

Geoscience BC's

# Explorer

Annual Information Update

Annual Report 2011



**QUEST-Northwest Project**  
**Ongoing Mineral Initiatives**  
**Northeast BC Projects**  
**Scholarship Winners**  
**Financial Statements**



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Photo by T. Bissig

## Annual Information Update



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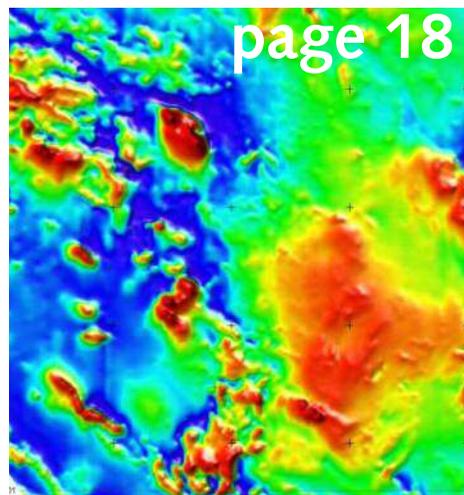
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*Dr John Thompson  
Chairman of the Board of Directors,  
Geoscience BC*

## Message from the Chair

As the Chair of the Board of Directors of Geoscience BC it is a distinct pleasure for me to present this year's Explorer Magazine and Annual Report for 2011-2012.

First and foremost, I would like to begin by thanking the Provincial government for providing Geoscience BC with an additional grant of \$12 Million in May 2011. This funding will allow us to continue to deliver quality applied geoscience information and knowledge to underpin mineral and oil & gas exploration in BC.

In 2011, we continued to attract tremendous support across the Province. We are very grateful for the interest that a number of communities have shown in our work, and the very positive reception and enthusiastic support that we have received from community leaders for geoscience and follow-up exploration and development activity.

As with all previous years, a key component of Geoscience BC's success is the contribution to our program planning, development and delivery that comes from the numerous volunteers that make up our Board of Directors, and our Technical

Advisory Committees. We are fortunate to have such a willing group of volunteers collectively representing the industry, governments, the research community and the Province. The volunteers support the dedicated staff, consultants and research staff at Geoscience BC that continues to deliver programs efficiently and effectively. I would like to thank all involved in Geoscience BC for their outstanding efforts.

Partnerships are a critical element of Geoscience BC's success. We are very fortunate to have excellent project partners, including individuals and organizations from academia, industry, government, communities and First Nations. Partnerships enhance the base of knowledge and expertise, leverage funding and other resources, and improve communication. We are particularly pleased to have established relationships with First Nations in several parts of the Province, and hope to further these relationships and develop new projects with First Nations in the future.

Geoscience BC remains committed to student support through our annual Applied Geoscience Scholarship for Master's and PhD

students, and by funding a number of student research projects. These initiatives will help to develop the next generation of resource geoscientists who will play critical roles in BC's mineral and oil&gas industries.

Geoscience BC will be celebrating its seventh anniversary in April 2012. Over the last seven years, Geoscience BC has operated as an efficient non-profit organization delivering applied, industry-directed public geoscience that complements the work of existing government agencies. We believe the results attract investment to BC and enhance the Province's competitiveness at a time of increasing global competition.

I look forward to positive contributions from Geoscience BC for many years to come.

A handwritten signature in black ink, appearing to read 'John Thompson', with a long horizontal line extending to the right.

**Dr. John Thompson**  
*VP Technology and Development and  
Chairman of the Board of Directors  
Geoscience BC*



*Dr. C.D. ('Lyn') Anglin  
President and CEO  
Geoscience BC*

## Message from the President & CEO

I would like to echo the remarks of the Chair of our Board and thank the Provincial Government for their ongoing support for geoscience, in particular for the new funding they provided to Geoscience BC to allow us to continue our activities to 2014. I would also like to add my thanks to the key contributors to our successes, namely; our staff, consultants, industry advisory committees, and our numerous project partners.

Last year we launched our latest in our series of "QUEST" exploration geoscience projects: QUEST-Northwest. We also launched the second phase of our Horn River Basin water studies, and completed the data collection and compilation phases of the Montney Water Project. Results from these partnership water research projects will be released in 2012. All of these projects

represent successful multi-partner initiatives, and I would like to thank all of our partners for making these projects so effective.

We are beginning 2012 with consultations with industry and other partners to help us identify priority projects to be supported with the new funding we have been granted by the Provincial government. We continue to focus on our mandate of attracting exploration and development investment to BC through provision of publicly available applied geoscience.

And finally, we are very pleased that some of the results from our QUEST-West airborne geophysical work, published in 2009, were used by the Huckleberry Mine exploration team and contributed to a new discovery at the Mine, announced in May 2010. In January 2012, the Province

announced that a large mine expansion permit has been granted for the Huckleberry Mine. The mine expansion will commence in 2012 and will mean the continuation of 230, and creation of about 70 new, jobs at the mine for the next 9 years. Geoscience BC congratulates the government and Huckleberry Mines Ltd. for their success, and is pleased to have been able to contribute to this significant achievement.

**Dr. C.D. ('Lyn') Anglin**  
*President and CEO  
Geoscience BC*

*'Lyn Anglin receives new funding for Geoscience BC from the Honourable Steve Thomson, Minister of Forests, Lands and Natural Resources.*

*Photo by F. Gordon.*



# Geoscience BC in 2011

**This has been another very successful and exciting year for Geoscience BC. We received new funding, launched new projects, released new reports and datasets, hosted a highly successful workshop, and participated in numerous conferences and meetings. Here are a few of our highlights from 2011:**

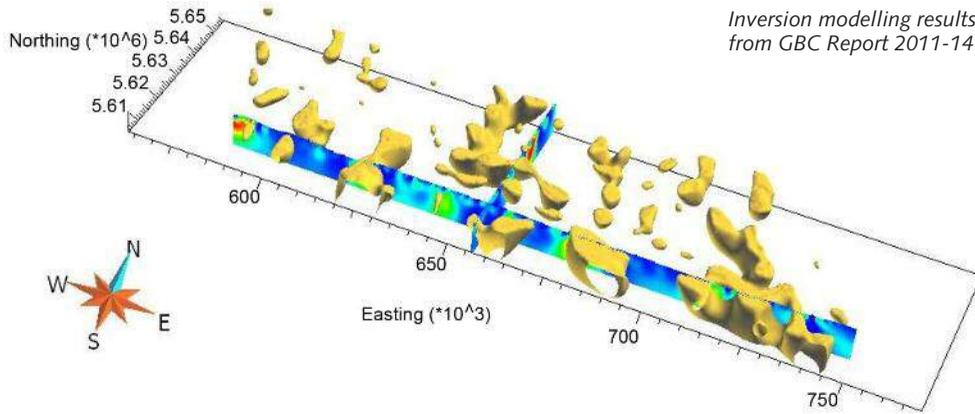
## **New Funding!**

In May 2012 Geoscience BC was pleased to receive \$12 million in new funding from the Government of British Columbia. The Honourable Steve Thomson, Minister of Forests, Lands and Natural Resources presented 'Lyn Anglin, President and CEO of Geoscience BC, with the new funding at the BC Mining Week Opening Reception in Vancouver. This new funding allows Geoscience BC to continue to deliver programs aimed at stimulating economic activity in the province, including the QUEST series of programs and recent work on water sourcing in Northeast B.C.

Geoscience BC was originally established in 2005 with a \$25 million investment from the Province, and also received \$11.7 million in 2008 to support mineral geosciences in Mountain Pine Beetle-affected areas and oil & gas geoscience in frontier areas of the province.



Photo by B. van Straaten.



*Inversion modelling results from the QUEST-South area, from GBC Report 2011-14 by Mira Geoscience Ltd.*



Photo courtesy of SkyTEM.

### New Projects

Geoscience BC launched three multi-part projects in 2011, which cover three distinct parts of the province. QUEST-Northwest is the latest in Geoscience BC's 'QUEST' series of projects, and is focused on stimulating mineral exploration investment in northwest B.C. The Horn River Basin Phase 2 Project continues baseline water research studies in northeast B.C. to support responsible development of natural gas resources. The SEEK Project ("Stimulating Exploration in the East Kootenays") was launched in late 2011 and is a partnership with the East Kootenays Chamber of Mines. More information on all of these projects can be found later in this report.

### New Data and Reports

While new projects got underway, 2011 also saw the completion of many Geoscience BC programs. Sixteen separate reports were released through Geoscience BC's website over the year, including the Summary of Activities 2010 volume, a compilation of 25 papers from various projects.

In addition, Geoscience BC was pleased to participate in the June 2011 Canadian Journal of Earth Science Special Issue "New Insights in Cordilleran Intermontane Geoscience: Reducing Exploration Risk in the Mountain Pine Beetle-Affected Area of British Columbia". The volume presents the results of public geoscience programs led by Geological Survey of Canada, Geoscience BC, and the British Columbia Ministry of Energy and Mines over the last few years, and includes seven papers related to Geoscience BC-funded projects.



*'Lyn Anglin, Karino Briño (Mining Association of B.C.) and Bruce Madu (Ministry of Energy and Mines) attended the China Mining Conference in November 2011.*

Photo by T. Sexton, Association for Mineral Exploration B.C.

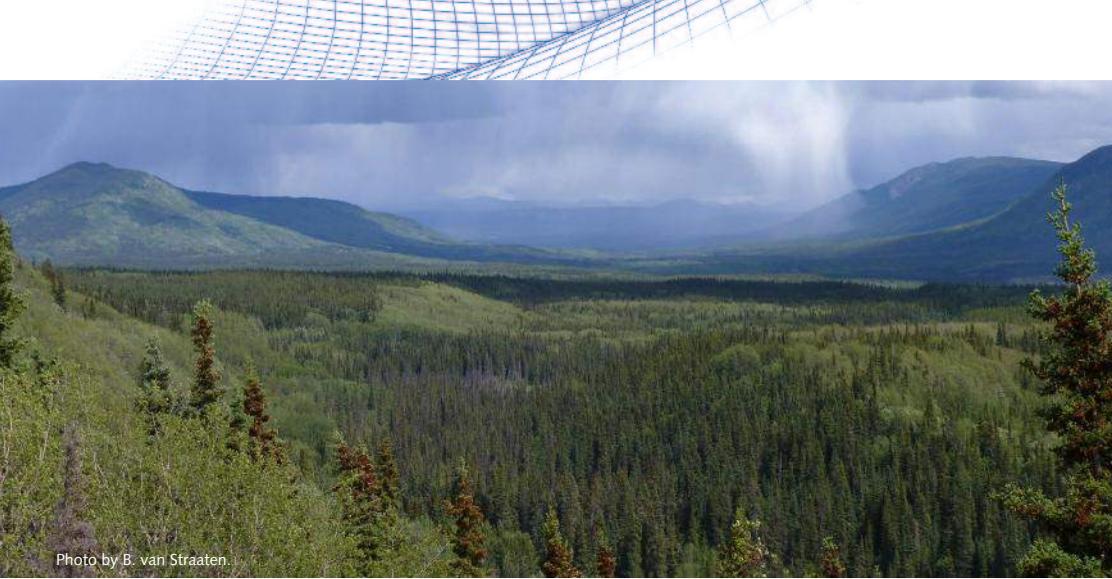


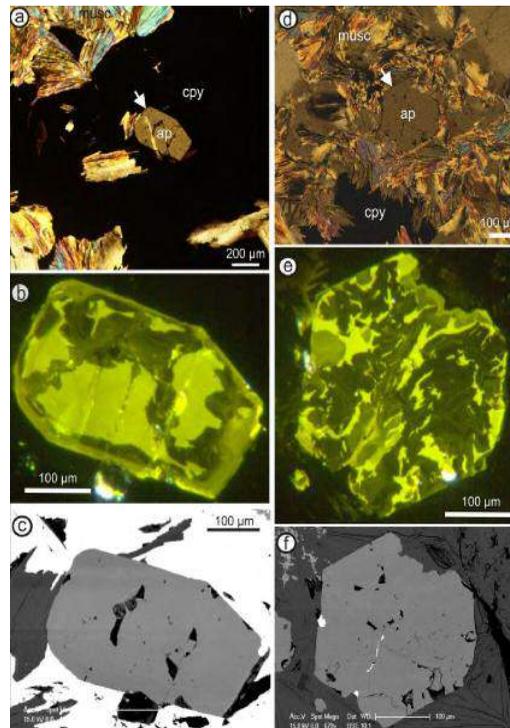
Photo by B. van Straaten.

## Workshops and Conferences

Geoscience BC staff and consultants attended numerous conferences and workshops this year, giving presentations on Geoscience BC-supported projects at many events. Events attended in 2011 included:

- B.C. Natural Gas Symposium
- B.C. Natural Resource Forum
- B.C. Oil and Gas Conference
- B.C. Unconventional Gas Forum
- China Mining
- Dawson Creek World Water Day Workshop
- Energy and Mines Ministers
- Federal Energy, the Environment and Natural Resources Senate Committee
- Kamloops Exploration Group Conference
- Mineral Exploration Roundup
- Minerals North
- Minerals South
- Prospectors and Developers Association of Canada Conference (PDAC)
- Rock Talks
- Select Standing Committee on Finance and Government Services
- Union of B.C. Municipalities
- Vancouver Island First Nations Resource Opportunities
- Various Local Government Association Meetings (Kootenay & Boundary, Southern Interior, Lower Mainland, North Central)

In addition, Geoscience BC, in partnership with the B.C. Geophysical Society, hosted an “Exploration Undercover” Workshop in mid-October in Vancouver, and a Montney Water Workshop in May for companies participating in the Montney Water Project.



Highland Valley apatites with phyllic alteration. Image from GBC Report 2011-17 (Porphyry Indicator Minerals Project) by F. Bouzari et al., MDRU.

## Looking forward to 2012

This next year promises to be just as eventful for Geoscience BC. Mineral Exploration Roundup 2012 will host the release of the Summary of Activities 2012 volume, as well as the new QUEST-Northwest high-resolution airborne magnetic datasets. QUEST-Northwest mapping and geochemistry data will be released in the spring. New results from the Horn River Basin work will be released in early 2012 as well.

New projects will get underway in 2012 (see page 13 for details), and upcoming conferences (Mineral Exploration Roundup, PDAC) will include presentations from Geoscience BC proponents on their sponsored projects.

As always, all of the latest Geoscience BC news is available from our website ([www.geosciencebc.com](http://www.geosciencebc.com)), and via our e-mail list. For more information on Geoscience BC, contact us at [info@geosciencebc.com](mailto:info@geosciencebc.com) or 604.662.4147.

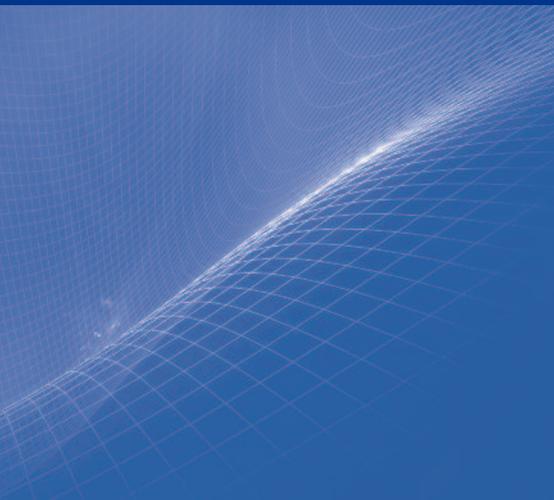


Photo courtesy of Aeroquest Ltd.

## The Geoscience BC Team in 2011

### Board of Directors

**John Thompson, Chairman of the Board**  
VP Technology & Development,  
Teck Resources Limited

**C.D. ('Lyn) Anglin**  
President & CEO, Geoscience BC

**David Caulfield**  
Co-Chairman & Director of Business  
Development, Kiska Metals Corporation

**Mike Cathro<sup>+</sup>**  
Principal, Cathro Resources Corp.  
VP, Virginia Energy Resources Inc.

**David Caulfield**  
Co-Chairman & Director of Business  
Development, Kiska Metals Corporation

**Richard Dunn**  
VP, Regulatory and Government Relations  
Canadian Division, Encana Corporation

**Tony Fogarassy**  
Principal, Dunbar Law Corporation

**Geoff Freer**  
CEO, Firth Group

**James Gray**  
Partner, De Visser Gray LLP Chartered  
Accountants

**Calvin Helin**  
President & CEO, Eagle Group of Companies, LLC,  
and President, Native Investment and Trade  
Association

**David James\***  
Independent Consultant

**Stephanie Killam**  
Mayor, District of Mackenzie

**Brian Kynoch<sup>+</sup>**  
President, Imperial Metals Corporation

**David Strong\***  
Independent Consultant

**David Taylor**  
VP, Business Development & Exploration,  
Parex Resources Inc.

<sup>+</sup> Appointed in 2011

\* Term completed in 2011

### Staff

**C.D. ('Lyn) Anglin**  
President and CEO

**Kirstie Simpson**  
VP, Minerals Research

**Christa Sluggett**  
Project Geologist and Communications  
Coordinator

**Fion Ma**  
GIS Specialist

**Rhonda Schultz**  
Accountant and Corporate Secretary

**Angel Sit**  
Office Manager and Executive Assistant

### Primary Consultants and Research Associates

**Thomas Bissig**  
UBC – MDRU

**Derek Brown**  
Strategic West Energy Ltd.

**Andy Calvert**  
Simon Fraser University

**Fionnuala Devine**  
Merlin Geosciences Inc.

**Dan Jepsen**  
C3 Alliance Corp.

**Russell Hartlaub**  
BCIT

**Brad Hayes**  
Petrel Robertson Consulting Ltd.

**Dave Heberlein**  
Heberlein Geoconsulting

**Wayne Jackaman**  
Noble Exploration Services Ltd.

**Ben Kerr**  
Foundry Spatial Ltd.

**Garth Kirkham**  
Kirkham Geosystems Ltd.

**Peter Kowalczyk**  
PK Geophysics

**Gordon Loverin**  
T'senaglobe Communications

**Don MacIntyre**  
D.G. MacIntyre & Associates Ltd.

**David Molinski**  
OnPoint Consultants

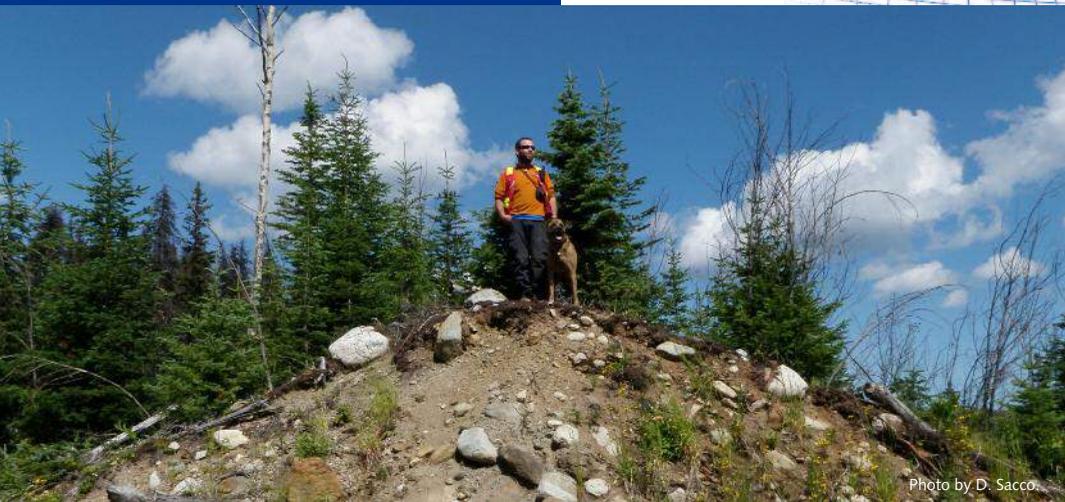


Photo by D. Sacco



Photo by Pignotta

### Technical Advisory Committees

Geoscience BC has two Technical Advisory Committees (TACs), a Minerals TAC and an Oil & Gas TAC. Individuals on these committees represent a range of expertise in industry, academia and government. The TACs are tasked with reviewing and recommending proposals under consideration by Geoscience BC, and setting Geoscience BC's technical priorities. The TAC's recommendations are presented to Geoscience BC's Board of Directors for final funding approval.

### Minerals Technical Advisory Committee

- Henry Awmack**  
Equity Exploration Consultants Ltd.
- Lindsay Bottomer**  
Entrée Gold Ltd.
- Peter Bradshaw**  
First Point Minerals Corporation
- Rob Cameron**  
Bearing Resources Ltd.
- Stephen Cook**  
Teck Resources Ltd.
- Andrew Davies**  
Teck Resources Ltd.
- Rob Duncan\***  
Evrin Resources Corp.
- Craig Hart**  
UBC – MDRU
- Jacques Houle**  
Consultant

- Ward Kilby**  
Cal Data Ltd.
- Jules Lajoie**  
CanAlaska Uranium Ltd.
- Bob Lane**  
Plateau Minerals Corporation
- Rob Pease**  
Sabina Gold & Silver Corp.
- Mark Rebagliati**  
Hunter Dickinson Inc.
- Wayne Roberts**  
Consultant
- Steve Robertson\***  
Imperial Metals Corporation
- Victoria Sterritt<sup>+</sup>**  
Teck Resources Ltd.
- Non Voting Members**
- Garth Kirkham**  
Kirkham Geosystems Ltd.
- Carmel Lowe**  
Natural Resources Canada
- Bruce Northcote**  
BC Ministry of Forests, Mines and Lands  
Mineral Development Office
- Steve Rowins**  
BC Geological Survey
- Kirstie Simpson, Chair**  
Geoscience BC
- Christa Sluggett, Co-Chair**  
Geoscience BC

<sup>+</sup> Appointed in 2011  
\* Resigned in 2011

### Oil & Gas Technical Advisory Committee

- Andrew Calvert, Chair**  
Simon Fraser University
- Brad Hayes**  
Petrel Robertson Consulting Ltd.
- John Hogg**  
MGM Energy Corporation
- Richard Kellett**  
Sherritt International Corporation
- Grant Knowles**  
EnCana Corporation
- Don Lawton**  
University of Calgary
- Lavern Stasiuk**  
Shell Canada Ltd.
- Non Voting Members**
- Christa Sluggett, Co-Chair**  
Geoscience BC
- Fil Ferri**  
BC Ministry of Energy
- David James**  
Independent Consultant
- Peter Kowalczyk**  
PK Geophysics Inc.
- Carmel Lowe**  
Natural Resources Canada
- David Taylor**  
Parex Resources Inc.

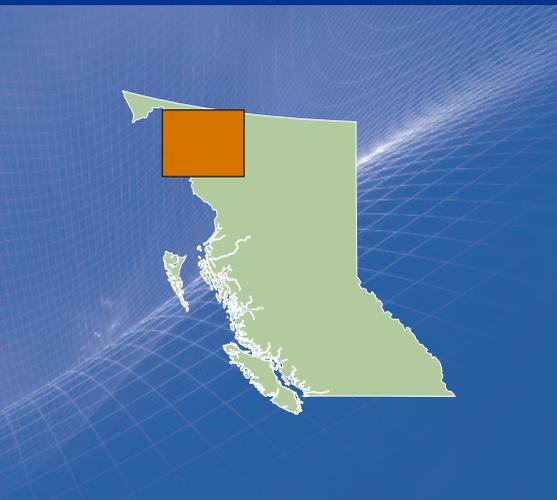


Photo courtesy of Aeroquest Ltd.

## Geoscience BC's QUEST-Northwest Initiative

**QUEST-Northwest, Geoscience BC's latest major mineral geoscience initiative, is designed to stimulate new mineral exploration activity in the northwestern part of the province, and to enhance the success of existing exploration activities in the region. The project was officially announced at the Minerals North conference in Stewart in late April 2011, with Geoscience BC committing \$3.25 million to the program.**

Like the QUEST, QUEST-West and QUEST-South projects before it, QUEST-Northwest includes both airborne geophysical surveys and regional geochemical programs. The QUEST-Northwest program also includes a regional mapping component, which was undertaken in partnership with the BC Geological Survey (BCGS). Both the regional geochemical sampling and airborne magnetic survey field programs benefitted from the hiring of members of the Tahltan First Nation.

Fieldwork for the initiative commenced in June 2011, with the start of the bedrock mapping program led by Jim Logan of the BCGS. Geoscience BC funding supported the hiring of the field crew and ongoing analytical work. The main focus of the program is 1:50,000 mapping west of Dease Lake, however, the program also includes smaller studies of the Hotailuh batholith, Snow Peak pluton and Tsaybahe group in the Dease Lake area. Fieldwork for this program ended in August 2011, and first results will be available in early 2012.

The QUEST-Northwest geochemical program includes both new sampling and reanalysis of existing samples. Over 400 new stream sediment samples were collected in

the Dease Lake and Telegraph Creek areas in August 2012 by Noble Exploration Services Ltd, and are currently being analyzed. Existing stream sediment samples in NTS 104K are also currently being reanalyzed by ICP-MS techniques. These new datasets will be released in early 2012, and will be accompanied by the results an INAA reanalysis program in 104F and G.

QUEST-Northwest also includes two high-resolution airborne magnetic surveys. The Block 1 survey was flown by Aeroquest Ltd., and the Block 2 survey was flown by Geo Data Solutions, both at a line spacing of 250 m. Data collection on both surveys started in August 2011 and was completed by the end of October 2011. The release of both airborne magnetic datasets is scheduled for Mineral Exploration Roundup in January 2012.

In addition to the new high-resolution airborne surveys, an airborne magnetic data compilation project is in development in the Stewart area (not shown on map).

For more information on the QUEST-Northwest Project, go to: <http://www.geosciencebc.com/s/Quest-Northwest.asp>.

### DID YOU KNOW?

Geoscience BC partnered with the Geological Survey of Canada to fly an airborne magnetic survey of the Jennings River map sheet (NTS 104O, just north of the QUEST-Northwest surveys) in 2006. The results are available through Geoscience BC's website.



Photo by B. van Straaten.

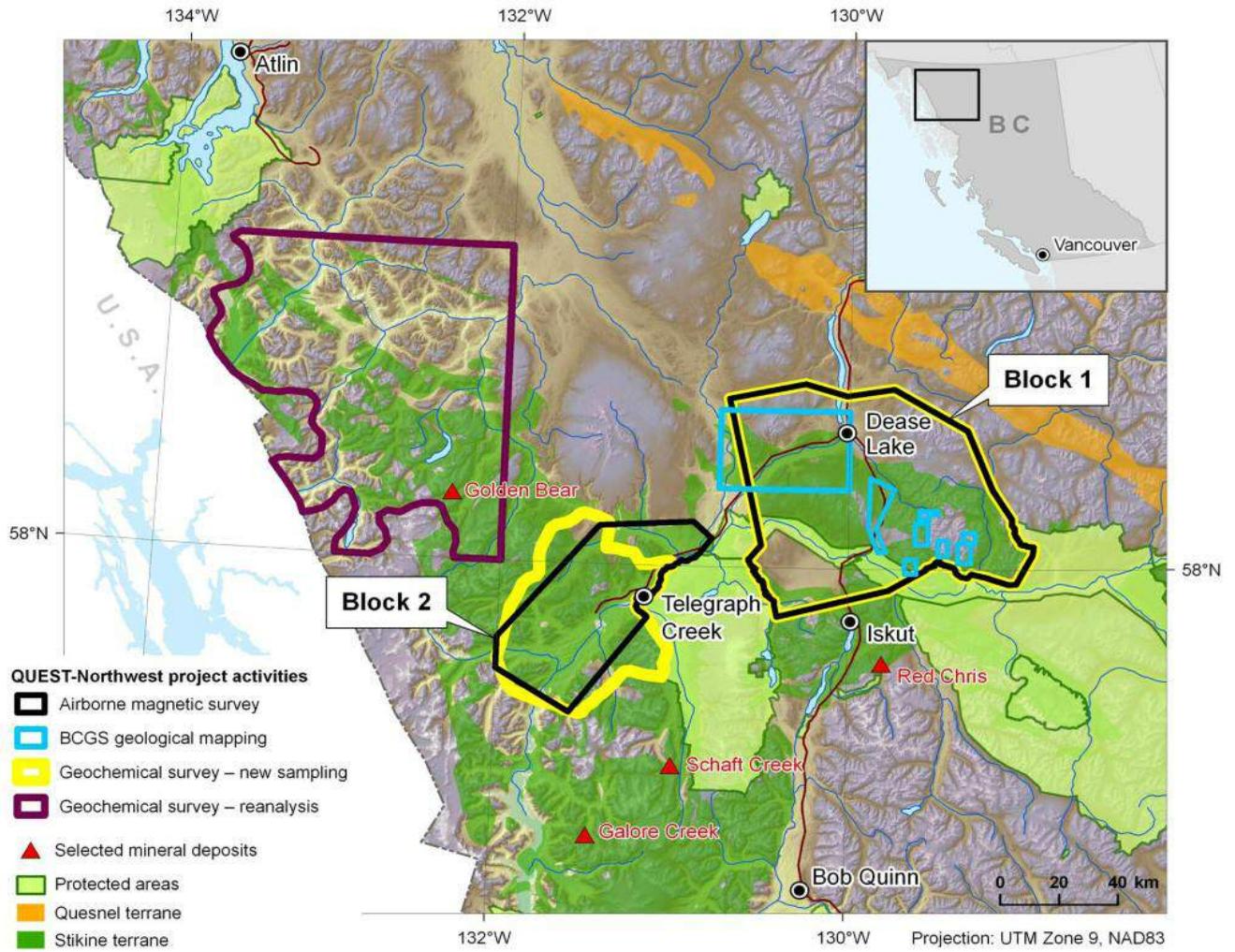


Photo by W. Jackamañ.

## Ongoing Minerals Initiatives in 2011

Geoscience BC has many Minerals partnership projects throughout the province. The following is a selection of some of the new, ongoing and completed projects active in 2011.

For a complete listing of all Geoscience BC-supported projects, go to [www.geosciencebc.com/s/Projects.asp](http://www.geosciencebc.com/s/Projects.asp).



Photo by G. Pignotta.



Photo by J. Norris.

## New Projects in 2011

### Geological Mapping, Compilation and Mineral Evaluation, Burrell Creek Map Sheet (082E/09), Southern British Columbia

– T. Höy

This project follows up on the geological mapping and compilation work T. Höy completed in the Deer Park map sheet (NTS 82/08) in 2009, which was released as Geoscience BC Report 2010-7. The project includes approximately 40 days of field mapping, concentrated in areas of higher mineral potential or mineral occurrences, compilation of data in digital format, and evaluation and upgrading of mineral occurrences for BC MINFILE. The data will be integrated to produce several geological maps, at both 1:20,000 and 1:50,000 scales, suitable for directing and focusing mineral exploration. Fieldwork for the project started in 2011, and will continue through 2012, with the final map to be released in early 2013.

### Leveraging International Earth Science Standards to Enhance Mineral Exploration Success in British Columbia – C. Smyth, Georeference Online Ltd. and Refractions Research

This project, led by Georeference Online Ltd. and Refractions Research, with input from Geoscience BC and the British Columbia Geological Survey, aims to demonstrate how the incorporation of international earth science standards will materially improve the science of mineral exploration in British Columbia. Specifically, the project will relate EarthResourcesML standard terminologies to a few key BC geoscience databases to demonstrate the effectiveness of using standard terminologies to improve mineral exploration in BC. Final results of this test project will be released in early 2012.

## Ongoing Projects

### Porphyry Integration Project – F. Devine, D. Heberlein and P. Kowalczyk for Geoscience BC

The Porphyry Integration Project is working to develop integrated geological, geophysical and geochemical maps and datasets for thirteen important porphyry districts in BC. The exploration data are drawn from public and, where possible, private company contributions. The goal is to develop an integrated model for porphyry discovery that links conceptual geological models with practical field exploration. A project update is published in the Summary of Activities 2011 volume. Final results will be available in late 2012.

### Geochemical Models for BC Porphyry Deposits: Outcropping, Blind and Buried Examples – F. Blaine and C.J.R. Hart, Mineral Deposit Research Unit (MDRU)

This project is compiling a consistent and comprehensive geochemical database for porphyry deposits in BC through acquisition of data from assessment reports and industry sources, with the goal of categorizing deposits and geochemical data based on deposit and environment variables likely to affect geochemical distribution. Geochemical exploration models for specific deposit types and surficial environments will then be developed. Final results from this project will be released in early 2012, and a progress report is published in the Summary of Activities 2011 volume.

### Carbonate Alteration as an Indicator of Proximity to Eskay Creek-Type Deposits – T. Monecke and T. Meuzelaar, Colorado School of Mines

The goal of this project is to identify a set of geochemical vectors that can be used to explore for Eskay Creek-type deposits. Project research in 2011 focused on constraining fluid controls on ore genesis at Eskay Creek. Results of this modelling, presented in Summary of Activities 2011, demonstrates that the Eskay Creek deposit formed from a near-neutral and relatively reducing fluid, and that exploration for a

similar deposit can be guided by criteria not unlike those used in the search for conventional massive sulphide deposits.

### Geochemistry, Volcanology and Physical Properties of the Late Triassic Nicola Arc and its Metallogenic Implications – T. Bissig and S. Vaca, MDRU

This project is investigating the geochemical and physical characteristics along and across the Late Triassic volcanic arc components of the Quesnel terrane, which host porphyry Cu-Au mineralization. Recent work, reported in the Summary of Activities 2011 volume, examines chemical variations in pyroxene and Fe-Ti-oxide crystals in basalts of the Nicola Group in southern BC, and relates the results to magma alkalinity and the location of known deposits.

### Glacial Geologic Framework and Drift Prospecting for a Portion of the QUEST Project Area – B. Ward, Simon Fraser University

Mineral exploration activity in the central QUEST Project area has been hindered in the past, due to the thick surficial deposits which cover much of the region. This three-year project is studying the Quaternary geology of the area, and has recently focused on interpreting the INAA results from the heavy mineral fraction of 136 till geochemistry samples. A project update is published in the Summary of Activities 2011 volume, with a final project reported to be released in 2012.

### Surficial Geochemistry and Lithology of the Bulkley River Valley, Central British Columbia – A. Stumpf, University of Illinois

This project, which is focused on the Quaternary geology and till geochemistry of the Bulkley River Valley, aims to provide the mineral exploration community with additional information characterizing glacial deposits in the region, which form a near-continuous cover masking the bedrock surface. A Summary of Activities 2011 article describes the project database that will be released in early 2012.



Photo by R. Hartlaub

**Defining the Upper Parts of an Alkalic Porphyry Copper-Gold Deposit: The Evolution of the Porphyry Copper-Gold Deposit at Red Chris, Northern British Columbia** – C.J.R. Hart and J. Norris, MDRU

This M.Sc. project is focused on increasing the understanding of the magmatic evolution, mineralization styles and alteration of Imperial Metals' Red Chris deposit in northwest BC, with a particular focus on the East zone. The project will wrap up in 2012.

**Relationship Between Magmatism/Volcanism, Deformation and Economic Mineralization within Paleozoic Strata in the Terrace-Kitimat Area, British Columbia** – G. Pignotta, University of Wisconsin

The primary objective of this project is to complete structural analysis, geochemical characterization and an economic mineral assessment of the Zymoetz Group rocks in the Terrace-Kitimat region. Field and analytical work on the project is complete, and the final project report will be published in 2012.

**Implications for Geology, Metallogeny and Mineral Potential of the Basement of Quesnellia in southern British Columbia** – J. Mortensen, University of British Columbia

This project, undertaken in 2010 to compliment Geoscience BC's QUEST-South project, aims to increase the understanding of the pre-Mesozoic basement assemblages of the southern Quesnel terrane. Final results of the project will be released in 2012.

**Till Geochemistry of Tahtsa Lake District North and Adjacent Areas, West-Central British Columbia – A Key Ingredient for the Discovery of New Porphyry, VMS, and Polymetallic Vein Mineralization** – T. Ferbey, BC Geological Survey

A joint Geoscience BC-BC Geological Survey initiative, this project aims to characterize the Quaternary materials and assess the economic potential of covered bedrock in the Tahtsa Lake district by conducting till geochemistry surveys. Till geochemistry results for the Nadina River

and Colleymount map areas were released in 2010 and 2011 respectively, and final maps will be released in 2012.

**Projects Completed in 2011**

The following Geoscience BC mineral geoscience projects wrapped up in 2011. All projects deliverables (may include posters, presentations, Summary of Activities articles and final reports) are available through Geoscience BC's website:

- A Biogeochemical and Follow-up Study to Investigate the Effectiveness of MMI, Ionic Leach and Deionised Water Extractions on Ah Horizon Samples at Kwanika (D. Heberlein, Heberlein Geoconsulting)
- Vancouver Island Data Reanalysis Project (W. Jackaman, Noble Exploration Services Ltd.)
- QUEST-South: Catchment Basin Analysis and Stream Sediment Exploration (D. Arne and B. Bluemel, ioGlobal Solutions Inc.)
- Regional 3D Inversion Modeling of Airborne Gravity and Magnetic Data: QUEST-South, BC (Mira Geoscience Ltd.)

- Regional 3D Inversion Modeling of Airborne Gravity, Magnetic, and Electromagnetic Data, Central BC (Mira Geoscience Ltd.)
- An Evaluation of the Strata-bound Base Metal Potential of the Middle and Upper Purcell Supergroup, Southeast British Columbia (R. Hartlaub, BCIT)
- Porphyry Indicator Minerals (PIMS): Exploration for Concealed Deposits in QUEST, central British Columbia (C.J.R. Hart and F. Bouzari, MDRU)\*
- Geological, Mineralogical and Geochemical Characterization of Carbonate-hosted Nonsulphide Zn-Pb Mineralization in Southern B.C. (S. Paradis, GSC; and G. Simandl, BCGS)
- Ground truthing the BW Mining predicted geology map (T. Bissig for Geoscience BC)

\* A second phase of this project was recently funded by Geoscience BC. See page 13.



Photo by G. Pignotta

# Coming in 2012

## SEEK: Stimulating Exploration in the East Kootenays

In November 2011 Geoscience BC launched the SEEK project, which is aimed at increasing economic activity related to mineral exploration in the East Kootenay region through the acquisition, compilation and addition of value to public and private sector mineral exploration information.

The East Kootenays have a long and successful history of mineral exploration and mining. One of the world's largest lead-zinc mines, the former Sullivan Mine, sustained the economy of Kimberley and the East Kootenay region for almost 100 years. The initial phase of the SEEK Project will capitalize on the region's rich exploration history, concentrating on compiling existing mineral prospect and exploration information with a particular focus on capturing knowledge from local prospectors and exploration geologists. This local knowledge represents invaluable information that is not yet in the public domain.

Dr. Russell Hartlaub, faculty member in the Department of Mining and Mineral Exploration at BCIT, will manage all activities as project coordinator. He will be working closely with Geoscience BC staff and the East Kootenay Chamber of Mines to deliver this project. Geoscience BC's Minerals Technical Advisory Committee will provide technical oversight on the project.

## Northern Vancouver Island – Exploration Geoscience Project in Development

Geoscience BC is also working with a number of communities and Regional Districts on Northern Vancouver Island to develop a proposal for an exploration geoscience project on the Island. The proposal will be submitted to the Island Coastal Economic Trust for partnership funding in the spring of 2012, and if successful, we hope to also launch the project in 2012.



Photo by J. Norris.

## Request for Proposals 2011: New Projects

Geoscience BC generally issues a Request for Proposals (RFP) each fall, looking for new projects that will attract investment to British Columbia. All proposals are evaluated by one of Geoscience BC's Technical Advisory Committees (TACs), with final funding decisions made by Geoscience BC's Board of Directors.

In September 2011, Geoscience BC issued two RFPs, one focused on the QUEST-Northwest Project area, and one open to minerals geoscience projects located anywhere in BC. The following four projects were approved for funding in December 2011, and will commence in early 2012:

- PIMS: Porphyry indicator minerals from alkalic Cu-Au porphyry deposits in British Columbia – *Farhad Bouzari, Mineral Deposit Research Unit*
- Nelson-Lardeau Regional Geochemical Survey Reanalysis, Kootenays, British Columbia – *Wayne Jackaman, Noble Exploration Services Ltd.*
- Seeing through Chilcotin basalts: the geochemical signal of what is hidden underneath – *Thomas Bissig, Mineral Deposit Research Unit*
- Enhancing exploration effectiveness for polymetallic mineralization in southeastern British Columbia: a combined petrological and tectonic approach – *David Pattison, University of Calgary*

More information on all of these projects will be posted to Geoscience BC's website in the near future. Stay tuned to [www.geosciencebc.com/s/projects.asp](http://www.geosciencebc.com/s/projects.asp).



Photo by W. Jackaman



Photo courtesy of Kerr Wood Leidal.

## Horn River Basin Project – Phase II



Photo courtesy of Kerr Wood Leidal.

**In September 2011 Geoscience BC and the Horn River Basin Producers Group officially launched Phase II of the collaborative Horn River Basin project, which is undertaking baseline research on water resources in the Basin.**

Phase II expands and builds on the deep saline aquifer research completed in Phase I (see Geoscience BC Report 2010-11), to include surface and ground water hydrological research. The Horn River Basin is located in the northeastern corner of the province, just north of Fort Nelson.

Phase II of the Horn River Basin Water Study includes three core components: a surface water study, an airborne electromagnetic survey pilot project, and a continuation of the deep saline aquifer study started in Phase I. The project work is supported by the Province of British Columbia through grants to Geoscience BC, and by the Horn River Basin Producers Group and individual member companies.

The three-year surface water study is focused on collecting data on the quantity and quality of surface water sources in the Horn River Basin and assessing its availability for shale gas development. Kerr Wood Leidal Associated Ltd. is carrying out this work with assistance from Peace Country Technical Services and Environmental Dynamics Inc. This project also includes direct participation of representatives of the Fort Nelson First Nation, and the Acho Dene Koh First Nation.

The airborne electromagnetic survey pilot project was developed to test the applicability of electromagnetic surveys to mapping of near-surface groundwater. SkyTEM Canada Inc. completed the data collection in April 2011, and results will be released to the public in early 2012.

Finally, Phase II includes the continuation of the Phase I data collection and integration on select deep saline aquifers. This research, led by Petrel Robertson Consulting Ltd., has already produced significant results and has supported shale gas producers reducing their use of surface water for shale gas development in some parts of the basin. The results of the Phase II work will be released to the public in early 2012.

The Horn River Basin Producers Group consists of 11 of the companies involved in the Horn River play, namely: Apache Canada Ltd., ConocoPhillips, Devon Canada Corp., Encana, EOG Resources Canada, Imperial Oil Resources/ExxonMobil Canada, Nexen Inc., Pengrowth, Suncor, Quicksilver, and Stone Mountain Resources. The purpose of the group is to facilitate cooperation and communication between major industry players, key stakeholders and First Nations in the area.

For more information on the Horn River Basin Project, go to: [www.geosciencebc.com/s/HornRiverBasin.asp](http://www.geosciencebc.com/s/HornRiverBasin.asp).



Photo courtesy of F. Hirschfield



## The Montney Water Project

**The Montney Water Project, initiated in 2010, is designed to provide a comprehensive inventory of water sources and potential for deep geological disposal sites in the Montney Gas Play area, by creating a comprehensive database of surface water, ground water and deep saline aquifers in the Montney area.**

Water is an essential component of shale gas development, and is used for drilling and hydraulic fracturing. Hydraulic fracturing or fracking is a process where a mixture of water and sand is injected into the deep shale at a high pressure to create small cracks in the rock, which allows gas to flow.

The Montney Water Project is divided into three components: surface water, near-surface water and deep sub-surface water. All three components are now complete, and some of the results have been released through Geoscience BC's website. Project deliverables available to-date through Geoscience BC's website include:

- Technical articles describing the project
- Posters for seven watersheds in the Montney area, which include information on streamflow, lakes, water balance, surficial materials, land use and vegetation, climate (present and future models), ground water, paleovalleys and ungauged watersheds
- Preliminary bedrock topography and drift thickness maps
- A surficial geology compilation map
- Links to the updated water well database (WELLS) and aquifer mapping completed as part of the project (hosted on the BC Ministry of Environment website)

In addition, the results of the sub-surface water component will be released through Geoscience BC's website in 2012.

The Montney Water Project is supported with funding from Geoscience BC,

the Science and Community Environmental Knowledge Fund and seven natural gas producers operating in the area – ARC Resources Ltd., ConocoPhillips Canada, Devon Canada Corporation, Encana Corporation, Progress Energy, Shell Canada, and Talisman Energy.

In addition, Geoscience BC is working collaboratively with a number of government departments and agencies, who are making significant in-kind contributions to the project, including: Ministry of Energy, Mines, Ministry of Environment, Ministry of Health, Oil and Gas Commission, Northern Health Authority, as well as the University of Northern British Columbia and the City of Dawson Creek.

For more information on the Montney Water Project, go to [www.geosciencebc.com/s/Montney.asp](http://www.geosciencebc.com/s/Montney.asp)



Photo by A. Hickin.

### DID YOU KNOW?

Since 2005, Geoscience BC has given out 48 student scholarships and supported 37 students through project funding.



Photo courtesy of F. Hirshfield.



Photo courtesy of F. Hirshfield.

## Northeast BC Partnership Projects in 2011

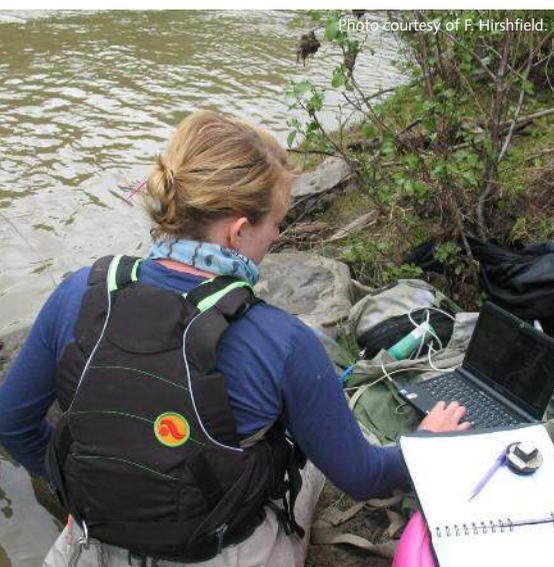


Photo courtesy of F. Hirshfield.

**In addition to the Horn River Basin and Montney Water Projects, Geoscience BC also supported smaller partnership projects in Northeast BC in 2011.**

**Landscape Level Hydrology Modelling to Support Water Allocation Decision-Making for the Oil and Gas Sector in Northeast British Columbia** – *A. Chapman, BC Oil and Gas Commission*

This project, initiated as a partnership between Geoscience BC, the BC Oil and Gas Commission (OGC) and the BC Ministry of Forest, Lands and Natural Resource Operations (FLNRO), is extending and fine-tuning hydrological modelling previously undertaken for the Horn River Basin and Liard Basin gas play areas into the rest of northeast BC. The project will produce a decision-support tool for the OGC and FLNRO to use in evaluating requests for industrial short- and long-term water licences for unconventional gas development. A paper further describing the project goals is published in the Summary of Activities 2011 volume.

**Examining Present and Future Water Resources for the Kiskatinaw River Watershed, British Columbia** – *J. Sui and J. Li, University of Northern British Columbia*

A sub-project funded through the Montney Water Project (see previous page), the Kiskatinaw River Watershed research project is a collaborative initiative developed by the City of Dawson Creek, the University of Northern BC and the BC Ministry of Environment. The Kiskatinaw River watershed is the primary source of water for the City of Dawson Creek and surrounding area, and, as there are competing uses of surface and groundwater by industry, communities and agricultural users it is increasingly important for water managers in the region to understand the hydrologic

characteristics and nature of withdrawals in the watershed.

**Quantification of the Gas in Place and Flow Characteristics of Tight Gas Charged Rocks and Gas Shale Potential in British Columbia** – *M. Bustin, University of British Columbia*

This two-year study is focused on quantifying and interpreting the reservoir characteristics of gas-shale units in northeastern BC. Research in 2011 included high-resolution stratigraphic analyses of the mineralogy and pore system of strata in the Groundbirch area south of Fort St. John. The results of this work are described in the Summary of Activities 2011 volume.

**Biostratigraphic and Sedimentological Studies of Natural Gas-Bearing Triassic Strata in the Halfway River Map Area, NE British Columbia** – *J. Mortensen and M. Golding, University of British Columbia*

This project is focused on improving the biostratigraphic correlations of gas-producing formations in northeast BC, focusing initially on surface equivalents of the gas-producing formations, and later extending to the subsurface sections. Fieldwork in 2011 was focused along the Alaska Highway in northeast BC, and the results of this work, as well as progress on conodont and detrital zircon analysis, is presented in the Summary of Activities 2011 volume.

**Upper Paleozoic to lowest Triassic Succession: Sukunka–Kakwa area, BC** – *C. Henderson, University of Calgary*

This two-year study is focused on understanding the tectonic evolution and stratigraphy of the Dawson Creek area, and the implications for hydrocarbon exploration. The final project report, published in the Summary of Activities 2011 volume, highlights the complicated tectonic history of northeast BC.



Photo courtesy of F. Hirshfield.

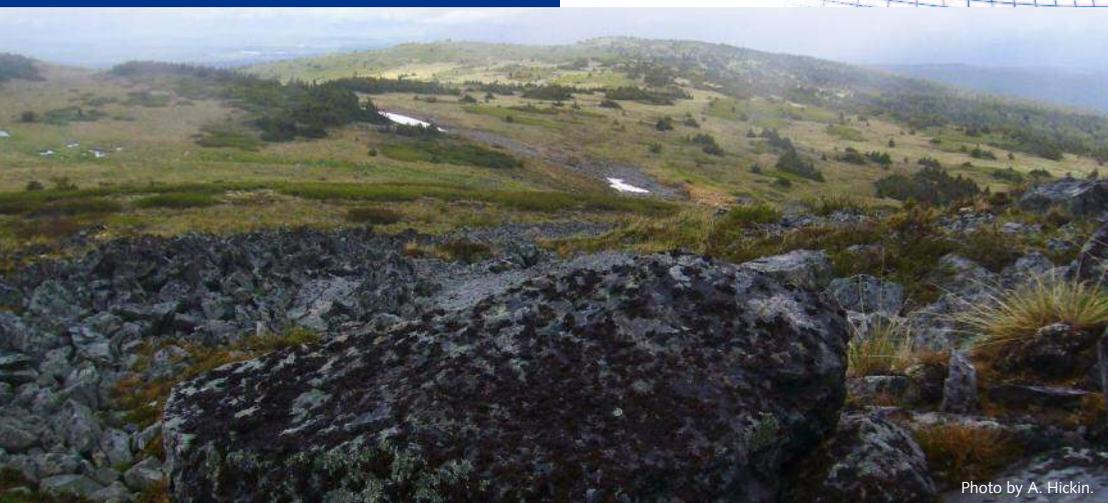
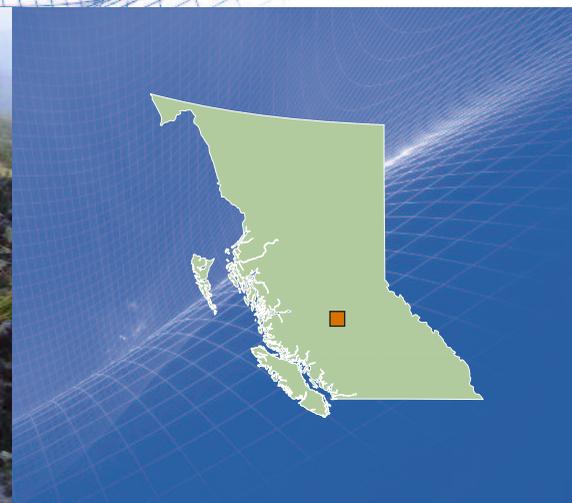


Photo by A. Hickin.



## Nechako Basin

**The Nechako Basin in central BC was the focus of Geoscience BC's first major oil & gas project, the Nechako Basin Seismic survey. It was also the target of Geoscience BC's first few oil & gas Requests for Proposals.**

The Nechako Basin oil & gas partnership programs listed below have either recently been completed or are nearing completion. For more information on Geoscience BC's work in the Nechako Basin, go to [www.geosciencebc.com/s/NechakoSeismic.asp](http://www.geosciencebc.com/s/NechakoSeismic.asp).

### **Rock Physical Property Measurements for Modelling Geophysical Results – K. Russell, University of British Columbia**

This recently completed project focused on measuring the geophysical properties (e.g. magnetic properties, density, porosity, electrical conductivity, VP and VS) of key lithologies within the Nechako Basin, to aid in the interpretation of geophysical surveys. The final report (including a physical property database) was released in 2011 as Geoscience BC Report 2011-10, and the results are further discussed in a Summary of Activities 2011 paper.

### **Nature, Distribution, Thickness and Regional Structural Framework of Eocene Volcanic Centres in the Nechako Basin, South-Central BC – E. Bordet and C. Hart, Mineral Deposit Research Unit, University of British Columbia**

This ongoing project is evaluating the distribution, nature and thickness of Eocene volcanic rocks in the Nechako Basin, which have extensively modified and complicated the older geology. The project has implications for both the mineral and oil & gas exploration industries, as the Eocene rocks have mineral potential, and the older rocks they cover have hydrocarbon potential. Geoscience BC Report 2011-13 presents the preliminary interpretations of

this study, which is part of E. Bordet's ongoing Ph.D. project.

### **Gravity and Magnetic Inversion Modelling: Nechako Basin, BC – Mira Geoscience Ltd.**

Mira Geoscience's Advanced Geophysical Interpretation Centre (AGIC) undertook 3-D constrained inversion modeling of airborne gravity and magnetic data over the Nechako Basin, in conjunction with concurrent projects focused on the QUEST-West and-South project areas. Final results of this project were released as Geoscience BC Report 2011-15 in December 2011.

### **Integrated Interpretation and First Arrival Tomography of Reflection Surveys in Nechako Basin – D. Talinga and A. Calvert, Simon Fraser University**

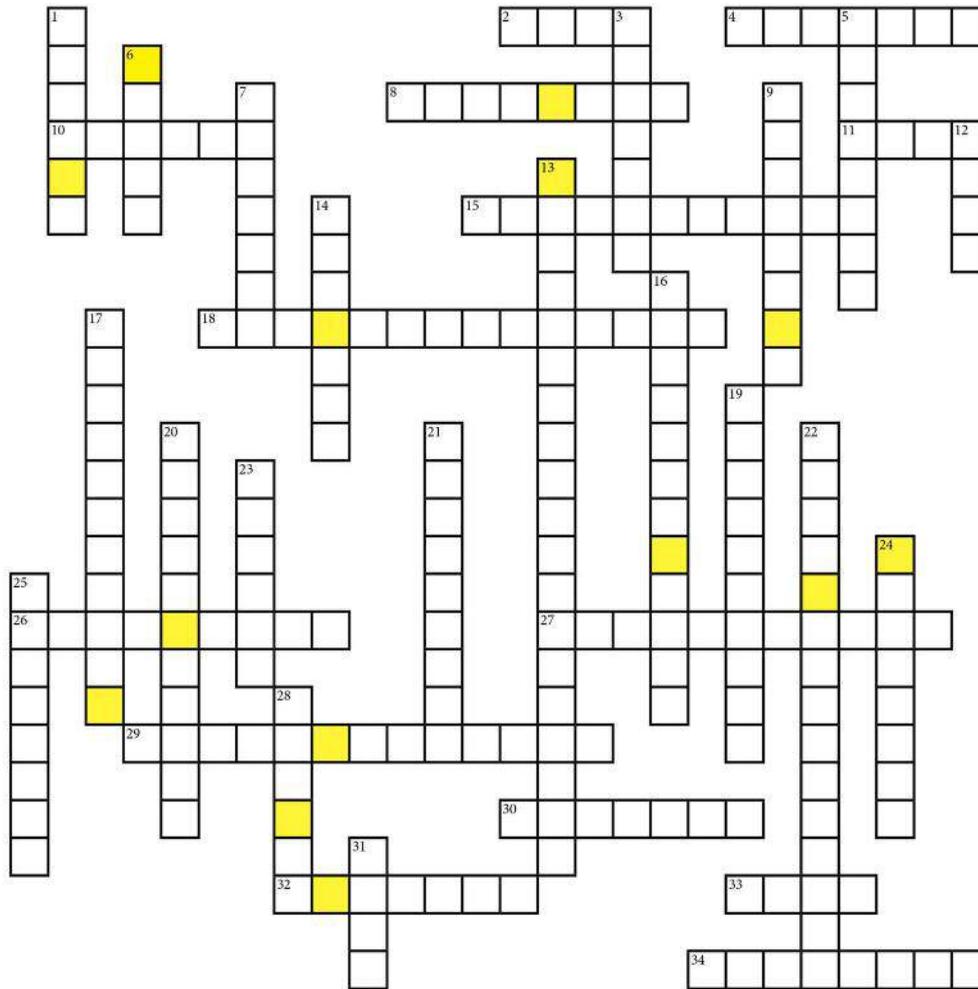
The goal of this project is to better understand the structure and hydrocarbon potential of the Nechako Basin by producing velocity models from Geoscience BC's 2008 Nechako Basin seismic survey. The project is nearing completion and Geoscience BC will issue a final report in early 2012.

### **Modelling and Investigation of Airborne Electromagnetic Data, and Reprocessing of Vibroseis Data, from Nechako Basin, BC, Guided by Magnetotelluric Results – C. Farquharson, Memorial University of Newfoundland**

This project, which is nearing completion, is conducting numerical modeling and inversion studies to assess what might be expected from a ZTEM survey of the Nechako Basin, while also utilizing the results of the Nechako Basin magnetotelluric dataset to guide the reprocessing of the 2008 seismic survey. Further details on the project are presented in the Summary of Activities 2011 volume, and a final project report will be released through Geoscience BC in 2012.



Photo courtesy of E. Bordet.



**Test your knowledge of Geoscience BC (GBC). Almost all answers to this crossword puzzle can be found in this annual report.**

Once the crossword puzzle is complete, the letters in yellow-shaded boxes can be used to spell out two words related to B.C. geology.

**Across**

- 2 GBC's provincial partner on the QUEST-Northwest mapping project (acronym)
- 4 Regional Bedrock "\_\_\_" program
- 8 Ministry of Forests, Lands and Natural "\_\_\_" Operations
- 10 GBC received "\_\_\_" million dollars from the Province in 2011
- 11 Porphyry Indicator Minerals (acronym)
- 15 Scholarship winner Stephanie studies this BC deposit (2 words)
- 18 Author of GBC Report 2011-12 (2 words)
- 26 Mira Geoscience made these types of 3D models
- 27 Porphyry "\_\_\_" Project
- 29 Local BC exploration conference (2 words)
- 30 Exploration Undercover Workshop sponsor
- 32 GBC collected this type of data in Nechako
- 33 UBC Mineral Deposit Research Center (acronym)
- 34 Hydraulic fracturing process

**Down**

- 1 Company that flew the Horn River Basin EM pilot survey
- 3 GBC is this type of organization
- 5 BC Mineral Deposit type
- 6 GBC's first major minerals initiative (acronym)
- 7 Bordet and Hart, among others, are studying this central BC basin
- 9 Title of GBC's annual report
- 12 New East Kootenays Project (acronym)
- 13 GBC's annual technical publication (3 words)
- 14 GBC Report 2011-3 examines the "\_\_\_" Central Zone
- 16 Montney Water Project posters contain information on these landforms
- 17 Industry participant in Horn River Basin project
- 19 Deposit studied by Meuzelaar and Monecke (2 words)
- 20 Association for Mineral "\_\_\_" B.C.
- 21 GBC works to attract mineral and "\_\_\_" investment (3 words)
- 22 Farquharson and Spratt studied "\_\_\_" transfer functions in 2011
- 23 President and CEO of GBC
- 24 Chair of GBC's Board
- 25 Scholarship winner Mallory studies this carbonatite complex
- 28 GBC is funded through "\_\_\_" from the Provincial Government of B.C.
- 31 Unsorted glacial sediment studied by Ward or Ferbey



Photo by K. Witherly.



Photo by K. Witherly.

## Exploration Undercover Workshop

### October 12-14th 2011

**Geoscience BC and the BC Geophysical Society hosted a two day workshop focusing on BC Porphyry deposits and the challenges of exploring for these mineral deposits undercover. The "Exploration Undercover" workshop involved one day of presentations by experts in the geology, geophysics and geochemistry of porphyry deposits and one day devoted to a practical targeting exercise.**

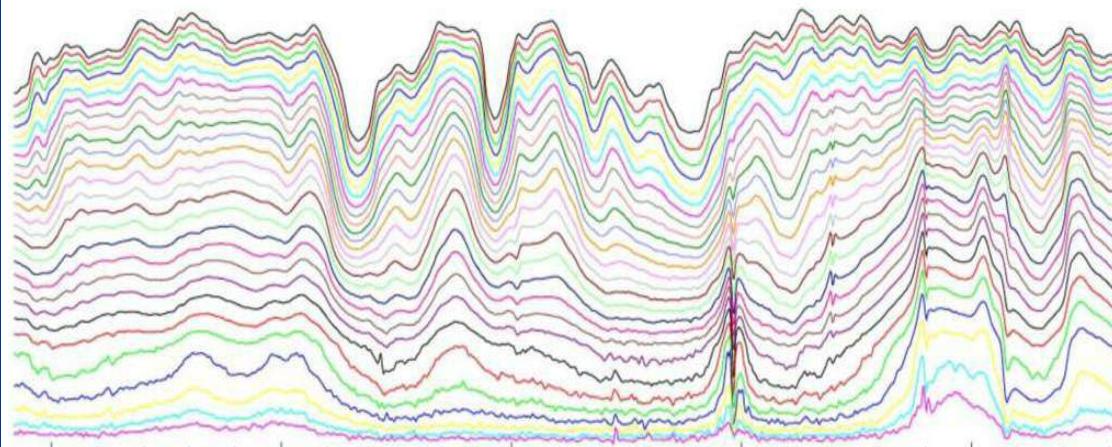
Presenters included: Ken Witherly (Condor Consulting Inc.), John Thompson (Teck Resources Ltd.), Tim Baker (Geological Survey of South Australia, PIRSA), Paul Schiarriza (BCGS), Jim Logan (BCGS), Fionnuala Devine (Merlin Geosciences), Colin Barnett (BW Mining), Dave Heberlein

(Heberlein Geoconsulting), Peter Kowalczyk (Geoscience BC), Dianne Mitchinson (Mira Geoscience), Nigel Phillips (Mira Geoscience) and James Siddorn (SRK Consulting Inc, Canada).

For the practical exercise, participants were divided into groups based on their expertise and experience (which ranged from zero to over 45 years). Each group was provided with Geoscience BC's QUEST datasets, given an exploration budget and asked to undertake a targeting exercise over a specified area. GIS experts were assigned to each group and many of the presenters from the first day of talks were available for consultation and guidance.

The workshop benefitted from generous sponsorship from: Teck Resources Ltd., Aeroquest, Rio Tinto, SJ Geophysics, Coast Mountain Geological, Fugro, Mira Geoscience, Ocean Floor Geophysics, Sander Geophysics, Geotech, Happy Creek Minerals and ESRI. In addition, four students from UBC volunteered their time to help run the practical exercise.

The quality of the presenters, the diversity of talks, the practical targeting component and the enthusiasm of the participants made for a highly successful workshop. PDF copies of all presentations will soon be available on Geoscience BC's website.



### DID YOU KNOW?

Geoscience BC's new geochemical sampling and geochemical reanalysis programs have covered 51% of the total area of the province.

# Geoscience BC Data and Publications 2011

All Geoscience BC data and reports can be accessed through our website at [www.geosciencebc.com/s/DataReleases.asp](http://www.geosciencebc.com/s/DataReleases.asp).

All releases of Geoscience BC reports and data are announced through our website and e-mail distribution list. If you are interested in receiving e-mails regarding these reports and other Geoscience BC news, please contact [info@geosciencebc.com](mailto:info@geosciencebc.com).

## Geoscience BC Report 2011-1

Geoscience BC Summary of Activities 2010 (contains 25 technical papers on Geoscience BC project activities in 2010, *various authors*)

## Geoscience BC Report 2011-2

Northern BC Sample Reanalysis Project, *by W. Jackaman*

## Geoscience BC Report 2011-3

The Application of Surface Organic Materials as Sample Media over Deeply Buried Mineralization at the Kwanika Central Zone, North-Central British Columbia, *by D.R. Heberlein and C.E. Dunn*

## Geoscience BC Report 2011-4

Regional Stream Sediment and Water Geochemical Data, Vancouver Island, British Columbia, *by W. Jackaman*

## Geoscience BC Report 2011-5

Catchment Analysis and Interpretation of Stream Sediment Data from QUEST-South, British Columbia, *by D.C. Arne and E.B. Bluemel*

## Geoscience BC 2011-6

Ground Testing of Predicted Geology Based on Stream and Lake Sediment Geochemistry in the QUEST Area, Using Previously Undocumented Bedrock Exposures, *by T. Bissig, J. Logan, D.R. Heberlein and F. Ma*

## Geoscience BC Report 2011-7 (BC Ministry of Energy and Mines, Energy Open File 2011-1)

Preliminary Bedrock Topography and Drift Thickness of the Montney Play, *by A.S. Hickin and M.A. Fournier*

## Geoscience BC Map 2011-8-1 (BC Ministry of Energy and Mines, Energy Open File 2011-2)

Compilation of Geological Survey of Canada Surficial Geology Maps for NTS 094A and 093P, *by A.S. Hickin*

## Geoscience BC Report 2011-9 (BC Geological Survey Open File 2011-06)

Till Geochemistry of the Colleymount Map Area (093L/01), West-Central British Columbia, *by T. Ferbey*

## Geoscience BC Report 2011-10

Rock Physical Property Measurements to Aid Geophysical Surveys in the Nechako Basin Oil and Gas Region, Central British Columbia, *by G. Andrews, S. Quane, R.J. Enkin, K. Russell, A. Kushnir, L. Kennedy, N. Hayward and M. Heap*

## Geoscience BC Report 2011-12

Montney Water Project: Watershed Posters, *by Foundry Spatial Ltd.*

## Geoscience BC Report 2011-13

Preliminary Lithological and Structural Framework of Eocene Volcanic Rocks in the Nechako Region, Central British Columbia, *by E. Bordet, C.J.R. Hart, and D. Mitchinson*

## Geoscience BC Report 2011-14

Regional 3-D Inversion Modelling of Airborne Gravity and Magnetic Data: QUEST-South, BC, Canada, *by Mira Geoscience Ltd.*

## Geoscience BC Report 2011-15

Regional 3-D Inversion Modelling of Airborne Gravity, Magnetic, and Electromagnetic Data, Central BC, Canada, *by Mira Geoscience Ltd.*

## Geoscience BC Report 2011-16

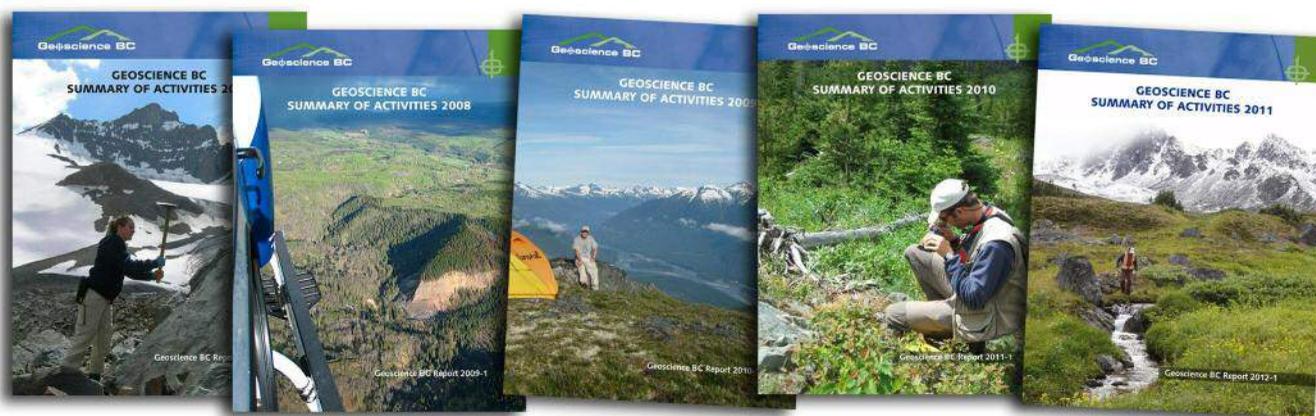
The Characteristics, Origin and Exploration Potential for Sediment-Hosted Cu±Ag Mineralization in the Purcell Supergroup, Canada, *by R.P. Hartlaub, W. J. Davis and C.E. Dunn*

## Geoscience BC Report 2011-17

Porphyry Indicator Minerals (PIMS): A New Exploration Tool for Concealed Deposits in South-Central British Columbia, *by F. Bouzari, C.J.R. Hart, S. Barker and T. Bissig*



Photo by G. Pignotta



## Summary of Activities

Released every January at Mineral Exploration Roundup, *Summary of Activities* is Geoscience BC's annual scientific volume, composed of technical papers from our new, ongoing and recently completed projects.

Geoscience BC's *Summary of Activities 2011* is the fifth in the series (in 2005 and 2006, Geoscience BC technical papers were published in the BC Geological Survey Fieldwork series). Printed in full colour, and available digitally through Geoscience BC's website, *Summary of Activities 2011* includes 162 pages of new information on Geoscience BC-funded projects.

The 2011 volume includes three papers on Geoscience BC's QUEST-Northwest Project, seven papers on minerals geoscience projects from throughout the province, and six papers on oil and gas geoscience projects in northeast and central BC.

QUEST-Northwest: Geoscience BC's new minerals project in northwestern British Columbia, by *K.A. Simpson*

QUEST-Northwest mapping: BC Geological Survey Dease Lake Geoscience Project, northern British Columbia, by *J.M. Logan, L.J. Diakow, B.I. van Straaten, D.P. Moynihan and O. Iverson*

QUEST-Northwest Project: new regional geochemical survey and sample reanalysis data, northern British Columbia, by *W. Jackaman*

Porphyry Integration Project: bringing together geoscience and exploration datasets for British Columbia's porphyry districts, by *F. Devine*

Geochemical-exploration models for porphyry deposits in British Columbia, by *F.A. Blaine and C.J.R. Hart*

Fluid controls on ore genesis in the Eskay Creek deposit, northwestern British Columbia, by *T. Meuzelaar and T. Monecke*

Development of a database for geoscience field observations, west-central British Columbia, by *A.J. Stumpf*

Heavy mineral analysis of till samples within the QUEST Project area, central British Columbia, by *B.C. Ward, M.I. Leybourne and D.A. Sacco*

Chemical variations of pyroxene and Fe-Ti-oxide crystals in basalts hosting Cu-Au porphyry mineralization in the Quesnel terrane, interior British Columbia, by *S. Vaca, T. Bissig, M. Raudsepp and C.J.R. Hart*

Geological mapping, regional data compilation and mineral evaluation in the Burrell Creek map area, southeastern British Columbia, by *T. Höy and W. Jackaman*

Hydrological modelling and decision-support tool development for water allocation, northeastern British Columbia, by *A. Chapman, B. Kerr and D. Wilford*

Geological controls on matrix permeability of the Doig-Montney hybrid shale-gas-tight-gas reservoir, northeastern British Columbia, by *G.R.L. Chalmers, R.M. Bustin and A.A.M. Bustin*

Biostratigraphy and sedimentary provenance of Lower and Middle Triassic natural-gas-bearing rocks in northeastern British Columbia: progress report, by *M.L. Golding, J.K. Mortensen, J-P. Zonneveld and M.J. Orchard*

Chronostratigraphic and tectonostratigraphic summary of the Late Paleozoic and Early Triassic succession in east-central British Columbia, by *C.M. Henderson, K.D. Zubin-Stathopoulos and G.J. Dean*

Rock physical-property measurements for the Nechako Basin oil and gas region, central British Columbia, by *A. Kushnir, G. Andrews, J.K. Russell, R.J. Enkin, L.A. Kennedy, M.J. Heap and S. Quane*

Analysis of magnetotelluric transfer functions to determine the usefulness of ZTEM data in the Nechako Basin, south-central British Columbia, by *J.E. Spratt, C.G. Farquharson and J.A. Craven*

Go to [www.geosciencebc.com/s/Publications.asp](http://www.geosciencebc.com/s/Publications.asp) for more information on the Summary of Activities series.

# Scholarship Winners

## Exploration Geoscience Graduate Students Working in BC

In 2011, Geoscience BC awarded eight scholarships of \$5,000 each to graduate students working on BC-based project directly relevant to mineral or oil and gas exploration.

The students were evaluated on their project's technical merit and ability to attract mineral and oil & gas investment to British Columbia and their academic qualifications and work experience. Preference was given to applicants whose projects were deemed to have the greatest potential benefit to exploration in BC, and whose research and career interests are primarily directed towards the exploration section.

For more information about the Geoscience BC graduate scholarship, including past winners and their respective projects, please visit [www.geosciencebc.com/s/Scholarships.asp](http://www.geosciencebc.com/s/Scholarships.asp).



**Piotr Angiel**  
Ph.D. student, University of Western Ontario

*"Sedimentology and allostratigraphy of a shale-dominated, high-accommodation foredeep: the Shaftesbury Formation (Late Albian), NE British Columbia"*

The abundance of mudstone in the Shaftesbury Formation (Western Canada foreland basin) makes it an ideal natural laboratory in which to study patterns and mechanisms of mud dispersal on an ancient marine shelf. This project is examining the 'Fish Scales sandstone', a organic-rich unit with the potential to source hydrocarbons and host shale gas. The nearshore sandstone facies are also being examined, as they are presently being exploited as shallow subsurface sources of water. Not all sandstones host water equally well, and hence an understanding of facies character may improve the ability to choose successful horizons.



**Esther Bordet**  
Ph.D. student, University of British Columbia

*"Late Cretaceous to Eocene Tectonic and Metallogenic Evolution of the Nechako Region, Central British Columbia: Insights from Volcanic Stratigraphy and Structural Framework Reconstructions"*

This project aims to characterize the nature, thickness and structural framework of Eocene volcanic rocks in central BC. An improved stratigraphic model based on the identification of mappable units will be proposed for the Eocene in the Nechako region. A structural framework together with a thickness model will clarify controls on the distribution, extent and thickness of Eocene volcanic rocks. Outcomes of this study will help assess the metallogenic potential of Eocene volcanic rocks in the Nechako region, and the hydrocarbon potential of underlying Jura-Cretaceous basin strata.



**Mallory Dalsin**  
M.Sc. student, University of British Columbia

*"The Mineralogy, Geochemistry, and Geochronology of the Wicheeda Carbonatite Complex, BC"*

The Wicheeda carbonatite complex is located 80 km northeast of Prince George, BC. This project aims to determine the mineralogy, geochemistry, geology and age of the Wicheeda carbonatite. Understanding carbonatites and the mineralogy of rare earth element deposits is important in developing a successful exploration strategy, determining whether this deposit is economic or not, and supporting the exploration of similar deposits within this belt.

### DID YOU KNOW?

Geoscience BC is reproducing the 1989-1993 MDRU Iskut River Project mapping and will release the new maps as an ArcGIS product.



**Erin Looby**  
M.Sc. student, University of British Columbia

*"Project: Geologic Framework for Gold Mineralization in the Blackwater Deposit of the Nechako Plateau, Central BC"*

The Blackwater Gold prospect, located 110 km southwest of Vanderhoof, is thought to be a low-sulphidation epithermal type deposit. This project aims to understand the context of mineralization and to obtain a better understanding of the geological setting through geological mapping, and examination of alteration assemblages, volcanic textures and geochemistry. Potential foci include trace element zonation of the deposit, the identification of volcanic textural controls of hydrothermal alteration, or reconciling the presence of high temperature alteration minerals in a supposed low temperature epithermal environment.



**Lindsay McClenaghan**  
M.Sc. student, University of British Columbia

*"Alteration Minerals and the Paragenetic Evolution of Newton Deposit, British Columbia: an Unusual Style of Bulk Tonnage Gold Mineralization"*

The Newton gold deposit is an early stage exploration project located on the Nechako plateau in south central British Columbia. The disseminated polymetallic gold mineralization could represent the intersection between an epithermal system and a gold-copper-molybdenum porphyry

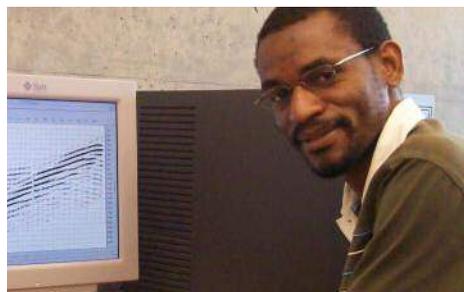
system. This project combines diamond drill core logging, thin section studies, and short wave infrared and X-ray diffraction analysis, and aims to develop a detailed geologic setting, genetic and exploration models for a locality not previously studied.



**Colin Smith**  
M.Sc. student, University of Victoria

*"Petrological linkages between Tertiary Porphyry Cu (Mo-Au) Deposits in the Cascades, Washington, Vancouver Island and Adjacent Coast Mountains, Southwest British Columbia"*

A genetic link between Tertiary porphyry Cu-(Mo-Au) deposits in the Central Cascades of Washington and those on south Vancouver Island has long been suspected. This research investigates the petrology of a number of Tertiary felsic intrusions and associated porphyry-style mineralization in the Pacific Northwest. Specifically, the Catface porphyry deposit, located on the central-west coast of Vancouver Island, is examined in detail, and associations to the Cascadian North Fork, and British Columbian O.K. and Gambier Island porphyry Cu deposits are evaluated.



**Eric-Martial Takam Takougang**  
Ph.D. student, Simon Fraser University

*"2-D Frequency Domain Waveform Tomography of the Queen Charlotte Sedimentary Basin of Western Canada and the Seattle Fault Zone"*

This project uses waveform tomography to image the Queen Charlotte Basin down to approximately 1200 m depth. Research tasks include developing a strategy for a successful application of waveform tomography to marine seismic reflection data, applying the technique to four lines across the basin, and testing the quality of results and resolution limit. Results show evidence of hydrocarbon-bearing sediment in three different areas in Hecate Strait, gas chimneys and shale, confirming the high hydrocarbon potential of the basin.



**Stephanie Wafforn**  
M.Sc. student, Oregon State University

*"Reinterpretation of the Structural Geology of the Mount Polley Deposit, Likely, British Columbia"*

Exploration in the northeast zone of the of alkalic copper porphyry Mount Polley deposit has been limited due to complex structure geology. Therefore, the aim of this research project is to reinterpret the structural geology on a local and regional scale. This will be achieved through field mapping, systems analysis of structural orientations, and petrographic analysis of hand samples and drill core. It is anticipated that this research will enable a reconstruction of the deposit, leading to the generation of new exploration targets.

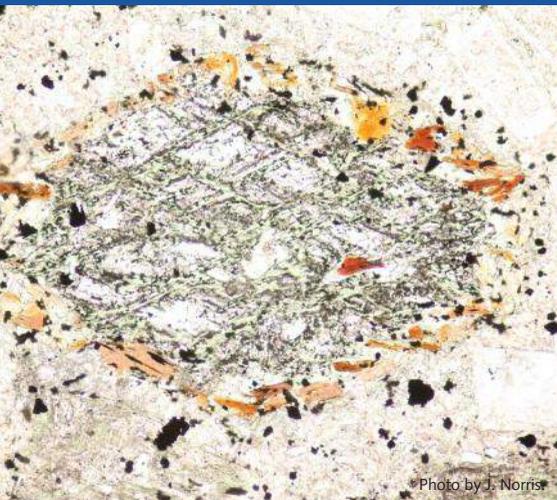


Photo by J. Norris

# Financial Statements

March 31, 2011

## Management's Responsibility for Financial Reporting

The financial statements and the information contained in the annual report are the responsibility of the management of Geoscience BC Society (the "Society").

The financial statements have been prepared in accordance with the new Canadian accounting standards for not-for-profit organizations. These are the Society's first financial statements prepared in accordance with these new standards, which have been applied retrospectively. No significant restatement of previously reported amounts was required since the adoption of the new accounting framework had no material impact on the previously reported assets, liabilities and net assets of the Society, given the Society's election to continue to designate that all investments be measured at fair value. The presentation and disclosures in the financial statements this year include the presentation of the opening amounts as of the date of the transition, being April 1, 2009, and all disclosures required under the new accounting framework. The financial statements include, where appropriate, estimates based on the best judgement of management. Financial and operating data elsewhere in the annual report is consistent with that contained in the accompanying financial statements.

As part of its responsibilities, the Society maintains systems of internal accounting and administrative controls of high quality, subject to their cost not exceeding the estimated benefit derived therefrom. Such systems are designed to provide reasonable assurance that the financial information is relevant, reliable and accurate, and that the Society's assets are appropriately accounted for and adequately safeguarded.

The Society carries out its responsibilities with regard to the financial statements mainly through its Finance Committee (the "Committee"). The Committee reviews the annual financial statements and recommends them to the Society for approval. The Committee meets periodically with management and the external auditors. Following these meetings, the Committee may meet privately with the auditors to ensure free and open discussion of any subject the Committee or the auditors wish to pursue. The Committee also recommends the engagement or re-appointment of the external auditors, reviews the scope of the audit and approves the fees of the external auditors for audit and non-audit services.

The financial statements, audited by Beauchamp & Company Chartered Accountants, have been approved by the Society, on the recommendation of the Finance Committee.

September 2, 2011

"C.D. ('Lyn) Anglin"

Director

"James D. Gray"

Director

# Independent Auditors' Report

## To the Members of Geoscience BC Society

We have audited the accompanying financial statements of Geoscience BC Society, which comprise the Statement of Financial Position as at March 31, 2011, March 31, 2010 and April 1, 2009 and the Statements of Revenues and Expenditures, Cash Flows, and Changes in Net Assets for the years ended March 31, 2011 and March 31, 2010, and a summary of significant accounting policies and other explanatory information.

### Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

### Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the society's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the society's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of Geoscience BC Society as at March 31, 2011, March 31, 2010 and April 1, 2009, and the results of its operations and its cash flows for the years ended March 31, 2011 and March 31, 2010 in accordance with Canadian accounting standards for not-for-profit organizations.

Vancouver, BC  
September 2, 2011

*"Beauchamp & Company"*  
Chartered Accountants



Photo by Pignotta.



Photo by J. Norris

## Geoscience BC Society

# Statements of Financial Position

As at March 31, 2011, March 31, 2010 and April 1, 2009

	March 31, 2011	(Note 12) March 31, 2010	(Notes 2 & 12) April 1, 2009
<b>ASSETS</b>			
<b>Current Assets</b>			
Cash and cash equivalents (Note 3)	\$ 83,923	\$ 206,012	\$ 554,786
Investments (Notes 3 & 4)	10,198,811	11,951,266	16,991,131
Accrued interest receivable	13,623	1,140	202,990
Amounts receivable (Note 11)	12,073,539	196,516	1,695,182
Prepaid expenses and deposits	3,647	8,756	13,500
	<u>22,373,543</u>	<u>12,363,690</u>	<u>19,457,589</u>
<b>Capital Assets (Notes 3 &amp; 6)</b>	<u>11,687</u>	<u>23,637</u>	<u>30,787</u>
	<u>\$ 22,385,230</u>	<u>\$ 12,387,327</u>	<u>\$ 19,488,376</u>
<b>LIABILITIES</b>			
<b>Current Liabilities</b>			
Accounts payable and accrued liabilities (Note 7)	\$ 110,839	\$ 66,506	\$ 115,638
<b>NET ASSETS</b>			
<b>Net Assets Restricted For Approved Programs (Note 9)</b>	2,873,470	3,272,410	4,142,621
<b>Unrestricted Net Assets</b>	<u>19,400,921</u>	<u>9,048,411</u>	<u>15,230,117</u>
	<u>22,274,391</u>	<u>12,320,821</u>	<u>19,372,738</u>
	<u>\$ 22,385,230</u>	<u>\$ 12,387,327</u>	<u>\$ 19,488,376</u>

Nature Of Operations And Going Concern (Note 1)

Subsequent Events (Note 11)

Approved By The Board:

"C.D. ('Lyn) Anglin"  
Director

"James D. Gray"  
Director

See accompanying notes.

# Geoscience BC Society

## Statements of Revenues and Expenditures

For the years ended March 31, 2011 and 2010

	2011	(Notes 2 & 12) 2010
<b>Revenues</b>		
Grant – BC Ministry of Energy and Mines (Note 11)	\$ 12,000,000	\$ –
Other grants and program reimbursements	683,822	51,486
Investments (Note 4)	400,098	1,609,271
Funding recoveries (Note 9)	24,482	22,548
Sublease rent and other	14,580	16,420
	<u>13,122,982</u>	<u>1,699,725</u>
<b>Expenditures – Programs</b>		
Program costs incurred	2,056,353	7,385,757
Project GST/HST, non-refundable portion	24,310	131,681
Publishing costs	38,464	37,816
	<u>2,119,127</u>	<u>7,555,254</u>
<b>Expenditures – Administration</b>		
Amortization of capital assets	14,726	16,940
Communications and marketing	58,906	50,847
Consulting	53,899	90,765
Gifts and promotion	1,465	6,102
Dues and memberships	3,258	3,194
Equipment lease	3,262	3,426
GST/HST, non-refundable portion	22,129	12,196
Insurance	5,445	5,407
Investment management fees	49,495	52,032
Office and sundry	16,937	46,813
Professional fees	54,488	56,579
Recruitment	–	3,000
Rent and utilities (Note 8)	125,045	125,589
Salaries and benefits	482,362	546,564
Scholarship awards	45,000	50,000
Sponsorship	18,369	17,842
Staff training and professional development	6,071	434
Travel, conferences and meetings	78,624	99,265
Website, internet and e-mail	10,804	4,474
Workshops	–	4,919
	<u>1,050,285</u>	<u>1,196,388</u>
<b>Excess (Deficiency) Of Revenues Over Expenditures</b>	<b>\$ 9,953,570</b>	<b>\$ (7,051,917)</b>

See accompanying notes.



Photo by [unreadable]



Photo by J. Norris.

## Geoscience BC Society

# Statements of Cash Flows

For the years ended March 31, 2011 and 2010

	2011	(Notes 2 & 12) 2010
<b>Cash Provided By (Used For):</b>		
<b>Operating Activities</b>		
Other grants and program reimbursements	\$ 718,986	\$ 1,503,523
Investments	421,544	722,270
Funding recoveries	24,482	31,374
Sublease rent and other	14,580	16,420
Payments for program expenditures	(2,101,238)	(7,514,098)
Payments for administration expenditures	(1,004,859)	(1,264,802)
Payments of refundable portion of GST/HST	(53,612)	(144,951)
Receipt of refundable GST/HST	144,951	182,564
Cash used for operating activities	(1,835,166)	(6,467,700)
<b>Investing Activities</b>		
Purchase of investments (Note 4)	(3,750,000)	-
Redemption of investments (Note 4)	5,831,872	6,786,915
Reinvestment of investment distributions, net	(363,346)	(658,199)
Purchase of capital assets	(5,449)	(9,790)
Cash provided by investing activities	1,713,077	6,118,926
<b>Decrease In Cash And Cash Equivalents</b>	<b>(122,089)</b>	<b>(348,774)</b>
<b>Cash And Cash Equivalents, Beginning Of Year</b>	<b>206,012</b>	<b>554,786</b>
<b>Cash And Cash Equivalents, End Of Year</b>	<b>\$ 83,923</b>	<b>\$ 206,012</b>

See accompanying notes.

## Geoscience BC Society

# Statements of Changes in Net Assets

For the years ended March 31, 2011 and 2010

	Restricted For Approved Programs	Unrestricted	Total
Balance, April 1, 2009 (Notes 2 & 12)	\$ 4,142,621	\$ 15,230,117	\$ 19,372,738
Internally imposed restrictions (Deficiency) Excess of revenues over expenditures	6,697,227 (7,567,438)	(6,697,227) 515,521	– (7,051,917)
Balance, March 31, 2010 (Note 12)	3,272,410	9,048,411	12,320,821
Internally imposed restrictions (Deficiency) Excess of revenues over expenditures	1,726,723 (2,125,663)	(1,726,723) 12,079,233	– 9,953,570
Balance, March 31, 2011	\$ 2,873,470	\$ 19,400,921	\$ 22,274,391

See accompanying notes.

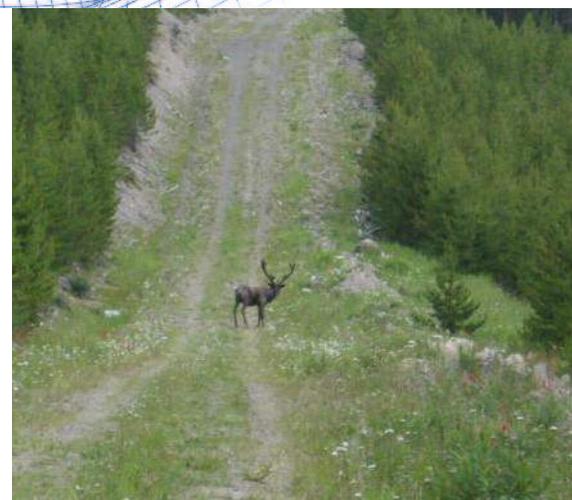




Photo by Jo Norris.

## Geoscience BC Society

# Notes to Financial Statements March 31, 2011 and 2010

### 1. Nature Of Operations And Going Concern

Geoscience BC Society ("Geoscience BC" or "the Society") was incorporated under the Society Act (British Columbia) on April 26, 2005 as a not for profit organization. The Society is exempt from taxation under subsection 149(1) of the Income Tax Act (Canada). The purpose of the Society is to promote, fund and otherwise support applied geoscience research in British Columbia. The Society had its genesis in a \$25 million funding commitment announced by the government of British Columbia in January 2005, which unrestricted funding was subsequently received and the Society incorporated. The Society has had certain members and directors in common with, and its creation was promoted by, both the Association for Mineral Exploration British Columbia and the Mining Association of British Columbia. However, the Society operates independently of both organizations and is controlled by a separate board of up to 13 directors, which also comprises the Society's membership. Although it functions to complement the efforts of pre-existing provincial and federal agencies, Geoscience BC also operates on an arms-length basis from the governments of both British Columbia and Canada.

The Society has no source of operating revenue and its future operations are therefore dependent upon the receipt of continued unrestricted and non-repayable funding, anticipated to be from government sources. In the event such funding is not received, the Society would in due course deplete its cash reserves and be required to cease operations. At March 31, 2011 the Society expects to maintain operations for a minimum period of one year based on its existing commitments to fund projects and its related liquid asset balances on hand. Refer to notes 4 and 11.

Management believes that these actions make the use of the going concern basis appropriate; however, it is not possible at this time to predict the outcome of these matters. If the going concern basis is not appropriate, adjustments could be necessary to the carrying amounts and/or classification of assets, liabilities, revenues and expenditures in these financial statements, and these adjustments could be material.

### 2. Adoption Of Accounting Standards For Not-For-Profit Organizations

Effective April 1, 2010, the Society has elected to adopt new Canadian accounting standards for not-for-profit organizations which are consistent with Canadian standards applicable to entities that are not 'publically accountable'. These are the Society's first financial statements prepared in accordance with these standards, and they have been applied retrospectively.

Management reviewed the exemptions provided on transition to these standards and has elected to designate all investments to be subsequently measured at fair value, which is consistent with the accounting policy in place at the time of transition.

The adoption of the new accounting framework had no impact on the previously-reported assets, liabilities and net assets of the Society, however it did impact the Society's operations and its presentation of the changes in net assets in that unrealized gains and losses applicable to the value of the Society's investments are now included in the Society's statements of revenues and expenditures. Under previous standards such amounts could be, and were in the case of the Society, reported in the statement of changes in net assets. Accordingly, the deficiency of revenues over expenditures in fiscal 2010 has been changed to \$7,051,917, compared to \$8,400,883 as previously reported.

## Notes

### to Financial Statements March 31, 2011 and 2010

(cont'd)

#### 2. Adoption Of Accounting Standards For Not-For-Profit Organizations (Cont'd)

Also during the year ended March 31, 2011, in a change unrelated to the adoption of the new accounting standards, the Society adopted the policy of not segregating, for presentation purposes, the net assets applicable to the aggregate carrying amount of capital assets. Accordingly, such amounts have been reclassified together with unrestricted net assets on both the Society's statements of financial position and changes in net assets.

The presentation and disclosures provided in the financial statements reflect the requirements under the new accounting framework.

#### 3. Significant Accounting Policies

##### Use of estimates

These financial statements have been prepared in accordance with Canadian accounting standards for not-for-profit organizations, which necessarily involves the use of estimates. The preparation of financial statements requires management to make estimates and assumptions which affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported amounts of revenues earned and expenditures incurred during the year. Actual results could differ from those estimates. The financial statements of the Society have, in management's opinion, been properly prepared within reasonable limits of materiality, and within the framework of the significant accounting policies disclosed below.

##### Cash and cash equivalents

Cash and cash equivalents consist of cash on deposit with banks and other financial institutions, and highly liquid short-term interest bearing securities that are readily convertible to known amounts of cash.

##### Investments

Investments are initially recognized and subsequently measured at fair value, determined using market information. Transaction costs and net gains and losses arising from changes in fair value are immediately recognized in the Society's statement of revenues and expenditures.

##### Capital assets

Capital asset purchases made by the Society are capitalized and are recorded at cost less accumulated amortization. Amortization is recorded as disclosed in note 6 on a straight-line basis, commencing in the quarter of acquisition, as follows:

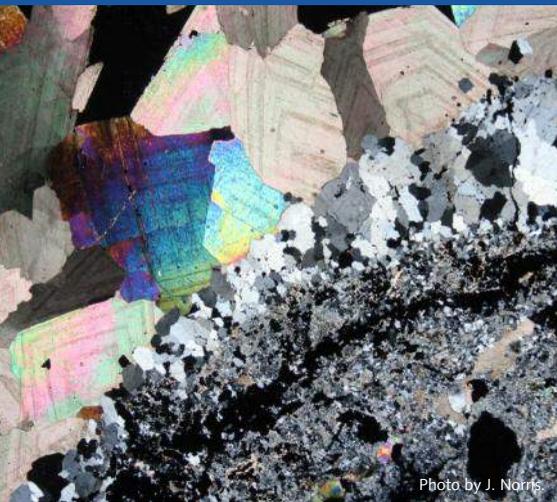
Computer equipment	3 years
Furniture and office equipment	5 years

##### Revenue recognition

The Society follows the deferral method of accounting for contributions. Restricted contributions are recognized as revenue in the year in which the related expenditures are incurred. Unrestricted contributions are recognized as revenue when received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured. Endowment contributions are recognized as direct increases in net assets. Restricted investment income is recognized as revenue in the year in which the related expenditures are incurred. Unrestricted investment income is recognized as revenue when earned.



Photo by E. Bordet.



## Geoscience BC Society

# Notes to Financial Statements March 31, 2011 and 2010 (cont'd)

### 3. Significant Accounting Policies (Cont'd)

#### Donated materials and services

Donated materials and services are recorded only when a fair value can be reasonably estimated and when they would be paid for by the Society if they had not been donated.

#### Contributed services

Significant volunteer labour is contributed to assist the Society in carrying out its activities, but is not recorded in the Society's financial statements due to the difficulty of determining the fair value of those services.

### 4. Investments

During the year ended March 31, 2011, \$3.75 million (2010 – \$nil) was invested in guaranteed income certificates or equivalent instruments issued by Canadian financial institutions which are readily convertible to cash at any time at market values. The Society also has investments in various pooled funds under the discretionary management of Connor, Clark and Lunn Private Capital Ltd. ("CC&L"), and subject to a Statement of Investment policy between the Society and CC&L. These monies are also readily convertible to cash at any time without penalty.

During the year ended March 31, 2011, the Society drew \$1.83 million (2010 – \$6.79 million) from amounts invested in banker's acceptances, and \$4.0 million (2010 – \$nil) from amounts invested under CC&L's management. Of this \$4.0 million amount, \$3.75 million was immediately reinvested in a near cash instrument as disclosed above.

	March 31, 2011 Market Value \$	(Note 12) March 31, 2010 Market Value \$	(Notes 2 & 12) April 1, 2009 Market Value \$
<b>Investments:</b>			
Dundee investment savings account	255,111	501,427	–
Renaissance high interest savings account	–	1,004,659	–
Guaranteed investment certificates ("GIC's")	3,750,000	573,153	8,598,063
	4,005,111	2,079,239	8,598,063
CC&L aggregate portfolio	6,193,700	9,872,027	8,393,068
	10,198,811	11,951,266	16,991,131

## Notes

### to Financial Statements March 31, 2011 and 2010

(cont'd)

#### 4. Investments (Cont'd)

Investment revenue is comprised of the following:

	March 31, 2011 \$	(Notes 2 & 12) March 31, 2010 \$
Interest earned on GIC's and equivalent instruments	20,430	67,887
Reinvested distributions	413,737	452,531
Realized investment gains (losses)	1,692	(260,113)
Unrealized investment (losses) gains	(35,761)	1,348,966
Revenue disclosed in the Statements of Revenues and Expenditures	400,098	1,609,271

#### 5. Financial Instruments

The Society's financial instruments consist of cash and cash equivalents, short-term investments, amounts receivable, and accounts payable and accrued liabilities.

##### Interest rate risk

The Society's investments in highly liquid near cash instruments, excluding the CC&L portfolio, currently consist of a Guaranteed Investment Certificate issued by a Canadian commercial bank and funds on treasury deposit with such an institution. The Society considers the interest rate risk associated with such investments to be minimal. Investments in equity securities are not exposed to significant interest rate risk.

##### Currency risk

Related to the general price risk disclosed above, historically, a small portion of the underlying assets comprising the CC&L portfolio have been denominated in foreign currencies, and accordingly the portfolio has been exposed to foreign exchange fluctuations to this extent. The Society mitigates the currency risk exposure of its foreign bonds and equities through diversification. The Canadian portion of the portfolio was 100% at March 31, 2011 (2010 – 100%).

##### Credit and market risk

The Society's financial instruments are exposed to market price volatility, particularly in respect to the value of the \$6.2 million currently invested in the CC&L portfolio of pooled private equity funds.

Until January 2010, the Society's CC&L portfolio was subject to a Statement of Investment Policy ("SIP") which prescribed an overall fixed income weighting of 75% relative to an equity weighting of 25%. During the period January 2010 to March 31, 2011, the Society elected to alter this SIP whereby the fixed income weighting of the portfolio was increased to 100%. Upon receipt of the \$12 million grant from the BC Ministry of Energy and Mines, the Society reverted back to its original SIP. These monies do not represent direct holdings of securities in specific entities but rather investments in units of CC&L funds which themselves hold widely diversified positions and which are managed on a pooled basis generally with a view to limiting the overall volatility of a given fund. Refer to note 11.



Photo by E. Bordet.

Photo by E. Bordet.



## Geoscience BC Society

# Notes

## to Financial Statements March 31, 2011 and 2010 (cont'd)

### 6. Capital Assets

	Cost	Accumulated Amortization	March 31, 2011	Net Book Value At	
				(Note 12) March 31, 2010	(Notes 2 & 12) April 1, 2009
Computer equipment	\$ 25,600	\$ 15,657	\$ 9,943	\$ 18,340	\$ 21,848
Furniture and office equipment	5,534	3,790	1,744	5,297	8,939
	\$ 31,134	\$ 19,447	\$ 11,687	\$ 23,637	\$ 30,787

### 7. Accounts Payable And Accrued Liabilities

	March 31, 2011	(Note 12) March 31, 2010	(Notes 2 & 12) April 1, 2009
	\$	\$	\$
Trade payables	93,182	50,133	101,309
Government remittances	3,657	3,873	3,579
Accrued liabilities	14,000	12,500	10,750
	110,839	66,506	115,638

### 8. Contractual Obligations

As at March 31, 2011, the Society has a base rental commitment relating to the lease of its office premises, inclusive of monthly charges in respect to operating and common area costs and property taxes, totalling approximately \$153,000 (2010 – \$267,000) to July 31, 2012.

Pursuant to a contract of employment with its President and Chief Executive Officer, the Society would be committed, in the event that it terminates its employment of this individual without cause, to pay \$175,000 in termination benefits. In addition, the President and Chief Executive Officer may terminate employment with the Society at any time by providing three months written notice.

# Notes

## to Financial Statements March 31, 2011 and 2010

(cont'd)

### 9. Restricted Net Assets

At March 31, 2011, the Society's net assets are subject to future obligations aggregating \$2,873,470 (2010 – \$3,272,410), representative of undisbursed but approved program funding commitments, payment of which is contingent upon the Society receiving acceptable deliverables from these programs in accordance with executed agreements. These internally restricted amounts are not available for other purposes without the approval of the Society's Board of Directors.

Recipients of funding from Geoscience BC are required to account for the expenditure of all monies received, and Geoscience BC reserves the right to request documentation to support the reported expenditure breakdowns. Unspent funds, including HST and GST input tax credits subsequently recovered by recipients, but based on the expenditure of Geoscience BC grants, are to be returned to the Society. During the fiscal year ended March 31, 2011, the Society received an aggregate of \$24,482 (2010 – \$22,548) of such recoveries, which are included within the Society's unrestricted net assets. No predictions of future recoveries can be accurately made at this time and therefore funding recoveries are recorded at the earlier of the date of receipt and the date that a recovered amount becomes determinable.

Refer to Note 11.

### 10. Related Party Transactions

These related party transactions were in the normal course of operations and are measured at fair value as determined by management of the Society.

During the year ended March 31, 2011, the Society paid or accrued an aggregate of \$22,085 (2010 – \$41,285) to entities controlled by Directors of the Society for community engagement, communications and administrative services.



Photo by E. Bordet.



## Geoscience BC Society

# Notes

## to Financial Statements March 31, 2011 and 2010 (cont'd)

### 11. Subsequent Events

During the period subsequent to March 31, 2011:

- The Society received additional funding from the B.C. government in the amount of \$12.0 million. The amount was recorded as receivable as at March 31, 2011 as the government decision to expend the funds had been made prior to that date. An aggregate of \$5.5 million of these funds was subsequently invested with CC&L, with the residual maintained in near-cash instruments. The Society at the same time returned to its initial SIP with CC&L, under which the portfolio will be based on a relative fixed income/equity ratio of 75%/25%.
- The Society announced the QUEST (“Quesnellia Exploration Strategy”)-Northwest program, pursuant to which its Board of Directors has approved approximately \$3.25 million to be spent directly by the Society on regional geophysical and geochemical exploration programs, bedrock mapping projects and the purchase of existing company aeromagnetic data in the QUEST-Northwest area.
- The Board of Directors of the Society approved an additional \$1.56 million in program funding, and a further \$55,000 for the purchase of a DAP server.
- The Society approved and disbursed 8 scholarships of \$5,000 each.

### 12. Comparative Figures

Certain of the comparative figures have been reclassified to conform to the financial statement presentation adopted by the Society during the year ended March 31, 2011.



*Geoscience BC is an industry-led, industry-focused not for profit society that works to attract mineral and oil and gas investment to British Columbia through collection and marketing of geoscience data.*



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Geoscience BC is funded through grants from the Provincial Government of British Columbia.