

Nova Scotia

Minerals Update

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In This Issue

On the Road Again

A Look Back at Geology Matters 2011

Mineral Resources Branch Releases
Groundwater Chemistry Map Series

From the Mineral Inventory Files

2012 Atlantic Geoscience Society
Colloquium

July-September 2011 Open Assessment
Reports

Successfully Reclaiming Surface Coal
Mining Sites in Nova Scotia

Ch-Ch-Ch-Changes

Special Note/Dates to Remember

**Comments or questions? Please
contact:**

Doug MacDonald
Editor, *Nova Scotia Minerals Update*
Mineral Resources Branch
P.O. Box 698, Halifax
Nova Scotia, Canada B3J 2T9
Phone 902-424-2510
E-mail drmacdon@gov.ns.ca



On the Road Again

The Mineral Resources Branch of the Nova Scotia Department of Natural Resources (DNR) plays an important role in informing exploration companies and financial institutions about mineral resources and investment opportunities in Nova Scotia. In the early months of 2012, representatives of the branch will be travelling to the two biggest mineral industry events in Canada.

Mineral Exploration Roundup

The Association of Mineral Exploration BC Roundup, held in Vancouver in January, is regarded the world's premier technical mineral exploration conference. Individuals and organizations representing all components of the global mineral exploration and mine development industries gathered for the 29th annual Roundup conference. More than 7000 participants from over 30 countries attended the show, which featured seven technical sessions, ten short courses, two field trips, a prospector's tent, core shack, map tent and hundreds of poster displays. Executive Director of the Mineral Resources Branch Don James (see article on p. 7), Liaison Geologist Diane Webber and Geologist Trevor MacHattie attended the conference and promoted Nova Scotia's mineral resources in the DNR booth. The booth presented a geological overview of the province focusing on gold and rare metals.

Prospectors and Developers Association of Canada (PDAC)

Staff at the Mineral Resources Branch are busy preparing for PDAC 2012, which will be held from March 4-7 at the Metro Toronto Convention Centre. The PDAC Trade Show and Investors Exchange began in 1932 and is the largest international mining trade show in the world. In addition to hosting over 1,000 exhibitors and 30,000 attendees from 120 countries, this conference offers technical sessions and short courses, as well as social and networking events. This year's delegation from the Mineral Resources Branch will consist of Minister of Natural Resources the Honourable Charlie Parker and Deputy Minister Duff Montgomerie, as well as Mineral Resources Branch Executive Director Don James, Director of the Geological Services Division Rob Naylor, Registrar of Mineral and Petroleum Titles John MacNeil, Liaison Geologist Diane Webber, Mineral Deposits Geologist Trevor MacHattie and Exploration Services Geologist Ron Mills. DNR will have an opportunity to promote the mineral resources of the province with excellent visibility at the Atlantic Rock Room.

Minister Parker will host his annual breakfast for industry representatives at the PDAC conference. There will be discussions on the importance of the mining industry, and its contribution as an economic pillar in the province, especially in rural areas. The Minister will also meet with company representatives to discuss challenges facing the province's mineral industry. In recognition of the importance of prospectors to the prosperity of the Nova Scotia mineral sector, DNR is providing financial assistance for approximately twelve prospectors to travel to Toronto and promote their properties at the PDAC. This conference has proven to be an extremely productive venue for prospectors to find project partners and develop option agreements with companies or investors.

Diane Webber

A Look Back at Geology Matters 2011

The Mineral Resources Branch of the Nova Scotia Department of Natural Resources (DNR) hosted its 35th annual fall conference on October 25 and 26, 2011. October 25 featured presentations under the themes “New Initiatives”, “Exploration and Mining”, “Energy” and “Reclamation”. DNR gave presentations on the Natural Resources Strategy, Automation of the Registry of Mineral and Petroleum Titles, 12% Protected Lands and Surface Coal Mining Enhancement initiatives, and announced a gold discovery in the Cobequid Highlands. Guest speakers presented details on exploration industry trends, carbon capture and storage, rockfall mitigation, and mineral exploration companies outlined their activities in Nova Scotia and around the world.

Lunch on October 25 featured speaker David Haley, Territory Manager – Maritimes for SNC-Lavalin Inc.’s Environment Division. Mr. Haley gave an informative report on the Lower Churchill Hydroelectric Generation Project with an overview of the Muskrat Falls Development. Muskrat Falls is one of the two hydroelectric generation facilities that Nalcor Energy is proposing to develop in central Labrador.

A workshop was held in the afternoon, to explain many aspects of the geoscience profession to local university students. The first day of the conference ended with the Minister’s Reception and Awards Ceremony. The Honourable Charlie Parker delivered a firm message that “the mining industry continues to be a very important contributor to the Nova Scotia economy” and his government “wants to see new mineral development in Nova Scotia, carried out in a sustainable way” and believes that “engaging Nova Scotians in project planning and decision making is very important when developing our mineral resources.” Minister Parker assisted in the presentation of the Terrance Coughlan Memorial Award to Pat Mills, Plant Manager at National Gypsum and president of the Mining Association of Nova Scotia (MANS), for his



Minister of Natural Resources, the Honourable Charlie Parker (C), presents the department’s Prospector of the Year Award to Joe Richman (L) and the Terrance Coughlan Memorial Award to Pat Mills (R) at Geology Matters 2011.

contribution to the development of industrial minerals in Nova Scotia. Mr. Parker presented the Prospector of the Year award to Joe Richman.

On October 26, the conference was organized around the themes “Land-use Planning” and “Exploration and Mining.” Presentations on the second day included viewpoints from MANS, the Mining Society of Nova Scotia, and activity reports from prospectors and exploration and mining companies, as well as a Mining Law presentation by representatives of a local law firm. Amanda Dillon, Public Outreach and Special Event Coordinator of the Prospectors and Developers Association of Canada (PDAC), spoke at the luncheon on October 26. Ms Dillon presented details on the PDAC’s initiative *Mining Matters*, the charitable organization that works to educate students about Canada’s geology and mineral resource endowment, and to promote an awareness of the importance of rocks, metals, minerals and mining.

There was an overwhelming response to the Wetlands 101 Workshop held in the afternoon of October 26. Delegates learned about wetlands in Nova Scotia and the province’s wetland policies and regulations from guest speakers, and from a panel of professionals. The Geology Matters 2011 Program with Abstracts has been posted on the branch web site at <http://www.gov.ns.ca/natr/meb/oh/index.asp>. PowerPoint presentations, videos and posters will be available on the website at a future date.

Geology Matters 2011 enjoyed record attendance and the Mineral Resources Branch will continue to build on creating opportunities for science-based learning, engagement and networking at future conferences. Geology Matters 2012 will be held on October 29 and 30 at the Westin Hotel, Halifax. For further information contact Diane Webber at webberde@gov.ns.ca or 902-424-3053.

Diane Webber

Mineral Resources Branch Releases Groundwater Chemistry Map Series

The Nova Scotia Department of Natural Resources maintains the Nova Scotia Groundwater Chemistry Database (NSGCDB), which contains approximately 5,000 inorganic chemistry analyses collected between 1954 and 2012. The database was compiled from various federal, provincial and municipal groundwater chemistry data sources, including well water quality monitoring data from government buildings, and Nova Scotia Environment groundwater chemistry data from registered public drinking water supplies, pumping tests, municipal groundwater systems and provincial observation wells. The database does not include known contaminated sites and likely represents naturally occurring conditions.

A series of 17 bedrock groundwater maps showing the distribution of selected water chemistry parameters from the NSGCDB was published in December 2011. The selected parameters include alkalinity, bicarbonate, carbonate, sodium, potassium, calcium, magnesium, fluoride, sulphate, chloride, hardness (Fig. 1), total dissolved solids, pH, nitrate + nitrite as nitrogen, arsenic, uranium, iron and manganese, and are available at: <http://www.gov.ns.ca/natr/meb/data/pubs/rn/rn2012-01.pdf>. The range in concentrations for each parameter is presented on the maps along with information pertaining to the distribution of the data and their relationship to the Health Canada Guidelines for Canadian Drinking Water Quality. Since groundwater chemistry is influenced by the geologic materials encountered, the bedrock groundwater regions are also shown on the maps for comparison.

The maps may be useful to various groups, such as groundwater researchers, land-use planners, municipal officials and well owners. Much of this information can also be accessed through the DNR interactive groundwater map viewer at <http://gis4.natr.gov.ns.ca/website/nsgroundwater>.

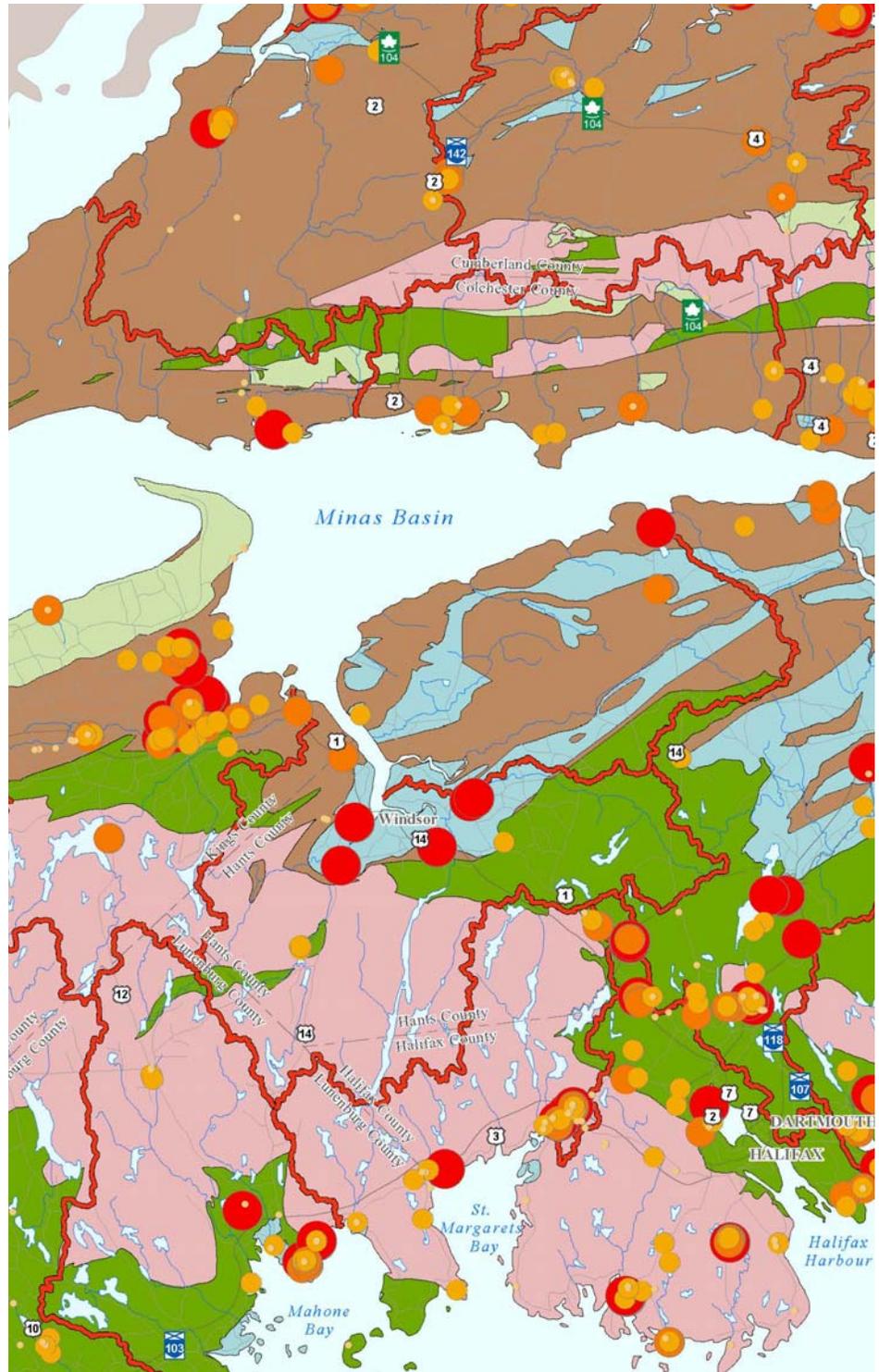


Figure 1. A portion of the map depicting hardness data from the Nova Scotia Groundwater Chemistry Database. The base map shows bedrock groundwater regions in Nova Scotia.

From the Mineral Inventory Files

Meandering Thoughts

A couple of years ago local prospector Roland Anthony discovered impressive amounts of placer gold along a section of the Meander River near Greenhill, Hants County (Fig. 1). This discovery caused me, once again, to reflect on an area of the central and western Rawdon Hills where several factors suggest the presence of undiscovered gold deposits. Those involved with mineral exploration commonly use the old adage “where there’s smoke there’s fire” and I have felt for some years now that this Rawdon Hills area has a distinctly sooty smell.

The recent discovery by Mr. Anthony spurred me to compile an inventory of mineral indicators present in this region and pass them along in this article. Several workers have made interesting notations over the years, the first dating as far back as the gold rush immediately following the first discovery of gold in Nova Scotia in 1860. At that time people were fanning out all over the province with dreams of “striking it rich.” In 1863, John Campbell wrote a report to Provincial Secretary Joseph Howe that was published in the *Journal and Proceedings of the House of Assembly of the Province of Nova Scotia*. The report, among other things, drew attention to a section of the Herbert River that traverses Halifax Formation rocks about 16 km west of the Renfrew Gold District (Fig. 1). Campbell noted how the river “rolls gold in its sands along the greater part of its course” and that he found gold in “every panful of the stuff” that he tested. He also noted the abundance of quartz float in the glacial till in several areas and actually cited a farm in which a 60 m long stone wall (present day location unfortunately not known) was built almost entirely of quartz.

The Meander River, where Roland Anthony’s recent placer discovery was made, parallels the Herbert River and both traverse the same sequence of Halifax Formation slates, so it can now be said that both rivers “roll gold in their

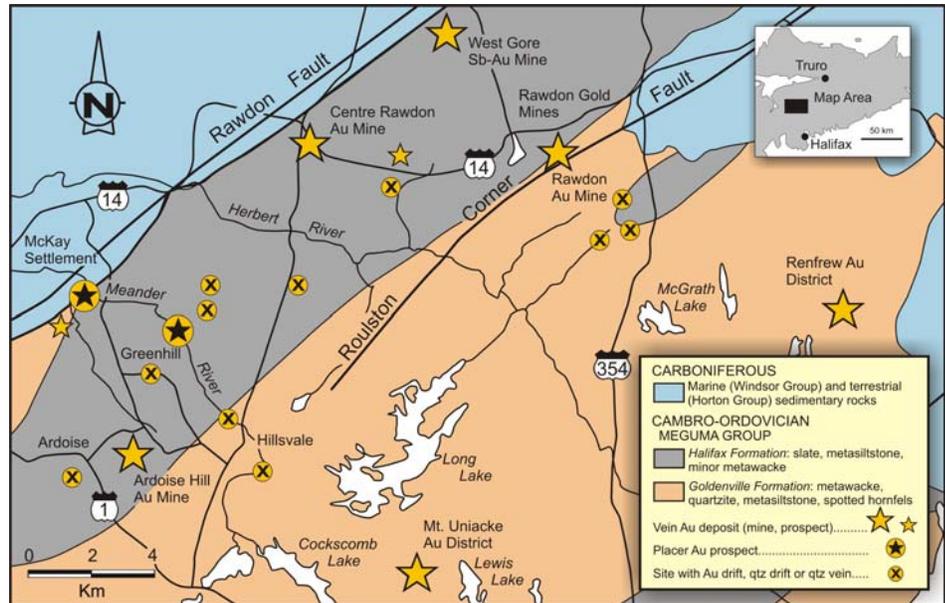


Figure 1. Geology of the central and western Rawdon Hills area showing the location of gold mines and prospects, as well as sites where there are quartz veins in bedrock and abundant quartz and gold-rich float present in overburden.

sands.” Add to this that at McKay Settlement, about 4 km downstream along the Meander River from Greenhill, a section of the Little Meander River just upstream of its confluence with the Meander produced a small amount of placer gold from 1897-1899.

What is the source of this gold? This region has its share of old gold mines, such as the typical saddle-reef quartz vein deposits mined at Mt. Uniacke, Renfrew and Rawdon (Fig. 1). As well, the region is the home of some former gold mines and prospects where the mined quartz veins are atypical of most Nova Scotia gold deposits, which are typically associated with northeast-trending structures. At the Centre Rawdon Mine the mine’s entire gold production came from two northwest-trending, discordant, quartz veins. Similarly, at the West Gore antimony-gold mine, the ore was also produced from northwest-trending, discordant quartz veins. At Ardoise Hill, just west of Greenhill, small-scale

gold mining took place in the late 1800s from both interbedded and discordant quartz veins, but several were very rich in pyrite. These deposits could be looked on as potential sources of the placer gold still present in the Meander and Herbert rivers. Given the lay of the land, however, it’s difficult to believe that the placer gold occurring along these rivers comes from those deposits. Instead, I would draw attention to several other mineral indications noted on E. R. Faribault’s 1908 Elmsdale and 1909 Windsor map sheets over the Rawdon Hills. These maps show numerous notations of “gold drift”, “quartz drift” and “quartz veins” over the entire region (Fig. 1), suggesting that the gold in the major rivers is from another source, or possibly multiple sources. In my opinion, all these indications, looked at collectively, weave a tale worth reading and it is high time someone signed this book out and paid strict attention to its pages. Any takers?

G. A. O’Reilly

Successfully Reclaiming Surface Coal Mining Sites in Nova Scotia

Public concerns about former mining practices in the Cape Breton Regional Municipality and the potential for adverse cumulative effects from multiple mining projects led the Minister of Natural Resources in 2006 to establish the Surface Coal Mine Reclamation Enhancement Initiative. The initiative, which wraps up its work in April 2012, concluded that progressive reclamation practices (as described below) can return mine sites to Acadian forest conditions in less time than the standard reclamation practice whereby compacted mineral soil is simply seeded with grass.

In 2009, an opportunity became available to study an active surface coal mine, the Pioneer Coal mine in Point Aconi, Cape Breton County. Progressive reclamation practices were employed at the site, with one section of the mine being reclaimed soon after it had been mined. The Department of Natural Resources was granted access to conduct vegetation surveys on different treatment sites before mining and after reclamation. The following three reclamation treatments were studied at Pioneer Coal.

Forest floor grubbings Shredded trees, whole tree stumps and a forest organic layer were spread over previously mined areas that were contoured and back filled. The grubbings were transported by truck and spread by excavators in the winter months when the ground was frozen to minimize damage to soil structure. A depth of 30 cm was accomplished in most areas, with stumps placed upright and the ground left uneven with small hills and valleys.

Shrub clumps Shrubs were placed close together in one area. The clumps were re-grown after the forest was cut down in a region to be mined. Shrub clumps were scooped up with a flat pan on the front of an excavator and immediately transported to an area and placed adjacent to each other. This step was also carried out when the plants were dormant.

Scattered shrub clumps This method allowed larger areas to be



These wetlands are situated on a reclaimed surface coal mining site near the Point Aconi coal-fired electric generating station. Photo by Helen MacLeod.

covered by placing clumps of shrubs farther apart and allowing vegetation to fill in between shrub clumps over time. This was done in the summer of 2009.

Vegetation surveys were conducted on the forest grubbings and shrub clump sites, as well as in a natural forested area adjacent to the mining activity in the summer of 2009. In 2010, surveys were conducted on the plantation scattered shrub clump site and repeated on the grubbings site. The sites seem to be growing well after initial placement, with new growth observed, and continue to do well in 2011 although there was some initial die-back in the plantation scattered shrub clump site. Fifty-two plant species were recorded in 2009 and 88 species were recorded in 2010 in the grubbings site. The proportion of bare ground averaged 73% in 2009 and 41% in 2010.

As part of the reclamation process, a number of wetlands were established in 2009 and more were added in 2011.

These wetlands are shallow and allow wetland vegetation to migrate in and grow successfully. Previously mined areas were contoured to form hills and valleys with loose soil containing shrub clumps and grubbings spread over them. A number of settling ponds were formed in 2011, and other areas were seeded with grass mixtures. These sites allow varied habitats for wildlife and encourage biodiversity.

The reclaimed sites retained organic matter and a seed bank of native species and propagules was established through the placement of grubbings and shrub clumps. Biodiversity has been encouraged by the use of varied habitats in wetlands, ponds, uneven topography, grubbings and shrub clumps.

Through the progressive reclamation practices described above, this site will return to Acadian forest conditions in less time than if compacted mineral soil was simply seeded only with grass.

Helen MacLeod

2012 Atlantic Geoscience Society Colloquium

The 38th Atlantic Geoscience Society (AGS) Colloquium and Annual General Meeting will be held at the Delta Beauséjour Hotel in Moncton, NB, from February 3 to 5, 2012. The theme of the conference is *Current Research in the Atlantic Provinces (and Beyond)*, with Special Sessions on "Paleontology in Atlantic Canada" chaired by Matt Stimson and Melissa Grey, "Surficial Geology and Geochemistry" chaired by Michael Parkhill, Serge Allard, Bruce Broster and Tim Webster, "Stratigraphy and Sedimentology" chaired by Dave Keighley and Nazrul Islam, "Economic Geology" chaired by Jacob Hanley and Chris McFarlane and "Structure and Tectonics" chaired by Cliff Shaw and Jamie Braid. Technical sessions will run Friday evening and all day Saturday. Friday afternoon features a tour of the Sussex potash mine and a concurrent short course entitled "Practical Applications of Fluid Inclusions to Ore Forming Environments" organized by Dan Kontak and Jacob Hanley.

The annual banquet will be held on Saturday night, Feb. 4. Several awards will be presented at the banquet, including the AGS Gesner Medal (Distinguished Scientist Award), the Laing Ferguson Award (Distinguished Service Award), and the student awards for best poster (Graham Williams Award), best undergraduate student paper (Rupert MacNeill Award), and best graduate student paper (Sandra Barr Award). The guest speaker this year is Robert Grantham, whose talk is entitled "Adventures in Geoscience Interpretation." This will be followed by the traditional post-banquet Ceilidh and jam session, where all are invited to bring their musical instruments and singing voices.

Additional information can be found on the AGS web site (<http://ags.earthsciences.dal.ca/ags.php>). Hope to see you there.

Chris White

October - December 2011 Open Assessment Reports

Report Number	NTS	Licensee
AR ME 2009-087	11K/01C	Richman, J
AR ME 2009-088	21A/07C	Hiltz, K R
AR ME 2009-089	11F/04D	DeBay, A
AR ME 2009-090	11D/15C	DDV Gold Limited
AR ME 2009-091	11D/15C	DDV Gold Limited
AR ME 2009-092	11D/16C	Nycon Resources Incorporated
AR ME 2009-093	11E/02B	Acadian Mining Corporation
AR ME 2009-094	11D/14D	Acadian Mining Corporation
AR ME 2009-095	21A/04A	Avalon Rare Metals Incorporated
AR ME 2009-096	11E/05B	Rose, J M
AR ME 2009-097	11F/14A	MacLeod Resources Limited
AR ME 2009-098	11E/03B	Grant, S
AR ME 2009-099	11D/12D	Conrad Brothers Limited
AR ME 2009-100	11D/13D	MacEachern, H A
AR ME 2009-101	11E/06A	Acadian Mining Corporation
AR ME 2009-102	11F/16C, D	Thompson, A C
AR ME 2009-103	11D/13D; 11D/14C	Acadian Mining Corporation
AR ME 2009-104	11E/02A, D	Acadian Mining Corporation
AR ME 2009-105	11D/16C	Dufferin Resources Incorporated
AR ME 2009-106	11D/15A	Acadian Mining Corporation
AR ME 2009-107	11D/13D	DeBay, A
AR ME 2009-108	11E/02D	Shadbolt, D
AR ME 2009-109	11F/04D	Annapolis Properties Corporation
AR ME 2009-110	11E/11B	Alpha Uranium Resources Incorporated
AR ME 2009-111	11E/11B	Alpha Uranium Resources Incorporated
AR ME 2009-112	11D/15C	Scratch Exploration and Mining Corporation Limited
AR ME 2009-113	11E/03A	Hilchey, A F
AR ME 2009-114	11D/14A; 11D/15B	Hilchey, A F
AR ME 2009-115	11F/14C, D	Glencoe Resources Incorporated
AR ME 2009-116	11F/14C, D	Glencoe Resources Incorporated
AR ME 2009-117	11F/14C, D	MacDonald, R H
AR ME 2009-118	11D/16C	Acadian Mining Corporation

Susan Saunders

Ch-ch-ch-Changes

It appears that Francois de la Rochefoucauld was correct when he said “the only thing constant in life is change.” Over the last year, the Mineral Resources Branch has experienced the retirements of its Executive Director (Mike MacDonald), Manager of Information Services (Norman Lyttle) and Manager of Mineral Development and Policy (Dennis Merner). In addition, geologists Dan Utting and Terry Goodwin have gone down the road to seek their fortune out west (see *Nova Scotia Minerals Update*, v. 28, no. 4).

Fortunately, change also brings opportunity. The Department of Natural Resources has been very fortunate to acquire Donald James as the new Executive Director for the Mineral Resources Branch. Donald joins the department from the Canadian Northern Economic Development Agency, where he was Director General of the Northern Projects Management Office. Prior to that, Donald was Chief Geologist of the Canada-Nunavut Geoscience Office in Iqaluit, Nunavut. Donald has a Ph.D. in geological sciences earned from Queen’s University in Kingston, Ontario, and more than 30 years of field experience across northern Canada and Labrador. Donald was with the Geological Survey of Newfoundland and Labrador (1990-2004), has worked with industry and operated a consulting firm. He has served as President (twice) of the Newfoundland Section of the Geological Association of Canada, Science Program Chairman of the Geological Association of Canada (2008-2011), Finance Chairman of the Canadian Geoscience Council, and was a member of the National Geological Surveys Committee (2005-2010). The move to Nova Scotia will allow Donald to spend more time with family, experience the “adrenaline rush” of downhill skiing in Nova Scotia and enjoy the tranquility of fly fishing on some of the best salmon rivers in eastern Canada.

Joining Donald James as new members of the Mineral Resources Branch management team are Brian Fisher and Patrick Whiteway. Brian, formerly supervisor of GIS services, is now the manager of the branch’s Environmental Geology and Information Services programs. Mentored under the watchful eye of Norm Lyttle, Brian has made a very smooth transition into his new role. Patrick Whiteway replaces Dennis Merner as the Manager of Mineral Development and Policy. A native Nova Scotian, Patrick received his B.Sc. in geology from Acadia and his B.Eng. in mining from the Technical University of Nova Scotia. He has spent most of his career in the nickel industry, most recently as Manager, Communications (for eleven years), for the Nickel Institute in Toronto. A final change of note is the appointment of geologist Jeff Poole as supervisor of GIS services. Jeff is another of Norman Lyttle’s protégés and assumed his new role in September.

The Mineral Resources Branch will continue to go through significant staff changes over the next 3 to 5 years. With many employees eligible for retirement and the lure of high-paying industry jobs, change is inevitable. The future of the branch looks bright, however, with highly talented geologists, engineers and other staff joining our ranks.

Rob Naylor

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 *Nova Scotia Minerals Update* is released, please send your e-mail address to minerals@gov.ns.ca.

Dates to Remember

February 3-5, 2012

38th annual Atlantic Geoscience Society (AGS) Colloquium and Annual General Meeting, Delta Beauséjour Hotel, Moncton, NB. For more information please see the article on p. 5 and visit the web site (<http://ags.earthsciences.dal.ca/ags.php>).

March 4-7, 2012

Prospectors and Developers Association of Canada (PDAC) Trade Show and Investors Exchange, Metro Toronto Convention Centre, Toronto, ON. For more information please visit the web site www.pdac.ca/pdac/conv/.

May 6-9, 2012

Canadian Institute of Mining, Metallurgy and Petroleum, Conference and Exhibition, Shaw Conference Centre, Edmonton, AB. For more information please visit the web site www.cim.org/edmonton2012.

May 27-29, 2012

Geological Association of Canada-Mineralogical Association of Canada Joint Annual Meeting, Delta Hotel and Conference Centre, St. John’s, NL. For more information please visit the web site <http://stjohns2012.ca/>.