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Comments or questions? Please contact:

Doug MacDonald
 Editor, *The Geological Record*
 Nova Scotia Department of Natural Resources
 P.O. Box 698, Halifax
 Nova Scotia, Canada B3J 2T9
 Phone 902-424-2510
Douglas.R.MacDonald@novascotia.ca



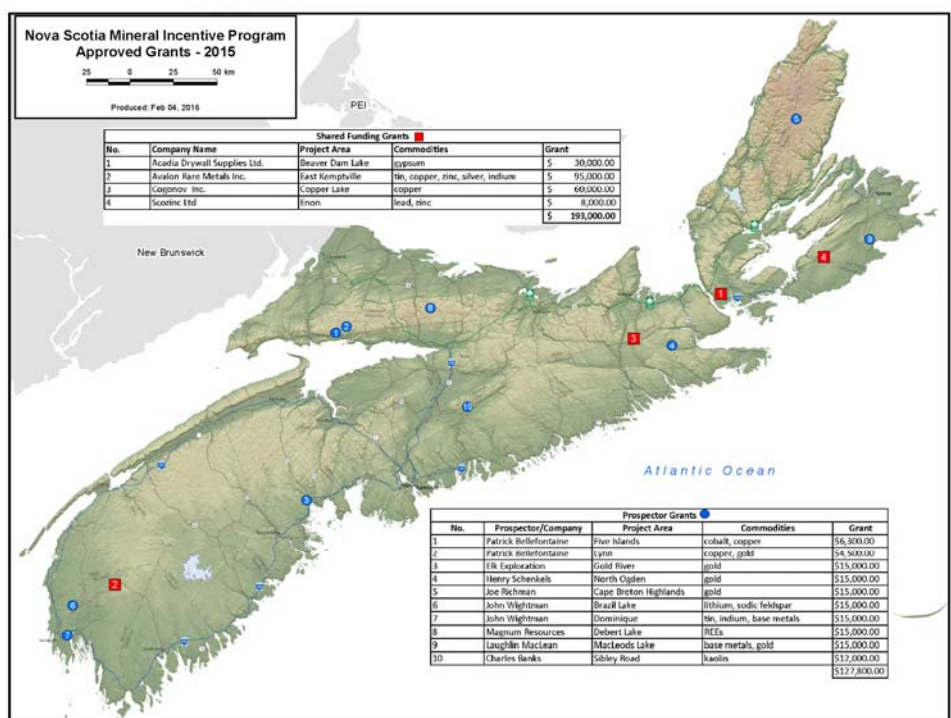
Government Continues Support for Mineral Incentive Program

The Nova Scotia Mineral Incentive Program (NSMIP) has been approved by the Government of Nova Scotia for the fifth straight year, with a total budget of \$400,000. A summary of the grants approved for the 2015-2016 fiscal year is shown in the illustration below. There are some important changes for 2016-2017, including: (1) an increase in the maximum funding available for a Shared Funding Grant from \$100,000 to \$150,000, (2) that grant applications will now be accepted year-round and (3) Research Grants of up to \$15,000 are available for university-based geoscience research that directly supports mineral exploration or development in Nova Scotia.

The increase in maximum funding for Shared Funding Grants to \$150,000 provides an opportunity to provide additional support to exploration projects. Nonetheless, the maximum funding will only be provided under circumstances where there is outstanding potential and other worthy grant applications have received appropriate funding.

By accepting applications year-round we are better able to issue additional grants if money becomes available after the initial round of funding. For example

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during 2015-2016 money became available when three Prospector Grants and one Shared Funding Grant were either cancelled or reduced in size. The unused money was re-allocated, but we unfortunately were not able to consider any applications that included new information that was obtained after the submission deadline.

The NSMIP Research Grant was created to encourage university researchers to take a more active interest in studying Nova Scotia's mineral resources. To qualify for a grant the research must be undertaken on Nova Scotia mineral resources by a university-based researcher(s). The scope of research that will be considered ranges from local to regional-scale deposit modelling, to the development or improvements of mining or mineral processing methods. Research Grant applications will be accepted throughout the year, and are evaluated based on budget, achievability and applicability to the exploration industry. The maximum individual Research Grant available for the 2016-2017 fiscal year is \$15,000.

Evaluation of grant applications will begin on June 7 and the announcement of which proposals will initially be funded will occur in mid-June. It is anticipated that additional grants will be approved after mid-June, so applicants are advised to continue to send in grant applications throughout the year.

Details and application forms for the 2016-2017 Nova Scotia Mineral Incentive Program Prospector and Shared Funding Grants are now available on the Geoscience and Mines Branch web site <http://novascotia.ca/natr/meb/nsmip/nsmip1.asp>. For information on how to apply for the new Research Grant please contact Diane Webber at Diane.Webber@novascotia.ca. Good luck in the coming field season.

Rob Naylor and Mick O'Neill

Promoting Nova Scotia at PDAC 2016

The Geoscience and Mines Branch has been busy redesigning its mineral promotion strategy. How we promote mineral opportunities to international audiences is an important part of this strategy. In March 2016 the branch represented Nova Scotia at the Prospectors and Developers Association of Canada (PDAC) annual conference in Toronto, in partnership with Nova Scotia Business Inc., the Greater Cape Breton Partnership and the Atlantic Canada Opportunities Agency (ACOA). Branch staff redesigned the booth to showcase new research and discoveries by DNR geoscientists and highlighted exciting new opportunities in the Cobequid Highlands and parts of Cape Breton Island. The potential for the discovery of a major mineral deposit in these two underexplored areas remains high.

After careful consideration by a selection committee, six prospectors were approved to accompany the DNR delegation in the provincial booth. Marketing grants from the Nova Scotia Mineral Incentive Program provided financial support for these prospectors to promote their best grass roots exploration properties in the province. These prospects included: a new drilling target near the former Stirling VMS mine, a copper showing on the Chedabucto Fault Zone, an open pit gold target near Country Harbour Gold Mines, a gold prospect in the Cape Breton Highlands, the Calendonia tin-tungsten prospect and the Dominique polymetallic granophile target.

The branch's new promotional approach at PDAC was a success, with increased global interest in the province's exploration opportunities and more option deals made by prospectors. This year's attendance at PDAC included more than 22,000 delegates from 125 countries. With an international audience of this size and scope, the PDAC continues to be an important convention to highlight and promote mineral opportunity for economic development in Nova Scotia.

As part of the promotional effort at PDAC the Minister of Natural Resources, the Honourable Lloyd Hines, and branch staff hosted the largest Nova Scotia Mining Breakfast to date. Minister Hines welcomed 150 convention delegates and distinguished guests that included Trade Commissioners from Canadian embassies and Ambassadors of Canada from countries including Argentina, Colombia, Nairobi, Cuba, Ghana, and dignitaries from the High Commission of Canada. Representatives from First Nations Membertou Band, such as Chief Terry Paul and former CEO Bernd Christmas, were also in attendance. Minister Hines spoke to breakfast attendees about the modern legislation to be introduced in the new *Mineral Resources Act* and the goal of government to "provide a framework for a competitive and open-for-business mining sector" that will attract and facilitate new exploration and growth in mining.

Diane Webber



Just another gold brick. This bar was displayed at PDAC 2015.

New Version of DNR's Drillhole and Drill Core Database Released

In March the Geoscience and Mines Branch released a new version of the drillhole and drill core database. The drillhole data in the database are derived from published drillhole information for the province of Nova Scotia. This includes information contained in publicly available mineral exploration assessment reports, open file reports and other DNR and Geological Survey of Canada publications. There are currently over 27,000 drillholes in the database with over 35,000 references. The drill core records represent the core holdings at the Core Library facilities in Stellarton. Drill core data are constantly being updated, with old records being modified and new ones added. There are currently 7858 drill core records in the database with links to 6686 drillholes.

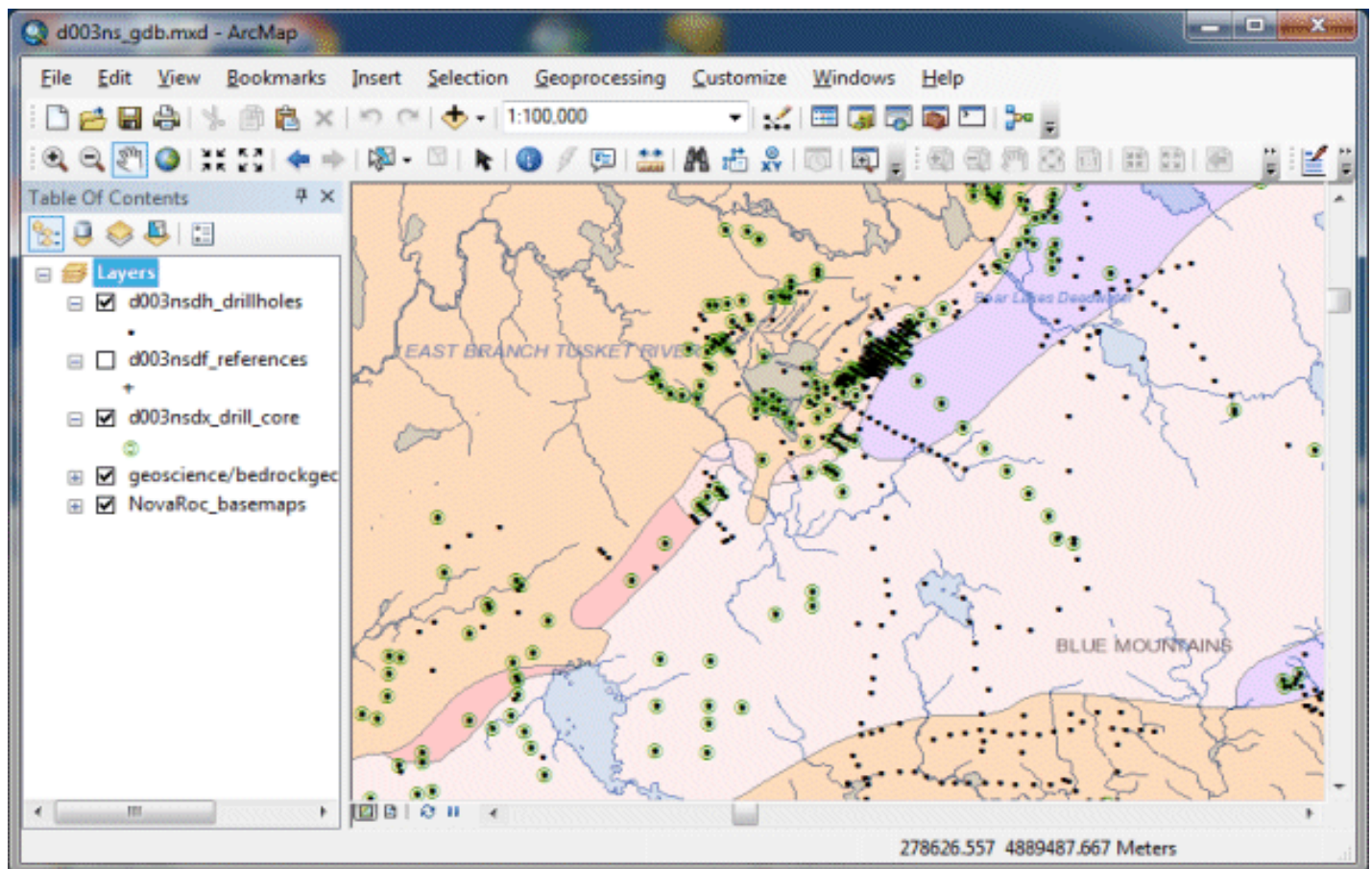
A number of improvements have been made to the database with this release. The previous version of the drillhole database had 21,614 records but only 11,198 had XY data. The current version has 27,301 records with only 652 with no XY information. A drillhole can be referenced one or more times in assessment reports over many years. This can represent drillhole extensions, downhole geophysical work, re-sampling of core, etc. Thus, one drillhole record may be associated with more than one related reference.

There are three ways to access the database. We have developed web-based search applications, similar to other Geoscience and Mines Branch databases that allow clients to search for drillhole and drill core data by

location, county, claim reference map, company name, company hole number, and year, along with a number of other fields. There is a downloadable GIS digital product that includes ESRI shapefile (SHP), ArcGIS file geodatabase (GDB), a Google Earth compatible file format (KML\KMZ) and Microsoft Excel spreadsheets (XLS). There is also an online map service that has been incorporated into the GMB Geoscience Atlas application.

For more information on the drillhole and the drill core database and the many ways you can use and access this information please go to <http://novascotia.ca/natr/meb/geoscience-online/about-database-dcdh.asp>.

Jeff Poole and Mick O'Neill



The image above shows the distribution of drillholes in the East Branch Tuskent River area of Nova Scotia. The black dots represent drillhole locations and the green circles around some of the drillholes indicate holes with drill core stored in Stellarton.

Geologist Don Weir Retires

Don Weir has moved on. After 31 years with DNR and the former Department of Mines and Energy, Don retired at the end of April and will be travelling the world and enjoying his cottage on the shore.

Don earned his degree in geology in 1982 and began work with the Department of Mines and Energy in the Stellarton Core Library in 1985. After 16 years at the Core Library, he took a position as Regional Geologist with DNR's Regional Services Branch in Truro in 2001. In 2014, he became the Exploration Monitoring Geologist with the Registry of Mineral and Petroleum Titles, working closer to home out of DNR's Stellarton Core Library.

Throughout his career, Don ably supported the efforts of countless prospectors and mineral rights holders, and managed the remediation of more than 430 abandoned mine openings (AMOs) in the department's Central Region. As a key part of the integrated resource management team in Truro, he worked closely with many facets of DNR, including wildlife, forestry and Crown lands. The AMO remediation group especially appreciated Don's willingness to continue his involvement with AMO remediation work after he left Regional Services. We thank Don for his contribution to the mineral industry and wish him well in his retirement!

Tom Lamb



Don Weir near the cliffs of Cap d'Or.

Mineral Incentive Program Provides Funds for Prospectors Association to Buy XRF Analyzer

Funding has been provided through the 2015-2016 Nova Scotia Mineral Incentive Program (NSMIP; see p. 1) to allow the Nova Scotia Prospectors Association (NSPA) to purchase an X-Ray Fluorescence analyzer. The unit is a Niton XL3t 950 GOLDD+ Mining XRF analyzer with Soils and Mining Modes. It is capable of analyzing up to 37 elements with the additional purchase of a REE Element Suite (Y, La, Ce, Pr, Nd, U and Th) for the Mining Mode.

The NSPA owns the analyzer, and will be handling all bookings for the unit. Only NSPA members will be eligible to use the analyzer. The current plan is to store the analyzer at the DNR Drill Core Library in Stellarton, with the possibility of occasionally moving the unit to the DNR office in Halifax.

The NSPA is responsible for ensuring that persons who use the analyzer have received the necessary training and operate the unit following specific safe work practices. A one day training course will be provided in the near future by the vendor of the unit. Information on this course will be sent out to all NSPA members. It is mandatory to take this course if you plan to use the unit (unless you have a valid, up-to-date XRF training course already). DNR staff will not analyze samples for clients.

We hope the use of the XRF will help Nova Scotia prospectors to discover new mineral occurrences and add valuable knowledge to current ones.

Mick O'Neill



Donkin Update: Kameron Collieries continues to make good progress developing an underground coal mine at Donkin, Cape Breton County. In April 2016, the company's consultants Stantec submitted to the Geoscience and Mines Branch an estimate of the cost to reclaim the site, should the company decide the mine is not economically feasible after the initial test-mining phase. The Mineral Management Division works collaboratively with Nova Scotia Environment to review reclamation cost estimates with the goal of coming to an agreement with proponents on the provision of an adequate reclamation security prior to the start of production. At the time of our site visit on March 22, 2016, work crews (pictured here) were pouring cement for the foundation that will support a 6,000 horsepower electric motor. That motor will drive the main conveyor belt, which will bring coal to the surface, potentially starting in July

From the Mineral Inventory Files

Jamesonite at Lansdowne, Digby County

The Sb-Pb-bearing sulphide mineral jamesonite ($Pb_4FeSb_6S_{14}$) is found at only a handful of localities in Canada, mostly in minor amounts. Lansdowne, Digby County (Fig. 1), however, is a site where jamesonite is the major component of several quartz-carbonate veins that have produced some of the most spectacular specimens to be found.

In 1949, NE-trending quartz-carbonate veins carrying jamesonite and arsenopyrite were found intruding Ordovician Halifax Group slates along Walsh Brook (Fig. 1). In 1950, Conwest Exploration diverted the stream and dug several trenches as well as a large pit in the former stream bed. They also drilled two short diamond-drill holes. Excavation exposed the veins and produced an abundance of spectacularly mineralized samples, many of which were discarded around the pit dug into the original stream bed (note: following exploration, the stream was allowed to return to its original course). Conwest's

drilling also intersected the veins and, interestingly, granite underlying the property at 35 m depth. Although the exploration identified mineralized veins, the property was abandoned.

The prospect lay dormant until DNR drilled four holes there in 1992 (Fig. 1) to investigate a possible genetic relationship between Lansdowne and a series of deposits throughout the Annapolis Valley with an elemental association of Pb-Sb-Co-Ni-Ag-Au (see *Nova Scotia Minerals Update*, v. 6, p. 3). These deposits share a similar elemental assemblage and association with shear and fault structures and, at least spatially, with small mafic plugs and dykes. The DNR drilling confirmed that the elemental assemblage at Lansdowne conforms to the other occurrences. The drillholes also intersected two, NE-trending, 35 m thick mafic dykes, one of which contains an 8 m thick, highly carbonate-altered zone containing three quartz-

carbonate veins with jamesonite, arsenopyrite, sphalerite and pyrite. Carbonate alteration completely replaces the original mafic mineral textures in thick sections of both dykes, and imparts a leucocratic look to the rock. It was probably this leucocratic appearance that led Conwest to interpret the rock as granite. Samples collected from the waste dumps and DNR drill core returned impressive analytical results: up to 12.9% Sb, 11.5% Pb, 1.33% Zn, 0.13% Cu, 88 ppm Ag and 0.57 ppm Au.

The elemental assemblage and association with mafic dykes at Lansdowne suggest a primitive, deep crustal source of the mineralizing fluids. Like much of the Annapolis Valley, the Lansdowne area is intruded by numerous NE-trending mafic dykes and sills (Fig. 1). Not only do the dykes hosting the Lansdowne veins need a closer look, but so do other dykes throughout the region.

G. A. O'Reilly

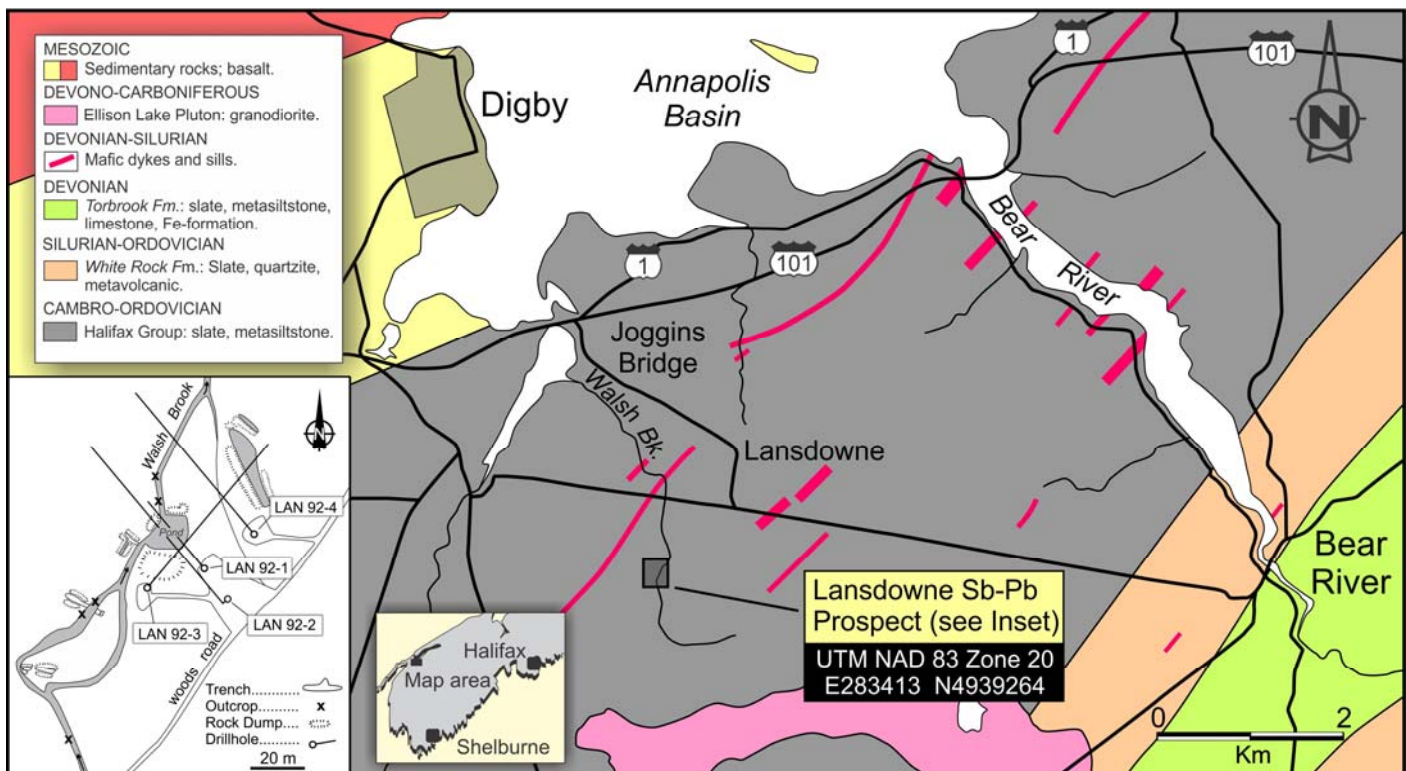


Figure 1. Geology of the Bear River-Digby area showing the location of the Lansdowne Sb-Pb-Zn-Ag-Au Prospect and a swarm of Ordovician-Devonian mafic dykes. The inset shows exploration workings at the Lansdowne Prospect.

Introducing Bill 149: the New *Mineral Resources Act*

Following several years of work, Bill 149, the new *Mineral Resources Act*, was passed by the Government of Nova Scotia on May 17 after its third reading in the legislature.

The new *Mineral Resources Act* will facilitate economic development, make Nova Scotia a more competitive jurisdiction, and assist in cutting red tape for industry and government. The new Act was drafted following extensive research by DNR staff and included reviews of mining legislation across the country. In addition, the department received input from industry, environmental non-government organizations, professional associations, the public and other government departments during consultation on the Act. Originally scheduled for submission in the fall of 2015, delays in getting the new bill to the legislature were to enable a second round of consultation with key stakeholders in the winter of 2016.

Effective legislation assists in reducing barriers to industry, and the review of the *Mineral Resources Act* was singled out in the *Now or Never, One Nova Scotia Report* as an exemplary initiative that will assist the sector to improve productivity and competitiveness. The new Act will require less frequent reporting on exploration licences so that industry can spend more time and money investing in exploration and less on administration of licences. The change from a one-year licence renewal to a two-year licence will allow industry to have more time to raise financing, complete necessary permitting, gain access to land, and to complete prospecting, field work and sample analyses. The new Act will only require filing an assessment report every two years. Having to review fewer assessment reports will also reduce work for DNR staff, improve times for licence renewals, and free-up more staff time to provide hands-on assistance to industry.

The new Act provides the tools for streamlining the process of resolving private land access disputes. It also eliminates special exploration licences.

This one change will allow for a more competitive, fair and timely process for acquisition of exploration licences for withdrawn minerals or for minerals on withdrawn lands. After the new *Mineral Resources Act* and *Regulations* are proclaimed, the Minister of Natural Resources may open selected areas in the province for mineral exploration, and issue an exploration licence for the selected area following a competitive and open request for proposals.

The new *Mineral Resources Act* requires companies to have, and implement, a community engagement plan for all stages of an exploration project. This new requirement, the first for any mining act in Canada, is supported by industry and non-government organizations. The Act will also contribute to public confidence by requiring regular reviews of mine reclamation plans and ensuring that mine sites have adequate reclamation security throughout the mining cycle.

The legislation strikes a balance between stimulating economic growth, managing mineral resources and protecting the environment. When the bill was before the Law Amendments Committee in April, the committee heard from a number of witnesses who expressed concerns about the potential for mineral development on private land trust protected areas. Government appreciates the need to protect Nova Scotia's most sensitive natural spaces, and the bill has appropriate tools in Sections 59(1) and 36(2) to protect the most sensitive areas wherever they may be in the province – on private land trust protected areas or any other sensitive area. Those sections of the Act provide the minister with the authority to withdraw mineral rights or to not accept an application for a mineral exploration licence where acceptance of an application and mineral exploration activities are not in the best interest of the Crown or the public.

Bill 149 has been positively received by industry. In a recent news

release, the Mining Association of Nova Scotia stated: *"the Mining Association has worked with the government on the review for several years and we are pleased that the government accepted many of our recommendations for improving the Act. The Act has not been fully reviewed in a quarter century so many of the changes are common sense improvements that cut red tape and bring the Act in line with equivalent acts in other provinces. The changes will make the Act more modern and efficient, and encourage more investment and job creation in Nova Scotia."*

There is still a lot of work to do to review and modernize the *Mineral Resources Regulations*, including reviewing the fees for acquiring and renewing exploration licences, and modernizing the list of allowable exploration expenditures required to keep licences in good standing. Department staff have started the review process and will hold consultation meetings with industry and interested stakeholders in the coming months.

With the upcoming changes to the legislation there will need to be changes made to the NovaROC application. The Act and Regulations cannot be effectively implemented until NovaROC is ready to work within the framework of the new regulatory regime. All of the necessary changes should be in place to fully implement the new Act and Regulations before the end of 2016.

Finally, it's a pleasure to acknowledge the work of Scott Swinden and the teams of experts who have led the review of the Act for the past two years. Those teams have included staff of the Geoscience and Mines Branch and the Policy Branch of DNR. In addition, we'd like to recognize the work of the Act Consultation Panel, which consisted of Lorrie Roberts, Nova Scotia Environment, Michael Johnson, (then) Economic and Rural Development and Tourism, and Patricia MacNeil, DNR. Well done.

Donald James and Lori Blackburn

A First for Reclamation in Nova Scotia

The proponent of a new gold mine in Nova Scotia is breaking ground in more ways than one. Atlantic Gold Corporation is the parent of DDV Gold, operator of the \$137-million Touquoy gold mine development project in Halifax County. On March 30, 2016, Atlantic Gold became the first mine developer in the province to reveal (in a public press release) the amount of financial security it plans to provide to the province to reclaim the site – even before any ground is broken. This is a welcome first because it provides transparency of a kind that could help to build public confidence in new mine developments.

Atlantic Gold has worked collaboratively with the Geoscience and Mines Branch of DNR and Nova Scotia Environment (NSE) under the Mining One Window Process to develop a reclamation security that was acceptable to both departments. Reclamation securities are required under the terms of a Mineral Lease, issued by DNR, and under terms of an Industrial Approval, issued by NSE.

In the case of the 5,500-tonne-per-day Touquoy open pit and milling facility, the company proposed to provide a security in the form of a surety bond totalling \$10.3 million. Provision of the security will be staged according to the actual level of ground disturbed on the site during development. For more information, please visit the company's web site http://atlanticgoldcorporation.com/resources/news/nr_2016_03_30.pdf. The mine will employ about 300 workers during construction and about 140 during production, which could start in December 2017.

Patrick Whiteway

Mining One Window Proponent Meeting Held for Brazil Lake, Yarmouth County

A Mineral Licence for Brazil Lake that has been held since the late 1990s (see *Nova Scotia Minerals Update*, v. 19, no. 9, p. 5) could see renewed activity in 2016 mainly because lithium – a key ingredient in rechargeable batteries – is in high demand.

Mineral rights holder Champlain Mineral Ventures Ltd., represented by President and CEO John Wightman, recently requested a Mining One Window proponent meeting so that DNR and other regulatory authorities could provide guidance on the approvals needed for advanced exploration work on the property, which is located 25 km north of Yarmouth.

The company plans to extract a 10,000 tonne sample of coarse-grained pegmatitic rocks in 2016 and ship it, via Shelburne, to a company in China for metallurgical test work. If that work proves that the lithium-bearing mineral spodumene ($\text{LiAlSi}_2\text{O}_6$) can be economically recovered from the sample, the company would then consider developing a small open pit and milling operation.

To date, an estimated 600,000 tonnes of mineralized rock have been outlined in two dykes (cf. G. A. O'Reilly, p. 5), and 75% of the 71 claims held have not been sampled in any detail.

Patrick Whiteway



Springhill Update: In the winter of 2016, Springhill Coal Mines Ltd. carried out a bulk sampling program on its Special Licence at Springhill. The company extracted an estimated 7,500 tonnes of coal from three seams. After the sampling was completed, the pit was back-filled. The company will deliver the coal sample to Nova Scotia Power's plant in Trenton for a test burn. Information gathered from the exploration program and the test burn will assist the company to evaluate the viability of developing the coal resources within their Special License. Staff from the Mineral Management Division and councilors from the Municipality of Cumberland are pictured here, standing next to the No. 1 Lower Seam, on a February 29, 2016, site visit.

The exploration program was carried out concurrently with frequent monitoring by the Town of Springhill of water levels in geothermal wells. The wells utilize warm water from flooded, abandoned underground coal workings under Springhill and the water is used to heat some of the businesses in Springhill.

Charting a Course through Nova Scotia for the International Appalachian Trail

Geologists and trail planners met on April 8 and 9 in Mabou, Inverness County, for the North American meeting of the International Appalachian Trail (IAT). The IAT traces the ancestral Appalachian orogeny through North America, and also its counterpart through north Africa and western Europe. The route through Nova Scotia faces the challenge of many disconnected trails – even the proposed route of the Trans Canada Trail favours lowlands over highlands, avoiding some of our most relevant and striking geology. Working with representatives of trail associations in communities across the province, we hope to propose a route that connects with New Brunswick and tells at least a part of Nova Scotia's Appalachian story. With luck, we'll find a way over Avalonia, Meguma, Ganderia, PeriGondwana and the Laurentian margin! You can find out more about this international endeavor at <http://www.iat-sia.org/>. Anyone interested in contributing ideas can contact the author John.H.Calder@novascotia.ca.

John Calder



Participants in the recent meeting held in Mabou to plan the International Appalachian Trail. Front row, l-r: Eric Chouinard, Québec; Bill Duffy, Maine; Don Hudson, Maine; Michael Haynes, Nova Scotia. Back row, l-r: Claire MacNeil, Nova Scotia; Cathy Gill, Prince Edward Island; Leo Gill, Prince Edward Island; Dick Anderson, Maine; John Calder, Nova Scotia; Dave Williams, Nova Scotia; Paul Wylezol, Newfoundland and Labrador; Poul Jorgenson, New Brunswick; Walt Anderson, Maine.

Special Note

E-mail Notification

If you would like to receive an e-mail notice (with hot links) when new maps, digital products and publications are released, or when a new issue of *The Geological Record* is released, please send your e-mail address to DNR.Library.List@novascotia.ca.

Dates to Remember

June 1-3, 2016

Geological Association of Canada-Mineralogical Association of Canada 2016: Margins through Time, Yukon College Campus, Whitehorse, YT. For more information please visit the web site: whitehorse2016.ca/.

June 9 and 10, 2016

Mining Society of Nova Scotia 129th Annual Meeting, Marriott Halifax Harbourfront, Halifax, NS. For more information please visit the web site: <http://www.miningsocietyns.ca/>.

August 19-21, 2016

Nova Scotia Gem and Mineral Show and Sale, Parrsboro, NS. For more information please visit: <https://fundygeological.novascotia.ca/gemshow>.

October 27-29, 2016

Atlantic Universities Geoscience Conference, Acadia University, Wolfville, NS. For more information please visit <https://scienceatlantic.ca/ocs/index.php/auhc/auhc2016>.

November 2-5, 2016

Mineral Resources Review, Delta St. John's Hotel and Convention Centre, St. John's, NL. For more information please visit <http://www.nr.gov.nl.ca/nr/mines/mineral.html>.

November 6-8, 2016

Exploration, Mining and Petroleum in New Brunswick Conference, Fredericton Convention Centre, Fredericton, NB. For more information please visit http://www2.gnb.ca/content/gnb/en/departments/energy/conference/Conf_home.html.