GOVERNMENT

Yukon Geology Program

Grant Abbott and staff
Yukon Geology Program

Le Service de géologie du Yukon

Maurice Colpron et Grant Abbott
Le Service de géologie du Yukon

Robert E. Leckie Awards for Outstanding Reclamation Practices

Andy Crowther
Mining Lands Division, DIAND

Yukon Geology Program

Grant Abbott[1] and staff
Yukon Geology Program

Abbott, J.G., 2003. Yukon Geology Program. *In:* Yukon Exploration and Geology 2002, D.S. Emond and L.L. Lewis (eds.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 41-54.

OVERVIEW

Ten years ago, the Canada-Yukon Geoscience Office opened its doors and marked the beginning of a *de facto* Yukon Geological Survey. Seven years ago, when the Canada-Yukon Mineral Development Agreements ended, the name changed to the Yukon Geology Program (YGP). The YGP (Fig. 1) includes two integrated and jointly managed offices with different administrative structures (Fig. 2). Federal funding is provided through the Exploration and Geological Services Division (EGSD), Yukon Region of the Department of Indian Affairs and Northern Development (DIAND), while Yukon Territorial Government (YTG) and cost-shared (YTG/DIAND) funding comes through the Mineral Planning and Development Branch of the Department of Energy, Mines and Resources (YTG). YTG independently manages and funds the Mineral Assessment Group and the Yukon Mining Incentives Program (YMIP). These are described separately. The Geological Survey of Canada (GSC) also maintains an office with the Program.

The past year has been a time of transition. In preparation for devolution of responsibility for administration of Yukon's land and resources from the Department of Indian Affairs and Northern Development, the Government of Yukon embarked upon a Renewal Process that examined how the government was organized and served the public. Out of that process, the Department of Energy,

Figure 1. *Yukon Geology Program staff from left to right: Jesse Duke, Don Murphy, Rod Hill, Grant Abbott, Jeff Bond, Bill LeBarge, Lee Pigage, Roger Hulstein, Ali Wagner, Karen Pelletier, Lara Lewis, Ken Galambos, Mike Burke, Amy Stuart, Maurice Colpron, Craig Hart, Derek Thorkelson, Jo-Anne vanRanden, Robert Deklerk, Julie Hunt, Charlie Roots, Diane Emond, Panya Lipovsky, Monique Raitchey, Grant Lowey and Steve Traynor. Missing: Robert Stroshein.*

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Mines and Resources was formed to assume responsibility for minerals, oil and gas, forestry, agriculture and lands. On April 1, 2003 the Geology Program will finally become one organization within the Mineral Development Branch (Fig. 2) of the Oil, Gas and Mineral Resources Division. The Geology Program will continue to be co-managed by Grant Abbott and Rod Hill. Jesse Duke will assume responsibility for the Geology Program as Director of the branch.

The Program has been fortunate to have had little staff turnover over the past year. We were sad to see Anna Fonseca leave the Mineral Assessment Group for the private sector, and Gary Stronghill leave the GIS Group for Ontario. Both positions have yet to be filled full-time.

This year being the tenth anniversary, staff have embarked on a number of commemorative activities. Local artist Chris Caldwell was commissioned to paint the poster shown on the cover. An open house was held for schools and the public to raise knowledge of the Program, Yukon geology and the mineral industry. Accomplishments of the Program were presented in a talk by Grant Abbott at the Geoscience Forum. Highlights include a quantum leap in the quality and quantity of the Yukon Geoscience database; significant measurable stimulation of mineral exploration; identification of significant, but under-explored mineral potential; and better information management. Some examples include doubling of detailed bedrock mapping coverage; generation of at least $50 million in exploration spending on YGP-defined

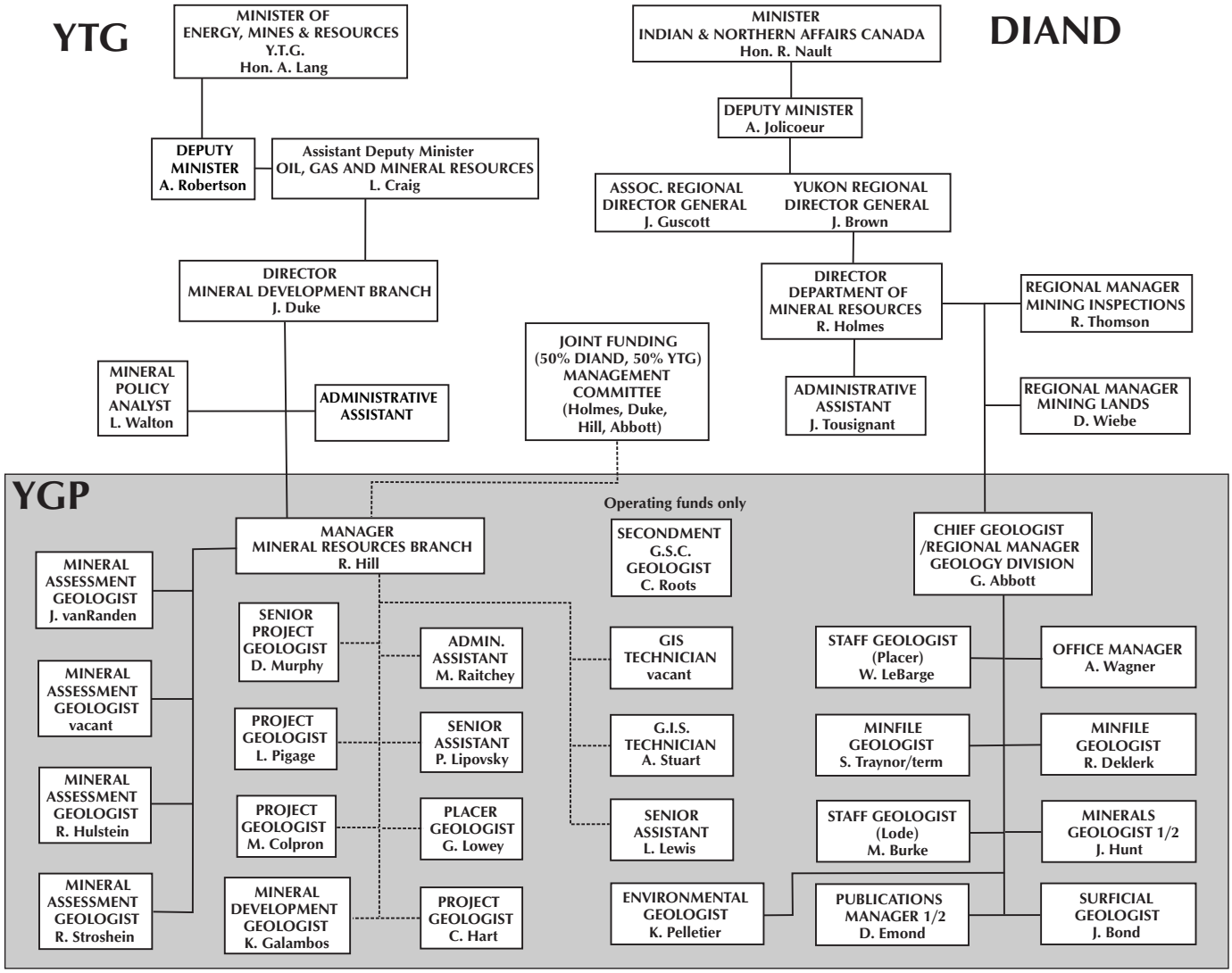

Figure 2. *Yukon Mineral Resources organization chart.*

geochemical, geophysical and geological targets; identification of untested geological, geochemical and geophysical targets in several parts of the Yukon-Tanana Terrane; and development of key databases and Internet distribution of all YGP Geoscience publications and data.

PROGRAM HIGHLIGHTS FOR 2002

FIELDWORK

The Yukon Geology Program is committed to providing a balanced complement of field projects, which not only quickly stimulate the mining and exploration industry, but also take the longer term view towards developing an understanding of the Yukon regional geological framework, and building the Yukon geoscience database. Field projects carried out in 2002 are shown in Figure 3, and the present state and location of geological, geochemical and geophysical surveys are shown in Figure 4.

The Yukon Geology Program continued to commit substantial resources to a joint Geological Survey of Canada-British Columbia Geological Survey Branch–Yukon Geology Program initiative, the Ancient Pacific Margin NATMAP (National Mapping Program) Project. This project is a multidisciplinary effort to better understand Yukon-Tanana and Kootenay terranes, arguably the least understood parts of the North American Cordillera. In Yukon, mapping projects include Finlayson Lake map area (Don Murphy), Glenlyon (Maurice Colpron), Stewart River (Steve Gordey, Jim Ryan/ GSC), and Wolf Lake (Charlie Roots/GSC). In southern B.C., the Project also includes regional mapping by Bob Thompson of the GSC, and in east-central Alaska, mapping by David Szumigala of the Alaska State Geological Survey, and mineral deposit studies by Cynthia Dusel-Bacon of the U.S. Geological Survey. Participation by numerous university researchers, graduate students and other specialists has greatly added to the depth and complexity of the Project. In Yukon, these include lithogeochemical studies in the Stewart River area by Steve Piercey of Laurentian University and mineral deposit studies by Jan Peter of the GSC. Regular workshops and field trips are one of the main benefits of such a large and diverse project. In November, 2002, the last NATMAP workshop was held in Sidney, B.C. and the project has now entered its synthesis phase, which is expected to be completed in 2004.

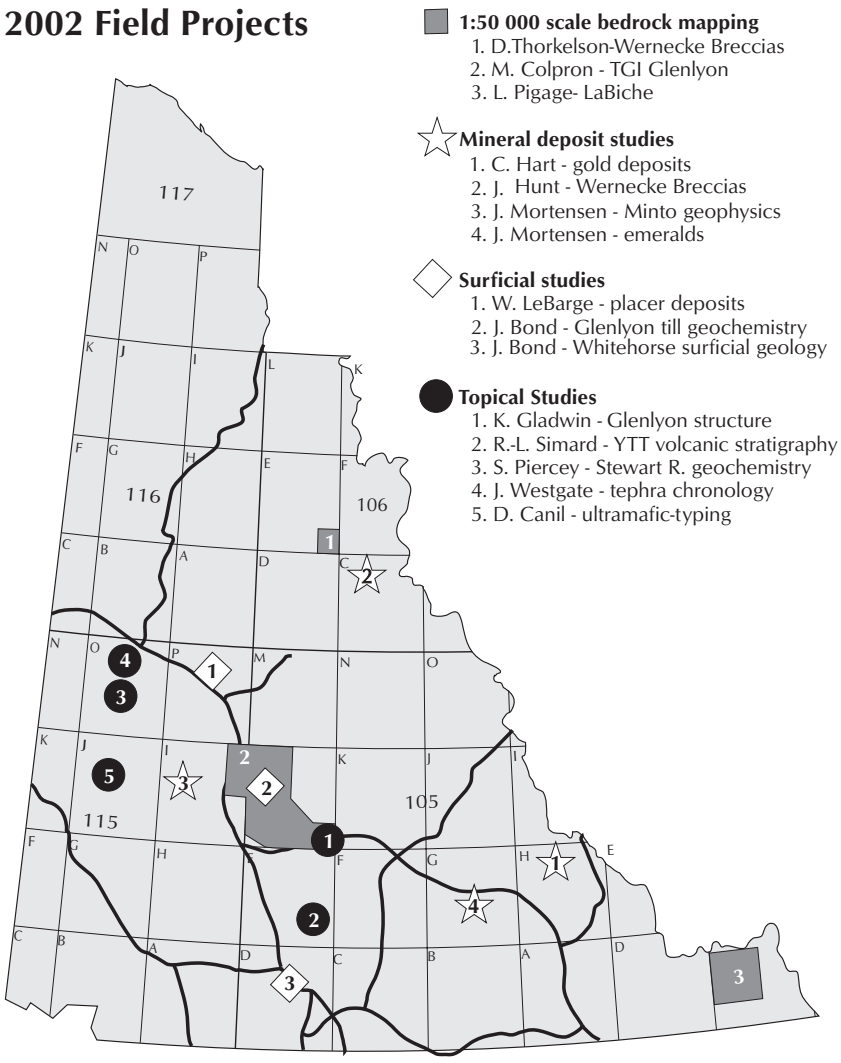

Figure 3. *Field projects carried out or sponsored by the Yukon Geology Program in 2002.*

The Yukon portion of the project has once again received a substantial boost from funds obtained through Natural Resources Canada's

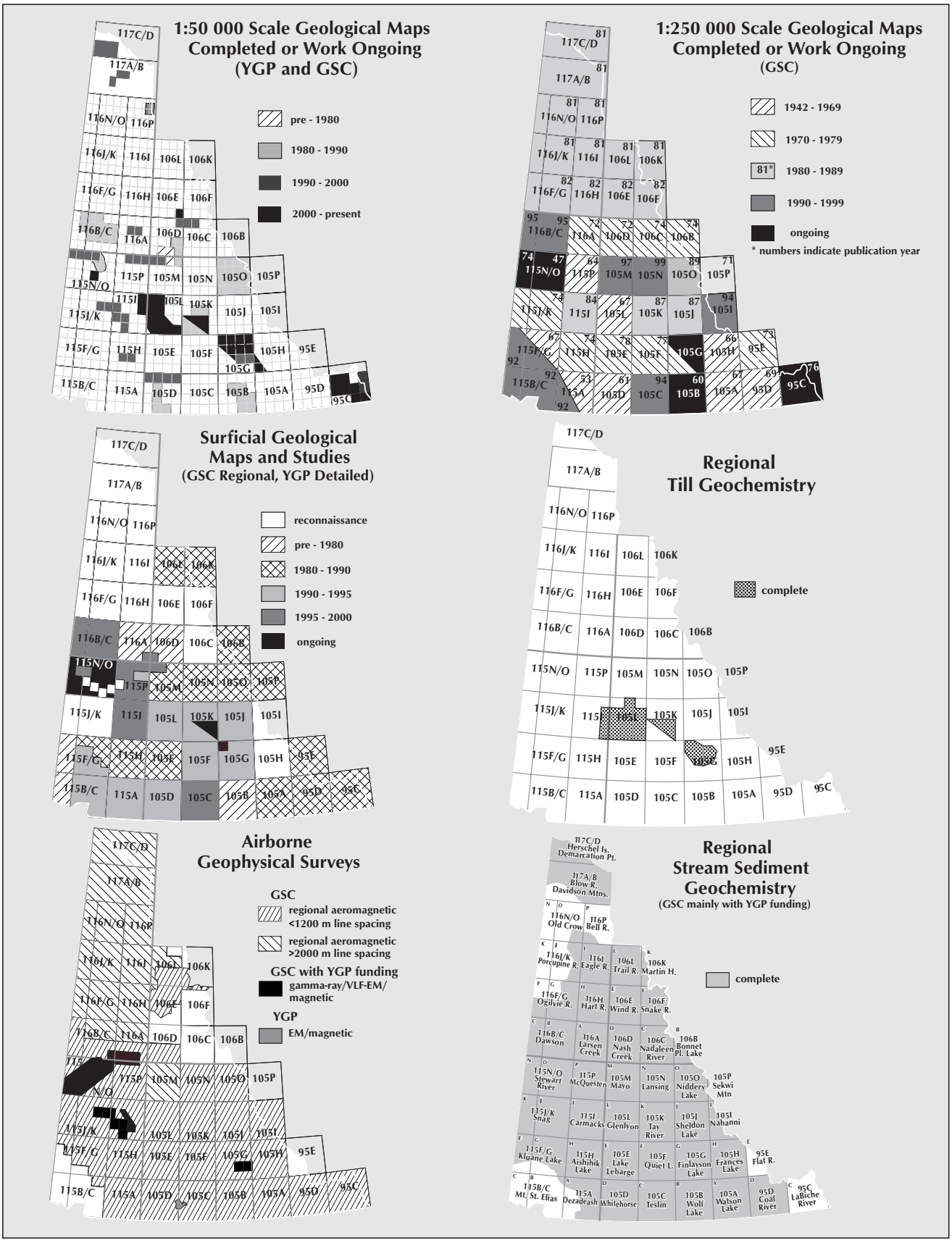

Figure 4. *Summary of available geological maps, and regional geochemical and geophysical surveys in the Yukon.*

Targeted Geoscience Initiative. In the Glenlyon map area, the extra funding enabled a program of accelerated regional bedrock mapping and till geochemistry. By using a contract helicopter for five weeks, five expert NATMAP participants (M. Colpron, D. Murphy, S. Gordey, J. Nelson and C. Roots) were able to map over half of the map sheet at 1:125 000 scale. As well, J. Bond, A. Plouffe and two assistants successfully carried out a regional till geochemical sampling program across the extensive overburden-covered parts of the area. Promising geological and geochemical targets were defined as a result.

Elsewhere, Don Murphy and Charlie Roots began the final compilation map and bulletin of Finlayson Lake and Wolf Lake – Jennings River map areas, respectively. In the Stewart River area, work included GSC bedrock mapping by Gordey and Ryan, and surficial mapping by Lionel Jackson for the GSC. Grant Lowey began the final compilation map and bulletin of his placer deposit studies.

Fieldwork was completed this year on the Central Forelands NATMAP Project, in which the Yukon Geology Program is a partner with GSC Calgary staff and university researchers. The Central Forelands Project is primarily focused on hydrocarbon-related geoscience, and includes regional mapping and topical studies in two separate areas: Trutch (94G) and Toad River (94N) in northern British Columbia, and Fort Liard (95B) and La Biche (95C) in Yukon and Northwest Territories. Tammy Allen and Lee Pigage joined the project in La Biche map area in southeast Yukon. The project has more clearly defined the geologic framework of the area with the highest hydrocarbon potential in all of Yukon. Mapping in the eastern part of the La Biche area has resulted in new structural interpretations that are key to hydrocarbon exploration. Work by Lee and Tammy in the western part of the map area has resulted in significant reinterpretation of both structure and stratigraphy.

Another major effort by the Yukon Geology Program has been to synthesize and enhance the geological database of the Anvil district. The Faro mine remains closed for the foreseeable future, but the possibility remains for renewed exploration and mining at some point. Lee Pigage has completed bedrock mapping, and has released a complete set of 11 geological maps of the district at 1:25 000 scale, and a compilation at 1:100 000 scale. A final report (bulletin) will be released in the spring of 2003. Jeff Bond completed surficial mapping and a till geochemical survey, and released 11 final maps and a bulletin in the spring of 2001.

Derek Thorkelson joined the YGP for six months while on sabbatical from Simon Fraser University. He has completed a 1:50 000-scale map sheet in the Wind River area (106E/1) of the Wernecke Mountains. The map area is an extension of Derek's previous project and includes extensive areas of Wernecke Breccia and many of the best-known Cu-U-Au occurrences associated with those rocks.

Craig Hart has completed a year's leave to undertake a PhD program at the University of Western Australia. Most of the requirements for the degree will entail writing papers on his previous field studies of the Tintina Gold Belt and other Yukon gold occurrences. Many of the students who received support from the YGP and assistance from Craig to study various aspects of Yukon gold deposits finished their studies this year. These included Mark Lindsay and Julian Stephens, under the supervision of Tim Baker at James Cook University; John Mair at University of Western Australia; and Erin Marsh and Seth Mueller under the supervision of Rich Goldfarb at the U.S. Geological Survey. This year, Craig carried out a preliminary investigation of intrusive-related mineral occurrences in northern Frances Lake map area with Lara Lewis.

Bill LeBarge and Mark Nowasad completed their studies of the relationship between sedimentology, grain size distribution and water quality of effluent from placer deposits. The technique will be evaluated for possible long-term applications and further research. Data gathered from this study was useful in the review of the Yukon Placer Authorization

Julie Hunt has returned to Australia to undertake a PhD program at James Cook University. YGP is funding her fieldwork. Julie partnered with Derek Thorkelson to complete fieldwork on the Wernecke Breccias, and is taking advantage of the Australian connection by comparing the Yukon breccias with similar Australian rocks that host giant ore deposits.

EXTERNAL SUPPORT

The YGP is providing financial and logistical support, or is a partner with graduate students and university researchers in the following projects:

John Laughton is completing an MSc thesis on the Slab volcanics in the Wernecke Breccias under the supervision of Derek Thorkelson at Simon Fraser University.

Kaesy Gladwin completed mapping and structural studies to characterize the boundary between the Yukon-Tanana and Cassiar terranes in southeast Glenlyon map area. This is an MSc project under the direction of Stephen Johnston at the University of Victoria.

Reza Tafti has begun a study of the Minto copper deposit for his MSc at the University of British Columbia under the supervision of Jim Mortensen. Through the project we will attempt to gain a better understanding of the nature, age and origin of the main host rocks to the Minto deposit and the Cu-Au mineralization contained within them. This information will be used as a basis for developing an exploration model for similar mineralization elsewhere in the Minto-Williams Creek belt.

Heather Douglas has begun a study of emerald and beryl occurrences in the Yukon and Northwest Territories for her MSc at the University of British Columbia under the supervision of Jim Mortensen and Lee Groat. The main focus of the study will be the Regal Ridge emerald deposit in the Finlayson Lake District. The purpose of the project is to understand the origin of the emerald occurrences and to develop exploration guidelines for the northern Canadian Cordillera.

Renée-Luce Simard is continuing a study of the volcanic stratigraphy, composition and tectonic evolution of Late Paleozoic successions in central Yukon for her PhD thesis at Dalhousie University under the direction of Dr. J. Dostal. The project will compare and contrast the depositional style, composition and tectonic setting of several volcanic successions within the belt of pericratonic terranes in the Northern Cordillera. These include the Klinkit succession in Wolf Lake map area, the Little Salmon succession in Glenlyon map area and the Boswell and Semenof formations in central Laberge map area.

Steve Piercey at Laurentian University, as part of the Ancient Pacific Margin NATMAP Project, began a study of the field, geochemical and isotopic attributes of volcanic and intrusive rocks in the Stewart River map area. The study will, in part, determine the similarities and differences of these rocks to volcanogenic massive sulphide (VMS)–bearing rocks in the Finlayson Lake district.

Dr. Dante Canil at the University of Victoria continued a study of the origin and emplacement of large ultramafic rock bodies in southwest Yukon, their potential for gold, nickel or platinum group element (PGE) mineralization, and their significance in Cordilleran tectonic evolution. This year, studies focussed on ultramafic rocks belonging to the Windy-McKinley Terrane in Snag map area of west-central Yukon.

John Westgate at the University of Toronto continued his studies of late Cenozoic tephrochronology of eastern Beringia. The objectives of this program are to establish a comprehensive tephrochonological framework to support studies in Quaternary geology, paleoenvironments and related fields. This year's studies focused on extension of the late Cenozoic tephra record of the Klondike Goldfields; determination of a precise and reliable glass fission track, magnetostratigraphic and Ar^{40}/Ar^{39} record for the widespread Dawson tephra bed; and establishment of the tephrochronological record preserved at Thistle Creek.

In addition to providing geochronological support to the GSC's Steward River project, Mike Villenueve has been using argon geochronology to 1) determine the cooling and uplift history of the Klondike region to aid in understanding mineralizing and tectonic processes in that region; 2) define the timing of recent volcanism in the Yukon, particularly the Fort Selkirk region; and 3) provide timing constraints on intrusion-related gold mineralization in the Tintina Gold Belt.

LIAISON AND SUPPORT TO INDUSTRY, FIRST NATIONS AND THE PUBLIC

Mike Burke and Bill LeBarge, our main links to the exploration industry, continued to monitor Yukon hard-rock and placer mining and mineral exploration activity, visit active properties, review reports for assessment credit, and maintain the assessment report library.

This year the YGP has focused more attention on increasing awareness among the public, schools and First Nations of geology and its importance to the mining industry, land use planning and environmental management. Karen Pelletier and Charlie Roots led the effort. The Geological Survey of Canada, with support from YGP, released its Geoscape Whitehorse Poster. The poster is one of a series that highlights geological features of interest in and around Canadian urban centres. The posters emphasize the impact of geology on everyday life. As a spin off to this project, a summer student gave presentations and led field trips through the Beringia Centre for school classes and the public. Karen Pelletier continued this initiative in the schools this fall. As part of the YGP 10^{th} anniversary celebrations, an open house was held to again highlight Yukon geology and the activities of the YGP. Karen also organized field trips with

First Nations groups to visit the Brewery Creek mine site and other exploration properties to examine modern reclamation practices.

ENVIRONMENTAL STUDIES

Karen Pelletier continued to manage the Mining and Environmental Research Group (MERG) in partnership with Lori Walton at YTG. Projects funded this year included 1) Evaluation of In-pit Algal Detoxification of Metal-Contaminated Pit Lakes by Laberge Environmental Services & Microbial Technologies Inc.; 2) Mine Sludge Stability and Densification in Cold Climates by CANMET; 3) Examination of Revegetation Methodologies for Dry Stack Tailings in Northern Environments by Access Mining Consultants Ltd.; and, 4) Follow-up Monitoring: Shrub Trial Plots at Brewery Creek Mine and Bioengineering Trials at Noname Creek by Stu Withers. Other activities included review of Mining Land Use and water license applications, and monitoring of reclaimed sites to document the effectiveness of mitigation practices. Karen also represents YGP on several committees that sponsor environmental research involving geology.

INFORMATION MANAGEMENT AND DISTRIBUTION

With the increasing volume of information generated by YGP and others, and rapidly evolving digital technology, YGP has placed more effort and resources into making geological information more accessible. A large part of our effort has gone into developing and maintaining key databases. The other part of the effort has gone into making all of our information internet-accessible. Ongoing activities include support for the H.S. Bostock Core Library and the Elijah Smith Library.

Databases

Yukon MINFILE, the Yukon's mineral occurrence database, is maintained by Robert Deklerk. A new Microsoft Access 2000 version was released in November, 2002. The database now contains 2593 records, of which 500 have been revised, and is complete to the end of 2000. The database has been simplified and is easier to use. Modifications allow better data table interaction, faster searching and editing speeds, improved data table and editing features, and easier export of data to a GIS system. It is expected that the database will become current over the next year.

The Yukon Placer Database, compiled under the direction of Bill LeBarge, was released in the fall of 2002. The database is in Microsoft Access 2000 format and is a comprehensive record of the geology and history of Yukon placer mining. The database contains descriptions of 440 streams and rivers, and 1356 associated placer occurrences. It also includes location maps in Portable Document Format (PDF).

The Yukon GEOPROCESS File, under the direction of Diane Emond, is an inventory of information on geological process and terrain hazards, including 1:250 000-scale maps showing permafrost, landslides, recent volcanic rocks, structural geology, and seismic events. It also includes references and summaries of bedrock and surficial geology. The GEOPROCESS File is intended as a planning aid for development activities and is available for most areas south of 66° latitude. The maps are now standardized in colour, and available on a single compact disk. Maps with text are in AutoCAD 2000 format and as PDF.

Steve Gordey and Andrew Makepeace of the Geological Survey of Canada undertook the Yukon Digital Geology Project with funding from YGP. It included syntheses of bedrock geology and glacial limits, compilations of geochronology, paleontology, and mineral occurrences, and a compendium of aeromagnetic images. All are now available on CD-ROM. Bedrock geology and glacial limit paper maps are also available at 1:1 000 000 scale. An updated version is scheduled for release in early 2003.

The Yukon Regional Geochemical Database analysis was compiled this year by Daniele Héon and released in November. The database contains all of the available digital data for regional stream sediment surveys that have been gathered in the Yukon under the Geological Survey of Canada's National Geochemical Reconnaissance Program. It is available on CD-ROM in Microsoft Excel 2000 format (.xls) and in ESRI ArcView Shapefile format (.shp).

The YukonAge 2002 Database was compiled this year by Katrin Breitsprecher and Jim Mortensen at the University of British Columbia, and Mike Villeneuve with the Geological Survey of Canada with funding from YGP. The database contains over 1500 age determinations derived from over 1100 rock samples from the Yukon Territory and is available in both Microsoft Access 2000 format and as a flat file in Microsoft Excel 2000 format so that the data may be viewed without Microsoft Access.

H. S. Bostock Core Library

Mike Burke and Ken Galambos maintain the H.S. Bostock Core Library. The facility contains about 128 000 m of diamond drill core from about 200 Yukon mineral occurrences. Confidentiality of material is determined on the same basis as mineral assessment reports. Confidential core can be viewed with a letter of release from the owner. Rock saws and other rock preparation equipment are available to the public.

Elijah Smith Library

The library in the Elijah Smith Building is an invaluable resource that is available to the public, but often overlooked. The library also houses Yukon assessment reports and contains most geological journals and a good selection of references on general geology, Yukon geology, and economic geology. YGP has begun the process of converting all of the assessment reports into PDF Format. Conversion may be complete in 2003.

Information distribution

The Yukon Geology Program is now converted fully to digital publishing and has developed a threefold strategy for distribution of information. We sell and distribute paper maps and reports through our Geoscience Information and Sales Office. In addition, many of our recent publications and databases are available in digital formats at considerably lower prices than our paper copies. Our main effort over the last year has been to make all of our publications available through our website (www.geology.gov.yk.ca), free of charge. A directory of assessment reports is also available online. We are also pleased to make spatial data available through our interactive map server; the Map Gallery can be accessed through the YGP website. It currently allows viewing of regional geology, MINFILE locations, regional stream geochemistry, topography, roads and communities, and First Nations Land selections. Vector data can now be clipped and downloaded. Planned enhancements include addition of geophysics, geochronology and paleontology, and addition of more attribute data to existing coverages. Coverages from other agencies such as mineral claims will soon be available. Users are encouraged to provide feedback and suggest improvements.

Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada publishes Yukon Geology Program publications. Hard copies are available at the following address:

Geoscience Information and Sales
c/o Whitehorse Mining Recorder
102-300 Main Street
Whitehorse Yukon Y1A 2B5
Ph. (867) 667-3266
Fax (867) 667-3267
E-mail: geosales@inac.gc.ca

To access publications and to learn more about the Yukon Geology Program, visit our homepage at http://www.geology.gov.yk.ca or contact us directly:

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2002 PUBLICATIONS AND MAPS

YGP BULLETINS

Hunt, J.A., 2002. Volcanic-associated massive sulphide (VMS) mineralization in the Yukon-Tanana Terrane and coeval strata of the North American miogeocline, in the Yukon and adjacent areas. Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, Bulletin 12, 107 p., one 11x17 map and CD-ROM with the appendices.

LeBarge, W.P., Bond, J. and Hein, F.J., 2002. Placer deposits of the Mayo area, central Yukon. Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, Bulletin 13, 209 p., six 1:50 000 scale and two 1:250 000 scale maps, also available on CD-ROM.

YGP OPEN FILES

Bond, J.D., Murphy, D.C., Colpron, M., Gordey, S.P., Plouffe, A., Roots, C.F., Lipovsky, P., Stronghill, G. and Abbott, J.G., 2002. Digital compilation of bedrock geology and till geochemistry of northern Finlayson Lake area, southeastern Yukon (105G). Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, Open File 2002-7(D)/GSC Open File 4243.

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Yukon Placer Database 2002. Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, W.P. LeBarge (comp.)

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EGSD Open File 2002-11/GSC Open File 4305: parts of 115N/9, 1:50 000 scale.

EGSD Open File 2002-12/GSC Open File 4306: parts of 115N/1, 1:50 000 scale.

EGSD Open File 2002-13/GSC Open File 4307: parts of 115O/6, 1:50 000 scale.

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EGSD Open File 2002-15/GSC Open File 4309: parts of 115O/16, 1:50 000 scale.

EGSD Open File 2002-16/GSC Open File 4310: 115O&N and 116B, 1:250 000 scale.

EGSD Open File 2002-17D /GSC Open File 4311: Digital files of maps in pdf format on one.

CD-ROM including Phases 1 and 2, by R.B.K. Shives, J.M. Carson, K.L. Ford, P.B. Holman, J.A. Grant, S. Gordey, G. Abbott.

GSC Open File 4312: Phase 2 Digital data are provided on CD-ROM with viewing/display program SurView (for PCs with Windows 3.1, 95, 98, 2000, or NT). Available only from the Geological Survey of Canada.

Multisensor Airborne Geophysical Surveys — Minto area: Ten 1:50 000-scale colour interval maps with modified topographic base are available for each of the following areas:

EGSD Open File 2002-18/GSC Open File 4331: parts of 115I/10,11.

EGSD Open File 2002-19/GSC Open File 4332b: parts of 115I/7.

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Le Service de géologie du Yukon

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Le Service de géologie du Yukon

Colpron, M. et Abbott, G., 2003. Le service de géologie du Yukon. *In:* Yukon Exploration and Geology 2002, D.S. Emond and L.L. Lewis (eds.), Exploration and Geological Services Division, Yukon Region, Indian and Northern Affairs Canada, p. 55-58.

APERÇU

Il y a dix ans, le Bureau géoscientifique Canada-Yukon a ouvert ses portes, marquant en fait le début de la commission géologique du Yukon. Il y a sept ans, quand l'accord de développement minéral Canada-Yukon s'est terminé, le nom du bureau a changé pour celui de Service de géologie du Yukon (SGY). Le SGY (fig. 1) consiste en deux bureaux intégrés présentant des structures administratives différentes mais qui sont gérés conjointement (fig. 2). Le financement par le gouvernement fédéral est fourni par l'entremise de la Division des Services d'exploration et de géologie de la région du Yukon du ministère des Affaires indiennes et du Nord canadien (MAIN), alors que le financement par le gouvernement du territoire du Yukon (GTY) et à coûts partagés (GTY/MAIN) est obtenu par l'entremise de la Direction du développement minéral du ministère de l'Énergie, des mines et des ressources (GTY). Le GTY gère et finance indépendemment le Groupe d'évaluation du potentiel minéral et le Programme d'encouragement pour l'exploration minérale du Yukon; ce dernier est décrit brièvement ci-dessous. La Commission géologique du Canada (CGC) maintient également un bureau auprès du Service.

L'année qui se termine fut un temps de transition. En préparation pour le transfert entre le MAIN et le GTY des responsabilités d'administration des terres et des réssources, le GTY s'est engagé dans un processus de rénouvellement, qui portait sur l'évaluation de l'organisation du gouvernement et sur sa façon de servir le publique. C'est à la suite de ce processus que le nouveau ministère de l'Énérgie, des mines et des ressources (GTY) a été introduit. Sa fonction sera d'assumer la responsabilité pour les minéraux, le pétrole et le gaz, les forêts, l'agriculture et les terres. Au premier avril 2003, le Service de géologie deviendra finalement une seule organisation au sein de la Direction du développement minéral (fig. 2) de la Division des ressources pétrolières, gazières, et minérales. Le Service de géologie va continuer d'être géré conjointement par Grant Abbott et Rod Hill. Jesse Duke assumera la responsabilité pour le Service de géologie en tant que directeur de la Direction du développement minéral.

Au cours de 2002, le programme a eu la chance d'avoir une base d'employés stable, sauf qu'on a été triste de voir partir Anna Fonseca et Gary Stronghill.

Cette année étant le dixième anniversaire du Service de géologie du Yukon, les employés ont entrepris plusieures activités commemoratives. L'artiste locale Chris Caldwell a été commissionée pour peindre l'affiche qui apparait sur la couverture de ce volume. Nous avons aussi ouvert nos portes aux écoles et au publique afin d'augmenter la connaissance du publique de notre service, de la géologie du Yukon, et de l'industrie minière. Lors du Colloque géoscientifique annuel, Grant Abbott a présenté un exposé soulignant les accomplissements du Service au cours de sa première décennie. Il a entre autre mentionné l'amélioration de la qualité et de la quantité d'information géoscientifique maintenant disponible sur le Yukon; les effets positifs que le Service a apporté sur

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l'industrie d'exploration minérale; l'identification du potentiel minéral important, mais sous-exploré, du territoire; et une meilleure gérance de l'information géoscientifique. Les activités du Service de géologie ont entre autre contribuées à doubler la couverture de cartographie géologique de détail du territoire; ont genérées au moins $50 million en dépenses d'exploration sur des cibles identifiées à l'aide de nouvelles données géologiques, géochimiques et géophysiques produitent par le SGY; ont identifiées plusieurs nouvelles cibles géologiques, géochimiques et géophysiques qui doivent toujours être vérifiées dans le Terrane de Yukon-Tanana; et ont développées plusieurs nouvelles bases des données. De plus le Service de géologie distribue maintenant la plupart des ses publications et bases de données par l'entremise de l'internet.

Les travaux de terrain du Service de géologie du Yukon n'ont pas seulement pour objet de stimuler de façon immédiate l'industrie minière, mais aussi de développer une meilleure connaissance de la géologie régionale du Yukon et d'augmenter la base de données géoscientifiques pour les générations à venir. Les travaux de terrain executés au cours de l'année 2002 sont indiqués sur la figure 3 et l'état actuel des couvertures géologiques, géochimiques et géophysiques du territoire est illustré sur la figure 4.

Le Service de géologie du Yukon contribue toujours d'importantes ressources au projet CARTNAT (Programme national de cartographie géoscientifique du Canada) de l'ancienne marge du Pacifique, une initiative conjointe des commissions géologiques du Canada, de la Colombie-Britannique et du Service de géologie du Yukon. Ce projet est une étude multidisciplinaire visant à mieux comprendre les terranes de Yukon-Tanana et de Kootenay, soit les parties considérées comme les moins bien connues de la cordillère nord-américaine. Au Yukon, des travaux de cartographie géologique ont été exécutés dans les régions de Finlayson Lake, de Glenlyon, de Stewart River, et de Wolf Lake. Ce projet inclut aussi des travaux de cartographie géologique dans le sud de la Colombie-Britannique et dans le centre-est de l'Alaska, de même que des études de gîtes minéraux en Alaska. La participation de nombreux chercheurs universitaires, d'étudiants de deuxième et de troisième cycle, et d'autres spécialistes ont grandement contribué à la valeur scientifique du projet. En outre, en 2002 on a entamé une étude lithogéochimique dans la région de Stewart River et l'on poursuit des études de gîtes minéraux à plusieurs endroits au sein du terrane de Yukon-Tanana.

En 2002, la partie yukonnaise du projet CARTNAT a une fois de plus reçu du financement additionnel par l'entremise de l'Initiative géoscientifique ciblée du ministère de ressources naturelles du Canada. Ces fonds additionnels ont permis de compléter un levé géochimique du till et la cartographie géologique de plus de la moitié de la carte de Glenlyon. Des cibles géologiques et géochimiques d'interêt furent identifiées lors de ce programme.

Ailleurs, la cartographie géologique des régions de Finalyson Lake et de Wolf Lake est maintenant complétée et en est à la phase de compilation et de rédaction. Dans la région de Stewart River, outre les travaux de cartographie géologique, le programme de cartographie des dépôts superficiels par la CGC s'est complété en 2002 et l'étude des placers entreprise par le Service de géologie du Yukon est maintenant en phase de compilation et de redaction.

Les travaux de terrain du projet CARTNAT de l'avant-pays central, auquel le Service de géologie du Yukon participe, se sont aussi complétés au cours de l'année 2002. Ce projet, qui recouvre en partie le nord de la Colombie-Britannique, le sud-ouest des territoires du Nord-Ouest, et le sud-est du Yukon, a pour principal objectif d'augmenter les connaissances géoscientifiques des régions présentant un potentiel d'hydrocarbures. Les travaux de cartographie géologique menés par le Service de géologie du Yukon dans la région de La Biche River ont permis de reviser les interprétations stratigraphiques et structurales de cette région, qui contient le plus haut potentiel d'hydrocarbures au Yukon.

Au nombre des autres objectifs majeurs visés par le Service de géologie du Yukon, mentionnons celui consistant à synthétiser et à améliorer la base de données géologiques du district d'Anvil, initiative qui comprend la cartographie géologique du socle rocheux et des dépôts superficiels, et des levés géochimiques de till, en plus de l'étude des gîtes minéraux. Un rapport couvrant la cartographie des dépôts superficiels et la géochimie du till, de même qu'une carte de compilation géologique régionale à l'échelle de 1 : 100,000 sont maintenant disponibles. Le rapport géologique final devrait être disponible au printemps 2003.

Derek Thorkelson a joint le Service de géologie du Yukon pour une période de six mois lors de son congé sabbatique de l'université Simon Fraser. Il a complété une carte à l'échelle de 1 : 50,000 dans la région de Wind River, dans les monts Wernecke, où l'on retrouve de

nombreux indices Cu-U-Au associés aux brèches de Wernecke. Les brèches de Wernecke continuent d'être l'objet d'une étude métallogénique, où les brèches yukonnaises seront comparées aux équivalent australiens qui renferment plusieurs gisements importants.

L'étude des indices aurifères du Yukon se poursuit. Une série d'articles portant sur la ceinture aurifère de Tintina et d'autres indices du Yukon est maintenant en préparation. De plus une étude préliminaire des indices minéraux associés aux intrusions dans la partie nord de la région de Frances Lake a été entamé au cours de 2002.

Un autre projet étudie la relation entre la sédimentologie, la répartition granulométrique et la qualité de l'eau des effluents provenant des gisements placériens. Les travaux de terrain sont maintenant complétés et la technique sera évaluée pour d'éventuelles applications à long termes.

Finallement, le Service de géologie du Yukon continue son assistance financière et logistique de nombreuses études thématiques conduites par des étudiants de deuxième et de troisième cycle, et par des chercheurs universitaires.

PROGRAMME D'ENCOURAGEMENT POUR L'EXPLOITATION MINÉRALE DU YUKON

Cette année, 99 demandes relatives au programme ont été reçues avant la date limite. Au total, 982 000 $ ont été accordés à 62 demandeurs. Neuf demandes ont été approuvées dans le cadre du volet 'Grassroots' et du volet 'Grubstake', 36 demandes ont obtenuent du financement dans le cadre du volet Évaluation de cibles, tandis que les 17 autres faisaient partie du nouveau volet de Cibles régionales. Un peu moins d'explorateurs commandités dans le cadre de ce programme ont recherché des métaux précieux : environ 41 % des candidats ont recherché de l'or et des éléments du groupe du platine, 45 % des métaux communs, et 14% des pierres précieuses et d'autres matières premières. Des programmes d'exploration ont été proposés dans les quatre districts miniers et presque partout sur le territoire du Yukon. Bien les dépenses totales d'exploration soient à la baisse par rapport à l'année précédente, le nombre de concessions minières qui ont fait l'objet d'options est à la hausse. Jusqu'à date, neuf ententes entre prospecteurs et entreprises minières ont été signées pour des concessions qui furent explorées dans le cadre de ce programme.

PRIX ROBERT E. LECKIE

Pour une quatrième année consécutive, on a décérné à l'industrie minière les prix Robert E. Leckie pour la restauration de sites miniers. Le prix pour les pratiques exceptionnelles de restauration de mines a été décerné à la société Viceroy Resource Corporation pour les travaux qu'elle a effectué sur la mine Brewery Creek. On a remis le prix pour les pratiques exceptionnelles de restauration de placers à David McBurney pour les travaux de restauration qui ont été exécutés à Indian River.

DIFFUSION DE L'INFORMATION

Le Service de géologie du Yukon produit maintenant une gamme complète de publications numériques. Toutes nouvelles cartes et rapports géologiques sont disponibles sur demande en format numérique, et toutes publications récentes sont aussi disponibles (sous format PDF) sans frais sur notre site internet (http://www.geology.gov.yk.ca). De plus, une gammes de rapports d'évaluation de propriété minières est maintenant disponible par l'entremise de notre site internet. Nous sommes aussi fier de notre service de carte interactive ('Map Gallery'). Ce service est disponible par l'entremise de notre site internet et permet la visualisation de la géologie régionale, des sites MINFILE, des levés régionaux de géochimie des sédiments de ruisseaux, de la topographie, des routes et des communautés du Yukon, et des sélections des terres des nations authochtones. Les données vectorielles peuvent maintenant être sélectionnées et téléchargées. Certaines des améliorations à venir incluent l'addition de données géophysiques, géochronologiques et paléontologiques. De plus, la couverture des concessions minières sera bientôt disponible.

Les publications du Service de géologie du Yukon sont diffusées par la Division des services géologiques et d'exploration (MAIN). Elles sont disponible à l'addresse suivante :

Bureau d'information et des ventes en géosciences

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