Explore Minnesota: GOLD
Minnesota's Golden Potential

Exploration companies are actively leasing gold prospects on state-owned mineral leases in Minnesota's Superior Province granite-greenstone terranes. The Archean Superior Province greenstone belts that host many of Canada's richest gold camps continue along strike across the U.S. border and into the northern portion of Minnesota. The potential for gold production in Minnesota's portions of the Wawa and Wabigoon Subprovinces is excellent, and the exploration models used for nearby gold deposits in Northwestern Ontario (e.g. Rainy River, Hammond Reef, Moss Lake/Shebandowan), should be considered.

Overburden thickness and composition in Minnesota range from thin layers of glacial drift in the northeast, to saprolite buried under more than 100 meters of glacial deposits in the northcentral part of the State. The possibility of supergene enrichment within saprolitic zones adds to the list of viable ore deposit models, and expands the area of viable greenstone belt gold exploration.

Active Gold Exploration in the Greenstone Belts of Minnesota and Northwestern Ontario

After MGS (2011) and OGS (2003)

Visible gold grain in a Virginia Horn quartz-feldspar porphyry drill core that has 77.9 gpt/2.3 ft. Photo courtesy of Vermillion Gold LLC
History of Gold Exploration in Minnesota

The Archean greenstone belts of Minnesota are considerably under-explored, compared to greenstone belts along strike in Ontario or Quebec. There was an active round of gold exploration and drilling programs during the 1980's that identified several gold prospects in six distinct areas (see below). There has been very little gold exploration activity when measured in terms of numbers of drill holes since that time.

Active Gold Exploration

Vermillion Gold LLC, which is exploring multiple areas within Minnesota’s Archean greenstone belts, completed seven drill holes at its Virginia Horn prospect (see map at left) in November 2015. Vermillion has also drilled at its ongoing Bigfork prospect (see core above).

Land Available to Explore

The State of Minnesota manages more than 12 million acres of mineral rights. Much of this is trust-owned land, and the MN DNR manages these mineral rights in the best interest of the Trusts. Private companies can explore for mineral deposits on these lands by obtaining a mineral exploration lease. A number of private mineral rights owners also offer leases on large land holdings. There are ample lands available to lease over Archean Superior Province greenstone belts, and an exploration company could assemble a land package to search for a mining camp-scale cluster of gold mines along a prospective trend.

http://www.dnr.state.mn.us/lands_minerals/mineral_faqs.html
Drill Core and Exploration Data
Minnesota’s Drill Core Library is a modern, heated facility that provides public access to more than 3 million feet of drill core from thousands of drill holes. Historic mineral exploration data from State-owned lands is available online or in hard copy within an assessment file system. The State of Minnesota continues to build a searchable, online information database of geochemical and geophysical surveys, regional and statewide geology maps, and structural geology reports. There is a statewide aeromagnetic layer. There are glacial drift gold anomalies that have not yet been traced to a bedrock source. Gold geochemical anomalies, bedrock alteration zones, and gold mineralization in bedrock have been identified in some locations.

Governance and Infrastructure:
100 Years of Support for Mining
Minnesota offers exploration companies a well-educated work force and a safe, conflict free work zone within a politically stable democracy. Its gold bearing greenstone belts are located near the Canadian border, within a part of the State that has a 100-year tradition of large-scale iron mining. The public school system owns 3.5 million acres of mineral rights, from which it receives mineral royalties. State policy supports mineral diversification. There is a moderate overall taxation policy in comparison to Ontario. The State of Minnesota has also demonstrated willingness to support nonferrous mineral exploration and development by funding technological research by agencies and academic groups.

Cook Area Results
In 2015, the MN DNR identified a previously-unrecognized area of high bedrock gold potential based on the results of an on-going gold-in-till survey within the Cook Area. High total gold grain counts and high percentages of pristine gold grains within glacial sediment samples from both the Skala Road and Murray Road South focus areas strongly suggest a local bedrock source for the gold.

All of the sediment sample locations in these two focus areas were on unsevered state-managed mineral rights that have previously been offered for mineral exploration lease.

http://www.dnr.state.mn.us/lands_minerals/mpes_projects/project392.html
Historical Review of Gold Exploration in Minnesota

In 2012, the NRRI published NRRI/TR-2011/43, an atlas of gold exploration in the Archean Superior Province rocks of Northern Minnesota. This report compiled available information (maps, assays, reports, etc) for 62 identified orogenic gold prospects within Minnesota’s portion of the Wawa and Wabigoon subprovinces.

Base Map Data Sources


Contacts

Dennis Martin, Manager
Mineral Potential Section
Minnesota Dept. of Natural Resources
Division of Lands and Minerals
500 Lafayette Road
St. Paul, MN 55155-4045
(651) 259-5405
dennis.martin@state.mn.us

Harvey Thorleifson, Director
Minnesota Geological Survey
2609 W Territorial Road
St. Paul, MN 55144
(612) 626-2150
thorleif@umn.edu

George Hudak, Director
Minerals-Metallurgy-Mining Program
Natural Resources Research Institute
University of Minnesota, Duluth
5013 Miller Trunk Highway Duluth, MN 55811-1442
(218) 720-4273
ghudak@d.umn.edu

Sponsored by Minnesota Minerals Coordinating Committee
March 2016