

DATA ON SAND AND GRAVEL RESOURCE LOCATIONS IN THE NORTHWEST TERRITORIES, CANADA

Phase II - Digital Capture of J.D. Mollard and Associates Northwest Territories Granular Reports

Prepared for:

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PHASE II – DIGITAL CAPTURE OF J.D. MOLLARD AND ASSOCIATES NORTHWEST TERRITORIES GRANULAR REPORTS

BACKGROUND

Granular material, specifically sand and gravel suitable for use in construction, are a necessary component of nearly all industrial, commercial and public infrastructure activities. In particular, large quantities of granular material are needed for activities in the petroleum exploration and development field (building and maintaining access roads, pipelines, supporting infrastructure sites, *etc.*). Unfortunately, sizeable deposits of this resource may be scarce in many parts of the Northwest Territories (NWT). Without adequate supplies of granular material commercial, industrial and community development plans in the NWT may be in jeopardy. It is essential, then, that government, community and private industry planners have access to accurate, detailed, comprehensive information about granular material resources in the NWT for planning, environmental assessment, regulatory and management purposes.

One such source of granular material information is the Northern Granular Resources Bibliographic (NGRB) database, available online at <http://www.aina.ucalgary.ca/ngrb>. The database attempts to provide a comprehensive bibliographic listing of granular material exploration, engineering and geological reports that contain information on granular material resources in the Northwest Territories, Yukon and Nunavut. Electronic copies, in Adobe PDF format, are available for many of the reports listed in the database. The NGRB database is maintained by the Arctic Institute of North America (University of Calgary, Alberta), for the Land and Water Management Directorate of Indian and Northern Affairs Canada (INAC), and is accessible free of charge to the public at the above internet address.

In November of 2004 J.D. Mollard and Associates Limited (JDMA) was contracted by INAC to provide information on all granular material resource exploration and related engineering or geological projects carried out by JDMA within the Northwest Territories, for inclusion in the NGRB database. In August of 2005 JDMA submitted a final report to INAC entitled “*Name and Status of Reports Prepared by J.D. Mollard and Associates Limited between*

1956 and 2005 – Data on Sand and Gravel Locations lying within the 2005 Boundaries of the Northwest Territories, Canada.” The report listed fifty-four (54) JDMA consulting reports that had been located in company archives and which pertained to granular material in the NWT. Eleven (11) of these reports, at that time, were already listed in the NGR database. In addition, the JDMA report listed eighty-nine (89) more consulting projects that were known to have been completed by JDMA but for which, at that time, no copy of a final project report could be found in company archives.

One of the recommendations of the 2005 JDMA report was for INAC to fund an additional study for JDMA to, among other tasks, conduct further searches of its company storage areas in an attempt to locate many of the 89 additional granular material reports believed to be in existence. In March, 2006, INAC contracted JDMA to carry out this and other tasks in a second study. This report details the results of this second study, conducted by JDMA staff during 2006. Because many of the tasks of this second project were, in essence, continuations of tasks begun in the 2005 JDMA report, this report is regarded as ‘Phase II.’ The original 2005 JDMA report is now regarded as ‘Phase I’ of this project.

OBJECTIVES

As detailed in the Scope of Work document sent to JDMA by INAC representative Robert Gowan, P.Geol., in March 2006, this project had six (6) main objectives:

- 1) to review lists of granular resource studies undertaken by J.D. Mollard and Associates Limited in the NWT and records currently shown in the Northern Granular Resources bibliographic database;
- 2) to conduct physical searches of all company archives / storage areas and retrieve all available reports not processed in the previous (*i.e.*, 2005) study, and summarize as per the previous work;
- 3) to continue to seek approval for any reports prepared for private clients to release to the public domain all reports retrieved in the above physical search, which pertain to granular materials on or along the Mackenzie Valley Highway or Mackenzie Valley Pipeline;
- 4) to, where the report is already in the public domain or where approval for its release has been obtained, prepare black and white, greyscale or colour scans (as appropriate) to produce a digital version of the original report;
- 5) to examine digital copies of any digital versions of reports already included in the NGRB for completeness, accuracy and quality of images, and replace or correct any inadequacies noted; and
- 6) to prepare a brief final report summarizing the work completed, results obtained, and recommendations.

The following sections of the report will follow the format set out by the six objectives as detailed in the March 2006 Scope of Work document.

SUMMARY REPORT ON WORK ACHIEVED

OBJECTIVE 1 *Review lists of granular resources studies undertaken by J.D. Mollard and Associates Limited in the Northwest Territories and records currently shown in the Northern Granular Resources Bibliography*

As of August 2006 there were nineteen (19) JDMA consulting reports listed in the NGRB database that pertain to granular material in the Northwest Territories. The reports were located by entering Mollard* as the keyword in the 'author' search field of the NGRB search engine. These nineteen reports are listed in Table 1, along with report year, author(s), and whether or not a paper copy of the report had also been located in JDMA archives during the initial Phase I of the study. Entering Mollard* as the keyword in the 'titles or abstracts' field of the NGRB search engine yielded an additional four (4) reports. However, these were reports by other companies, which simply mentioned J.D. Mollard and Associates Limited in their abstract text. As such, these four reports are not included in the above Table 1.

Five (5) of these report listings contained a web link to a downloadable PDF copy of the report. An assessment of the scan and image quality of these five PDF files can be found in Objective 5.

During Phase I of the study, JDMA staff located fifty-four (54) consulting reports in JDMA company archives that pertained to granular material in the NWT. These fifty-four reports were listed in Part I of Table 1 of the 2005 Phase I report. The reports listed in Table 1 Part I included, however, twelve (12) of the reports already listed in the NGRB database. Table 2 of this report is thus an updated version of the original Table 1 Part I table, with the twelve NGRB listed reports removed. An additional JDMA report, detailing work done in the Mackenzie Delta area by JDMA in 2005 (after the 2005 INAC Phase I report was written) is also included in this updated table.

In the spring of 2006 the JDMA company archive was re-catalogued by a university geography student working part-time at the company. The updated archive catalogue included more detailed information on report title, contact agency, contact name, and geographic extent of the study, allowing for more accurate and complete record searches to be made of the company archives. The re-cataloguing, however, did not turn up any new JDMA consulting reports pertaining to granular material in the NWT. Thus we can verify that the reports listed in Table 2 of this report are in fact all of the granular material in the NWT reports that exist in the current JDMA company archive.

OBJECTIVE 2 *Conduct a physical search of all company archives and retrieve all available reports not processed in the previous study, and summarize as per the previous work.*

In March of 2006 JDMA staff carried out an exhaustive search of all parts of the company archives, library, and off-site storage areas. Return visits were made again to some parts of the company storage in August 2006 after consulting with senior JDMA staff. Although a number of older JDMA consulting reports were located during the search, only a few pertained to granular material in the NWT. A total of only five (5) additional reports on granular material in the NWT were located; these five reports are listed in Table 3.

Part II of Table 1 in the 2005 Phase I report had listed eighty-nine (89) additional consulting projects that JDMA was known to have completed but for which a paper report copy was not located in the company archives. This included both granular material exploration reports and engineering / geological reports with some granular material study component (such as location of borrow in a proposed road route location study), in the NWT. Most of these additional project listing were based on project logs which are maintained by JDMA staff and which go back to the inception of the company in 1956. Other project listings were based on the memories of senior JDMA staff members, especially Jack Mollard (company president) and George Mollard (senior engineer), both of whom have been with the company since its early years. At the time of the 2005 Phase I report it was believed that some of these additional reports may have been in off-site storage areas rented by the company for storage of equipment and older material. As was noted in the 2005 Phase I report there was, however, a chance that such reports no longer existed. Given the low number of reports found, this is apparently the case. The fate of most of the reports listed in Table 1 Part II is unknown; the only thing we can verify is that they are no longer in the possession of JDMA Limited.

OBJECTIVE 3 *Continue to seek approval for any reports prepared for private clients to release to the public domain all reports retrieved [sic] in above physical search, which pertain to granular materials on or along the Mackenzie Valley Highway or Mackenzie Valley Pipeline.*

In the 2005 Phase I study, Permission to Release to Public Domain forms were sent to all private companies listed in that report's Table 1, Part I. Five (5) companies signed and returned release forms, freeing their respective reports for entry into the public domain. The majority of forms sent out during the Phase I study were either returned 'address unknown' or simply disappeared with no return reply.

As part of Objective 3, a more in-depth search of companies that had not replied during the 2005 Phase I study was undertaken. Internet searches using several major web search engines were carried out on both company names and the names of person(s) listed as contact personnel for the

reports (where available). If a contact person was located and appeared available, efforts were made to contact the person directly via email or by phone. Otherwise, companies were contacted by email sent to the company's general information email address. Table 4 contains the names, addresses and status of companies and/or contact personnel contacted during Objective 3 of this study.

Adobe PDF versions of the consent to release form were sent via email to each company / contact person after contact had been made. Signing personnel were asked to print-off the form, sign it, and return by either fax or mail (or both, if possible). Appendix C contains an example copy of the PDF consent to release form, and Appendix D contains scanned copies of the release forms signed and returned by companies contacted as part of Objective 3 of this study.

Unfortunately, both the internet searches and the attempts to obtain permission to release from companies yielded only a few successful releases. Very few of the companies for which JDMA carried out gravel studies in the Mackenzie Valley are still active. Most have either dissolved or been bought-out by other engineering or geological firms. Where such companies had been bought out, contact was made with the acquiring company, under the assumption that the new controlling company was now the legal owner of any reports commissioned earlier by its acquisition. Although most of the controlling companies contacted were willing to sign release forms, only a few did. Repeated attempts to contact companies that had indicated willingness to sign but never did were made throughout the latter half of 2006 and much of 2007, with no success. JDMA will send a final reminder email to those companies, and if these firms choose to sign the release form in the future JDMA will send the form onward to INAC.

The status of reports prepared for companies that simply dissolved with no buy-out or division of assets is still unknown. Perhaps the best example are the reports prepared for the Mackenzie Valley Pipeline Research Limited (MVPRL), a research consortium composed of personnel from several major oil producing firms in Canada. The consortium was created in the late 1960s – early 1970s to fund research into the geotechnical requirements and challenges of building an oil pipeline from the Arctic to southern Alberta via way of the Mackenzie Valley. After the research was carried out and final geotechnical reports (included several from JDMA) were completed, the MVPRL consortium was dissolved and the personnel returned to their respective companies. There does not appear to be, from JDMA's internet searches into the MVPRL, any controlling company still in existence that can lay claim to the work done for the MVPRL consortium. As such, the status of the reports in regards to public access is uncertain. Does the lack of controlling interest by any current firm result in the reports defaulting to the public domain? Can such reports be released to the public domain without a consent to release form? Likely this is a point of either copyright or corporate law, neither of which JDMA is qualified to comment on. For the purposes

of this study, JDMA assumed that the reports were not in the public domain and as such were not automatically available for release to the NGRB database. However, INAC is encouraged to get a qualified legal opinion regarding this point.

OBJECTIVE 4 *Where report is already in the public domain or where approval for its release has been obtained, prepare black and white, greyscale or colour scans as appropriate to produce a digital version of the original report.*

Twenty one (21) JDMA reports were scanned and converted to Adobe PDF format for inclusion in the NGRB database. In general reports were scanned using a Canon ir2200 ImageRunner at 200 dpi in 8-bit greyscale. Figures with no colour information were also scanned in greyscale, while figures with colour information were scanned at 200 dpi in 24-bit RGB colour using an HP 8550 colour scanner. Larger maps were scanned in colour by a professional print-copy service in Regina, again at 200-dpi and 24-bit colour. Assembly of the PDF copies was done using Adobe Acrobat Professional 6, and the final PDF copies were made compatible with Adobe Reader v6.0 or later. Table 5 contains a list of the JDMA reports captured to Adobe PDF for Objective 4 of this study, and a CD-ROM accompanying this report contains a copy of each PDF document.

Copies of most of these PDF documents were also uploaded via FTP to the Arctic Science and Technology Information System (ASTIS) of the Arctic Institute for inclusion in the NGRB database. The PDF reports were uploaded in December of 2006. Three (3) reports were not ready for upload at that time; these reports have now been completed and are included in the CD-ROM.

OBJECTIVE 5 *Examine digital copies of any digital versions of reports already included in the NGRB for completeness, accuracy and quality of images, and replace or correct any inadequacies noted.*

As mentioned in Objective 1, five (5) JDMA reports were already present as Adobe PDF documents in the NGRB database at the beginning of this study. These five reports were downloaded from the NGRB and their pages examined on-screen to judge both clarity of text and figures and to detect any missing pages / figures. Table 5 contains a list of the five reports examined in this objective of the study.

All five of the reports were satisfactory. Text was clear, and figures were generally readable and complete. JDMA did not detect any missing pages or figures in any of the reports. There was no reason to replace any pages or figures in the five reports examined.

OBJECTIVE 6 *Prepare a brief final report summarizing the work completed, results obtained and recommendations.*

This report was prepared in accordance with Objective 6 of the study. Adobe PDF and paper copies of this report have been sent to INAC, along with data CD-ROMs containing PDF versions of the JDMA reports captured in Objective 4.

There are two recommendations for future work regarding JDMA reports in the NGRB database:

- There is a possibility that reports prepared decades ago for organizations such as MVPRL or the PolarGas consortium may be in the public domain, and thus can be released to the NGRB database without need for a signed consent-to-release form. The status of these reports is a question of copyright or corporate law, or both. It is recommended that INAC obtain a qualified legal opinion on this matter. If it does turn out that reports for MVPRL or PolarGas now fall within the public domain, JDMA can scan and create PDF copies of any such reports in our company library for inclusion in the NGRB.
- The current NGRB database contains bibliographic references and/or Adobe PDF documents with information on granular resources in the north. As one of the stated objectives of the NGRB is to help promote development of the north through improved access to granular resource information, the next logical step for the NGRB may be to provide granular resource information in a format readily importable into geographic information systems (GIS). For example, granular resource prospects could be captured as digital polygons and supplied to interested companies in a standardized format such as ESRI shapefile. Attribute tables attached to each polygon would provide information such as mapping date, report author, original commissioning company, URL links for PDF copies of the report, any notes or additional information supplied by the mapping personnel, *etc.* Polygons could be provided for download by NTS map grid or by some other areal division. Alternatively, granular resource polygons could be displayed on a web-based map server, possibly with background reference information drawn from publicly available geodatabase sets such as the National Topographic System (NTS) Reference database from NRCan. Interested parties who access the NGRB could use such a web-based mapping service to quickly identify granular resource prospects within their particular area of study, and either print off maps directly from the web-mapping application or download the polygons for inclusion into a GIS. Such a feature would, in our opinion, make the NGRB database a much more flexible, and hence useful tool for companies who need access to granular resource information in the north.

Today, JDMA routinely supplies ESRI shapefiles of granular prospects mapped during office airphoto gravel studies, and many clients are beginning to require shapefiles as part of the

deliverables for such projects. JDMA can capture any granular resource prospect polygons contained in our company reports and deliver them to INAC and/or the Arctic Institute in a GIS-ready format. JDMA would also be pleased to work with INAC and the Arctic Institute in developing a web-based delivery system of granular resource GIS information, should they choose to pursue this idea further.

TABLES



Table 1. JDMA reports currently listed in the NGRB website (as of April 2006)

Year	Author(s)	Report Title	Web Link Available?	JDMA Copy?
1971	Mollard, J.D.	Airphoto terrain mapping report for pipeline route study: volume 1 – Prudhoe Bay to northern Alberta	N	Y
1971	Mollard, J.D.	Prefaces to Physiographic Divisions I to X	N	Y
1971	Balzer, J.E., and J.D. Mollard	Report on construction materials survey along Mackenzie Valley Pipe Line Research Limited pipeline route: Prudhoe Bay to the 60 th parallel	N	Y
1971	Balzer, J.E., and J.D. Mollard	Summary of construction-material sources along Mackenzie Valley Pipe Line Research Limited route: Prudhoe Bay to Fort McPherson, NWT, via the Arctic coastal route	N	Y
1971	Balzer, J.E., and J.D. Mollard	Summary of construction-material sources along Northwest Project Study Group proposed pipeline route: Fort McPherson to San Sault Rapids, N.W.T.	N	N
1971	Balzer, J.E., and J.D. Mollard	Summary of construction-material sources along Northwest Project Study Group proposed pipeline route: Sans Sault Rapids to Northwest Territories-Alberta boundary, west side of Mackenzie River valley	N	N
1972	Balzer, J.E., and J.D. Mollard	Gravel and bedrock borrow prospects, physiographic division XVI (Elliot Creek to Richards Island and Travaillant Lake to the NWT/Yukon border)	Y	N
1972	Mollard, J.D.	Gravel inventory: Richards Island and adjacent areas	N	Y
1972	Mollard, D.G.	Office airphoto study Dempster Highway, Northwest Territories, Mile 278 at the Yukon-NWT boundary to Mile 322 on the Peel River, NWT	N	Y
1973	Mollard, J.D.	Map of provisional physiographic divisions and chart showing a first appraisal of dominant terrain conditions along Polar Gas Project alternate pipeline route corridors for preliminary cost estimating purposes	N	N
1974	Balzer, J.E., and J.D. Mollard	Airphoto gravel search: Liard River to Chinchaga River along proposed CAGSL pipeline location – final report	N	N
1974	Mollard, J.D.	Office airphoto study, Yellowknife Area	N	Y
1974	Mollard, J.D., and J.E. Balzer	Report on 1974 drilling program: Mackenzie Valley Pipeline study	N	N
1991	Mollard, D.G.	Office airphoto study showing sand and gravel prospects along Campbell Highway, Watson Lake – Francis River, Yukon	N	Y
1993	Mollard, D.G., and J.D. Mollard	Compilation inventory of granular material resources information within the Izok Lake transportation corridor	Y	Y
1993	Mollard, D.G., and J.D. Mollard	Compilation inventory of granular material resources information within Cameron Hills area	Y	N
1994	Mollard, D.G., and J.D. Mollard	Compilation inventory of granular material resources information bordered by latitude 63° and 68° and longitude 102° and 112° in N.W.T.	Y	Y
1994	Mollard, J.D.	Potential granular deposits and terrain analysis of selected areas on the Cameron Hills, Northwest Territories.	Y	Y
1995	Mollard, D.G., and J.D. Mollard	Compilation inventory of granular material resource information bordered by latitude 60° and 66° and longitude 96° and 98° and Hudson Bay in N.W.T.	N	Y

Note: green cells indicate an existing URL link in the NGRB web database, linking to a PDF copy of the report; see Objective 5 for more details

Table 2. Remaining JDMA reports currently listed in JDMA company library (update to Table 1, Part I from Phase I Study)

Date	Author(s)	Report Title	Sponsor	Original Sponsor Contact	Sponsor Status	Released To Public Domain?	Scanned to PDF?
1962	Mollard, J.D.	Airphoto search for suitable granular materials vicinity of Cree Lake, Saskatchewan, and of Providence, NWT	Government of Canada Department of Transport	H.J. Connolly, Director, Construction Branch, and G.V. Sebastyan	Active	Y	Y
1963	Dishaw, H.E.	Airphoto selection of potential airport sites in the vicinity of Hay River, NWT	Government of Canada Department of Transport	V.R. Currie, P.Eng. Regional Construction Engineer	Active	Y	Y
1963	Dishaw, H.E.	Preliminary airphoto studies for selection of an airport site near Pine Point, Northwest Territories	Government of Canada Department of Transport	V.R. Currie, P.Eng. Regional Construction Engineer	Active	Y	Y
1970	Mollard, J.D.	Key maps, terrain legend, and notes on field data acquisition: Prudhoe Bay, Alaska, to Fort McMurray, Alberta	Mackenzie Valley Pipe Line Research, Ltd. (MVPRL)	E.D. Wilson, P.Eng.	Inactive	N	N
1971	Mollard, J.D.	NWPSG airphoto terrain mapping legend for pipeline route study, Volume II	Mackenzie Valley Pipe Line Research, Ltd (MVPRL)	unknown	Inactive	N	N
1971	Mollard, J.D.	Prefaces to Physiographic Divisions I to XIV	William Brothers Canada, Ltd., and MVPRL	unknown	Inactive	N	N
1971	Mollard, J.D.	Prefaces to Physiographic Divisions XI to XIV	William Brothers Canada, Ltd., and MVPRL	unknown	Inactive	N	N
1971	Balzer, J.E., and J.D. Mollard	Report on construction materials survey along Mackenzie Valley Pipe Line Research Ltd. Pipeline route – Prudhoe Bay to 60 th parallel	Mackenzie Valley Pipe Line Research, Ltd (MVPRL)	G.H. McDade, P.Eng.	Inactive	N	Y
1971	Balzer, J.E., and J.D. Mollard	Summary of construction material sources along Mackenzie Valley Pipe Line Research Ltd. Route – Prudhoe Bay to Fort McPherson, NWT, via the Arctic coastal route	Mackenzie Valley Pipe Line Research, Ltd (MVPRL)	G.H. McDade, P.Eng.	Inactive	N	Y
1972	Mollard, J.D.	Granular-materials airphoto study Richards Island and escarpment above East Channel in vicinity of Caribou Hills	Northern Construction Co. (now Washington Group International)	Paul G. Ellis, Northern Construction Co.	Active	Y	Y
1972	Mollard, J.D.	Reconnaissance study of hydrogeology of the Mackenzie River Valley region – draft report	Environment Canada, Inland Waters Branch, Hydrologic Sciences Division	Dr. R.L. Harlan, Groundwater Subdivision	Active	Y	Y
1974	Balzer, J.E., and J.D. Mollard	Airphoto and satellite imagery interpretation and the ice scour problem in the Canadian Arctic archipelago	Polar Gas Project	O.M. Kaustinen, P.Eng.	Inactive	N	N
1974	Mollard, J.D.	Alignment sheets and flow diagrams, interior alternative pipeline route from Prudhoe Bay to Travaillant Lake Junction via the main branch of the Canning River	Alaskan Arctic Gas Pipeline Company, and CAGSL	unknown	Inactive	N	N
1975	Mollard, D.G., and J.D. Mollard	Office airphoto study of transmission line route alternatives between Twin Gorges area and Pine Point, Northwest Territories	Northern Canada Power Commission (now NWT Power Corporation)	Don MacIntyre, P.Eng.	Active	N	N
1975	Mollard, J.D.	Office map and airphoto study, La Martre hydro power project proposal	Northern Canada Power Commission (now NWT Power Corporation)	Don MacIntyre, P.Eng.	Active	N	N
1976	Mollard, D.G.	Airphoto search for granular prospects along Highway No. 2 Fort Rae to vicinity Sunset Lake, Northwest Territories: Office-based study – Interim report	Government of Northwest Territories Dept of Public Works, Highways Division	Turgot Ersoy, Head, Design and Construction	Active	Y	Y
1976	Mollard, D.G.	Airphoto search for granular prospects along Highway No. 2 Fort Rae to vicinity Sunset Lake, Northwest Territories: Office-based study – Final report	Government of Northwest Territories Dept of Public Works, Highways Division	Turgot Ersoy, Head, Design and Construction	Active	Y	Y
1977	Mollard, D.G.	Gravel search, Enterprise-south area	Government of Northwest Territories Dept of Public Works, Highways Division	John A. Bowen, Technical Officer	Active	Y	Y
1979	Mollard, J.D.	Pipeline locations: “Y” pipeline locations, 56 terrain segments, Longlac, Ontario, and Winnipeg, Manitoba, north to Richards Island and the Arctic Islands	Polar Gas Project	T.D. Neel	Inactive	N	N
1979	Mollard, J.D.	Summary of terrain conditions, geotechnical considerations and river characteristics	Polar Gas Project	T.D. Neel	Inactive	N	N
1980	Mollard, J.D.	Alignment sheets published and named as “Foothills Pipe Line Ltd.” Document; mapping done by JDMA	Foothills Pipe Lines Ltd. (now TransCanada Pipelines Ltd [TCPL])	Unknown	Active	N	N
1983	Mollard, J.D.	Polar Gas Project Mackenzie Delta to Edson; final pipeline route	Polar Gas Project	T.D. Neel	Inactive	N	N
1984	Mollard, J.D.	Mineral aggregate source search office airphoto study – Coppermine study area	Government of Northwest Territories Dept of Public Works, Highways Division	Peter Vician, Project Officer	Active	Y	Y
1984	Mollard, D.G., and J.D. Mollard	Office airphoto search for foundation and surfacing materials for Trout Lake airstrip vicinity Trout Lake, N.W.T.	Government of Northwest Territories Dept of Public Works, Highways Division	Peter Vician, Project Officer	Active	Y	Y
1984	Mollard, D.G.	Office airphoto search for foundation and surfacing materials for Nahanni Butte airstrip vicinity Nahanni Butte settlement, N.W.T.	Government of Northwest Territories Dept of Public Works, Highways Division	Peter Vician, Project Officer	Active	Y	Y
1986	Mollard, J.D.	Office airphoto search for granular material and bedrock aggregate prospects adjacent to Highway No. 3 between km 170 and km 237 south of Edzo, Northwest Territories	Government of Northwest Territories Dept of Public Works, Highways Division	Peter Vician, Project Officer	Active	Y	Y
1988	Mollard, J.D.	Airphoto gravel search along #3 Highway, Fort Providence Area	Renwick Engineering	G.C. Haist, P.Eng.	Inactive	Y	Y
1988	Mollard, J.D.	Airphoto gravel search along the Liard Highway #7 between the Muskeg and Blackstone Rivers, Northwest Territories	Renwick Engineering	G.C. Haist, P.Eng.	Inactive	Y	Y
1988	Mollard, J.D.	Airphoto interpretation to identify gravel prospects along the Mackenzie River from Fort Simpson to Wrigley	Renwick Engineering	G.C. Haist, P.Eng.	Inactive	Y	N
1988	Mollard, J.D., D.G. Mollard,	Information review and airphoto interpretation to locate sand, gravel, and quarry prospects	Renwick Engineering	G.C. Haist, P.Eng.	Inactive	Y	N

	and L.A. Penner	km 0 to 74.2 – Dempster Highway, Northwest Territories					
1989	Mollard, J.D.	Phase 1 Study – Alternative haul route location and comparative evaluation, Yellowknife to Athabasca Gold property on Nicholas Lake	Athabasca Gold Resources, Ltd. (now tied in with GLR Resources, Inc.)	E.G. Kennedy, P.Eng.	Inactive	N	N
1992	Mollard, J.D., and L.A. Penner	Draft report on Izok multiple transport mode route selection and characterization from office map and airphoto study	Minnova, Inc. (now Inmet Mining Corporation)	K.J. Hill	Active	N	N
1992	Mollard, J.D., and D.G. Mollard	Office airphoto gravel search along a shoreline zone of terrain bordering Great Slave Lake vicinity Yellowknife Bay, N.W.T.	Government of Canada, Department of Indian and Northern Development	Arthur Boutilier, Projects and Planning, Land Resources Division	Active	Y	Y
1993	Mollard, J.D., D.G. Mollard, and L.A. Penner	JDMA interim report on Phase 1 Izok Project: feasibility level haul route selection and terrain studies	EBA. Engineering Consultants, Ltd	L. Dunn, P.Eng.	Active	N	N
1995	Mollard, D.G., J.D. Mollard, and L.A. Penner	Office airphoto route selection and terrain mapping of competing #3 Highway routes between Rae and Yellowknife, NWT, for Government of Northwest Territories	Government of Northwest Territories Dept of Transportation	J. Bunge	Active	Y	Y
1995	Mollard, J.D.	Remotely sensed terrain analysis and assessed impact of the existing roadway along and near the 185-km-long Prairie Creek existing winter haul route from 1:20,000 scale stereoscopic airphotos	Bruce Geotechnical Consulting, Inc. (now BGC Engineering Inc.)	W. Savigny, P.Eng., P.Geo.	Active	N	N
1996	Mollard, D.G.	Compilation of most-promising airphoto-mapped gravel prospect areas selected from mapping carried out by JDMA in Yellowknife area over last 30 years	City of Yellowknife	Adrian Bader, City of Yellowknife	Active	Y	Y
1996	Mollard, J.D., and D.G. Mollard	Final report on an airphoto and map study of Lupin to Ulu alternative haul route locations examined with terrain mapping	Echo Bay Mines, Ltd.	R.A. Cooper, P.Eng.	Active	N	N
1996	Mollard, J.D., and D.G. Mollard	Kimberlite pipe 5034 study project – airphoto terrain mapping and evaluation and infrastructure location and controls	Bruce Geotechnical Consulting, Inc. (now BGC Engineering Inc.)	W. Savigny, P.Eng., P.Geo.	Active	N	N
1996	Mollard, J.D., and D.G. Mollard	Office airphoto and map study Jericho Pipe to Lupin Mine Road, road route location and terrain evaluation	Bruce Geotechnical Consulting, Inc. (now BGC Engineering Inc.)	W. Savigny, P.Eng., P.Geo.	Active	N	N
1996	Mollard, J.D., and D.G. Mollard	Office airphoto mapping of terrain conditions within City of Yellowknife limits and a 1-km-wide surrounding area, Northwest Territories	EBA. Engineering Consultants, Ltd	E. Hoeve, P.Eng.	Active	N	N
1997	Mollard, J.D.	Office airphoto and map pre-feasibility study of a road route from Ingraham Trail terminus to Exeter Lake, NWT	Expedite North, Ltd.	T. Tweed	Active	N	N
2001	Mollard, J.D.	All-weather road route selection, terrain mapping and borrow identification on alternative competing route corridors and ROWs – Izok minesite to a port on Bathurst Inlet, Nunavut	SNC-Lavalin	T. Wachmann, P.Eng.	Active	N	N
2005	Mollard, J.D., and J.I. Cosford	Mapping and evaluation of terrain conditions along the proposed Niglintgak – Taglu gas pipeline route	C-CORE	Dr. Shawn Kenny, P.Eng.	Active	N	N

Note: yellow cells indicate reports for which a PDF copy has been created and delivered to INAC and the Arctic Institute for inclusion in the NGRB database

Table 3. Additional JDMA reports retrieved from JDMA company storage locations (reports pertaining to aggregate resources in NWT)

Date	Author(s)	Report Title	Sponsor	Original Sponsor Contact	Sponsor Status	Released To Public Domain?	Scanned to PDF?
1962	Mollard, J.D.	Materials of construction search from airphotos Twin Gorges vicinity, Talson River, NWT	Montreal Engineering Company Limited (now possibly Agra Monenco, with AMEC)	W.J. Smith, P.Eng., Chief Civil Engineer, and H.S. Watson	Active?	N	N
1963	Dishaw, H.E.	Airphoto route location study Bell Rock to Little Buffalo River, Northwest Territories	Government of Canada, Department of Public Works, Development Branch	J.E. Savage, District Engineer	Active	Y	Y
1970	Mollard, J.D.	Selection and terrain evaluation of alternate test-loop sites for a hot oil line paralleling the Mackenzie Valley	Mackenzie Valley Pipe Line Research, Ltd. (MVPLR)	E.D. Wilson, P.Eng., Research Coordinator	Inactive	N	N
1972	Mollard, J.D.	Interim Report – Inferred history of glacier retreat, associated glacial-lake stages and surface geological materials along the Mackenzie Valley between Liard River and the Mackenzie Delta	Templeton Engineering Company, and Government of Canada, Environmental Protection Board	L.E. Hurwitz, P.Eng. (Templeton)	Active	Y	N
1977	Mollard, J.D.	Office study of airphotos, mosaics, satellite imagery, and bedrock geology maps to check for recent faulting activity in the vicinity of Richards Island, Northwest Territories	Shell Canada Resources Limited (now Shell Canada)	G.H. Durham	Active	N	N

Note: yellow cells indicate reports for which a PDF copy has been created and delivered to INAC and the Arctic Institute for inclusion in the NGRB database

Table 4. Name and Status of Companies / Individuals Contacted During Objective 3

Report	Company / Address / Contact	Status
Mollard, J.D. 1971. Preface to Physiographic Divisions XI to XIV, MVPRL Pipeline	William Brothers Canada, Ltd. / no address / no contact info	William Brothers Canada was a subsidiary of William Brothers Engineering; William Brothers bought out by Ashland Inc. sometime in late 1980s; release form sent to Manager of Public Relations at Ashland, Jim Vitak (jevitak@ashland.com), who stated he would pass the request for signature of release on to the legal department at Ashland; last contact was Sept 2006; Ashland has never replied with either a signed release form or an email stating they will not sign.
Mollard, J.D. 1971. Prefaces to Physiographic Divisions I to X, MVPRL Pipeline	William Brothers Canada, Ltd. / no address / no contact info	William Brothers Canada was a subsidiary of William Brothers Engineering; William Brothers bought out by Ashland Inc. sometime in late 1980s; release form sent to Manager of Public Relations at Ashland, Jim Vitak (jevitak@ashland.com), who stated he would pass the request for signature of release on to the legal department at Ashland; last contact was Sept 2006; Ashland has never replied with either a signed release form or an email stating they will not sign.
Mollard, J.D. 1971. Prefaces to Physiographic Divisions I to XIV, MVPRL Pipeline	William Brothers Canada, Ltd. / no address / no contact info	William Brothers Canada was a subsidiary of William Brothers Engineering; William Brothers bought out by Ashland Inc. sometime in late 1980s; release form sent to Manager of Public Relations at Ashland, Jim Vitak (jevitak@ashland.com), who stated he would pass the request for signature of release on to the legal department at Ashland; last contact was Sept 2006; Ashland has never replied with either a signed release form or an email stating they will not sign.
Mollard, J.D. 1972. Granular materials airphoto study Richards Island and escarpment above East Channel in vicinity of Caribou Hills	Northern Construction Company / 1304 Hornby Street, Vancouver, British Columbia / Mr Paul G. Ellis	Northern Construction Co. bought out by other company, which in turn was restructured into present company Washington Group International; Washington Group agreed to sign the release form; release form signed by Richard Parry, Boise Legal Department of Washington Group, 29 March 2006
Mollard, J.D. 1975. Office map and airphoto study, La Martre hydro power project proposal	Northern Canada Power Commission / Hay River, Northwest Territories / Mr D. MacIntyre, P.Eng.	Northern Canada Power Commission restructured into NWT Power Corporation; several emails sent to general email in-box at info@ntpc.com ; no response from company
Mollard, D.G., and J.D. Mollard. 1975. Office airphoto study of transmission line route alternatives between Twin Gorges and Pine Point, NWT	Northern Canada Power Commission / Hay River, Northwest Territories / Mr D. MacIntyre, P.Eng.	Northern Canada Power Commission restructured into NWT Power Corporation; several emails sent to general email in-box at info@ntpc.com ; no response from company

Mollard, J.D. 1988. Airphoto gravel search along the Liard Highway #7 between the Muskeg and Blackstone Rivers, Northwest Territories	Renwick Engineering / Box 1054, Hay River, NWT, X0E 0R0 / Contact: Mr. Greg C. Haist, P.Eng.	Renwick Engineering dissolved in 1990s(?); Greg Haist contacted via phone April 2006; signed release form for report 07 April 2006
Mollard, J.D. 1988. Airphoto gravel search along the NWT Highway #3 Fort Providence area, Northwest Territories	Renwick Engineering / Box 1054, Hay River, NWT, X0E 0R0 / Contact: Mr. Greg C. Haist, P.Eng.	Renwick Engineering dissolved in 1990s(?); Greg Haist contacted via phone April 2006; signed release form for report 07 April 2006
Mollard, J.D. 1988. Airphoto interpretation to identify gravel prospects along the Mackenzie River from Fort Simpson to Wrigley, Northwest Territories	Renwick Engineering / Box 1054, Hay River, NWT, X0E 0R0 / Contact: Mr. Greg C. Haist, P.Eng.	Renwick Engineering dissolved in 1990s(?); Greg Haist contacted via phone April 2006; signed release form for report 07 April 2006
Mollard, J.D., D.G. Mollard, and L.A. Penner. 1988. Information review and airphoto interpretation to locate sand, gravel and quarry prospects km 0 – 74.2 Dempster Highway, Northwest Territories	Renwick Engineering / Box 1054, Hay River, NWT, X0E 0R0 / Contact: Mr. Greg C. Haist, P.Eng.	Renwick Engineering dissolved in 1990s(?); Greg Haist contacted via phone April 2006; signed release form for report 07 April 2006

Table 5. JDMA reports converted to Adobe PDF format and supplied to NGRB

Year	Author(s)	Report Title	Capture Date	File Size (MB)
1962	Mollard, J.D.	Airphoto search for suitable granular materials vicinity of Cree Lake, Saskatchewan, and Providence, NWT	10 Mar 2006	1.95 MB
1963	Dishaw, H.E.	Airphoto route location study, Bell Rock to Little Buffalo River, Northwest Territories	10 July 2006	1.97 MB
1963	Dishaw, H.E.	Airphoto selection of potential airport sites in the vicinity of Hay River, NWT	10 Mar 2006	5.01 MB
1963	Dishaw, H.E.	Preliminary airphoto studies for selection of an airport site near Pine Point, North West Territories	10 Mar 2006	4.32 MB
1971	Balzer, J.E., and J.D. Mollard	Report on construction materials survey along Mackenzie Valley Pipeline Research Limited Pipeline Route – Prudhoe Bay to 60 th Parallel.	18 Oct 2006	6.35 MB
1971	Balzer, J.E., and J.D. Mollard	Summary of construction material sources along Mackenzie Valley Pipe Line Research Limited Route – Prudhoe Bay to Fort McPherson, NWT, via the Arctic Route	18 Oct 2006	2.42 MB
1972	Mollard, J.D.	Granular materials airphoto study Richards Island and Escarpment above East Channel in vicinity of the Caribou Hills	28 Mar 2006	2.16 MB
1972	Mollard, J.D.	Reconnaissance study of hydrogeology of the Mackenzie River valley region – DRAFT	12 July 2006	70.4 MB
1976	Mollard, D.G.	Airphoto search for granular prospects along Highway #2 Fort Rae to vicinity Sunset Lake, Northwest Territories – Office-based study final report	08 Mar 2006	37.2 MB
1976	Mollard, J.D.	Airphoto search for granular prospects along Highway No. 2 Fort Rae to vicinity Sunset Lake, Northwest Territories – Office-based study interim report	08 Mar 2006	38.0 MB
1977	Mollard, D.G.	Gravel search, Enterprise-south area	08 Mar 2006	13.6 MB
1979	Mollard, J.D.	Mackenzie Valley Route Summary – DRAFT	25 Jul 2006	1.28 MB
1984	Mollard, D.G., and J.D. Mollard	Office airphoto search for foundation and surfacing materials for Nahanni Butte airstrip, vicinity Nahanni Butte settlement, N.W.T.	15 Mar 2006	26.8 MB
1984	Mollard, J.D.	Mineral aggregate source search; office airphoto study – Coppermine study area	09 Mar 2006	19.0 MB
1984	Mollard, J.D.	Office airphoto search for foundation and surfacing materials for Trout Lake airstrip, vicinity Trout Lake, N.W.T.	08 Mar 2006	26.8 MB
1986	Mollard, J.D.	Office airphoto search for granular material and bedrock aggregate prospects adjacent to Highway No. 3 between km 170 and km 237 south of Edzo, Northwest Territories	07 Mar 2006	26.9 MB
1988	Mollard, J.D.	Airphoto gravel search along the Liard Highway #7 between the Muskeg and Blackstone Rivers, Northwest Territories	17 Jul 2006	55.8 MB
1988	Mollard, J.D.	Airphoto gravel search along the NWT Highway 3, Fort Providence area, Northwest Territories	17 Jul 2006	23.8 MB
1992	Mollard, J.D., and D.G. Mollard	Office airphoto gravel search along a shoreline zone of terrain bordering Great Slave Lake, vicinity Yellowknife Bay, N.W.T.	09 Mar 2006	27.2 MB
1995	Mollard, D.G., J.D. Mollard, and L.A. Penner	Office airphoto route selection and terrain mapping of competing #3 Highway routes between Rae and Yellowknife, NWT, for Government of Northwest Territories	14 Jul 2006	48.6 MB
1996	Mollard, D.G.	Compilation of most-promising airphoto-mapped gravel prospect areas selected from mapping carried out by JDMA in Yellowknife area over last 30 years	12 Jul 2006	15.7 MB

Table 6. Status of JDMA reports downloaded from NGRB database (April 2006)

NGRB File No.	Report Citation	Evaluation
31792	Balzer, J.E., and J.D. Mollard. 1972. Gravel and bedrock borrow prospects – Physiographic Division XVI (Elliot Creek to Richards Island and Travaillant Lake to the NWT / Yukon Border)	Report text very clear and readable; first 19 pages of figures dark and a bit difficult to read, remaining figures clear and readable; large maps at end are clear and readable
33367	Mollard, J.D., and D.G. Mollard. 1993. Compilation inventory of granular material resources information within Cameron Hills area	Inside cover w/ Engineer's stamp has considerable scan artifacts making it difficult to read, but otherwise all report text and figures are very clear and readable
33368	Mollard, J.D., and D.G. Mollard. 1993. Compilation inventory of granular resources information within the Izok Lake transportation corridor	All report text and tables clear and readable; airphoto figures readable; large maps at end clear and readable; no issues with report
54751	Mollard, J.D., and D.G. Mollard. 1994. Compilation inventory of granular material resources information bordered by Latitude 63° and 68° and Longitude 102° and 112° in N.W.T.	All report text and tables clear and readable; large maps at end clear and readable; no issues with report
55083	Mollard, J.D. 1994. Potential granular deposits and terrain analysis of selected areas on the Cameron Hills, Northwest Territories	All report text and tables clear and readable; airphoto figures readable; no issues with report

APPENDIX A

PERMISSION TO RELEASE FORMS SENT OUT
TO COMPANIES DURING OBJECTIVE 3



PERMISSION TO RELEASE TO PUBLIC DOMAIN

Report Name and Date¹:

Mollard, J.D. 1971. Prefaces to Physiographic Divisions I to XIV, MVPRL Pipeline.

by J.D. Mollard and Associates Limited for:

William Brothers Canada, Ltd., & Mackenzie Valley Pipeline Research Limited (MVPRL)

- ☐ Yes, approval is unconditionally granted for the above report to be forwarded to Indian and Northern Affairs Canada (INAC) to be released into public domain through the Northern Granular Resources Bibliography website at www.aina.ucalgary.ca/ngr/.

Name

Date

Position

Department/Company

- ☐ Approval is granted for the above report to be forwarded to Indian and Northern Affairs Canada (INAC) to be released into the public domain through the Northern Granular Resources Bibliography website at www.aina.ucalgary.ca/ngr/, subject to the following conditions:

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¹ Because some years may have occurred since the report was prepared, the actual report name shown above may not be exactly the same as the report in your company library. However, we think that the title and the given date will enable you to identify the report. Please correct the title shown above if necessary.

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PERMISSION TO RELEASE TO PUBLIC DOMAIN

Report Name and Date¹:

Mollard, J.D. 1975. Office map and airphoto study, La Martre hydro power project proposal.

by J.D. Mollard and Associates Limited for:

Northern Canada Power Commission (Attention: D. MacIntyre, P.Eng.)
Hay River, Northwest Territories

- ☐ Yes, approval is unconditionally granted for the above report to be forwarded to Indian and Northern Affairs Canada (INAC) to be released into public domain through the Northern Granular Resources Bibliography website at www.aina.ucalgary.ca/ngr/.

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Hay River, Northwest Territories

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PERMISSION TO RELEASE TO PUBLIC DOMAIN

Report Name and Date¹:

Mollard, J.D. 1972. Granular-Materials Airphoto Study Richards Island and Escarpment Above East Channel in Vicinity of Caribou Hills.

by J.D. Mollard and Associates Limited for:

Northern Construction Company (Attention: Mr. Paul G. Ellis)
1304 Hornby Street
Vancouver, British Columbia

- ☐ Yes, approval is unconditionally granted for the above report to be forwarded to Indian and Northern Affairs Canada (INAC) to be released into public domain through the Northern Granular Resources Bibliography website at www.aina.ucalgary.ca/ngnr/.

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Report Name and Date¹:

Mollard, J.D., D.G. Mollard, and L.A. Penner 1988. Information review and airphoto interpretation to locate sand, gravel and quarry prospects km 0 - 74.2 Dempster Highway, Northwest Territories

by J.D. Mollard and Associates Limited for:

Renwick Engineering (Attention: Mr. Greg C. Haist, P.Eng.)
Box 1054
Hay River, NWT X0E 0R0

- ☐ Yes, approval is unconditionally granted for the above report to be forwarded to Indian and Northern Affairs Canada (INAC) to be released into public domain through the Northern Granular Resources Bibliography website at www.aina.ucalgary.ca/ngr/.

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Report Name and Date¹:

Mollard, J.D. 1988. Airphoto gravel search along the Liard Highway #7 between the Muskeg and Blackstone Rivers, Northwest Territories

by J.D. Mollard and Associates Limited for:

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Box 1054
Hay River, NWT X0E 0R0

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Report Name and Date¹:

Mollard, J.D. 1988. Airphoto gravel search along the NWT Highway #3 Fort Providence area,
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by J.D. Mollard and Associates Limited for:

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Box 1054
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Report Name and Date¹:

Mollard, J.D. 1988. Airphoto interpretation to identify gravel prospects along the Mackenzie River from Fort Simpson to Wrigley, Northwest Territories

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APPENDIX B

SIGNED PERMISSION TO RELEASE FORMS SENT BACK
FROM COMPANIES DURING OBJECTIVE 3





Washington Group International
Integrated Engineering, Construction, and Management Solutions

WASHINGTON GROUP INTERNATIONAL, INC.
LEGAL DEPARTMENT
720 PARK BOULEVARD, P.O. BOX 79
BOISE, ID 83712
PHONE: (208) 386-5424/FAX: (208) 386-5833

Fax

Date: March 29, 2006

Pages (including cover sheet): 2

To: Troy Zimmer

Fax: (306) 352-8820

Location: JD Mollard

Phone: (306) 352-8811

From: Tawny Aldrich

Fax: (208) 386-5833

Location: Boise Legal

Phone: (208) 386-5424

Re:

Confidentiality Note

This communication is intended to be privileged and confidential to the person to whom it is addressed. If you are not the intended recipient or the agent of the intended recipient or if you are unable to deliver this communication to the intended recipient, please do not read, copy or use this communication or show it to any other person, but notify the sender immediately by telephone at (208) 386-5424.

Troy:

Here's your form. I'll send the original in the mail.

Tawny

PERMISSION TO RELEASE TO PUBLIC DOMAIN

Report Name and Date¹:

Mollard, J.D. 1972. Granular-Materials Airphoto Study Richards Island and Escarpment Above East Channel in Vicinity of Caribou Hills.

by J.D. Mollard and Associates Limited for:

Northern Construction Company (Attention: Mr. Paul G. Ellis)
1304 Hornby Street
Vancouver, British Columbia


- ☐ Yes, approval is unconditionally granted for the above report to be forwarded to Indian and Northern Affairs Canada (INAC) to be released into public domain through the Northern Granular Resources Bibliography website at www.aina.ucalgary.ca/ngr/.

Name Date

Position Department/Company

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Include statement that report was prepared for Washington Group
Northern Ltd., who disclaims any (1) warranty of accuracy or
completeness and (2) liability for third party reliance on the
information contained in said report.


Name Date
Richard D. Parry
Senior Vice President and General Counsel Washington Group International, Inc.
Position Department/Company

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Name Date

Position Department/Company

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PERMISSION TO RELEASE TO PUBLIC DOMAIN

Report Name and Date¹:

Mollard, J.D. 1988. Airphoto gravel search along the Liard Highway #7 between the Muskeg and Blackstone Rivers, Northwest Territories

by J.D. Mollard and Associates Limited for:

Renwick Engineering (Attention: Mr. Greg C. Haist, P.Eng.)
Box 1054
Hay River, NWT X0E 0R0

- ☒ Yes, approval is unconditionally granted for the above report to be forwarded to Indian and Northern Affairs Canada (INAC) to be released into public domain through the Northern Granular Resources Bibliography website at www.aina.ucalgary.ca/ngnr/.

Name Gregory G. Haist A. Haist Date April 07/2006
Position Prof. Engineer Department/Company Renwick Engineering

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Position _____ Department/Company _____

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Position _____ Department/Company _____

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PERMISSION TO RELEASE TO PUBLIC DOMAIN

Report Name and Date¹:

Mollard, J.D., D.G. Mollard, and L.A. Penner 1988. Information review and airphoto interpretation to locate sand, gravel and quarry prospects km 0 - 74.2 Dempster Highway, Northwest Territories

by J.D. Mollard and Associates Limited for:

Renwick Engineering (Attention: Mr. Greg C. Haist, P.Eng.)
Box 1054
Hay River, NWT X0E 0R0

- ☒ Yes, approval is unconditionally granted for the above report to be forwarded to Indian and Northern Affairs Canada (INAC) to be released into public domain through the Northern Granular Resources Bibliography website at www.aina.ucalgary.ca/ngnr/.

Gregory G. Haist
Name



April 07/2006
Date

Prof. Engineer
Position

Renwick Engineering
Department/Company

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PERMISSION TO RELEASE TO PUBLIC DOMAIN

Report Name and Date¹:

Mollard, J.D. 1988. Airphoto gravel search along the NWT Highway #3 Fort Providence area,
Northwest Territories

by J.D. Mollard and Associates Limited for:

Renwick Engineering (Attention: Mr. Greg C. Haist, P.Eng.)
Box 1054
Hay River, NWT X0E 0R0

- ☒ Yes, approval is unconditionally granted for the above report to be forwarded to Indian and Northern Affairs Canada (INAC) to be released into public domain through the Northern Granular Resources Bibliography website at www.aina.ucalgary.ca/ngr/.

Gregory G. Haist Haist April 07/2006
Name Date
Prof. Engineer Renwick Engineering
Position Department/Company

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PERMISSION TO RELEASE TO PUBLIC DOMAIN

Report Name and Date¹:

Mollard, J.D. 1988. Airphoto interpretation to identify gravel prospects along the Mackenzie River from Fort Simpson to Wrigley, Northwest Territories

by J.D. Mollard and Associates Limited for:

Renwick Engineering (Attention: Mr. Greg C. Haist, P.Eng.)
Box 1054
Hay River, NWT X0E 0R0

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Name Gregory G. Haist Date April 07/2006
Position Prof. Engineer Department/Company Renwick Engineering

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END OF REPORT

