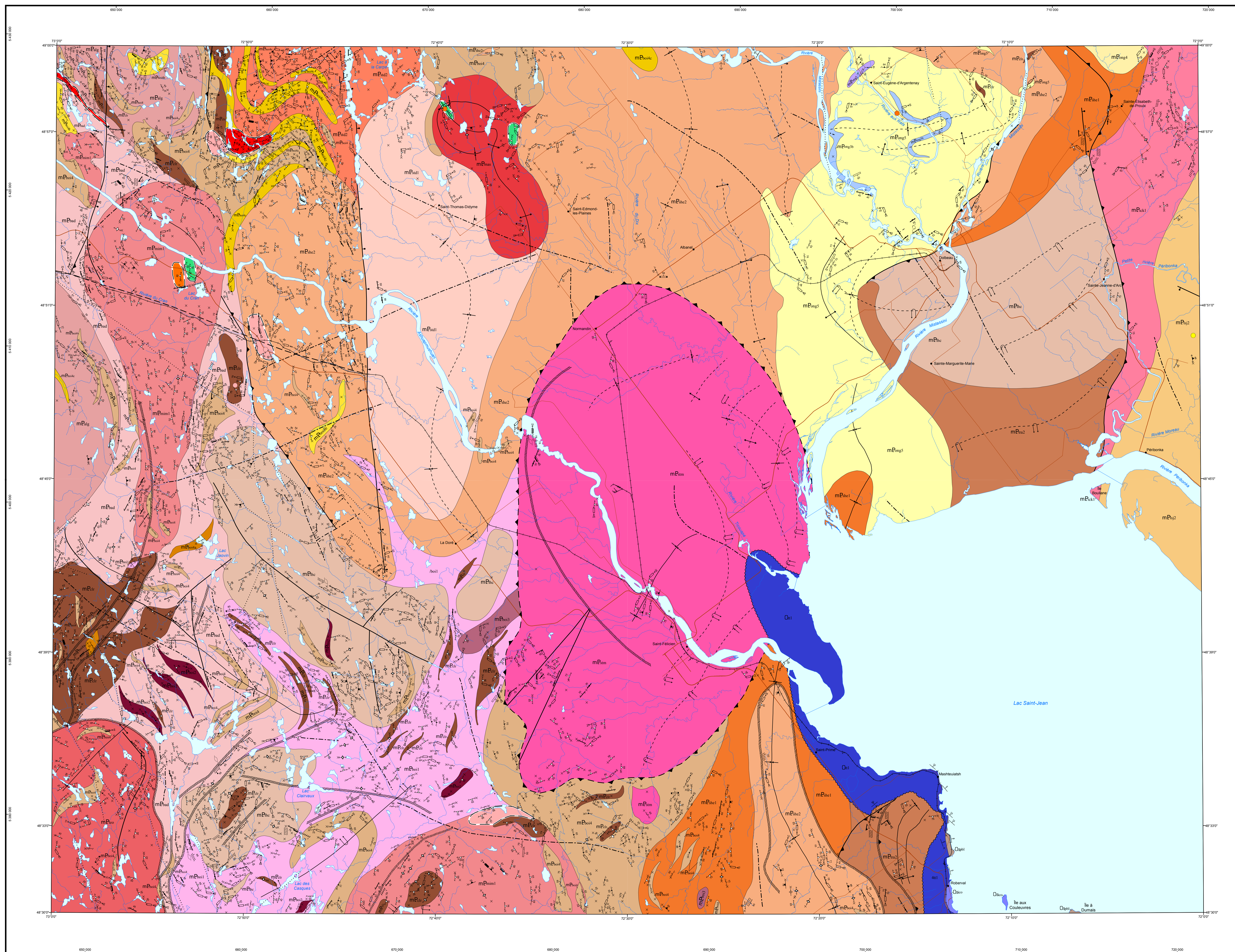
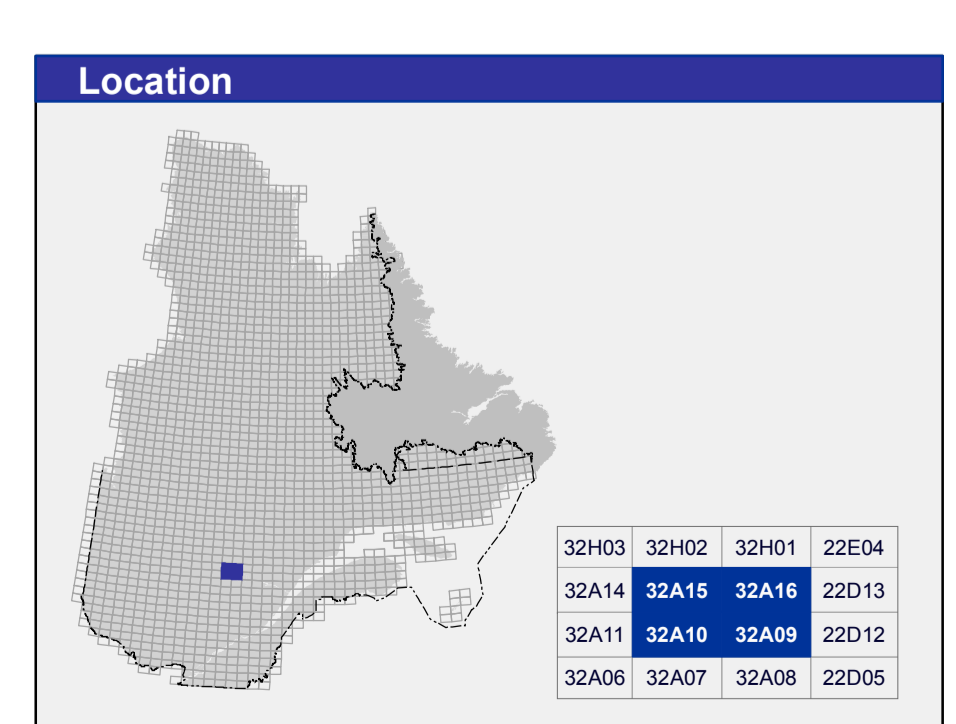


# Geology of the Normandin Area, Grenville Province, Saguenay–Lac-Saint-Jean Region, Quebec, Canada



- ### STRATIGRAPHIC LEGEND
- #### ST. LAWRENCE PLATFORM
- ##### UPPER ORDOVICIAN
- la aux Couleuvres Formation**
  - Qa1** Grey limestone, locally argillaceous and/or cherty, containing large amounts of coral
  - Qa2** Shale, conglomeratic calcarenite and limestone
- ##### ORDOVICIAN
- Trenton Group**
  - Qa3** Limestone containing fossil-rich beds locally as well as shale, dolomite and sandstone beds from bottom to top. It consists of the subhorizontal Trenton (Qa3b), Simard (Qa3c), Shipman (Qa3d) and Gales (Qa3e) formations
- #### GRENVILLE PROVINCE
- ##### ALLOCHTON
- ##### MESOPROTEROZOIC
- Miosina Plutonic Suite (1003 ±18 Ma, Pappasovlu, 2019)**
  - mEa1** Margarite, quartz syenite, hypersthene syenite, monzogranite and alkali feldspar granite; minor amounts of jasperite and gabbroite
  - Mallette Batholith**
  - mEa2** Margarite, charnockite, hypersthene monzonite (granite) and minor amounts of gabbroite and alkali feldspar granite
  - Saint-Thomas-D'Orville Suite**
  - mEa3** Margarite, gabbroite, charnockite, alkali feldspar granite and quartz diorite
  - mEa4** Quartz syenite, hypersthene syenite, alkali feldspar granite and locally gabbroite
  - Saint-Méthode Plutonic Suite**
  - mEa5** Alkali feldspar granite, margarite and quartz syenite; minor amounts of gabbroite and hypersthene syenite. Presence of paragneiss enclaves and granite or syenite dikes
  - Sainte-Hedwige Intrusive Suite (1017 ±16 Ma, Pappasovlu, 2019)**
  - mEa6** Porphyratic quartz syenite and margarite, alkali feldspar granite and gabbroite. Presence of paragneiss and granitic gneiss enclaves
  - mEa7** Quartz monzonite, jasperite and quartz monzonite; minor amounts of gabbroite and syenogranite
  - Lachance Margarite (1042 ±16.9 Ma, Pappasovlu, 2019)**
  - mEa8** Feldspar porphyritic amphibole biotite-margarite ± orthopyroxene margarite and quartz syenite, alkali feldspar granite
  - Clare Gabbroite**
  - mEa9** Rubicly locally melanocratic Fe-Ti ± V oxide gabbroite; gabbro and minor amounts of margarite and leucogranite
  - Tavernes Suite (1072 ±14.4 Ma, Pappasovlu et al., 2018)**
  - mEa10** Margarite, syenite and hypersthene syenite; minor amounts of syenogranite and granite
  - Léo Plutonic Suite**
  - mEa11** Margarite, charnockite, epidote and gabbroite
  - Allégain Plutonic Suite**
  - mEa12** Quartz syenite, alkali feldspar granite, minor amounts of gabbroite, charnockite and granitic gneiss. Presence of paragneiss enclaves
  - Lac-Saint-Jean Anorthositic Suite (1160-1135 Ma, Higgins and van Breemen, 1996)**
- ##### Mafic and ultramafic Phase
- mEa13** Amphibole, saponite, gabbroite and layers of ultramafic rocks
- ##### Intermediate to Felsic Phase
- Patrick Quest charnockite (1143 ±2 Ma, van Breemen, 2009)**
  - mEa14** Charnockite, margarite, alkali feldspar granite. The whole is coarse grained, feldspar porphyritic and irregular
  - Saint-Onge Supracrustal Sequence (1163 ±18 Ma, Higgins et al., 2002)**
  - mEa15** Quartzofeldspathic paragneiss with quartzite, calcosilicate rocks and some marble
  - mEa16** Quartzite
  - mEa17** Marble and calcosilicate rocks
  - mEa18** Calcosilicate rocks, locally marble, paragneiss and quartzite
- ##### Barrois Complex
- mEa19** Biotite quartzofeldspathic paragneiss, locally migmatized; quartzite, migmatite and granitic gneiss
  - mEa20** Biotite ± sillimanite ± garnet ± graphite paragneiss, amphibolized mafic volcanic rocks, marble, calcosilicate rocks, gneiss and a graphite garnet quartzite
  - mEa21** Paragneiss interstratified with quartzite
  - mEa22** Rusty garnet-subhelo-graphite paragneiss, migmatite paragneiss, migmatite and granitic gneiss
  - mEa23** Locally biotitized and migmatized orthogneiss containing decimetric layers of medium-grained gneissic amphibole
  - mEa24** Orthopyroxene orthogneiss, charnockite and enderbite
  - mEa25** Gneissitic to tonalitic orthogneiss and grey amphibole-biotite gneiss; locally orthopyroxene-bearing; minor amount of granitic gneiss
- ##### Barbeau Plutonic Suite
- mEa26** Margarite, hypersthene syenite, gabbroite, alkali feldspar granite, quartz diorite, jasperite and enclaves of migmatite paragneiss and quartzite
- #### PROSPECTIVE ZONE FOR MINERAL EXPLORATION
- Apatite**
  - Copper**
  - Rare earth elements**
  - Zinc**
- #### SHOWING AND DEPOSIT
- Copper**
  - Rare earth elements**
  - Gold**



Metadata	Sources	Organization	Realization
Geoidetic reference frame: GRS 80 ellipsoid	Data: Base de données pour l'aménagement du territoire (BDAT 1004)	Ministère de l'Énergie et des Ressources naturelles	Geology: Abdelal Moutari, Mohamed El Bourki (2019)
Geoidetic reference system: NAD 83 compatible with the world geoidetic system WGS 84			References: Morfin et al. (2015) - MB 2015-07
Cartographic projection: Universal Transverse Mercator (UTM), zone 18			Technical assistance: Sylvie Tétéault
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To obtain the most recent data for this region, we suggest that you consult the geomatics products of Québec's Geomatics Information System (SIGEO).

Bulletin géologique

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