rap.

In 1983, INAC adopted a classification system similar to that presented in the draft Territorial Pits and Quarries Regulations that considered both the USC classification of the material as well as the most suitable end use. This system, modified by INAC, is the basis for all borrow material classification carried out under the current contract.

Materials at prospective borrow sources have been graded into one of the five following classes:

Class 1	Excellent Quality Material,
Class 2	Good Quality Material,
Class 3	Fair Quality Material,
Class 4	Poor Quality Material and
Class 5	Bedrock, Felsenmeer and Talus.

These abbreviated descriptions are elaborated upon in the following subsections of this report.



2.1.2 Class 1

Excellent quality material consisting of clean, well-graded, structurally-sound sands and gravels suitable for use as high quality surfacing materials, or as asphalt or concrete aggregate, with a minimum of processing.

2.1.3 Class 2

Good quality material generally consisting of well-graded sands and gravels with limited quantities of silt. This material will provide good quality base and surface course aggregates or structure-supporting fill. Production of concrete aggregate may be possible with extensive processing, except where deleterious materials are present.

2.1.4 Class 3

Fair quality material consisting generally of poorly-graded sands and gravels with or without substantial silt content. This material will provide fair quality general fill for roads, foundation pads or lay-down yards.

2.1.5 Class 4

Poor quality material generally consisting of silty, poorly-graded, fine-grained sand with minor gravel. These deposits may also contain weak particles and deleterious materials. These materials are considered suitable for marginal general (non-structural) fill.

2.1.6 Class 5

Bedrock of fair to good quality, felsenmeer or talus. Potentially excellent sources of construction material, ranging from general fill to concrete aggregate or building stone if quarried and processed. Also includes erosion control materials such as rip-rap or armour stone.

2.1.7 Summary

The five material classes presented above are summarized in Table 1. For reference purposes, the GNWT's classification system has been correlated in the table with the adopted INAC system.



TABLE 1

GRANULAR MATERIAL TYPES

MATERIAL DESCRIPTION	CLASS	POTENTIAL APPLICATIONS
Excellent quality material consisting of clean, well-graded, structurally-sound sands and gravel suitable for use as high-quality (e.g., runway or roof) surfacing materials, or as asphalt or concrete aggregate, with a minimum of processing.	1	Concrete Aggregate (CA), Surfacing Material (SM)
Good quality material generally consisting of well-graded sands and gravels with limited quantities of silt. This material will provide good quality base and surface course aggregates or structure-supporting fill. Production of concrete aggregates may be possible with extensive processing, except where deleterious materials are present.	2	Concrete Aggregate (CA), Surfacing Material (SM)
Fair quality material consisting generally of poorly-graded sands and gravels with or without substantial silt content. This material will provide fair quality general fill for roads, flexible foundation pads, or lay-down yards.	3	Base (B), Subbase (SB), Embankment (E)
Poor quality material generally consisting of silty, poorly-graded, fine-grained sand, with minor gravel. May also contain weak particles and deleterious materials and are considered suitable only for marginal, general (non-structural) fills.	4	Subbase (SB), Embankment (E)
Bedrock of fair to good quality, felsenmeer, or talus. Potentially excellent sources of construction material, ranging from general fill to concrete aggregate or building stone if quarried and processed. Also includes erosion control materials such as rip-rap or armour stone.	5	Rip-rap, or if processed properly, equivalent to Class 1 or any other class of material.



2.2 Inventory

The calculated volumes of the various types of granular materials available at the examined sources have been divided into various certainty levels, as detailed below. These definitions are consistent with those used by INAC.

2.2.1 Proven

A 'proven' volume is one whose occurrence, distribution, thickness and quality is supported by ground truth information such as geotechnical drilling, test pitting and/or exposed stratigraphic sections. Usually the thickness of material encountered in a borehole is extrapolated to a radius not exceeding 50 metres around the hole.

2.2.2 Probable

A 'probable' volume is one whose existence and extent is inferred on the basis of direct and indirect evidence, including topography, landform characteristics, airphoto interpretation, extrapolation of stratigraphy, geophysical data and/or limited sampling.

2.2.3 Prospective

A 'prospective' volume is one whose existence is suspected on the basis of limited direct evidence, such as airphoto interpretation and/or general geological considerations.

In the context of this project, the uncertainty associated with prospective volumes of granular material varies with the terrain conditions specific to the various communities. For instance, substantial amounts of bedrock are located northwest of the community of Aklavik. Since the bedrock has not been explored in detail, the volume of rock is considered to be prospective. Any exploration would likely result in the prospective volume becoming 'probable' or 'proven'. The situation is very different in the vicinity of Tuktoyaktuk, where granular materials are scarce and landforms are poorly defined. Features that contain 'prospective' volumes of material are often found during detailed investigation to contain little or no useable granular material.



3.0 SUPPLY OF GRANULAR RESOURCES

3.1 General

The amount of information available on the borrow sources in the vicinity of each community varies greatly. This is due in part to the historic level of activity in and around each community, but predominately to the relative supply of acceptable quality borrow within reasonable distance of the community.

Communities whose growth has not been significantly affected by northern petroleum exploration (ie. Holman, Paulatuk and Sachs Harbour) have little formal information regarding the location, size and quality of appropriate borrow sources. As the granular materials demand in general is modest and wholly generated by the community, there is little incentive to undertake borrow material studies provided adequate quantities for current needs exist adjacent to the community. The quality of the borrow materials may not meet desirable standards but this is usually offset by the convenient location. If the borrow performs poorly once in place, it is a simple matter to obtain more material and improve the deteriorating areas.

Communities whose recent growth can be partially attributed to northern petroleum exploration (Inuvik and Tuktoyaktuk) have greater requirements for granular resources. These requirements usually impact both the quality and quantity of borrow materials. Industrial developments usually require large volumes of higher quality material.

The extent of identification and investigation of granular material sources has depended upon local demand. Minimal information is available pertaining to borrow reserves in the vicinity of Holman, Paulatuk and Sachs Harbour. Transport Canada has conducted airphoto studies for the area adjacent to each community, but the results have not been confirmed by field evaluations. Information pertaining to borrow resources for Inuvik and Aklavik is available, however, extensive exploration work has not been undertaken because developed sources have been sufficient to meet the demands.

Tuktoyaktuk is a unique situation with respect to supply of granular materials. Although Tuktoyaktuk has grown substantially over the past 10 years and petroleum resource activities have put unusual demands on granular material resources, semi-continuous granular resource exploration activities have generally failed to prove large deposits of quality material within a reasonable distance of the community.



The supply of granular resources for the six western Arctic communities was determined summarizing existing data from site investigations, airphoto interpretation and field reconnaissance of prospective sources. These estimates were made by combining the areal extent of the sources (aerial photography and field measurements) with the stratigraphy determined from test pits and boreholes within the source.

The accuracy of the estimates may not accurately reflect the true situation as detail is lacking for certain sources. Some sources have no ground truthing or very few boreholes and test pits and the depth to which the investigations were completed was often insufficient to reasonably represent the extent of the individual materials within a source. Testing of samples for moisture content or grain size analysis was not necessarily carried out consistently and so designation of a certain class of material to a particular source may be based only upon visual soil description.

Source-by-source descriptions and estimated material volumes are located in the Supply appendix. The following sections describe the supply of granular resources situated on or near 7(1)(a) and 7(1)(b) lands adjacent to the community of Tuktoyaktuk.

3.2 Tuktoyaktuk

3.2.1 General

Tuktoyaktuk is located on the south Beaufort coast adjacent to a natural harbour. Granular deposits in the area range from coastal shoals and beaches to till-capped inland fluvial features consisting of deltaic sands, glaciofluvial sands and marine clays. Several of these features are currently used as sources of fair quality sand and gravel for the community; higher quality materials are frequently imported from Richards Island.

The area around Tuktoyaktuk has undergone extensive periglacial modification. Thermokarst and massive ice features (pingos and ice wedges) are very common and occur throughout the region. Thaw of these features during recovery of borrow material can severely affect the utility and volume of material recovered. The previously developed source located on the eastern side of Tuktoyaktuk Harbour (160/161) has recently been suggested a 'no development zone' due to extreme distress caused by thaw of massive ice.



Exploration for granular resources has occurred over the past 10 to 15 years, but no substantial source of suitable granular material has been proven and exploited. Geotechnical exploration of Source 155, a potential source of higher quality fill, is currently in progress.

A complete description of the granular resources located within the community's region is presented in the following sections.

3.2.2 Class 1

A relatively small volume (124,000 cubic metres) of Class 1 material has been proven in the Tuktoyaktuk region. This volume has been proven at only 3 of the 67 sources considered in this study (Figure 7 and Table 18). These sources are 156, 168 and 304. The volumes of probable and prospective Class 1 material are substantially larger; 6.7 million and 11.6 million cubic metres, respectively. Distances from the community vary from 0 to 64 km. The largest single source of prospective Class 1 material is Source 176 with a probable volume of 1.5 million cubic metres and a prospective volume of 3.1 million cubic metres. This source is located 50 km from the community. Access to this source is only available over winter roads

3.2.3 Class 2

Class 2 material is slightly more abundant than Class 1. Figure 7 and Table 19 show that the proven volume of Class 2 material is about 1.8 million cubic metres. Probable and prospective volumes are 11.3 million and 17.3 million cubic metres, respectively. Twenty-seven of the sixty-seven sources studied have probable volumes ranging from a low of 7,500 cubic metres to a maximum of 2.3 million cubic metres. Prospective volumes range from 7,500 cubic metres to 3.1 million cubic metres. Distances from the community range from 0 to 69 km. The largest single proven source is Parson's Lake 1 with a proven volume of 1 million cubic metres. The largest single prospective source is Source 176 with an estimated volume of 3.1 million cubic metres. Both Parson's Lake 1 and Source 176 are located at least 50 km from the community and have development constraints including the presence of massive ice and locations that may be considered environmentally sensitive. The closest source to Tuktoyaktuk is 160/161 which is located adjacent to the harbour.



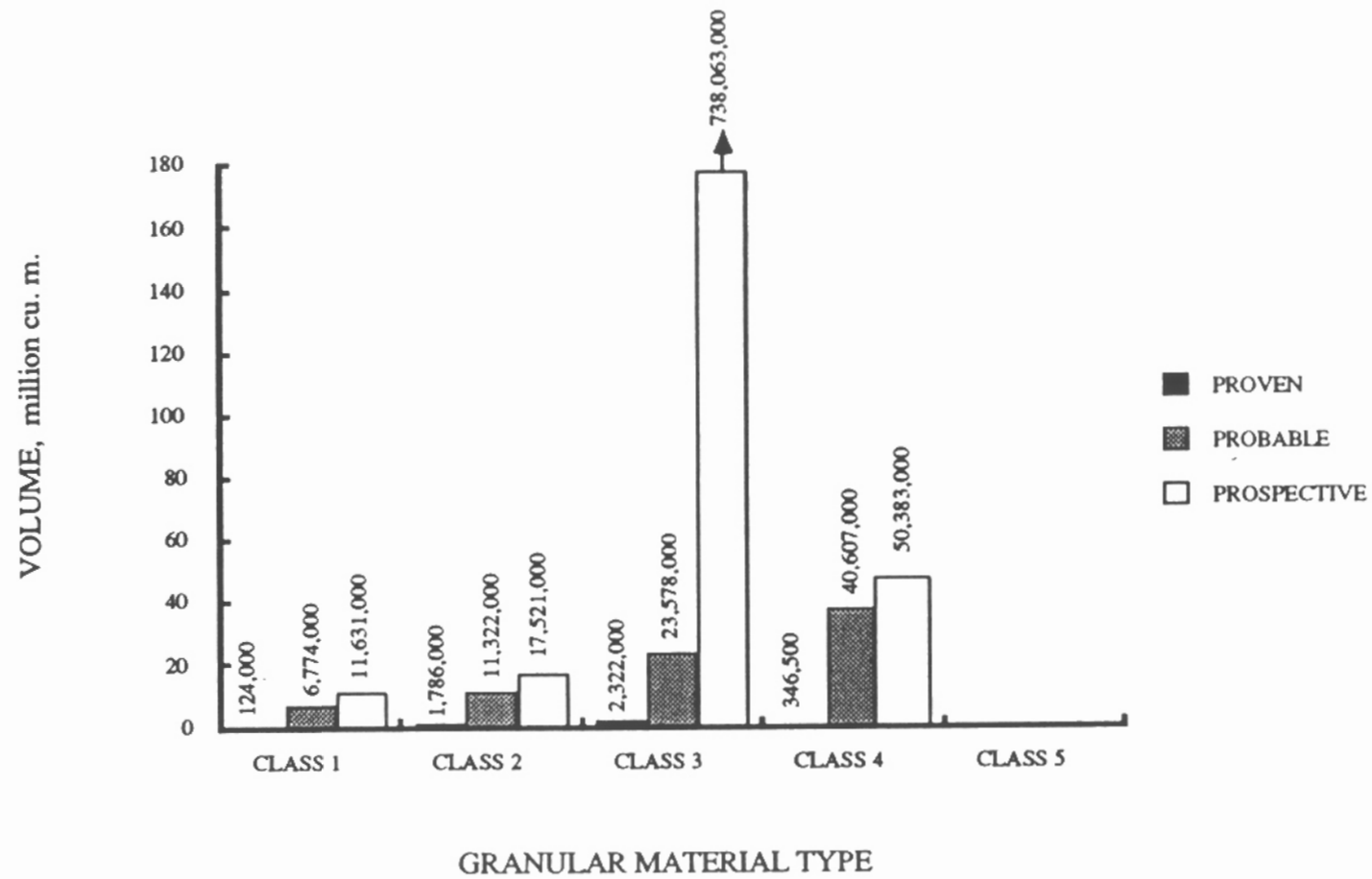


FIGURE 7

SUPPLY OF GRANULAR RESOURCES-
TUKTOYAKTUK

TABLE 18 DISTANCE TO CLASS 1 GRANULAR RESOURCES-
TUKTOYAKTUK

SOURCE	DISTANCE (km)	PROVEN (cu. m.)	PROBABLE (cu. m.)	PROSPECTIVE (cu. m.)	CONSIDERATIONS
162	0		70,000	1,050,000	Tuktoyaktuk Harbour
159	2		700,000	875,000	Coastline
158	5		120,000	370,000	Coastline
156	8	45,000	45,000	45,000	Coastline
169	16		204,000	306,000	Discontinuous
177	22		317,000	634,000	Overburden thickness
168	25	70,000	70,000	70,000	
166	32		26,000	130,000	Discontinuous
170	32		61,000	458,000	Overburden thickness
171	35		100,000	300,000	Discontinuous
304	35	9,200	9,200	9,200	
172	37		24,000	24,000	Massive ice
306	42		57,500	115,000	Discontinuous
151	48		380,000	380,000	Shoreline, Husky Lakes
176	50		1,525,000	3,050,000	Massive ice
308	50		15,000	15,000	Discontinuous
309	56		750,000	1,500,000	Discontinuous
312	64		2,300,000	2,300,000	Shoreline, Husky Lakes



TABLE 19 DISTANCE TO CLASS 2 GRANULAR RESOURCES-
TUKTOYAKTUK

SOURCE	DISTANCE (km)	PROVEN (cu. m.)	PROBABLE (cu. m.)	PROSPECTIVE (cu. m.)	CONSIDERATIONS
160/161	0		128,000	128,000	Adjacent to Tuktoyaktuk
177	22		317,000	634,000	Overburden thickness
27A	24		190,000	190,000	Overburden thickness
27B	24		40,000	40,000	
167	27		220,000	880,000	Discontinuous
165	32		85,000	1,300,000	Discontinuous
164	35		534,000	890,000	Discontinuous
304	35	9,200	36,800	36,800	
172	37		24,000	24,000	Massive ice
27	42		40,000	40,000	Overburden thickness
305	42		230,000	230,000	Massive ice
173	45		62,000	230,000	Massive ice
174	48		290,000	1,090,000	Massive ice
175	50		102,000	510,000	Massive ice
176	50		1,525,000	3,050,000	Massive ice
211	50	84,500	301,000	301,000	Ground ice
309	56		750,000	1,500,000	Discontinuous
Parsons Lk.1	60	1,000,000	1,000,000	1,000,000	River environment
Parsons Lk.2	60	230,000	230,000	230,000	Ground ice
Parsons Lk.3	60	400,000	400,000	400,000	River environment
Parsons Lk.5	60	30,000	30,000	30,000	Overburden thickness
Parsons Lk.6	60	7,500	7,500	7,500	Overburden thickness
Parsons Lk.7	60		20,000	20,000	Overburden thickness
Parsons Lk.8	60	25,000	25,000	25,000	Overburden thickness
Parsons Lk.10	60		135,000	135,000	Overburden thickness
312	64		2,300,000	2,300,000	Shoreline, Husky Lakes
314	69		2,300,000	2,300,000	Shoreline, Husky Lakes

This source has been developed to a certain extent and the volumes remaining are unknown.

3.2.4 Class 3

The largest proven, probable and prospective supply of granular material in the Tuktoyaktuk region is of Class 3 type. Figure 7 and Table 20 show that the proven resources total about 2.3 million cubic metres. Probable volumes are in the order of 30 million cubic metres and prospective volumes are about 178 million cubic metres. The largest single proven source is Source 157, located about 5 km from Tuktoyaktuk, with 1 million cubic metres. This source is located on the coast which may prove to be environmentally sensitive. Depletion of this source could be carried out in one year at typical extraction depths of 1.5 metres. The largest probable and prospective source is Source 163 with about 10 million cubic metres and 150 million cubic metres, respectively. Source 163 is located about 35 km northeast of the community. No apparent development constraints are applicable to Source 163.

Source 155, located approximately 32 kilometres southwest of Tuktoyaktuk is currently being explored as a source of granular material. The source is estimated to contain a probable volume of 1.2 million cubic metres and a prospective volume of 2.6 million cubic metres. Preliminary results from the drilling program suggest that 600,000 cubic metres of granular material have been proven at the source, assuming an average extraction depth of 1.5 metres.

3.2.5 Class 4

The supply of Class 4 material is of the same magnitude as the Class 1 and 2 material. The proven volume is approximately 350,000 cubic metres, the probable is 11 million cubic metres and the prospective is 16 million cubic metres (Figure 7 and Table 21). Source 211 has the largest proven supply of 211,000 cubic metres. However, its potential total volume is only 640,000 cubic metres. The largest probable and prospective source is Source 217, located 64 km southwest of Tuktoyaktuk, with 2.4 million cubic metres for both. There is however, a large amount of ground ice in this source and the source is of marginal quality. Other substantial sources include 23A, 211E, 216, 216S, and 152A. All of the sources cited in this section are a minimum of



TABLE 20 DISTANCE TO CLASS 3 GRANULAR RESOURCES-
TUKTOYAKTUK

SOURCE	DISTANCE (km)	PROVEN (cu. m.)	PROBABLE (cu. m.)	PROSPECTIVE (cu. m.)	CONSIDERATIONS
162	0		285,000	4,275,000	Tuk Harbour
160/161	0		622,000	622,000	Adjacent to Tuk
159	2		2,100,000	2,625,000	Coastline
157	5	990,000	990,000	990,000	Coastline
158	5		1,143,000	3,430,000	Coastline
156	8	185,000	185,000	185,000	Coastline
181	8	260,000	260,000	260,000	Ground ice
183	12	118,500	118,500	118,500	Ground ice
169	16		306,000	459,000	Discontinuous
184	19	220,000	220,000	220,000	Ground ice
177	22		317,000	634,000	Overburden thickness
168	25	280,000	530,000	530,000	
167	27		220,000	880,000	Discontinuous
155	32		1,160,000	2,600,000	
170	32		549,000	4,122,000	Overburden thickness
163	35		10,000,000	150,000,000	
164	35		1,068,000	1,780,000	Discontinuous
171	35		67,000	406,000	Discontinuous
172	37		96,000	435,000	Massive ground ice
173	45		122,000	458,000	Massive ground ice
175	50		204,000	1,020,000	Massive ground ice
206	57		200,000	1,000,000	Massive ground ice
207	60		150,000	300,000	Overburden, ground ice
2.24	60			12,000,000	Lake environment
Parsons Lk.4	60	150,000	150,000	150,000	Overburden thickness
Parsons Lk.8	60	50,000	50,000	50,000	Overburden thickness
Parsons Lk.9	60	38,000	38,000	38,000	Overburden thickness
Parsons Lk.11	60		150,000	150,000	Overburden thickness
313	67		38,000	38,000	Shoreline, Husky Lakes
219	69	30,000	30,000	30,000	Marginal quality
2.34	70			55,000,000	Lake environment
327	71		760,000	760,000	Shoreline, Husky Lakes
2.40	75			40,000,000	
325	76		750,000	750,000	Shoreline, Husky Lakes
2.36	80			300,000,000	
2.37	80			50,000,000	
2.38	85			100,000,000	Lake environment
200A	95		700,000	1,750,000	IBP

TABLE 21 DISTANCE TO CLASS 4 GRANULAR RESOURCES-
TUKTOYAKTUK

SOURCE	DISTANCE (km)	PROVEN (cu. m.)	PROBABLE (cu. m.)	PROSPECTIVE (cu. m.)	CONSIDERATIONS
171	35		133,000	814,000	Discontinuous
24A	37		150,000	150,000	Overburden thickness
172	37		96,000	435,000	Massive ground ice
23	42		350,000	350,000	Overburden thickness
23A	42		1,900,000	1,900,000	Overburden thickness, ice
213	46		300,000	600,000	Massive ground ice
211E	47	15,000	1,600,000	1,600,000	Poor quality, ground ice
174	48		590,000	2,190,000	Massive ground ice
211	50	211,000	639,000	639,000	Ground ice
208A	51		450,000	5,000,000	Poor quality
209	55		280,000	1,000,000	Poor quality
212	55		190,000	190,000	Thick overburden, ground ice
307	55		115,000	115,000	Discontinuous
310A	57		350,000	350,000	Poor quality, shoreline
216	59		1,000,000	1,000,000	Poor quality, ground ice
216S	60	13,000	1,700,000	1,700,000	Poor quality, ground ice
311	62		300,000	300,000	Shoreline, Husky Lakes
217	64	7,500	2,350,000	2,350,000	Poor quality, ground ice
219	69	100,000	100,000	100,000	Marginal quality
328A	80			100,000	Poor quality, shoreline
203A	81		7,000,000	7,000,000	IBP
201A	95		20,000,000	20,000,000	IBP
202A	95		1,000,000	1,000,000	IBP
152A	160		14,000	1,500,000	Coastline



35 km and range up to 160 km from Tuktoyaktuk. Generally, the sources of Class 4 material are either discontinuous, have thick overburden, are of marginal to poor quality, have extensive ground ice, or are in environmentally sensitive areas.

3.2.6 Class 5

There were no sources of Class 5 material identified in the Tuktoyaktuk study region.



4.0 DEMAND FOR GRANULAR RESOURCES

4.1 General

The purpose of the demand model was to determine the requirements for granular materials within the study area for a period encompassing the next 20 years. The needs of the model required that a substantial amount of specific information be obtained. This information consisted of descriptions of proposed types of projects and end users of the granular material, as well as material type and volume requirements.

The first step in compilation of the demand model was the identification of individuals and groups likely to have granular material demands or, alternatively, be concerned with the use of granular materials in general. A list of potential respondents was prepared by identifying the various departments in all levels of government involved with civil-oriented community projects and by forming a list of contractors residing or prominent in each community. A questionnaire was then assembled and distributed.

The questionnaire was designed to determine the need for various quantities of selected types of granular materials and to indicate the end use of the material. The questionnaire recipient was also asked to indicate, if possible, the likely or preferred source of the granular materials for each project or material type. In an attempt to quantify the rate of granular material demand, information was requested to be submitted in four data blocks, each five years in length.

Shortly after submission of the questionnaires, two EBA representatives, Messrs. D. Hayley, P. Eng., and J. Carss, P. Eng., visited each project community, as well as Yellowknife and Cambridge Bay, to meet with recipients of the questionnaires and other representatives of the local community to discuss their specific requirements for granular materials. This not only provided direct contact with most of the users and regulators of granular materials but also permitted the EBA representatives to become familiar with local conditions regarding granular resources.

Recipients of the questionnaire who were not visited were contacted by telephone, where possible, to ensure that all possible input was obtained and to clarify any questions or ambiguities that developed regarding the information sought by the questionnaire. The data collected was then assembled into a computerized data base to facilitate data handling and interpretation.



A large number of the respondents defined material quality in terms other than those in the INAC classification system that was outlined in the questionnaire. Table 1 presents the current interpretation of these various classes of required materials in light of the INAC classification system.

The process of data assimilation indicated that a project requiring granular materials could best be described as belonging to one of three categories: planned capital projects, speculative projects and maintenance. While the demand generated by all three project categories may be somewhat speculative, the 'speculative' projects category specifically refers to large scale projects that may or may not occur within the next 20 years. These projects usually involve a political decision and require a substantial commitment of both funding and granular materials and typically involve projects such as airstrips, lengthy highways and construction of infrastructure for the production of oil and gas.

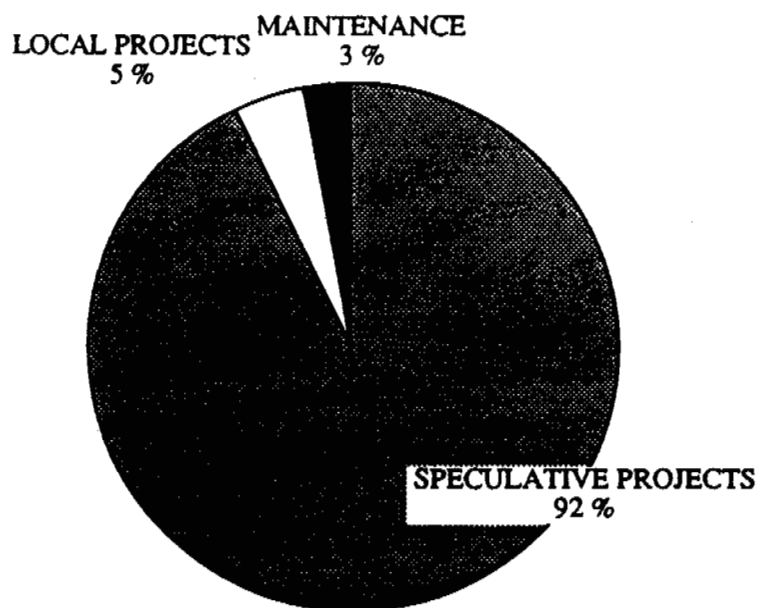
The total demand for granular materials in all of the Western Arctic communities is graphically presented in Figure 8. The total demand for granular materials for the years 1987 to 2007 has been estimated at 17.4 million cubic metres. Ninety-two percent of the demand (16 million cubic metres) is for projects that have been described as speculative, five percent of the demand (0.8 million cubic metres) has been indicated for planned capital projects and three percent of the demand (0.6 million cubic metres) has been designated for maintenance. Most of the demand is created by the various levels of government, with expansion of private industry requiring only three percent of the non-speculative capital project demand.

Despite the attempt of the questionnaire to determine the 20-year demand in 5-year blocks, most data received did not contain any specific 5-year information for non-speculative capital projects beyond 1991. The reasons for this occurrence appear to be two-fold: first, the Territorial Government uses an annually up-dated 5-year plan for budgeting capital expenditures; and second, most of the communities will acquire their basic facilities (ie. schools, nursing stations, government offices, etc.) within the next five years.

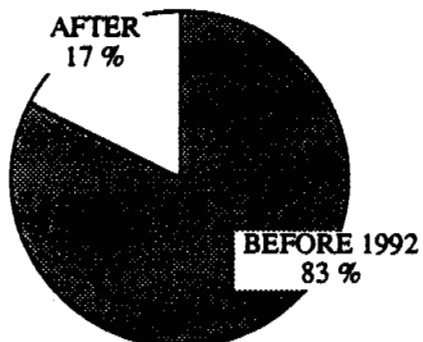
Projects designated as speculative appear to require 38 percent of the designated 16 million cubic metres within the next five years and 62 percent thereafter. This breakdown is likely as speculative as the projects themselves, since it predominately reflects the desire for the project to occur in the near future. In contrast to the public/private split



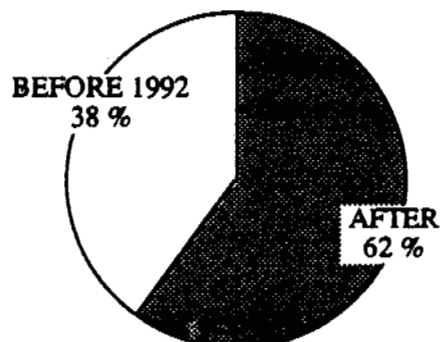
**DISTRIBUTION OF
DEMAND
BY PROJECT TYPE-
All Communities**



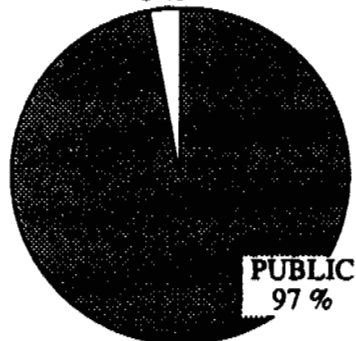
LOCAL PROJECTS



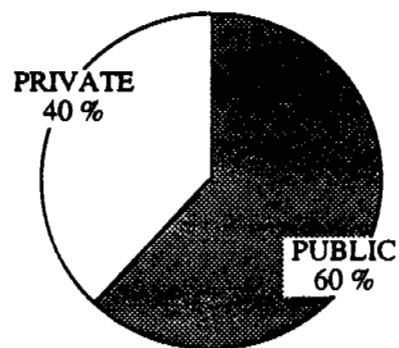
SPECULATIVE PROJECTS



PRIVATE
3 %



PRIVATE
40 %



**FIGURE 8 GRANULAR RESOURCES DEMAND SUMMARY-
ALL COMMUNITIES**



on local capital projects, private industry envisages requiring 40 percent (6.9 million cubic metres) of the total speculative demand.

The following subsections present and discuss the demand data collected. Granular material requirements for the projects identified within the area of the community are presented and summarized in the Demand appendix. Figures presenting the required volume of each class of material for Tuktoyaktuk are contained in the following text.

4.2 Tuktoyaktuk

4.2.1 General

Tuktoyaktuk shares much in common with Inuvik in terms of granular needs. Very large quantities of granular materials could be required if either the Inuvik-Tuktoyaktuk Highway were to be built or if resource exploration activities were to increase. For purposes of this study, the community is mature enough that many of their public facilities require only modest up-grading within the foreseeable future. Total 20-year granular material demands are 200,000 cubic metres for local capital projects, 116,000 cubic metres for maintenance and 8.6 million cubic metres for speculative projects. Only 35 percent of the capital projects requirement (69,200 cubic metres) is needed within the next five years while the speculative projects will require nearly 20 percent of their total demand (1.7 million cubic metres) within the next five years. New road construction and shore protection projects each constitute 31 percent of the capital projects granular demand while private development requires only 1,500 cubic metres. Slightly less than one-half of the speculative projects requirement has been imposed by the private sector. The demand for each material class, including speculative projects, is presented in Figure 21, and a summary is presented in Figure 22. The demand, excluding speculative projects is presented in Figure 23; Figure 24 presents a demand summary.

Tuktoyaktuk is unique in that 61.4 percent of the granular resource demand is allocated to capital projects which will be undertaken beyond 1992. This might be regarded as an indication of the maturity of the community since no other community was able to forecast any significant granular needs for local capital projects beyond 1992.



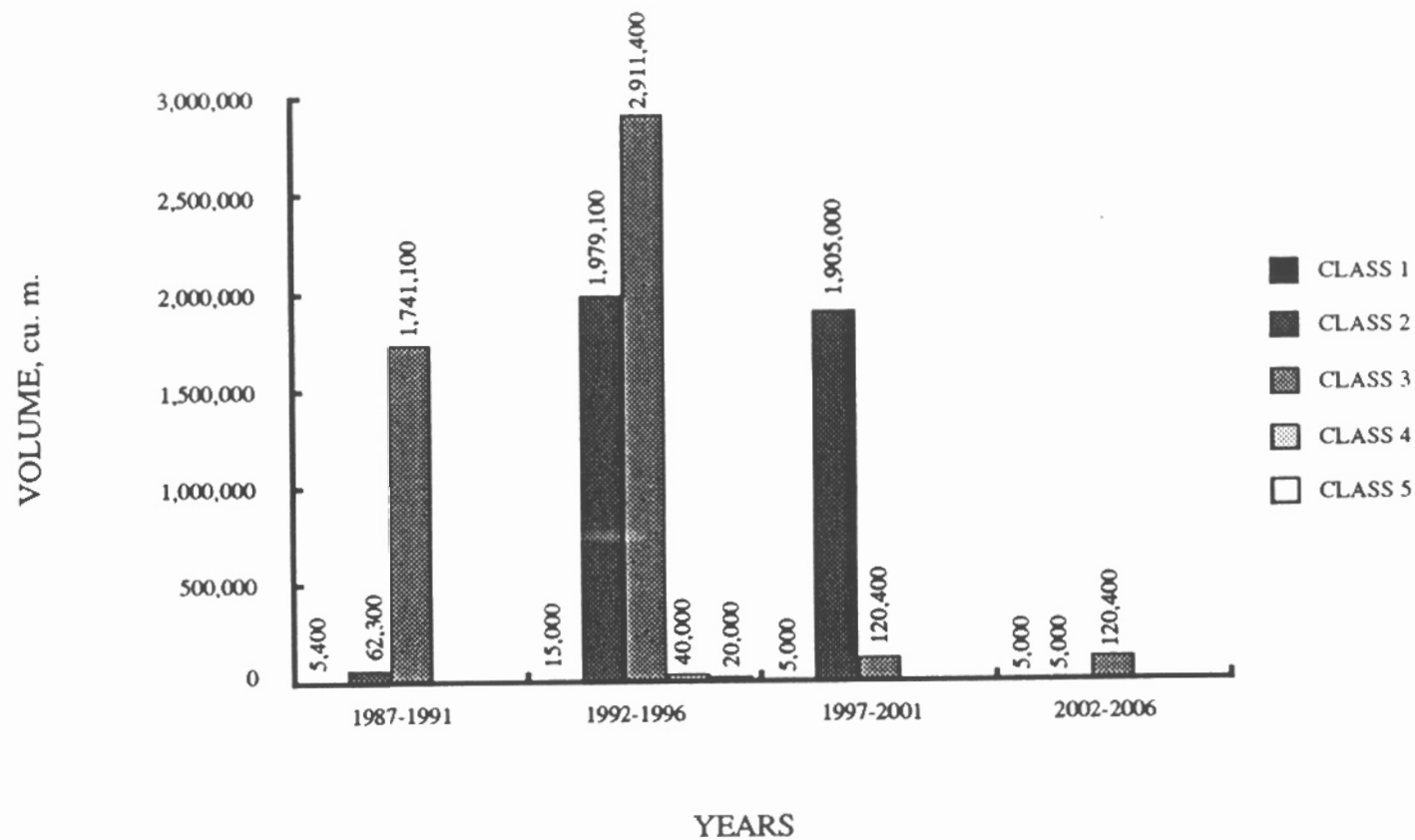


FIGURE 21

DEMAND FOR GRANULAR RESOURCES-
TUKTOYAKTUK (WITH SPECULATIVE PROJECTS)



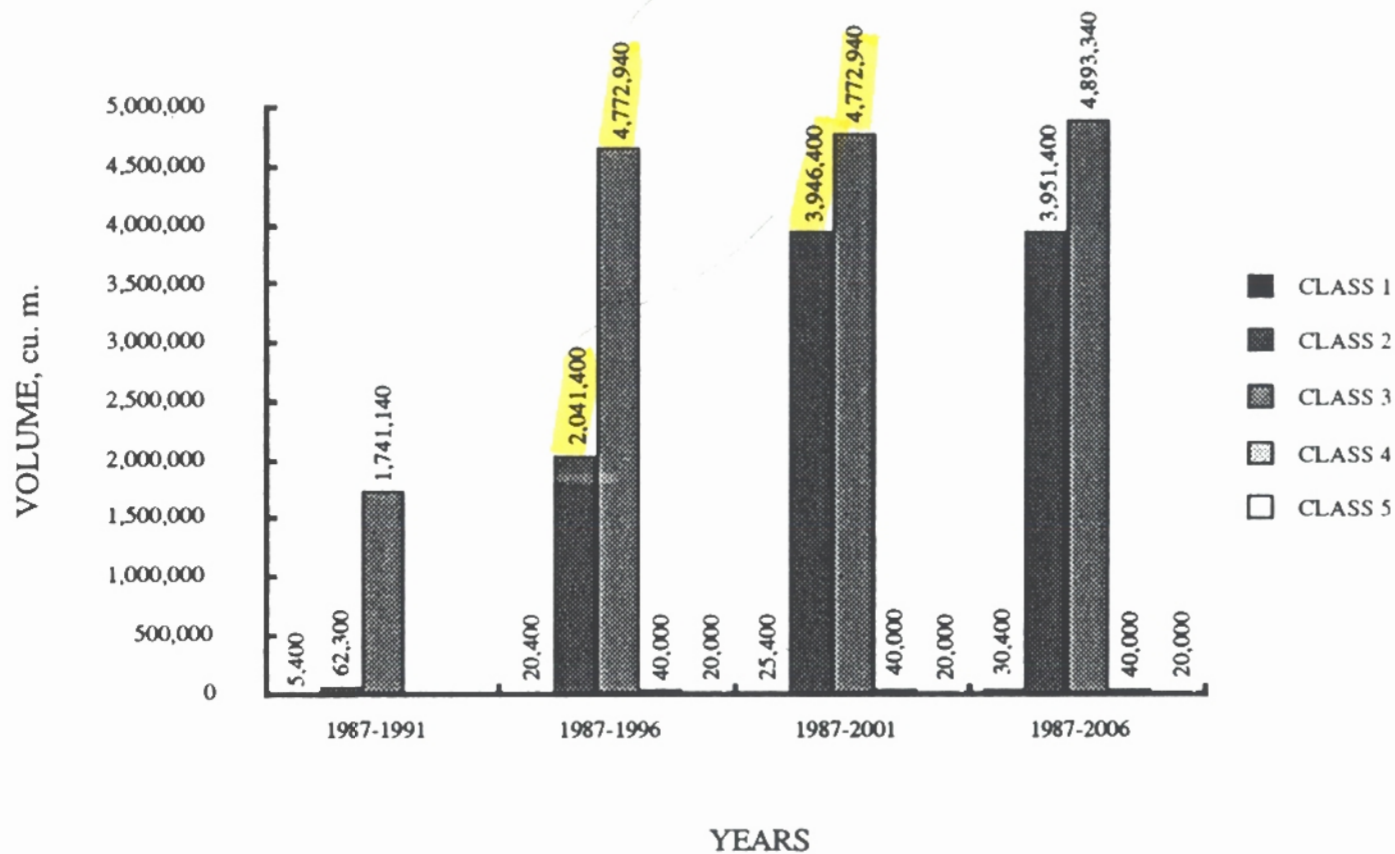


FIGURE 22

CUMULATIVE DEMAND FOR GRANULAR RESOURCES-TUKTOYAKTUK (WITH SPECULATIVE PROJECTS)

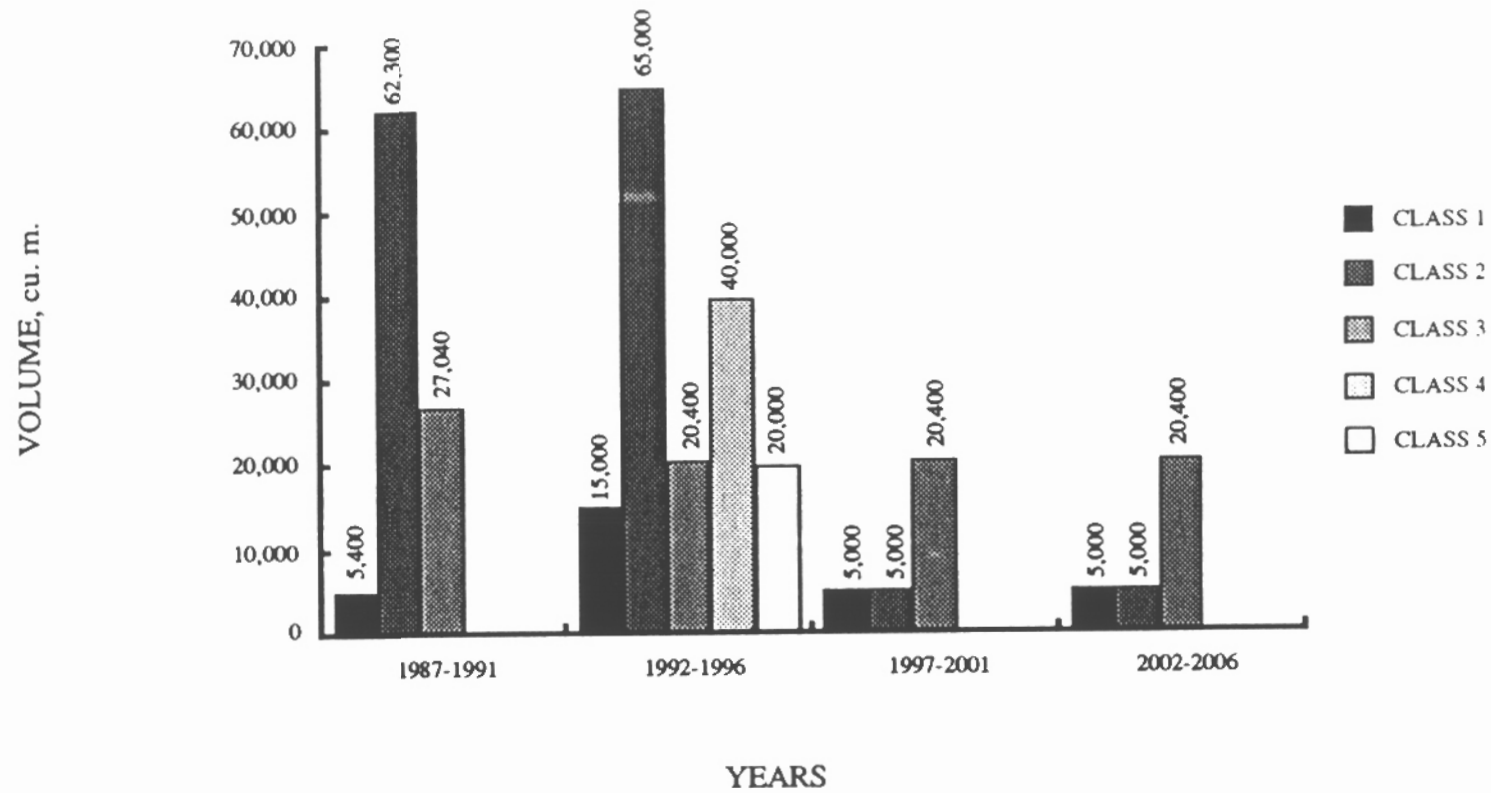


FIGURE 23 DEMAND FOR GRANULAR RESOURCES-TUKTOYAKTUK (WITHOUT SPECULATIVE PROJECTS)

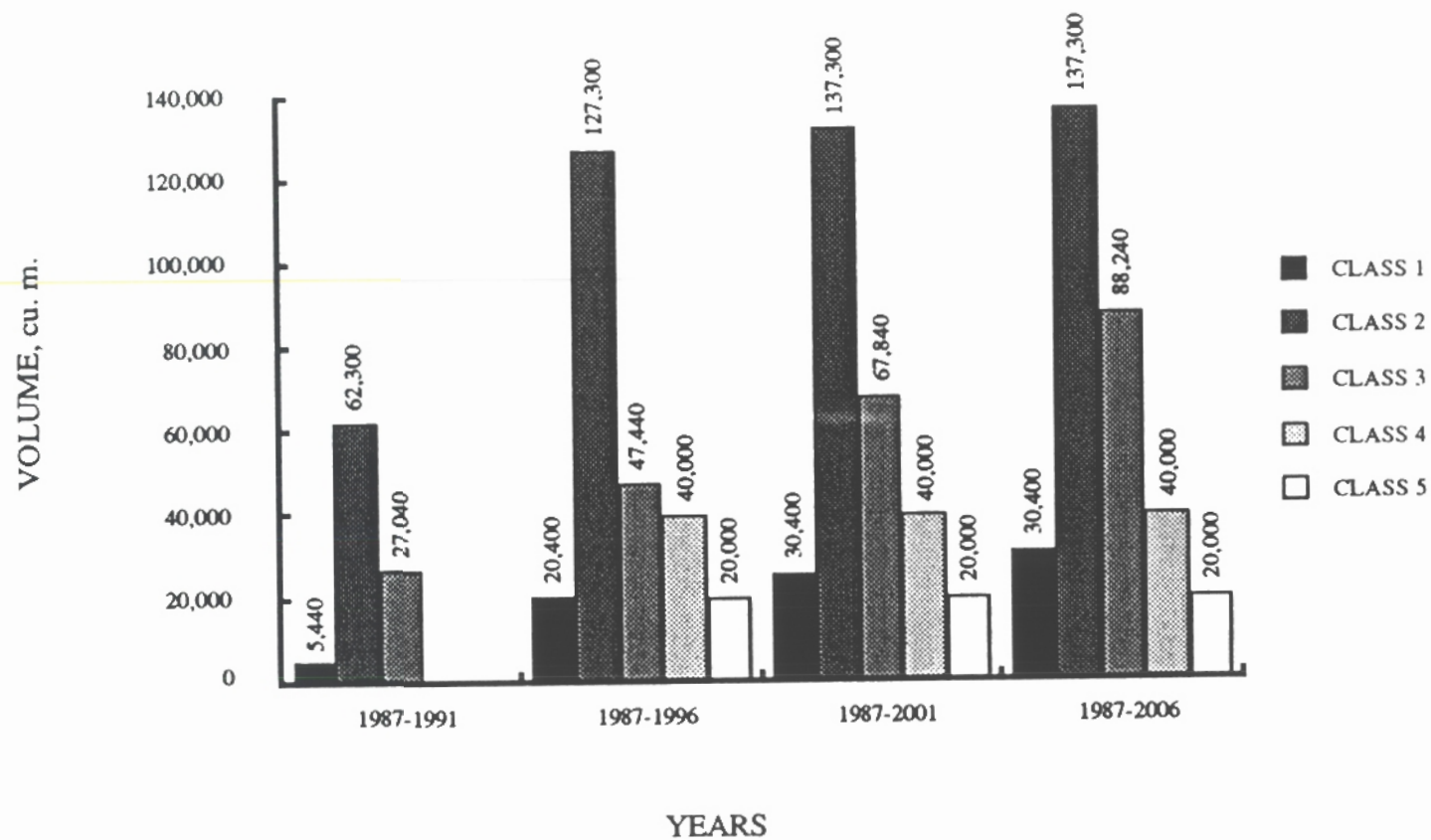


FIGURE 24 CUMULATIVE DEMAND FOR GRANULAR RESOURCES-TUKTOYAKTUK (WITHOUT SPECULATIVE PROJECTS)

4.2.2 Class 1

Tuktoyaktuk has generated a demand for 30,400 cubic metres of Class 1 granular material for the years between 1987 and 2006, inclusive. Required within the first group of five years is 5,400 cubic metres of material; a demand of 15,000 cubic metres exists for 1992 through 1996. The two last 5-year groups each have a requirement for 5,000 cubic metres of Class 1 material.

Most of the demand is required for road maintenance purposes. The increased demand that exists between 1992 and 1997 is caused by land assembly and road construction projects.

4.2.3 Class 2

The Class 2 granular material requirement is 4 million cubic metres, inclusive of speculative projects. This demand is split disproportionately between each of the four time periods, with a demand of 62,300 cubic metres in the first five years, 1.98 million cubic metres in the second five years, 1.90 million cubic metres in the third five years and 5,000 cubic metres in the last 5-year block.

The speculative projects occur within between 1987 and 2001. Projects considered to be speculative consist of onshore oil and gas production (3.76 million cubic metres) and expansion of the airstrip (58,100 cubic metres). The demands created by these projects are responsible for 97 percent of the total demand for Class 2 material. Excluding the speculative projects results in a total demand of 137,300 cubic metres of Class 2 material.

4.2.4 Class 3

The amount of Class 3 material required for the years 1987 through 2006 is 4,893,400 cubic metres. The first group of years has an indicated requirement of 174,200 cubic metres; the second group of years 2.9 million cubic metres and each of the last two groups of years 120,400 cubic metres.

Speculative projects are responsible for most of the demand. Without these projects, the total 20-year demand is for 88,240 cubic metres of Class 3 material. Projects considered to be speculative consist of the proposed Inuvik-



Tuktoyaktuk highway (3.30 million cubic metres), pipeline and site development (14,100 cubic metres) and airstrip expansion (1.5 million cubic metres).

The remaining demand (88,000 cubic metres) is nearly equally distributed over the four 5-year blocks. The bulk of this demand is for material to be used for road maintenance and other general public projects.

4.2.5 Class 4

Only 40,000 cubic metres of Class 4 granular material are required during the second five years of the study period, with no apparent requirement for material of this type in other years. This demand is generated by land development and construction of a solid waste disposal site.

4.2.5 Class 5

A demand exists for 20,000 cubic metres of Class 5 granular material. This demand is generated by an erosion control project scheduled to occur between 1992 and 1996, the second five years of the study period.



5.0 DEVELOPMENT SCENARIOS

5.1 Tuktoyaktuk- Speculative Projects Included

5.1.1 General

Tuktoyaktuk's granular materials currently come from YaYa Lake and several deposits located closer to the community. A number of granular deposits have been 'scalped' and essentially abandoned. These sources are occasionally re-opened if new demand occurs near the pits, but for the most part, the pits remain undeveloped.

An exception is Source 160/161 (located on the east side of Tuktoyaktuk Harbour), which has been continuously developed over the past few years. This pit is now nearly depleted and in need of restoration. It is likely that additional borrow material can be obtained from the pit during reclamation activities, but this should be a secondary consideration for planning restoration activities.

Development of Source 168 is underway; at time of report preparation permits for the removal of 200,000 cubic metres had been issued. Class 1 and 3 granular material is being excavated from the source and used for beach nourishment as part of an overall shoreline erosion protection system. In spite of its relatively small size, Source 168 is considered to be one of the best sources of quality gravel in the Tuktoyaktuk area. This quality resource is being underutilized in this application. In the future, it is recommended that Source 168 be reserved for community projects that require high quality granular material.

The community needs a good source of all types of granular material. Such a source would provide a substantial portion of Tuktoyaktuk's public demand and would ensure that borrow materials are reserved for use on community projects. Deposit 177 is thought to have the potential to be such a source. However, exploration was underway at Source 155, located 32 kilometres south of Tuktoyaktuk during this study. If this source is found to contain substantial amounts of quality granular resources, then it could be developed as an alternative to Source 177.



With reference to Table 28, the proposed development scenario for Tuktoyaktuk is presented in the following subsections.

5.1.2 Class 1

The demand for Class 1 material ranges from 5,000 to 15,000 cubic metres per five years and is not affected by any speculative projects in the Tuktoyaktuk region. It is recommended that the required borrow material be obtained from Source 177 for the first 10 years (until 1997) and from a combination of 177 and Source 168 thereafter. Superior portions of the YaYa Lake pit are also acceptable sources of Class 1 material, but the costs of extracting the borrow and hauling it to Tuktoyaktuk are likely higher than for material that could be obtained locally.

Source 177 has the potential to be a major supplier of Class 1 through 3 granular resources and it is this multiplicity that makes 177 attractive as a prime source. If the highway from Inuvik is completed within the next ten years, access to 177 will be enhanced as will the accessibility of Source 168. The latter source has been recognized as a small but prominent source of Class 1 and 3 borrow, although access to the site is difficult due to its distance from Tuktoyaktuk. Road construction will make Source 168 attractive as a source of Class 1 borrow material, making pit development desirable not only for projects in Tuktoyaktuk, but for limited highway construction purposes as well.

5.1.3 Class 2

Speculative projects impose a large demand on the prospective sources of Class 2 granular material in the Tuktoyaktuk region. Slightly more than 2.0 million cubic metres of Class 2 borrow are required for development of onshore petroleum facilities between 1992 and 2001.

The demand greatly exceeds the requirements of the Tuktoyaktuk community and the required quantity simply does not exist within any of the known borrow sources in the study area, with the exception of the YaYa Lake pit, an expensive alternative. It is therefore, recommended that the demand be satisfied with Class 3 material and that this material be obtained from Sources 163, 164 and 165. These sources are located some distance from the proposed highway and the



TABLE 28

GRANULAR RESOURCE UTILIZATION-
TUKTOYAKTUK
(With Speculative Projects)

MATERIAL	1987-1991	1992-1996	1997-2001	2002-2006
CLASS 1 Demand, cu. m. Source(s)	5,440 177	15,000 177	5,000 177/168	5,000 177/168
CLASS 2 Demand, cu. m. Source(s) Source(s) Source(s)	62,300 177	1,979,100 177 (58,100) 177 (65,000) 163/164/165 (1,856,000)	1,905,000 177 (5,000) 163/164/165 (1,900,000)	5,000 177 (5,000)
CLASS 3 Demand, cu. m. Source(s) Source(s) Source(s) Source(s) Source(s) Source(s) Source(s)	1,741,140 181/183 (27,040) 177/169/ 181/183 (14,100) 168/169/170/ 171/172/173/ 177/312/314/ Parsons Lk. (1,700,000)	2,911,400 181/183 (20,400) 168/169/170/ 171/172/173/ 177/312/314/ Parsons Lk. (1,400,000) 162 (1,491,000)	120,400 181/183 (20,400) 168 (100,000)	120,400 181/183 (20,400) 168 (100,000)
CLASS 4 Demand, cu. m. Source(s)		40,000 177		
CLASS 5 Demand, cu. m. Source(s)		20,000 1403/R28/29		

NOTES:

1. Available volumes of Class 2 material are insufficient to meet the demand imposed by onshore production facilities (2,076,000 cu. m.). Sources 163/164/165 (Class 3 material) are suggested as an alternative. The other option would be to import the borrow from YaYa Lake.
2. Numerous sources of Class 3 material for construction of the Tuktoyaktuk-Inuvik highway are suggested.
3. Use of Source 162 (Tuktoyaktuk Harbour) to obtain the required volume of material for expansion of the airstrip is recommended.
4. Source 155 is currently being explored as a source of higher quality material. If substantial reserves of quality material are found, Source 155 could replace Source 177 as the recommended main community source.

community, but represent suitable sources of fill material that will not likely be developed for community needs.

Community and proposed airstrip expansion projects should be supplied with material obtained from Source 177, also recommended as a source of Class 1 fill material.

5.1.4 Class 3

Speculative projects put a tremendous demand on the supply of Class 3 borrow materials. Most of the speculative demand is generated by construction of the proposed Inuvik-Tuktoyaktuk highway (3.1 million cubic metres) and proposed expansion of the community airstrip (1.5 million cubic metres).

It is recommended that granular material for highway construction purposes be obtained from sources located along the proposed alignment (168, 169, 170, 171, 172, 173, 177, 312, 314 and Parsons Lake) and that the material required for airport expansion be dredged from Tuktoyaktuk Harbour (Source 162). Providing that a dredge is available, recovery of harbour borrow would be feasible for the volumes required since all other large sources of Class 3 material are located at some distance from the community.

The volume estimated for construction of a gas pipeline to service Tuktoyaktuk (an Inuvialuit project) has been estimated at 14,100 cubic metres. This volume of material should be obtained from Sources 177, 169, 181 and 183, which are located adjacent to the proposed pipeline alignment.

Source 160/161 has been exploited as a source of granular material in the past and is now considered 'off-limits' by the community. It is recommended that the source be considered as abandoned and the land should be reclaimed. If any quality borrow material is encountered during reclamation it should be utilized.

All Class 3 borrow material should be obtained exclusively from Sources 181 and 183. Granular material extracted from these two sources should only be used for community and Inuvialuit projects since they appear to be the closest sources of medium quality granular material to Tuktoyaktuk.



5.1.5 Class 4

The demand for 40,000 cubic metres of Class 4 material can be supplied from Source 177, which is recommended as a source of Class 1, 2 and 3 granular material. This results in some high-grading, but no other convenient sources of Class 4 material are located in the area.

5.1.6 Class 5

Class 5 material required for erosion protection projects could be obtained from Source I403 or R28/29, located near Inuvik. There are no sources of Class 5 material located within the Tuktoyaktuk region.

5.2 Tuktoyaktuk- Speculative Projects Excluded

5.2.1 General

The proposed development scenario for Tuktoyaktuk, without speculative projects is described in the following sections. Table 29 contains a summary of the suggested development scenario.

5.2.2 Class 1

The demand for Class 1 material ranges from 5,000 to 15,000 cubic metres per 5-year block and is not affected by speculative projects in the Tuktoyaktuk region. It is recommended that all required Class 1 borrow material be obtained from Source 177. Source 177 has the potential to be a major supplier of Class 1 through 3 granular resources and it is this multiplicity that makes 177 attractive as a prime source.

The YaYa Lake pit is also an acceptable source of Class 1 material, but the costs of extracting the borrow and hauling it to Tuktoyaytuk are likely higher than for material that could be obtained locally.

5.2.3 Class 2

The community's demand for Class 2 granular material should be supplied with borrow obtained from Source 177, also recommended as a source of Class 1 fill material. Acceptable material could also be obtained from the YaYa Lake pit.



TABLE 29

**GRANULAR RESOURCE UTILIZATION-
TUKTOYAKTUK**
(Without Speculative Projects)

MATERIAL		1987-1991	1992-1996	1997-2001	2002-2006
CLASS 1	Demand, cu. m. Source(s)	5,400 177	15,000 177	5,000 177	5,000 177
CLASS 2	Demand, cu. m. Source(s)	62,300 177	65,000 177	5,000 177	5,000 177
CLASS 3	Demand, cu. m. Source(s)	27,040 181/183	20,400 177/181/183	20,400 177/181/183	20,400 177/181/183
CLASS 4	Demand, cu. m. Source(s)		40,000 177		
CLASS 5	Demand, cu. m. Source(s)		20,000 1403		

- NOTES:
1. Source 155 is currently being explored as a source of higher quality material. If substantial reserves of quality material are found, Source 155 could replace Source 177 as the recommended main community source.
 2. Due to the limited volumes, Sources 181/183 should be reserved for community use.
 3. Class 5 granular material will need to be imported from the Inuvik area.



5.2.4 Class 3

Source 160/161 has been exploited as a source of granular material in the past and is now considered 'off-limits' by the community. It is recommended that the source be considered as abandoned and the land should be reclaimed. If any quality borrow material is encountered during reclamation it should be utilized.

All Class 3 borrow material should be obtained exclusively from Sources 181 and 183. Granular material extracted from these two sources should only be used for community and Inuvialuit projects since they appear to be the closest sources of medium quality granular material to Tuktoyaktuk.

5.2.5 Class 4

The demand for 40,000 cubic metres of Class 4 material can be supplied from Source 177, which is recommended as a source of Class 1, 2 and 3 granular material. This results in some high-grading, but no other convenient sources of Class 4 material are located in the area.

5.2.6 Class 5

Class 5 material required for erosion protection projects could be obtained from Source I403 or R28/29, located near Inuvik. There are no sources of Class 5 material located within the Tuktoyaktuk region.



6.0 BORROW SOURCE DEVELOPMENT RECOMMENDATIONS

6.1 General

The following sections present guidelines and recommendations for developing a management plan.

These recommendations have taken into consideration information presented in the Environmental Guidelines: Pits and Quarries Handbook (Indian and Northern Affairs Canada, 1983), and the draft Territorial Lands and Public Lands Pits and Quarries Regulations. The ILA currently do not have regulations governing pits and quarries, but generally follow the guidelines suggested in the above documents.

6.2 Objectives

Site-specific management plans must consider the requirements and constraints of regional borrow demand and availability. Each plan should ensure that economical recovery of quality granular materials is achieved at each pit while minimizing the adverse environmental impact. The environmental impact on the region can be minimized by restricting granular recovery operations to a select number of pits, realizing that maximum extraction from a pit will likely cause a slight rise in material cost. This cost increase must be weighed against the environmental costs associated with high grading the better drained surface materials. This local practice frequently results in numerous smaller pits being worked simultaneously or sequentially. Pit management plans should be developed primarily to maximize the utilization of limited resources and to minimize environmental disturbance.

6.3 Pit Access

Access to sources of granular material should be by the most economical, least environmentally damaging manner. Areas with granular resources located nearby (Inuvik, Holman, Paulatuk and Sachs Harbour) can access certain resources with all weather roads. Areas with distant resources (Aklavik and Tuktoyaktuk) can usually only obtain borrow in the winter by tundra/ice roads or in the summer by barge, if the sources are located adjacent to a waterway.

Summer operations would require construction of temporary access roads from the sources and docking facilities for barges. The construction of these facilities would



probably require large quantities of granular materials, and would significantly reduce the recoverable volumes.

6.4 Pit Development

6.4.1 Site Preparation Work

Site preparation should be conducted in advance of excavation to prevent contamination of granular materials. This preparation also should preferably be carried out in winter to minimize disturbance to the surrounding terrain. Snow should be cleared from both the area to be excavated and yard areas and placed so as to minimize subsequent pit infilling by drifting snow. Topsoil consisting of peat and organic soils, while typically scarce, should be stripped where possible and stockpiled or windrowed at the edges of the pit area. Windrows should be placed parallel to slope direction to prevent ponding of surface water during spring, or contamination of granular materials. Inorganic overburden materials should be stripped and placed in separate stockpiles or windrows, with similar consideration of drainage considerations. The stripped materials are to be reserved for reclamation purposes. Disturbed areas must be kept to a practical minimum.

6.4.2 Extraction Methods

Winter recovery operations will normally consist of the ripping of friable frozen granular material and pushing it into temporary windrows or stockpiles for loading. This type of extraction can be conducted with conventional equipment including bulldozers with rippers, loaders, and trucks. Poorly-bonded or friable granular material will usually be located near the surface of deposits that exhibit positive relief. If an insufficient volume of material cannot be obtained through ripping, blasting will be necessary.

Summer operations will typically consist of stripping and windrowing or stockpiling thawed layers of granular material with bulldozers, commencing when thaw has progressed about 0.5 m into the deposit. The cycle of operation is largely dependent on the rate of thawing, and the drainage considerations. This method allows potentially greater annual recovery by progressively increasing the amount of thawed material, and it may enhance drainage of the material in stockpiles or windrows.



Experience has shown that winter excavation of frozen stockpiles windrowed the previous summer, may be just as difficult as winter excavation directly from the borrow source unless the stock pile process results in a significant reduction in natural moisture content. Moisture reduction from 10 percent in situ to 5 percent in a stockpile has been achieved by use of conveyors during favourable summer conditions (Hayley and MacLeod, 1977). Frozen gravel stockpiles with a moisture content less than 5 percent are usually sufficiently friable for direct loading without ripping.

Drilling and blasting of frozen ground in the winter has proven cost effective for larger operations. The techniques developed and used extensively at Prudhoe Bay, Alaska, is to remove gravel in lifts 5.5 m thick, by drilling shot holes 6 m deep on a 3 m pattern. Load factors are typically 0.9 kg of ANFO explosive per cubic metre of gravel to create manageable size chunks. Typical specifications for Alaska winter construction restrict the size of frozen gravel chunks to 200 mm.

6.4.3 Treatment of Massive Ice

Logistical constraints caused by massive ice during summer development of YaYa Lake pit are described by Hayley and MacLeod (1977). Where practical, the extent of massive ice in a prospective deposit should be defined prior to pit development. The development plans should include methodology for coping with ice bodies as they are encountered.

Where practical, large bodies of massive ice should be avoided. Thin, or less extensive massive ice within the granular material at higher elevations should be excavated and wasted, or exposed to permit thawing during the summer months. Drainage must be considered with either method of disposal.

Relatively thin layers of massive ice at depth may be permitted to thaw provided all overlying recoverable granular materials are removed during one extraction season. Formation of thaw ponds as ice melts during the summer is inevitable in this situation. Appropriate measures must be taken to control drainage and to protect, and ensure access to, adjacent recoverable granular materials.

It may be desirable to identify and preserve thicker ice bodies at depth. If this material thaws it is likely to prevent recovery of adjacent materials, or result in



major disturbance of the surrounding areas. A minimum cover of 1.5 m of granular material should be left as insulation over massive ice to prevent excessive thawing. Criteria for establishing the minimum thickness of massive ice beds which should be preserved is influenced by topographic relief, thickness and extent of granular materials, and the effect of thaw ponds on surrounding terrain. Operators involved with large extraction operations may simply wish to excavate and waste the ice.

6.4.4 Drainage Considerations

Adequate drainage of pit areas must be maintained to ensure availability of recoverable granular material and to attain required annual extraction rates. Higher moisture contents inhibit thawing, increase excavation costs and reduce material quality. Small amounts of meltwater runoff from ice bonded and thinly ice-lensed granular materials could be allowed to seep into the surrounding terrain. Larger amounts of runoff, from thawing of large massive ice bodies, should be directed to retention ponds or sumps excavated in the pit floor. Where gravity drainage is possible, natural ponds or drainage ditches may be effective at removing water from the site. However, excavated ditches are generally ineffective in areas of high ice content.

It is essential that pit drainage facilities be maintained and updated frequently to ensure that moisture drains away from the working face, and that ponded runoff does not accumulate on recoverable granular material. Where thaw ponds are allowed to form by exposing buried massive ice, or where collection ponds are created, care should be taken to preserve and maintain access to adjacent recoverable granular materials. A development plan to adequately account for pit drainage is particularly important where summer extraction operations are employed.

6.4.5 Waste Material

All lenses of fine-grained material (silts and clays) found within the granular deposit, should be stripped and wasted. Waste material should be stockpiled near the stockpiled overburden for use in pit reclamation. Fine-grained waste material at depth will undoubtedly have high excess ice contents, hence it may be



advisable to construct a dyke of drier overburden around waste piles to prevent flow of thawed waste onto surrounding terrain or into pit areas.

6.5 Restoration

Restoration measures are required whether the pit is being abandoned temporarily or permanently. All worked areas should be cleaned of all debris, and graded to remove all topographic irregularities. Where abandonment is temporary, positive drainage away from existing faces and access routes must be provided by grading or by ditching to ensure the future recovery of remaining materials. Berms should be constructed at the top of pit faces, if necessary, to prevent surface runoff from entering the pit area.

Prior to permanent abandonment, the edges of worked areas or pit walls should be recontoured to blend into the surrounding terrain. All obstructions to natural drainage should be removed and any slopes graded to prevent runoff from channelling and downcutting. Since thaw ponds and lakes and massive ground ice are common in the Tuktoyaktuk area, flooding of pits is an acceptable, and frequently inevitable, method of restoration. Areas which are not likely to become flooded should be smoothly graded and covered with stockpiled overburden and organics.



Revegetation may be feasible in certain areas by redistributing stockpiled organic topsoil and peat over the graded slopes of areas unlikely to be flooded, and by seeding or allowing reinvasion of natural vegetation, depending on the nature of the site and the quality of the topsoil. Fine-grained overburden soils are generally adequate for surface reclamation, however, the amount of naturally-occurring topsoil is very limited at some sites. The fertility of these soils may require enrichment for revegetation.

6.6 Site Specific Development Plans

6.6.1 General

The site specific development plans presented in the following report subsections pertain to selected sources that are prominent in the development scenario proposed for the community of Tuktoyaktuk. The level of detail presented for each source reflects the amount of information available for a particular deposit.

6.6.2 Source 177

Access

This source is located approximately 22 kilometres south of the community of Tuktoyaktuk and is accessible during the winter by an ice/tundra road.

Site Preparation

The site is currently undeveloped. Any site preparation should be conducted in accordance with the recommendations presented in Section 6.4.1 of this report. Some areas of the source may have relatively thick overburden (up to 1.2 metres in thickness).

Extraction Methods

Annual extraction of the upper 1.5 metres of the source is feasible. This should be accomplished by ripping and pushing frozen granular material into temporary stockpiles for loading onto trucks. It is recommended that attempts be made to develop a relatively deep borrow pit, rather than recovering granular material by scraping-off the surficial materials.



Drainage Considerations

The pit floor should be graded where possible, to enhance drainage of surface and melt water. Water should be collected and discharged in an environmentally acceptable manner. Good drainage enhances seasonal thaw and limits the ingress of water. As the subject source is located on several hill tops, drainage at the developed sites should be readily obtainable.

Treatment of Massive Ice

Massive ground ice may be encountered at the source. Depending on the extent and distribution of the ice, it may either be excavated and wasted or covered with an insulating blanket of granular material and left in place. More detailed recommendations for dealing with ground ice are contained in Section 6.4.3 of this report.

Restoration

When the pits become partially exhausted, restoration can be undertaken concurrent with further borrow recovery. Restoration should be conducted in accordance with the recommendations presented in Section 6.5 of this report and should primarily consist of roughening the surface and contouring the abandoned areas of the pit to enhance drainage. Revegetation can be examined as pit abandonment proceeds.

6.6.3 Source 168

Access

The source is located adjacent to the north shore of Husky Lakes and is accessible only during the winter by an ice/tundra road.

Site Preparation

The site is currently under development and the removal of 200,000 cubic metres is planned for the winter of 1987. In the event that further site preparation is required, activities should be conducted in accordance with the recommendations presented in Section 6.0 of this report. The source is located sufficiently inland



such that site development should have no adverse effects on the stability of the shoreline.

Extraction Methods

Annual extraction of the upper 1.5 metres of the source is feasible. This should be accomplished by ripping and pushing frozen granular material into temporary stockpiles for loading onto trucks. It is recommended that attempts be made to develop a relatively deep borrow pit, rather than recovering granular material by scraping-off the surficial materials.

Drainage Considerations

The pit floor should be graded where possible, to enhance drainage. Water should be collected and discharged in an environmentally acceptable manner. Good drainage enhances seasonal thaw and limits the ingress of water.

Treatment of Massive Ice

Massive ground ice may be encountered at the source, particularly at depth. Depending on the extent and distribution of the ice, it may either be excavated and wasted or covered with an insulating blanket of granular material and left in place. More detailed information on dealing with ground ice is contained in Section 6.4.3 of this report.

Restoration

When the pit becomes partially exhausted, restoration can be undertaken concurrent with further borrow recovery. Restoration should be conducted in accordance with the recommendations presented in Section 6.5 of this report and should primarily consist of roughening the surface and contouring the abandoned areas of the pit to enhance drainage. Alternatively, restoration through flooding may be feasible. Revegetation can be considered as pit abandonment proceeds.



6.6.4 Source 181/183

Access

These sources are located approximately 12 kilometres southeast of the community of Tuktoyaktuk and are accessible during the winter by an ice/tundra road.

Site Preparation

The sites are currently undeveloped. Any site preparation required should be conducted in accordance with the recommendations presented in Section 6.4.1 of this report.

Extraction Methods

Extraction of the upper 1.0 metres of the source is feasible. This should be accomplished by ripping and pushing frozen granular material into temporary stockpiles for loading onto trucks. Removal of approximately 1.0 metres of borrow material should essentially deplete the source.

Drainage Considerations

The pit floor should be graded where possible, to ensure gravity drainage of surface and melt water. Water should be collected and discharged in an environmentally acceptable manner. The source is located on several hill tops, therefore maintenance of site drainage during development will be simplified.

Treatment of Massive Ice

Due to the relatively shallow recovery depth, massive ground ice will not likely be encountered at the source. In the event that massive ground ice is encountered during borrow recovery efforts, the detailed information on dealing with ground ice contained in Section 6.4.3 of this report should be considered.

Restoration

As the pits become partially exhausted, restoration can be undertaken concurrent with further borrow recovery. Restoration should be conducted in accordance with the recommendations presented in Section 6.5 of this report and



should primarily consist of roughening the surface and contouring the abandoned areas of the pit to enhance drainage. Revegetation can be examined as pit abandonment proceeds.



7.0 RECOMMENDATION

7.1 Source 177

Additional work will be required to confirm the quantity and quality of the granular resources contained in the prominent source of granular material. Source 177 is partially explored and has the potential to supply a substantial portion, if not all of Tuktoyaktuk's future granular material requirements. The source should last for many years at present consumption rates. If Source 155 is not capable of supplying the necessary material then Source 177 should be investigated fully to determine its potential. A geotechnical drilling and sampling program should be undertaken at the site. Objectives of the geotechnical drilling program should be to establish the quantity and quality of the material available.



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150	RKL 1973, ZONE 1	157	HARDY 1977
151	RKL 1973, ZONE 1		
152A	RKL 1973, ZONE 1		
153	RKL 1973, ZONE 1	165	HARDY 1977
154	RKL 1973, ZONE 1	166	HARDY 1977
155	RKL 1973, ZONE 1	2.01	HARDY 1986
156	RKL 1973, ZONE 1	T108-112	RKL 1973, TUKTOYAKTUK
157	RKL 1973, ZONE 1	T100-103,150	RKL 1973, TUKTOYAKTUK
158	HARDY 1977	T104,106,107	RKL 1973, TUKTOYAKTUK
159	HARDY 1977	TUK HARBOUR, AIRSTRIP	EBA 1973
160/161	HARDY 1977	TUK HARBOUR, AIRSTRIP	EBA 1973
162	HARDY 1977		
163	HARDY 1977		
164	HARDY 1977		
165	HARDY 1977	153	RKL 1973, ZONE 1
166	HARDY 1977	154	RKL 1973, ZONE 1
167	HARDY 1977	T113	RKL 1973, TUKTOYAKTUK
168	HARDY 1977	168	BBT 1983
169	HARDY 1977	169	HARDY-BBT 1986
170	HARDY 1977		
171	HARDY 1977	25	DPW 1976
172	HARDY 1977	24, 24A, 24B	DPW 1976
173	HARDY 1977	23, 23A, 23B, 23C, 23D	DPW 1976
174	HARDY 1977		
175	HARDY 1977		

SOURCE NUMBER, TEXT REFERENCES AND CROSS REFERENCES, cont.

PRIMARY SOURCE NO. OR NAME AND TEXT REFERENCE		CROSS-REFERENCE SOURCE NO. OR NAME AND TEXT REFERENCE	
176	HARDY 1977		
177	HARDY 1977		
181	HARDY 1977		
183	HARDY 1977		
184	HARDY-BBT 1986		
211	BBT 1983	211	RKL 1973, ZONE 2
211E	EBA 1986		
214	BBT 1983	2.02	HARDY-BBT 1986
215	EBA 1986	2.03	HARDY-BBT 1986
216	RKL 1973, ZONE 2	216	EBA 1986
216S	EBA 1986		
217	RKL 1973, ZONE 2	217	EBA 1986
217E	EBA 1986		
218	RKL 1973, ZONE 2	218	EBA 1986
218N	EBA 1986		
219	EBA 1986	219	EBA 1986
222	EBA 1986	222	EBA 1976a
300A	RKL 1973, ZONE 3		
301	RKL 1973, ZONE 3		
302	RKL 1973, ZONE 3		
303	RKL 1973, ZONE 3	303; 2.08	EBA 1976a; HARDY-BBT 1986
304	RKL 1973, ZONE 3		
305	RKL 1973, ZONE 3		
306	RKL 1973, ZONE 3		
307	RKL 1973, ZONE 3		

SOURCE NUMBER, TEXT REFERENCES AND CROSS REFERENCES, cont.

PRIMARY SOURCE NO. OR NAME AND TEXT REFERENCE		CROSS-REFERENCE SOURCE NO. OR NAME AND TEXT REFERENCE	
308	RKL 1973, ZONE 3		
309	RKL 1973, ZONE 3		
310A	RKL 1973, ZONE 3		
311	RKL 1973, ZONE 3		
312	RKL 1973, ZONE 3		
313	RKL 1973, ZONE 3		
314	RKL 1973, ZONE 3		
315	RKL 1973, ZONE 3		
316	RKL 1973, ZONE 3		
317	RKL 1973, ZONE 3	2.17	HARDY-BBT 1986
318	RKL 1973, ZONE 3		
319	RKL 1973, ZONE 3		
320	RKL 1973, ZONE 3		
321	RKL 1973, ZONE 3		
322	RKL 1973, ZONE 3	2.16	HARDY-BBT 1986
323A	RKL 1973, ZONE 3	2.15	HARDY-BBT 1986
324A	RKL 1973, ZONE 3	2.14	HARDY-BBT 1986
325	RKL 1973, ZONE 3	2.41	HARDY-BBT 1986
326	RKL 1973, ZONE 3	326A; 2.12	EBA 1976b, HARDY-BBT 1986
327	RKL 1973, ZONE 3	2.33	HARDY-BBT 1986
328A	RKL 1973, ZONE 3	2.39	HARDY-BBT 1986
I400	RKL 1973, ZONE 3		
I401A	RKL 1973, ZONE 3	2.47	
I402	RKL 1973, INUVIK		
I403	RKL 1973, INUVIK		



SOURCE NUMBER, TEXT REFERENCES AND CROSS REFERENCES, cont.

PRIMARY SOURCE NO. OR NAME AND TEXT REFERENCE		CROSS-REFERENCE SOURCE NO. OR NAME AND TEXT REFERENCE	
I404	RKL 1973, INUVIK		
I405A	RKL 1973, INUVIK		
I406	RKL 1973, INUVIK		
I407	RKL 1973, INUVIK	2.13	
455	RKL 1973, ZONE 4		
467	HARDY 1976		
456A	RKL 1973, ZONE 4		
457A	RKL 1973, ZONE 4		
463	HARDY 1976	R24	EBA 1983a
464	HARDY 1976	R25	EBA 1983a
468	HARDY 1976	R27	EBA 1983a
469	HARDY 1976	R26	EBA 1983a
PARSONS LK. 1	KLCL 1974		
PARSONS LK. 2	KLCL 1974		
PARSONS LK. 3	KLCL 1974		
PARSONS LK. 4	KLCL 1974		
PARSONS LK. 5	KLCL 1974		
PARSONS LK. 6	KLCL 1974		
PARSONS LK. 7	KLCL 1974		
PARSONS LK. 8	KLCL 1974		
PARSONS LK. 9	KLCL 1974		
PARSONS LK. 10	KLCL 1974		
PARSONS LK. 11	KLCL 1974		
R28/29	EBA 1976b	R28/29	EBA 1983a
YAYA	EBA 1975		

DEMAND SUMMARY

TUKTOYAKTUK

INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES DEMAND SUMMARY
Tuktoyaktuk

YEAR GROUP	PROJECT (W Denotes Speculative Project)	CATEGORY	VOLUME, cu.m.	
1987-1991	CURLING RINK	PUBLIC	Class 1:	100
			Class 2:	100
			Class 3:	1,000
			Class 4:	
			Class 5:	
			TOTAL	1,200
1987-1991	GARAGE	PUBLIC	Class 1:	50
			Class 2:	250
			Class 3:	600
			Class 4:	
			Class 5:	
			TOTAL	900
1987-1991	GARAGE WORKSHOP	PUBLIC	Class 1:	
			Class 2:	
			Class 3:	40
			Class 4:	
			Class 5:	
			TOTAL	40
1987-1991	GENERAL MAINTENANCE	PUBLIC	Class 1:	
			Class 2:	
			Class 3:	20,000
			Class 4:	
			Class 5:	
			TOTAL	20,000
1987-1991	LOT DEVELOPMENT	PUBLIC	Class 1:	
			Class 2:	
			Class 3:	500
			Class 4:	
			Class 5:	
			TOTAL	500
1987-1991	NURSING STATION	PUBLIC	Class 1:	
			Class 2:	
			Class 3:	300
			Class 4:	
			Class 5:	
			TOTAL	300



INDIAN AND NORTHERN AFFAIRS CANADA
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GRANULAR RESOURCES DEMAND SUMMARY
Tukttoyaktuk

YEAR GROUP	PROJECT (W Denotes Speculative Project)	CATEGORY	VOLUME, cu.m.	
1987-1991	PRIMARY SCHOOL	PUBLIC	Class 1:	200
			Class 2:	100
			Class 3:	400
			Class 4:	
			Class 5:	
			TOTAL	700
1987-1991	ROAD MAINTENANCE	PUBLIC	Class 1:	5,000
			Class 2:	
			Class 3:	
			Class 4:	
			Class 5:	
			TOTAL	5,000
1987-1991	SHORE PROTECTION	PUBLIC	Class 1:	
			Class 2:	60,000
			Class 3:	
			Class 4:	
			Class 5:	
			TOTAL	60,000
1987-1991	STAFF HOUSING	PUBLIC	Class 1:	50
			Class 2:	1,350
			Class 3:	2,800
			Class 4:	
			Class 5:	
			TOTAL	4,200
1987-1991	YARD DEVELOPMENT	OTHER	Class 1:	
			Class 2:	500
			Class 3:	1,000
			Class 4:	
			Class 5:	
			TOTAL	1,500
1987-1991	YARD MAINTENANCE	OTHER	Class 1:	
			Class 2:	
			Class 3:	400
			Class 4:	
			Class 5:	
			TOTAL	400



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES DEMAND SUMMARY
Tuktoyaktuk

YEAR GROUP	PROJECT (V Denotes Speculative Project)	CATEGORY	VOLUME, cu.m.
1987-1991	NGAS WELL/PIPELINE AND SITE DEVELOP.	INUVIALUIT	Class 1: Class 2: Class 3: 14,100 Class 4: Class 5: TOTAL 14,100
1987-1991	WINUVIK-TUKTOYAKTUK HIGHWAY	PUBLIC	Class 1: Class 2: Class 3: 1,700,000 Class 4: Class 5: TOTAL 1,700,000
1992-1996	AIRFIELD MAINTENANCE	PUBLIC	Class 1: Class 2: 5,000 Class 3: Class 4: Class 5: TOTAL 5,000
1992-1996	EROSION CONTROL	PUBLIC	Class 1: Class 2: Class 3: Class 4: Class 5: 20,000 TOTAL 20,000
1992-1996	GENERAL MAINTENANCE	PUBLIC	Class 1: Class 2: Class 3: 20,000 Class 4: Class 5: TOTAL 20,000
1992-1996	LAND DEVELOPMENT	PUBLIC	Class 1: Class 2: Class 3: Class 4: 20,000 Class 5: TOTAL 20,000



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES DEMAND SUMMARY
Tuktoyaktuk

YEAR GROUP	PROJECT (Y Denotes Speculative Project)	CATEGORY	VOLUME, cu.m.	
1992-1996	LAND DEVELOPMENT	PUBLIC	Class 1:	5,000
			Class 2:	
			Class 3:	
			Class 4:	
			Class 5:	
			TOTAL	5,000
1992-1996	ROAD CONSTRUCTION	PUBLIC	Class 1:	5,000
			Class 2:	60,000
			Class 3:	
			Class 4:	
			Class 5:	
			TOTAL	65,000
1992-1996	ROAD MAINTENANCE	PUBLIC	Class 1:	5,000
			Class 2:	
			Class 3:	
			Class 4:	
			Class 5:	
			TOTAL	5,000
1992-1996	SOLID WASTE SITE	PUBLIC	Class 1:	
			Class 2:	
			Class 3:	
			Class 4:	20,000
			Class 5:	
			TOTAL	20,000
1992-1996	YARD MAINTENANCE	OTHER	Class 1:	
			Class 2:	
			Class 3:	400
			Class 4:	
			Class 5:	
			TOTAL	400
1992-1996	WAIKPORT EXPANSION	PUBLIC	Class 1:	
			Class 2:	58,100
			Class 3:	1,491,000
			Class 4:	
			Class 5:	
			TOTAL	1,549,100



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES DEMAND SUMMARY
Tuktoyaktuk

YEAR GROUP	PROJECT (Y Denotes Speculative Project)	CATEGORY	VOLUME, cu.m.	
1992-1996	WINUVIK-TUKTOYARTUK HIGHWAY	PUBLIC	Class 1: Class 2: Class 3: 1,400,000 Class 4: Class 5:	
			TOTAL	1,400,000
1992-1996	WONSHORE GAS PRODUCTION	OTHER	Class 1: Class 2: 680,000 Class 3: Class 4: Class 5:	
			TOTAL	680,000
1992-1996	WPADES AND ROADS	OTHER	Class 1: Class 2: 1,176,000 Class 3: Class 4: Class 5:	
			TOTAL	1,176,000
1997-2001	AIRFIELD MAINTENANCE	PUBLIC	Class 1: Class 2: 5,000 Class 3: Class 4: Class 5:	
			TOTAL	5,000
1997-2001	GENERAL MAINTENANCE	PUBLIC	Class 1: Class 2: Class 3: 20,000 Class 4: Class 5:	
			TOTAL	20,000
1997-2001	ROAD MAINTENANCE	PUBLIC	Class 1: 5,000 Class 2: Class 3: Class 4: Class 5:	
			TOTAL	5,000



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES DEMAND SUMMARY
Tuktoyaktuk

YEAR GROUP	PROJECT (W Denotes Speculative Project)	CATEGORY	VOLUME, cu.m.
1997-2001	YARD MAINTENANCE	OTHER	Class 1: Class 2: Class 3: 400 Class 4: Class 5: TOTAL 400
1997-2001	WINUVIK-TUKTOYAKTUK HIGHWAY	PUBLIC	Class 1: Class 2: Class 3: 100,000 Class 4: Class 5: TOTAL 100,000
1997-2001	WONSHORE GAS PRODUCTION	OTHER	Class 1: Class 2: 700,000 Class 3: Class 4: Class 5: TOTAL 700,000
1997-2001	WONSHORE OIL PRODUCTION	OTHER	Class 1: Class 2: 1,200,000 Class 3: Class 4: Class 5: TOTAL 1,200,000
2002-2006	AIRFIELD MAINTENANCE	PUBLIC	Class 1: Class 2: 5,000 Class 3: Class 4: Class 5: TOTAL 5,000
2002-2006	GENERAL MAINTENANCE	PUBLIC	Class 1: Class 2: Class 3: 20,000 Class 4: Class 5: TOTAL 20,000



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES DEMAND SUMMARY
Tuktoyaktuk

YEAR GROUP	PROJECT (W Denotes Speculative Project)	CATEGORY	VOLUME, cu.m.	
2002-2006	ROAD MAINTENANCE	PUBLIC	Class 1:	5,000
			Class 2:	
			Class 3:	
			Class 4:	
			Class 5:	
			TOTAL	5,000
2002-2006	YARD MAINTENANCE	OTHER	Class 1:	
			Class 2:	
			Class 3:	400
			Class 4:	
			Class 5:	
			TOTAL	400
2002-2006	WINUVIK-TUKTOYAKTUK HIGHWAY	PUBLIC	Class 1:	
			Class 2:	
			Class 3:	100,000
			Class 4:	
			Class 5:	
			TOTAL	100,000
1987-2006	SUMMARY OF DEMAND VOLUMES Tuktoyaktuk		Class 1:	30,400
			Class 2:	3,951,400
			Class 3:	4,893,340
			Class 4:	40,000
			Class 5:	20,000
			TOTAL	



SUPPLY SUMMARY
TUKTOYAKTUK

INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 2.24

LOCATION: 60 km S of Tuktoyaktuk

REFERENCE(S): Hardy 1986

SETTING
Unknown

RELIEF
Unknown

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial deposits

CONTINUITY
Unknown

SUMMER ACCESS
None

AREA
Unknown

DEVELOPMENT CONSTRAINTS
Lake environment

BOREHOLES (#)
None

TEST PITS (#)
None

MOIST. CON. (#)
None

GRAINSIZE (#)
None

OVERBURDEN

TYPE: Unknown
EXTENT: Unknown
THICK.: Unknown

GROUND ICE

Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.:

Unknown

RECOVERABLE, cu.m:

12,000,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						12,000,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 2.34

ILA 7(1) (b)

LOCATION: 70 km S of Tuktoyaktuk

REFERENCE(S): Hardy 1986

SETTING
Unknown

RELIEF
Unknown

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial deposit

CONTINUITY
Unknown

SUMMER ACCESS
None

AREA
6.1 sq km

DEVELOPMENT CONSTRAINTS
Lake environment, wildlife

BOREHOLES (#)
None

TEST PITS (#)
None

MOIST. CON. (#)
None

GRAINSIZE (#)
None

OVERBURDEN

TYPE: Unknown
EXTENT: Unknown
THICK.: Unknown

GROUND ICE

Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.:

Unknown

RECOVERABLE, cu.m:

55,000,000

MATERIAL

PROVEN, cu.m.
Annual Total

PROBABLE, cu.m.
Annual Total

PROSPECTIVE, cu.m.
Annual Total

CLASS 1

CLASS 2

CLASS 3

CLASS 4

CLASS 5

9,000,000 55,000,000



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 2.36

ILA 7(1) (b)

LOCATION: 80 km S of Tuktoyaktuk

REFERENCE(S): Hardy 1986

SETTING
Unknown

RELIEF
Unknown

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial plain

CONTINUITY
Unknown

SUMMER ACCESS
None

AREA
33 sq km

DEVELOPMENT CONSTRAINTS
Wildlife

BOREHOLES (#)
None

TEST PITS (#)
None

MOIST. CON. (#)
None

GRAINSIZE (#)
None

OVERBURDEN

TYPE: Unknown
EXTENT: Unknown
THICK.: Unknown

GROUND ICE

Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.:

Unknown

RECOVERABLE, cu.m:

300,000,000

MATERIAL PROVEN, cu.m.
Annual Total

PROBABLE, cu.m.
Annual Total

PROSPECTIVE, cu.m.
Annual Total

CLASS 1

CLASS 2

CLASS 3

50,000,000 300,000,000

CLASS 4

CLASS 5



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 2.37

ILA 7(1) (b)

LOCATION: 80 km S of Tuktoyaktuk

REFERENCE(S): Hardy 1986

SETTING
Unknown

RELIEF
Unknown

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial deposit

CONTINUITY
Unknown

SUMMER ACCESS
None

AREA
5.5 sq km

DEVELOPMENT CONSTRAINTS
Wildlife

BOREHOLES (#)
None

TEST PITS (#)
None

MOIST. CON. (#)
None

GRAINSIZE (#)
None

OVERBURDEN

TYPE: Unknown
EXTENT: Unknown
THICK.: Unknown

GROUND ICE

Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.:

Unknown

RECOVERABLE, cu.m:

50,000,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3					8,000,000	50,000,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 2.38

ILA 7(1)(b)

LOCATION: 85 km S of Tuktoyaktuk

REFERENCE(S): Hardy 1986

SETTING
Unknown

RELIEF
Unknown

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial deposit

CONTINUITY
Unknown

SUMMER ACCESS
None

AREA
11.1 sq km

DEVELOPMENT CONSTRAINTS
Lake environment, wildlife

BOREHOLES (#)
None

TEST PITS (#)
None

MOIST. CON. (#)
None

GRAINSIZE (#)
None

OVERBURDEN

TYPE: Unknown
EXTENT: Unknown
THICK.: Unknown

GROUND ICE

Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.:

Unknown

RECOVERABLE, cu.m: 100,000,000

MATERIAL

PROVEN, cu.m.
Annual Total

PROBABLE, cu.m.
Annual Total

PROSPECTIVE, cu.m.
Annual Total

CLASS 1

CLASS 2

CLASS 3

CLASS 4

CLASS 5

16,000,000 100,000,000



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 2.40

ILA 7(1) (b)

LOCATION: 75 km S of Tuktoyaktuk

REFERENCE(S): Hardy 1986

SETTING
Unknown

RELIEF
Unknown

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial plain

CONTINUITY
Unknown

SUMMER ACCESS
None

AREA
4.4 sq km

DEVELOPMENT CONSTRAINTS
Wildlife

BOREHOLES (#)
None

TEST PITS (#)
None

MOIST. CON. (#)
None

GRAINSIZE (#)
None

OVERBURDEN

TYPE: Unknown
EXTENT: Unknown
THICK.: Unknown

GROUND ICE

Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.:

Unknown

RECOVERABLE, cu.m:

40,000,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total

CLASS 1

CLASS 2

CLASS 3

7,000,000 40,000,000

CLASS 4

CLASS 5



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 23

ILA 7(1) (a)

LOCATION: 42 km S of Tuktoyaktuk

REFERENCE(S): DPW 1976

SETTING
Hummocky plain

LANDFORM
Kames, outwash plain

AREA
115,000 sq m

RELIEF
6 m to 30 m

CONTINUITY
Continuous

DEVELOPMENT CONSTRAINTS
Distance, thick overburden

WINTER ACCESS
Tundra/ice road

SUMMER ACCESS
None

BOREHOLES (#)
4

MOIST. CON. (#)
24

TEST PITS (#)
None

GRAINSIZE (#)
23

OVERBURDEN
TYPE: Peat, ice
EXTENT: Intermittent
THICK.: Up to 3 m

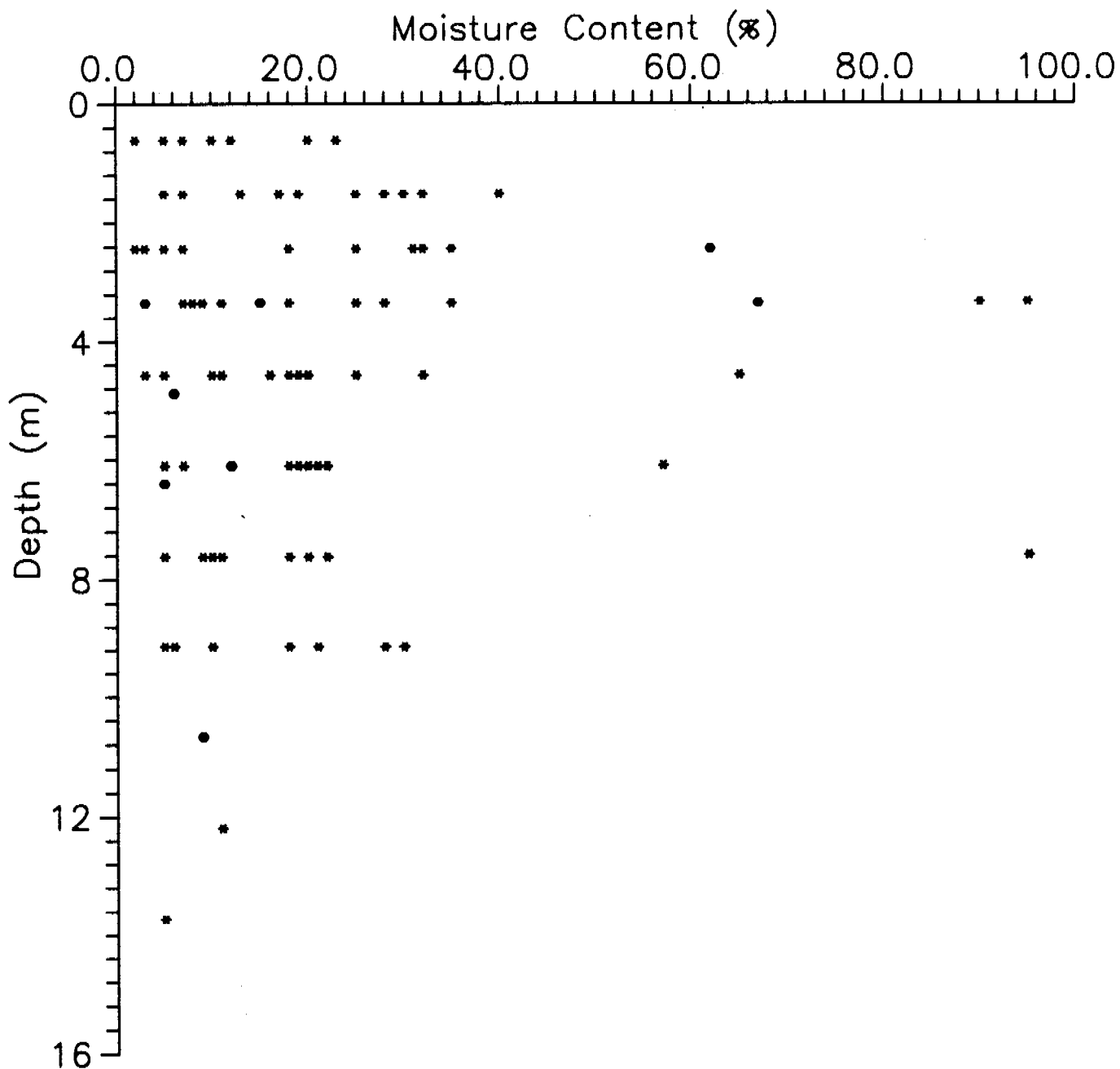
GROUND ICE
Massive, lenses
Intermittent
Up to 3 m

POTENTIAL VOLUME, cu. m.: >350,000

RECOVERABLE, cu.m: 350,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			115,000	350,000	115,000	350,000
CLASS 5						





Indian and Northern Affairs Canada
 Inuvialuit Land Administration
 Source 23
 Moisture Content vs. Depth



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 23A

ILA 7(1) (a)

LOCATION: 42 km S of Tuktoyaktuk

REFERENCE(S): DPW 1976

SETTING
Hummocky plain

RELIEF
6 m to 30 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Kame field

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
1.2 sq km

DEVELOPMENT CONSTRAINTS
Distance, thick overburden, ice

BOREHOLES (#)
7

TEST PITS (#)
None

MOIST. CON. (#)
27

GRAINSIZE (#)
27

OVERBURDEN

TYPE: Peat, ice, silt
EXTENT: All holes
THICK.: Up to 3 m

GROUND ICE

Lenses, inclusions
All holes
Up to 2 m

POTENTIAL VOLUME, cu. m.: >1,900,000

RECOVERABLE, cu.m: 1,900,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			640,000	1,900,000	640,000	1,900,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 24A

ILA 7(1) (a)

LOCATION: 37 km S of Tuktoyaktuk

REFERENCE(S): DPW 1976

SETTING
Hummocky plain

RELIEF
6 m to 30 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Kames, outwash plain

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
0.72 sq km

DEVELOPMENT CONSTRAINTS
Terrain, ice

BOREHOLES (#)
7

TEST FITS (#)
None

MOIST. CON. (#)
24

GRAINSIZE (#)
23

OVERBURDEN

TYPE: Feat, clay
EXTENT: Intermittent
THICK.: Up to 0.3 m

GROUND ICE

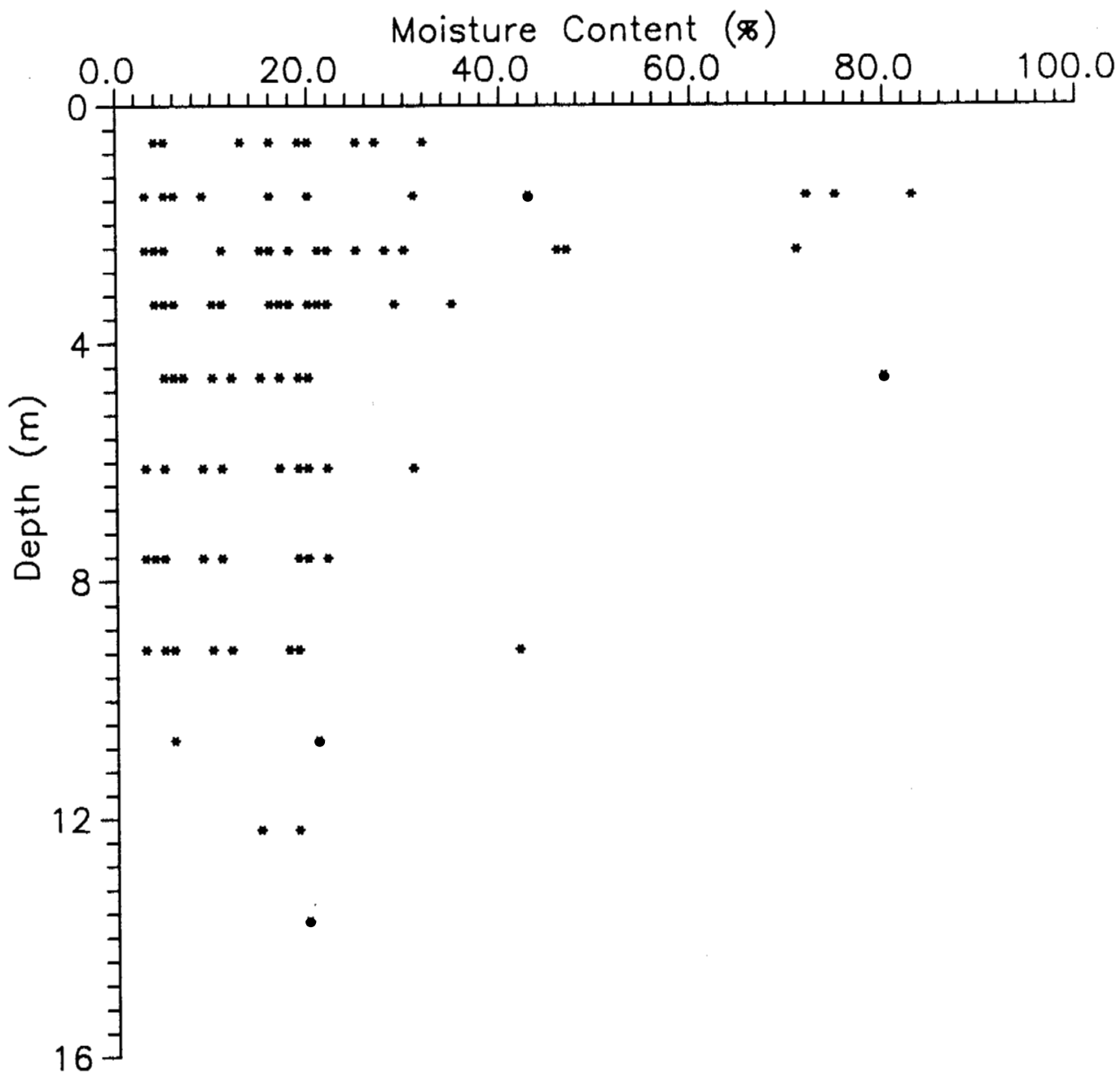
Lenses, inclusions
Intermittent
Lenses to 1.2 m

POTENTIAL VOLUME, cu. m.: >150,000

RECOVERABLE, cu.m: 150,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			25,000	150,000	25,000	150,000
CLASS 5						





Indian and Northern Affairs Canada
Inuvialuit Land Administration
Source 24
Moisture Content vs. Depth



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 27

ILA 7(1) (a)

LOCATION: 42 km S of Tuktoyaktuk

REFERENCE(S): DPW 1976

SETTING
Flat plain, polygonal

LANDFORM
Glacio-fluvial outwash

AREA
225,000 sq km

RELIEF
Subdued

CONTINUITY
Continuous

DEVELOPMENT CONSTRAINTS
Thick overburden, pit stability

WINTER ACCESS
Tundra/ice road

SUMMER ACCESS
None

BOREHOLES (#)
9

TEST PITS (#)
None

MOIST. CON. (#)
41

GRAINSIZE (#)
41

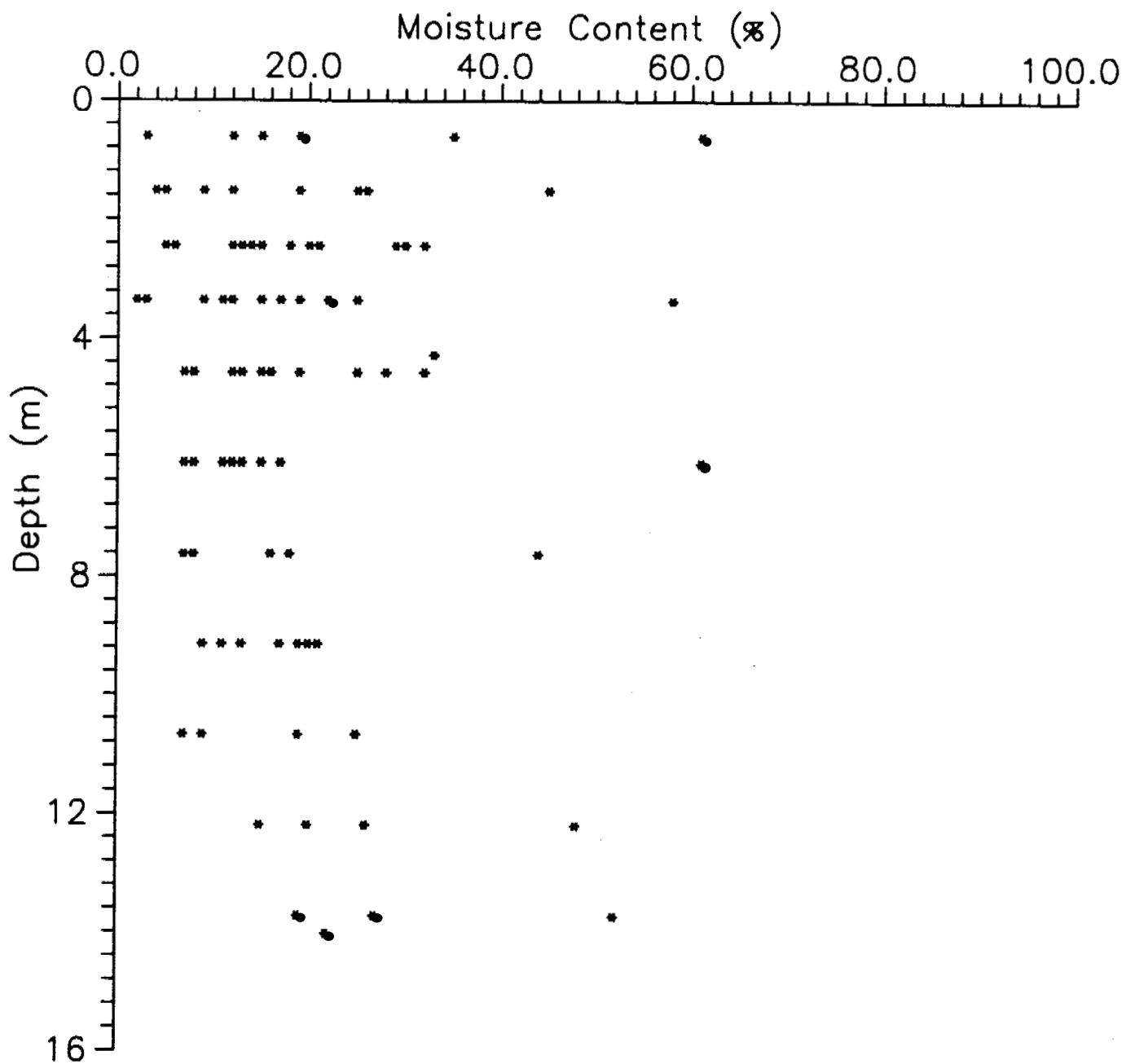
OVERBURDEN
TYPE: Peat, clay
EXTENT: Intermittent
THICK.: Up to 1 m

GROUND ICE
Lenses, inclusions
Intermittent
Lenses to 0.6 m

POTENTIAL VOLUME, cu. m.: 40,000 RECOVERABLE, cu.m: 40,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			16,000	40,000	16,000	40,000
CLASS 3						
CLASS 4						
CLASS 5						





Indian and Northern Affairs Canada
Inuvialuit Land Administration
Source 27
Moisture Content vs. Depth



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 27A

ILA 7(1) (a)

LOCATION: 24 km S of Tuktoyaktuk

REFERENCE(S): DPW 1976

SETTING
Flat plain, polygonal

RELIEF
Subdued

WINTER ACCESS
Tundra/ice road

LANDFORM
Glacio-fluvial outwash

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
180,000 sq km

DEVELOPMENT CONSTRAINTS
Thick overburden, ice

BOREHOLES (#)
8

TEST FITS (#)
None

MOIST. CON. (#)
48

GRAINSIZE (#)
48

OVERBURDEN
TYPE: Peat, ice, silt
EXTENT: Intermittent
THICK.: Up to 4.3 m

GROUND ICE
Lenses, inclusions
Intermittent
Lenses to 1.2 m

POTENTIAL VOLUME, cu. m.: 190,000

RECOVERABLE, cu.m: 190,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			75,000	190,000	75,000	190,000
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 27B

ILA 7(1) (a)

LOCATION: 24 km S of Tuktoyaktuk

REFERENCE(S): DPW 1976

SETTING
Flat plain, polygonal

LANDFORM
Glacio-fluvial outwash

AREA
230,000 sq km

RELIEF
Subdued

CONTINUITY
Continuous

DEVELOPMENT CONSTRAINTS
Fit stability, small volume

WINTER ACCESS
Tundra/ice road

SUMMER ACCESS
None

BOREHOLES (#)
2

TEST PITS (#)
None

MOIST. CON. (#)
4

GRAIN SIZE (#)
4

OVERBURDEN
TYPE: Peat
EXTENT: All holes
THICK.: Thin veneer

GROUND ICE
Well bonded
All holes
-

POTENTIAL VOLUME, cu. m.:

40,000

RECOVERABLE, cu.m.:

40,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			16,000	40,000	16,000	40,000
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 151

LOCATION: 48 km ENE of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 1

SETTING
North shore of Eskimo Lk.

RELIEF
Up to 16 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Outwash, fluvial deposit

CONTINUITY
Continuous

SUMMER ACCESS
Barge on lakes

AREA
4 sq km

DEVELOPMENT CONSTRAINTS
Fish and wildlife habitat

BOREHOLES (#)
None

TEST PITS (#)
1

MOIST. CON. (#)
1

GRAINSIZE (#)
1

OVERBURDEN

TYPE: None
EXTENT: -
THICK.: -

GROUND ICE

Ice rich gravel
Unknown

POTENTIAL VOLUME, cu. m.: 28,000,000

RECOVERABLE, cu.m: 380,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			190,000	380,000	190,000	380,000
CLASS 2						
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 152A

ILA 7(1) (b)

LOCATION: 160 km NE of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 1

SETTING
Ocean shoreline

RELIEF
Up to 3 m amsl

WINTER ACCESS
Tundra/ice road

LANDFORM
Ocean spits

CONTINUITY
Discontinuous

SUMMER ACCESS
Barge

AREA
Indeterminate

DEVELOPMENT CONSTRAINTS
Extremely remote, ocean envir.

BOREHOLES (#)
None

TEST PITS (#)
1

MOIST. CON. (#)
1

GRAINSIZE (#)
1

OVERBURDEN
TYPE: None
EXTENT: -
THICK.: -

GROUND ICE
None
All holes
-

POTENTIAL VOLUME, cu. m.: 1,500,000

RECOVERABLE, cu.m: 1,500,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			14,000	14,000	600,000	1,500,000
CLASS 5						

INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 155

ILA 7(1) (a)

LOCATION: 32 km SW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 1; H-BBT 1986

SETTING
Rolling, above stream

RELIEF
8 to 25 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Beach deposits

CONTINUITY
3 deposits

SUMMER ACCESS
None

AREA
1 sq km

DEVELOPMENT CONSTRAINTS
None discernible

BOREHOLES (#)
None

TEST FITS (#)
7

MOIST. CON. (#)
2

GRAINSIZE (#)
6

OVERBURDEN
TYPE: Organic silt
EXTENT: Continuous
THICK.: 0.3 m

GROUND ICE
Well bonded
Unknown
Unknown

POTENTIAL VOLUME, cu. m.: 10,000,000

RECOVERABLE, cu.m: 2,600,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total

CLASS 1

CLASS 2

CLASS 3 1,030,000 1,160,000 2,300,000 2,600,000

CLASS 4

CLASS 5



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tukttoyaktuk

SOURCE: 156

ILA 7(1) (b)

LOCATION: Up to 8 km SW of Tukttoyaktuk

REFERENCE(S): Hardy 1977; RKL 1973

SETTING
Shoreline deposits

RELIEF
1 to 1.8 m

WINTER ACCESS
None

LANDFORM
Ocean spit and beach deposit

CONTINUITY
Discontinuous

SUMMER ACCESS
Barge

AREA
270,000 sq m

DEVELOPMENT CONSTRAINTS
Environmental sensitivity

BORERHOLES (#)
None

TEST PITS (#)
11

MOIST. CON. (#)
8

GRAINSIZE (#)
8

OVERBURDEN
TYPE: None
EXTENT: -
THICK.: -

GROUND ICE
None
All Holes
-

POTENTIAL VOLUME, cu. m.:

275,000

RECOVERABLE, cu.m:

230,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1	45,000	45,000	45,000	45,000	45,000	45,000
CLASS 2						
CLASS 3	185,000	185,000	185,000	185,000	185,000	185,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 157

ILA 7(1) (a)

LOCATION: Up to 21 km NE of Tuktoyaktuk

REFERENCE(S): Hardy 1977; RKL 1973

SETTING
Coastline

RELIEF
Up to 1.2 m

WINTER ACCESS
Ice road

LANDFORM
Ocean spits, beach deposits

CONTINUITY
Discontinuous

SUMMER ACCESS
Dredge/stockpiles

AREA
555,000 sq m

DEVELOPMENT CONSTRAINTS
Environmental sensitivity

BOREHOLES (#)
None

TEST PITS (#)
7

MOIST. CON. (#)
5

GRAINSIZE (#)
6

OVERBURDEN

TYPE: None
EXTENT: -
THICK.: -

GROUND ICE

None
-
-

POTENTIAL VOLUME, cu. m.: 1,190,000

RECOVERABLE, cu.m: 990,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3	990,000	990,000	990,000	990,000	990,000	990,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 158

ILA 7(1) (a)

LOCATION: 5 km N of Tuktoyaktuk

REFERENCE(S): Hardy 1977

SETTING
Offshore deposits

RELIEF
N/A

WINTER ACCESS
Tundra/ice road

LANDFORM
Reef and shoal deposits

CONTINUITY
Discontinuous

SUMMER ACCESS
Dredging

AREA
Unknown

DEVELOPMENT CONSTRAINTS
Dredge availability

BOREHOLES (#)
None

TEST PITS (#)
1

MOIST. CON. (#)
None

GRAINSIZE (#)
1

OVERBURDEN

GROUND ICE

TYPE: None
EXTENT: -
THICK.: -

None
-
-

POTENTIAL VOLUME, cu. m.: 3,800,000

RECOVERABLE, cu.m: 3,800,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			120,000	120,000	370,000	370,000
CLASS 2						
CLASS 3			1,143,000	1,143,000	3,430,000	3,430,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 159

ILA 7(1) (a)

LOCATION: 2 km NE of Tuktoyaktuk

REFERENCE(S): Hardy 1977; RKL 1973

SETTING
Rolling terrain w/swales

LANDFORM
Glaciofluvial outwash plain

AREA
4 sq km

RELIEF
15 m

CONTINUITY
Discontinuous

DEVELOPMENT CONSTRAINTS
Coastline, overburden, ice

WINTER ACCESS
Tundra/ice road

SUMMER ACCESS
Barge to stockpiles

BOREHOLES (#)
None

TEST PITS (#)
11

MOIST. CON. (#)
3

GRAINSIZE (#)
8

OVERBURDEN
TYPE: Feat
EXTENT: Intermittent
THICK.: Up to 2 m

GROUND ICE
Ice rich gravel
-
Unknown

POTENTIAL VOLUME, cu. m.: 17,500,000

RECOVERABLE, cu.m: 3,500,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			350,000	700,000	350,000	875,000
CLASS 2						
CLASS 3			1,050,000	2,100,000	1,050,000	2,625,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 160/161

ILA 7(1) (b)

LOCATION: East side of Tuk harbour

REFERENCE(S): Hardy 1977, 1980; RKL 1973, EBA 1973

SETTING
Adjacent to coast

RELIEF
Gently rolling

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial outwash plain

CONTINUITY
Discontinuous

SUMMER ACCESS
Barge to stockpiles

AREA
4 sq km

DEVELOPMENT CONSTRAINTS
Overburden, ice, ocean envir.

BOREHOLES (#)
56

TEST PITS (#)
9

MOIST. CON. (#)
2

GRAINSIZE (#)
60

OVERBURDEN
TYPE: Peat, ice, silt
EXTENT: Intermittent
THICK.: 1.5 to 4 m

GROUND ICE
Massive segments
All holes
Variable

POTENTIAL VOLUME, cu. m.: 4,800,000

RECOVERABLE, cu.m: 750,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			43,000	128,000	43,000	128,000
CLASS 3			246,000	622,000	246,000	622,000
CLASS 4						
CLASS 5						

INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 162

ILA 7(1) (a)

LOCATION: Northern half Tuk Harbour

REFERENCE(S): Hardy 1977, 1978, 1979; HBA 1973

SETTING
Underwater

RELIEF
N/A

WINTER ACCESS
Tundra/ice road

LANDFORM
Underwater deposit

CONTINUITY
Continuous

SUMMER ACCESS
Barge

AREA
8 sq km approx.

DEVELOPMENT CONSTRAINTS
Fish habitat, dredge availability

BOREHOLES (#)
38

TEST PITS (#)
9

MOIST. CON. (#)
17

GRAINSIZE (#)
15

OVERBURDEN

TYPE: Peat, ice, silt
EXTENT: Intermittent
THICK.: Zero to 2.5 m

GROUND ICE

Lenses, inclusions
Intermittent
Variable

POTENTIAL VOLUME, cu. m.: 5,325,000

RECOVERABLE, cu.m: 5,325,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			70,000	70,000	1,050,000	1,050,000
CLASS 2						
CLASS 3			285,000	285,000	4,275,000	4,275,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 163

ILA 7(1) (a)

LOCATION: 35 km NE of Tuktoyaktuk

REFERENCE(S): Hardy 1977; H-BBT 1986

SETTING
Thermokarst plain

RELIEF
12 to 15 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial outwash plain

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
7 sq km

DEVELOPMENT CONSTRAINTS
Distance from Tuk

BOREHOLES (#)
None

TEST PITS (#)
5

MOIST. CON. (#)
None

GRAINSIZE (#)
3

OVERBURDEN

TYPE: Organic silt
EXTENT: Intermittent
THICK.: 0.3 m

GROUND ICE

None
Intermittent
-

POTENTIAL VOLUME, cu. m.: 150,000,000

RECOVERABLE, cu.m: 150,000,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3			10,000,000	10,000,000	10,000,000	150,000,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 164

ILA 7(1) (a)

LOCATION: 35 km E of Tuktoyaktuk

REFERENCE(S): Hardy 1977

SETTING
Thermokarst plain

RELIEF
21 to 30 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial outwash plain

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
1 sq km

DEVELOPMENT CONSTRAINTS
Distance from Tuk

BOREHOLES (#)
None

TEST PITS (#)
1, 2 expos

MOIST. CON. (#)
None

GRAINSIZE (#)
1

OVERBURDEN

TYPE: None
EXTENT: -
THICK.: -

GROUND ICE

Tr. Wbn sand
-
Indeterminate

POTENTIAL VOLUME, cu. m.: 22,000,000

RECOVERABLE, cu.m: 2,670,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			356,000	534,000	356,000	890,000
CLASS 3			712,000	1,068,000	712,000	1,780,000
CLASS 4						
CLASS 5						

INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 165

ILA 7(1) (a)

LOCATION: 32 km SE of Tuktoyaktuk

REFERENCE(S): Hardy 1977; RKL 1973

SETTING
Hilly, thermokarst plain

RELIEF
Subdued

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial outwash plain

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
2 sq km

DEVELOPMENT CONSTRAINTS
Distance from Tuk

BOREHOLES (#)
None

TEST PITS (#)
1

MOIST. CON. (#)
1

GRAINSIZE (#)
1

OVERBURDEN

TYPE: Silt till
EXTENT: Intermittent
THICK.: Unknown

GROUND ICE

None
Intermittent
-

POTENTIAL VOLUME, cu. m.: >>1,300,000

RECOVERABLE, cu.m: 1,300,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			85,000	85,000	170,000	1,300,000
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 166

ILA 7(1) (a)

LOCATION: 32 km SE of Tuktoyaktuk

REFERENCE(S): Hardy 1977; RKL 1973

SETTING
Hills near Eskimo lk.

RELIEF
21 to 45 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Kame complex

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
1 sq km

DEVELOPMENT CONSTRAINTS
Small quantity, distance from Tuk

BOREHOLES (#)
None

TEST FITS (#)
3

MOIST. CON. (#)
2

GRAINSIZE (#)
3

OVERBURDEN
TYPE: Organic silt
EXTENT: Intermittent
THICK.: 0.3 m

GROUND ICE
None
-
-

POTENTIAL VOLUME, cu. m.: >130,000

RECOVERABLE, cu.m: 130,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			26,000	26,000	26,000	130,000
CLASS 2						
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 167

ILA 7(1) (a)

LOCATION: 27 km SE of Tuktoyaktuk

REFERENCE(S): Hardy 1977; RKL 1973

SETTING
Hilly, thermokarst plain

RELIEF
Up to 21 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Kame complex

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
2 sq km

DEVELOPMENT CONSTRAINTS
Distance from Tuk

BOREHOLES (#)
None

TEST PITS (#)
3

MOIST. CON. (#)
1

GRAINSIZE (#)
1

OVERBURDEN
TYPE: Organic silt
EXTENT: Continuous
THICK.: Up to 0.9 m

GROUND ICE
Massive segments
-
Unknown

POTENTIAL VOLUME, cu. m.: 6,000,000

RECOVERABLE, cu.m: 1,760,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			176,000	220,000	176,000	880,000
CLASS 3			176,000	220,000	176,000	880,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 168

ILA 7(1) (a)

LOCATION: 25 km SE of Tuktoyaktuk

REFERENCE(S): Hardy 1977; BBT 1983

SETTING
Ridge near Eskimo Lk.

RELIEF
Up to 9 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Kames and esker ridge

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
14,000 sq m

DEVELOPMENT CONSTRAINTS
None discernible

BOREHOLES (#)
8

TEST PITS (#)
2

MOIST. CON. (#)
47

GRAINSIZE (#)
38

OVERBURDEN
TYPE: Peat
EXTENT: Intermittent
THICK.: Minimal

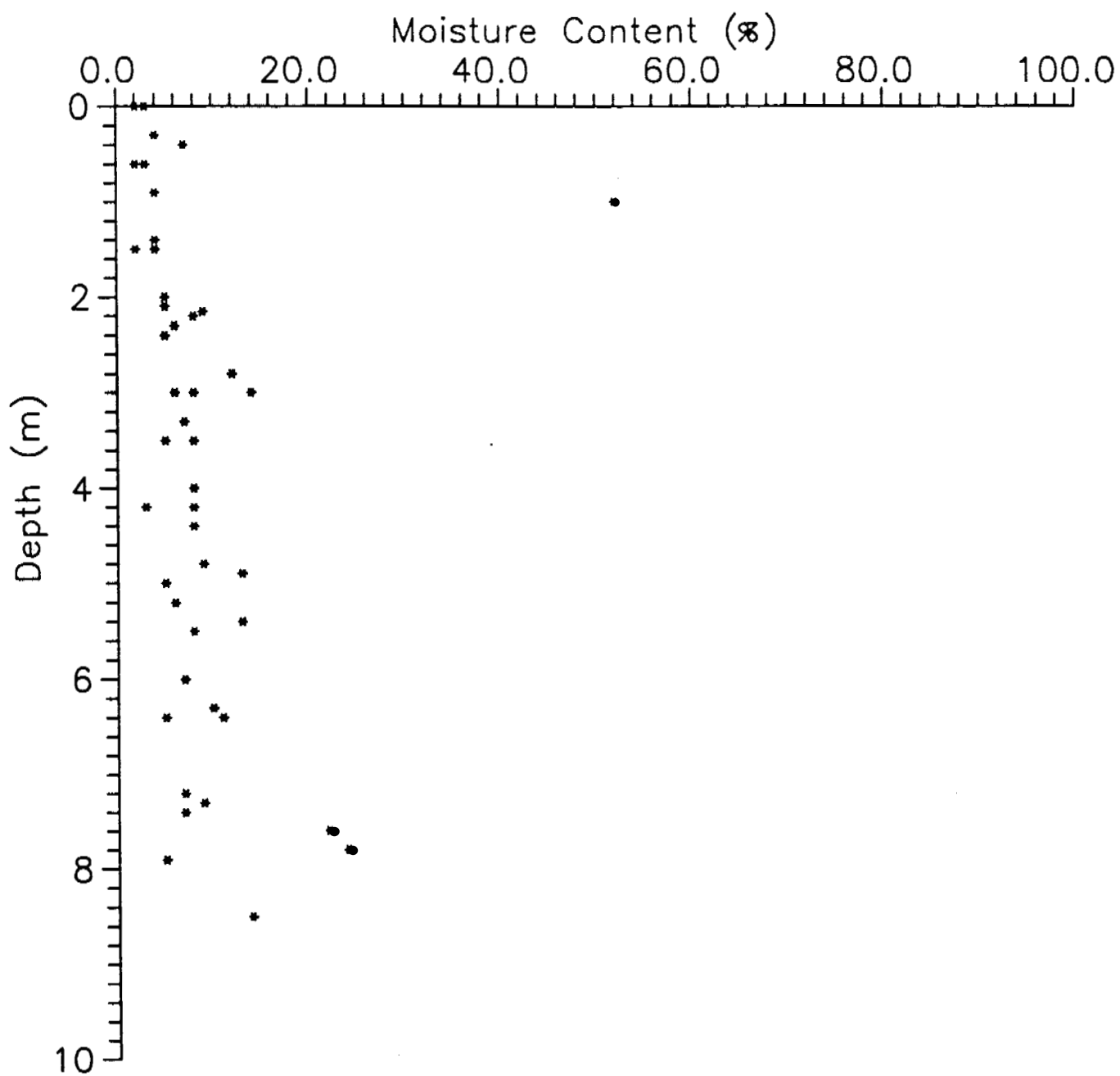
GROUND ICE
Lenses, inclusions
Intermittent
Variable

POTENTIAL VOLUME, cu. m.: 600,000

RECOVERABLE, cu.m: 600,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1	20,000	70,000	20,000	70,000	20,000	70,000
CLASS 2						
CLASS 3	80,000	280,000	80,000	530,000	80,000	530,000
CLASS 4						
CLASS 5						





Indian and Northern Affairs Canada
Inuvialuit Land Administration
Source 168
Moisture Content vs. Depth



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 169

ILA 7(1) (a)

LOCATION: 16 km SE of Tuktoyaktuk

REFERENCE(S): Hardy 1977; H-BBT 1986

SETTING
Rolling to hilly

RELIEF
Up to 18 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial outwash plain

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
1 sq km

DEVELOPMENT CONSTRAINTS
None discernible

BOREHOLES (#)
None

TEST PITS (#)
4

MOIST. CON. (#)
None

GRAINSIZE (#)
3

OVERBURDEN
TYPE: Organic silt & peat
EXTENT: Unknown
THICK.: 0.5 m

GROUND ICE
None
All holes
-

POTENTIAL VOLUME, cu. m.: 3,000,000

RECOVERABLE, cu.m: 765,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			81,000	204,000	81,000	306,000
CLASS 2						
CLASS 3			122,000	306,000	122,000	459,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 170

ILA 7(1) (a)

LOCATION: 32 km S of Tuktoyaktuk

REFERENCE(S): Hardy 1977

SETTING
Hummocky, thermokarst

RELIEF
15 to 25 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial outwash plain

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
2 sq km

DEVELOPMENT CONSTRAINTS
Overburden thickness

BOREHOLES (#)
None

TEST PITS (#)
4

MOIST. CON. (#)
None

GRAINSIZE (#)
1

OVERBURDEN

TYPE: Peat
EXTENT: Intermittent
THICK.: to 1.5 m

GROUND ICE

None
-
-

POTENTIAL VOLUME, cu. m.: >4,580,000

RECOVERABLE, cu.m: 4,580,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			61,000	61,000	61,000	458,000
CLASS 2						
CLASS 3			549,000	549,000	549,000	4,122,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 171

ILA 7(1) (a)

LOCATION: 35 km S of Tuktoyaktuk

REFERENCE(S): Hardy 1977; DPW 1976

SETTING
Hummocky, near Eskimo Lk.

LANDFORM
Glaciofluvial outwash/kames

AREA
2 sq km

RELIEF
Up to 30 metres

CONTINUITY
Discontinuous

DEVELOPMENT CONSTRAINTS
Possible massive ice

WINTER ACCESS
Tundra/ice road

SUMMER ACCESS
None

BOREHOLES (#)
17

MOIST. CON. (#)
110

TEST PITS (#)
2

GRAINSIZE (#)
110

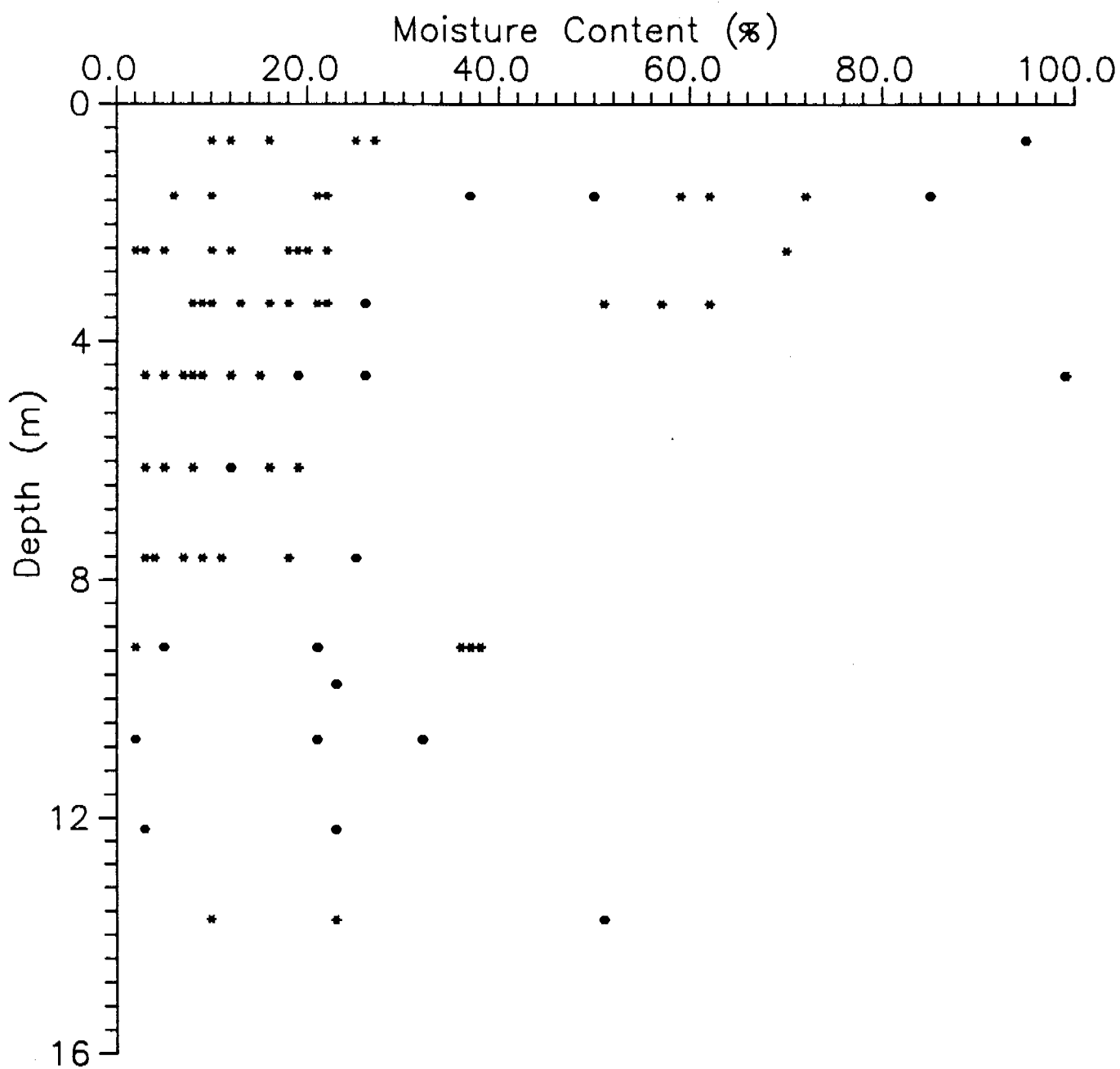
OVERBURDEN
TYPE: Peat, ice, silt
EXTENT: Intermittent
THICK.: 0.9 m

GROUND ICE
Lenses, inclusions
-
Variable

POTENTIAL VOLUME, cu. m.: 6,000,000

RECOVERABLE, cu.m: 1,520,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			100,000	100,000	100,000	300,000
CLASS 2						
CLASS 3			67,000	67,000	67,000	406,000
CLASS 4			133,000	133,000	133,000	814,000
CLASS 5						



Indian and Northern Affairs Canada
 Inuvialuit Land Administration
 Source 171
 Moisture Content vs. Depth



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 172

ILA 7(1) (a)

LOCATION: 37 km S of Tuktoyaktuk

REFERENCE(S): Hardy 1977; DPW 1976

SETTING
Hummocky, near Eskimo Lk.

LANDFORM
Glaciofluvial outwash/kames

AREA
2 sq km

RELIEF
Up to 21 metres

CONTINUITY
Discontinuous

DEVELOPMENT CONSTRAINTS
Massive ice, distance from Tuk

WINTER ACCESS
Tundra/ice road

SUMMER ACCESS
None

BOREHOLES (#)
12

MOIST. CON. (#)
66

TEST PITS (#)
2

GRAINSIZE (#)
65

OVERBURDEN
TYPE: Peat, clay
EXTENT: Intermittent
THICK.: 0.5 m

GROUND ICE
Lenses, inclusions
All holes
Variable

POTENTIAL VOLUME, cu. m.: 4,300,000

RECOVERABLE, cu.m: 918,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			24,000	24,000	24,000	24,000
CLASS 2			24,000	24,000	24,000	24,000
CLASS 3			96,000	96,000	96,000	435,000
CLASS 4			96,000	96,000	96,000	435,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 173

ILA 7(1) (a)

LOCATION: 45 km S of Tuktoyaktuk

REFERENCE(S): Hardy 1977; DPW 1976

SETTING
Hummocky plain

RELIEF
6 to 30 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Kame complex

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
Up to 2 sq km approx

DEVELOPMENT CONSTRAINTS
Massive ice, distance from Tuk

BOREHOLES (#)
7

TEST PITS (#)
2

MOIST. CON. (#)
27

GRAINSIZE (#)
26

OVERBURDEN

TYPE: Peat, silt
EXTENT: Intermittent
THICK.: Up to 0.9 m

GROUND ICE

Massive, excess
Most holes
Variable

POTENTIAL VOLUME, cu. m.: 2,000,000

RECOVERABLE, cu.m: 688,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			62,000	62,000	62,000	230,000
CLASS 3			122,000	122,000	122,000	458,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 174

ILA 7(1) (a)

LOCATION: 48 km S of Tuktoyaktuk

REFERENCE(S): Hardy 1977

SETTING
Hummocky, rough terrain

RELIEF
Approx 25 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Kame complex/outwash

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
2 sq km

DEVELOPMENT CONSTRAINTS
Distance from Tuk, massive ice

BOREHOLES (#)
None

TEST PITS (#)
4

MOIST. CON. (#)
None

GRAINSIZE (#)
2

OVERBURDEN

TYPE: Peat, silt
EXTENT: Intermittent
THICK.: Up to 0.3 m

GROUND ICE

Massive present
Most holes
Variable

POTENTIAL VOLUME, cu. m.: 17,000,000

RECOVERABLE, cu.m: 3,280,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			290,000	290,000	290,000	1,090,000
CLASS 3						
CLASS 4			590,000	590,000	590,000	2,190,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 175

ILA 7(1) (a)

LOCATION: 50 km SW of Tuktoyaktuk

REFERENCE(S): Hardy 1977

SETTING
Hummocky, rolling terrain

RELIEF
15 to 25 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial outwash

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
1 sq km total

DEVELOPMENT CONSTRAINTS
Massive ice, distance from Tuk

BOREHOLES (#)
None

TEST PITS (#)
3

MOIST. CON. (#)
None

GRAINSIZE (#)
1

OVERBURDEN

TYPE: Peat
EXTENT: Intermittent
THICK.: Up to 1.5 m

GROUND ICE

Massive present
Intermittent
Variable

POTENTIAL VOLUME, cu. m.: 4,500,000

RECOVERABLE, cu.m: 1,530,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			102,000	102,000	102,000	510,000
CLASS 3			204,000	204,000	204,000	1,020,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 176

ILA 7(1) (a)

LOCATION: 50 km SW of Tuktoyaktuk

REFERENCE(S): Hardy 1977

SETTING
Thermokarst plain

RELIEF
Subdued

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial outwash plain

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
2 sq km

DEVELOPMENT CONSTRAINTS
Massive ice, distance from Tuk

BOREHOLES (#)
None

TEST FITS (#)
4

MOIST. CON. (#)
None

GRAINSIZE (#)
2

OVERBURDEN
TYPE: Peat, silt
EXTENT: Intermittent
THICK.: 0.15 m

GROUND ICE
Lenses, inclusions
Intermittent
Unknown

POTENTIAL VOLUME, cu. m.: >6,100,000

RECOVERABLE, cu.m: 6,100,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			610,000	1,525,000	610,000	3,050,000
CLASS 2			610,000	1,525,000	610,000	3,050,000
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 177

ILA 7(1) (a)

LOCATION: 22 km S of Tuktoyaktuk

REFERENCE(S): Hardy 1977; DPW 1977

SETTING
Hummocky thermokarst plain

RELIEF
Up to 18 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial outwash

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
1 sq km

DEVELOPMENT CONSTRAINTS
Overburden, access

BOREHOLES (#)
14

TEST FITS (#)
5

MOIST. CON. (#)
Unknown

GRAINSIZE (#)
Unknown

OVERBURDEN
TYPE: Peat, silt
EXTENT: Intermittent
THICK.: Up to 1.2 m

GROUND ICE
Lenses, inclusions
Intermittent
Unknown

POTENTIAL VOLUME, cu. m.: 7,600,000

RECOVERABLE, cu.m: 1,902,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			169,000	317,000	169,000	634,000
CLASS 2			169,000	317,000	169,000	634,000
CLASS 3			169,000	317,000	169,000	634,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 181

ILA 7(1) (a)

LOCATION: 8 to 12 km SE of Tuktoyaktuk

REFERENCE(S): H-BBT 1986

SETTING
Thermokarst plain

RELIEF
Gently rolling

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial deposits

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
260,000 sq m

DEVELOPMENT CONSTRAINTS
Access, ice content

BOREHOLES (#)
None

TEST PITS (#)
15

MOIST. CON. (#)
None

GRAINSIZE (#)
12

OVERBURDEN
TYPE: Peat, organic silt
EXTENT: All holes
THICK.: Up to 0.1 m

GROUND ICE
Well bonded
Unknown
Unknown

POTENTIAL VOLUME, cu. m.: 260,000

RECOVERABLE, cu.m: 260,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3	260,000	260,000	260,000	260,000	260,000	260,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 183

ILA 7(1) (a)

LOCATION: 12 to 17 km SE of Tuktoyaktuk

REFERENCE(S): H-BBT 1986

SETTING
Small hills, kames

RELIEF
Gently rolling

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial deposits

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
118,500 sq m

DEVELOPMENT CONSTRAINTS
Access, ice content

BOREHOLES (#)
None

TEST PITS (#)
6

MOIST. CON. (#)
None

GRAINSIZE (#)
5

OVERBURDEN
TYPE: Peat, organic silt
EXTENT: All holes
THICK.: Up to 0.1 m

GROUND ICE
Well bonded
Intermittent
Unknown

POTENTIAL VOLUME, cu. m.: 118,500

RECOVERABLE, cu.m.: 118,500

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3	118,500	118,500	118,500	118,500	118,500	118,500
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 184

ILA 7(1) (a)

LOCATION: 19 to 22 km SE of Tuktoyaktuk

REFERENCE(S): H-BBT 1986

SETTING
Lake intersected deposit

RELIEF
Up to 50 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Upland plateau area

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
220,000

DEVELOPMENT CONSTRAINTS
Access, ice content

BOREHOLES (#)
None

TEST PITS (#)
8

MOIST. CON. (#)
None

GRAINSIZE (#)
5

OVERBURDEN
TYPE: Peat, organic silt
EXTENT: Intermittent
THICK.: Up to 0.1 m

GROUND ICE
No visible ice
Intermittent
-

POTENTIAL VOLUME, cu. m.: 220,000

RECOVERABLE, cu.m: 220,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3	220,000	220,000	220,000	220,000	220,000	220,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 200A

LOCATION: 95 km WSW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2

SETTING
Lake shore

RELIEF
3 to 10 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Beach, terrace remnants

CONTINUITY
Continuous

SUMMER ACCESS
Barge

AREA
350,000 sq km

DEVELOPMENT CONSTRAINTS
Lake shore environment, Bird Sanctuary

BOREHOLES (#)
None

TEST FITS (#)
2 + 1 exp.

MOIST. CON. (#)
1

GRAINSIZE (#)
2

OVERBURDEN

TYPE: Organic silt
EXTENT: Continuous
THICK.: Up tp 1.0 m

GROUND ICE

Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.: 1,750,000

RECOVERABLE, cu.m: 1,750,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3			700,000	700,000	700,000	1,750,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 201A

LOCATION: 95 km WSW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2

SETTING
Lake shore

RELIEF
6 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Beach, delta remnants

CONTINUITY
4 features

SUMMER ACCESS
Barge

AREA
4.8 sq km

DEVELOPMENT CONSTRAINTS
Lake shore environment, Bird Sanctuary

BOREHOLES (#)
None

TEST PITS (#)
6

MOIST. CON. (#)
4

GRAINSIZE (#)
4

OVERBURDEN
TYPE: Silt, organics
EXTENT: Continuous
THICK.: Up to 0.7 m

GROUND ICE
Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.: >20,000,000

RECOVERABLE, cu.m: 20,000,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			10,000,000	20,000,000	10,000,000	20,000,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 202A

LOCATION: 95 km WSW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2

SETTING
Lake shore

RELIEF
4 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Beach, delta remnant

CONTINUITY
Continuous

SUMMER ACCESS
Barge

AREA
280,000 sq km

DEVELOPMENT CONSTRAINTS
Lake shore environment, Bird Sanctuary

BOREHOLES (#)
None

TEST PITS (#)
1 exposure

MOIST. CON. (#)
1

GRAINSIZE (#)
1

OVERBURDEN

TYPE: Organic silt
EXTENT: Unknown
THICK.: 1 m

GROUND ICE

Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.: 1,000,000

RECOVERABLE, cu.m: 1,000,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			500,000	1,000,000	500,000	1,000,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 203A

LOCATION: 81 km WSW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2

SETTING
Lake shore

RELIEF
3 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Beach, delta remnant

CONTINUITY
Continuous

SUMMER ACCESS
Barge

AREA
2.3 sq km

DEVELOPMENT CONSTRAINTS
Lake shore environment, Bird Sanctuary

BOREHOLES (#)
None

TEST FITS (#)
1 exposure

MOIST. CON. (#)
1

GRAINSIZE (#)
1

OVERBURDEN

TYPE: Peat
EXTENT: Unknown
THICK.: 0.7 m

GROUND ICE

Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.: 7,000,000

RECOVERABLE, cu.m: 7,000,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			4,000,000	7,000,000	4,000,000	7,000,000
CLASS 5						



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INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 205A

LOCATION: 67 km WSW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2

SETTING
Denis Lagoon

RELIEF
3 to 30 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Kame

CONTINUITY
3 features

SUMMER ACCESS
None

AREA
130,000 sq m

DEVELOPMENT CONSTRAINTS
Contains no useable granular material

BORERHOLES (#)
None

TEST PITS (#)
1

MOIST. CON. (#)
None

GRAINSIZE (#)
None

OVERBURDEN
TYPE: Silt and peat
EXTENT: Unknown
THICK.: Up to 0.8 m

GROUND ICE
Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.:

0

RECOVERABLE, cu.m:

0

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4					0	0
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 206

LOCATION: 57 km WSW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2

SETTING
Ridges near Denis Lake

RELIEF
Up to 25 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Esker remnants

CONTINUITY
5 features

SUMMER ACCESS
None

AREA
1.6 sq km

DEVELOPMENT CONSTRAINTS
Overburden, massive ground ice, erratic

BOREHOLES (#)
6

TEST PITS (#)
4

MOIST. CON. (#)
17

GRAINSIZE (#)
11

OVERBURDEN
TYPE: Silt, organics, ice
EXTENT: Intermittent
THICK.: Over 6 m

GROUND ICE
Massive
Continuous
Unknown

POTENTIAL VOLUME, cu. m.: 1,000,000

RECOVERABLE, cu.m: 1,000,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3			100,000	200,000	500,000	1,000,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 207

LOCATION: 60 km WSW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2

SETTING
Lake shore, Denis Lake

RELIEF
Rolling

WINTER ACCESS
Tundra/ice road

LANDFORM
Kame-esker complex

CONTINUITY
3 features

SUMMER ACCESS
None

AREA
840,000 sq m

DEVELOPMENT CONSTRAINTS
Lake shore environment, overburden, ground ice

BOREHOLES (#)
5

TEST FITS (#)
3

MOIST. CON. (#)
17

GRAINSIZE (#)
13

OVERBURDEN
TYPE: Silt, peat
EXTENT: Intermittent
THICK.: Up to 5 m

GROUND ICE
Massive
Unknown
> 2 m

POTENTIAL VOLUME, cu. m.: 300,000

RECOVERABLE, cu.m: 150,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3			150,000	150,000	150,000	300,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 208A

LOCATION: 51 km W of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2

SETTING
Rolling plain

RELIEF
Variable

WINTER ACCESS
Tundra/ice road

LANDFORM
Terrace remnant

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
1.5 sq km

DEVELOPMENT CONSTRAINTS
Poor quality material

BOREHOLES (#)
None

TEST PITS (#)
1

MOIST. CON. (#)
1

GRAINSIZE (#)
1

OVERBURDEN
TYPE: Organic silt
EXTENT: Unknown
THICK.: 0.3 m

GROUND ICE
Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.: 5,000,000

RECOVERABLE, cu.m: 450,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			450,000	450,000	1,700,000	5,000,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 209

LOCATION: 55 km WNW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2

SETTING
Lake shore

RELIEF
Up to 25 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Kame-like deposit

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
140,000 sq km

DEVELOPMENT CONSTRAINTS
Lake shore environment, poor quality

BOREHOLES (#)
None

TEST PITS (#)
1 exposure

MOIST. CON. (#)
1

GRAINSIZE (#)
1

OVERBURDEN

TYPE: None
EXTENT: Unknown
THICK.: -

GROUND ICE

Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.: >1,000,000

RECOVERABLE, cu.m: 1,000,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			280,000	280,000	280,000	1,000,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 210A

LOCATION: 54 km W of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2

SETTING
Rolling plain

RELIEF
Variable

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial terrace

CONTINUITY
4 features

SUMMER ACCESS
None

AREA
1.9 sq km

DEVELOPMENT CONSTRAINTS
overburden, ground ice, poor quality

BOREHOLES (#)
2

TEST PITS (#)
None

MOIST. CON. (#)
1

GRAINSIZE (#)
None

OVERBURDEN

TYPE: Silt, ice
EXTENT: Continuous
THICK.: > 5 m

GROUND ICE

Massive
Unknown
Unknown

POTENTIAL VOLUME, cu. m.:

Unknown

RECOVERABLE, cu.m:

0

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4					0	0
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 211

ILA 7(1) (a)

LOCATION: 50 km SW of Tuk

REFERENCE(S): BBT 1983; RKL 1973, Zone 2

SETTING
Hummocky, thermokarst

RELIEF
Up to 18 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Esker ridge

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
2 sq km

DEVELOPMENT CONSTRAINTS
Distance from Tuk, ice

BOREHOLES (#)
13

TEST FITS (#)
4

MOIST. CON. (#)
67

GRAINSIZE (#)
39

OVERBURDEN

TYPE: Organic silt
EXTENT: Intermittent
THICK.: Up to 0.9 m

GROUND ICE

Lenses, inclusions
All Holes
Variable

POTENTIAL VOLUME, cu. m.: 940,000

RECOVERABLE, cu.m: 940,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2	39,800	84,500	136,000	301,000	136,000	301,000
CLASS 3						
CLASS 4	83,000	211,000	226,000	639,000	226,000	639,000
CLASS 5						

INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 211E

LOCATION: 47 km WSW of Tuktoyaktuk

REFERENCE(S): EBA 1986

SETTING
Near East Channel

RELIEF
Rolling

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial terrace

CONTINUITY
2 ridges

SUMMER ACCESS
None

AREA
320,000 sq m

DEVELOPMENT CONSTRAINTS
Poor quality, ground ice

BOREHOLES (#)
2

TEST PITS (#)
None

MOIST. CON. (#)
14

GRAINSIZE (#)
4

OVERBURDEN

TYPE: Silt, ice
EXTENT: 1 ridge
THICK.: Unknown

GROUND ICE

Massive, excess
-
Unknown

POTENTIAL VOLUME, cu. m.: 3,200,000

RECOVERABLE, cu.m: 1,600,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4	2,000	15,000	230,000	1,600,000	230,000	1,600,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 212

LOCATION: 55 km SW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2

SETTING
Rolling plain

RELIEF
Variable

WINTER ACCESS
Tundra/ice road

LANDFORM
Outwash

CONTINUITY
2 features

SUMMER ACCESS
None

AREA
840,000 sq m

DEVELOPMENT CONSTRAINTS
Thick overburden, massive ice

BOREHOLES (#)
1

TEST PITS (#)
3

MOIST. CON. (#)
6

GRAINSIZE (#)
3

OVERBURDEN
TYPE: Silt, ice
EXTENT: Continuous
THICK.: > 5 m

GROUND ICE
Massive
Unknown
Unknown

POTENTIAL VOLUME, cu. m.: 190,000

RECOVERABLE, cu.m: 190,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			190,000	190,000	190,000	190,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 213

LOCATION: 46 km SW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2

SETTING
Shore, Mackenzie R.

RELIEF
6 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Terrace remnants

CONTINUITY
3 features

SUMMER ACCESS
Barge

AREA
1.2 sq km

DEVELOPMENT CONSTRAINTS
River environment

BOREHOLES (#)
None

TEST PITS (#)
2 + exposures

MOIST. CON. (#)
1

GRAINSIZE (#)
1

OVERBURDEN
TYPE: Silt
EXTENT: Intermittent
THICK.: 0.6 m

GROUND ICE
Unknown
Unknown
Unknown

POTENTIAL VOLUME, cu. m.: >600,000

RECOVERABLE, cu.m.: 300,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			300,000	300,000	300,000	600,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 216

LOCATION: 59 km SW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2; EBA 1986

SETTING
Near East Channel

RELIEF
Rolling

WINTER ACCESS
Tundra/ice road

LANDFORM
Kame/esker remnants

CONTINUITY
3 ridges

SUMMER ACCESS
None

AREA
1.0 sq km

DEVELOPMENT CONSTRAINTS
Poor quality, ground ice, access

BOREHOLES (#)
11

TEST FITS (#)
3

MOIST. CON. (#)
53

GRAINSIZE (#)
18

OVERBURDEN

TYPE: Silt, ice
EXTENT: Most holes
THICK.: Up to 31 m

GROUND ICE

Massive, excess
Unknown
Up to 20 m

POTENTIAL VOLUME, cu. m.: 6,000,000

RECOVERABLE, cu.m: <1,000,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			250,000	1,000,000	150,000	1,000,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 2168

LOCATION: 60 km SW of Tuktoyaktuk

REFERENCE(S): EBA 1986

SETTING
Hillock near E. Channel

RELIEF
Subdued

WINTER ACCESS
Tundra/ice road

LANDFORM
Glacial outwash

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
431,000 sq m

DEVELOPMENT CONSTRAINTS
Poor quality, ground ice

BOREHOLES (#)
1

TEST PITS (#)
None

MOIST. CON. (#)
7

GRAINSIZE (#)
3

OVERBURDEN

TYPE: None
EXTENT: -
THICK.: -

GROUND ICE

Massive, excess
All holes
Unknown

POTENTIAL VOLUME, cu. m.: 1,700,000

RECOVERABLE, cu.m: 1,700,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4	6,500	13,000	850,000	1,700,000	850,000	1,700,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 217

LOCATION: 64 km SW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2; EBA 1986

SETTING
Near E. Channel

RELIEF
Subdued

WINTER ACCESS
Ice road

LANDFORM
Possible esker

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
568,000 sq m

DEVELOPMENT CONSTRAINTS
Poor quality, ground ice

BOREHOLES (#)
2

TEST PITS (#)
1

MOIST. CON. (#)
16

GRAINSIZE (#)
4

OVERBURDEN

TYPE: Silt, till
EXTENT: All holes
THICK.: Up to 2.0 m

GROUND ICE

Excess, massive
Unknown
Unknown

POTENTIAL VOLUME, cu. m.: 2,350,000

RECOVERABLE, cu.m: 2,350,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4	7,500	7,500	235,000	2,350,000	235,000	2,350,000
CLASS 5						



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INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 217E

LOCATION: 63 km SW of Tuktoyaktuk

REFERENCE(S): EBA 1986

SETTING
Near E. Channel

RELIEF
Subdued

WINTER ACCESS
Ice road

LANDFORM
Possible kame

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
428,000 sq m

DEVELOPMENT CONSTRAINTS
Poor quality material

BOREHOLES (#)
1

TEST PITS (#)
None

MOIST. CON. (#)
9

GRAINSIZE (#)
1

OVERBURDEN
TYPE: Organic silt
EXTENT: Unknown
THICK.: Up to 1.3 m

GROUND ICE
Excess
All holes
Unknown

POTENTIAL VOLUME, cu. m.:

0

RECOVERABLE, cu.m.:

0

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4					0	0
CLASS 5						

INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 218

LOCATION: 61 km WSW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 2; ERA 1986

SETTING
Steep hillocks

RELIEF
20 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Glacial outwash

CONTINUITY
2 features

SUMMER ACCESS
None

AREA
690,000 sq m

DEVELOPMENT CONSTRAINTS
Poor quality, ground ice

BOREHOLES (#)
2

TEST PITS (#)
1

MOIST. CON. (%)
15

GRAINSIZE (#)
2

OVERBURDEN

TYPE: Organic silt
EXTENT: All holes
THICK.: Up to 2.0 m

GROUND ICE

Massive, excess
Unknown
Unknown

POTENTIAL VOLUME, cu. m.:

0

RECOVERABLE, cu.m.:

0

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total

CLASS 1

CLASS 2

CLASS 3

CLASS 4

0

0

CLASS 5



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INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 218N

LOCATION: 58 km WSW of Tuktoyaktuk

REFERENCE(S): EBA 1986

SETTING
Hillocks and ridges

RELIEF
Up to 15 m

WINTER ACCESS
Tundra/ice road

LANDFORM
Glacial outwash

CONTINUITY
4 features

SUMMER ACCESS
None

AREA
1.06 sq km

DEVELOPMENT CONSTRAINTS
Poor quality, ground ice

BOREHOLES (#)
4

TEST PITS (#)
None

MOIST. CON. (#)
25

GRAINSIZE (#)
None

OVERBURDEN
TYPE: Peat, organic silt
EXTENT: All holes
THICK.: Up to 2.0 m

GROUND ICE
Excess, massive
All holes
Unknown

POTENTIAL VOLUME, cu. m.:

0

RECOVERABLE, cu.m:

0

MATERIAL
PROVEN, cu.m.
Annual Total

PROBABLE, cu.m.
Annual Total

PROSPECTIVE, cu.m.
Annual Total

CLASS 1

CLASS 2

CLASS 3

CLASS 4

0

0

CLASS 5



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 219

LOCATION: 69 km SW of tuk

REFERENCE(S): RKL 1973, Zone 2; EBA 1986

SETTING
Flat-topped ridge

RELIEF
15 m

WINTER ACCESS
Ice road

LANDFORM
Possible crevasse filling

CONTINUITY
Continuous

SUMMER ACCESS
none

AREA
1.5 sq km

DEVELOPMENT CONSTRAINTS
Fair quality material

BOREHOLES (#)
17

TEST PITS (#)
2

MOIST. CON. (#)
118

GRAINSIZE (#)
39

OVERBURDEN
TYPE: Peat, silt, clay
EXTENT: Nearly all holes
THICK.: Up to 6.0 m

GROUND ICE
Massive, excess
All holes
Up to 10 m

POTENTIAL VOLUME, cu. m.: 7,500,000

RECOVERABLE, cu.m.: 230,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3	30,000	30,000	30,000	30,000	30,000	30,000
CLASS 4	100,000	100,000	100,000	100,000	100,000	100,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 304

LOCATION: 35 km S of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Thermokarst plain

RELIEF
5 to 6 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Esker remnants

CONTINUITY
Two fields

SUMMER ACCESS
None

AREA
18,000 sq m

DEVELOPMENT CONSTRAINTS
None discernible

BOREHOLES (#)
None

TEST PITS (#)
2

MOIST. CON. (#)
1

GRAINSIZE (#)
1

OVERBURDEN
TYPE: None
EXTENT: -
THICK.: -

GROUND ICE
None
All holes
-

POTENTIAL VOLUME, cu. m.:

46,000

RECOVERABLE, cu.m.:

46,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1	9,200	9,200	9,200	9,200	9,200	9,200
CLASS 2	9,200	9,200	9,200	36,800	9,200	36,800
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 305

ILA 7(1) (b)

LOCATION: 42 km S of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Hummocky with many ponds

LANDFORM
Kames on outwash plain

AREA
20 sq km

RELIEF
6 to 30 metres

CONTINUITY
Numerous kames

DEVELOPMENT CONSTRAINTS
Massive ice, wildlife

WINTER ACCESS
Tundra/ice road

SUMMER ACCESS
None

BOREHOLES (#)
6

TEST PITS (#)
2

MOIST. CON. (#)
4

GRAINSIZE (#)
7

OVERBURDEN
TYPE: Organic silt
EXTENT: Intermittent
THICK.: Up to 0.9 m

GROUND ICE
Massive present
-
Variable

POTENTIAL VOLUME, cu. m.: >>230,000

RECOVERABLE, cu.m: 230,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			230,000	230,000	230,000	230,000
CLASS 3						
CLASS 4						
CLASS 5						

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INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 306

ILA 7(1) (a)

LOCATION: 42 km S of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Thermokarst plain

LANDFORM
Kame field

AREA
11.5 sq km

RELIEF
Up to 15 metres

CONTINUITY
Numerous kames

DEVELOPMENT CONSTRAINTS
Wildlife, distance from Tuk

WINTER ACCESS
Tundra/ice road

SUMMER ACCESS
None

BOREHOLES (#)
3

TEST PITS (#)
2

MOIST. CON. (#)
9

GRAINSIZE (#)
5

OVERBURDEN
TYPE: Organic silt
EXTENT: Intermittent
THICK.: Up to 2.3 m

GROUND ICE
Lenses, inclusions
Intermittent
Variable

POTENTIAL VOLUME, cu. m.: >>115,000

RECOVERABLE, cu.m: 115,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			57,500	57,500	57,500	115,000
CLASS 2						
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 307

ILA 7(1) (a)

LOCATION: 55 km S of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Hillocks, small ponds

RELIEF
Up to 15 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Kame field

CONTINUITY
Numerous kames

SUMMER ACCESS
None

AREA
5 sq km

DEVELOPMENT CONSTRAINTS
Wildlife, distance from Tuk

BOREHOLES (#)
3

TEST PITS (#)
1

MOIST. CON. (#)
12

GRAINSIZE (#)
9

OVERBURDEN
TYPE: Organic silt
EXTENT: All holes
THICK.: Up to 0.76 m

GROUND ICE
Lenses, inclusions
Intermittent
Variable

POTENTIAL VOLUME, cu. m.: >115,000

RECOVERABLE, cu.m: 115,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			50,000	115,000	50,000	115,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 308

LOCATION: 50 km S of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Outwash plain

RELIEF
12 to 15 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Terrace remnants and kames

CONTINUITY
Discontinuous

SUMMER ACCESS
None

AREA
550,000 sq m

DEVELOPMENT CONSTRAINTS
Wildlife, distance, small volumes

BOREHOLES (#)
None

TEST PITS (#)
2

MOIST. CON. (#)
2

GRAINSIZE (#)
2

OVERBURDEN
TYPE: None
EXTENT: -
THICK.: -

GROUND ICE
None
All holes
-

POTENTIAL VOLUME, cu. m.: >>15,000

RECOVERABLE, cu.m: 15,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			15,000	15,000	15,000	15,000
CLASS 2						
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 309

LOCATION: 56 km S of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Ponds, low lying

RELIEF
30 to 45 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Kame field

CONTINUITY
Numerous kames

SUMMER ACCESS
None

AREA
7.5 sq km

DEVELOPMENT CONSTRAINTS
Wildlife, distance from Tuk

BOREHOLES (#)
8

TEST PITS (#)
3

MOIST. CON. (#)
28

GRAINSIZE (#)
19

OVERBURDEN

TYPE: Organic silt
EXTENT: Intermittent
THICK.: Up to 1.0 m

GROUND ICE

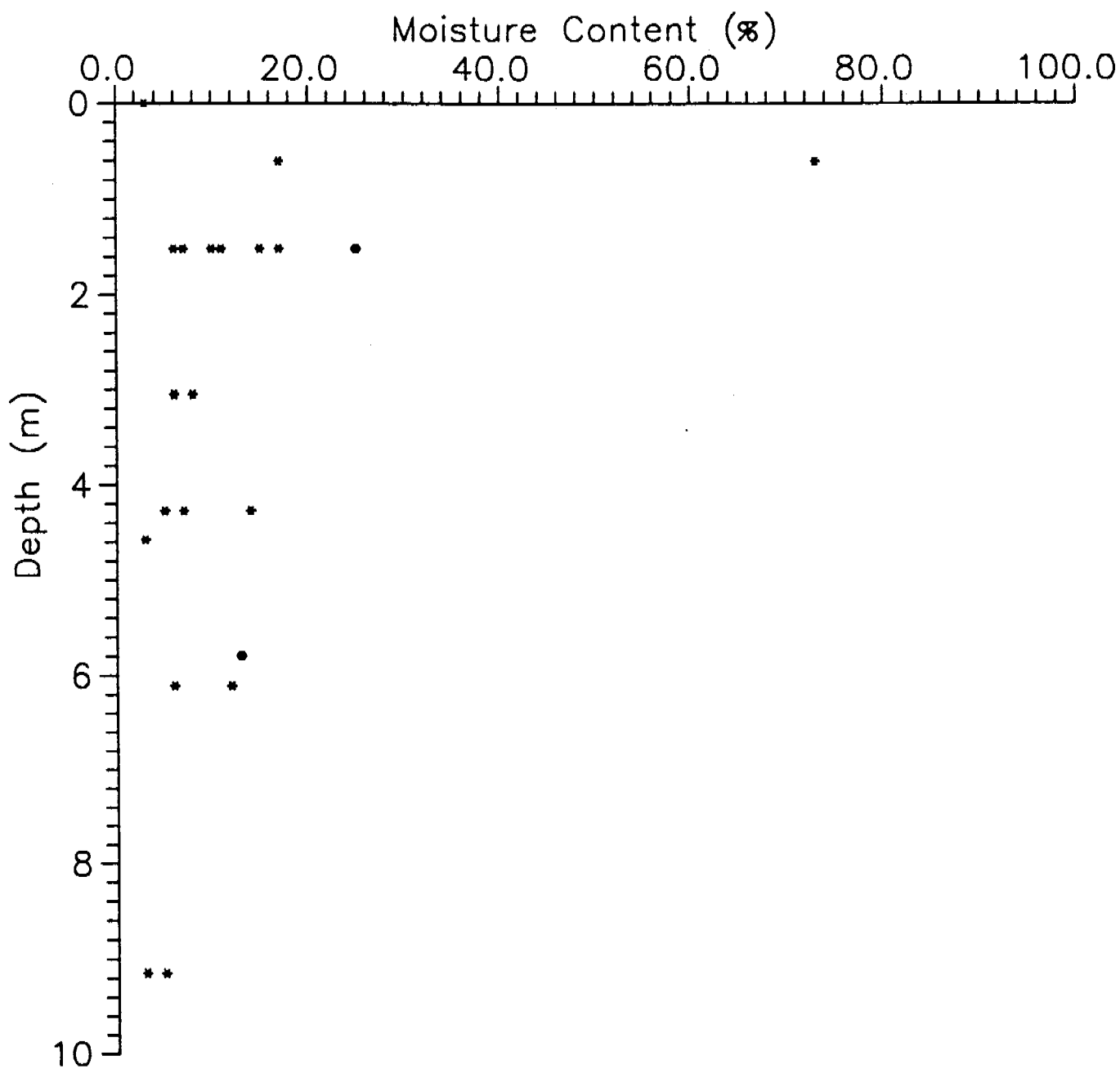
Massive, excess
-
Variable

POTENTIAL VOLUME, cu. m.: 200,000,000

RECOVERABLE, cu.m: 1,500,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			375,000	750,000	375,000	1,500,000
CLASS 2			375,000	750,000	375,000	1,500,000
CLASS 3						
CLASS 4						
CLASS 5						





Indian and Northern Affairs Canada
Inuvialuit Land Administration
Source 309
Moisture Content vs. Depth



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 310A

ILA 7(1) (a)

LOCATION: 57 km SW of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Lake shore

RELIEF
Up to 15 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Several kames and esker

CONTINUITY
2 separate fields

SUMMER ACCESS
None

AREA
1.2 sq km

DEVELOPMENT CONSTRAINTS
Poor quality, envir., distance

BOREHOLES (#)
2

TEST PITS (#)
2

MOIST. CON. (#)
2

GRAIN SIZE (#)
2

OVERBURDEN
TYPE: Organic silt
EXTENT: Intermittent
THICK.: Up to 0.3 m

GROUND ICE
Massive, excess
-
Up to 3.6 m

POTENTIAL VOLUME, cu. m.: 1,000,000

RECOVERABLE, cu.m.: 350,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			350,000	350,000	350,000	350,000
CLASS 5						



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INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 311

ILA 7(1) (b)

LOCATION: 62 km S of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Shoreline, Eskimo Lk.

RELIEF
Up to 15 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Bank deposit

CONTINUITY
2 deposits

SUMMER ACCESS
Barges

AREA
1.3 sq km

DEVELOPMENT CONSTRAINTS
Lake envir., wildlife

BOREHOLES (#)
None

TEST PITS (#)
2

MOIST. CON. (#)
2

GRAINSIZE (#)
2

OVERBURDEN
TYPE: Organic silt
EXTENT: Intermittent
THICK.: 1.0 m

GROUND ICE
None
Intermittent
-

POTENTIAL VOLUME, cu. m.: 300,000

RECOVERABLE, cu.m: 300,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4			300,000	300,000	300,000	300,000
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 312

ILA 7(1)(b)

LOCATION: 64 km S of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Shoreline of Eskimo Lk.

RELIEF
5 to 15 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Terraces

CONTINUITY
Continuous

SUMMER ACCESS
Barge

AREA
1.5 sq km

DEVELOPMENT CONSTRAINTS
Lake environment, wildlife

BOREHOLES (#)
5

TEST PITS (#)
3

MOIST. CON. (#)
18

GRAINSIZE (#)
13

OVERBURDEN
TYPE: Feat, ice, silt
EXTENT: Intermittent
THICK.: Up to 1.0 m

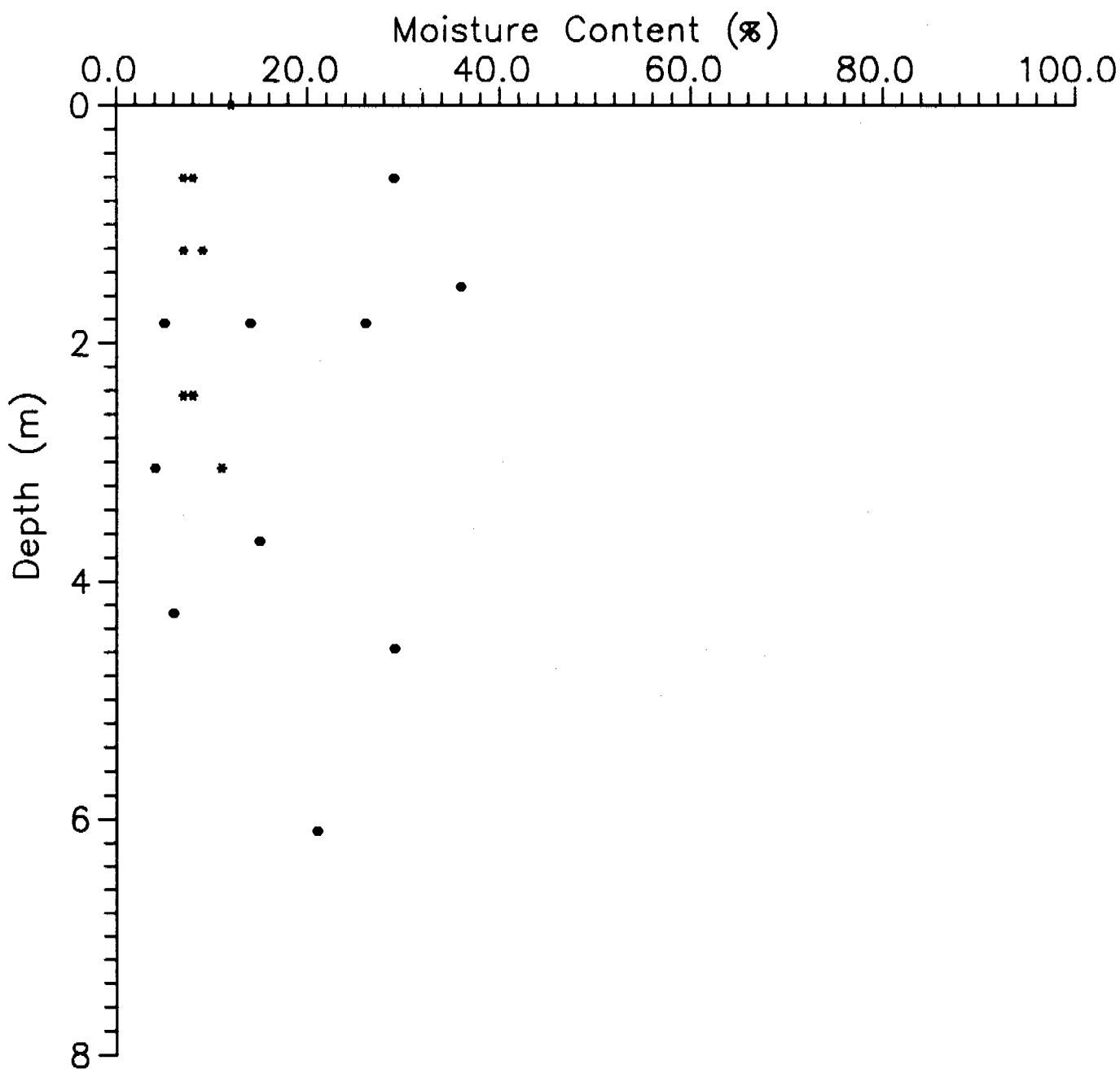
GROUND ICE
Massive, excess
-
Up to 3.6 m

POTENTIAL VOLUME, cu. m.: >4,600,000

RECOVERABLE, cu.m: 4,600,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1			700,000	2,300,000	700,000	2,300,000
CLASS 2			700,000	2,300,000	700,000	2,300,000
CLASS 3						
CLASS 4						
CLASS 5						





Indian and Northern Affairs Canada
Inuvialuit Land Administration
Source 312
Moisture Content vs. Depth



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INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 313

ILA 7(1)(b)

LOCATION: 67 km S of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Shoreline, Eskimo Lk.

LANDFORM
Glaciofluvial outwash

AREA
1.9 sq km

RELIEF
4 to 6 metres

CONTINUITY
Continuous

DEVELOPMENT CONSTRAINTS
Lake environment, wildlife

WINTER ACCESS
Tundra/ice road

SUMMER ACCESS
Barge

BOREHOLES (#)
5

TEST PITS (#)
None

MOIST. CON. (#)
13

GRAINSIZE (#)
4

OVERBURDEN
TYPE: Silt, peat, ice
EXTENT: Intermittent
THICK.: Up to 0.76 m

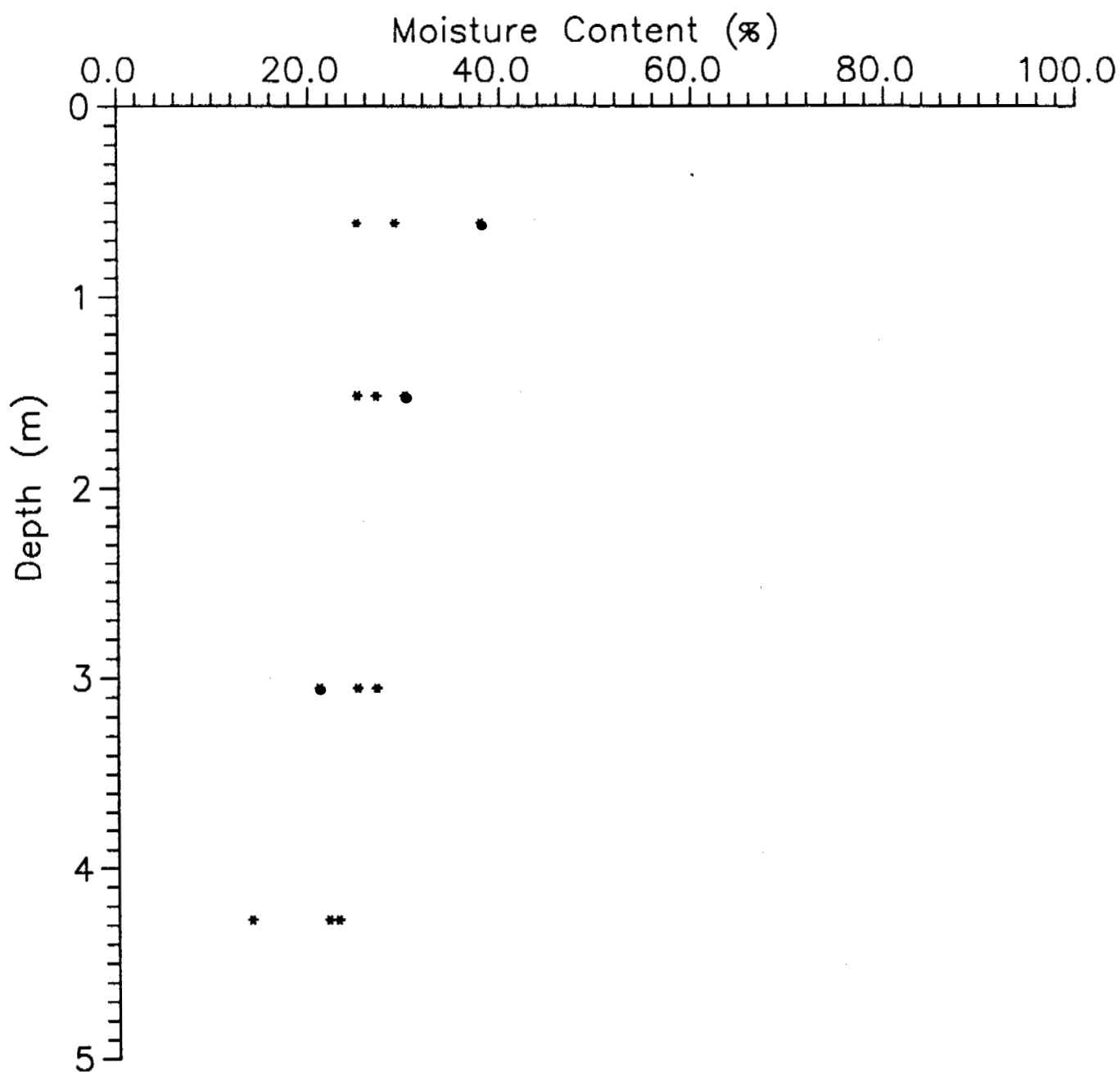
GROUND ICE
Massive, excess
Intermittent
Up to 4.2 m

POTENTIAL VOLUME, cu. m.: 3,000,000

RECOVERABLE, cu.m: 38,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3			12,000	38,000	12,000	38,000
CLASS 4						
CLASS 5						





Indian and Northern Affairs Canada
Inuvialuit Land Administration
Source 313
Moisture Content vs. Depth



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 314

ILA 7(1) (b)

LOCATION: 79 km S of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Terrace adjacent to stream

RELIEF
Indeterminate

WINTER ACCESS
Tundra/ice road

LANDFORM
Post-glacial fluvial terraces

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
1.1 sq km

DEVELOPMENT CONSTRAINTS
Lake environment, wildlife

BOREHOLES (#)
None

TEST PITS (#)
3

MOIST. CON. (#)
2

GRAINSIZE (#)
2

OVERBURDEN
TYPE: Silt
EXTENT: Intermittent
THICK.: Up to 0.3 m

GROUND ICE
None
All Holes
-

POTENTIAL VOLUME, cu. m.: 2,300,000

RECOVERABLE, cu.m: 2,300,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			460,000	2,300,000	460,000	2,300,000
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 325

ILA 7(1) (b)

LOCATION: 76 km S of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Lake shore deposit

RELIEF
Variable

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial terrace

CONTINUITY
Continuous

SUMMER ACCESS
Barge

AREA
7.5 sq km

DEVELOPMENT CONSTRAINTS
Lake envir., wildlife, distance

BOREHOLES (#)
4

TEST PITS (#)
None

MOIST. CON. (#)
11

GRAINSIZE (#)
4

OVERBURDEN
TYPE: Silt, organics, ice
EXTENT: Continuous
THICK.: Up to 1.4 m

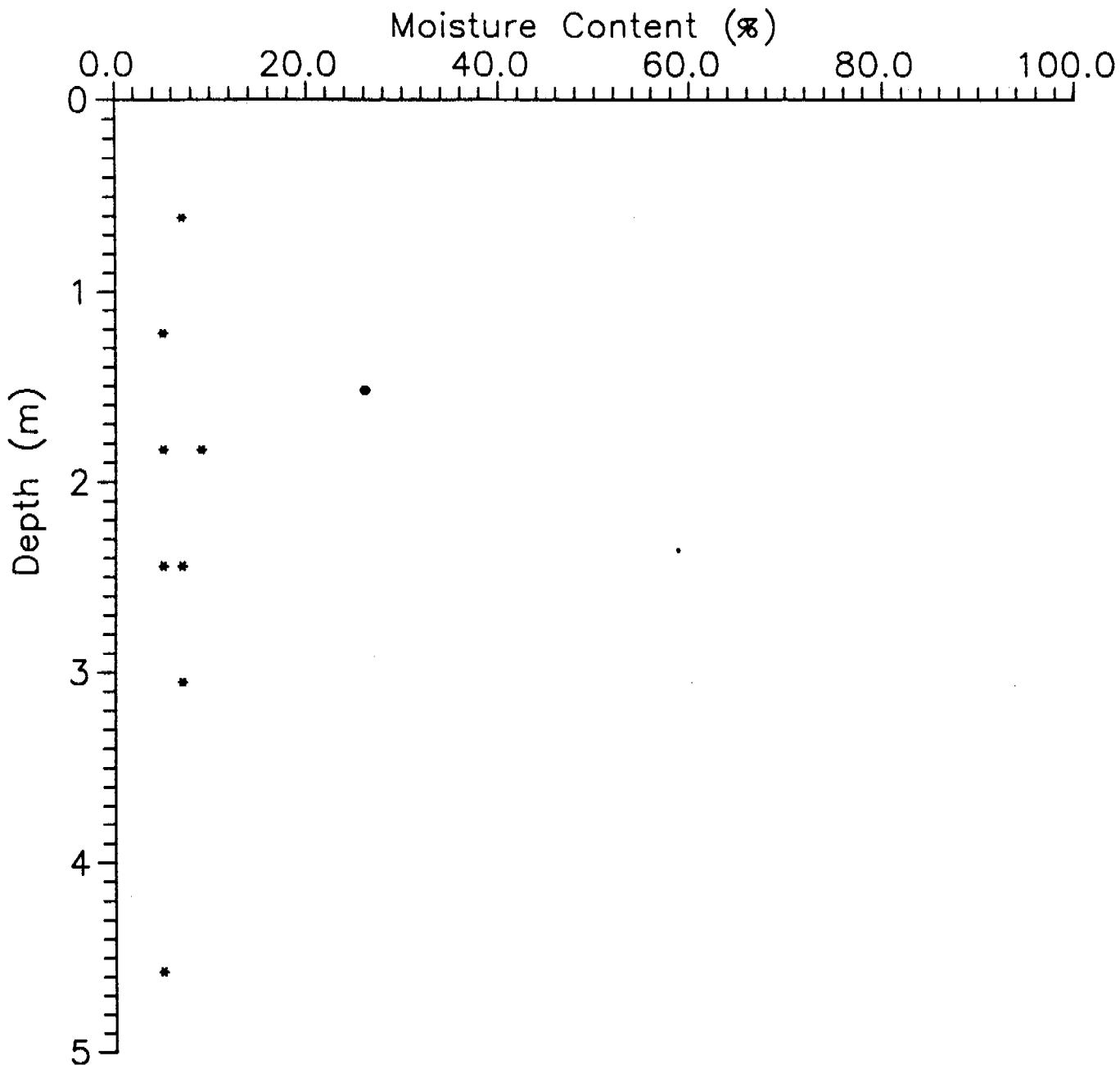
GROUND ICE
Massive, excess
-
Up to 2.1 m

POTENTIAL VOLUME, cu. m.: 6,000,000

RECOVERABLE, cu.m: 750,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3			150,000	750,000	150,000	750,000
CLASS 4						
CLASS 5						





Indian and Northern Affairs Canada
Inuvialuit Land Administration
Source 325
Moisture Content vs. Depth



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 327

ILA 7(1) (b)

LOCATION: 71 km S of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Hillocks, gullies

RELIEF
Variable

WINTER ACCESS
Tundra/ice road

LANDFORM
Glaciofluvial complex

CONTINUITY
Continuous

SUMMER ACCESS
Barge

AREA
2.9 sq km

DEVELOPMENT CONSTRAINTS
Lake envir., wildlife, distance

BOREHOLES (#)
4

TEST FITS (#)
None

MOIST. CON. (#)
10

GRAINSIZE (#)
4

OVERBURDEN
TYPE: Silt, peat
EXTENT: All holes
THICK.: Up to 2.1 m

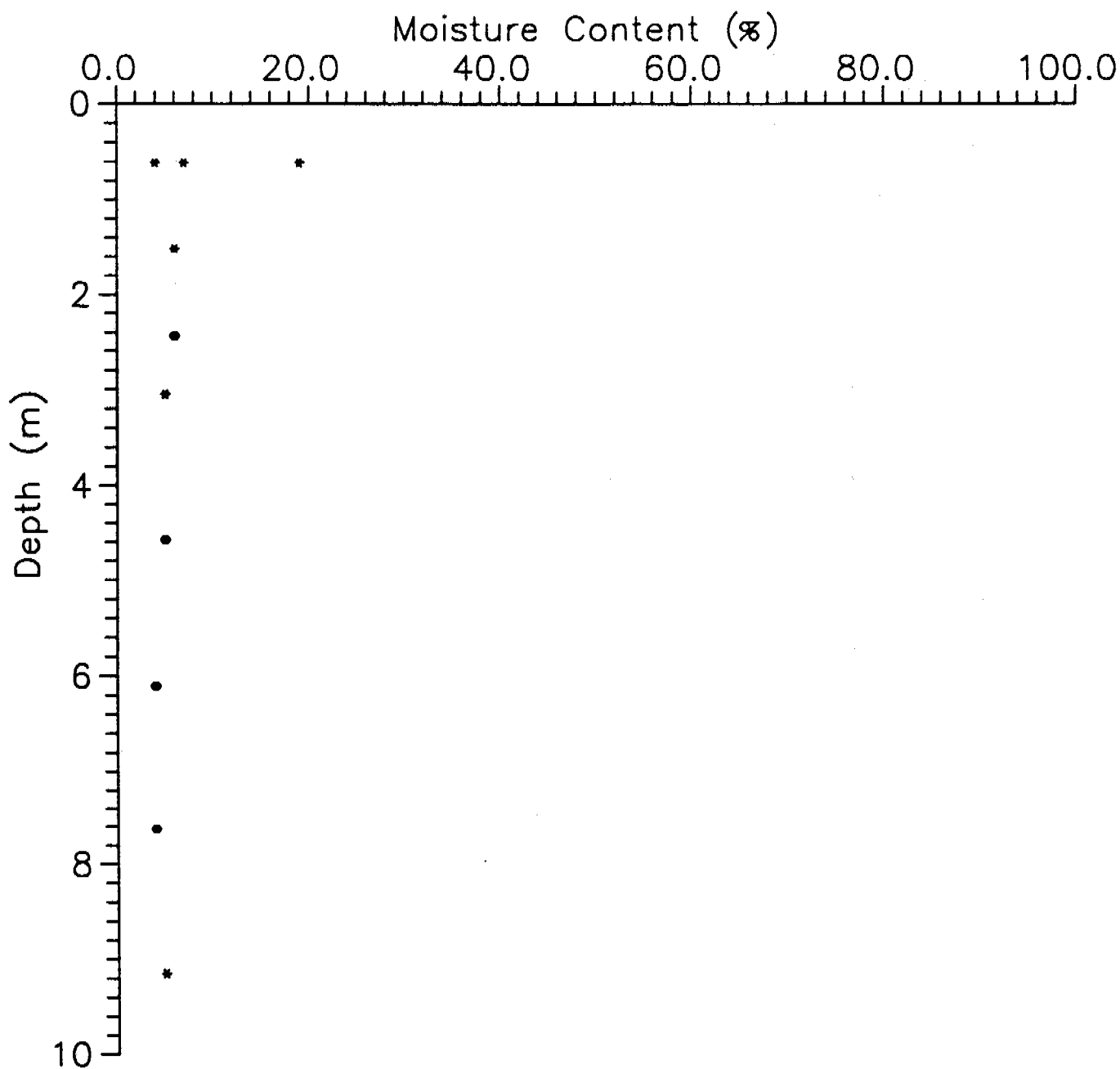
GROUND ICE
Massive, excess
All holes
Up to 3.9 m

POTENTIAL VOLUME, cu. m.: 6,000,000

RECOVERABLE, cu.m: 760,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3			75,000	760,000	75,000	760,000
CLASS 4						
CLASS 5						





Indian and Northern Affairs Canada
Inuvialuit Land Administration
Source 327
Moisture Content vs. Depth



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: 328A

ILA 7(1) (b)

LOCATION: 80 km S of Tuktoyaktuk

REFERENCE(S): RKL 1973, Zone 3

SETTING
Lake shore

RELIEF
Variable

WINTER ACCESS
Tundra/ice road

LANDFORM
Morainal, glaciofluvial

CONTINUITY
Discontinuous

SUMMER ACCESS
Barge

AREA
13 sq km

DEVELOPMENT CONSTRAINTS
Poor quality, envir., distance

BOREHOLES (#)
5

TEST PITS (#)
None

MOIST. CON. (#)
3

GRAINSIZE (#)
1

OVERBURDEN
TYPE: Silt, ice
EXTENT: Continuous
THICK.: Full depth of holes

GROUND ICE
Massive, excess
Intermittent
Up to 4.5 m

POTENTIAL VOLUME, cu. m.: 100,000

RECOVERABLE, cu.m: 100,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3						
CLASS 4					100,000	100,000
CLASS 5						



0101-4575
APRIL, 1987

INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: Parsons Lk.1

ILA 7(1) (a)

LOCATION: 60 km S of Tuktoyaktuk

REFERENCE(S): KLCL 1974; Source 1

SETTING
Riverbanks

RELIEF
3 to 10 m

WINTER ACCESS
Tundra/ice road

LANDFORM
River terrace

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
0.25 sq km

DEVELOPMENT CONSTRAINTS
River envir., wildlife

BOREHOLES (#)
64

TEST PITS (#)
2 exposure

MOIST. CON. (#)
172

GRAINSIZE (#)
33

OVERBURDEN
TYPE: Organic silt, peat
EXTENT: All holes
THICK.: Up to 2.7 m

GROUND ICE
Ice lenses, bonded
Intermittent
Lenses up to 3.0 m

POTENTIAL VOLUME, cu. m.: >>1,000,000

RECOVERABLE, cu.m: 1,000,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2	345,000	1,000,000	345,000	1,000,000	345,000	1,000,000
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: Parsons Lk.2

ILA 7(1) (b)

LOCATION: 60 km S of Tuktoyaktuk

REFERENCE(S): KLCL 1974; Source 2

SETTING
Low terrace

LANDFORM
River terrace

AREA
0.1 sq km

RELIEF
3 to 5 metres

CONTINUITY
Continuous

DEVELOPMENT CONSTRAINTS
High ice content

WINTER ACCESS
Tundra/ice road

SUMMER ACCESS
None

BOREHOLES (#)
36

MOIST. CON. (#)
14

TEST PITS (#)
None

GRAINSIZE (#)
8

OVERBURDEN
TYPE: Organic silt & peat
EXTENT: Intermittent
THICK.: Avg 0.3 m; up to 2.7 m

GROUND ICE
Lenses, inclusions
All Holes
Up to 0.76 m

POTENTIAL VOLUME, cu. m.: >230,000

RECOVERABLE, cu.m: 230,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2	230,000	230,000	230,000	230,000	230,000	230,000
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: Parsons Lk.3

ILA 7(1) (b)

LOCATION: 60 km S of Tuktoyaktuk

REFERENCE(S): KLCL 1974; Source 3

SETTING
Low lying terrace

RELIEF
Up to 3 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
River terrace

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
0.2 sq km

DEVELOPMENT CONSTRAINTS
Ice wedges, river envir.

BOREHOLES (#)
56

TEST PITS (#)
1 exposure

MOIST. CON. (#)
26

GRAINSIZE (#)
7

OVERBURDEN

TYPE: Peat, silt, ice
EXTENT: Intermittent
THICK.: Max. 3.6 m, avg 1.2

GROUND ICE

Lenses, inclusions
Intermittent
Up to 0.9 m

POTENTIAL VOLUME, cu. m.: >400,000

RECOVERABLE, cu.m: 400,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2	150,000	400,000	150,000	400,000	150,000	400,000
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: Parsons Lk.4

ILA 7(1) (b)

LOCATION: 60 km S of Tuktoyaktuk

REFERENCE(S): KLCL 1974; Source 4

SETTING
Flat lying terrace

RELIEF
4 to 7 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
River terrace

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
50,000 sq m

DEVELOPMENT CONSTRAINTS
Thick overburden

BOREHOLES (#)
14

TEST PITS (#)
1 exposure

MOIST. CON. (#)
27

GRAINSIZE (#)
6

OVERBURDEN
TYPE: Organic silt & peat
EXTENT: Intermittent
THICK.: Max. 3.0 m, avg 1.0

GROUND ICE
Massive
Intermittent
Up to 5.1 m

POTENTIAL VOLUME, cu. m.: >150,000

RECOVERABLE, cu.m: 150,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3	50,000	150,000	50,000	150,000	50,000	150,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: Parsons Lk.5

ILA 7(1) (b)

LOCATION: 60 km of of Tuktoyaktuk

REFERENCE(S): KLCL 1974; Source 5

SETTING
Lake shoreline

RELIEF
N/A

WINTER ACCESS
Tundra/ice road

LANDFORM
Small kame

CONTINUITY
Continuous

SUMMER ACCESS
Barge

AREA
22,500 sq m

DEVELOPMENT CONSTRAINTS
Thick overburden, ice

BOREHOLES (#)
5

TEST PITS (#)
None

MOIST. CON. (%)
5

GRAINSIZE (#)
1

OVERBURDEN
TYPE: Silt, organics, ice
EXTENT: All holes
THICK.: Up to 2.6 m

GROUND ICE
Massive, excess
Intermittent
Lenses up to 1.9 m

POTENTIAL VOLUME, cu. m.: >30,000

RECOVERABLE, cu.m: 30,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2	10,000	30,000	10,000	30,000	10,000	30,000
CLASS 3						
CLASS 4						
CLASS 5						

INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: Parsons Lk.6

ILA 7(1) (b)

LOCATION: 60 km S of Tuktoyaktuk

REFERENCE(S): KLCL 1974; Source 6

SETTING
Lake shoreline

RELIEF
Up to 43 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
Small kame

CONTINUITY
Continuous

SUMMER ACCESS
Barge

AREA
30,000 sq m

DEVELOPMENT CONSTRAINTS
Thick overburden, ice

BOREHOLES (#)
3

TEST PITS (#)
1 exposure

MOIST. CON. (#)
4

GRAINSIZE (#)
1

OVERBURDEN
TYPE: Peat, silt, ice
EXTENT: Intermittent
THICK.: Up to 2.4 m

GROUND ICE
Massive, excess
All Holes
Up to 5.8 m

POTENTIAL VOLUME, cu. m.: >7,500 RECOVERABLE, cu.m: 7,500

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2	2,500	7,500	2,500	7,500	2,500	7,500
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: Parsons Lk.7

ILA 7(1) (b)

LOCATION: 60 km S of Tuktoyaktuk

REFERENCE(S): KLCL 1974; Source 7

SETTING
Flat lying terrace

RELIEF
1.5 to 5 metres

WINTER ACCESS
Tundra/ice road

LANDFORM
River terrace

CONTINUITY
3 terraces

SUMMER ACCESS
None

AREA
280,000 sq km

DEVELOPMENT CONSTRAINTS
Ice wedges, thick overburden

BOREHOLES (#)
20

TEST PITS (#)
1 exposure

MOIST. CON. (#)
8

GRAINSIZE (#)
4

OVERBURDEN

TYPE: Organic silt, peat
EXTENT: All holes
THICK.: Up to 2.4 m, avg 1.8

GROUND ICE

Lenses, inclusions
Intermittent
Up to 1.5 m

POTENTIAL VOLUME, cu. m.: >20,000

RECOVERABLE, cu.m: 20,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			20,000	20,000	20,000	20,000
CLASS 3						
CLASS 4						
CLASS 5						

INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: Parsons Lk.8

ILA 7(1) (b)

LOCATION: 60 km S of Tuktoyaktuk

REFERENCE(S): KLCL 1974; Source 8

SETTING
Flat-lying terrace

RELIEF
Up to 3 m

WINTER ACCESS
Tundra/ice road

LANDFORM
River terrace

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
0.7 sq km

DEVELOPMENT CONSTRAINTS
Limited volume, thick overburden

BOREHOLES (#)
55

TEST PITS (#)
None

MOIST. CON. (#)
26

GRAINSIZE (#)
5

OVERBURDEN
TYPE: Organic silt & peat
EXTENT: All holes
THICK.: Up to 3.0 m, avg 1.8

GROUND ICE
Lenses, inclusions
Intermittent
Up to 0.6 m

POTENTIAL VOLUME, cu. m.: >75,000

RECOVERABLE, cu.m: 75,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2	12,500	25,000	12,500	25,000	12,500	25,000
CLASS 3	25,000	50,000	25,000	50,000	25,000	50,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: Parsons Lk.9

ILA 7(1) (b)

LOCATION: 60 km S of Tuktoyaktuk

REFERENCE(S): KLCL 1974; Source 9

SETTING
High river terrace

LANDFORM
River terrace

AREA
45,000 sq m

RELIEF
Up to 15 metres

CONTINUITY
Continuous

DEVELOPMENT CONSTRAINTS
Limited volume, thick overburden

WINTER ACCESS
Tundra/ice road

SUMMER ACCESS
None

BOREHOLES (#)
9

MOIST. CON. (#)
7

TEST PITS (#)
None

GRAINSIZE (#)
None

OVERBURDEN
TYPE: Silt, peat
EXTENT: Intermittent
THICK.: Up to 3.0 m

GROUND ICE
Lenses, inclusions
Intermittent
Up to 1.5 m

POTENTIAL VOLUME, cu. m.: >38,000 RECOVERABLE, cu.m: 38,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3	19,000	38,000	19,000	38,000	19,000	38,000
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: Parsons Lk.10

ILA 7(1) (b)

LOCATION: 60 km S of Tuktoyaktuk

REFERENCE(S): KLCL 1974; Source 10

SETTING
Low lying plain

LANDFORM
Kame/outwash plain

AREA
20,000 sq m

RELIEF
Gently rolling

CONTINUITY
Continuous

DEVELOPMENT CONSTRAINTS
Thick overburden, ice

WINTER ACCESS
Tundra/ice road

SUMMER ACCESS
None

BOREHOLES (#)
7

MOIST. CON. (#)
8

TEST PITS (#)
None

GRAINSIZE (#)
None

OVERBURDEN

TYPE: Silt, organics, ice
EXTENT: All holes
THICK.: Up to 6.7 m

GROUND ICE

Massive, excess
Intermittent
Up to 5.1 m

POTENTIAL VOLUME, cu. m.: >135,000

RECOVERABLE, cu.m: 135,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2			35,000	135,000	35,000	135,000
CLASS 3						
CLASS 4						
CLASS 5						



INDIAN AND NORTHERN AFFAIRS CANADA
INUVIALUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND RECOMMENDATIONS FOR DEVELOPMENT

GRANULAR RESOURCES SUPPLY SUMMARY
Tuktoyaktuk

SOURCE: Parsons Lk.11

ILA 7(1) (b)

LOCATION: 60 km S of Tuktoyaktuk

REFERENCE(S): KLGL 1974; Source 11

SETTING
Broad plain

RELIEF
Gently rolling

WINTER ACCESS
Tundra/ice road

LANDFORM
Outwash /moraine

CONTINUITY
Continuous

SUMMER ACCESS
None

AREA
120,000 sq m

DEVELOPMENT CONSTRAINTS
Ground ice, thick overburden

BOREHOLES (#)
13

TEST PITS (#)
None

MOIST. CON. (#)
5

GRAINSIZE (#)
None

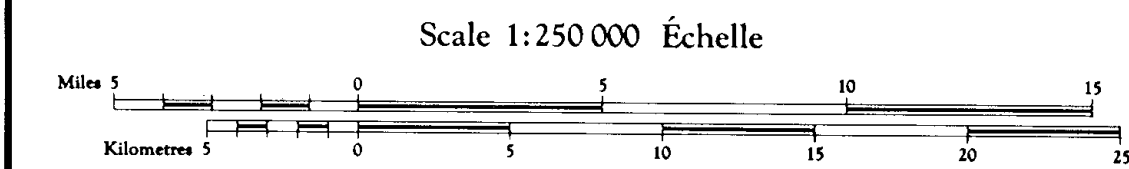
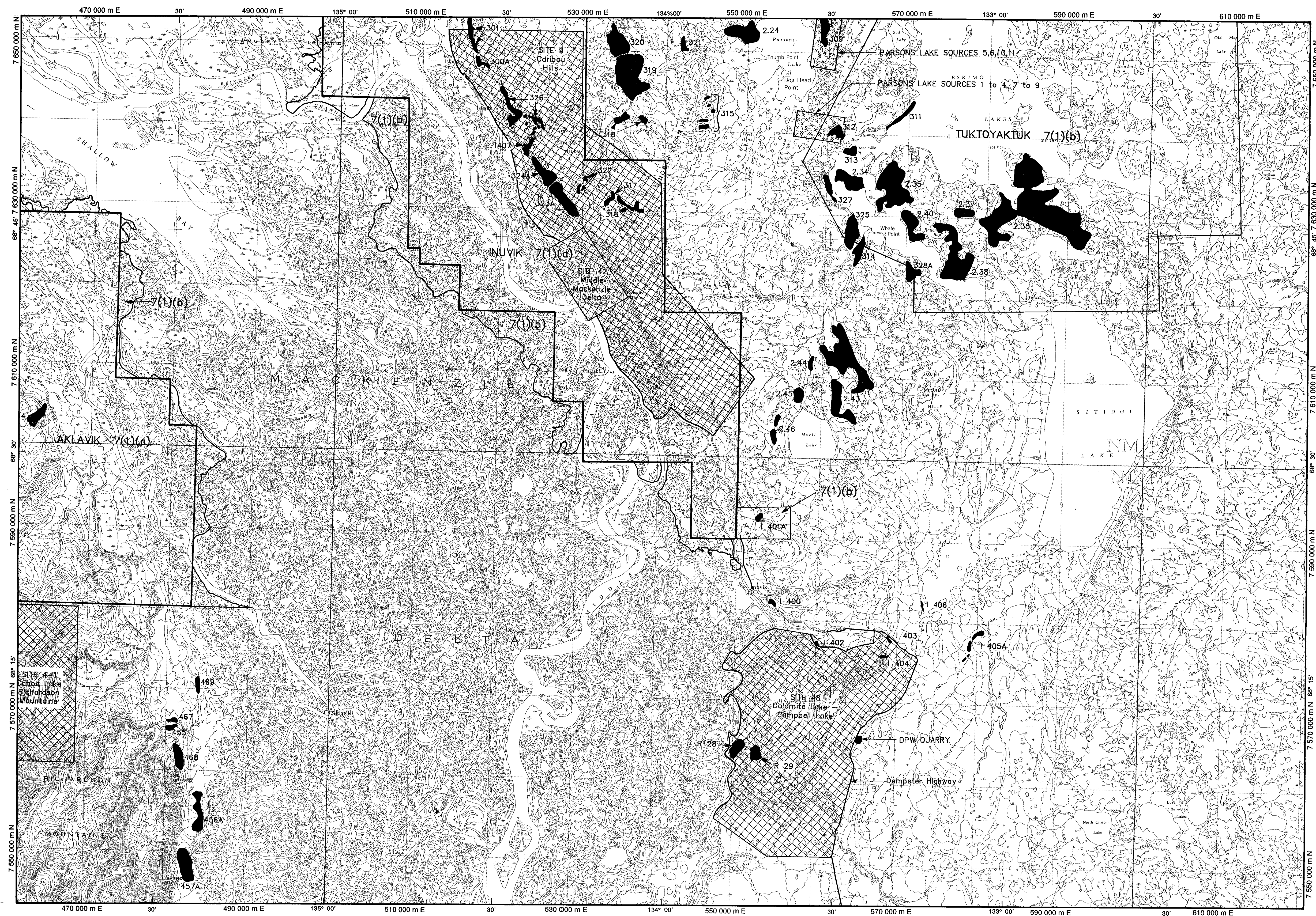
OVERBURDEN
TYPE: Silts, organics, ice
EXTENT: All holes
THICK.: Up to 2.6 m

GROUND ICE
Massive, excess
All Holes
Up to 9.7 m

POTENTIAL VOLUME, cu. m.: >150,000

RECOVERABLE, cu.m: 150,000

MATERIAL	PROVEN, cu.m.		PROBABLE, cu.m.		PROSPECTIVE, cu.m.	
	Annual	Total	Annual	Total	Annual	Total
CLASS 1						
CLASS 2						
CLASS 3			37,500	150,000	37,500	150,000
CLASS 4						
CLASS 5						



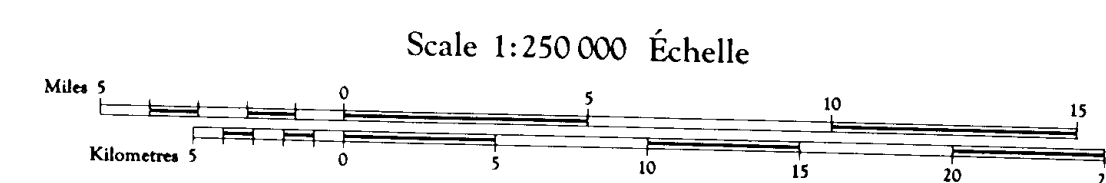
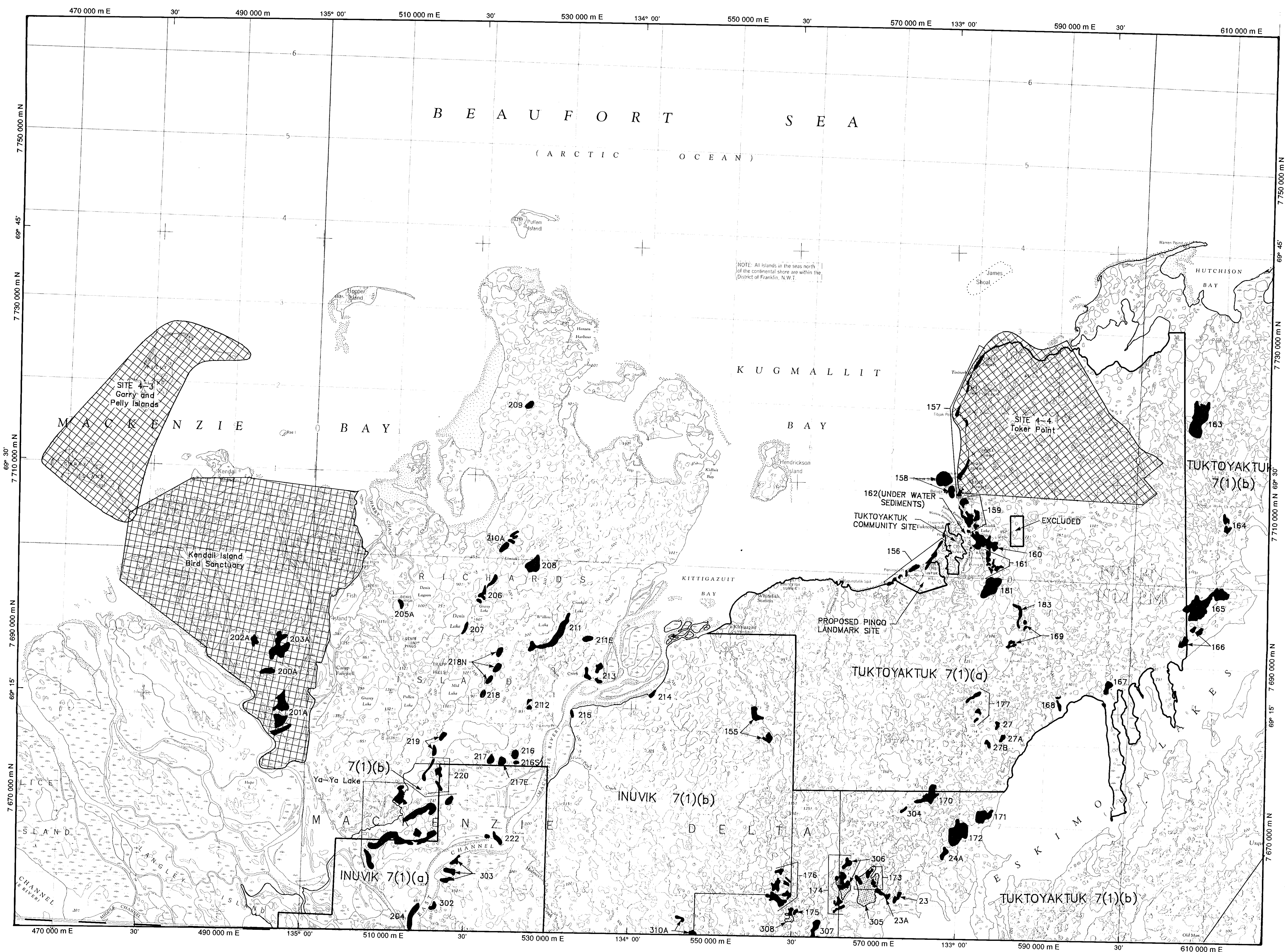
- 7(1)(a) Lands Boundary
7(1)(b) Lands Boundary
Approximate Boundary of Granular Source
23 Granular Source Number
Proposed International Biological Program Area

ROADS/ROUTES	
hard surface - paved
loose surface - gravel
soft surface - dirt
trail - service
detention - suppression	XXXXXX

loose surface - all weather	de gravel, toute saison
hard surface - all weather	parée, toute saison
loose surface - all weather	de gravel, toute saison
unpaved, cart track	chemin de terre
valley, normal gauge	chemin de fer, écartement normal
depression contour	contour de cote
spot elevation, in feet	repère de nivellement en pieds
power transmission line	ligne de transport d'énergie

spot elevation, precise, approximate	point coté, précis, approximatif
boundary monument	borne frontalière
stream feature	progrès élevés
depression contour	contour de cote
cell or low valley	cellier ou relief peu accidenté
water	eau
prairie	prairie de terre
building	bâtiment
post office	bureau de poste
church	église
school	école
astronomical monument	repère astronomique
R.C.M.P. detachment	poste de la G.C.R.C.
horizontal control point	point géodésique
lighthouse	phare
town	village
village or settlement	village ou hameau

EBA Engineering Consultants Ltd.				PROJECT INUVIUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND MANAGEMENT PLAN	
CLIENT INDIAN AND NORTHERN AFFAIRS CANADA				TITLE GRANULAR DEPOSIT LOCATIONS INUVIK AND TUKTOYAKTUK DISTRICT OF MACKENZIE, N.W.T.	
DATE 87/02/20	DWN. EBR	CHKD. BAB	DWG. NO. 0101-4575-003		



- 7(1)(a) Lands Boundary
- 7(1)(b) Lands Boundary
- Approximate Boundary of Granular Source
- 23 Granular Source Number
- Proposed International Biological Program Area

ROADS-ROUTES

hard surface - pavé

loose surface - de gravier

cart track - en terre

trail - sentier

seasonal - saisonnière

XXXXX

loose surface, all weather - de gravier, toute saison

hard surface, all weather - pavé, toute saison

loose surface, all weather - de gravier, toute saison

wagon, cart track - chemin de terre

railway, normal gauge - chemin de fer, écartement normal

depression contour - courbes de cote

spot elevation, in feet - repère de nivellement en pieds

power transmission line - ligne de transport d'énergie

spot elevation, precise, approximate - point coté précis, approximatif

boundary monument - borne frontière

related beach - plage associée

depression contour - courbes de cote

cell or low relief - falaise ou relief peu accentué

ester - estuaire

prings - sources de terre

building - bâtiment

post office - bureau de poste

church - église

school - école

astronomical instrument - repère astronomique

R.C.M.P. detachment - poste de la G.R.C.

horizontal control point - point géodésique

lighthouse - phare

town - ville

village or settlement - village ou hameau

EBA Engineering Consultants Ltd.

CLIENT
INDIAN AND NORTHERN AFFAIRS CANADA

DATE

DWN.

EBR

CHKD.

BAB

PROJECT
INUVIUIT SETTLEMENT SAND AND GRAVEL INVENTORY AND MANAGEMENT PLAN

TITLE
GRANULAR DEPOSIT LOCATIONS INUVIK AND TUKTOYAKTUK DISTRICT OF MACKENZIE, N.W.T.

DWG. NO.

0101-4575-004