Digital Information Services Activities in 2011

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The Digital Information Services group is responsible for developing and maintaining the Mineral Resources Branch (MRB) Geographic Information System and associated databases, the NovaScan publications and maps database, for supplying digital data and services to clients and staff, and for developing and maintaining the MRB internet website. Permanent Digital Information Services staff consists of geologists/GIS specialists Brian Fisher, Jeff Poole and Jeff McKinnon; Angie Ehler, a GIS specialist/cartographer; and web/desktop publishing technician Susan Saunders. Norman Lyttle retired in the spring of 2011, and Brian Fisher moved into the manager's position soon after. Students Alysha Cantwell, Tom Landry and Laura Trudell were hired to work as website and GIS assistants during the summer of 2011.

Digital Geoscience Data Products

A collection of digital geology maps, databases and images of Nova Scotia (in DXF, ARC export, ArcView® shapefiles, TIFF, JPEG and MrSID formats in a UTM projection using the NAD83 datum, and in PDF format) has been developed, and is available for viewing or free download from the MRB website (http://www.gov.ns.ca/natr/meb/pubs/pubs3.asp). A licence agreement is issued with all digital data sets. This agreement allows unrestricted use of the data with the understanding that the Nova Scotia Department of Natural Resources (DNR) remains the owner of the data and is not transferring copyright to the user.

GIS Development

Digital Information Services staff worked together with other MRB staff on numerous projects in 2011. This included providing advice and assistance as requested, along with developing databases and maps for the projects outlined below.

Geological Resource Atlas: Section staff finished work on the Geological Resource Atlas late in 2010 and early 2011. The majority of the work involved working with Scott Weldon (Geologist, Department of Energy) to create a number of petroleum and gas layers to be included in the databases and to produce ArcGIS® models to create a petroleum potential layer. In addition, changes were made to the maps, databases and models to reflect editing changes to the maps and the accompanying report. The mineral potential database was used to perform a final coarse screen on over 2400 parcels of land from the Colin Stewart Forest Forum to evaluate these lands for conflict with mineral values and petroleum values. The ArcGIS® models used to perform this analysis have proven to be very successful. Sixteen 1: 250 000 scale Geological Resource Atlas maps were released in January of 2011.

Halifax Regional Municipality Surficial Mapping Project: Section staff worked with surficial geologist Dan Utting to complete cartography and databases. Final versions of eleven 1:25 000 scale maps were released in May 2011.

Governor Lake Map: Section staff worked with bedrock geologist Chris White to complete the databases and cartography on a 1: 50 000 scale map released in May 2011.

Southwest Nova Mapping Project: Section staff are currently working with geologist Chris White to compile all required databases and produce 26 new 1:50 000 bedrock geology maps covering primarily the Meguma Group in Southwestern Nova Scotia. The new geology maps required legacy data to be compiled from the South Mountain Batholith (SMB) project. All thirteen of the 1:50 000 SMB bedrock maps were compiled into a single database in 2011. The final drafts of 15 maps, along with preliminary drafts for 11 maps, have been done in 2011 and the first published maps should be released in 2012.

Poole, J. C., Fisher, B. E., Saunders, J. S., McKinnon, J. S. and Ehler, A. L. 2013: *in* Mineral Resources Branch, Report of Activities 2011; Nova Scotia Department of Natural Resources, Report ME 2012-001, p. 65-71.

Valley Aggregate Project: Section staff continued to enter data collected by geologist Garth Prime into the project databases in 2011. Section staff also provided Garth with the GIS tools to edit and update data on his own.

Registry of Mineral and Petroleum Titles Database: The GIS version of the Registry of Mineral and Petroleum Titles database was updated twice in 2011. Two new versions of the *Mineral Rights Disposition Map for the Province of Nova Scotia* (Open File Map ME 2011-014, versions 1 and 2) were released along with two new versions (21 and 22) of the Mineral Rights Database (DP ME 051). GIS staff also assisted Registry Staff with drafting a Request for Proposals for an online registry system late in 2011.

ArcGIS® Migration Project: Section staff continued the process of migrating the branch's corporate GIS databases to make them more readily accessible in ArcGIS®, and have converted a number of the GIS databases into ArcGIS® geodatabase format. The staff continue to work with others in the branch to help them expand their use of the ArcGIS® software suite.

Drillhole and Drill Core Database: Section staff continue to work on new applications that will allow for the entry of drillhole and drill core data into an SQL Server database, and applications that will allow staff and the public to query the database through the Internet. Efforts were delayed by the addition and updates to over 5000 drillhole records. These applications should be completed in 2012.

Radon Potential Map: Section staff are working with George O'Reilly to produce a radon potential map for the province. Staff finished fixing problems with the Canadian Soil Information System (CanSIS) GIS databases and have incorporated this layer into an ArcGIS radon potential model. This work was completed in 2011, and George is in the process of drafting the final map.

Regional Adaptation and Change (RAC) Program: Section staff continued to work with the geological staff on the RAC program by providing assistance with building databases, producing maps, compiling airphoto mosaics and gathering other required databases and images. They also assisted the outside contributors, St. Mary's University (SMU) and the Applied Geomatics Research Group (AGRG), part of the Centre of Geographic Sciences in Middleton, with cartography and map editing in the fall and winter of 2011. Final 1:10 000 scale maps for Grande Pré, Amherst, Yarmouth, Minas Basin, Oxford and Lunenburg areas that are part of this project will be released in the spring of 2012.

Website Work: In the winter of 2011, Famous Folks was contracted to redesign the MRB website. The template of the website was delivered in the spring of 2011 and the next step was to update and provide new content for the website. Branch and section staff worked on this project throughout the year. Two student website specialists were hired over the summer to assist with this work. The new website will be released early in 2012.

Scanning Activities

Scanning of publicly released assessment and property reports continued throughout the year. So far, 4,221 publicly released reports have been scanned and their PDFs made available to the public for download through NovaScan. This represents 56% of publicly available reports.

Internet Map Server Applications

The section continues to maintain its three primary public Internet Map Server (IMS) applications. The Nova Scotia Geoscience Maps, Database and Images IMS application generated 265,734 maps (up 36% from 2010); the Nova Scotia Groundwater Maps and Databases IMS application generated 62,030 maps (up 41% from 2010); and the Mineral Resource Land Use Atlas IMS application generated 18,660 maps. The GIS4 map server generated a total of 647,516 maps in 2011 for all DNR IMS applications, up 24% from the 523,144 maps generated in 2010.

The purpose of the Nova Scotia Geoscience Maps, Databases and Images IMS application is to provide the public with a single geographic compilation of geoscience maps, databases and images. The application displays a number of different layers from previously released digital products. Updates were made to Mineral Rights Layers in June and October 2011. The following new layers of information were added to this application in 2011: Mineral Potential Ranked, 12% Lands for Review (June 2011), Lands Committed to Protection and Existing Protected Lands. The Nova Scotia Geoscience Maps, Databases and Images IMS application can be accessed at http://gis4.natr.gov.ns.ca/website/nsgeomap.

In August 2011 the branch updated a number of layers in the Nova Scotia Groundwater Maps and Databases IMS application. The purpose of this IMS application is to provide the public with an interactive application containing layers of spatially referenced maps, databases, grids and images of interest to hydrogeologists, particularly those interested in the hydrogeological properties associated with the identified groundwater regions (http://gis4.natr.gov.ns.ca/website/nsgroundwater).

The main purpose of the Mineral Resource Land-Use Atlas (MRLU) IMS application is to provide the public with a single geographic compilation of mineral resource and related land-use information at a reasonably detailed scale of 1:50 000. A key objective is to create a useful reference for practitioners working in land-use and environmental planning, geotechnical firms and groups involved in community economic development. The MRLU IMS application displays the location and distribution of mineral and energy resources and related activities as well as aspects of environmental geology that relate to land-use and environmental planning. Special land-use designations on Crown and some privately owned land are shown to indicate how Nova Scotia's land base varies regarding the ability of mineral resource interests to access land and hold secure tenure (http://gis4.natr.gov.ns.ca/website/mrlu83).

Jeff Poole has been working with staff from the Office of the Chief Information Officer (OCIO), GeoNova, DNR Crown Lands and the Department of Environment to develop a shared corporate GIS Server infrastructure, to set up and test a virtual server environment and to transfer some applications to ArcGIS Server® 9.3.1. This work will continue in 2012.

NovaScan

NovaScan is the geoscience publications and maps database on Nova Scotia and its offshore regions. As of December 31, 2011, the database contained 16,238 MRB records, consisting of 7,941 mineral exploration assessment and property reports, 3,855 publications, 1,273 open file reports, 1,868 published and open filed maps and illustrations, 842 theses, 239 contribution series, 193 digital products, and 25 outside publications.

Each month, a list of new publicly released assessment and property reports is generated from NovaScan and posted on the MRB website at http://www.gov.ns.ca/natr/meb/download/ar_new.asp. The original paper copies of these released reports are filed in the DNR Halifax Library and the Core Library in Stellarton monthly, and PDF versions of these released reports are posted to the MRB website monthly. Quarterly lists of open assessment and property reports are produced and published in the Nova Scotia Minerals Update newsletter. One hundred and thirteen (113) assessment reports were released in 2011.

In order to provide better service to our staff and clients, the branch maintains a public search application that allows the public to query records in the NovaScan database using Internet Explorer® or Firefox®. NovaScan can be searched by Title, Author/Organization, Subject, Area, Map Sheet (NTS), Map Type, Licence Type, Licence Number, Document Type, Document Number, Year and Scale. NovaScan is updated monthly as new geoscience maps, publications, open files, theses, mineral exploration assessment reports and property reports become available. The search interface can be accessed at http://www.gov.ns.ca/natr/meb/pubs/pi_nvscn.asp. In 2011, the following 86 documents were geologically indexed and added

to the database: 31 assessment reports, 18 open file maps, 5 contribution series, 3 digital products, 1 thesis, 20 report, 5 open file reports and 1 open file illustration.

Digital Products and Open File Maps Released in 2010

The following new digital products, open file maps, and updated versions of digital products were released in 2011. A complete list of all digital products can be found at http://www.gov.ns.ca/natr/meb/pubs/pubs3.asp. All digital products can be downloaded for free from the URL listed with the product.

Digital Products

DP ME 051, Version 21 (June 24, 2011) and Version 22 (October 18, 2011), Nova Scotia Mineral Rights Database, Digital product compiled by B. E. Fisher. Available in E00, SHP and DXF/DBF formats. Available as a free download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/dp051.asp.

DP ME 447, Version 1, 2011. Digital Geological Data Generated as Part of the Surficial Geology Mapping Project of the Halifax Metropolitan and Surrounding Areas, Halifax and Hants Counties, Nova Scotia, by D. J. Utting, 2011. Digital product compiled by D. J. Utting, B. E. Fisher and A. L. Ehler, 2011. Available as a free download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/dp447.asp.

DP ME 442, Version 1, 2011. Digital Version of Nova Scotia Department of Natural Resources Open File Map ME 2011-013, Bedrock Geology Map of the Governor Lake Area, Part of NTS Sheets 11E/01, 11E/02, 11E/07 and 11E/08, Colchester, Guysborough, Halifax and Pictou Counties, Nova Scotia, Scale 1:50 000, by C. E. White and K. L. Scallion, 2011. Digital product compiled by C. E. White, K. L. Scallion, B. E. Fisher, J. S. McKinnon and A. L. Ehler, 2011. Available as a free download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/dp442.asp.

DP ME 181, Version 1, 2011. Digital Version of Nova Scotia Department of Natural Resources Open File Map ME 2010-006, Bedrock Geology Map of the Port Hawkesbury Area, Part of NTS Sheets 11F/06, 11F/07, 11F/11 and 11F/15, Inverness, Richmond, Guysborough and Antigonish Counties, Nova Scotia, Scale 1:50 000, by P. S. Giles, R. D. Naylor, P. J. Teniere, C. E. White, S. M. Barr, G. J. DeMont and E. R. Force, 2010. Digital product compiled by P. S. Giles, R. D. Naylor, P. J. Teniere, C. E. White, S. M. Barr, G. J. DeMont, E. R. Force, B. E. Fisher, A. L. Ehler and J. S. McKinnon, 2011. Available as a free download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/dp181.asp.

Open File Maps

Open File Maps ME 2010-001 to -004 were released in January 2011 and not included in last year's Report of Activities:

Open File Map ME 2010-001 (Sheet 1 of 4), Geological Resource Atlas, Exploration and Mining Activity, Southwestern Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-001.asp.

Open File Map ME 2010-001 (Sheet 2 of 4), Geological Resource Atlas, Exploration and Mining Activity, Central/Western Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-001.asp.

Open File Map ME 2010-001 (Sheet 3 of 4), Geological Resource Atlas, Exploration and Mining Activity, Central/Eastern Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/

download/mg/ofm/htm/ofm_2010-001.asp**.**

Open File Map ME 2010-001 (Sheet 4 of 4), Geological Resource Atlas, Exploration and Mining Activity, Northeastern Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-001.asp.

Open File Map ME 2010-002 (Sheet 1 of 4), Geological Resource Atlas, Mineral Occurrences and Deposits, Southwestern Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-002.asp.

Open File Map ME 2010-002 (Sheet 2 of 4), Geological Resource Atlas, Mineral Occurrences and Deposits, Central/Western Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-002.asp.

Open File Map ME 2010-002 (Sheet 3 of 4), Geological Resource Atlas, Mineral Occurrences and Deposits, Central/Eastern Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-002.asp.

Open File Map ME 2010-002 (Sheet 4 of 4), Geological Resource Atlas, Mineral Occurrences and Deposits, Northeastern Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-002.asp.

Open File Map ME 2010-003 (Sheet 1 of 4), Geological Resource Atlas, Aggregate Resources, Southwestern Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-003.asp.

Open File Map ME 2010-003 (Sheet 2 of 4), Geological Resource Atlas, Aggregate Resources, Central/Western Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-003.asp.

Open File Map ME 2010-003 (Sheet 3 of 4), Geological Resource Atlas, Aggregate Resources, Central/Eastern Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-003.asp.

Open File Map ME 2010-003 (Sheet 4 of 4), Geological Resource Atlas, Aggregate Resources, Northeastern Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-003.asp.

Open File Map ME 2010-004 (Sheet 1 of 4), Geological Resource Atlas, Mineral Resource Potential, Southwestern Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-004.asp.

Open File Map ME 2010-004 (Sheet 2 of 4), Geological Resource Atlas, Mineral Resource Potential, Central/Western Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-004.asp.

Open File Map ME 2010-004 (Sheet 3 of 4), Geological Resource Atlas, Mineral Resource Potential, Central/Eastern Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-004.asp.

Open File Map ME 2010-004 (Sheet 4 of 4), Geological Resource Atlas, Mineral Resource Potential, Northeastern Area of Nova Scotia, by Nova Scotia Department of Natural Resources, 2010. Scale 1:250 000. Available as a free PDF download from the Mineral Resources Branch website at http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2010-004.asp.

Surficial Geology Maps of the Halifax Metropolitan and Surrounding Areas, Halifax and Hants Counties, Nova Scotia. *This series of twelve maps consists of an overview map of the whole map area at a scale of 1:100 000 (OFM ME 2011-001), and eleven detailed maps at a scale of 1:25 000 (OFM ME 2011-002 to -012).*

Open File Map ME 2011-001, Overview Map Showing Locations of Surficial Geology Maps of the Halifax Metropolitan and Surrounding Areas, Halifax and Hants Counties, Nova Scotia, by D. J. Utting, 2011. Scale 1:100 000. Available as a free PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-001.asp.

Open File Map ME 2011-002, Surficial Geology Map, Part of the Uniacke Claim Reference Sheet 11D/11C, Halifax and Hants Counties, Nova Scotia, by D. J. Utting, 2011. Scale 1:25 000. Available as a free PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-002.asp.

Open File Map ME 2011-003, Surficial Geology Map, Part of the Grand Lake Claim Reference Sheet 11D/13D, Halifax and Hants Counties, Nova Scotia, by D. J. Utting, 2011. Scale 1:25 000. Available as a free PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-003.asp.

Open File Map ME 2011-004, Surficial Geology Map, Part of the Oldham Claim Reference Sheet 11D/14C, Halifax County, Nova Scotia, by D. J. Utting, 2011. Scale 1:25 000. Available as a free PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-004.asp.

Open File Map ME 2011-005, Surficial Geology Map, Part of the Pockwock Lake Claim Reference Sheet 11D/13B, Halifax and Hants Counties, Nova Scotia, by D. J. Utting, 2011. Scale 1:25 000. Available as a free PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-005.asp.

Open File Map ME 2011-006, Surficial Geology Map, Part of the Waverley Claim Reference Sheet 11D/13A, Halifax County, Nova Scotia, by D. J. Utting, 2011. Scale 1:25 000. Available as a free PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-006.asp.

Open File Map ME 2011-007, Surficial Geology Map, Part of the Porters Lake Claim Reference Sheet 11D/14B, Halifax County, Nova Scotia, by D. J. Utting, 2011. Scale 1:25 000. Available as a free PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-007.asp.

Open File Map ME 2011-008, Surficial Geology Map, Part of the French Village Claim Reference Sheet 11D/12C, Halifax County, Nova Scotia, by D. J. Utting, 2011. Scale 1:25 000. Available as a free PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-008.asp.

Open File Map ME 2011-009, Surficial Geology Map, Part of the Halifax Claim Reference Sheet 11D/12D, Halifax County, Nova Scotia, by D. J. Utting, 2011. Scale 1:25 000. Available as a free

PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-009.asp.

Open File Map ME 2011-010, Surficial Geology Map, Part of the Cole Harbour Claim Reference Sheet 11D/11C, Halifax County, Nova Scotia, by D. J. Utting, 2011. Scale 1:25 000. Available as a free PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-010.asp.

Open File Map ME 2011-011, Surficial Geology Map, Part of the Herring Cove Claim Reference Sheet 11D/12A, Halifax County, Nova Scotia, by D. J. Utting, 2011. Scale 1:25 000. Available as a free PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-011.asp.

Open File Map ME 2011-012, Surficial Geology Map, Part of the Devils Island Claim Reference Sheet 11D/11B, Halifax County, Nova Scotia, by D. J. Utting, 2011. Scale 1:25 000. Available as a free PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-012.asp.

Open File Map ME 2011-013, Bedrock Geology Map of the Governor Lake Area, Part of NTS Sheets 11E/01, 11E/02, 11E/07 and 11E/08, Colchester, Guysborough, Halifax and Pictou Counties, Nova Scotia, by C. E. White and K. L. Scallion, 2011. Scale 1:50 000. Available as a free PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-013.asp.

Open File Map ME 2011-014, Mineral Rights Disposition Map for the Province of Nova Scotia, Version 1 (June 24, 2011) and Version 2 (October 18, 2011) , compiled by B. E. Fisher and A. S. Wenning, 2011. Scale 1:500 000. Available as a free PDF download from the Mineral Resources Branch website http://www.gov.ns.ca/natr/meb/download/mg/ofm/htm/ofm_2011-014.asp.