

Nova Scotia

# Minerals Update

Department of Natural Resources, Mineral Resources Branch

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<http://www.gov.ns.ca/natr/meb/pdf/mu.htm>

  
**NOVA SCOTIA**  
Natural Resources

## Mining Matters 2007 Highlights Industry Investment Forum

Have you ever wondered why the mineral industry is so vital to your everyday existence, or why so many millionaires are found in the mining sector? An increasing percentage of the general population, and many special interest groups, are unaware of the many environmentally responsible changes in the mineral industry and the fundamental, everyday uses of mineral resources in their lives. This year the Mineral Resources Branch will use the annual review of activities to put a real face on the mining industry. In addition to the provincial review of geoscience and mining related activities, the conference will highlight similar activities in both New Brunswick and Newfoundland and Labrador, as well as a highly anticipated, full day dedicated to an industry-sponsored Investment Forum. The Organizing Committee is planning a comprehensive event that centres on the theme ***From Rocks to Riches: Why Mining Matters to You!***

When the conference opens on November 13, it will showcase numerous government, academic and industry posters, and diamond-drill core displays in the Commonwealth Ballroom of the Westin Nova Scotian Hotel in Halifax (see Program, p. 4). These displays will attempt to highlight the critical importance of the mineral industry to this province, to capture the fundamental requirement of natural resources to our survival, and provide a brief overview of how the industry functions in today's unprecedented regulatory

environment. Following a special luncheon presentation by Michelle Landreville, the new Executive Director of the Mining Association of Nova Scotia (see p. 8), afternoon talks from senior DNR staff will discuss initiatives in the Mineral Resources Branch, including the hiring of new staff (see p. 7) for advanced research on mineral deposits, surficial geology and water resources. In anticipation of the many changes that will occur, a restructuring of existing programs and staff allocation is already underway to more closely reflect the current fiscal and staff resources, as well as the changing needs of client groups across the province. Specific initiatives dealing with these numerous changes will be highlighted by a series of presentations. Reviews highlighting mineral exploration and mining activities in both New Brunswick and Newfoundland and Labrador will also be presented by senior provincial staff from those provinces. The significance of exploration and development activities in Nova Scotia will be then compared to those of the other Atlantic Provinces, thus highlighting the extensive potential of the industry at home.

A Minister's Reception will follow the day's technical presentations. The Honourable David Morse, Minister of Natural Resources, and his colleagues will welcome delegates and recognize the contributions of several members of the industry at an Awards Ceremony.

The Industry Investment Forum will be the focus of the second day of this conference. After Minister Morse welcomes the many local, national and



This map of currently active mines and large aggregate quarries in Nova Scotia gives a small insight into the provincial mining industry. Mining and mineral processing employ 5200 workers and have a payroll of \$80 million.

international companies, numerous speakers and the attending delegates, the conference will proceed with more than a dozen commodity talks (see Program, p. 5). This full day of company presentations on mining properties from all over the world will highlight an array of mineral commodities, innovative new techniques to extract these resources in an environmentally responsible and sustainable manner, and feature the exciting investment opportunities associated with the mining and mineral sector. Greg McCoach, renowned mining stock speculator and owner of the highly esteemed newsletter *The Mining*

*Speculator*, will deliver a special luncheon presentation designed to take the mystery out of stock investment. This talk will provide an excellent opportunity to find out why the mineral sector is such a compelling investment option today. Following more industry presentations in the afternoon, and a four-member panel discussion by top industry experts, the floor microphone will be opened to the audience for comments and questions to the panel, moderated by well known broadcaster George Jordan. This is your chance to find out about one of the most vibrant and progressive industries in the world.

The conference will conclude with an industry reception for all delegates. The Mineral Resources Branch invites you to take this opportunity to visit with, and talk to the exploration, mining and investment companies, and to become more familiar with all aspects of the industry. This is your chance to see first hand that the mining sector is now a leader of responsible environmental practices and sustainable development, despite a regulatory process not experienced by any other industry in Nova Scotia.

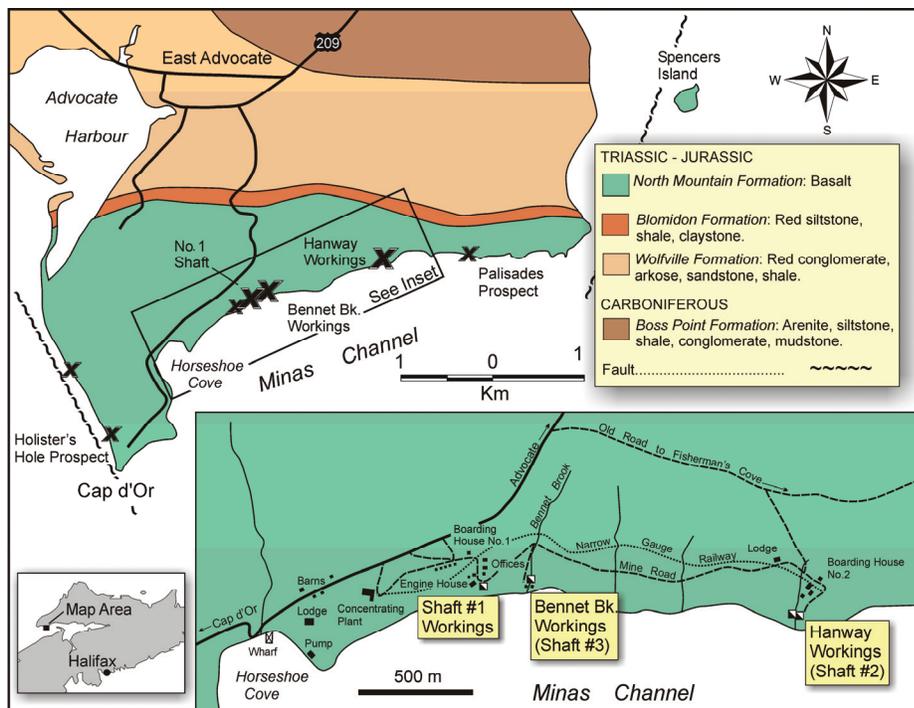
Paul Smith

# From The Mineral Inventory Files

## At Cap d'Or, All That Glitters is not Gold - it's Copper!

Most people in the province, even those involved with mining, know little about the unique mineralization style and large size of the copper (Cu) deposits mined at Cap d'Or, Cumberland County, from 1900-1907 (see Fig. 1). Common perception is that they were little more than glory holes on a few Cu occurrences. This is not so. Native Cu-bearing veins in the Triassic basalt cliffs at Cap d'Or were used before Europeans came to Nova Scotia when natives made arrowheads from the metal. Early in the 17<sup>th</sup> century Samuel de Champlain made note of Cu in these cliffs after first thinking it was gold (hence "Cap d'Or") and called the nearby area Port des Mines (later re-named Advocate).

Serious attention was not paid to the deposits until 1897 when Mr. J. A. Hanway formed the Colonial Copper Company. The company, from its New York city offices, invested several million dollars in developing mining operations at Cap d'Or. At that time, this was a very obscure part of the province with few roads. Best access to the site was by sea and a wharf was constructed in Horsehoe Cove. By 1900, three areas of workings were operating (see Fig. 1). Shaft No. 1 was sunk to 113 m and had two short drifts at 66 and 110 m. The Hanway workings actually consisted of two inclined shafts, one at 25-30° toward the north for 150 m (approx 100 m true depth) and another toward the south at 30-50° for 200 m. There are upwards of 243 m of underground tunnels at the Hanway workings, one of which opens on the basalt cliff face south of the shafts. A third area of workings, Shaft 3 at Bennet Brook, was 55 m deep with 90 m of drifts. Mine infrastructure for the district consisted of a crushing and concentrating plant, mine offices, assay lab, numerous miners' homes, boarding houses and a lodge. In addition, a narrow gauge rail line connected all three workings to the concentrating plant. **Please be forewarned that should you decide to visit these sites, the shafts there are among**



**Figure 1.** Geology of the Cap d'Or area, Cumberland County, showing the location of Cu deposits. Inset map shows the infrastructure of the Colonial Copper Company.

### the most dangerous in the province. Exercise extreme caution!

The ore consisted of native Cu with essentially no sulphides, occurring as lenses, knots and disseminations within carbonate-quartz veins and breccias. The mineralized zones occupy north-trending fault zones in the flat-lying Triassic basalt flows. The most extensive workings of the district were those at the Hanway, which reportedly penetrated the basalt to the underlying Triassic redbeds. I assume that the ore zones do not extend into the underlying sediments, but this is not totally clear. Within the Hanway workings the mineralized zone averaged about 2.5% Cu and was 1.2 m wide at 30 m depth, 8.5 m wide at 61 m, and 3 m wide at 91 m. The Bennet Brook Shaft was sunk in a 15 m wide fault and breccia zone with native Cu found in a predominantly carbonate vein occurring along its eastern margin. These workings lie in a deep ravine and immediately adjacent

to a brook, responsible for reported water incursion that always hampered mining. The fault and mineralized zone at Shaft No. 1 was narrow, generally less than 30 cm, and this deposit was deemed to be least important. In addition to the three sites of mining there were several other Cu prospects discovered in the area, but none were explored to any extent (see Fig. 1).

Although occurrences of native Cu are known in several other locations in the Triassic volcanic rocks of the province, these deposits at Cap d'Or are by far the largest and most extensive. Surprisingly very little is known about the genesis of these interesting deposits, simply because nobody has taken the time to study them in detail. There has never been a modern exploration evaluation of the deposits, thus no meaningful statements as to their true potential can be made.

G. A. O'Reilly

# Program for Mining Matters 2007

## Tuesday, November 13

Venue: The Westin Nova Scotian Hotel, Commonwealth Ballroom A (Posters and Core Shack Display) and B (Presentations)

- 9:00 am - 5:30 pm      Registration, Conference Level Lobby
- 9:00 am - 9:10 am      Opening Remarks, Peter Underwood, Deputy Minister, Nova Scotia Department of Natural Resources (DNR)
- 9:00 am - 12:00 pm      Posters and Core Shack Display
- 12:00 pm - 2:00 pm      Lunch, Atlantic Ballroom (tickets \$20), with speaker Michelle Landreville, Executive Director of the Mining Association of Nova Scotia: *The Way Forward*
- 2:00 pm - 5:30 pm      Natural Resources Review
- 2:00 pm - 2:10 pm      Opening Remarks, Peter Underwood, DNR
- 2:10 pm - 2:30 pm      Scott Swinden, DNR: *Mineral Resources Branch: Where We've Been and Where We're Going*
- 2:30 pm - 2:50 pm      Bruce Carter, DNR: *Integrated Resource Management*
- 2:50 pm - 3:10 pm      Bob Ryan, DNR: *Resource Evaluation - a Transition of Priorities*
- 3:10 pm - 3:40 pm      Coffee break
- 3:40 pm - 4:00 pm      Rob Naylor, DNR: *Review of the Geological Mapping, Environmental Geology and Hydrogeology Projects Undertaken in 2007*
- 4:00 pm - 4:20 pm      Les Fyffe, New Brunswick Department of Natural Resources: *Overview of Geoscience and Exploration Programs in New Brunswick*
- 4:20 pm - 4:40 pm      Dave Liverman, Newfoundland and Labrador Department of Natural Resources: *Mining, Exploration and Government Geoscience in Newfoundland and Labrador*
- 4:40 pm - 5:00 pm      Mike MacDonald, DNR: *Mineral Exploration in Nova Scotia: Industry Highlights, Supporting Geoscience Activities and Regional Correlation*
- 5:00 pm - 5:30 pm      Cash Bar
- 5:30 pm - 7:00 pm      Minister's Reception (tickets \$10), hosted by the Honourable David Morse, Commonwealth A
- 7:00 pm - 8:00 pm      Awards Presentation
- 7:30 pm - 9:00 pm      Mining Society of Nova Scotia, Business Meeting in the Fundy Room

# Program for Industry Investment Forum

## Wednesday, November 14

Venue: The Westin Nova Scotian Hotel, Commonwealth Ballroom A (Booth Displays) and Atlantic Ballroom (Presentations)

7:00 am - 8:30 am	Speakers' Breakfast, Fundy Room
8:00 am - 5:00 pm	Registration, Conference Level Lobby
8:45 am - 9:00 am	Welcoming Remarks, the Honourable David Morse, Minister of Natural Resources
9:00 am - 9:15 am	Will Felderhof, Acadian Mining Corporation: <i>Acadian Mining - a Corporate Snapshot</i>
9:15 am - 9:30 am	Greg Isenor, Merrex Gold Inc.: <i>Merrex Gold: Corporate Story</i>
9:30 am - 9:45 am	Wade Dawe, Linear Metals Corporation: <i>Two Base Metal Discoveries - Ontario and Mexico</i>
10:00 am - 10:15 am	Diane Webber, Erdene Gold Inc.: <i>Bringing the Energy Back Home to Cape Breton and Molybdenum to China's Steel Industry</i>
10:15 am - 10:45 am	Coffee break
10:45 am - 11:00 am	Presenter TBA, Xstrata Coal: <i>The Donkin Coal Mine</i>
11:00 am - 11:15 am	Scott Trebilcock, Nautilus Minerals Inc.: <i>New World - New Vision - New Resources</i>
11:15 am - 11:30 am	Dave Felderhof, Royal Roads Corporation and Buchans River Ltd.: <i>TBA</i>
11:30 am - 11:45 am	Gary Woods, Mountain Lake Resources Inc.: <i>Gold, Base Metal and Diamonds - Three Advanced Projects</i>
11:45 am - 12:00 pm	Lyndon Jensen, Coxheath Minerals: <i>Coxheath - Multi-mineral Potential</i>
12:00 pm - 1:45 pm	Industry Luncheon, Atlantic Ballroom (tickets \$20), with speaker Greg McCoach, The Mining Speculator
1:45 pm - 2:00 pm	Richard Gordon, Etruscan Resources Corporation: <i>Uniquely Positioned for Growth in Africa</i>
2:00 pm - 2:15 pm	Allan Cramm, Anaconda Gold Corporation: <i>Update on the Pine Cove Gold Project</i>
2:15 pm - 2:30 pm	Jim McKenzie, Ucore Uranium Inc.: <i>Uranium and Rare-earth Exploration across North America</i>
2:30 pm - 2:45 pm	Tony Belperio, Minotaur Exploration Ltd.: <i>Minotaur in Nova Scotia - the Search for the Next World-class Copper-Gold Deposit</i>
2:45 pm - 3:00 pm	Peter Hawley, Scorpio Mining Corporation: <i>Building a Mining Relationship: Different Place - Same Principles</i>
3:00 pm - 3:30 pm	Coffee break
3:30 pm - 3:45 pm	Luc Arsenault, TSX Venture Exchange: <i>TBA</i>
3:45 pm - 4:00 pm	Peter Carter, Atlantic Gold NL: <i>Update on the Touquoy Gold Project</i>
4:00 pm - 4:15 pm	Michael Taylor, Slam Exploration Ltd.: <i>The Nash Creek Zinc Deposit - a Mine in the Making</i>
4:15 pm - 4:30 pm	Peter Oram, Conestoga-Rovers and Associates: <i>Overview of Mine Permitting in Nova Scotia from 1996 to the Present</i>
4:30 pm - 5:30 pm	Panel Discussion and Open Microphone Session, Moderated by George Jordan; Panelists: Greg McCoach, The Mining Speculator; John Hanrahan, Citadel Securities; Will Felderhof, Acadian Mining Corporation; and Luc Arsenault, TSX Venture Exchange
5:30 pm - 7:00 pm	Industry Reception, Atlantic Ballroom
7:00 pm	Conference Closed

## Acid Rock Drainage: Integration of Bedrock Mapping and Land-use Planning

Sulphide-bearing rocks of the Meguma Supergroup underlie parts of the Halifax Regional Municipality. When road work and other forms of excavation expose the sulphide minerals pyrrhotite, pyrite and arsenopyrite to oxygen in the air and surface water, oxidation of these minerals generates acidic runoff, commonly referred to as acid rock drainage (ARD). If left untreated, ARD within a watershed will reduce pH, increase flocculants and increase dissolved metals, resulting in a stressed ecosystem. In addition to the potential ecological damage, including loss of aquatic life, acid rock drainage has been responsible for damage to engineered infrastructure (such as cement pipes) as well as multimillion-dollar remediation measures and continuous treatment costs. Halifax's Robert Stanfield International Airport is a case study in the effects and costs of acid rock drainage.

In the last 15 years, the department has undertaken regional bedrock mapping of the Meguma Supergroup. This has resulted in subdivision of the Meguma's Goldenville and Halifax groups into several mappable formations. Especially prone to ARD is the Cunard Formation of the Halifax Group, which consists of black slate with subordinate thinly bedded and laminated metasilstone and metasandstone beds. The Cunard Formation is further characterized by abundant sulphide minerals.

## July - September 2007 Open Assessment Reports

Report Number	NTS	Licensee
AR ME 2005-069	11E/05C	Allen, L J
AR ME 2005-070	11E/05C	Allen, L J
AR ME 2005-071	11E/02A	Acadian Gold Corporation
AR ME 2005-072	11E/05D	Allen, L J
AR ME 2005-073	11K/01B	Wightman, J F; Mt Cameron Minerals Incorporated
AR ME 2005-075	11E/04B	Goldenville Mining Corporation
AR ME 2005-076	11E/06D	Candor Ventures Corporation
AR ME 2005-077	21A/07C	Crouse, A R
AR ME 2005-078	11D/11C	Goldenville Mining Corporation
AR ME 2005-079	11E/02B	Allen, L J
AR ME 2005-081	11F/16D	Rainbow Resources Limited
AR ME 2005-082	11D/16C	Nycon Resources Incorporated
AR ME 2005-083	11D/13A	Boutilier, T D
AR ME 2005-084	11F/05A, B	Acadian Gold Corporation
AR ME 2005-085	11E/02B	D D V Gold Limited
AR ME 2005-086	11E/02B, C	D D V Gold Limited
AR ME 2005-087	11D/14D	D D V Gold Limited
	11E/03A	
AR ME 2005-088	11E/02B	D D V Gold Limited
	11E/03A	

*Susan Saunders and Norman Lyttle*

During the 2007 field season, DNR initiated a detailed 1:10 000 scale bedrock mapping project to examine the geology of the Halifax Regional Municipality, which in some areas has not been mapped for over 100 years. The project's goals include production of a series of varied-scale, user-defined geological maps of the Meguma Supergroup and South Mountain Batholith in the municipality. It is anticipated that information on these maps will help guide land-use decisions related to ARD in the Halifax Regional Municipality.

This new mapping has shown that the Cunard Formation of the Halifax Group underlies a significant portion of

southern Nova Scotia. Mapping has also shown that other rock units (e.g. the Beaverbank and Moshers Island formations) have the potential for ARD, whereas many units carry only trace quantities or no sulphides. The department, therefore, is striving to make this information on acid rock drainage in the Meguma Supergroup more widely known. Geological information provided by DNR will be fundamentally important in the decision-making process for policy makers, land-use planners, the construction industry, the mining industry, and many special interest groups.

*Terry Goodwin and Chris White*

## Geological Services Division Welcomes Three New Members of Staff

The Geological Services Division of DNR is the principal source of geoscience information and expertise in the Government of Nova Scotia. Inevitably, some of that expertise leaves the division as staff members retire or change jobs. The redeeming factor in this loss is the opportunity to bring youth, energy and new ideas to the organization through hiring. The division is delighted to announce that three new professional staff members are now at work.

The Resource Evaluation Section welcomes Trevor MacHattie as Economic Geologist. Trevor is a native Nova Scotian, with a B.Sc. from Saint Francis Xavier University, an M.Sc. from Memorial University of Newfoundland, and an impending defense of his Ph.D. from the University of Alberta. Trevor's work and research experience has focused on the geochemistry and geochronology of mafic-related ore deposits and granites.

The Geological Mapping, Environmental Geology and Hydrogeology Section welcomes Gavin Kennedy as Hydrogeologist and Dan Utting as Surficial Geologist. Gavin received a B.Sc. in Environmental Science from McMaster University and an M.Sc. in Earth Sciences from the University of Waterloo. Gavin has a strong industry background in large-scale groundwater assessment and exploration, most recently in a number of Nova Scotia municipalities. Dan Utting joins the division after spending three years in Nunavut with the Canada-Nunavut Geoscience Office as a Quaternary/Surficial Geologist. Dan completed a B.Sc. at the University of Calgary, where he grew up, and an M.Sc. at Simon Fraser University.

The division has been fortunate to attract these three geoscientists to the Mineral Resources Branch. As you can see by their photographs to the right, they haven't a grey hair among them.

*Mike MacDonald, Director*



*Dan Utting stands on Citadel Hill, Nova Scotia's most celebrated drumlin.*



*Trevor MacHattie (L) and Gavin Kennedy (R) enjoy a beautiful day at the fossil cliffs of Joggins.*

## Introducing the Mining Association of Nova Scotia and Executive Director Michelle Landreville

Nova Scotia has a long and rich mining history, producing fuels, metals and building materials for over 300 years. The mining and mineral processing industries in Nova Scotia have an annual workforce (direct and spinoff employment) of over 5200 employees earning approximately \$80 million. Most mining employment in the province is permanent, year-round work, and the mining industry ranks first in terms of average weekly wages among the resource sectors. Mining and mineral processing currently contribute \$400.4 million to the province's Gross Domestic Product and this contribution will almost certainly increase substantially, perhaps even double, in the next five years.

The Mining Association of Nova Scotia (MANS), formerly the Chamber of Mineral Resources of Nova Scotia, represents over 150 members in all five areas of mining: exploration, discovery, development, production and reclamation. MANS also represents the consultants and suppliers vital to all stages of mine operations.

The Chamber of Mineral Resources was established in 1981 as a lobby group for members and the mining industry in general. More recently, association members recognized the need for a revitalized organization and voice of the industry in the province, so 2007 has been a turning point for MANS. A three-year strategic business plan was developed, calling for a greater focus on communications, education and community liaison.

One of the exciting changes outlined in this plan was a further commitment of the Board of Directors of MANS and the industry in general to hiring a full time Executive Director. Michelle

Landreville was recently appointed to this position and is eager to move forward with the mandate as outlined in the strategic plan.

Michelle is a senior executive with experience in personnel and facilities management, program development, public relations and working as an agent of change. Her most recent work experience has included positions with Jacques Whitford of Dartmouth, Nova Scotia, Mount Saint Vincent University in Halifax and the Canadian Construction Association in Ottawa.

With new mining projects already announced and others in advanced stages of planning, the Mining Association of Nova Scotia will no doubt have a central role in the growth of this pillar of the provincial economy.

*Contributed by the Mining Association of Nova Scotia*



*Michelle Landreville, Executive Director of the Mining Association of Nova Scotia.*

### Dates to Remember

#### October 25-27, 2007

Atlantic Universities Geological Conference, St. Francis Xavier University, Antigonish, NS. For more information please contact Sarah Hindle (902-867-4000 ext. 5554).

#### November 1-3, 2007

Mineral Resources Review 2007, Mines Branch Review of Activities and CIM Newfoundland Branch Annual Conference and Trade Show, Delta St. John's Hotel and Conference Centre, St. John's, NL. For more information please contact Norm Mercer: normmercerc@gov.nl.ca, phone 709-729-6193.

#### November 4-7, 2007

Exploration and Mining New Brunswick, Delta Hotel, Fredericton, NB. For more information please contact Carol McNeill-Dobbelsteyn, New Brunswick Department of Natural Resources, carol.mcneill-dobbelsteyn@gnb.ca, phone 506-453-6624.

#### November 13 and 14, 2007

Mining Matters for Nova Scotia 2007 and Industry Investment Forum, Westin Nova Scotian Hotel, Hollis Street, Halifax, NS. For more information contact Paul Smith at 902-424-2526 or visit the conference web site (<http://www.gov.ns.ca/natr/meb/OH/INDEX/HTM>).

#### January 28-31, 2008

Mineral Exploration Roundup 2008, Westin Bayshore, Vancouver, BC. For more information visit the web site: <http://www.amebc.ca/roundupoverview.htm#>.

#### February 1-3, 2008

Atlantic Geoscience Society, 34th Colloquium and Annual General Meeting, Dartmouth, NS. For more information contact the co-chairs Michael Parsons (Michael.Parsons@NRCan.gc.ca) or Jennifer Bates (Jennifer.Bates@NRCan.gc.ca).