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## **Fact Sheet: Alaska Strategic Minerals/Rare Earth Elements**

- What are strategic minerals? Strategic minerals (also called critical minerals) are defined as minerals that are essential for use but subject to potential supply disruptions. The U.S. Geological Survey maintains a list of critical minerals that is updated on the basis of supply risk and changing technologies. This list includes rare-earth elements.
- What are rare-earth elements (REEs)? They are a group of chemical elements used in radar systems, avionics, satellites, renewable energy systems and consumer electronic goods. While they are not particularly rare in the earth's crust, they are not often found in mineable concentrations.
- China possesses an estimated 48% of the world's proven resources of REEs and is the dominant global supplier with nearly 97% of the world's production. Recent curtailment of REE exports from China and reliance on the Chinese industry for processing and manufacturing has highlighted the fragility in the global supply-demand chain. Alaska has an important role to play in securing a domestic supply of strategic minerals.
- Alaska is an excellent place for companies to explore and develop mineral projects. Furthermore, geologists consider Alaska highly prospective for strategic and critical minerals. There are more than 70 known occurrences of rare-earth elements throughout Alaska. Millions of acres of land conveyed to or selected by the state are awaiting assessment for their REE/strategic mineral potential.
- Alaska contains one of the most significant REE prospects in the US: the Bokan Mountain/Dotson Ridge property. The property is currently ranked 15th in North America for total tonnage of contained rare earth metal oxides. However, unlike other U.S. deposits, Bokan Mountain is enriched in yttrium and critical heavy rare-earth elements, which are critical for the production of permanent magnets. The land position and permitting issues are favorable to mineral development.
- Alaska has past production of some of the metals and mineral products considered strategic/critical minerals. This past production is listed in the annual Alaska's mineral industry report, with the 2010 version of the report chronicling 2010 activity and listing past production in Appendices E and F (<http://www.dggs.alaska.gov/webpubs/dggs/sr/text/sr065.PDF>). Future production

hinges on a number of factors, including grade and size of a mineral deposit, commodity prices, land tenure, cost of infrastructure, tax structure and environmental/business regulations.

- Other REE occurrences in Alaska: See Alaska Division of Geological and Geophysical Surveys (DGGS) Information Circular 61 (Table 5) for the full list of known occurrences: <http://www.dggs.dnr.state.ak.us/pubs/id/22262>
- DGGS spends in excess of \$1 million per year to conduct geophysical surveys and geological mapping that is used extensively by companies exploring or interested in exploring for minerals in Alaska.
- With new funding sought by Gov. Sean Parnell and approved by the Alaska Legislature, DGGS is conducting a strategic and critical minerals assessment. This project includes but is not limited to:
  - Compiling a digital database of all available published and unpublished data on REE occurrences in Alaska
  - Conducting fieldwork on select REE known occurrences and prospective areas in the summer of 2011 and 2012. In summer 2011, DGGS conducted geological field work and stream-sediment sampling in the Melozitna area (approximately 45 miles west of Tanana on the north side of the Yukon River) to investigate the source of uranium and REE sediment anomalies. DGGS also conducted an REE assessment of state land and nearby REE occurrences adjacent to William Henry Bay in Southeast Alaska. In summer 2012, DGGS is conducting a sampling program in the Ray Mountains-Dalton Highway area to assess the areas strategic and critical mineral-resource potential to assist with state land selection/relinquishment decisions.
  - Obtaining modern geochemical analysis on archived samples stored at the Geological Materials Center for areas throughout Alaska with high strategic minerals potential.
  - Publishing the results (free public access)
- Collaboration: The state is leveraging its rare earth assessment and looking for partnerships with the federal government, Alaska Native corporations and others. The state has been meeting with officials at the White House to explore ways that the federal government can partner with Alaska to foster domestic production.
- The State of Alaska has a robust regulatory process which has led to the permitting of six major producing mines in the state, all of which meet or exceed modern standards. During operation, regular environmental monitoring and reporting is required and environmental audits are required at least every 5 years as a condition for reissuance of permits. State law requires all mines to be reclaimed in accordance with a reclamation and closure plan approved by the state prior to commencement of mining. State law also requires that the mine post a financial assurance based on that plan so that the state can perform the reclamation if the miner cannot.