# BEAUFORT-DELTA OIL PROJECT LIMITED

# PRELIMINARY

# BORROW SOURCE STUDY

# MACKENZIE VALLEY CORRIDOR

# VOLUME II

# MAP BD5 to BD8

SITE BD5-01(3)

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| REFERENCE: | Deposit (a), Area XI DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 40,000,000 cu.m (55,000,000 cu.yd.) |
| SITE DESCRIPTION: | Channelled glaciofluvial terrace located approximately 17 km (11 mi.) northeast of Tenlen Lake. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 4,400,000 sq m (47,000,000 sq ft.)<br>Perimeter: 15,000 m (50,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake. |
| | UTM Reference: Zone 9; 424,000E 7,542,500N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat, thermokarst terrain. |

SITE BD5-02(2)

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| REFERENCE: | Deposit (e), Area XII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fill, base and surface course aggregates. |
| MATERIAL DESCRIPTION: | Gravel. |
| SITE DESCRIPTION: | Numerous small gravel mounds located approximately 21 km (13 mi.) northeast of Tenlen Lake. |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 435,000E 7,537,500N |
| ASSESSMENT: | Suitable for development, although the deposits are widely scattered. |
| | The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling thermokarst terrain characterized by numerous lakes. |

SITE BD5-03(3)

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| REFERENCE: | Deposit (b), Area XII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 100,000 cu.m (150,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky glaciofluvial deposit located 26 km (16 mi.) northeast of Tenlen Lake. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 31,000 sq m (330,000 sq ft.)<br>Perimeter: 1,500 m (5,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 438,300E 7,539,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat thermokarst terrain. |

SITE BD5-04(3)

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| REFERENCE: | Deposit (a) and (b), Area X DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial terrace and hummocky glaciofluvial deposit located immediately west of Tenlen Lake.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 1,400,000 sq m (15,000,000 sq ft.)<br>Perimeter: 6,700 m (22,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 406,000E 7,530,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling to flat thermokarst terrain. |

SITE BD5-05(3)

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|---|---|
| REFERENCE: | Deposit (b) and (c), Area XII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 7,500,000 cu.m (10,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glacioflucial terraces located approximately 27 km (17. mi.) east of Tenlen Lake. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 2,800,000 sq m (30,000,000 sq ft.)<br>Perimeter: 15,000 m (50,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 445,000E 7,530,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over flat to rolling thermokarst terrain, characterized by numerous lakes. |

SITE BD5-06(NG)

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| REFERENCE: | Site 1132A, Vol. IV, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class N.G., Non-granular material not suitable for construction purposes. |
| MATERIAL DESCRIPTION: | Sand, some silt and clay (SC). |
| DEPTH OF ACTIVE LAYER: | 90 cm (3 ft.)+ |
| SITE DESCRIPTION: | Deposit situated 19 km (12 mi) northeast of Travaillant Lake on the shore of an unnamed lake. |
| | Drainage: Good. |
| | MAP Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9 402,600E 7,526,400N |
| SITE INVESTIGATION: | 1 test pit. |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD5-07(3)

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| REFERENCE: | Deposit (a) and (b), Area X DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 20,000,000 cu.m (25,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial terrace and hummocky glaciofluvial deposit located adjacent to the south shore of Tenlen Lake.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 2,000,000 sq m (22,000,000 sq ft.)<br>Perimeter: 7,600 m (25,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 411,000E 7,526,500N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling terrain characterized by numerous large lakes. |

SITE BD5-08(3)

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| REFERENCE: | Deposit (a) and (c), Area XII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 15,000,000 cu.m (20,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial terrace and hummocky glaciofluvial deposit located approximately 21 km (13 mi.) east of Tenlen Lake.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 3,800,000 sq m (41,000,000 sq ft.)<br>Perimeter: 21,000 m (70,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 437,500E 7,525,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located well outside the 28 km (17 .5 mi.) pipeline corridor. Access is by truck in the summer across flat to rolling thermokarst terrain characterized by numerous lakes. |

SITE BD5-09(3)

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| REFERENCE: | Deposit (a), Area X DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 15,000,000 cu.m (20,000,000 cu. yd.) |
| SITE DESCRIPTION: | Glaciofluvial terrace located approximately 19 km (12 mi.) east of Travaillant Lake. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 1,700,000 sq m (18,000,000 sq ft.)<br>Perimeter: 9,100 m (30,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 405,000E 7,523,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling terrain characterized by numerous large lakes. |

SITE BD5-10(4)

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| REFERENCE: | Site 1136, Volume IV, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, gravel content variable, silt content variable (SM-GM);<br>Maximum size to 1.9 cm (3/4 in.);<br>High moisture content. |
| OVERBURDEN: | Peat; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | 60 cm (2 ft.)+ |
| RESERVES: Proven | 2,000,000 cu.m ( 2,500,000 cu.yd.) |
| Probable | 8,000,000 cu.m (10,000,000 cu.yd.) |
| Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip, doze, stockpile and drain. Buffer zones and siltation controls recommended to protect adjacent shorelines. |
| SITE DESCRIPTION: | Marshy fossil terrace situated 34 km (21 mi.) north of the confluence of the Thunder and Mackenzie Rivers.<br><br>Vegetation: Dense spruce and birch.<br><br>Drainage: poor.<br><br>Thickness: 9.2 m (30 ft.)<br>Area: 1,800,000 sq.m (19,000,000 sq.ft.)<br>Perimeter: 9,200 m (30,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 421,000E 7,521,000N |
| SITE INVESTIGATION: | 2 drill holes, 2 test pits. |
| ASSESSMENT: | Suitable for development. The source lies near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over hilly and thermally sensitive terrain.<br><br>High moisture content, moderate environmental |

sensitivities and difficult access make the development of this site questionable.

SITE BD5-11(3)

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| REFERENCE: | Deposit (b), Area XV DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 3,000,000 cu.m (4,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial ridges located approximately 8 km (5 mi.) east of Tenlen Lake. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 390,000 sq m (4,200,000 sq ft.)<br>Perimeter: 3,000 m (10,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 423,000E 7,521,700N |
| ASSESSMENT: | Suitable for development. |
| | The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling, thermokarst terrain characterized by numerous lakes. |

SITE BD5-12(3)

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| REFERENCE: | Deposit (a) and (b), Area VII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 7,5000,000 cu.m (10,000,000 cu.yd.) |
| SITE DESCRIPTION: | A series of glaciofluvial terraces and hummocky glaciofluvial deposits located approximately 14 km (9 mi.) east of Travaillant Lake.<br><br>Thickness: 6 m (20 ft.)<br>Area: 1,800,000 sq m (20,000,000 sq ft.)<br>Perimeter: 25,000 m (80,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 402,000E 7,513,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling, thermokarst terrain. |

SITE BD5-13(3)

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| REFERENCE: | Site 1133, Volume IV, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand, some gravel, some silt (SW-SM);<br>Maximum size to 3.8 cm (1½ in.);<br>Medium moisture content. |
| OVERBURDEN: | Peat and silt; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | 90 cm (3 ft.)+ |
| RESERVES: Proven | 45,000 cu.m ( 60,000 cu.yd.) |
| Probable | 300,000 cu.m ( 400,000 cu.yd.) |
| Possible | 2,500,000 cu.m (3,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Buffer zones may be required. |
| SITE DESCRIPTION: | Small outwash deposit situated south of an unnamed lake, 10 km (7 mi.) south of Tenlen Lake.<br><br>Vegetation: dense shrubs, herbs and sedges; spruce, tamarack and shrub.<br><br>Drainage: good, into nearby lake.<br><br>Thickness: 4.6 m (15 ft.)<br>Area: 510,000 sq.m (5,400,000 sq.ft.)<br>Perimeter: 3,400 m (11,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 414,000E 7,515,600N |
| SITE INVESTIGATION: | 1 test pit. |
| ASSESSMENT: | Suitable for development although usefulness is limited by long haul distance and only moderate quantities available.<br><br>The source is located near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across hilly and thermally sensitive terrain. |

SITE BD5-14(2)

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| REFERENCE: | | Site 1135, Volume IV, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 2, Good quality material suitable for embankment fills, base land surface course aggregates. |
| MATERIAL DESCRIPTION: | | Sand and gravel, little to some silt (GM);<br>Maximum size to 7.6 cm (3 in.);<br>Low moisture content. |
| OVERBURDEN: | | Silt and peat; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | | 2.7 m (9 ft.)+ |
| RESERVES: | Proven | 950,000 cu.m ( 1,500,000 cu.yd.) |
| | Probable | 8,000,000 cu.m (10,000,000 cu.yd.) |
| | Possible | 15,000,000 cu.m (20,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip and doze. Buffer zones and siltation controls are recommended. |
| SITE DESCRIPTION: | | Outwash deposit located along the southwest shore of a large unnamed lake 29 km (18 mi.) north of the confluence of the Thunder and Mackenzie Rivers.<br><br>Vegetation: dense birch and spruce.<br><br>Drainage: fair, into nearby lake.<br><br>Thickness: 7.6 m (25 ft.)<br>Area: 2,200,000 sq.m (24,000,000 sq.ft.)<br>Perimeter: 7,500 m (25,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 421,500E 7,515,500N |
| SITE INVESTIGATION: | | 1 drill hole, 2 test pits. |
| ASSESSMENT: | | Suitable for development although a large area would have to be disturbed because of thin nature of deposit. Material suitable for concrete aggregates is available.<br><br>The source is located near the center of the 28 km |

(17.5 mi.) pipeline corridor. Access is by truck in the winter and is difficult over hilly and thermally sensitive terrain.

SITE BD5-15(3)

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| REFERENCE: | Deposit (c), Area XIII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Gravel. |
| RESERVES: Possible | 7,000,000 cu.m (9,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial terrace located approximately 35 km (22 mi.) northeast of the confluence of the Thunder and Mackenzie Rivers.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 1,400,000 sq m (15,000,000 sq ft.)<br>Perimeter: 15,000 m (50,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 441,000E 7,514,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located inside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling terrain. |

SITE BD5-16(3)

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| REFERENCE: | Deposit (a), Area XIII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 4,500,000 cu.m (6,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial terraces located approximately 41 km (25 mi.) northeast of the confluence of the Mackenzie and Thunder Rivers.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 1,300,000 sq m (14,000,000 sq ft.)<br>Perimeter: 9,100 m (30,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 445,000E 7,515,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling terrain. |

SITE BD5-17(NG)

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| REFERENCE: | Site 1134, Volume IV, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material not suitable for construction purposes. |
| MATERIAL DESCRIPTION: | Clay, trace gravel and cobbles;<br>Maximum size to 7.6 cm (3 in.)<br>Medium moisture content. |
| DEPTH OF ACTIVE LAYER: | 2.1 m ( 7 ft.) |
| SITE DESCRIPTION: | Glacial till deposit situated 13 km (8 mi.) south of Tenlen Lake. |
| | Drainage: good. |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 417,600E 7,512,500N |
| SITE INVESTIGATION: | 1 drill hole, 1 test pit. |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD5-18(3)

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|---|---|
| REFERENCE: | Deposit (a) and (b), Area XV DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| SITE DESCCRIPTION: | Hummocky, ridged glaciofluvial deposit located approximately 26 km (16 mi.) north of the confluence of the Thunder and Mackenzie Rivers.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 2,400,000 sq m (26,000,000 sq ft.)<br>Perimeter: 24,000 m (80,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 423,000E 7,510,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling thermokarst terrain. |

SITE BD5-19(3)

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|---|---|
| REFERENCE: | Deposit (b), Area VII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 6,000,000 cu.m (8,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial terrace located approximately 22 km (14 mi.) east of Travaillant Lake. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 1,200,000 sq m (13,000,000 sq ft.)<br>Perimeter: 4,300 m (14,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 411,000E 7,511,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located inside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling to flat thermokarst terrain. |

SITE BD5-20(3)

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|---|---|
| REFERENCE: | Site 1096, Vol. III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Gravel and sand, silt content is variable (GW-GM);<br>Maximum size to 7.6 cm (3 in.);<br>Medium moisture content. |
| OVERBURDEN: | Organic material, silt, moss; 90 cm (3 ft.) |
| DEPTH OF ACTIVE LAYER | 335 cm (11 ft.)+ |
| RESERVES: Proven | 50,000 cu.m (65,000 cu.yd.) |
| Probable | 500,000 cu.m (650,000 cu.yd.) |
| Possible | 1,000,000 cu.m (1,300,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Buffer strips are recommended near bodies of water. |
| SITE DESCRIPTION: | Crevasse infilling situated 11 km (7 mi.) east of Travaillant Lake.<br><br>Vegetation: sparse spruce and tamarack; shrubs, herbs and sedges near marsh; dense alder and willow along water courses.<br><br>Drainage: Fair.<br><br>Thickness: 3 m (10 ft.)<br>Area: 670,000 sq.m (7,200,00 sq.ft.)<br>Perimeter: 8,700 m (29,000 ft.)<br><br>MAP Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 394,300E 7,507,900N |
| SITE INVESTIGATION: | 2 drill holes, 1 test pit. |
| ASSESSMENT: | Suitable for development. The variable overburden thickness and moderate environmental sensitivity of this site suggests careful development techniques. |

SITE BD5-20(3)

The sources is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter.

SITE BD5-21(NG)

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| REFERENCE: | Site 1097A, Vol. III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction purposes. |
| MATERIAL DESCRIPTION: | Clay and sand, trace gravel(SC);<br>Maximum size to 1.9 cm (3/4 in.);<br>Medium moisture content. |
| DEPTH OF ACTIVE LAYER: | 365 cm (12 ft.)+ |
| SITE DESCRIPTION: | Deposit located 6 km (4 mi.) east of Travaillant Lake.<br><br>MAP Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 395,500E 7,511,600N |
| SITE INVESTIGATION: | 1 drill hole, 1 test pit. |
| ASSESSMENT: | Material is not suitable for constuction purposes |

SITE BD5-22(2)

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|---|---|
| REFERENCE: | Site 1098, Vol. III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 2, Good quality material, suitable for embankment fill, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | Gravel, little sand, trace silt (GW-GM);<br>Maximum size 7.8 cm (3 in.);<br>Low moisture content. |
| OVERBURDEN: | Negligible. |
| DEPTH OF ACTIVE LAYER: | 640 cm (21 ft.)+ |
| RESERVES: Proven | 700,000 cu.m (900,000 cu.yd.) |
| Probable | 8,000,000 cu.m (10,000,000 cu.yd.) |
| Possible | 20,000,000 cu.m (25,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Buffer zones may be required. |
| SITE DESCRIPTION: | Extensive outwash deposit situated 3.5 km (2.5 mi.) east of Travaillant Lake.<br><br>Vegetation: spruce, tamarack and aspen.<br><br>Drainage: Good.<br><br>Thickness: 9.1 m (30 ft.)<br>Area: 2,400,000 sq.m (26,000,000 sq.ft.)<br>Perimeter: 11,000 m (38,000 ft.)<br><br>MAP Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 393,000E 7,513,000N |
| SITE INVESTIGATION: | 1 drill hole, 1 test pit. |
| ASSESSMENT: | Suitable for development.<br><br>The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access should be by truck in the winter and crosses thermally sensitive terrain.<br><br>Gravel could be processed for concrete aggregates |

with a minimum of handling. However, site is removed from currently proposed facilities.

SITE BD5-23(3)

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|---|---|
| REFERENCE: | Site 1095, Vol. III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand, varying gravel content, trace to little silt (GW-SM);<br>Medium moisture content. |
| OVERBURDEN: | Clay; 120 cm (4 ft.) |
| DEPTH OF ACTIVE LAYER: | 335 cm (11 ft.)+ |
| RESERVES: Proven | 300,000 cu.m (400,000 cu.yd.) |
| Probable | 2,000,000 cu.m (2,500,000 cu.yd.) |
| Possible | 3,000,000 cu.m (4,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze, stockpile, thaw and drain. Buffer zones and siltation controls are recommended. |
| SITE DESCRIPTION: | Outwash overlain by 120 cm (4 ft.) of clay (lacustrine) situated 6 km (4 mi.) south south east of Travaillant Lake.<br><br>Vegetation: dense spruce and tamarack; dense shrubs, herbs and sedges in marsh; dense alder and willow along water courses.<br><br>Drainage: Good.<br><br>Thickness: 2.0 m (10 ft.)<br>Area: 1,000,000 sq.m (11,000,000 sq. ft.)<br>Perimeter: 4,300 m (14,000 ft.)<br><br>MAP Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 394,300E 7,502,600N |
| SITE INVESTIGATION: | 1 drill hole. |
| ASSESSMENT: | Suitable for development.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling and some thermally sensitive terrain. |

SITE BD5-24(3)

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| REFERENCE: | Deposit (a) Area VI DIAND Granular Resource Inventory; Travaillant Lake NTS 106-0, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 2,500,000 cu.m (3,500,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky glaciofluvial deposit located approximately 13 km (8 mi.) east of Travaillant Lake. |
| | Thickness: 6 m (20 ft.)<br>Area: 510,000 sq.m (5,500,000 sq.ft.)<br>Perimeter: 3,600 m (12,000 ft.) |
| | Map Reference: NTS 106-0, Travaillant Lake |
| | UTM Reference: Zone 9; 400,000E 7,507,500N |
| ASSESSMENT: | Suitable for development. |
| | The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling thermokarst terrain. |

SITE BD5-25(R2)

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|---|---|
| REFERENCE: | Site 1092, Vol. III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Shale;<br>Medium to low moisture content. |
| OVERBURDEN: | Clay and weathered shale; 210 cm (7 ft.) to 460 cm (15 ft.) |
| DEPTH OF ACTIVE LAYER: | Near surface. |
| RESERVES: Possible | Unlimited |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Blast and quarry. Siltation controls may be required. |
| SITE DESCRIPTION: | Bedrock deposit located 16 km (10 mi.) north of the confluence of the Thunder and Mackenzie Rivers.<br><br>Vegetation: dense spruce and tamarack; dense shrubs, herbs and sedges in marsh.<br><br>Drainage: Fair to good.<br><br>MAP Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 416,000E 7,502,500N |
| SITE INVESTIGATION: | 1 drill hole. |
| ASSESSMENT: | Material is suitable for development. The thick, ice rich overburden make the development of this site very doubtful.<br><br>The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across hilly and thermally sensitive terrain. |

SITE ED5-26(3)

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|---|---|
| REFERENCE: | Deposit (a) and (c), Area XIV DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 7,500,000 cu.m (10,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial terraces located 26 km (16 mi.) northeast of the confluence of the Mackenzie and Thunder Rivers. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 1,700,000 sq m (18,000,000 sq ft.)<br>Perimeter: 14,000 m (45,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 434,000E 7,508,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over rolling terrain. |

SITE BD5-27(3)

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| REFERENCE: | Deposit (b), Area XIII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 7,500,000 cu.m (10,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial terrace located approximately 40 km (25 mi.) northeast of the confluence of the Thunder and Mackenzie Rivers.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 2,000,000 sq m (22,000,000 sq ft.)<br>Perimeter: 14,000 m (45,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 452,000E 7,507,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located inside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling terrain. |

SITE BD5-28(3)

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| REFERENCE: | Deposit (a), Area XIII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 4,500,000 cu.m (6,000,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky glaciofluvial deposit located approximately 16 km (10 mi.) northeast of the confluence of the Thunder and Mackenzie Rivers. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 1,300,000 sq m (14,000,000 sq ft.)<br>Perimeter: 7,600 m (25,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 445,000E 7,505,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located within the 28 km (17.5 mi) pipeline corridor. Access is by truck over the winter across rolling terrain. |

SITE BD5-29(3)

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|---|---|
| REFERENCE: | Deposit (b) and (c), Area XIV DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 6,000,000 cu.m (7,500,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky and terraced glaciofluvial deposit located 42 km (26 mi.) northeast of the confluence of the Thunder and Mackenzie Rivers.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 1,600,000 sq m (17,000,000 sq ft.)<br>Perimeter: 3,000 m (10,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 431,000E 7,503,500N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling terrain. |

SITE BD5-30(R2)

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| REFERENCE: | Site 1091, Volume III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973.<br><br>Borrow Pit B-62, DPW Geotechnical Investigation Mile 725 to 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable as fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Shale, soft;<br>Low moisture content. |
| OVERBURDEN: | Clay and weathered shale; 210 cm (7 ft.) to 460 cm (15 ft.) |
| DEPTH OF ACTIVE LAYER: | Near surface. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Blast and quarry. Siltation controls may be required. |
| SITE DESCRIPTION: | Bedrock deposit located 16 km (10 mi.) north of the confluence of the Mackenzie and Thunder Rivers.<br><br>Vegetation: spruce and tamarack; dense shrubs, herbs and sedges in marsh.<br><br>Drainage: fair to good.<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9, 416,000E 7,502,500N |
| SITE INVESTIGATION: | 8 drill holes. |
| ASSESSMENT: | Material is suitable for development. However, the deep ice rich overburden may make the development of this site doubtful.<br><br>The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across hilly and thermally sensitive terrain. |

SITE BD5-31(3)

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| REFERENCE: | Deposit (c), Area V, DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Pos sible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky, terraced glaciofluvial deposit located approximately 2.5 km (1.5 mi.) southeast of Travaillant Lake.<br><br>Thickness: 6 m (20 ft.)<br>Area: 2,600,000 sq m (28,000,000 sq ft.)<br>Perimeter: 8,700 m (28,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 389,000E 7,505,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling terrain exhibiting thermo-karst features. |

SITE BD5-32(3)

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|---|---|
| REFERENCE: | Deposit (b) and (d), Area V DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 7,500,000 cu.m (10,000,000 cu.yd.) |
| SITE DESCRIPTION: | Terraced and channelled glaciofluvial deposit located immediately adjacent to the southeastern shore of Travaillant Lake.<br><br>Thickness: 6 m (20 ft.)<br>Area: 2,200,000 sq m (24,000,000 sq ft.)<br>Perimeter: 12,000 m (40,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 393,000E 7,507,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling terrain exhibiting thermokarst features. |

SITE BD5-33(R2)

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|---|---|
| REFERENCE: | Site 1093, Volume III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973.<br><br>Borrow Pit B-50 and B-52, DPW Geotechnical Investigation Mile 725 to 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Shale. |
| OVERBURDEN: | Clay and soft shale; 120 cm to 320 cm (4 ft. to 8 ft.) |
| DEPTH OF ACTIVE LAYER: | Near surface. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Blast and quarry. |
| SITE DESCRIPTION: | Bedrock deposit located 9 km (6 mi.) southeast of Travaillant Lake.<br><br>Vegetation: dense spruce and tamarack.<br><br>Drainage: Fair to good.<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9, 392,000E 7,501,200N |
| SITE INVESTIGATION: | 35 drill holes. |
| ASSESSMENT: | Material is suitable for development.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter and crosses thermally sensitive terrain.<br><br>The relative thin overburden makes this site attractive for development. |

SITE BD5-34(3)

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| REFERENCE: | Deposit (e), Area XVII DIAND Granular Resource Inventory Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 55,000 cu.m (70,000 cu.yd.) |
| SITE DESCRIPTION: | Three individual esker ridges located approximately 14 km (9 mi.) north of the confluence of the Thunder and Mackenzie Rivers. |
| | Thickness: 3 m (10 ft.)<br>Area: 15,000 sq m (160,000 sq ft.)<br>Perimeter: 9,800 m (32,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 424,000E 7,501,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling to flat thermokarst terrain. |

SITE BD5-35(R2)

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|---|---|
| REFERENCE: | Site 1090, Vol. III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, bedrock suitable as fair quality general fill in sub-grade. |
| MATERIAL DESCRIPTION: | Shale;<br>Medium moisture content. |
| OVERBURDEN: | Clay; 210 cm (7 ft.) to 460 cm (15 ft.) |
| DEPTH OF ACTIVE LAYER: | Near surface. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Blast and quarry. |
| SITE DESCRIPTION: | Bedrock deposit sutuated 13 km (8 mi.) north of the confluence of the Mackenzie and Thunder Rivers.<br><br>Vegetation: moderate to high density spruce, tamarack, aspen and birch.<br><br>Drainage: Fair.<br><br>MAP Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9, 421,000E 7,499,000N |
| SITE INVESTIGATION: | 1 drill hole. |
| ASSESSMENT: | Bedrock material is suitable for development. However, the ice rich and relatively thick overburden may reduce the economical development of this deposit as a source of quarried material.<br><br>The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is in the winter by truck across thermally sensitive terrain. |

SITE BD5-36(3)

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|---|---|
| REFERENCE: | Deposit (a), Area XVI DIAND Granular Resource Inventory; Travaillant Lake NTS 106-0, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 6,500,000 cu.m (8,500,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial terrace located approximately 26 km (16 mi.) northeast of the confluence of the Thunder and Mackenzie Rivers.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 1,300,000 sq m (14,000,000 sq ft.)<br>Perimeter: 6,000 m (20,000 ft.)<br><br>Map Reference: NTS 106-0, Travaillant Lake<br><br>UTM Reference: Zone 9; 423,000E 7,510,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling terrain exhibiting slight thermokarst features. |

SITE BD5-36(3)

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|---|---|
| REFERENCE: | Deposit (a), Area XVI DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 6,500,000 cu.m (8,500,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial terrace located approximately 26 km (16 mi.) northeast of the confluence of the Thunder and Mackenzie Rivers. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 1,300,000 sq m (14,000,000 sq ft.)<br>Perimeter: 6,000 m (20,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 423,000E 7,510,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling terrain exhibiting slight thermokarst features. |

SITE BD5-37(4)

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| REFERENCE: | Site 1088, Vol. III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, little silt, trace gravel (SM);<br>Maximum size 1.9 cm (3/4 in.);<br>Medium moisture content in sand. |
| OVERBURDEN: | Peat, silty sand; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | 260 cm (8.5 ft.)+ |
| RESERVES: Proven | 550,000 cu.m (750,000 cu.yd.) |
| Probable | 5,500,000 cu.m (7,500,000 cu.yd.) |
| Possible | 8,000,000 cu.m (10,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze, stock pile, thaw and drain. Buffer zones and siltation controls recommended. |
| SITE DESCRIPTION: | Large kame terrace situated 24 km (15 mi.) north northeast of the confluence of the Thunder and Mackenzie Rivers.<br><br>Vegetation: dense spruce, tamarack and aspen; dwarf shrubs and grasses on well drained slopes.<br><br>Drainage: good.<br><br>Thickness: 4.9 m (16.5 ft.)<br>Area: 1,800,000 sq.m (20,000,000 sq.ft.)<br>Perimeter: 8,500 m (28,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 439,200E 7,495,100N |
| SITE INVESTIGATION: | 1 drill hole, 2 test pits. |
| ASSESSMENT: | Suitable for development for marginal fill material. The environmental sensitivity and rugged access across thermally sensitive terrain makes development of this site very doubtful.<br><br>The source is located outside the 28 km (17.5 mi.) |

SITE BD5-37(4)

pipeline corridor.

SITE BD 5-38(2)

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| REFERENCE: | Deposit (f), Area XVI DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fill, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | Gravel. |
| SITE DESCRIPTION: | Four gravel mound deposits located approximately 19 km (12 mi.) northeast of the confluence of the Mackenzie and Thunder Rivers. |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 435,200E 7,496,300N |
| ASSESSMENT: | Suitable for development. |
| | The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling thermokarst terrain. |

SITE BD5-39(3)

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|---|---|
| REFERENCE: | Deposit (c) and (d), Area XVI DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 4,500,000 cu.m (6,000,000 cu.yd.) |
| SITE DESCRIPTIONS: | Small glaciofluvial plain remnants and hummocky glaciofluvial deposits located adjacent to the Thunder River approximately 40 km (25 mi.) north of Little Chicago. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 1,200,000 sq m (13,000,000 sq ft.)<br>Perimeter: 12,000 m (40,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 434,000E 7,495,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling and slightly thermokarst terrain. |

SITE BD5-40(3)

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| REFERENCE: | Deposit (d), Area XVII DIAND Granular Resource Inventory Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| SITE DESCRIPTION: | Glaciofluvial terrace adjacent to Thunder River approximately 12 km (7.5 mi.) upstream from its confluence with the Mackenzie River. |
| | Thickness: 3 m (10 ft.)<br>Area: 930,000 sq m (10,000,000 sq ft.)<br>Perimeter: 6,100 m (20,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 426,000E 7,496,500N |
| ASSESSMENT: | Suitable for development. |
| | The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat thermokarst terrain. |

SITE BD5-41(3)

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| REFERENCE: | Site 1089, Vol. III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand, trace silt, gravel content variable (SP-SM);<br>Maximum size to 3.8 cm (1.5 in.);<br>Medium to high moisture content. |
| OVERBURDEN: | Organic material; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | 230 cm (7.5 ft.)+ |
| RESERVES: Proven | 150,000 cu.m (200,000 cu.yd.) |
| Probable | 2,500,000 cu.m (3,500,000 cu.yd.) |
| Possible | 5,500,000 cu.m (7,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze, stockpile, thaw and drain, or strip and thaw in place during summer construction period. Bank stability required. |
| SITE DESCRIPTION: | Extensive eroded, kame-kame terrace complex on south bank of the Thunder River 6 km (4 mi.) from its confluence with the Mackenzie River.<br><br>Vegetation: medium to high density spruce, tamarack, aspen and birch; dense alder and willow along water course.<br><br>Drainage: good.<br><br>Thickness: 7.6 m (25 ft.)<br>Area: 1,500,000 sq.m (16,000,000 sq.ft.)<br>Perimeter: 8,500 m (28,000 ft.)<br><br>MAP Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9, 422,000E 7,493,000N |
| SITE INVESTIGATION: | 4 drill holes, 2 test pits. |
| ASSESSMENT: | Suitable for development although material is of marginal quality, high moisture content and frozen in place. The granular |

materials in place are highly variable in quality and fines content.

The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across thermally sensitive terrain.

SITE BD5-42(3)

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| REFERENCE: | Deposit (a), Area VI DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 25,000,000 cu.m (35,000,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky glaciofluvial deposit located approximately 11 km (7 mi.) southeast of Travaillant Lake. |
| | Thickness: 6 m (20 ft.)<br>Area: 4,300,000 sq m (47,000,000 sq ft.)<br>Perimeter: 11,000 m (35,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 393,500E 7,500,000 N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling terrain exhibiting thermokarst features. |

SITE BD5-43(NG)

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| REFERENCE: | Site 1083A, Volume III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction purposes. |
| MATERIAL DESCRIPTION: | Sand and silt (SM-ML);<br>Maximum size 1.3 cm (1½ in.);<br>High moisture content. |
| DEPTH OF ACTIVE LAYER: | 90 cm (3 ft.)+ |
| SITE DESCRIPTION: | Located 13 km (8 mi.) north northeast of the confluence of the Travaillant and Mackenzie Rivers.<br><br>Drainage: fair to good.<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 397,200E 7,497,500N |
| SITE INVESTIGATION: | 2 test pits. |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD5-44(3)

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|---|---|---|
| REFERENCE: | | Site 1082, Volume III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | | Varies from gravel with some sand and trace silt to sand and gravel with some silt (GW);<br>Variable moisture content;<br>Massive ice layers at 3.6 m (12 ft.) |
| OVERBURDEN: | | Sand, some silt; 90 cm (3 ft.) |
| DEPTH OF ACTIVE LAYER: | | At surface. |
| RESERVES: | Proven | 25,000 cu.m ( 35,000 cu.yd.) |
| | Probable | 250,000 cu.m (350,000 cu.yd.) |
| | Possible | 400,000 cu.m (500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip, stockpile, thaw and drain. Buffer zones and siltation controls are recommended. |
| SITE DESCRIPTION: | | Complex of high, dry kames and wet muskeg filled valleys situated along the south bank of the Travaillant River, 11 km (7 mi.) north northwest of the confluence of the Travaillant and Mackenzie Rivers.<br><br>Vegetation: dense spruce, tamarack; dense alder and willow along water courses.<br><br>Drainage: fair, into Travaillant River.<br><br>Thickness: 5.5 m (18 ft.)<br>Area: 100,000 sq.m (1,100,000 sq.ft.)<br>Perimeter: 5,300 m (17,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant River<br><br>UTM Reference: Zone 9; 389,000E 7,496,400N |
| SITE INVESTIGATION: | | 1 drill hole. |
| ASSESSMENT: | | Material is suitable but development prospects are poor because of massive ice and possible severe thaw if the area is stripped. Long haul distances are involved if material is exploited. |

SITE BD5-44(3)

The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across hilly and thermally sensitive terrain.

SITE BD5-45(3)

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| REFERENCE: | Site 1084, Volume III, Stage III DIAND, Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Variable from silty sand to sand and gravel with some silt (SM);<br>High moisture content. |
| OVERBURDEN: | Moss and peat; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | 210 cm (7 ft.)+ |
| RESERVES: Proven | 150,000 cu.m ( 200,000 cu.yd.) |
| Probable | 1,000,000 cu.m (1,500,000 cu.yd.) |
| Possible | 3,500,000 cu.m (4,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip, stockpile, thaw and drain. Bank stability must be insured. |
| SITE DESCRIPTION: | Outwash remnants located 1.6 km (1 mi.) northwest of the confluence of Thunder and Mackenzie Rivers.<br><br>Vegetation: moderate to dense shrubs, herbs, sedges, spruce; dense alder and willow along water courses.<br><br>Drainage: poor to fair.<br><br>Thickness: 3 m (10 ft.)<br>Area: 1,100,000 sq.m (11,500,000 sq.ft.)<br>Perimeter: 8,400 m (28,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 417,500E 7,488,100N |
| SITE INVESTIGATION: | 1 drill hole, 3 test pits. |
| ASSESSMENT: | Suitable for development, however, high environmental sensitivity is apparent.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access along the Mackenzie River is possible by truck in the winter or barge in the summer. Access directly to the pipeline is by truck in the winter. |

SITE BD5-46(3)

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| REFERENCE: | Deposit (a), Area XVI DIAND Granular Resource Inventory; Travaillant Lake NTS 106-0, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 20,000,000 cu.m (25,000,000 cu.yd.) |
| SITE DESCRIPTION: | Channelled glaciofluvial plain located adjacent to the confluence of the Thunder and Mackenzie Rivers. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 3,500,000 sq m (38,000,000 sq ft.)<br>Perimeter: 12,000 m (40,000 ft.) |
| | Map Reference: NTS 106-0, Travaillant Lake |
| | UTM Reference: Zone 9; 421,000E 7,487,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck across flat thermokarst terrain. |

SITE BD5-47(3)

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| REFERENCE: | Site 1085, Volume III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973.<br><br>Borrow Pit B-80 and B-81 DPW Geotechnical Investigation Mile 725 to 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand, trace silt (GW-GM);<br>Maximum size 3.8 cm (1½ in.);<br>Medium moisture content in granular materials;<br>Ice lenses at 4.3 (14 ft.). |
| OVERBURDEN: | Peat and organic silt; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | Near surface + |
| RESERVES: Proven | 70,000 cu.m ( 90,000 cu.yd.) |
| Probable | 1,500,000 cu.m (2,000,000 cu.yd.) |
| Possible | 2,000,000 cu.m (2,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze; slope stability should be maintained. |
| SITE DESCRIPTION: | Thin outwash remnants located 3 km (2 mi.) east of confluence of the Thunder and Mackenzie River.<br><br>Vegetation: small, dense black spruce.<br><br>Drainage: good.<br><br>Thickness: 2.4 m (8 ft.)<br>Area: 1,500,000 sq.m (15,000,000 sq.ft.)<br>Perimeter: 8,000 m (26,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 421,200E 7,486,600N |
| SITE INVESTIGATION: | 24 drill holes, 2 test pits. |
| ASSESSMENT: | Suitable for development although the in place gravel layers are thin and the site exhibits high environmental sensitivity. |

SITE BD5-47(3)

The source is located outside the 28 km (17.5 mi.) pipeline corridor. By linking the source to the Mackenzie River access is possible along the river in the summer by barge and in the winter by truck. Direct access to the pipeline is by truck in the winter.

SITE BD5-48(3)

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| REFERENCE: | Site 1086, Volume III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand, variable silt content, trace gravel (SP-SM);<br>Maximum size 3.8 cm (1½ in.)<br>Medium moisture content. |
| OVERBURDEN: | Moss; 15 cm (½ ft.) |
| DEPTH OF ACTIVE LAYER: | 240 cm (8 ft.)+ |
| RESERVES: Proven | 150,000 cu.m ( 200,000 cu.yd.) |
| Probable | 1,500,000 cu.m (2,000,000 cu.yd.) |
| Possible | 2,000,000 cu.m (3,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip, Stockpile, thaw and drain. |
| SITE DESCRIPTION: | Small kame complex located 9 km (5.5 mi.) east of the confluence of the Thunder and Mackenzie River.<br><br>Vegetation: trees and brush.<br><br>Drainage: good.<br><br>Thickness: 7.6 m (25 ft.)<br>Area: 580,000 sq.m (6,200,000 sq.ft.)<br>Perimeter: 5,900 m (20,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 425,200E 7,486,500N |
| SITE INVESTIGATION: | 1 drill hole, 2 test pits. |
| ASSESSMENT: | Suitable for development. The in place moisture content of the gravel is high necessitating thawing and draining of the material. |

SITE BD5-49(3)

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| REFERENCE: | DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 500,000 cu.m (650,000 cu.yd.) |
| SITE DESCRIPTION: | Ridged glaciofluvial deposit located approximately 38 km (24 mi.) NNW of Little Chicago. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 140,000 sq m (1,500,000 sq ft.)<br>Perimeter: 1,500 m (5,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 430,000E 7,487,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over flat thermokarst terrain and involving one major river crossing. |

SITE BD5-50(3)

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| REFERENCE: | | Site 1087, Volume III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | | Gravel and sand, with variable silt content (GM);<br>Maximum size to 3.8 cm (1½ in.);<br>Medium moisture content. |
| OVERBURDEN: | | Negligible. |
| DEPTH OF ACTIVE LAYER: | | 240 cm (8 ft.)+ |
| RESERVES: | Proven | 25,000 cu.m (30,000 cu.yd.) |
| | Probable | 50,000 cu.m (65,000 cu.yd.) |
| | Possible | 70,000 cu.m (90,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip, doze, stockpile, thaw and drain. Buffer strips suggested to protect pothole lakes. |
| SITE DESCRIPTION: | | Complex of small scattered kames located 26 km (16 mi.) northwest of Tutsieta Lake.<br><br>Vegetation: dense birch and spruce.<br><br>Drainage: good.<br><br>Thickness: 4.6 m (15 ft.)<br>Area: 300,000 sq.m (3,200,000 sq.ft.)<br>Perimeter: 8,500 m (28,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 425,200E 7,486,500N |
| SITE INVESTIGATION: | | 1 drill hole, 2 test pits. |
| ASSESSMENT: | | Suitable for development. The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over thermally sensitive terrain.<br><br>The scattered nature of the deposit will necessitate further drilling to delineate the quality and quantity of materials available. |

SITE BD5-51(3)

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| REFERENCE: | Deposit (a), Area XVIII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 4,000,000 cu.m (5,000,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky glaciofluvial deposit located approximately 24 km (15 mi.) north of Little Chicago. |
| | Thickness: 12 m (40 ft.)<br>Area: 360,000 sq m (4,000,000 sq ft.)<br>Perimeter: 3,000 m (10,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 433,000E 7,483,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling terrain incised by numerous stream channels and exhibiting slight thermokarst features. |

SITE BD5-52(2)

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| REFERENCE: | | Site 1060, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 2, Good quality material suitable for embankment fills, base and surface course aggregates. |
| MATERIAL DESCRIPTION: | | Gravel, some sand, trace silt (GW);<br>Sand, some gravel, some to little silt (SW-SM);<br>Low to moderate moisture content in sands and gravels. |
| OVERBURDEN: | | Organic Silt; 30 cm (0 to 1 ft.) |
| DEPTH OF ACTIVE LAYER: | | 150 cm (5 ft.)+ |
| RESERVES: | Proven | 10,000,000 cu.m ( 15,000,000 cu.yd.) |
| | Probable | 80,000,000 cu.m (100,000,000 cu.yd.) |
| | Possible | 150,000,000 cu.m (200,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip, and doze. Commence excavation in high areas which are entirely within the active layer. Stockpile frozen gravels, preferably in the winter preceeding to allow thawing and draining. |
| SITE DESCRIPTION: | | Extensive outwash deposit which beings 10 km (6 mi.) north of Tutsieta Lake and extends more than 26 km (16 mi.) to the northeast.<br><br>Vegetation: high areas sparsely vegetated.<br><br>Drainage: higher areas are well drained.<br><br>Thickness: 11 m (35 ft.)<br>Area: 50,000,000 sq.m (540,000,000 sq.ft.)<br>Perimeter: 68,000 m (220,000 ft.)<br><br>Map Reference: NTS 106P, Canot Lake<br><br>UTM Reference: Zone 9; 465,000E 7,480,000N |
| SITE INVESTIGATION: | | 3 drill holes, 5 test pits. |
| ASSESSMENT: | | Suitable for development as a good prospect for good quality materal.<br><br>The source is located with the 28 km (17.5 mi.) |

pipeline corridor. Access is by truck across snow roads in the winter.

In view of the extensive nature of the deposit, considerable field drilling is required for a well managed development program of exploitable granular materials.

SITE BD5-53(3)

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| REFERENCE: | Deposit (a), Area XIX DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 1,500,000 cu.m (2,000,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky glaciofluvial deposit located approximately 26 km (16 mi.) NNE of Little Chicago. |
| | Thickness: 12 m (40 ft.)<br>Area: 160,000 sq m (1,700,000 sq ft.)<br>Perimeter: 3,000 m (10,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 457,000E 7,478,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located adjacent to the western boundary of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling terrain incised by numerous stream channels and exhibiting slight thermokarst features. |

SITE BD5-54(3)

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| REFERENCE: | Deposit (b), Area XVIII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: possible | 6,000,000 cu.m (8,000,000 cu.yd.) |
| SITE DESCRIPTION: | Channelled glaciofluvial deposit located approximately 24 km (15 mi.) north of Little Chicago. |
| | Thickness: 12 m (40 ft.)<br>Area: 610,000 sq m (6,500,000 sq ft.)<br>Perimeter: 2,700 m (9,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 437,700E 7,476,500N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the summer across flat to rolling terrain incised by numerous stream channels and exhibiting slight thermokarst features. |

SITE BD5-55(4)

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| REFERENCE: | | Site 1063A, Volume III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | | Sand, little silt (SM);<br>High moisture content. |
| OVERBURDEN: | | Moss and Peat; 15 cm (½ ft.) |
| DPETH OF ACTIVE LAYER: | | 120 cm (4 ft.)+ |
| RESERVES: | Proven | 55,000 cu.m ( 75,000 cu.yd.) |
| | Probable | 10,000,000 cu.m (15,000,000 cu.yd.) |
| | Possible | 20,000,000 cu.m (25,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip, doze, stockpile and thaw. Mackenzie River bank stability of concern. |
| SITE DESCRIPTION: | | High river terrance on the south bank of the Mackenzie River 1.6 km (1 mi.) south of the river and 7 km (4.5 mi.) west of the confluence of the Thunder and Mackenzie Rivers.<br><br>Vegetation: dense shrub, herbs and sedges in marsh, dense spruce, tamarack, aspen and birch in well drained area.<br><br>Drainage: good.<br><br>Thickness: 8 m (25 ft.)<br>Area: 2,800,000 sq.m (31,000,000 sq.ft.)<br>Perimeter: 9,400 m (31,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 412,500E 7,484,000N |
| SITE INVESTIGATION: | | 1 test pit. |
| ASSESSMENT: | | Not suitable for development because of environmental sensitivity, high moisture content and poor quality material.<br><br>The source is located well outside the 28 km (17,5 mi.) pipeline corridor. Access along the |

SITE BD5-55(4)

Mackenzie by truck in the winter or barge in the summer. A route to the pipeline may be possible in the winter across the Mackenzie and up the Thunder River valley.

SITE BD5-56(3)

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| REFERENCE: | Deposit (c), Area XXII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 20,000,000 cu.m (25,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial terrace immediately adjacent to the west banks of the Mackenzie River, located approximately 43 km (27 mi.) northwest of Little Chicago.<br><br>Thickness: 12 m (40 ft.)<br>Area: 1,800,000 sq m (20,000,000 sq ft.)<br>Perimeter: 15,000 m (50,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 406,500E 7,480,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access includes crossing the Mackenzie River either by truck in the winter or by barge in the summer. A barging operation may require stockpiling because of seasonal land access across flat to rolling terrain, characterized by slight to extensive thermokarst features. |

SITE BD5-57(3)

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| REFERENCE: | Deposit (b), Area XXII DIAND Granular Resource Inventory; Travaillant Lake, NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand, some gravel, trace silt and clay; well graded. |
| REFERENCE: Possible | 25,000,000 cu.m (35,000,000 cu.yd.) |
| SITE DESCRIPTION: | Channelled and ridged glaciofluvial deposit on the west side of the Mackenzie River. |
| | Thickness: 12 m (40 ft.)<br>Area: 14,000,000 sq m (150,000,000 sq ft.)<br>Perimeter: 25,000 m (80,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 406,000E 7,476,500N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access involves crossing the Mackenzie River either by truck in the winter or barge in the summer. A barging operation may require stockpiling because of seasonal land access. Terrain to the pipeline route is flat to rolling and exhibits slight to extreme thermokarst features. |

SITE BD5-58(3)

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| REFERENCE: | Site 1062, Volume III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Variable material from silty sand (SM) to silty gravel and sand (GM);<br>Maximum size 3.8 cm (1½ in.)<br>Low to high moisture content. |
| OVERBURDEN: | Peat and moss; 396 cm (0 to 13 ft.) |
| DEPTH OF ACTIVYER: | 60 cm (2 ft.)+ |
| RESERVES: Proven | 20,000 cu.m ( 25,000 cu.yd.) |
| Probable | 2,000,000 cu.m (2,500,000 cu.yd.) |
| Possible | 7,500,000 cu.m (9,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Summer operations suggested because of environmental concerns. |
| SITE DESCRIPTION: | Large outwash on the south side of the Mackenzie River stretching from 7 km (4½ mi.) to 17 km (19½ mi.) southwest of Thunder River.<br><br>Vegetation: dense shrubs, herbs and sedges in marsh; dense spruce and tamarack with dwarf shrubs on dry slopes; dense alder and willow along stream courses.<br><br>Drainage: good.<br><br>Thickness: 6.1 m (20 ft.)<br>Area: 1,200,000 sq.m (13,000,000 sq.ft.)<br>Perimeter: 18,000 m (61,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 411,500E 7,478,500N |
| SITE INVESTIGATION: | 2 drill holes, 2 test pits. |
| ASSESSMENT: | Suitable for development. The source lies well outside the 28 km (17.5 mi.) pipeline corridor. Access along the Mackenzie River is by truck in |

the winter and barge in the summer. A winter route to the pipeline may be possible across the Mackenzie and up the Thunder River Valley.

SITE ED5-59(3)

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| REFERENCE: | Deposit (c), Area XXII DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 7,500,000 cu.m (10,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial terraces located immediately adjacent to the east bank of the Mackenzie River, approximately 35 km (22 mi.) northwest of Little Chicago.<br><br>Thickness: 12 m (40 ft.)<br>Area: 980,000 sq m (11,000,000 sq ft.)<br>Perimeter: 6,100 m (20,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 417,000E 7,474,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access includes crossing the Mackenzie River either by truck in the winter or by barge in the summer. A barging operation may require stockpiling because of seasonal land access across flat to rolling terrain characterized by slight to extensive thermokarst features. |

SITE BD5-60(R2)

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| REFERENCE: | Site 1056, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973.<br><br>Borrow Pit B-105, DPW Geotechnical Investigation Mile 725 to 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, bedrock suitable for fair quality general fill. |
| MATERIAL DESCRIPTION: | Shale. |
| OVERBURDEN: | Peat, 15 cm (½ ft.) to 210 cm (7 ft.)<br>Weathered Shale; 150 cm (5 ft.) |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Stripping, blasting and quarrying. |
| SITE DESCRIPTION: | Shale, outcroping along scarps, 16 km (10 mi.) north of Little Chicago.<br><br>Vegetation: spruce, tamarack, aspen with dwarf shrubs and grasses on drier slopes.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 444,000E 7,471,300N |
| SITE INVESTIGATION: | 29 drill holes, 2 test pits. |
| ASSESSMENT: | Bedrock material is only marginally suitable for construction requirements, therefore, development of this site is questionable.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access into the site will be difficult because a local high relief, and would be restricted to truck in the winter or by barge along the Mackenzie River in the summer. |

SITE BD5-61(3)

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| REFERENCE: | Deposit (a) and (b), Area XIX DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 5,500,000 cu.m (7,000,000 cu.yd.) |
| SITE DESCRIPTION: | A series of glaciofluvial deposits exhibiting hummocky and rolling topography, located approximately 19 km (12 mi.) NNE of Little Chicago.<br><br>Thickness: 12 m (40 ft.)<br>Area: 570,000 sq m (6,100,000 sq ft.)<br>Perimeter: 18,000 m (60,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 443,500E 7,472,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling to hummocky terrain incised by numerous stream channels and exhibiting slight thermokarst features. |

SITE BD5-62(NG)

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| REFERENCE: | Site 1059A, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction purposes. |
| MATERIAL DESCRIPTION: | Clay. |
| DEPTH OF ACTIVE LAYER: | 30 cm (1.0 ft.)+ |
| SITE DESCRIPTION: | Slopes along unnamed creek 4.8 km (3 mi.) northeast of Tutsieta Lake. |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 462,000E 7,465,800N |
| SITE INVESTIGATION: | 1 test pit. |
| ASSESSMENT: | Material is not suitable for construction purposes |

SITE BD5-63(R2)

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| REFERENCE: | Site 1058, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Rock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | shale. |
| OVERBURDEN: | Clay; 120 cm (4 ft.)<br>Moist, weathered shale 60 cm (2 ft.) |
| DEPTH OF ACTIVE LAYER: | 4.8 m (16 ft.)+ |
| RESERVES: Possible | unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Blast and quarry. Siltation controls may be required. |
| SITE DESCRIPTION: | Rock outcrop 0.8 km (½ mi.) northwest of Tutsieta Lake. |
| | Vegetation: spruce; dwarf shrubs and grasses on dry slopes. |
| | Drainage: well drained into Tutsieta Lake |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 455,200E 7,466,500N |
| SITE INVESTIGATION: | 1 drill hole, 1 surface exposure. |
| ASSESSMENT: | Suitable for development. Overburden and weathered shale be removed and stockpiled for use in restoration. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across irregular terrain which is poorly drained and thermally sensitive in localized areas. |

SITE ED5-64(3)

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| REFERENCE: | Deposit (a) and (c), Area XX DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 40,000,000 cu.m (50,000,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky glaciofluvial deposit and glaciofluvial plain both adjacent to the east bank of the Mackenzie River approximately 13 km (8 mi.) north of Little Chicago.<br><br>Thickness: 12 m (40 ft.)<br>Area: 3,900,000 sq m (42,000,000 sq ft.)<br>Perimeter: 12,000 m (40,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 444,500E 7,466,500N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling terrain which is incised by numerous stream channels and exhibits slight thermokarst features. |

SITE BD5-65(2)

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|---|---|---|
| REFERENCE: | | Site 1055, Volume III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 2, Good quality material suitable for embankment fills, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | | Gravel and sand, some silt (GP-GM);<br>Maximum size 7.6 cm (3 in.);<br>Low moisture content. |
| OVERBURDEN: | | Moss; 15 cm (½ ft.) |
| DEPTH OF ACTIVE LAYER: | | 90 cm (3 ft.)+ |
| RESERVES: | Proven | 45,000 cu.m ( 60,000 cu.yd.) |
| | Probable | 450,000 cu.m ( 600,000 cu.yd.) |
| | Possible | 3,500,000 cu.m (4,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip, and doze. Buffer zones and erosion control are recommended. |
| SITE DESCRIPTION: | | Esker situated 31 km (19.5 mi.) northwest of Little Chicago in the west side of the Mackenzie River. |
| | | Vegetation: dense forest of spruce. |
| | | Drainage: good. |
| | | Thickness: 6.1 m (20 ft.)<br>Area: 580,000 sq.m (6,300,000 sq.ft.)<br>Perimeter: 8,500 m (28,000 ft.) |
| | | Map Reference: NTS 106-O, Travaillant Lake |
| | | UTM Reference: Zone 9; 420,000E 7,469,300N |
| SITE INVESTIGATION: | | 2 test pits. |
| ASSESSMENT: | | Suitable for development; however, access is difficult and haulage distance is long. |
| | | The site is located well outside the 28 km (17.5 mi.) pipeline corridor and on the west side of the Mackenzie River. Access is by |

truck in the winter or by barge in the summer along the Mackenzie River. Material must be transported across the Mackenzie River to be used in currently proposed facilities.

SITE BD5-66(3)

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| REFERENCE: | | Site 1061, Volume III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | | Variable from gravel and sand with some silt to silty sand with some gravel;<br>Maximum size 3.8 cm (1½ in.);<br>Low moisture content. |
| OVERBRUDEN: | | Moss, 15 cm (½ ft.) |
| DEPTH OF ACTIVE LAYER: | | 335 cm (11 ft.)+ |
| RESERVES: | Proven | 70,000 cu.m ( 95,000 cu.yd.) |
| | Probable | 7,000,000 cu.m ( 9,500,000 cu.yd.) |
| | Possible | 25,000,000 cu.m (35,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip and doze. Summer borrow operations suggested because of environmental concerns. |
| SITE DESCRIPTION: | | Extensive outwash area on the west bank of the Mackenzie River, 8 km (5 mi.) southwest of the confluence of the Mackenzie and Thunder Rivers.<br><br>Vegetation: dense shrubs, herbs and sedges; dense spruce, tamarack and aspen.<br><br>Drainage: variable.<br><br>Thickness: 4.6 m (15 ft.)<br>Area: 4,300,000 sq. m (46,000,000 sq.ft.)<br>Perimeter: 44,000 m (140,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillent Lake<br><br>UTM Reference: Zone 9; 413,500E 7,477,500N |
| SITE INVESTIGATION: | | 1 drill hole, 1 test pit. |
| ASSESSMENT: | | Suitable for development. The site is situated well outside the 28 km (17.5 mi.) pipeline corridor. Access to all point along the adjacent Mackenzie River is possible by truck in the winter and barge in the summer. A winter route to the pipeline may be found along the |

SITE BD5-66(3)

Thunder River valley.

Considerable variation in material quality may be anticipated.

SITE BD5-67(3)

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| REFERENCE: | Site 1054, Volume III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and silt, little gravel, outwash;<br>Gravel and sand, trace silt esker (GP-GM);<br>Maximum size 7.6 cm (3 in.);<br>Low to medium moisture content. |
| OVERBURDEN: | Moss, peat, clay; 60 cm (0 to 2 ft.) |
| DEPTH OF ACTIVE LAYER: | 60 cm (2 ft.)+ |
| RESERVES: Proven | 300,000 cu.m ( 400,000 cu.yd.) |
| Probable | 1,500,000 cu.m (2,000,000 cu.yd.) |
| Possible | 3,000,000 cu.m (4,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip, stockpile, thaw and drain. Selective excavation is suggested. |
| SITE DESCRIPTION: | Outwash and esker complex located 24 km (15 mi.) northwest of Little Chicago on the west bank of the Mackenzie River.<br><br>Vegetation: moderately dense spruce.<br><br>Drainage: good.<br><br>Thickness: 6.1 m (20 ft.)<br>Area: 500,000 sq.m (5,400,000 sq.ft.)<br>Perimeter: 5,700 m (19,000 ft.)<br><br>Map Reference: NTS 106-O, Arctic Red River<br><br>UTM Reference: Zone 9; 424,000E 7,466,400N |
| SITE INVESTIGATION: | 2 drill holes, 2 test pits. |
| ASSESSMENT: | Material is suitable for development, however, access is very difficult because the site is located on the west side of the Mackenzie River.<br><br>The source is located well outside the 28 km (17 mi.) pipeline corridor. Access is by truck in the summer along the Mackenzie River. |

SITE BD5-67(3)

Selective excavation may yield material suitable for concrete aggregate after washing and screening.

SITE BD5-68(3)

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| REFERENCE: | Deposit (b), Area XXI DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 5,000,000 cu.m (6,500,000 cu.yd.) |
| SITE DESCRIPTION: | A series of kettled glaciofluvial deposits exhibiting thermokarst features, immediately adjacent to the east bank of the Mackenzie River, located approximately 18 km (11 mi.) WNW of Little Chicago.<br><br>Thickness: 12 m (40 ft.)<br>Area: 520,000 sq m (5,600,000 sq ft.)<br>Perimeter: 9,100 m (30,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 430,000E 7,462,000N |
| ASSESSMENT: | Suitable for development although access is difficult and only a small quantity of granular materials may be available.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access involves crossing the Mackenzie River either by truck in the winter or by barge in the summer. A barging operation may require stockpiling because of seasonal land access across flat to rolling terrain exhibiting slight to extensive thermokarst features. |

SITE BD5-69(2)

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| REFERENCE: | Site 1057, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fill, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | Sand and gravel, with trace to some silt (GW-GM);<br>Maximum size to 7.8 cm (3 in.);<br>Medium moisture content. |
| OVERBURDEN: | Silt; 30 cm (1 ft.)+ |
| DEPTH OF ACTIVE LAYER: | 7.2 m (24 ft.)+ |
| RESERVES: Proven | 1,000,000 cu.m (1,500,000 cu.yd.) |
| Probable | 8,000,000 cu.m (10,000,000 cu.yd.) |
| Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Siltation controls may be required. |
| SITE DESCRIPTION: | Northwest trending esker ridge, 5.5 km (3.5 mi.) west of Tutsieta Lake.<br><br>Vegetation: spruce, tamarack and aspen; dwarf shrubs and grasses on dry slopes.<br><br>Drainage: good.<br><br>Thickness: 9.1 m (30 ft.)<br>Area: 2,400,000 sq.m (26,000,000 sq.ft.)<br>Perimeter: 29,000 m (95,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 450,000E 7,464,000N |
| SITE INVESTIGATION: | 1 drill hole, 3 test pits. |
| ASSESSMENT: | Suitable for development.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling to hummocky terrain. |

SITE BD5-70(2)

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| REFERENCE: | Deposit (b), Area XX DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fill, base and surface course aggregates. |
| MATERIAL DESCRIPTION: | Gravel. |
| RESERVES: Possible | 3,500,000 cu.m (4,500,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial ridges located immediately east of Tutsieta Lake 10 km (6 mi.) northeast of Little Chicago. |
| | Thickness: 12 m (40 ft.)<br>Area: 1,400,000 sq m (15,000,000 sq ft.)<br>Perimeter: 7,600 m (25,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 454,000E 7,461,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is across flat to rolling terrain incised by numerous stream channels and exhibiting slight thermokarst features. |

SITE BD5-71(3)

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| REFERENCE: | Deposit (d), Area XX DIAND Granular Resource Inventory; Travaillant Lake NTS 106, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 3,000,000 cu.m (4,000,000 cu.yd.) |
| SITE DESCRIPTION: | Undifferentiated glaciofluvial deposit located approximately 10 km (6 mi.) northeast of Little Chicago.<br><br>Thickness: 12 m (40 ft.)<br>Area: 310,000 sq m (3,300,000 sq ft.)<br>Perimeter: 6,000 m (20,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 454,000E 7,459,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over flat to rolling terrain incised by numerous stream channels and exhibiting slight thermokarst features. |

SITE BD5-72(3)

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| REFERENCE: | Site 1052, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel, trace silt (GP-GM);<br>Maximum size to 7.8 cm (3 in.);<br>Low moisture content in the sands and gravels. |
| OVERBURDEN: | Moss; 15 cm (½ ft.). |
| DEPTH OF ACTIVE LAYER: | 3.6 m (12 ft.)+ |
| RESERVES: Proven | 150,000 cu.m (200,000 cu.yd.) |
| Probable | 70,000 cu.m (95,000 cu.yd.) |
| Possible | 7,000 cu.m (9,500 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Buffer zones may be required. Siltation of adjacent lakes should be avoided |
| SITE DESCRIPTION: | Several small eskers and crevasse fillings, 1.6 km (1 mi.) south of Tutsieta Lake.<br><br>Vegetation: sparse spruce and aspen.<br><br>Drainage: good.<br><br>Thickness: 3.0 m (10 ft.)<br>Area: 95,000 sq.m (1,000,000 sq.ft.)<br>Perimeter: 6,900 m (23,000 ft.)<br><br>Map Reference: NTS 106P, Canot Lake<br><br>UTM Reference: Zone 9; 457,400E 7,457,000N |
| SITE INVESTIGATION: | 1 drill hole, 1 test pit. |
| ASSESSMENT: | Suitable for development. Low volume, long haul distances and scattered nature of the deposit may make development unattractive.<br><br>The source is located adjacent to the western boundary of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across irregular terrain and flat, thermally sensitive terrain. |

SITE BD5-73(3)

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| REFERENCE: | Deposit (d) and (e), Area I DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Posssible | 4,500,000 cu.m (6,000,000 cu.yd.) |
| SITE DESCRIPTION: | A series of three esker ridges and a kettled glaciofluvial plain exhibiting thermokarst features located approximately 8 km (5 mi.) east of Little Chicago.<br><br>Thickness: 12 m (40 ft.)<br>Area: 5,100,000 sq m (54,000,000 sq ft.)<br>Perimeter: 11,000 m (35,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 454,500E 7,454,500N |
| ASSESSMENT: | Suitable for development although the esker ridges require clearing of large areas to recover a relatively small quantity of granular materials.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling and hummocky terrain. |

CLASS BD5-74(4)

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| REFERENCE: | Site 1053A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 4, Non-granular. |
| MATERIAL DESCRIPTION: | Silt and clay (SC). |
| DEPTH OF ACTIVE LAYER: | 4.8 m (16.0 ft.)+ |
| SITE DESCRIPTION: | The site is located on the west bank of the Mackenzie River, 11 km (8 mi.) west of Little Chicago.<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 433,000E 7,452,600N |
| SITE INVESTIGATION: | 2 drill holes, 2 test pits. |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD5-75(3)

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| REFERENCE: | Deposit (a), Area X DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 15,000,000 cu.m (20,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial terrace located approximately 6 km (4 mi.) south of Tenlen Lake. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 1,700,000 sq m (18,000,000 sq ft.)<br>Perimeter: 4,600 m (15,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 412,000E 7,519,500N |
| ASSESSMENT: | Suitable for development. |
| | The source is located near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling terrain. |

SITE BD5-76(3)

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| REFERENCE: | Borrow Area 303 Main Canadian Route, CAGSL Pipeline Related Borrow Studies; Northern Engineering Services Co. Ltd., 1974. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel;<br>Medium to high moisture content. |
| OVERBURDEN: | Topsoil and silt; 60 cm (2 ft.) to 150 cm (5 ft.) |
| RESERVES: Possible | 15,000,000 cu.m+(20,000,000+cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Hummocks and kames located approximately 8 km (5 mi.) north of Little Chicago.<br><br>Drainage: Fair on ridges<br><br>Thickness: 3 m+ (10 ft+)<br>Area: 5,000,000 sq m+(55,000,000 sq ft+)<br>Perimeter: Not determined.<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 450,000E 7,461,500N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Suitable for development as a source of general fill.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across locally steep but generally flat to rolling terrain.<br><br>Selected by CAGSL as a primary source for right-of-way materials. |

SITE BD5-77(R2,4)

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| REFERENCE: | Borrow Pit B-108, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades.<br><br>Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Shale and till; low moisture content in till. |
| OVERBURDEN: | Till, 60 cm (2 ft.) to 300 cm (10 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Near surface bedrock located approximately 11 km (7 mi.) north of Little Chicago.<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 7,455,500N |
| SITE INVESTIGATION: | 9 drill holes. |
| ASSESSMENT: | Shale is suitable for development as a source of fair quality fill. A large portion of the till overburden may be useable as a marginal fill.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling thermokarst terrain. |

SITE BD5-78(R2,4)

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|---|---|
| REFERENCE: | Borrow Pit B-99, DPW Geotechnical Investigation Mile 725 to Mile 936 Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades.<br><br>Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Shale high moisture content in till. |
| OVERBURDEN: | Till 60 cm (2 ft.) to 600 cm (20 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Near surface bedrock forming ridge located approximately 19 km (12 mi.) southeast of the confluence of the Thunder and Mackenzie Rivers.<br><br>Drainage: Fair to the west.<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 436,600E 7,469,300N |
| SITE INVESTIGATION: | 32 drill holes. |
| ASSESSMENT: | Shale is suitable for development as a source of fair quality general fill. The overlying till may also be a source of marginal fill.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling, thermokarst terrain. |

SITE BD5-79(R2)

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|---|---|
| REFERENCE: | Borrow Pit B-58,B-59, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Shale, soft to medium with some sandstone and siltstone; high moisture content. |
| OVERBURDEN: | Till 60 cm (2 ft.) to 400 cm (13 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Near surface bedrock located approximately 22 km (14 mi.) east of Travaillant Lake. |
| | Drainage: Well defined. |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 405,000E 7,505,000E |
| SITE INVESTIGATION: | 19 drill holes. |
| ASSESSMENT: | Suitable for development. |
| | The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to gently sloping, thermokarst terrain. |

SITE BD5-80(R2)

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| REFERENCE: | Site 1094, Vol. III, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Shale;<br>Medium moisture content. |
| OVERBURDEN: | Clay and weathered shale; 460 cm (15 ft.) |
| DEPTH OF ACTIVE LAYER: | |
| RESERVES: Possible | Unlimited |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Blast and quarry. Avoid altering natural drainage. |
| SITE DESCRIPTION: | Bedrock deposit located 5 km (3 mi.) south-east of Travaillant Lake.<br><br>Vegetation: dense shrubs, herbs and sedges in marsh; dense spruce and aspen; dwarf shrubs and grasses on dry slopes; dense alder and willow along water courses.<br><br>Drainage: Fair<br><br>MAP Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9, 386,300E 7,502,600N |
| SITE INVESTIGATION: | 1 drill hole. |
| ASSESSMENT: | Material is suitable for development. The thick overburden and potentially low recoverable volumes of material make this site unattractive for development.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter; the route is long and may necessitate crossing Travaillant Lake. |

SITE BD6-01(3)

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| REFERENCE: | Deposit (c), Area I DIAND Granular Resource Inventory; Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 9,000,000 cu.m (12,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial plain located approximately 10 km (6 mi.) east of Little Chicago. |
| | Thickness: 12 m (40 ft.)<br>Area: 1,800,000 sq m (20,000,000 sq ft.)<br>Perimeter: 5,900 m (19,000 ft.) |
| | Map Reference: NTS 106-O, Travaillant Lake |
| | UTM Reference: Zone 9; 456,000E 7,450,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across irregular terrain. |

SITE BD6-02(3)

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| RESERVES: | Site 1049, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand, some gravel, trace to little silt (GM-SM);<br>Maximum size to 3.8 cm (1.5 in.);<br>Low to medium moisture content. |
| OVERBURDEN: | Peat; very thin. |
| DEPTH OF ACTIVE LAYER: | 5.7 m (19 ft.)+ |
| RESERVES: Proven | 20,000 cu.m (30,000 cu.yd.) |
| Probable | 200,000 cu.m (300,000 cu.yd.) |
| Possible | 250,000 cu.m (350,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze; Siltation controls may be required; avoid altering lowland drainage. |
| SITE DESCRIPTION: | Small, low eskers, 12 km (7.5 mi.) east southeast of Little Chicago. |
| | Vegetation: dense spruce. |
| | Drainage: good. |
| | Thickness: 5.2 m (17 ft.)<br>Area: 99,000 sq.m (1,100,000 sq.ft.)<br>Perimeter: 4,300 m (14,000 ft.) |
| | Map Reference: NTS 106P, Canot Lake |
| | UTM Reference: Zone 9; 457,500E 7,449,000N |
| SITE INVESTIGATION: | 1 drill hole, 2 test pits. |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rugged and irregular terrain characterized by numerous small lakes, ponds and bogs in localized areas. |

SITE BD6-03(3)

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| REFERENCE: | Site 1050, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Gravel and sand, little silt (GM);<br>Maximum size 7.8 cm (3 in.);<br>Low moisture content. |
| OVERBURDEN: | Sand; silty 30 cm to 150 cm (1 ft. to 5 ft.). |
| DEPTH OF ACTIVE LAYER: | 60 cm (2 ft.)+ |
| RESERVES: Proven | 10,000 cu.m (15,000 cu.yd.) |
| Probable | 250,000 cu.m (350,000 cu.yd.) |
| Possible | 1,500,000 cu.m (2,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| SITE DESCRIPTION: | Scattered kame complex, 24 km (15 mi.) north west of Yeltea Lake and 16 km (10 mi.) east southeast of Little Chicago.<br><br>Vegetation: dense spruce and poplar.<br><br>Drainage: good.<br><br>Thickness: 4.6m (15 ft.)<br>Area: 690,000 sq.m (7,400,000 sq.ft.)<br>Perimeter: 8,200 m (27,000 ft.)<br><br>Map Reference: NTS 106P, Canot Lake<br><br>UTM Reference: Zone 9; 464,000E 7,448,200N |
| SITE INVESTIGATION: | 2 test pits. |
| ASSESSMENT: | Suitable for development. Material is very scattered and variable in quality.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across irregular terrain characterized by numerous small lakes, ponds and bogs in localized areas.. |

SITE BD6-04(NG)

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| REFERENCE: | Site 1051A, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction purposes. |
| MATERIAL DESCRIPTION: | Silt, trace gravel. |
| DEPTH OF ACTIVE LAYER: | 60 cm (2 ft.)+ |
| SITE DESCRIPTION: | Esker, 18 km (11 mi.) north west of Yeltea Lake |
| | Map Reference: NTS 106P, Canot Lake |
| | UTM Reference: Zone 9; 468,800E 7,447,600N |
| SITE INVESTIGATION: | 1 test pit. |
| ASSESSMENT: | Material is not suitable for construction purposes |

SITE BD6-05(3)

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| REFERENCE: | Site 1048, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel, some silt; (SM);<br>Maximum size to 7.8 cm (3 in.);<br>Medium moisture content; |
| OVERBURDEN: | Silt, 90 cm (0 to 3 ft.)+ |
| DEPTH OF ACTIVE LAYER: | 4.2 m (14 ft.)+ |
| RESERVES: Proven | 70,000 cu.m (90,000 cu.yd.) |
| Probable | 350,000 cu.m (450,000 cu.yd.) |
| Possible | 400,000 cu.m (550,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze |
| SITE DESCRIPTION: | A drumlin in a drumlin field, 15 km (9 mi.) south southeast of Little Chicago.<br><br>Vegetation: dense.<br><br>Drainage: good.<br><br>Thickness: 7.6 m (25 ft.)<br>Area: 140,000 sq.m (1,300,000 sq.ft.)<br>Perimeter: 2,100 m (6,800 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake<br><br>UTM Reference: Zone 9; 452,200E 7,441,400N |
| SITE INVESTIGATION: | 1 drill hole, 1 test pit |
| ASSESSMENT: | Suitable for development. These drumlins characteristically have a "rose" of sand and gravel.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over flat thermally sensitive terrain characterized by numerous small lakes, ponds and bogs. Access to the pipeline corridor |

involves the crossing of rugged, irregular terrain farther to the east.

SITE BD6-06(3)

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| REFERENCE: | Site 1046, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel, some to little silt (GM);<br>Maximum size to 7.8 cm (3 in.);<br>Low moisture content; |
| OVERBURDEN: | Negligible |
| DEPTH OF ACTIVE LAYER: | 2.1 m (7 ft.)+ |
| RESERVES: Proven | 600,000 cu.m (750,000 cu.yd.) |
| Probable | 4,000,000 cu.m (5,500,000 cu.yd.) |
| Possible | 6,000,000 cu.m (8,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Siltation controls may be required. |
| SITE DESCRIPTION: | Kame and kame terrace complex, 15 km (9 mi.) west northwest of the northern tip of Yeltea Lake.<br><br>Vegetation: dense cover of black spruce, tamarack, aspen; dwarf shrubs and grasses on dry slopes.<br><br>Drainage: good.<br><br>Thickness: 3 m (10 ft.)<br>Area: 2,700,000 sq.m (29,000,000 sq.ft.)<br>Perimeter: 8,000m (26,000 ft.)<br><br>Map Reference: NTS 106P, Canot Lake<br><br>UTM Reference: Zone 9; 468,000E 7,442,000N |
| SITE INVESTIGATION: | 1 drill hole, 2 test pits |
| ASSESSMENT: | Suitable for development although long haul distances are involved.<br><br>The source is located adjacent to the western border of the 28km (17.5 mi.) pipeline corridor. Access is by truck in the winter over reasonably stable but irregular terrain. |

SITE BD6-07(2)

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| REFERENCE: | Site 1044, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fills, base and surface course aggregate; |
| MATERIAL DESCRIPTION: | Gravel, some sand, trace silt (GM);<br>Maximum size to 7.8 cm (3 in.);<br>Low moisture content. |
| OVERBURDEN: | Silt; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | 90 cm (3 ft.)+ |
| RESERVES: Proven | 500,000 cu.m (650,000 cu.yd.) |
| Probable | 1,000,000 cu.m (1,500,000 cu.yd.) |
| Possible | 3,500,000 cu.m (4,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Buffer zones and siltation controls should be used to minimize contamination of adjacent lakes and streams. |
| SITE DESCRIPTION: | Glacial outwash deposit 8 km (5 mi.) north of Yeltea Lake.<br><br>Vegetation: moss, brush and dense spruce.<br><br>Drainage: Fair.<br><br>Thickness: 3 m (10 ft.)<br>Area: 1,100,000 sq.m (12,000,000 sq.ft.)<br>Perimeter: 4,600 m (15,000 ft.)<br><br>MAP Reference: NTS 106P, Conot Lake<br><br>UTM Reference: Zone 9; 478,600E 7,442,600N |
| SITE INVESTIGATION: | 1 drill hole, 1 test pit. |
| ASSESSMENT: | Suitable for development.<br><br>The source is located in the center of the 28 km (17.5 mi) pipeline corridor. Access will be in the winter by truck across rugged, thermally sensitive terrain. |

SITE BD6-08(3)

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| REFERENCE: | Site 1043A, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill is anticipated based on airphoto interpretations. |
| MATERIAL DESCRIPTION: | Not determined. |
| OVERBURDEN: | Not determined. |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | 1,500,000 cu.m (2,000,000 cu.yd.) |
| SITE DESCRIPTION: | A complex of knobs, 5 km (3 mi.) north of Yeltea Lake.<br>Thickness: 3.0 m (10 ft.)<br>Area: 1,000,000 sq.m (11,000,000 sq.ft.)<br>Perimeter: 6,300 m (21,000 ft.)<br><br>MAP Reference: NTS 106P, Carot Lake<br><br>UTM Reference: Zone 9; 482,000E 7,440,800N |
| SITE INVESTIGATION: | 1 test pit |
| ASSESSMENT: | Material may be suitable for development but the source will require additional field investigation before a reliable assessment can be made.<br><br>The source is located near the centre of the 28 km (17.5 mi.) pipeline corridor. |

SITE BD6-09(NG)

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| REFERENCE: | Site 1042A, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material not suitable for construction purposes. |
| MATERIAL DESCRIPTION: | Silt, clayey. |
| DEPTH OF ACTIVE LAYER: | 90 cm (3 ft.)+ |
| SITE DESCRIPTION: | Located 8 km (5 mi.) north east of the northern tip of Yeltea Lake. |
| | MAP Reference: NTS 106P, Canot Lake |
| | UTM Reference: Zone 9; 487,500E 7,439,000N |
| SITE INVESTIGATION: | 2 test pits. |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD6-10(2)

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| REFERENCE: | Site 1045, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fills, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | Gravel and sand, trace silt (GW-GM);<br>Maximum size to 7.8 cm (3 in.);<br>Low moisture content in the sands and gravels; |
| OVERBURDEN: | Peat and silt; less than 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | 4 m (13.5 ft.)+ |
| RESERVES: Proven | 550,000 cu.m (700,000 cu.yd.) |
| Probable | 5,500,000 cu.m (7,000,000 cu.yd.) |
| Possible | 30,000,000 cu.m (40,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Siltation controls may be required. |
| SITE DESCRIPTION: | Outwash deposit 13 km (8 mi.) west of the northern tip of Yeltea Lake.<br><br>Vegetation: dense to very dense spruce, tamarack and shrubs.<br><br>Drainage: Good.<br><br>Thickness: 5 m (16 ft.)<br>Area: 5,500,000 sq.m (59,000,000 sq.ft.)<br>Perimeter: 17,000 m (55,000 ft.)<br><br>MAP Reference: NTS 106P, Conot Lake<br><br>UTM Reference: Zone 9; 468,000E 7,436,500N |
| SITE INVESTIGATION: | 1 drill hole, 3 test pits. |
| ASSESSMENT: | Suitable for development although long haul distances are involved.<br><br>The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rugged, |

SITE BD6-10(2)

poorly drained terrain exhibiting thermokarst features.

SITE BD6-11(3)

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| REFERENCE: | | Site 1047, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973.<br><br>Borrow Pit B-127, DPW Geotechnical Investigation Mile 725 to 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | | Sand and gravel, trace silt (GM-GW);<br>Sand, trace of silt and gravel (SM);<br>Maximum size to 7.8 cm (3 in.);<br>Low to high moisture content. |
| OVERBURDEN: | | Silt; 30 cm (1 ft.)+ |
| DEPTH OF ACTIVE LAYER: | | 460 cm (15 ft.)+ |
| RESERVES: | Proven | 2,500,000 cu.m ( 3,000,000 cu.yd.) |
| | Probable | 25,000,000 cu.m (30,000,000 cu.yd.) |
| | Possible | 55,000,000 cu.m (75,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip and doze. Siltation controls may be required. |
| SITE DESCRIPTION: | | Fossil fluvial terrace, 27 km (17 mi.) north of the confluence of Payne Creek and Mackenzie River and 24 km (15 mi.) west of the northern tip of Yelta Lake.<br><br>Vegetation: dense black spruce.<br><br>Drainage: Excellent.<br><br>Thickness: 4.8 m (16 ft.)<br>Area: 6,100,000 sq.m (66,000,000 sq.ft.)<br>Perimeter: 18,000 m (59,000 ft.)<br><br>Map Reference: NTS 106P, Canot Lake<br><br>UTM Reference: Zone 9; 456,500E 7,436,000N |
| SITE INVESTIGATION: | | 8 drill holes, 4 test pits. |
| ASSESSMENT: | | Suitable for development as a potential source for large volumes of granular materials. |

SITE BD6-11(3)

The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access will be by truck across fairly rugged terrain in winter.

SITE BD6-12(3)

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| REFERENCE: | Deposit (a), Area I DIAND Granular Resource Inventory, Travaillant Lake NTS 106-O, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand. |
| SITE DESCRIPTION: | Glaciofluvial plain located approximately 21 km (13 mi.) south of Little Chicago on the east bank of the Mackenzie River.<br><br>Thickness: 12 m (40 ft.)<br>Area: 6,000,000 sq m (64,000,000 sq ft.)<br>Perimeter: 11,000 m (35,000 ft.)<br><br>Map Reference: NTS 106-O, Travaillant Lake.<br><br>UTM Reference: Zone 9; 449,000E 7,433,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat, thermokarst terrain. |

SITE BD6-13(3)

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| REFERENCE: | Site 1041A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Gravel, some sand, trace silt (GW-GM); High moisture content. |
| OVERBURDEN: | Silt and organics; 15 cm (½ ft.) |
| DEPTH OF ACTIVE LAYER: | 240 cm ( 8 ft)+ |
| RESERVES: Proven | 150,000 cu.m ( 200,000 cu.yd.) |
| Probable | 3,000,000 cu.m ( 4,000,000 cu.yd.) |
| Possible | 8,000,000 cu.m (10,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip, stockpile, thaw and drain. Control should be instituted to avoid siltation of natural drainage channels. |
| SITE DESCRIPTION: | Outwash delta and esker 10 km (6 mi.) east of Yeltea Lake.<br><br>Vegetation: spruce; dwarf shrubs and grasses on steep slopes.<br><br>Drainage: fair to poor.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 3,500,000 sq.m (27,000,000 sq.ft.)<br>Perimeter: 9,600 m (32,000 ft.)<br><br>Map Reference: NTS 106P, Canot Lake<br><br>UTM Reference: Zone 9; 492,500E 7,434,000N |
| SITE INVESTIGATION: | 1 drill hole, 2 test pits. |
| ASSESSMENT: | Suitable for development, although high moisture contents require stockpiling of the material.<br><br>The source is located near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rugged, thermally sensitive terrain to the north, or across flat, poorly drained, thermokarst terrain to the south. |

SITE BD6-14(3)

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|---|---|---|
| REFERENCE: | | Site 1038, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | | Gravel, some sand, trace silt, well graded (GW); Maximum size 7.8 cm (3 in.). |
| OVERBURDEN: | | Peat; 15 cm (½ ft.) |
| DEPTH OF ACTIVE LAYER: | | 300 cm (10 ft.)+ |
| RESERVES: | Proven | 150,000 cu.m ( 200,000 cu.yd.) |
| | Probable | 3,000,000 cu.m ( 3,500,000 cu.yd.) |
| | Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip and doze. Controls to prevent siltation of natural drainage channels are required. |
| SITE DESCRIPTION: | | Large braided, actively eroding, outwash, 6 km (4 mi.) west of the northern end of Yeltea Lake.<br><br>Vegetation: black spruce 15 m (50 ft.), tamarack and scrub.<br><br>Drainage: well drained into adjacent lake.<br><br>Thickness: 4.6 m (15 ft.)<br>Area: 1,800,000 sq.m (19,000,000 sq.ft.)<br>Perimeter: 7,500 m (25,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 474,500E 7,430,500N |
| SITE INVESTIGATION: | | 1 test pit. |
| ASSESSMENT: | | Suitable for development. The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across thermally sensitive terrain. Travel on ice roads along Yeltea Lake may be desirable. |

SITE BD6-15(3)

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| REFERENCE: | Deposit (a),Area IV DIAND Granular Resource Inventory, Fort Good Hope NTS 106I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel |
| RESERVES: Possible | 6,500,000 cu.m (9,000,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky, glaciofluvial deposit located immediately west of the northern tip of Yeltea Lake.<br><br>Thickness: 12 m (40 ft.)<br>Area: 680,000 sq m (7,300,000 sq ft.)<br>Perimeter: 5,600 m (18,500 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 480,000E 7,430,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling to flat terrain exhibiting thermokarst features. |

SITE BD6-16(R2)

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| REFERENCE: | Site 1040A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Rock suitable for fair quality fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Thick. |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Blast and quarry. |
| SITE DESCRIPTION: | Bedrock ridges along the shores of Manuel Lake.<br><br>Vegetation: Spruce, dwarf shurbs and grasses on steep slopes.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 504,000E 7,428,200N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | Bedrock is suitable for development. However, the thick overburden, environmental sensitivity related to siltation of adjacent lake and long haul distances make this deposit questionable for development.<br><br>The site is located adjacent to the eastern boundary of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat poorly drained terrain characterized by numerous small lakes, ponds and bogs to the south and across moderately drained terrain to the north. |

# SITE BD6-17(NG)

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| REFERENCE: | Site 1039A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction purposes. |
| MATERIAL DESCRIPTION: | Silt, some sand, some clay;<br>Medium moisture content. |
| DEPTH OF ACTIVE LAYER: | 2.4 m (8 ft.)+ |
| SITE DESCRIPTION: | Situated 1.6 km (1 mi.) northeast of Manuel Lake. |
| | Vegetation: Spruce, tamarack aspen, birch and dense alder; willow along streams. |
| | Drainage: good. |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 510,000E 7,423,500N |
| SITE INVESTIGATION: | 1 test pit |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD6-18(2)

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| REFERENCE: | | Site 1036, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 2, Good quality material suitable for embankment fill, base and surface course aggregates. |
| MATERIAL DESCRIPTION: | | Gravel and sand, little to some silt (GM);<br>Maximum size 7.8 cm (3 in.);<br>Medium moisture content. |
| OVERBURDEN: | | Negligible |
| DEPTH OF ACTIVE LAYER: | | 6 m (20 ft.)+ |
| RESERVES: | Proven | 150,000 cu.m ( 200,000 cu.yd.) |
| | Probable | 3,000,000 cu.m ( 3,500,000 cu.yd.) |
| | Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip and doze. Ensure that existing hydrologic system is maintained. |
| SITE DESCRIPTION: | | Fossil outwash, 12 km (8 mi.) north of the confluence of Payne Creek and the Mackenzie River.<br><br>Vegetation: Sparse.<br><br>Drainage: fair to good.<br><br>Thickness: 7.6 m (25 ft.)<br>Area: 14,000,000 sq.m (18,000,000 sq.ft.)<br>Perimeter: 7,800 m (26,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 458,000E 7,422,500N |
| SITE INVESTIGATION: | | 1 drill hole, 1 test pit. |
| ASSESSMENT: | | Suitable for development as a good deposit for embankment fill and construction aggregate.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat poorly drained terrain exhibiting thermokarst features. |

SITE BD6-19(NG)

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| REFERENCE: | Site 1037a, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction purposes. |
| MATERIAL DESCRIPTION: | Silt, clayey, trace of sand (CI). |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| SITE DESCRIPTION: | Complex of small kames located 10 miles west of Yeltea Lake. |
| | Drainage: good. |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 465,300E 7,421,000N |
| SITE INVESTIGATION: | 2 test pits. |
| ASSESSMENT: | Materials is not suitable for construction purposes. |

SITE BD6-20(3)

| | | |
|---|---|---|
| REFERENCE: | | Site 1032, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | | Sand and gravel (GP). |
| OVERBURDEN: | | Moss and silt; 30 cm (0 to 1 ft.) |
| DEPTH OF ACTIVE LAYER: | | 90 cm (3.0 ft.)+ |
| RESERVES: | Proven | 85,000 cu.m ( 100,000 cu.yd.) |
| | Probable | 850,000 cu.m (1,000,000 cu.yd.) |
| | Possible | 3,500,000 cu.m (4,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip and doze. Buffer zones and siltation control may be required. |
| SITE DESCRIPTION: | | Kame terrace with an esker deposit on top of the terrace, 1.6 km (1 mi.) east of Yelta Lake.<br><br>Vegetation: spruce, tamarack, aspen; dwarf shrubs and grasses.<br><br>Drainage: good.<br><br>Thickness: 3 m (10 ft.)<br>Area: 1,200,000 sq.m (12,000,000 sq.ft.)<br>Perimeter: 7,500 m (25,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 8; 487,000E 7,419,500N |
| SITE INVESTIGATION: | | 1 test pit. |
| ASSESSMENT: | | Suitable for development. However, the limited quantity of available material and the remoteness of the site from planned facilities may limit the development of this site.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat poorly drained terrain characterized by numerous small lakes, ponds and bogs. Access along Yeltea Lake in the winter on ice roads may also be possible. |

SITE BD6-21(3)

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|---|---|
| REFERENCE: | Deposit (b), Area V DIAND Granular Resource Inventory; Fort Good Hope NTS 106I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel |
| RESERVES: Possible | 12,000,000 cu. (16,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial and alluvial plains located on the east side of Yeltea Lake. |
| | Thickness: 7.5 m (25 ft.)<br>Area: 2,200,000 sq m (22,000,000 sq ft.)<br>Perimeter: 8,000 m (26,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 490,000E 7,420,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across thermally sensitive terrain. |

SITE BD6-22(3)

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|---|---|
| REFERENCE: | Deposit (a), Area VII DIAND Granular Resource Inventory Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel |
| RESERVES: Possible | 7,500,000 cu. m (10,000,000 cu. yd.) |
| SITE DESCRIPTION: | Ridged glaciofluvial deposit located on the east shore of Rorey Lake. |
| | Thickness: 7.5 m (25 ft.)<br>Area: 2,000,000 sq m (21,000,000 sq ft.)<br>Perimeter: 4,000 m (13,000 ft. |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 528,000E 410,500N |
| ASSESSMENT: | Suitable for development as a source of general fill. |
| | The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling terrain which is poorly in localized areas. |

SITE BD6-23(3)

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|---|---|
| REFERENCE: | Deposit (a), Area V DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972 |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel, interbedded. |
| RESERVES: Possible | 5,500,000 cu.m (7,500,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky glaciofluvial deposit located on the east side of Yeltea Lake. |
| | Thickness: 7.5 m (25 ft.)<br>Area: 900,000 sq m (9,600,000 sq ft.)<br>Perimeter: 4,400 m (14,500 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 488,000E 7,415,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over flat, thermally sensitive terrain. |

SITE BD6-24(3)

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|---|---|
| REFERENCE: | Area V, DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel, interbedded. |
| RESERVES: Possible | 1,000,000 cu.m (1,500,000 cu.yd.) |
| SITE DESCRIPTION: | Alluvial plain located on small unnamed stream, located approximately 42 km (26 mi.) SSE of Little Chicago.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 440,000 sq m (4,700,000 sq ft.)<br>Perimeter: 3,000 m (10,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 464,000E 7,417,700N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over rolling poorly drained terrain which exhibits some thermokarst features. |

SITE BD6-25(3)

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|---|---|
| REFERENCE: | Deposit (c), Area V DIAND Granular Resource Inventory; Fort Good Hope NTS 106I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 10,000,000 cu.m(15,000,000 cu.yd.) |
| SITE DESCRIPTION: | Rolling glaciofluvial deposit and channelled, morainal till deposit, located approximately 38 km (24 mi.) northwest of the confluence of the Tieda and Mackenzie Rivers.<br><br>Thickness: 6 m (20 ft.)<br>Area: 2,100,000 sq m (23,000,000 sq ft.)<br>Perimeter: 7,600 m (25,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 458,500E 7,417,500N |
| ASSESSMENT: | Suitable for development. The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling terrain. Either Tieda River or Yeltea Lake may have to be crossed to reach the pipeline route. |

SITE BD6-26(2)

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| REFERENCE: | Site 1035, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fill, building pads, base and surface course aggregates. |
| MATERIAL DESCRIPTION: | Gravel, some sand trace silt (GW-GM);<br>Maximum size greater than 7.5 cm (3 in.);<br>Low moisture content. |
| OVERBURDEN: | Moss and silt; 15 cm (½ ft.) |
| DEPTH OF ACTIVE LAYER: | 10 m (20 ft.)+ |
| RESERVES: Proven | 300,000 cu.m ( 400,000 cu.yd.) |
| Probable | 6.000,000 cu.m ( 8,000,000 cu.yd.) |
| Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Buffer zones, siltation control and drainage maintenance may be required at pits along access. Winter operation of pits is recommended to ensure environmental stability. |
| SITE DESCRIPTION: | Remnants of an outwash deposit located 11 km (8 mi.) north of the confluence of the Ontaratue and Mackenzie Rivers.<br><br>Vegetation: aspen, white spruce, aspen, birch, dense alder and willow.<br><br>Drainage: fair to good.<br><br>Thickness: 7.6 m (25 ft.)<br>Area: 1,500,000 sq.m (16,000,000 sq.ft.)<br>Perimeter: 8,200 m (27,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 456,000E 7,417,400N |
| SITE INVESTIGATION: | 1 drill hole, 2 test pits. |
| ASSESSMENT: | Suitable for development as an excellent source of good quality material. Concrete aggregate may be produced by screening, washing and crushing. |

SITE BD6-26(2)

The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter on snow roads and across the ice on Yeltea Lake. The adjacent terrain is flat, poorly drained, and thermally sensitive characterized by numerous small lakes, ponds and bogs.

SITE BD6-27(R2)

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| REFERENCE: | Site 1033, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone;<br>Sand, some silt some gravel, variable grading;<br>Moisture content low. |
| OVERBURDEN: | Silt and fine sand; 300 cm (10 ft.) |
| DEPTH OF ACTIVE LAYER: | 390 cm ( 13 ft.)+ |
| RESERVES: Proven | 15,000 cu.m ( 20,000 cu.yd.) |
| Probable | 300,000 cu.m (400,000 cu.yd.) |
| Possible | 400,000 cu.m (500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze granular material, blast and quarry limestone. A berm should be left between the excavation and creek to ensure bank stability. |
| SITE DESCRIPTION: | Limestone scarp with eskers along valley slope adjacent to Payne Creek, 6.5 km (4 mi.) upstream from confluence with the Mackenzie River.<br><br>Vegetation: spruce, aspen, dwarf shrubs and grasses on dry slopes; dense alder and willow along water courses.<br><br>Drainage: good, well drained by Payne Creek.<br><br>Thickness: 9.1 m (30 ft.)<br>Area: 85,000 sq.m (920,000 sq.ft.)<br>Perimeter: 6,600 m (22,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 459,000E 7,410,000N |
| SITE INVESTIGATION: | 2 drill holes, 3 test pits. |
| ASSESSMENT: | Suitable for development. The esker and borrow may be variable and slightly frost susceptible. The limestone bedrock is of fair quality.<br><br>The site is located well outside the 28 km |

SITE BD6-27(R2)

(17.5 mi.) pipeline corridor. Access is by truck in the winter or by barge in the summer along the near by Mackenzie River. Access directly to the pipeline is by truck in the winter across relatively flat terrain which is characterized by numerous small lakes, ponds and bogs in the vicinity of the pipeline corridor. Yeltea Lake may have to be crossed by truck in the winter over an ice bridge or be detcured by a winter snow road in order to reach the pipeline.

SITE BD6-28(4)

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| REFERENCE: | Site 1029A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, some silt. |
| OVERBURDEN: | |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | 400,000 cu.m (500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Buffer zones and siltation controls may be required. |
| SITE DESCRIPTION: | Small eskers 1.5 km (1 mi.) east of Yeltea Lake.<br><br>Vegetation: spruce with dwarf shrubs and grasses on steep slopes.<br><br>Drainage: good.<br><br>Thickness: 3 m (10 ft.)<br>Area: 250,000 sq.m (2,700,000 sq ft.)<br>Perimeter: 6,700 m (19,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 487,500E 7,410,000N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | Development or further investigation is not recommended because of limited volume, probable variable composition and high environmental sensitivity. The source is located within the 28 km (17.5 mi.) pipeline corridor. |

SITE BD6-29(R2)

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| REFERENCE: | Site 1031a, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Bedrock and talus suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Peat and Clay; 130 cm to 300 cm (1 ft to 10 ft.) |
| DEPTH OF ACTIVE LAYER: | 45 cm (1.5 ft.)+ |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. |
| SITE DESCRIPTION: | Section of a bedrock ridge approximately 3 km (2 mi.) west of the south arm of Rorey Lake.<br><br>Vegetation: spruce.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 518,500E 7,411,000N |
| SITE INVESTIGATION: | 1 drill hole, 1 surface exposure. |
| ASSESSMENT: | Suitable for development. The long haul distance may reduce the feasibility of developing this source. The source is located adjacent to the western boundary of the 28 km (17.5 mi) pipeline corridor. Access is by truck in the winter over sloping to flat terrain which is poorly drained. At least one major stream crossing will be required. |

SITE BD6-30(R2)

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| REFERENCE: | Site 1030A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Rock suitable for fair quality fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Clay and peat; 1.5 cm (5 ft.) to 3 m (10 ft.) |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. |
| SITE DESCRIPTION: | Limestone knob, 7.2 km (4.5 mi.) south of Manuel Lake.<br><br>Vegetation: Spruce, tamarack, dwarf shrubs, dense alder and willow shrubs.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 507,600E 7,409,000N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | Material is suitable for development. The source is located near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat, poorly drained terrain to the west and sloping, fairly drained terrain to the east. |

SITE BD6-31(R2)

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| REFERENCE: | Site 1028, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, rock suitable for fair quality general fill primarily in sub-grades. |
| MATERIAL DESCRIPTION: | Shale. |
| OVERBURDEN: | Clay till and soft weathered shale; 3.7 m (12 ft.) to 6 m (20 ft.). |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. |
| SITE DESCRIPTION: | Near surface shale, 6.4 km (4 mi.) west of the southern tip of Yeltea Lake.<br><br>Vegetation: dense shrubs, herbs and sedges in marsh; dense spruce.<br><br>Drainage: fair.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 470,000E 7,405,600N |
| SITE INVESTIGATION: | 2 drill holes, 1 test pit. |
| ASSESSMENT: | Suitable for development. The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor.<br><br>Access is by truck in the winter across rolling to flat terrain which is poorly drained further to the east. The Tieda River may have to be crossed to reach the pipeline. |

SITE BD6-32(R2)

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| REFERENCE: | Site 1027, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, suitable for fair quality general fill primarily in sub-grades. |
| MATERIAL DESCRIPTION: | Interbedded soft shaley limestone and harder silty limestone. |
| OVERBURDEN: | Silty sand, farily thick but variable. |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting taking precautions to avoid siltation of adjacent river and excessive slumping of slopes. Buffer zones are recommended. |
| SITE DESCRIPTION: | Limestone outcrop located 18 km (11 mi.) northwest of the confluence of the Tieda and Mackenzie Rivers.<br><br>Vegetation: spruce, tamarack, aspen, alder and willow.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 474,500E 7,405,100N |
| SITE INVESTIGATION: | 1 test pit. |
| ASSESSMENT: | Material is suitable for development. The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over gently rolling to flat terrain which is poorly drained within the eastern half of the pipeline corridor. Yeltea Lake may have to be either crossed by truck in the winter on ice roads or detoured on snow roads, which will require a crossing of the Tieda River.<br><br>The source lies within a peregrine falcan nesting area, May - August. |

SITE BD6-33(R2)

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| REFERENCE: | Site 1026, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Fairly thick. |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. |
| SITE DESCRIPTION: | Bedrock formation adjacent to the Mackenzie River, 10 km (7 mi.) northeast of the confluence of the Tieda and Mackenzie Rivers.<br><br>Vegetation: slopes adjacent to creek are bare; dense spruce on terrace.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 478,300E 7,399,700N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | May be suitable for development, although site has high environmental sensitivity and the overburden is thick. Development should only be considered if adequate borrow sources are not found closer to pipeline.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is possible along the adjacent Mackenzie River by truck in the winter or by barge in the summer. Access directly to the pipeline is across rolling to flat terrain characterized by numerous small lakes, ponds, and bogs. The crossing of the Tieda River will be required to reach the pipeline.<br><br>The source is within a potential peregrine falcan nesting area. |

SITE BD6-34(3)

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|---|---|
| REFERENCE: | Deposit (a), Area V DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 20,000,000 cu.m (25,000,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky glaciofluvial deposit paralleling the Tieda River. |
| | Thickness: 7.5 m (25 ft.)<br>Area: 3,200,000 sq m (34,500,000 sq ft.)<br>Perimeter: 7,500 m (24,500 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 488,200E 7,402,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat, thermally sensitive terrain. |

SITE BD6-35(4)

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|---|---|
| REFERENCE: | Site 1025, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable for marginal fill. |
| MATERIAL DESCRIPTION: | Silt, little gravel (ML-GM). |
| OVERBURDEN: | Not determined. |
| DEPTH OF ACTIVE LAYER: | 90 cm (3 ft.)+ |
| RESERVES: Proven | 15,000 cu.m ( 20,000 cu.yd.) |
| Probable | 350,000 cu.m ( 450,000 cu.yd.) |
| Possible | 1,000,000 cu.m (1,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| STIE DESCRIPTION: | Esker on the east bank of the Tieda River, 6.4 km (4 mi.) upstream of confluence with the Mackenzie River. |
| | Vegetation: East side of esker bare, west side dense stand of trees. |
| | Drainage: good. |
| | Thickness: 6.1 m (20 ft.)<br>Area: 3,600,000 sq.m (4,000,000 sq.ft.)<br>Perimeter: 5,000 m (17,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9, 488,000E 7,390,500N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | Suitable for development as a source of poor quality material. However, the site is environmentally very sensitive. |
| | The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is very difficult by truck in the winter across sloping to flat terrain which is poorly drained and characterized by numerous small lakes, ponds and bogs. |

SITE BD6-35(4)

The difficult access, poor quality material and environmental sensitivities makes this site questionable for development.

SITE BD6-36(3)

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|---|---|
| REFERENCE: | Deposit (a), Area V DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 1,500,000 cu.m (2,000,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky, glaciofluvial deposit located 5.5 km (3.5 mi.) north of the confluence of the Tieda and Mackenzie Rivers.<br><br>Thickness: 7.5 m (25 ft.)<br>Area: 210,000 sq m (2,300,000 sq ft.)<br>Perimeter: 2,700 m (9,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 485,400E 7,395,700N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat, thermokarst terrain and involves the crossing of the Tieda River. |

SITE BD6-37(2)

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|---|---|
| REFERENCE: | Area V, DIAND Granular Resource Inventory; Fort Good Hope, NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fill, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | Gravel. |
| RESERVES: Possible | 1,000,000 cu.m (1,500,000 cu.yd.) |
| SITE DESCRIPTION: | Gravel mounds located 4 km (2.5 mi.) north of the confluence of the Tieda and Mackenzie Rivers.<br><br>Thickness: 9 m (30 ft.)<br>Area: 100,000 sq m (1,100,000 sq ft.)<br>Perimeter: 4,600 m (15,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 484,000E 7,394,500N |
| ASSESSMENT: | Suitable for development as a possible source of base course aggregates or embankment fill. Site may be a source of high quality aggregates but further laboratory testing would be required.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck across flat, thermokarst terrain and involves the crossing of the Tieda River. |

SITE BD6-38(R2,4)

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|---|---|
| REFERENCE: | Borrow Pit B-160, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades.<br><br>Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Shale, soft to medium, layered with siltstone and sandstone;<br>Till, medium moisture content. |
| OVERBURDEN: | Till; 60 cm (2 ft.) to 210 cm (7 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Till overlying near surface bedrock, located approximately 10 km (6 mi.) northeast of the confluence of the Tieda and Mackenzie Rivers.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 492,000E 7,397,500N |
| SITE INVESTIGATION: | 12 drill holes |
| ASSESSMENT: | Suitable for development as a source of bedrock suitable for fair quality general fill and as a source of till suitable for marginal fill.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over flat to sloping, thermokarst terrain. |

SITE BD6-39(R2,4)

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|---|---|
| REFERENCE: | Borrow Pit B-156, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades.<br><br>Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Shale and till;<br>Medium to high moisture content. |
| OVERBURDEN: | Till; 60 cm (2 ft.) to 180 cm (6 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Till overlying near surface bedrock, located approximately 14 km (9 mi.) north of the confluence of the Tieda and Mackenzie Rivers.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 484,300E 7,404,000N |
| SITE INVESTIGATION: | 9 drill holes. |
| ASSESSMENT: | Suitable for development as a source of bedrock suitable for fair quality general fill and a source of till suitable for marginal fill.<br><br>The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to sloping, thermokarst terrain. |

SITE BD6-40(R2,4)

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|---|---|
| REFERENCE: | Borrow Pit 150, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades.<br><br>Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Shale, soft to medium, with hard sandstone layers; Till, medium to high moisture content. |
| OVERBURDEN: | Till; 60 cm (2 ft.) to 180 cm (6 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Till overlying shallow bedrock, located approximately 21 km (13 mi.) northwest of the confluence of the Tieda and Mackenzie Rivers.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 466,000E 7,409,000N |
| SITE INVESTIGATION: | 12 drill holes; |
| ASSESSMENT: | Suitable for development as a source of fair quality general fill.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over flat to rolling, thermokarst terrain. |

# SITE BD6-41(R2)

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|---|---|
| REFERENCE: | Borrow Pit B-152, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Shale, soft to medium; with hard sandstone layers. |
| OVERBURDEN: | Till; 180 cm (6 ft.) to 300 cm (10ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Near surface bedrock located approximately 23 km (14 mi.) northwest of the confluence of the Tieda and Mackenzie Rivers<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 475,500E 7,409,500N |
| SITE INVESTIGATION: | 22 drill holes |
| ASSESSMENT: | Suitable for development, if required, as a source of fair quality general fill.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to rolling thermokarst terrain. |

SITE BD6-42(R2,4)

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|---|---|
| REFERENCE: | Borrow Pit B-149, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades.<br><br>Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Shale, layered, soft to hard;<br>Till; medium to high moisture content. |
| OVERBURDEN: | Till; 150 cm (5 ft.) to 300 cm (10 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Till overlying shallow bedrock located approximately 14 km (9 mi.) north of the confluence of the Tieda and Mackenzie Rivers.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 468,500E 7,414,500N |
| SITE INVESTIGATION: | 12 drill holes; |
| ASSESSMENT: | Suitable for development as a source of both bedrock suitable for general fill and till suitable for marginal fill.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across irregular, thermokarst terrain. |

SITE BD6-43(R2,4)

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|---|---|
| REFERENCE: | Borrow Pit B-140, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades.<br><br>Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Shale, layered, soft to hard<br>Till; medium to high moisture content. |
| OVERBURDEN: | Till, 60 cm (2 ft.) to 270 cm (9 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Near surface bedrock underlying till located approximately 35 km (22 mi.) northwest of the confluence of the Mackenzie and Tieda Rivers.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 460,500E 7,414,700N |
| SITE INVESTIGATION: | 21 drill holes. |
| ASSESSMENT: | Suitable for development as a source of both bedrock suitable for fair quality general fill and till suitable for marginal fill. Additional drilling is recommended to assist in selection of the best portion of the deposit for development. |

SITE BD6-44(4)

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|---|---|
| REFERENCE: | Borrow Pit B-129, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Till;<br>Low moisture content;<br>No near surface ground ice. |
| OVERBURDEN: | Till; 30 cm (1 ft.) to 60 cm (2 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Till plain located approximately 30 km (18 mi.) SSE of Little Chicago.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 457,300E 7,425,700N |
| SITE INVESTIGATION: | 8 drill holes. |
| ASSESSMENT: | Suitable for development as a source of marginal fill.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across irregular thermokarst terrain. |

SITE BD6-45(3)

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|---|---|
| REFERENCE: | Borrow Pit B-126, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sands and gravels;<br>Low moisture content, |
| OVERBURDEN: | Till 30 cm (1 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Glaciofluvial deposit located approximately 29 km (18 mi.) SSE of Little Chicago.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 457,300E 7,427,000N |
| SITE INVESTIGATION: | 5 drill holes. |
| ASSESSMENT: | Suitable for development as a source of general fill.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling, thermokarst terrain. |

SITE BD6-46(4)

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|---|---|
| REFERENCE: | Borrow Pit B-139, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Till; low moisture content. |
| OVERBURDEN: | Till; 60 cm (2 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Till deposit located approximately 24 km (15 mi.) SSE of Little Chicago. |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 459,000E 7,441,000N |
| SITE INVESTIGATION: | 13 drill holes. |
| ASSESSMENT: | Suitable for development as a source of marginal fill following a test pitting program. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across rolling, thermokarst terrain. |

SITE BD6-47(R2)

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|---|---|
| REFERENCE: | Borrow Pit B-123, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Shale; |
| OVERBURDEN: | Till 60 cm (2 ft.) to 300 cm (10 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Near surface bedrock underlying till, located approximately 18 km (11 mi.) southeast of Little Chicago. |
| | Map Reference: NTS 106P, Canot Lake |
| | UTM Reference: Zone 9; 459,000E 7,441,000N |
| SITE INVESTIGATION: | 19 drill holes. |
| ASSESSMENT: | Shale is suitable for development as a source of fair quality general fill. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over locally steep terrain and flat, thermokarst terrain to the west. |

SITE BD6-48(R2,4)

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|---|---|
| REFERENCE: | Borrow Pit B-116, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades.<br><br>Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Shale and siltstone soft to hard, layered, underlying till; low moisture content. |
| OVERBURDEN: | Till; 30 cm (1 ft.) to 60 cm (2 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Near surface bedrock located approximately 11 km (7 mi.) east of Little Chicago.<br><br>Map Reference: NTS 106P, Canot Lake<br><br>UTM Reference: Zone 9; 457,600E 7,451,700N |
| SITE INVESTIGATION: | 16 drill holes. |
| ASSESSMENT: | Bedrock suitable for development as a source of fair quality general fill.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across locally irregular terrain and flat, thermokarst terrain to the west and south. |

SITE BD7-01(3)

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|---|---|
| REFERENCE: | Deposit (d), Area IX DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 30,000,000 cu.m (40,000,000 cu.yd.) |
| SITE DESCRIPTION: | Channelled, glaciofluvial plain located 18 km (11 mi.) southeast of Rorey Lake. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 5,300,000 sq m (57,000,000 sq ft.)<br>Perimeter: 7,000 m (23,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope. |
| | UTM Reference: Zone 9; 539,000E 7,406,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across gently sloping, fairly drained terrain and across flat, poorly drained terrain. |

SITE BD7-02(3)

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|---|---|
| REFERENCE: | Deposit (a), Area IX DIAND Granular Resource Inventory; Fort Good Hope, NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 60,000,000 cu.m (75,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial plain located 11 km (7 mi.) southeast of Rorey Lake.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 17,000,000 sq m (180,000,000 sq ft.)<br>Perimeter: 30,000 m (100,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 539,000E 7,408,000N |
| ASSESSMENT: | Suitable for development as a source of general fill.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across sloping fairly well drained terrain and across flat poorly drained terrain characterized by numerous small lakes. |

SITE BD7-03(3)

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| REFERENCE: | Deposit (a), Area VII DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 7,500 cu.m (10,000 cu.yd.) |
| SITE DESCRIPTION: | Esker ridge located approximately 5 km (3 mi.) south of Rorey Lake. |
| | Thickness: 10 m (30 ft.)<br>Area: 59,000 sq m (640,000 sq ft.)<br>Perimeter: 1,900 m (6,400 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope. |
| | UTM Reference: Zone 9; 524,000E 7,404,500N |
| ASSESSMENT: | Suitable for development for use in local projects, only because of minor quanitity of available material. |
| | The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat, thermokarst terrain. |

SITE BD7-04(3)

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| REFERENCE: | Deposit (f), Area IX DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 45,000 cu.m (60,000 cu.yd.) |
| SITE DESCRIPTION: | Three esker ridges located immediately east of Bluefish River, and approximately 22 km (14 mi.) southeast of Rorey Lake.<br><br>Thickness: 3 m (10 ft.)<br>Area: 260,000 sq m (2,700,000 sq ft.)<br>Perimeter: 8,400 m (27,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope.<br><br>UTM Reference: Zone 9; 542,000E 7,402,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat, thermokarst terrain. |

SITE BD7-05(3)

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|---|---|
| REFERENCE: | Deposit (b) Area IX, DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| SITE DESCRIPTION: | Rolling glaciofluvial deposit located 20 km (13 mi.) southeast of Rorey Lake. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 3,800,000 sq m (40,000,000 sq ft.)<br>Perimeter: 9,000 m (30,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope. |
| | UTM Reference: Zone 9; 539,900E 7,393,500N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across sloping fairly drained terrain and flat poorly drained terrain characterized by numerous lakes. |

SITE BD7-06(3)

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|---|---|
| REFERENCE: | Deposit (c), Area IX DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| SITE DESCRIPTION: | Ridged, glaciofluvial deposit located 22 km (14 mi.) south of Rorey Lake and adjacent to the Tchaneta River. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 4,200,000 sq m (45,000,000 sq ft.)<br>Perimeter: 15,000 m (50,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope. |
| | UTM Reference: Zone 9; 535,000E 7,390,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat terrain which is characterized by numerous lakes in localized areas. |

SITE BD7-07(NG)

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|---|---|
| REFERENCE: | Site 1014A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction purposes. |
| MATERIAL DESCRIPTION: | Silt; some pockets of sand;<br>Maximum size 7.8 cm (3 in.). |
| DEPTH OF ACTIVE LAYER: | 90 cm (3 ft.)+ |
| SITE DESCRIPTION: | Small scattered kames and river terraces, west of the confluence of the Tchaneta and Bluefish Rivers.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-Fort Good Hope.<br><br>UTM Reference: Zone 9; 531,000E 7,390,000N |
| SITE INVESTIGATION: | 4 test pits. |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD7-08(R2)

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|---|---|
| REFERENCE: | Site 1018, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Clay; variable depth. |
| DEPTH OF ACTIVE LAYER: | 275 cm (9 ft.)+ |
| RESERVES: Possible | Unlimited |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. Siltation controls may be required. |
| SITE DESCRIPTION: | Small limestone ridge situated 16 km (10 mi.) east of the confluence of the Tieda and Mackenzie Rivers.<br><br>Vegetation: spruce and tamarack.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9, 504,500E 7,389,500N |
| SITE INVESTIGATION: | 1 drill hole, 2 test pits. |
| ASSESSMENT: | Suitable for development as a source of bedrock borrow.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to gently sloping terrain. The flat terrain is generally characterized by numerous small lakes, ponds and bogs.<br><br>Additional field drilling is required to delineate the bedrock ridge and related overburden thickness. |

SITE BD7-09(R2)

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|---|---|
| REFERENCE: | Site 1024a, Vol. II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Silt; 6 m (20 ft.) |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES Possible | Unlimited |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. Bank stability must be insured. Buffer zones be imposed. |
| SITE DESCRIPTION: | Bedrock source located on the north shore of the Mackenzie River at the confluence of the Tieda River.<br><br>Vegetation: spruce, tamarack; dwarf shrubs and grasses on dry slopes; dense alder and willow along water courses.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 485,500E |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Not suitable for development because overburden thickness, and high environmental sensitivity.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter or by barge along the Mackenzie River in the summer.<br><br>Peregrine falcons nest in the scarp face from May to August. |

SITE BD7-10(R2)

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| REFERENCE: | Site 1023, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Not determined. |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting but not from existing scarp faces; strict siltation controls should be exercised. |
| SITE DESCRIPTION: | Bedrock source located 15 km (9.5 mi.) west of Loon Lake and 10 km (6 mi.) east of the confluence of the Tieda and Mackenzie Rivers.<br><br>Vegetation: spruce, tamarack, dense willow and alder along water courses.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope.<br><br>UTM Reference: Zone 9; 494,600E 7,389,100N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | Suitable for development. The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat terrain characterized by numerous small lakes, ponds and bogs to the north and northwest. |

SITE BD7-11(3)

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| REFERENCE: | Site 1022, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Gravel and sand, trace silt (GW-GP);<br>Sand, some silt, little gravel (SM);<br>Maximum size to 7.8 cm (3 in.);<br>Medium moisture content. |
| OVERBURDEN: | Peat and silt: 15 cm (½ ft.) |
| DEPTH OF ACTIVE LAYER: | 225 cm (7.5 ft.)+ |
| RESERVES: Proven | 400,000 cu.m ( 500,000 cu.yd.) |
| Probable | 4,000,000 cu.m (5,000,000 cu.yd.) |
| Possible | 6,500,000 cu.m (8,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Siltation controls may be required. |
| SITE DESCRIPTION: | Kames and kame terraces located 18 km (11 mi.) west of Loon Lake, 8 km (5 mi.) southeast of the confluence of the Tieda and Mackenzie Rivers.<br><br>Vegetation: dense spruce, tamarack and aspen; dwarf shrubs and grasses on dry slopes.<br><br>Drainage: good.<br><br>Thickness: 3 m (10 ft.)<br>Area: 2,600,000 sq.m (28,000,000 sq.ft.)<br>Perimeter: 15,000 m (50,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope.<br><br>UTM Reference: Zone 9; 496,000E 7,386,700N |
| SITE INVESTIGATION: | 3 drill holes, 3 test pits, 1 surface exposure. |
| ASSESSMENT: | Suitable for development. The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to gently sloping terrain characterized by numerous lakes. |

SITE BD7-12(4)

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|---|---|
| REFERENCE: | DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I,Geological Survey of Canada,1972. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand |
| RESERVES: Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| SITE DESCRIPTION: | Series of eolian sand dunes on glaciolacustrine plain located approximately 51 km (32 mi.) northwest of Fort Good Hope in the west side of the Mackenzie River.<br><br>Thickness: 9 m (30 ft.)<br>Area: 1,300,000 sq m (14,000,000 sq ft.)<br>Perimeter: 7,500 m (24,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 478,500E 7,386,500N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access involves crossing the Mackenzie River either by barge in the summer or by truck in the winter.<br>Land access is by truck in the winter across flat poorly drained terrain. Some steep terrain may be encountered. |

SITE BD7-13(2)

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| REFERENCE: | DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 2,000,000 cu.m (2,500,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial deposit located 50 km (31 mi.) northwest of Fort Good Hope, on the west side of the Mackenzie River. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 400,000 sq m (4,400,000 sq ft.)<br>Perimeter: 2,600 m (8,500 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 476,000E 7,383,500N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access involves crossing the Mackenzie River either by truck in the winter or by barge in the summer. Land access is by truck in the winter across generally flat and poorly drained terrain. |

SITE BD7-14(3)

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| REFERENCE: | Site 1021, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Gravel and sand (GW, SP-SW);<br>High moisture content in sand to low moisture content in gravel. |
| OVERBURDEN: | Silt and sand; 150 cm (5 ft.) |
| DEPTH OF ACTIVE LAYER: | Near surface. |
| RESERVES: Proven | 90,000 cu.m ( 120,000 cu.yd.) |
| Probable | 7,500,000 cu.m (10,000,000 cu.yd.) |
| Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Frozen gravels may have to be blasted. Buffer zones may be required adjacent to Mackenzie River. |
| SITE DESCRIPTION: | Kame terrace located on the east bank of the Mackenzie, 8 km (5 mi.) southeast of the confluence of the Tieda and Mackenzie Rivers.<br><br>Vegetation: dense shrubs, herbs and sedges in marsh; spruce and tamarack; dense alder and willow along water courses.<br><br>Drainage: good.<br><br>Thickness: 6 m (20 ft.)<br>Area: 2,400,000 sq.m (26,000,000 sq.ft.)<br>Perimeter: 8,200 m (27,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 491,000E 7,384,500N |
| SITE INVESTIGATION: | 1 drill hole. |
| ASSESSMENT: | Suitable for development. The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter or barge in the summer along the Mackenzie River. Access |

directly to the pipeline is across flat to gently sloping terrain characterized by numerous lakes.

In view of relatively thick overburden additional field drilling is required.

SITE BD7-15(2)

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| REFERENCE: | | Site 1020, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 2, Good quality material suitable for embankment fills, base and surface course aggregates. |
| MATERIAL DESCRIPTION: | | Gravel, fine to coarse sand (GW); High and erratic moisture content. |
| OVERBURDEN: | | Silt; clayey; 365 cm (12 ft.) |
| DEPTH OF ACTIVE LAYER: | | Near surface |
| RESERVES: | Proven | 300,000 cu.m (400,000 cu.yd.) |
| | Probable | 600,000 cu.m (750,000 cu.yd.) |
| | Possible | 600,000 cu.m (750,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Not applicable. |
| SITE DESCRIPTION: | | Large kame located 1.6 km (1 mi.) northeast of the Mackenzie River and 10 km (6 mi.) southeast of the confluence of the Mackenzie and Tieda Rivers.<br><br>Vegetation: treeless with dense shrubs, herbs and sedges in marsh; spruce and tamarack; dense alder and willow along water courses.<br><br>Drainage: good.<br><br>Thickness: 3.5 m (11 ft.)<br>Areas: 350,000 sq.m (3,800,000 sq.ft.)<br>Perimeter: 2,500 m (8,300 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 492,100E 7,383,200N |
| SITE INVESTIGATION: | | 1 drill hole. |
| ASSESSMENT: | | Not suitable for development because of thick overburden, low volume, high ice content. |

SITE BD7-15(2)

The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access along the Mackenzie River is by truck in the winter or barge in the summer. Direct access to the pipeline is across flat to gently sloping terrain characterized by numerous small lakes.

# SITE BD7-16(NG)

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| REFERENCE: | Site 1019, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction purposes. |
| MATERIAL DESCRIPTION: | Sand and silt (SM). |
| SITE DESCRIPTION: | Small thin outwash situated 10 km (6.5 mi.) northwest of the confluence of the Loon and Mackenzie Rivers.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope.<br><br>UTM Reference: Zone 9; 497,000E 7,381,000N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD7-17(NG)

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|---|---|
| REFERENCE: | Site 1017A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction purposes. |
| MATERIAL DESCRIPTION: | Sand and silt, trace gravel (SM); Maximum size to 7.8 cm (3 in.). |
| DEPTH OF ACTIVE LAYER: | 90 cm (3 ft.)+ |
| SITE DESCRIPTION: | Outwash deposit situated 1.6 km (1 mi.) east of Loon Lake on the north shore of Loon River.<br><br>Vegetation: dense shrubs, herbs, and sedges in marsh; spruce and tamarack; dense alder and willow along water courses.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 513,300E 7,384,600N |
| SITE INVESTIGATION: | 2 test pits. |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD7-18(2)

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|---|---|
| REFERENCE: | Site 1016, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fills, base and surface course aggregates. |
| MATERIAL DESCRIPTION: | Gravel, trace sand, trace silt in esker (GW-GP);<br>Sand, some gravel, little silt in kames (GW-GP);<br>Maximum size to 7.8 cm (3 in.)<br>Low moisture content. |
| OVERBURDEN: | Peat; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | 430 cm ( 14 ft.)+ |
| RESERVES: Proven | 2,500 cu.m ( 3,500 cu.yd.) |
| Probable | 250,000 cu.m (350,000 cu.yd.) |
| Possible | 400,000 cu.m (550,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze; siltation controls are required. |
| SITE DESCRIPTION: | Hummocky esker-kame complex 6 km (4 mi.) east of the confluence of Loon Lake and Loon River.<br><br>Vegetation: spruce and birch, 9 to 12 m (30 to 40 ft.).<br><br>Drainage: good.<br><br>Thickness: 8 m (26 ft.)<br>Area: 100,000 sq.m (1,100,000 sq.ft.)<br>Perimeter: 7,100 m (23,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 518,900E 7,386,300N |
| SITE INVESTIGATION: | 2 drill holes, 2 test pits. |
| ASSESSMENT: | Suitable for development. The source is located near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to gently sloping terrain characterized by numerous small lakes, ponds and bogs.<br><br>The volume yield is expected to be low because |

of the scattered nature of the deposit. Selective excavation may yield material which may be suitable for processing into concrete aggregates.

SITE BD7-19(3)

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| REFERENCE: | Deposit (a), Area IX DIAND Granular Resource Inventory; Fort Good Hope, NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 2,000,000 cu.m (2,500,000 cu.yd.) |
| SITE DESCRIPTION: | Small glaciofluvial plain located on the west side of the Bluefish River, 25 km (16 mi.) south of Rorey Lake.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 600,000 sq m (6,300,000 sq ft.)<br>Perimeter: 3,600 m (12,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 533,500E 7,384,500N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across gently rolling terrain. |

SITE BD7-20(3)

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|---|---|---|
| REFERENCE: | | Site 1012, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | | Sand and gravel, some silt (GP-GM);<br>Maximum size to 7.8 cm (3 in.);<br>Low to medium moisture content in sands and gravels. |
| OVERBURDEN: | | Silt; 0 to 210 cm (7 ft.) |
| DEPTH OF ACTIVE LAYER: | | 210 cm (7 ft.) |
| RESERVES: | Proven | 25,000 cu.m ( 30,000 cu.yd.) |
| | Probable | 500,000 cu.m (650,000 cu.yd.) |
| | Possible | 750,000 cu.m (950,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip and doze; possible blasting to excavate frozen gravels. |
| SITE DESCRIPTION: | | Long narrow esker located 10 km (6 mi.) southeast of the confluence of the Tchaneta and Bluefish Rivers.<br><br>Vegetation: dense spruce.<br><br>Drainage: good.<br><br>Thickness: 5.5 m (18 ft.)<br>Area: 270,000 sq.m (2,900,000 sq.ft.)<br>Perimeter: 7,800 m (26,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 543,500E 7,386,500N |
| SITE INVESTIGATION: | | 2 drill holes, 2 test pits. |
| ASSESSMENT: | | Suitable for development. Low volume of material and long haul distances may reduce the priority for developing this site.<br><br>The source is located outside the 28 km (17.5 mi.) pipline corridor. Access is by truck in the winter across flat terrain with scattered small lakes. |

SITE BD7-21(3)

| | | |
|---|---|---|
| REFERENCE: | | Site 1013, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | | Sand and gravel, trace silt, clay pockets (GW - SM);<br>Maximum size to 7.8 cm (3 in.);<br>Medium moisture content. |
| OVERBURDEN: | | Peat, silt and moss; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | | 120 cm (4 ft)+ |
| RESERVES: | Proven | 9,000 cu.m ( 10,000 cu.yd.) |
| | Probable | 900,000 cu.m (1,000,000 cu.yd.) |
| | Possible | 3,000,000 cu.m (4,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip and doze; pockets of clay and clay till will require stripping and stockpiling; some limited blasting may be required in frozen gravels and sand. |
| SITE DESCRIPTION: | | Actively eroding terrace on the west bank of the Bluefish River, 9 km (5.5 mi.) south of its confluence with the Tchanets River.<br><br>Vegetation: spruce trees up to 21 m (70 ft.)<br><br>Drainage: good.<br><br>Thickness: 3 m (10 ft.)<br>Area: 1,000,000 sq.m (11,000,000 sq.ft.)<br>Perimeter: 5,700 m (19,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 534,000E 7,381,500N |
| SITE INVESTIGATION: | | 1 drill hole, 1 test pit. |
| ASSESSMENT: | | Suitable for development. Long haul distance may reduce the feasibility of developing this site.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is across flat terrain by truck in the winter. |

SITE BD7-22(R2)

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|---|---|
| REFERENCE: | Site 1015A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Considerable |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. Siltation controls may be required. |
| SITE DESCRIPTION: | Bedrock ridge 14 km (9 mi.) south southeast of Loon Lake.<br><br>Vegetation: dense shrubs, herbs and sedges in marsh; spruce and tamarack; dwarf shrubs and grasses on dry slopes.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 526,500E 7,381,500N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | Not suitable for development because of considerable overburden thickness and long haul distances. |

SITE BD7-23(3)

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|---|---|
| REFERENCE: | Deposit (d), Area XI DIAND Granular Resource Inventory; Fort Good Hope, NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 500,000,000 cu.m (700,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial deposit located approximately 27 km (17 mi.) north of Fort Good Hope. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 440,000 sq m (4,700,000 sq ft.)<br>Perimeter: 9,800 m (32,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 513,000E 7,375,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat terrain which is poorly drained in localized areas. |

SITE BD7-24(2)

| | | |
|---|---|---|
| REFERENCE: | | Site 1003, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 2, Good quality material suitable for embankment fill, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | | Gravel and sand, trace silt (GP-GW);<br>Maximum size to 7.8 cm (3 in.);<br>Low to medium moisture content. |
| OVERBURDEN: | | Peat and silt; 0 to 1.2 m (0 to 4 ft.) |
| DEPTH OF ACTIVE LAYER: | | 45 cm (1.5 ft.)+ |
| RESERVES: | Proven | 100,000 cu.m ( 150,000 cu.yd.) |
| | Probable | 1,000,000 cu.m (1,500,000 cu.yd.) |
| | Possible | 3,000,000 cu.m (4,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip and doze. Bank stability should be ensured. Buffer zones are recommended. Both summer and winter operation are possible. |
| SITE DESCRIPTION: | | Actively eroding high river terrace located along the Loon River, 5 km (3 mi.) upstream from its confluence with the Mackenzie River.<br><br>Vegetation: spruce to 9.1 m (30 ft.) and underbrush.<br><br>Drainage: good.<br><br>Thickness: 3 m (10 ft.)<br>Area: 1,000,000 sq.m (11,000,000 sq.ft.)<br>Perimeter: 14,000 m (4,300 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 504,500E 7,373,500N |
| SITE INVESTIGATION: | | 1 drill hole, 2 test pits. |
| ASSESSMENT: | | Suitable for development. The source is located adjacent to the western boundary of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat terrain which is locally characterized by numerous small lakes. |

SITE BD7-24(2)

Concrete aggregates may be produced with a limited amount of processing. Additional field investigations and testing of materials are required before this site is developed.

# SITE BD7-25(3)

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| REFERENCE: | Deposit (c), Area X DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 8,000,000 cu.m (10,000,000 cu.yd.) |
| SITE DESCRIPTION: | Ridged, glaciofluvial deposit located approximately 37 km (23 mi.) northeast of Fort Good Hope. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 1,300,000 sq m (14,000,000 sq ft.)<br>Perimeter: 1,600 m (5,500 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 540,000E 7,376,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located adjacent to the eastern border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over flat, thermokarst terrain. |

SITE ED7-26(3)

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| REFERENCE: | Deposit (c), Area X DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 2,000,000 cu.m (2,500,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial plain east of Bluefish River and approximately 30 km (19 mi.) northeast of Fort Good Hope.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 520,000 sq m (5,600,000 sq ft.)<br>Perimeter: 3,600 m (12,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 536,500E 7,372,500N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat terrain. At least one major river crossing may be required. |

SITE BD7-27(3)

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|---|---|
| REFERENCE: | Deposit (a), Area X DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky, rolling and ridged glaciofluvial deposit on the west banks of the Bluefish River, approximately 26 km (16 mi.) northeast of Fort Good Hope. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 3,500,000 sq m (38,000,000 sq ft.)<br>Perimeter: 11,000 m (35,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 533,500E 7,371,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat, thermokarst terrain. |

SITE BD7-28(R2)

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| REFERENCE: | Site 1007A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable fcr fair quality fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | very thin |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. Siltation should be regulated. |
| SITE DESCRIPTION: | Flat outcropping scarp of limestone situated 21 km (13 mi.) northeast of the confluence of Mackenize and Hare Indian Rivers.<br><br>Vegetation: Not determined.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 529,000E 7,370,000N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | Suitable for development. The source is located near the centre of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat terrain characterized by numerous lakes. |

SITE BD7-29(2)

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|---|---|
| REFERENCE: | DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I,Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fill, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | Gravel. |
| RESERVES: Possible | 4,000,000 cu.m (5,500,000 cu.yd.) |
| SITE DESCRIPTION: | Gravel mounds located approximately 24 km (15 mi.) NNW of Fort Good Hope adjacent to the confluence of the Loon and Mackenzie Rivers.<br><br>Thickness: 9 m (30 ft.)<br>Area: 450,000 sq m (5,000,000 sq ft.)<br>Perimeter: 17,000 m (55,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 506,000E 7,371,000N |
| ASSESSMENT: | Suitable for development as a source of quality base course aggregate. Higher quality aggregates might be available by screening, crushing and washing the borrow material.<br><br>The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to gently rolling terrain. |

SITE BD7-30(3)

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|---|---|---|
| REFERENCE: | | Site 1002, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | | Sand, little silt (SM);<br>Maximum size to 3.8 cm (1½ in.);<br>Low moisture content. |
| OVERBURDEN: | | Negligible |
| DEPTH OF ACTIVE LAYER: | | 810 cm (26.5 ft.)+ |
| RESERVES: | Proven | 800,000 cu.m ( 1,000,000 cu.yd.) |
| | Probable | 8,000,000 cu.m (10,000,000 cu.yd.) |
| | Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip and doze. Siltation and bank stability should be controlled. Winter or summer development. |
| SITE DESCRIPTION: | | Actively eroding, high river terrace located south of the confluence of the Loon and Mackenzie Rivers.<br><br>Vegetation: sparse aspen and spruce, dense alder and willow along water courses.<br><br>Drainage: good.<br><br>Thickness: 9.1 m (30 ft.)<br>Area: 1,100,000 sq.m (12,000,000 sq.ft.)<br>Perimeter: 4,600 m (15,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 503,000E 7,370,000N |
| SITE INVESTIGATION: | | 1 drill hole, 1 test pit. |
| ASSESSMENT: | | Suitable for development. The source is located outside the 28 km (17.5 mi.) pipeline corridor<br><br>Access is by truck in the winter across relatively flat terrain. |

SITE BD7-31(R2)

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| REFERENCE: | Site 1001A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Egnineering Consultants, 1973.. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in subgrades. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Not determined. |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blast. Avoid winter operations. Buffer zones may be imposed. |
| SITE DESCRIPTION: | 91 m (300 ft.) high limestone cliffs along west bank of Mackenzie River opposite the confluence of the Loon and Mackenzie Rivers.<br><br>Vegetation: Moderately dense spruce and poplar.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 500,000E 7,366,700N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | Although the material is suitable, the site is not recommended for development because of difficult access and high environmental sensitivity..<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is very difficult as the material must cross the Mackenzie River and is further complicated by 90 m (300 ft.) cliffs. Winter operations should be avoided, therefore a barging system would be required. |

SITE BD7-32(4)

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| REFERENCE: | DIAND Granular Resoruce Inventory; Fort Good Hope, NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, fine to medium. |
| RESERVES: Possible | 2,000,000 cu.m(3,000,000 cu.yd.) |
| SITE DESCRIPTION: | Eolian sand deposit located on the east banks of the Mackenzie River approximately 24 km (15 mi.) northwest of Fort Good Hope. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 450,000 sq m (5,000,000 sq ft.)<br>Perimeter: 4,000 m (13,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 503,500E 7,368,500N |
| ASSESSMENT: | Suitable for development. |
| | The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to gently sloping terrain. |

SITE BD7-33(NG)

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|---|---|
| REFERENCE: | Site 1005A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material not suitable for construction purposes. |
| MATERIAL DESCRIPTION: | Probably a till fluting (based on air photo interpretation). |
| SITE DESCRIPTION: | Long, narrow ridge (possible till fluting) located 20 km (12.5 mi.) north of Fort Good Hope. |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 514,000E 7,368,500N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | Material not suitable for construction purposes. |

SITE BD7-34(4)

| | | |
|---|---|---|
| REFERENCE: | | Site 1008A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | | Sand, some gravel, little silt (SM);<br>Maximum size to 7.8 cm (3 in.);<br>Medium moisture content. |
| OVERBURDEN: | | Negligible |
| DEPTH OF ACTIVE LAYER: | | 240 cm (8 ft.)+ |
| RESERVES: | Proven | 80,000 cu.m ( 100,000 cu.yd.) |
| | Probable | 550,000 cu.m ( 700,000 cu.yd.) |
| | Possible | 850,000 cu.m (1,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | | |
| METHOD OF EXTRACTION: | | Rip and doze. Stream bank buffers and siltation controls are recommended. |
| SITE DESCRIPTION: | | A few small isolated kames on the west bank of Bluefish River, 31 km (19.5 mi.) north northeast of Fort Good Hope and 8 km (5 mi.) north of the Hare Indian River.<br><br>Vegetation: spruce, tamarack and aspen; dense alder and willow along water courses.<br><br>Drainage: good.<br><br>Thickness: 4 m (13 ft.)<br>Area: 440,000 sq.m (4,700,000 sq.ft.)<br>Perimeter: 6,700 m (22,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 535,000E 7,369,000N |
| SITE INVESTIGATION: | | 3 test pits. |
| ASSESSMENT: | | Not suitable for development because of poor quality, limited volume and high environment sensitivity. |

SITE BD7-35(3)

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|---|---|
| REFERENCE: | Deposit (a), Area I DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 2,500,000 cu m (3,500,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial plain adjacent to the Bluefish River, located approximately 26 km (16 mi.) northeast of Fort Good Hope. |
| | Thickness: 7.5 m (25 ft.)<br>Area: 420,000 sq m (4,500,000 sq ft.)<br>Perimeter: 8,800 m (29,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 536,000E 7,367,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat thermokarst terrain. |

SITE BD7-36(NG)

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|---|---|
| REFERENCE: | Site 1009A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction purposes. |
| MATERIAL DESCRIPTION: | Silt and fine sand. |
| DEPTH OF ACTIVE LAYER: | 90 cm (3 ft.)+ |
| SITE DESCRIPTION: | Eroding river terrace and a few sand dunes situated 32 km (20 mi.) northeast of Fort Good Hope along the Hare Indian River near its confluence with the Bluefish River.<br><br>Vegetation: spruce, tamarack, aspen; dwarf shrubs and grasses on dry slopes; dense alder and willow along water courses.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 538,500E 7,367,000N |
| SITE INVESTIGATION: | 4 test pits. |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD7-37(4)

| | |
|---|---|
| REFERENCE: | Deposit (c), Area I DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable for marginal fill only. |
| MATERIAL DESCRIPTION: | Sand, fine to medium grained. |
| RESERVES: Possible | 1,500,000 cu.m (2,000,000 cu.yd.) |
| SITE DESCRIPTION: | Eolian sand ridges and plain located south of Hare Indian River approximately 27 km (17 mi.) ENE of Fort Good Hope.<br><br>Thickness: 7.5 m (25 ft.)<br>Area: 2,000,000 sq m (22,000,000 sq ft.)<br>Perimeter: 12,000 m (40,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 540,500E 7,363,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat thermokarst terrain. |

SITE BD7-38(3)

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|---|---|
| REFERENCE: | Deposit(f), Area 1 DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand, some silt. |
| RESERVES: Possible | 100,000,000 cu. m (150,000,000 cu.yd.) |
| SITE DESCRIPTION: | Eolian sand deposit overlying a glaciofluvial plain located adjacent to the Hare Indian River approximately 16 km (10 mi.) northeast of Fort Good Hope.<br><br>Thickness: 7.5 m (25 ft.)<br>Area: 21,000,000 sq m (220,000,000 sq ft.)<br>Perimeter: 30,000 m (100,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 530,000E 7,360,000N |
| ASSESSMENT: | Suitable for development.<br><br>The source is located near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over flat, poorly to fairly drained terrain. |

SITE BD7-39(3)

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|---|---|
| REFERENCE: | Deposit (a), Area I DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 20,000,000 cu.m (25,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial plain adjacent to the Hare Indian River, located approximately 19 km (12 mi.) northeast of Fort Good Hope. |
| | Thickness: 7.5 m (25 ft.)<br>Area: 2,900,000 sq m (31,000,000 sq ft.)<br>Perimeter: 12,000 m (39,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 529,000E 7,363,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located near the center of the 28 km (17.5 mi. ) pipeline corrridor. Access is by truck in the winter across flat thermokarst terrain. |

SITE BD7-40(3)

| | |
|---|---|
| REFERENCE: | Deposit (1), Area I DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 350,000 cu.m (500,000 cu.yd.) |
| SITE DESCRIPTION: | Alluvial flood plain and terraces of the Hare Indian River. |
| | Thickness: 2.5 m (8 ft.)<br>Area: 310,000 sq m (3,300,000 sq ft.)<br>Perimeter: 9,000 m (29,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 526,000E 7,361,500N |
| ASSESSMENT: | Not suitable for development, because available granular materials are located within or immediately adjacent to the active stream channel of the Hare Indian River. |
| | The source is lcoated within the 28 km (17.5 mi.) pipeline corridor. |
| | Access is by truck in the winter over flat terrain characterized by a few lakes. |

SITE BD7-41(NG)

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| REFERENCE: | Site 1006A, Volume II, Stage III, DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973.<br><br>Site FGH-6, Fort Good Hope, Community Study Area, Stage I DIAND Granular Materials Inventory; Pemcan Services "72", 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material not suitable for construction purposes. |
| MATERIAL DESCRIPTION: | Fine sand, some silt (SP-SM);<br>Medium moisture content. |
| DEPTH OF ACTIVE LAYER: | 425 cm (14 ft.)+ |
| SITE DESCRIPTION: | Small esker located 13 km (8 mi.) north-east of the confluence of the Mackenzie and Hare Indian Rivers.<br><br>Vegetation: aspen, spruce and tamarack; dwarf shrubs and grasses on dry slopes.<br><br>Drainage: good.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 523,000E 7,363,500N |
| SITE INVESTIGATION: | 1 drill hole, 1 test pit. |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD7-42(4)

| | | |
|---|---|---|
| REFERENCE: | | Site 1004A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | | Fine sand, some silt (SM-SP);<br>Low moisture content. |
| OVERBURDEN: | | Peat, 15 cm (½ ft.) |
| DEPTH OF ACTIVE LAYER: | | 75 cm (2.5 ft.)+ |
| RESERVES: | Proven | 1,500 cu.m ( 2,000 cu.yd.) |
| | Probable | 15,000 cu.m ( 20,000 cu.yd.) |
| | Possible | 75,000 cu.m (100,000 cu.yd.) |
| SITE DESCRIPTION: | | Complex of small, low kames located 10 km (6 mi.) south east of the confluence of the Mackenzie and Loon Rivers. |
| | | Vegetation: Not determined |
| | | Drainage: good. |
| | | Thickness: 3 m (10 ft.)<br>Area: 51,000 sq.m (550,000 sq.ft.)<br>Petimeter: 4,600 m (15,000 ft.) |
| | | Map Reference: NTS 106-I, Fort Good Hope |
| | | UTM Reference: Zone 9; 509,600E 7,366,800N |
| SITE INVESTIGATION: | | 1 test pit. |
| ASSESSMENT: | | Not suitable for development because of variable nature of material, high ice content, poor quality and small volume. |
| | | The source is located adjacent to the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat terrain. |

existing access trails. Access to the pipeline may require crossing the rugged terrain at the north end of the Norman Range.

SITE BD8-32(R2)

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|---|---|
| REFERENCE: | Area III, DIAND Granular Resource Inventory; Norman Wells NTS 96E, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone |
| RESERVES: Possible | Unlimited |
| SITE DESCRIPTION: | Prominent bedrock ridge known geographically as Hoosier Ridge located approximately 34 km (21 mi.) northwest of Norman Wells.<br><br>Map Reference: NTS 96E, Norman Wells.<br><br>UTM Reference: Zone 9; 567,000E 7,255,000N |
| ASSESSMENT: | Suitable for development as a source of general fill. The site may also be a source of base and surface course aggregates but additional field and laboratory investigations are required.<br><br>The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access includes crossing the Mackenzie River either by truck in the winter or barge in the summer. A barging operation may require stock-piling because of seasonal land access.<br><br>The prominent bedrock ridge has aesthetic features. |

SITE BD8-33(R1)

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|---|---|
| REFERENCE: | Site 286, Norman Wells to Fort Good Hope, Inter-community Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class R-1, Bedrock suitable for manufacturing of various construction aggregates. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Topsoil and drift. |
| DEPTH OF ACTIVE LAYER: | 60 cm (2 ft.)+ |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. |
| SITE DESCRIPTION: | A chain of relatively shallow bedrock ridges located 25 km (15 mi.) northwest of Norman Wells.<br><br>Vegetation: light stands of spruce.<br><br>Drainage: good to the southwest.<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 583,000E 7,254,200N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | Suitable for development. The source lies within the 28 km (17.5 mi.) pipeline corridor. Access to the pipeline may be across the rugged terrain at the north end of the Norman Range. |

SITE BD8-34(4)

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|---|---|
| REFERENCE: | Deposit (a), Area IV DIAND Granular Resource Inventory; Norman Wells NTS 96E, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable for marginal fill only. |
| MATERIAL DESCRIPTION: | Sand and silt. |
| RESERVES: Possible | 50,000,000 cu.m (65,000,000 cu.yd.) |
| SITE DESCRIPTION: | Fluvial flood plain of the Carcajou River. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 14,000,000 sq m (150,000,000 sq ft.)<br>Perimeter: 52,000 m (170,000 ft.) |
| | Map Reference: NTS 96E, Norman Wells |
| | UTM Reference: Zone 9; 564,000E 7,240,000N |
| ASSESSMENT: | Not suitable for development because all available granular materials are located within or immediately adjacent to the active stream channel. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat terrain exhibiting slight thermokarst features. Access also includes crossing the Mackenzie River either by truck in the winter or by barge in the summer. A barging operation may require stockpiling because of seasonal land access. |

SITE BD8-35(4)

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| REFERENCE: | Borrow Area 374 Main Canadian Route, CAGSL Pipeline Related Borrow Studies; Northern Engineering Services Co. Ltd., 1974. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand and silt (till);<br>Medium to high moisture content. |
| OVERBURDEN: | Topsoil and silt; 0 to 30 cm (1 ft.) |
| RESERVES: Possible | 15,000,000 cu.m (20,000,000 cu.yd.)+ |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Sandy till plain located approximately 21 km 13 mi.) NNW of the confluence of the Oscar Creek and the Mackenzie River.<br><br>Drainage: Fair to west and south<br><br>Thickness 3 m+ (10 ft.+)<br>Area: 5,000,000 sq m+ (55,000,000 sq ft+)<br>Perimeter: Not determined.<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 559,500E 7,275,000N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | May be suitable for development as a source of marginal fill.<br><br>The source is located just within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat, slightly thermokarst terrain.<br><br>Selected by CAGSL as a primary source of right of way materials. |

SITE BD8-36(3)

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|---|---|
| REFERENCE: | Borrow Area 374A Main Canadian Route, CAGSL Pipeline Related Borrow Studies; Northern Engineering Services Co. Ltd., 1974. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel;<br>High moisture content. |
| OVERBURDEN: | Topsoil and silt; 0 to 30 cm (1 ft.) |
| RESERVES: Possible | 40,000,000 cu. m+ (50,000,000 cu.yd.+) |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Outwash plain located adjacent to Elliot Creek approximately 2.5 km (1.5 mi.) east of its confluence with the Mackenzie River.<br><br>Drainage: fair<br><br>Thickness: 7.5 m (25 ft.)<br>Area: 5,000,000 sq m+ (55,000,000 sq ft+)<br>Perimeter: Not determined<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 564,500E 7,269,000N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Suitable for development as a source of general fill.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over flat terrain.<br><br>Selected by CAGSL as a source of right-of-way for primary materials. |

SITE BD8-23(R1)

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| REFERENCE: | Site 295, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class R-1, Bedrock suitable for the manufacturing of most construction aggregates. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Topsoil. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. |
| SITE DESCRIPTION: | Cresent shaped bedrock ridge located approximately 1.6 km (1 mi.) southeast of Elliot Creek.<br><br>Drainage: fair to adjacent terrain.<br><br>Map Reference: NTS 96E, Norman Wells.<br><br>UTM Reference: Zone 9; 567,000E 7,266,200N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Suitable for development. The source is located within the 28 km (17.5mi.) pipeline corridor.<br><br>Access is over adjacent poorly drained, thermokarst terrain. |

SITE BD8-24(R2)

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|---|---|
| REFERENCE: | Site 294, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class R-2, Talus suitable for fair quality fill in sub-grades. |
| MATERIAL DESCRIPTION: | Large limestone and dolomite blocks. |
| OVERBURDEN: | None. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Doze in talus slopes. |
| SITE DESCRIPTION: | A large rock slide developed within the south-western face of the Norman Range, located approximately 3 miles southeast of Elliot Creek.<br><br>Vegetation: debris slopes are bare; dense spruce and tamarack on adjacent muskeg.<br><br>Drainage: good to southwest.<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 568,800E 7,264,300N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Not suitable for development because of the possibility of triggering mass movement if materials are removed from the toe of the slopes.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Local access is across poorly drained, thermally sensitive terrain. |

# SITE BD8-25(R2)

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|---|---|
| REFERENCE: | Site 293, Fort Good Hope, Community Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class R-2, Talus suitable for fair quality fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone and dolomite fragments. |
| OVERBURDEN: | None. |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Proven | 100,000 cu.m (150,000 cu.yd.) |
| Probable | 1,000,000 cu.m (1,500,000 cu.yd.) |
| Possible | 13,000,000 cu.m (17,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| SITE DESCRIPTION: | Talus slopes and cones along the southwestern flanks of the Norman Range located 3.2 km (2 mi.) northwest of Oscar Creek. |
| | Vegetation: None |
| | Drainage: good. |
| | Thickness: 18 m (60 ft.)<br>Area: 1,400,000 sq m (15,000,000 sq.ft.)<br>Perimeter: 11,000 m (36,000 ft.) |
| | Map Reference: NTS 96E, Norman Wells |
| | UTM Reference: Zone 9; 572,400E 7,260,000N |
| SITE INVESTIGATION: | 1 test pit. |
| ASSESSMENT: | Suitable for development. The source is located within the 28 km (17.5 mi.) pipeline corridor. |
| | Access from the CNT pole line to the southwest is across thermally sensitive terrain. |

SITE BD8-26(4)

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|---|---|
| REFERENCE: | Site 292, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand (SP);<br>Maximum size #4 seve;<br>Generally low moisture content; |
| OVERBURDEN: | Topsoil; negligible |
| DEPTH OF ACTIVE LAYER: | 600 cm (20 ft.) |
| RESERVES: Proven | 3,000,000 cu.m (3,500,000 cu.yd.) |
| Probable | 5,000,000 cu.m (7,000,000 cu.yd.) |
| Possible | 15,000,000 cu.m (20,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Vertical excavation and buffer zones should be considered. Vegetation buffer zones be maintained between work areas to minimize erosion and thermal instability. |
| SITE DESCRIPTION: | Large sand dune complex located 1.6 km (1 mi.) north of Oscar Creek.<br><br>Vegetation: moderately dense spruce and birch on dunes; adjacent wetlands support stunted spruce and tamarack.<br><br>Drainage: good to southwest.<br><br>Thickness: 9 m (30 ft.)<br>Area: 1,100,000 sq.m (12,000,000 sq.ft.)<br>Perimeter: 5,000 m (17,000 ft.)<br><br>Map Reference: NTS 96E; Norman Wells<br><br>UTM Reference: Zone 9; 570,000E 7,260,000N |
| SITE INVESTIGATION: | 4 drill holes, 2 test pits. |
| ASSESSMENT: | Suitable for development. The source is located within the 28 km (17.5 mi.) pipeline corridor. Existing access is along the CNT pole line which |

traverses the site. Access along the adjacent Mackenzie River is by truck in the winter or by barge in the summer.

SITE BD8-27(2)

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| REFERENCE: | Site 288, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fill, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | Gravel and sand, fine to medium grained (GW-SW);<br>Maximum size to 3.8 cm (1.5 in.);<br>Medium to high moisture content; |
| OVERBURDEN: | Organic topsoil; 30 cm (1 ft.) |
| RESERVES: Proven | 1,500,000 cu.m (2,000,000 cu.yd.) |
| Probable | 7,000,000 cu.m (9,000,000 cu.yd.) |
| Possible | 15,000,000 cu.m (20,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Buffer zones be provided between borrow areas and Oscar Creek. |
| SITE DESCRIPTION: | Large remnant of a glaciofluvial delta immediately adjacent to the west banks of Oscar Creek.<br><br>Vegetation: dense spruce, birch and poplar in excess of 12 m (40 ft.) in height.<br><br>Drainage: good to east and southwest.<br><br>Thickness: 9.0 m (30 ft.)<br>Area: 1,6000,000 sq.m (17,000,000 sq.ft.)<br>Perimeter: 8,900 m (29,000 ft.)<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 575,300E 7,260,800N |
| SITE INVESTIGATION: | 7 drill holes. |
| ASSESSMENT: | Suitable for development. Material may be processed into concrete aggregates.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. No access presently exists except for seismic trails from Site 289 which |

cross Oscar Creek. Access to the pipeline is by truck in the winter across thermally sensitive terrain.

SITE BD8-28(R2)

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| REFERENCE: | Site 290, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class R-2, Talus slopes suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone and dolomite fragments and blocks in a silt and sand matrix. |
| OVERBURDEN: | negligible |
| RESERVES: Possible | Unlimited |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Doze talus slopes. |
| SITE DESCRIPTION: | Talus slopes located on the southwestern slopes of Mount Morrow.<br><br>Vegetation: none on talus slope; dense spruce, birch and occasional poplar on adjacent delta.<br><br>Drainage: good.<br><br>Map Reference: NTS 96E, Norman Wells.<br><br>UTM Reference: Zone 9; 575,500E 7,261,300N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | The site is suitable for development but adverse slope stability effects may result from excavation.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access to the pipeline is by truck in the winter possibly across the Norman Range. |

SITE BD8-29(2)

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|---|---|
| REFERENCE: | Site 289, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fills, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | Gravel and sand (GW-SW);<br>Maximum size 3.8 cm (1½ in.);<br>Low to medium moisture content;<br>Low ground ice content. |
| OVERBURDEN: | Topsoil; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.) |
| RESERVES: Proven | 600,000 cu.m (800,000 cu.yd.) |
| Probable | 2,000,000 cu.m (2,500,000 cu.yd.) |
| Possible | 3,500,000 cu.m (5,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Selective excavation may be required. Buffer zones and siltation controls required to protect the Oscar Creek ecology. |
| SITE DESCRIPTION: | Terrace-like remnant of a glaciofluvial delta located immediately adjacent to the east bank of Oscar Creek.<br><br>Vegetation: dense spruce, birch and poplar to 12 m (40 ft.) in height.<br><br>Drainage: good to the south and west.<br><br>Thickness: 7 m (16 ft.)<br>Area: 520,000 sq.m (5,600,000 sq.ft.)<br>Perimeter: 1,400 m (4,500 ft.)<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 576,600E 7,529,300N |
| SITE INVESTIGATION: | 3 drill holes. |
| ASSESSMENT: | The site is suitable for development. |

SITE BD8-29(2)

The source is located within the 28 km (17.5 mi.) pipeline corridor. Access from the CNT pole line is along an existing seismic cutline and new access trails. Access to the pipeline is by truck in the winter, possibly across the Norman Range.

Selected material may be processed into quality concrete aggregates.

SITE BD8-30(3)

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| REFERENCE: | Site 291, Norman Wells to Fort Good Hope Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Service "72", 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel (SM-GW). |
| OVERBURDEN: | Organic silt. |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| RESERVES: Possible | 2,500,000 cu.m (3,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Not applicable, since site has a high environmental sensitivity. |
| SITE DESCRIPTION: | Several shallow terraces bordering the active stream channel of Oscar Creek approximately 32 km (20 mi.).<br><br>Vegetation: dense spruce and poplar.<br><br>Drainage: into the stream channel.<br><br>Thickness: 3 m (10 ft.)<br>Area: 860,000 sq m (9,000,000 sq.ft.)<br>Perimeter: 16,000 m (54,000 ft.)<br><br>Map Reference: NTS 96E, Norman Wells.<br><br>UTM Reference: Zone 9; 575,000E 7,257,700N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Not suitable for development because the granular materials are located within or immediately adjacent to the stream channel.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter possibly across the Norman Range. |

SITE BD8-31(4)

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|---|---|
| REFERENCE: | Site 287, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, fine grained (SP);<br>Maximum size 1 cm (3/8 in.);<br>Low moisture content. |
| OVERBURDEN: | Topsoil; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | 6 m (20 ft.) |
| RESERVES: Proven | 450,000 cu.m (550,000 cu.yd.) |
| Probable | 850,000 cu.m (1,000,000 cu.yd.) |
| Possible | 1,500,000 cu.m (2,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Buffer zones should be maintained. Vertical excavation should be considered to minimize erosion of borrow area. |
| SITE DESCRIPTION: | Group of sand dunes, 5 km (3 mi.) south of Oscar Creek.<br><br>Vegetation: light to moderate growth of poplar and birch; stunted spruce and tamarack on adjacent wet lands.<br><br>Drainage: sand dunes surficially well drained to south and east.<br><br>Thickness: 12 m (40 ft.)<br>Area: 210,000 sq.m (2,300,000 sq.ft.)<br>Perimeter: 3,900 m (13,000 ft.)<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 577,800E 7,251,900N |
| SITE INVESTIGATION: | 6 drill holes. |
| ASSESSMENT: | Suitable for development. Source lies within the 28 km (17.5 mi.) pipeline corridor. Access is by existing CNT pole line right-of-way or |

the sands and gravels occur in scattered pockets with a variable gradation.

The source is located within the 28 km (17.5 mi.) pipeline corridor. Access to the site is along trail from CNT pole line. Access to the pipeline is by truck in the winter around the Brokenoff Mountain.

Access to the pipeline route may require the crossing of Hanna River.

SITE BD8-15(3)

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| REFERENCE: | Deposit (a), Area V DIAND Granular Resource Inventory; Sans Sault Repids NTS 106H, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 25,000,000 cu.m (35,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial deposit located on the east bank of the Mackenzie River adjacent to Carcajou Ridge. |
| | Thickness: 15 m (50 ft.)<br>Area: 9,300,000 sq m (100,000,000 sq ft.)<br>Perimeter: 10,000 m (34,000 ft.) |
| | Map Reference: NTS 106H, Sans Sault Rapids |
| | UTM Reference: Zone 9; 530,000E 7,280,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat thermokarst terrain. Access along the adjacent Mackenzie River is possible by truck in the winter or barge in the summer. Barging may require stock-piling because of seasonal land access. At least one major river crossing is required. |

SITE BD8-16(R1)

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|---|---|
| REFERENCE: | Site 301, Norman Wells and Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class R-1, Bedrock suitable for manufacturing various types of construction aggregates. |
| MATERIAL DESCRIPTION: | Limestone and dolomite with subordinate shale beds. |
| OVERBURDEN: | Topsoil; thin. |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | Unlimited |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. |
| SITE DESCRIPTION: | Bedrock ridges and talus slopes located approximately 5 km (3 mi.) southeast of Hanna River adjacent to Mount Morrow.<br><br>Vegetation: moderate growths of spruce and poplar.<br><br>Drainage: good.<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 558,400E 7,277,200N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Suitable for development. The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across thermally sensitive terrain. |

SITE BD8-17(4)

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|---|---|
| REFERENCE: | Site 300, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, fine, poorly graded (SP); |
| OVERBURDEN: | Topsoil; thin. |
| DEPTH OF ACTIVE LAYER: | 300 cm (10 ft.) |
| RESERVES: Possible | 4,000,000 cu.m (5,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| SITE DESCRIPTION: | A series of sand dunes located approximately 6 km (4 mi.) northwest of Elliot Creek on the north side of the Mackenzie River.<br><br>Vegetation: moderately dense spruce on sand dunes; spruce and tamarack on adjacent muskeg areas.<br><br>Drainage: good to adjacent terrain.<br><br>Thickness: 12 m (40 ft.)<br>Area: 620,000 sq.m (6,700,000 sq.ft.)<br>Perimeter: 18,000 m (60,000 ft.)<br><br>Map Reference: NTS 96E, Norman Wells.<br><br>UTM Reference: Zone 9; 557,500E 7,271,200N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Suitable for development. The source is located adjacent to the western boundary of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across thermally sensitive terrain. Access along the adjacent Mackenzie River is possible by truck in the winter or by barge in the summer. |

SITE BD8-18(4)

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|---|---|
| REFERENCE: | Site 299A, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, trace of silt (SP); |
| OVERBURDEN: | Topsoil; thin. |
| DEPTH OF ACTIVE LAYER: | 300 cm (10 ft.) |
| RESERVES: Possible | 700,000 cu.m (900,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| SITE DESCRIPTION: | A series of sand dunes located 4 km ( 2½ mi.) northwest of Elliot Creek and on the north-eastern side of the Mackenzie River.<br><br>Vegetation: dense spruce on dunes; spruce and tamarack on adjacent muskeg areas.<br><br>Drainage: good.<br><br>Thickness: 7.5 m (25 ft.)<br>Area: 180,000 sq.m (2,000,000 sq.ft.)<br>Perimeter: 3,900 m (13,000 ft.)<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 560,700E 7,270,700N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Suitable for development in the construction needs of local projects only.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corriodr. Existing access to the site is from the CNT pole line. |

SITE BD8-19(R1)

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|---|---|
| REFERENCE: | Site 298, Norman Wells and Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Studies "72", 1973 |
| MATERIAL QUALITY: | Class R-1, Bedrock suitable for the manufacturing of various construction aggregates. |
| MATERIAL DESCRIPTION: | Limestone and Shale. |
| OVERBURDEN: | Drift and screes; variable depth. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. |
| SITE DESCRIPTION: | A series of bedrock ridges located immediately northwest of Elliot Creek along the southwestern side of Mount Morrow.<br><br>Vegetation: moderate growths of spruce and poplar.<br><br>Drainage: good.<br><br>Map Reference: NTS 96E, Norman Wells.<br><br>UTM Reference: Zone 9; 563,000E 7,271,400N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Suitable for development. Source is located within the 28 km (17.5 mi.) pipeline corridor. Access is presently from the adjacent CNT pole line. Access to the pipeline is by truck in the winter across thermally sensitive terrain. |

SITE BD8-20(R2)

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|---|---|
| REFERENCE: | Site 297, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class R-2, Talus suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone and dolomite fragments and blocks in a silt and sand matrix. Partially cemented by snow and ice (rock glaciers). |
| OVERBURDEN: | None. |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Not applicable |
| SITE DESCRIPTION: | Talus slopes and localized rock glaciers which parallel the south slopes of Mount Thomas.<br><br>Vegetation: talus slopes are devoid of vegetation; adjacent muskeg supports moderately dense spruce and tamarack.<br><br>Drainage: good to south.<br><br>Thickness: 20 m (65 ft.)<br>Area: 730,000 sq m (7,800,000 sq.ft.)<br>Perimeter: 9,100 m (30,000 ft.)<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 566,200E 7,268,500N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Not suitable for development because of the adverse stability effects which may result from the removal of material. The high ice content also reduces the possibilities of developing these talus slopes.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the |

winter across thermally sensitive terrain.

SITE BD8-21(2)

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|---|---|
| REFERENCE: | Site 296, Norman Wells and Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973 |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fill, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | Gravel (GW);<br>Maximum size to 7.8 cm (3 in.);<br>Low moisture content. |
| OVERBURDEN: | Topsoil; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Proven | 2,500,000 cu.m (3,000,000 cu.yd.) |
| Probable | 10,000,000 cu.m (13,000,000 cu.yd.) |
| Possible | 15,000,000 cu.m (20,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze; vegetation buffer zones be retained between work areas and adjacent streams. |
| SITE DESCRIPTION: | Glaciofluvial delta located immediately adjacent to the south banks of Elliot Creek.<br><br>Vegetation: dense spruce, birch and poplar in excess of 90 ft in height.<br><br>Drainage: good, except for a few localized depressions with ponds.<br><br>Thickness: 5.5 m (18 ft.)<br>Area: 2,300,000 sq.m (25,000,000 sq.ft.)<br>Perimeter: 10,000 m (33,000 ft.)<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 565,900E 7,267,600N |
| SITE INVESTIGATION: | 7 drill holes. |
| ASSESSMENT: | Suitable for development. Better quality material may be recoverable by selective excavation and may be processed into concrete aggregates. |

SITE BD8-21(2)

The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is presently along a trail from CNT pole line. Access to the pipeline will be by truck in the winter across thermally sensitive terrain.

SITE BD8-22(4)

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|---|---|
| REFERENCE: | Site 299, Norman Wells and Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, fine grained (SP);<br>Medium moisture content; |
| OVERBURDEN: | Topsoil; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | 300 cm (10 ft.)+ |
| RESERVES: Proven | 10,000 cu.m (15,000 cu.yd.) |
| Probable | 1,000,000 cu.m (1,500,000 cu.yd.) |
| Possible | 1,500,000 cu.m (2,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Vertical excavation and buffer zones should be considered. |
| SITE DESCRIPTION: | A series of eroded sand dunes along the east bank of the Mackenzie River approximately 3 km (2 mi.) north of Elliot Creek. |
| | Vegetation: moderately dense spruce and birch on dunes; stunted spruce and tamarack on adjacent muskeg areas. |
| | Drainage: good to west into Mackenzie River. |
| | Thickness: 7.5m (25 ft.)<br>Area: 850,000 sq. m (9,100,000 sq.ft.)<br>Perimeter: 11,000 m (38,000 ft.) |
| | Map Reference: NTS 96E, Norman Wells |
| | UTM Reference: Zone 9; 564,300E 7,265,400N |
| SITE INVESTIGATION: | Suitable for development. The source is located within the 28 km (17.5 mi.) pipeline corridor. Existing access is possible from adjacent CNT pole line, across poorly drained thermally sensitive terrain. |
| | The Mackenzie River may be considered for access |

during the winter by trucks or by barge into the summer.

The material is generally only suitable for use in local projects.

SITE BD7-69(R2,4)

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|---|---|
| REFERENCE: | Borrow Pit B-172, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades.<br><br>Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Shale and till. |
| OVERBURDEN: | Till; 120 cm (4 ft.) to 210 cm (7 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE | |
| SITE DESCRIPTION: | Till overlying near surface bedrock, located approximately 8 km (5 mi.) east of the southern tip of Loon Lake.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 502,000E 7,381,000N |
| SITE INVESTIGATION: | 14 drill holes. |
| ASSESSMENT: | Not suitable for development due to the irregular bedrock surface and the limited area of shallow bedrock. However, it is recommended that further drilling be carried out in the vicinity of Pit B-172 to locate a more suitable area for development of a pit.<br><br>The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to gently sloping thermokarst terrain. |

SITE BD7-70(R2)

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|---|---|
| REFERENCE: | Borrow Pit B-169, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Till 30 cm (1 ft.) to 150 cm (5 ft.) |
| REFERVES: | Not determined |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Near surface bedrock located approximately 13km (8 mi.) ESE of the confluence of the Tieda and Mackenzie Rivers. |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 498,500E 7,386,500N |
| SITE INVESTIGATION: | 12 drill holes. |
| ASSESSMENT: | Suitable for development as a source of fair quality general fill. |
| | The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck over flat, thermokarst terrain. |

# SITE BD8-01(NG)

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|---|---|
| REFERENCE: | Site 313X, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material not suitable for construction purposes. |
| MATERIAL DESCRIPTION: | Sands and silts, limestone and shale fragments. |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| SITE DESCRIPTION: | Slope wash overlying glacial drift on the northern flanks of the Franklin Mountains, located approximately 8 km (5 mi.) north of Chick Lake.<br><br>Vegetation: moderately dense spruce and tamarack to 12 m (40 ft.) in height.<br><br>Drainage: good to the north.<br><br>Map Reference: NTS 106H, Sans Sault Rapids<br><br>UTM Reference: Zone 9; 533,000E 7,313,900N |
| SITE INVESTIGATION: | 7 drill holes. |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD8-02(R1)

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|---|---|
| REFERENCE: | Site 319, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class R-1, Bedrock suitable for manufacturing of various construction aggregates. |
| MATERIAL DESCRIPTION: | Limestone, weathered and fragmented at surface probably massive at depth. |
| OVERBURDEN: | Colluvium; 1.5 to 2.5m (5 ft. to 8ft.) |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. Overburden and fragmented surficial bedrock zone can be readily ripped. |
| SITE DESCRIPTION: | Numerous limestone bluffs and exposures located between Chick Lake and Snafu Lake.<br><br>Vegetation: sparse, but locally dense spruce, poplar and birch.<br><br>Drainage: fair to adjacent terrain.<br><br>Map Reference: NTS 106H, Sans Sault Rapids.<br><br>UTM Reference: Zone 9; 533,500E 7,312,500N |
| SITE INVESTIGATION: | 4 drill holes. |
| ASSESSMENT: | Suitable for development. The source is located adjacent to the western boundary of the 28 km (17.5 mi.) pipeline corridor. Access is across gently sloping or flat terrain. |

SITE BD8-03(NG)

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|---|---|
| REFERENCE: | Site 312, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction purposes. |
| MATERIAL DESCRIPTION: | Sand and silts, fragmented shales and limestone; High to very high moisture content. |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| SITE DESCRI TION: | Slope wash and reworked glacial till overlying glacial drift or bedrock. Located approximately 1.6 km (1 mi.) southwest of Chick Lake. |
| | Vegetation: dense spruce with tamarack. |
| | Drainage: good to the north into Chick Lake. |
| | Map Reference: NTS 106H, Sans Sault Rapids. |
| | UTM Reference: Zone 9; 537,000E 7,303,200N |
| SITE INVESTIGATION: | 7 drill holes. |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD8-04(3)

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|---|---|
| REFERENCE: | Site 309, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Limestone fragments, silt and sand matrix; Limestone fragments moderately well graded; Maximum size to 1.9 cm (3/4 in.); Low to moderate moisture content. |
| OVERBURDEN: | None. |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| RESERVES: Proven | 300,000 cu.m (400,000 cu.yd.) |
| Probable | 550,000 cu.m (750,000 cu.yd.) |
| Possible | 1,000,000 cu.m (1,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Extraction in late summer, fall or winter to avoid spring runoff conditions. Buffer zones should be maintained; active stream should be diverted. |
| SITE DESCRIPTION: | Two large alluvial cones on the northern flanks of the Gibson Ridge located approximately 3 km (2 mi.) south of Chick Lake.<br><br>Vegetation: a few scattered growths of stunted spruce and tamarack.<br><br>Drainage: good to the north.<br><br>Thickness: 9 m (30 ft.)<br>Area: 230,000 sq.m (2,500,000 sq.ft.)<br>Perimeter: 3,200 m (11,000 ft.)<br><br>Map Reference: NTS 106H, Sans Sault Rapids<br><br>UTM Reference: Zone 9; 539,000E 7,300,800N |
| SITE INVESTIGATION: | 5 drill holes. |
| ASSESSMENT: | Suitable for development. Limestone exposures and smaller cones and fans east and west of the |

source may also be suitable for development. The upstream erosional gullies may serve as a source of ground water. Access is by truck in the winter across thermally sensitive terrain. The source lies outside the 28 km (17.5 mi.) pipeline corridor.

SITE BD8-05(R1)

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|---|---|
| REFERENCE: | Site 311, Fort Good Hope, Community Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class R-1, Bedrock suitable for manufacturing various construction aggregates. |
| MATERIAL DESCRIPTION: | Limestone with thin siltstone laminations; Low moisture content. |
| OVERBURDEN: | Peat and silt; 2 m ( 6 ft.)<br>Weathered limestone; 1.5 m (5 ft.) to 3 m (10 ft.) |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. |
| SITE DESCRIPTION: | Limestone escarpment along the north flank of Gibson Ridge located approximately 2 km (1½ mi.) south of Chick Lake.<br><br>Vegetation: sparse growths of stunted spruce and occasional birch.<br><br>Drainage: good to the south.<br><br>Map Reference: NTS 106H, Sans Sault Rapids.<br><br>UTM Reference: Zone 9; 544,600E 7,300,000N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Suitable for development. Quarry locations be selected in areas where overburden is shallow. Residual soil and colluvium exhibits high ground ice contents.<br><br>The source is adjacent to the western boundary of the 28 km (17.5 mi.) pipeline corridor. Exisiting access is from the adjacent CNT pole line. Access to the pipeline is by truck in the winter over thermally sensitive terrain. |

SITE BD8-06(3)

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|---|---|
| REFERENCE: | Area I, DIAND Granular Resource Inventory; Sans Sault Rapids NTS 106H, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand, fine to medium grained. |
| RESERVES: Possible | 4,000,000 cu.m (5,500,000 cu.yd.) |
| SITE DESCRIPTION: | Eolian sand deposit located approximately 14 km (9 mi.) southwest of Chick Lake. |
| | Thickness: 6 m (20 ft.)<br>Area: 1,100,000 sq m (12,000,000 sq ft.)<br>Perimeter: 10,000 m (34,000 ft.) |
| | Map Reference: NTS 106H, Sans Sault Rapids |
| | UTM Reference: Zone 9; 526,500E 7,295,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat thermokarst terrain. |

SITE BD8-07(R2)

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|---|---|
| REFERENCE: | Site 310, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class R-2, Talus suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone and dolomite fragments cemented by snow and ice in rock glaciers. |
| OVERBURDEN: | None |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| RESERVES: | Not applicable |
| SITE DESCRIPTION: | Talus slopes, cones and rock glaciers located approximately 10 km (6 mi.) northwest of Hanna River and parallelling the southern rocky bluffs of the Gibson Ridge.<br><br>Vegetation: occasional cluster of very sparse and stunted spruce on talus and rock glaciers; dense spruce with some birch and tamarack on adjacent muskeg area.<br><br>Drainage: good to fair to the south.<br><br>Map Reference: NTS 106H, Sans Sault Rapids.<br><br>UTM Reference: Zone 9; 541,600E 7,295,200N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Not suitable for development because of very high ice content and difficult access. |

SITE BD8-08(NG)

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|---|---|
| REFERENCE: | Site 308X, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction purposes. |
| MATERIAL DESCRIPTION: | Silt. |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| SITE DESCRIPTION: | Outwash deposit on the northeastern flanks of the Gibson Ridge located 2 km (1½ mi.) south of Chick Lake. |
| | Vegetation: dense spruce with scattered birch and tamarack. |
| | Drainage: good to the east. |
| | Map Reference: NTS 96E, Norman Wells, |
| | UTM Reference: Zone 9; 548,500E 7,291,000N |
| SITE INVESTIGATION: | 3 drill holes |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD8-09(R1)

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|---|---|
| REFERENCE: | Site 307, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Service "72", 1973. |
| MATERIAL QUALITY: | Class R-1, Bedrock suitable for manufacturing various construction aggregates. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Variable; outcrop areas are bare. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. |
| SITE DESCRIPTION: | Southeastern segment of the Gibson Ridge immediately northwest of the gap between Gibson Ridge and Brokenoff Mountain.<br><br>Vegetation: spruce on northern and eastern slopes; bare on southern side.<br><br>Drainage: good<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 549,500E 7,298,600N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Suitable for development. The eastern most exposures should be considered for the best quarry locations.<br><br>The source is located adjacent to the western boundary of the 28 km (17.5mi.) pipeline corridor. Access is by truck in the winter across very thermally sensitive and steep, rugged terrain. |

SITE BD8-10(R2)

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|---|---|
| REFERENCE: | Site 305, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class R-2, Talus suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone and dolomite fragments cemented by snow and ice in the rock glaciers. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze only in talus cones. |
| SITE DESCRIPTION: | Talus cones, collapsed cones and rock glaciers along the southwestern slopes of the Franklin Mountains and located 3 km (1½ mi.) north of Hanna River.<br><br>Vegetation: occasional sparce and stunted spruce on talus slopes and rock glaciers; dense spruce with some birch and tamarack to 9 m (30 ft.) high on adjacent muskeg.<br><br>Drainage: good to southwest.<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 547,300E 7,289,200N |
| SITE INVESTIGATION: | 2 drill holes. |
| ASSESSMENT: | Suitable for development. The source is situated adjacent to the western boundary of the 28 km (17.5 mi.) pipeline corridor.<br><br>Existing access is along a winding seismic cutline from CNT pole line. Access to the pipeline is by truck in the winter across very thermally sensitive ground. Removal of material from the talus slopes by blasting should be restricted. |

SITE BD8-11(NG)

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|---|---|
| REFERENCE: | Site 306X, Norman Wells and Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction purposes.. |
| MATERIAL DESCRIPTION: | Slope wash and glacial till. |
| SITE DESCRIPTION: | Shallow slope wash and glacial tills overlying bedrock located approximately 5 km (3 mi.) southeast of Little Chick Lake.<br><br>Vegetation: dense growths of black spruce.<br><br>Drainage: good to south east.<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 551,200E 7,287,100N |
| SITE INVESTIGATION: | 2 drill holes. |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD8-12(R2)

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|---|---|
| REFERENCE: | Site 304, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class R-2, Talus suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone and dolomite fragments and blocks partially cemented by snow and ice as rock glaciers. |
| RESERVES: Possible | Unlimited. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze in talus slopes. Develop areas with low or no ground ice. |
| SITE DESCRIPTION: | Talus slopes and rock glaciers located along the southwestern slopes of Brokenoff Mountain.<br><br>Vegetation: none on talus slopes; moderately dense spruce and tamarack on adjacent muskeg terrain.<br><br>Drainage: good to the southwest.<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 554,700E 7,284,200N |
| SITE INVESTIGATION: | 2 drill holes. |
| ASSESSMENT: | Talus material is suitable for development. Additional investigations are required to locate areas with low or no ground ice.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Existing access to the site is from the adjacent CNT pole line. Access to the pipeline is by truck in the winter across thermally sensitive ground containing many shallow lakes and may require the crossing of Hanna River. |

SITE BD8-13(3)

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|---|---|
| REFERENCE: | Site 303, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel, variable gradation and silt content (SM-GM);<br>Maximum size greater than 7.8 cm (3 in.);<br>Low to medium moisture content; |
| OVERBURDEN: | Topsoil and silt; 60 cm to 360 cm (2 ft to 6 ft.) |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| RESERVES: Proven | 250,000 cu.m (350,000 cu.yd.) |
| Probable | 2,500,000 cu.m (3,500,000 cu.yd.) |
| Possible | 5,500,000 cu.m (6,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Selective excavation procedures are recommended. Commence excavation farthest from Hanna River and maintain a buffer zone of vegetation; siltation controls be exercised. |
| SITE DESCRIPTION: | Kame terrace located at the base of the southern escarpment of the Franklin Mountains.<br><br>Vegetation: dense spruce, birch, poplar and willow ranging to height in excess of 12 m (40 ft.)<br><br>Drainage: good to the southwest into the Hanna river watershed.<br><br>Thickness: 6 m (20 ft.)<br>Area: 860,000 sq.m (9,300,000 sq.ft.)<br>Perimeter: 4,100 m (14,000 ft.)<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 555,000E 7,283,400N |
| SITE INVESTIGATION: | 4 drill holes. |
| ASSESSMENT: | Suitable for development, although granular |

materials occur in scattered pockets which are extremely variable in quality.

The source is located within the 28 km (17.5 mi.) pipeline corridor. Existing access to the site consists of trail from CNT pole line. Access to the pipeline route is by truck in the winter across thermally sensitive terrain.

SITE BD8-14(3)

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|---|---|
| REFERENCE: | Site 302, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel, variable gradation and silt content (SM-GM);<br>Maximum size greater than 7.8 cm (3 in.);<br>Medium to low moisture content; |
| OVERBURDEN: | Topsoil and silt; 60 cm to 210 cm (2 ft to 7 ft.) |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| RESERVES: Proven | 1,500,000 cu.m (2,000,000 cu.yd.) |
| Probable | 9,000,000 cu.m (12,000,000 cu.yd.) |
| Possible | 13,000,000 cu.m (17,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Selective excavation should be employed; excavate farthest from Hanna River initially and maintain a buffer zone. Siltation controls should be exercised. |
| SITE DESCRIPTION: | Effaced and eroded kame terraces located at the base of the southern escarpment of the Franklin Mountains.<br><br>Vegetation: moderately dense spruce, birch, poplar and willow in excess of 12 m (40 ft.)<br><br>Drainage: good to the southwest into the Hanna River watershed.<br><br>Thickness: 4.5 m (15 ft.)<br>Area: 2,900,000 sq.m (31,000,000 sq.ft.)<br>Perimeter: 10,000 m (33,000 ft.)<br><br>Map Reference: NTS 96E, Norman Wells<br><br>UTM Reference: Zone 9; 557,500E 7,282,200N |
| SITE INVESTIGATION: | 8 drill holes. |
| ASSESSMENT: | The source is suitable for development although |

SITE BD7-66(R2)

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|---|---|
| REFERENCE: | Site 1010A, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades. |
| MATERIAL DESCRIPTION: | Limestone. |
| OVERBURDEN: | Clay and silt; 0 to 1.2 m (4 ft.) |
| DEPTH OF ACTIVE LAYER: | 120 cm (4 ft.)+ |
| RESERVES: Possible | Unlimited |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Quarry and blasting. Siltation controls maybe required. |
| SITE DESCRIPTION: | Bedrock source located 1.6 km (1 mi.) to 5.6 km (3.5 mi.) north of Hare Indian River and 40 km east of the confluence of the Hare Indian and Mackenzie Rivers. |
| | Vegetation: Not determined. |
| | Drainage: good. |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 549,500E 7,375,500N |
| SITE INVESTIGATION: | 1 drill hole, 1 test pit. |
| ASSESSMENT: | Not suitable for development because of high environmental sensitivity. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across relatively flat terrain although one major stream crossing may be required to reach the proposed pipeline route. |
| | The site is within an important woodland caribou winter range and marten abundance area. |

SITE BD7-67(3)

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|---|---|
| REFERENCE: | Site 1011, Volume II, Stage III DIAND Granular Materials Inventory; EBA Engineering Consultants, 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel, trace of silt (SP) to (GP-GW);<br>Material is highly variable;<br>Maximum size to 7.8 cm (3 in.);<br>Low moisture content. |
| OVERBURDEN: | Peat and silt; 15 cm (½ ft.) |
| DEPTH OF ACTIVE LAYER: | 230 cm (7.5 ft.)+ |
| RESERVES: Proven | 150,000 cu.m ( 200,000 cu.yd.) |
| Probable | 2,500,000 cu.m ( 3,500,000 cu.yd.) |
| Possible | 7,000,000 cu.m (10,000,000 culyd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| SITE DESCRIPTION: | Actively eroding, high river terrace on the north bank of Hare Indian River, 45 km (28 mi.) upstream from the Mackenzie River.<br><br>Vegetation: spruce and aspen; dwarf shrubs and grasses on dry slopes; dense alder and willow along water courses.<br><br>Drainage: good.<br><br>Thickness: 18 m (60 ft.)<br>Area: 1,700,000 sq.m (18,000 sq.ft.)<br>Perimeter: 7,900 m (26,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 557,000E 7,374,500N |
| SITE INVESTIGATION: | 2 drill holes, 2 test pits, 1 surface exposure. |
| ASSESSMENT: | Suitable for development although long haul distances are required to location of proposed facilities.<br><br>The source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat terrain, although |

one major river crossing may be required to reach the proposed pipeline route.

The site area is used trapping by the natives of Fort Good Hope.

# SITE BD7-68(R2,4)

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| REFERENCE: | Borrow Pit B-189, DPW Geotechnical Investigation Mile 725 to Mile 936, Mackenzie Highway, 1975. |
| MATERIAL QUALITY: | Class R-2, Bedrock suitable for fair quality general fill in sub-grades.<br><br>Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Shale and till. |
| OVERBURDEN: | Till; 180 cm (6 ft.) to 240 cm (8 ft.) |
| RESERVES: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| SITE DESCRIPTION: | Till overlying near surface bedrock, located approximately 18 km (11 mi.) north of Fort Good Hope.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 517,500E 7,366,500N |
| SITE INVESTIGATION: | 11 drill holes. |
| ASSESSMENT: | Suitable for development as a source of bedrock suitable for fair quality general fill or a source of till suitable for marginal fill.<br><br>The source is locate adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to sloping thermokarst terrain. |

SITE BD7-43(4)

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| REFERENCE: | Site FGH5, Fort Good Hope, Community Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973 |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, some gravel (SP-SM). |
| OVERBURDEN: | Organic topsoil; 30 cm (1 ft.) |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | 300,000 cu.m (400,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Develop only one or two ridges at a time. Buffer zones of vegetation should be maintained between work areas. |
| SITE DESCRIPTION: | Four small, seperate esker ridges approximately 15 km (9 mi.) northwest of Fort Good Hope.<br><br>Vegetation: sparse growth of spruce, birch and poplar.<br><br>Drainage: ridges well drained, adjacent terrain very poorly drained.<br><br>Thickness: 3 m (10 ft.)<br>Area: 92,000 sq.m (1,000,000 sq.ft.)<br>Perimeter: 3,400 m (11,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 517,800E 7,361,900N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Suitable for development in the use of local projects only.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. No existing access to the site although CNT pole line is within 3/4 km (½ mi.). Access to the pipeline is by truck in the winter across flat poorly drained terrain. |

SITE BD7-44(4)

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| REFERENCE: | Deposit (h), Area I DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 4, Fair quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Silt, clay and sand, unsorted, (till); |
| RESERVES: Possible | 150,000 cu.m (200,000 cu.yd.) |
| SITE DESCRIPTION: | Morainal till deposit located approximately 19 km (12 mi.) northeast of Fort Good Hope. |
| | Thickness: 3.5 m (12 ft.)<br>Area: 4,600,000 sq m (49,000,000 sq ft.)<br>Perimeter: 12,000 m (40,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 535,500E 7,358,000N |
| ASSESSMENT: | Suitable for development as a source of very marginal fill. |
| | The source is located near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat, slightly thermokarst terrain. |

SITE BD7-45(3)

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| REFERENCE: | Deposit (a), Area I DIAND Granular Resource Inventory; Fort Good Hope, NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 20,000,000 cu.m (25,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial plain located approximately 24 km (15 mi.) east of Fort Good Hope. |
| | Thickness: 7.5 m (25 ft.)<br>Area: 3,000,000 sq m (32,000,000 sq ft.)<br>Perimeter: 12,000 m (40,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 541,000E 7,355,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat to sloping terrain exhibiting thermokarst features. |

SITE BD7-46(4)

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| REFERENCE: | Deposit (c), Area I DIAND Granular Resource Inventory; Fort Good Hope, NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, fine to medium grained. |
| RESERVES: Possible | 3,000,000 cu.m (4,000,000 cu.yd.) |
| SITE DESCRIPTION: | Eolian sand deposit located approximately 14 km (9 mi.) east of Fort Good Hope. |
| | Thickness: 7.5 m (25 ft.)<br>Area: 2,500,000 sq m (26,000,000 sq ft.)<br>Perimeter: 14,000 m (45,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 531,000E 7,355,500N |
| ASSESSMENT: | Suitable for development. |
| | The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over flat to gently sloping terrain characterized by numerous lakes and streams. |

SITE BD7-47(4)

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| REFERENCE: | Deposit (e),Area I DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Gravel, coarse grained, some coarse sand; |
| RESERVES: Possible | 2,500,000 cu.m (3,500,000 cu.yd.) |
| SITE DESCRIPTION: | Hummocky, ridged glaciofluvial deposit located approximately 14 km (9 mi.) east of Fort Good Hope.<br><br>Thickness: 7.5 m (25 ft.)<br>Area: 420,000 sq m (4,500,000 sq ft.)<br>Perimeter: 2,700 m (9,000 ft.) |
| ASSESSMENT: | Suitable for development.<br><br>The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across gently sloping terrain charcaterized by numerous lakes and streams. |

SITE BD7-48(4)

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| REFERENCE: | Site FGH9, Fort Good Hope, Community Study Area, Stage I DIAND Granular Material Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, trace silt (SP); |
| OVERBURDEN: | Topsoil and silt; 30 cm (1 ft.)+ |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| RESERVES: Possible | 5,000,000 cu.m (6,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| SITE DESCRIPTION: | Glaciofluvial plain, pitted with localized depressions. Located approximately 14 km (9 mi.) northeast of Fort Good Hope.<br><br>Vegetation: dense spruce with occasional birch.<br><br>Drainage: Fair to the north.<br><br>Thickness: 3 m (10 ft.)<br>Area: 880,000 sq m (11,000,000 sq ft.)<br>Perimeter: 9,800 m (32,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 528,400E 7,355,000N |
| SITE INVESTIGATION: | None. |
| ASSESSMENT: | Suitable for development as a source of material for local construction projects.<br><br>The source lies within the 28 km (17.5 mi.) pipeline corridor. Existing access consists of numerous seismic lines. Access to the pipeline is by truck in the winter over thermally sensitive terrain. |

SITE BD7-49(4)

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| REFERENCE: | Deposit (c), Area I DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, fine to medium grained. |
| RESERVES: Possible | 25,000,000 cu.m (35,000,000 cu.yd.) |
| SITE DESCRIPTION: | Eolian sand deposit located immediately east of Fort Good Hope on the south bank of the Hare Indian River. |
| | Thickness: 7.5 m (25 ft.)<br>Area: 22,000,000 sq m (240,000,000 sq ft.)<br>Perimeter: 52,000 m (170,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 523,000E 7,354,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter over terrain characterized by numerous lakes and streams. |

SITE BD7-50(2)

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| REFERENCES: | Site FGH-1, Fort Good Hope, Community Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fills, base and surface course aggregates. |
| MATERIAL DESCRIPTION: | Gravel, some sand (GW);<br>Maximum size to 5 cm (2 in.);<br>Low to medium moisture content. |
| OVERBURDEN: | Organic top soil and silt; 0 to 2 m (6 ft.) |
| DEPTH OF ACTIVE LAYER: | 105 cm (3.5 ft.) |
| RESERVES: Proven | 1,500,000 cu.m (2,000,000 cu.yd.) |
| Probable | 2,000,000 cu.m (2,500,000 cu.yd.) |
| Possible | 5,500,000 cu.m (7,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Siltation controls should be maintained. |
| SITE DESCRIPTION: | Esker ridge located 5 km (3 mi.) northeast of Fort Good Hope.<br><br>Vegetation: moderate growth of spruce and birch 10 m to 16 m (30 ft. to 50 ft.)<br><br>Drainage: good.<br><br>Thickness: 3 m (10 ft.)<br>Area: 610,000 sq.m (6,600,00 sq.ft.)<br>Perimeter: 7,300 m (24,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 523,100E 7,352,100N |
| SITE INVESTIGATION: | 10 drill holes, 2 test pits. |
| ASSESSMENT: | Suitable for development. Selected areas in the deposit may contain material suitable for processing into concrete aggregates.<br><br>The source is located partially within the 28 km (17.5 mi.) pipeline corridor. Access is by truck |

in the winter across flat, poorly drained glacial terrain.

SITE BD7-51(4)

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| REFERENCE: | Deposit (b), Area I DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable for marginal fill only. |
| MATERIAL DESCRIPTION: | Sand. |
| RESERVES: Possible | 200,000,000 cu.m (250,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciofluvial plain located approximately 3 km (2 mi.) east of Fort Good Hope. |
| | Thickness: 7.5 m (25 ft.)<br>Area: 30,000,000 sq m (320,000,000 sq ft.)<br>Perimeter: 20,000 m (65,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 522,000E 7,349,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located partially inside the 28 km (17.5 mi.) pipeline corridor. |
| | Access is by truck in the winter across gently sloping, fairly drained terrain and across flat, poorly drained terrain characterized by numerous small lakes. |

SITE BD7-52(3)

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| REFERENCE: | Site FGH3, Fort Good Hope, Community Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Gravel, some sand (GW);<br>Maximum size greater than 7.8 cm (3 in.). |
| OVERBURDEN: | Organic topsoil; 0 to 45 cm (0 to 1.5 ft.) |
| DEPTH OF ACTIVE LAYER: | 90 cm (3 ft.)+ |
| RESERVES: Proven | 650,000 cu.m (850,000 cu.yd.) |
| Probable | 800,000 cu.m (1,000,000 cu.yd.) |
| Possible | 10,000,000 cu.m (15,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| SITE DESCRIPTION: | Glacial outwash terrace located 2.4 km (1½ mi.) northwest of Fort Good Hope.<br><br>Vegetation: moderate growth of spruce up to 6 m (20 ft.) high<br><br>Drainage: fair to the north into the Hare Indian River.<br><br>Thickness: 12 m (40 ft.)<br>Area: 1,000,000 sq.m (11,000,000 sq.ft.)<br>Perimeter: 5,000 m (17,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 518,100E 7,352,400N |
| SITE INVESTIGATION: | 5 test pits. |
| ASSESSMENT: | Suitable for development although better quality material sources with better access to the pipeline route are available.<br><br>The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access to the site is along the CNT pole line and seismic cut lines. Access to the pipeline is across flat, poorly drained terrain. |

SITE BD7-53(2)

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| REFERENCE: | Site FGH2, Fort Good Hope, Comunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973 |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fill, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | Gravel, some sand (GW);<br>Maximum size greater than 7.8 cm (3 in.);<br>Low moisture content. |
| OVERBURDEN: | Organic topsoil; 0 to 15 cm (½ ft.) |
| DEPTH OF ACTIVE LAYER: | 140 cm (4.5 ft.) |
| RESERVES: Proven | 400,000 cu.m (500,000 cu.yd.) |
| Probable | 2,500,000 cu.m (3,500,000 cu.yd.) |
| Possible | 25,000,000 cu.m (35,000,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Siltation controls required. |
| SITE DESCRIPTION: | Kame - esker complex which is part of an old glaciofluvial delta less than 1.5 km (1 mi.) north of Fort Good Hope.<br><br>Vegetation: spruce 10 m to 13 m (30 ft. to 40 ft.)<br><br>Drainage: good.<br><br>Thickness: 12 m (40 ft.)<br>Area: 2,200,000 sq.m (23,000,000 sq. ft.)<br>Perimeter: 8,200 (27,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 519,000E 7,351,400N |
| SITE INVESTIGATION: | 4 test pits. |
| ASSESSMENT: | Suitable for development. An existing borrow pit is presently in operation at the south end of the site to provide granular material for local requirements. The material is suitable for processing into concrete aggregate.<br><br>The source is located outside the 28 km (17.5 mi.) |

pipeline corridor. Access to the site from Fort Good Hope is by an existing all weather road. Access towards the pipeline is by truck in the winter across flat, poorly drained terrain.

SITE BD7-54(3)

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| REFERENCE: | Site FGH4, Fort Good Hope, Community Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Gravel, little sand (GW); Maximum size 7.6 cm (3 in.). |
| OVERBURDEN: | Peat and silt; 0 to 45 cm (0 to 1.5 in.) |
| DEPTH OF ACTIVE LAYER: | 120 cm (4 ft.)+ |
| RESERVES: Proven | 55,000 cu.m (75,000 cu.yd.) |
| Probable | 550,000 cu.m (750,000 cu.yd.) |
| Possible | 7,500,000 cu.m (9,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| SITE DESCRIPTION: | Glacial outwash plain located approximately 1.6 km (1 mi.) north of Fort Good Hope.<br><br>Vegetation: dense spruce with occasional birch and poplar.<br><br>Drainage: fair to the north.<br><br>Thickness: 12 m (40 ft.)<br>Area: 600,000 sq.m (6,500,000 sq. ft.)<br>Perimeter: 3,200m (11,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 518,000E 7,349,800N |
| SITE INVESTIGATION: | 3 test pits. |
| ASSESSMENT: | Material is suitable for development, however, better quality material is available in other sites with better access.<br><br>The source is situated outside the 28 km (17.5 mi.) pipeline corridor. The Fort Good Hope airport is located on this site. Access to the pipeline is by truck in the winter across flat, poorly drained terrain. |

SITE BD7-55(3)

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| REFERENCE: | Site FGH8, Fort Good Hope, Community Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand and gravel (SW-GW); |
| OBERBURDEN: | Organic topsoil 30 cm (1 ft.)+ |
| DEPTH OF ACTIVE LAYER: | Not determined. |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| SITE DESCRIPTION: | Glaciofluvial outwash plain located approximately ½ km (¼ mi.) southwest of Fort Good Hope.<br><br>Vegetation: dense spruce and birch in north; sparse in south.<br><br>Drainage: good to the west.<br><br>Thickness: 12 m (40 ft.)<br>Area: 1,300,000 sq.m (14,000,000 sq.ft.)<br>Perimeter: 5,300 m (17,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 517,500E 7,348,000N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Suitable for development although additional field work is required to delineate areas of exploitable material.<br><br>The source is situated outside the 28 km (17.5 mi.) pipeline corridor. Numerous seismic lines and forest trails intersect the site and the winter road crosses the north end of the site. Direct access to the pipeline is by truck in the winter across flat thermally sensitive terrain. |

SITE BD7-56(3)

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| REFERENCE: | DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I,Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 1,000,000 cu.m (1,500,000 cu.yd.) |
| SITE DESCRIPTION: | Alluvial fan deposit located on the east bank of the Mackenzie River located approximately 2.5 km (1.5 mi.) downstream from Fort Good Hope. |
| | Thickness: 7.5 m (25 ft.)<br>Area: 350,000 sq m (3,800,000 sq ft.)<br>Perimeter: 3,600 m (12,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 515,000E 7,346,000N |
| ASSESSMENT: | May be suitable for development. However, site is located adjacent to a small stream channel and development may require relocation of the stream. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat terrain, exhibiting slight thermokarst features. |

SITE BD7-57(4)

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| REFERENCE: | Deposit (b), Area II DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, coarse grained. |
| RESERVES: Possible | Not determined. |
| SITE DESCRIPTION: | Colluvial complex located within the geographical area known as The Ramparts, approximately 10 km (6 mi.) east of Fort Good Hope. |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 502,000E 7,343,000N |
| ASSESSMENT: | Not suitable for development because of narrow dimensions of deposit and high environmental sensitivity. The source is located within the perigrine falcon nesting area. |
| | The source is located will outside the 28 km (17.5mi.) pipeline corridor. |

SITE BD7-58(2)

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|---|---|
| REFERENCE: | Deposit (c), Area II DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fill, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 1,500,000 cu.m (2,000,000 cu.yd.) |
| SITE DESCRIPTION: | Glaciolacustrine deposit on the west bank of the Mackenzie Highway, located approximately 11 km (7 mi.) west of Fort Good Hope.<br><br>Thickness: 3.5 m (12 ft.)<br>Area: 520,000 sq m (5,600,000 sq ft.)<br>Perimeter: 10,000 m (33,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 504,000E 7,347,000N |
| ASSESSMENT: | May not be suitable for development because source is located well outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across flat, thermokarst terrain. Access also includes crossing the Mackenzie River either by truck in the winter or by barge in the summer. A barging operation may require stockpiling because of seasonal land access.<br><br>The source is located within the peregrine falcon nesting area. |

SITE BD7-59(4)

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|---|---|
| REFERENCE: | Site FGH7, Fort Good Hope, Community Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, little silt (SP); |
| OVERBURDEN: | Topsoil; 15 cm (½ ft.) |
| DEPTH OF ACTIVE LAYER: | Not determined |
| RESERVES: Possible | 100,000 cu.m (150,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| SITE DESCRIPTION: | Long narrow esker ridge with a very low vertical profile located approximately 11 km (7 mi.) east of Fort Good Hope.<br><br>Vegetation: moderate growths of spruce with occasional birch.<br><br>Drainage: fair to the north.<br><br>Thickness: 1 m (3 ft.)<br>Area: 100,000 sq.m (1,400,000 sq.ft.)<br>Perimeter: 3,900 m (13,000 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 525,100E 7,342,200N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Suitable as a source of material for local construction use only. Other sites with better quality material are available.<br><br>The source is located adjacent to the western boundary of the 28 km (17.5 mi.) pipeline corridor. Existing access is by seismic cut lines located within 3/4 km (1/2 mi.) of the site. Access to the pipeline is by truck in the winter across thermally sensitive terrain. |

SITE BD7-60(4)

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| REFERENCE: | Site 316, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand,some silt, little gravel (SM-GM); |
| OVERBURDEN: | Topsoil and peat; |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| RESERVES: Possible | 20,000 cu.m (25,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| SITE DESCRIPTION: | Small segment of glaciofluvial outwash located immediately south of Tsintu River, approximately 22 km (14 mi.) southeast of Fort Good Hope.<br><br>Vegetation: spruce and willows.<br><br>Drainage: fair to adjacent terrain<br><br>Thickness: 3 m (10 ft.)<br>Area: 7,000 sq.m (75,000 sq.ft.)<br>Perimeter: 370 m (1,200 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 535,000E 7,337,200N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Unsuitable for development as only small quantity of marginal quality material is available.<br><br>The source is located near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across thermally sensitive terrain covered with numerous lakes and bogs. |

SITE BD7-61(4)

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| REFERENCE: | Site 317, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality material suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand, some gravel, silty (SM-GM); Gravel occurs in scattered pockets. |
| OVERBURDEN: | Topsoil and peat. |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| RESERVES: Possible | 40,000 cu.m (60,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| SITE DESCRIPTION: | Cresent shaped glaciofluvial outwash deposit located approximately 24 km (15 mi.) southeast of Fort Good Hope.<br><br>Vegetation: moderate growths of spruce and willow.<br><br>Drainage: good to adjacent area.<br><br>Thickness: 4 m (13 ft.)<br>Area: 11,000 sq.m (120,000 sq.ft.)<br>Perimeter: 425 m (1,400 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 536,100E 7,336,300N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Unsuitable for development as only a small quantity of marginal quality material is available.<br><br>The source is located near the center of the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across thermally sensitive terrain covered by numerous lakes and bogs. |

SITE BD7-62(2)

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| REFERENCE: | Site 315 Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 2, Good quality material suitable for embankment fills, base and surface course aggregate. |
| MATERIAL DESCRIPTION: | Gravel, some sand, trace to little silt (GM-GW); Maximum size greater than 7.8 cm (3 in.); Low moisture content. |
| OVERBURDEN: | Peat and silt .75 m to 1.4m (2.5 ft to 4.5 ft.) |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| RESERVES: Proven | 25,000 cu.m (35,000 cu.yd.) |
| Probable | 500,000 cu.m (650,000 cu.yd.) |
| Possible | 1,000,000 cu.m (1,500,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. Excavate from eastern extremities first where greater depth of good quality material are indicated. |
| SITE DESCRIPTION: | Long narrow chain of discontinuous esker ridges located approximately 6 km (4 mi.) northeast of Snafu Lake. |
| | Vegetation: spruce and willows to 3 m (10 ft.) |
| | Drainage: good.<br>Area: 820,000 sq.m (8,800,000 sq.ft.)<br>Perimeter: 11,000 m (37,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 531,100E 7,326,600N |
| SITE INVESTIGATION: | 5 drill holes |
| ASSESSMENT : | Suitable for development. |
| | The source is located within the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across thermally sensitive terrain and around numerous muskeg bogs which may remain partially unfrozen during the winter. |

SITE BD7-63(4)

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| REFERENCE: | Site 318, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class 4, Poor quality materials suitable only for marginal fill. |
| MATERIAL DESCRIPTION: | Sand; little gravel, silty (SM-GM); |
| OVERBURDEN: | Top soil; shallow. |
| DEPTH OF ACTIVE LAYER: | 30 cm (1 ft.)+ |
| RESERVES: Possible | 25,000 cu.m (30,000 cu.yd.) |
| MINIMUM HAUL DISTANCE: | |
| METHOD OF EXTRACTION: | Rip and doze. |
| SITE DESCRIPTION: | Narrow esker ridge located 29 km (18 mi.).<br><br>Vegetation: moderate growth of spruce and occasional birch.<br><br>Drainage: fair to adjacent terrain.<br><br>Thickness: 2.5 m (8 ft.)<br>Area: 75,000 sq. m (810,000 sq.ft.)<br>Perimeter: 1,800 m (6,300 ft.)<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 522,500E 7,333,900N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Unsuitable for development because only a small quantity of low quality material is available.<br><br>The source is adjacent to the western border of the 28 km (17.5 mi.) pipeline corridor. Access is across poorly drained, thermally sensitive terrain. |

SITE BD7-64(4)

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| REFERENCE: | Site 314, Norman Wells to Fort Good Hope, Intercommunity Study Area, Stage I DIAND Granular Materials Inventory; PEMCAN Services "72", 1973. |
| MATERIAL QUALITY: | Class NG, Non-granular material unsuitable for construction. |
| MATERIAL DESCRIPTION: | Silt, sandy and clayey, some sand (ML-SM); High ground ice content. |
| SITE DESCRIPTION: | Snafu Creek alluvial flood plain, located approximately 3 km (2 mi.) west of Snafu Lake.<br><br>Vegetation: moderately dense spruce along stream channels; sparsely forested elsewhere.<br><br>Drainage: poor to fair into stream channel.<br><br>Map Reference: NTS 106-I, Fort Good Hope<br><br>UTM Reference: Zone 9; 520,000E 7,320,000N |
| SITE INVESTIGATION: | None |
| ASSESSMENT: | Material is not suitable for construction purposes. |

SITE BD7-65(3)

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| REFERENCE: | Deposit (c), Area IX, DIAND Granular Resource Inventory; Fort Good Hope NTS 106-I, Geological Survey of Canada, 1972. |
| MATERIAL QUALITY: | Class 3, Fair quality material suitable for general fill. |
| MATERIAL DESCRIPTION: | Sand and gravel. |
| RESERVES: Possible | 4,500,000 cu.m (6,000,000 cu.yd.) |
| SITE DESCRIPTION: | Ridged glaciofluvial deposit located 20 km (13 mi.) southeast of Rorey Lake. |
| | Thickness: 4.5 m (15 ft.)<br>Area: 1,400,000 sq m (15,000,000 sq ft.)<br>Perimeter: 5,500 m (18,000 ft.) |
| | Map Reference: NTS 106-I, Fort Good Hope |
| | UTM Reference: Zone 9; 542,000E 7,400,000N |
| ASSESSMENT: | Suitable for development. |
| | The source is located outside the 28 km (17.5 mi.) pipeline corridor. Access is by truck in the winter across gently sloping, fairly drained terrain and across flat, poorly drained terrain characterized by numerous small lakes. |