State Oversight of Nonferrous Mineral Exploration Activities in Minnesota

Division of Lands and Minerals, Minnesota Department of Natural Resources

August 21, 2013
Presentation outline

• What happens during a typical mineral exploration program in Minnesota?

• What are the regulatory requirements for mineral exploration companies in Minnesota?

• What additional requirements exist when mineral exploration companies work on state mineral lands?
MN DNR Webpages

Webpages on Nonferrous Metallic Minerals

• State Leasing
• Exploration Process
• Development Process
• Regulations and Reclamation
• Private Exploration Drilling
• DNR Reports
• Public Access to Minerals Documents

Link: http://www.dnr.state.mn.us/lands_minerals/metallic_nf/index.html
Presentation outline

- What happens during a typical mineral exploration program in Minnesota?
- What are the regulatory requirements for mineral exploration companies in Minnesota?
- What additional requirements exist when mineral exploration companies work on public lands?
A metallic mineral exploration program in Minnesota may be described as a four-step process that can take anywhere from 1 to 20 years to complete.

1. Business Plan & Financing [1 – 5 yrs]
2. Land Package [1 – 5 yrs]
3. Exploration [1 – 10 yrs]
4. Decision
Exploration Phase

Acquire a Land Package

• Secure the rights to explore for minerals over a buried geological target feature

• Land package may include:
  • State mineral leases
  • Private mineral leases
  • Federal prospecting permits

1. Planning [1 – 5 yrs]

2. Land Package [1 – 5 yrs]

3. Exploration [1 – 10 yrs]

4. Evaluation
Exploration tools

- Mapping of bedrock outcrops and bedrock outcrop sampling
- Geophysical surveys
- Geochemical surveys such as soil
- Drilling to obtain core samples of bedrock
Bedrock Outcrop: Examine for Geologic Mapping &/or Take a Sample
Exploration Activity: A Geochemical Survey Sample
Exploration Activity: Exploratory Boring
Statewide Results from 46 years of state mineral lease data

- No Drill Holes in 97.6% of the 40-acre parcels leased
- 1 drill hole: 1.6%
- More than 1 drill hole: 0.8%

State Mineral Leases, 1966–2012
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State Oversight of Metallic Mineral Exploration

1. Registration of the Business Entity (Secretary of State) and Registration of Explorer Engaged in Exploratory Boring (DNR)
2. Registration of the Drill Contractor & Equipment (MDH)
3. Testing for License for the Explorer prior to drilling (MDH)
4. Inspection during drilling (DNR for MDH)
5. Report: Sealing of Drill Hole (DNR & MDH)
6. Submit drill core upon termination (DNR)
MN Statutes 103I.601, Subd. 3. Notification of project construction.
(a) By 30 days before making an exploratory boring, an explorer must register with the commissioner of natural resources and provide a copy of the registration to the commissioner of health. The registration must include:
   (1) the identity of the firm, association, or company engaged in exploratory boring; and
   (2) the identification of an agent, including the agent's business address.
(b) The commissioner of natural resources may require a bond, security, or other assurance from an explorer if the commissioner of natural resources has reasonable doubts about the explorer's financial ability to comply with requirements of law relating to exploratory boring. The commissioner's determination to require assurance is exempt from the rulemaking provisions of chapter 14 and section 14.386 does not apply.
(c) An explorer shall annually register with the commissioner of natural resources while conducting exploratory boring.
103I.501 LICENSING AND REGULATION OF WELLS AND BORINGS.
(a) The commissioner (of MDH) shall regulate and license:
(1) drilling, constructing, and repair of wells;
(2) sealing of wells;...

(b) The commissioner (of MDH) shall examine and license well contractors, limited well/boring contractors, and elevator boring contractors, and examine and register monitoring well contractors.

103I.545 REGISTRATION OF DRILLING MACHINES AND HOISTS REQUIRED.
Subdivision 1. Drilling machine.
(a) A person may not use a drilling machine such as a cable tool, rotary tool, hollow rod tool, or auger for a drilling activity requiring a license or registration under this chapter unless the drilling machine is registered with the commissioner (of MDH).
103I.501 LICENSING AND REGULATION OF WELLS AND BORINGS.
(a) The commissioner shall regulate and license:.............
(c) The commissioner shall license explorers engaged in exploratory boring and shall examine persons who supervise or oversee exploratory boring.

103I.601 EXPLORATORY BORING PROCEDURES.
Subd. 2. License required to make borings.
(a) Except as provided in paragraph (d), a person must not make an exploratory boring without an explorer's license....
(b) (d) An explorer must designate a responsible individual to supervise and oversee the making of exploratory borings. ....The individual must take and pass an examination relating to construction, location, and sealing of exploratory borings. A professional engineer or geoscientist licensed under sections 326.02 to 326.15 or a professional geologist certified by the American Institute of Professional Geologists is not required to take the examination required in this subdivision, but must be certified as a responsible individual to supervise an exploratory boring.
Notification prior to Exploratory Boring

By ten days before beginning exploratory boring, an explorer must submit to the commissioners of health and natural resources a county road map having a scale of one-half inch equal to one mile, as prepared by the Department of Transportation, or a 7.5 minute series topographic map (1:24,000 scale), as prepared by the United States Geological Survey, showing the location of each proposed exploratory boring to the nearest estimated 40 acre parcel.

Gentlemen,
This letter is to advise you that Franconia Minerals Corporation plans to do exploration and drilling of 10 additional holes in T61N–R12W, Sections 25 and 36 beginning on March 25, 2010. The planned drill holes are located on Minnesota Power surface optioned to Franconia Minerals and State of Minnesota surface underlain by minerals leased to Franconia by the State of Minnesota (MN–9722N & MN–9455N). The attached map shows the drill pad sites with corresponding hole numbers and type of hole to be drilled (vertical, angled).
Notification Map from Explorer
Inspection during Drilling

MN Statutes 103I. 601, Subd. 5. Access to drill sites. The commissioners of health, natural resources, and the Pollution Control Agency, the community health board as authorized under section 145A.04, and their officers and employees shall have access to exploratory boring sites to inspect the drill holes, drilling, ...
DNR Does a Drill Site Inspection
DNR’s Second Drill Site Inspection: After Drilling
During and After Drilling Photos
An exploratory boring must be sealed with cement per the State Exploratory Boring Rules.

**MN Statutes 103I.601, Subd. 9. Sealing report.**
(a) By 30 days after permanent or temporary sealing of an exploratory boring, the explorer must submit a report to the commissioners of health and natural resources.

The information is available online in a database called the County Well Index.
The Explorer must submit to DNR the explorer’s drill core from exploratory borings per MN Statutes 103I.605, Subd. 5 after the mineral lease is terminated.

The core is then available for review by the public. One objective is that there will be fewer duplicative exploratory borings in the future at the same site.
Presentation outline

• What happens during a typical mineral exploration program in Minnesota?

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• What additional requirements exist when mineral exploration companies work on state-owned mineral leases?
Additional Rules for State (not Private) Mineral Leases

1. The right to apply for, acquire and hold a lease to prospect for, mine and remove metallic minerals owned by the state are subject to two items.
   • The applicant must be qualified to do business in Minnesota, and must be qualified to conduct exploratory borings in MN by fulfilling the requirements of MN Statutes, section 103I.601, subdivision 3.
   • The explorer must also be technically and financially capable of performing under the terms of the state lease.

2. Explorer must submit exploration plan to DNR for review and approval prior to activity.
3. Explorer must submit exploration data and drill core to DNR at termination of lease.
Exploration Plan Review: 3 cases had botanical surveys done

Part 1.
Explorer / Lessee

Consultant

Botanical Survey on State Leases

Part 2.
DNR Eco/Waters Lisa Joyal receives botanical survey, reviews it and writes conditions

Part 3.
DNR Lands & Minerals sends letter to Explorer with conditions from Eco/Waters, Forestry, Wildlife

Explorer / Lessee
“The plants were identified during a 2005 botanical survey of the area paid for by the explorer.”

“...in order to avoid impacts to the identified threatened or endangered species, Franconia will install temporary construction fencing in a ten-foot radius around the identified plants.”
As mentioned in the DNR’s February 10, 2010 exploration plan approval letter, there are known occurrences of state-listed threatened and endangered plants along an access road in section 36. These occurrences are near the proposed drill sites PDH-002 and PDH-005. The known occurrences must be avoided. These plants were identified during a 2005 botanical survey of the area. Botrychium oneidense was documented 60 ft. off the road and may not be a problem, but B. rugulosum is on the immediate south edge of the road. Your plan states that in order to avoid impacts to the identified threatened or endangered plant species, Franconia will install temporary construction fencing in a ten-foot radius around the identified plants. If road improvements are needed in the vicinity of the noted plants, you will either need to not widen the road in the vicinity of the B. rugulosum, or widen it to the north. If avoidance is not feasible, you will need to apply for a takings permit. Further botanical surveys may be required if mining does eventually occur. Please contact Natural Heritage Review Coordinator Lisa Joyal, 651-259-5109, if this is the case.
Known Deposits

Three Major Known Metallic minerals Deposits (yellow) with active State Metallic Mineral Leases on School Trust

- Twin Metals MN
  - Maturi and Nokomis
  - Potential Underground
    - Cu+Ni+PGM - NI 43-101

- Twin Metals MN
  - Birch Lake
  - Potential Underground
    - Cu+Ni+PGM - NI 43-101

- Teck
  - Mesaba
  - Potential Underground
    - Cu+Ni+PGM

- Teck
  - Mesaba
  - Potential Open Pit
    - Cu+Ni+PGM
### Minnesota Wells and Boreholes Completed During the Years 2000 - 2010

<table>
<thead>
<tr>
<th>Well/Boring Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Water Supply Well</td>
<td>108,201</td>
</tr>
<tr>
<td>Mineral Exploration Drill Hole</td>
<td>1,031</td>
</tr>
<tr>
<td>All Other</td>
<td>20,436</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>129,668</strong></td>
</tr>
</tbody>
</table>

Data Source: Minnesota Dept. Health, DNR Drill Core Database

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**Mineral Exploration Drill Holes 0.80%**

[Image of drilling equipment]

**Domestic Water Supply Wells 83.44%**

[Image of water supply wells]