SOUTH DAKOTA – 2005 Mineral Summary
Production, Exploration and Environmental Issues

E.H. Holm, T. Cline Jr., and M. Macy
South Dakota Department of Environment & Natural Resources
Minerals and Mining Program
http://www.state.sd.us/denr/DES/mining/mineprg.htm

Production

Gold: Gold production and value in South Dakota decreased in 2005. Wharf Resources Inc. produced 62,470 ounces of gold in 2005, and was the only company reporting gold production. This represents an 18 percent decrease in the amount of gold produced compared to 2004. Wharf is the only large scale gold mine still operating in the state. Gold continued to remain the leading mineral commodity in South Dakota in terms of value. The average price of gold in 2005 was $444.74, yielding a gross value of about $27.8 million. This was 11 percent lower than the 2004 gross value of $31.2 million. Table 1 compares gold production for 2004 and 2005 from the active large scale gold operations in South Dakota. The mines are surface heap leach operations, with the exception of Homestake.

Table 1 – Gold Production in South Dakota – 2004 and 2005

Company	2005 Production (ounces)	2004 Production (ounces)
Golden Reward Mining Co., LP	0	0
Homestake Mining Company	0	90
LAC Minerals (USA), LLC	0	79
Wharf Resources (USA), Inc.	62,470	76,119
Total	**62,470**	**76,288**
Estimated Value	**$27,782,908**	**$31,256,719**

Wharf was also the only company to report silver production, which is a by-product of its gold recovery process. A total of 166,998 ounces of silver was recovered in 2005. At an average price of $7.32, the value of the silver was $1,222,425. This is an increase from the 89,418 ounces and $596,418 value reported in 2004.

Homestake completed several reclamation projects at its historic gold mine in Lead during 2005. The new park in the former mill area was dedicated and opened to the public on June 3, 2005. The park includes displays of vintage mining equipment, a ¼ mile hiking trail, and a picnic area. The company also completed reclamation of its Yates Waste Rock Facility in August 2005. Slopes were reduced and revegetated to improve long term stability and appearance of the facility. In addition, Homestake sealed and closed several mine tunnels near Lead.

Work continued in 2005 on the conversion of the Homestake underground mine into a national underground science laboratory. In July, the National Science Foundation selected the Homestake Mine and the Henderson Mine in Colorado as the two finalists for the deep underground science and engineering laboratory, or DUSEL. A decision on which mine will be the preferred site for the DUSEL will be made at a later date. In September, the state signed an agreement with Barrick Gold to turn the underground mine over to the state's Science and Technical Authority. The South Dakota Legislature approved $19.9 million in additional funding during a special session in October to fund the development of an interim lab at the 4850 level of the mine.

There are currently 11 mine permits that cover six large scale gold mining operations in South Dakota. Wharf Resources, the only gold mine still actively mining in South Dakota, holds four of these permits. No new mine permits or mine permit amendments were issued to large scale gold operations in 2005.

Industrial and Other Minerals: Industrial and other mineral production for 2005 is summarized in Table 2. During the 2005 reporting period, 510 companies and individuals had active mine licenses in South Dakota. An operator must obtain a license to mine for sand, gravel, pegmatite minerals, materials used in the process of making cement or lime, and rock to be crushed and used in construction. There were also 36 mine permits that cover mining other minerals such as slate, bentonite, placer gold, and dimension stone.

Table 2 – 2005 Non-Metallic Mineral Production

Mineral	Production (Tons)
Bentonite	0
Dimension Stone	332,385
Gypsum	49,313
Iron Ore	81,807
Limestone	3,371,533
Mica Schist	11,154
Pegmatite Minerals	2,748
Placer Gold Ore	64
Quartzite	3,428,092
Shale	235,908
Slate	2,733
Sand & Gravel	16,201,296

Source: Annual reports submitted by mining companies

Sand and gravel was the major non-metallic mineral commodity produced during 2005 with 16,201,296 tons reported. Sand and gravel is produced in nearly every county in South Dakota and is used mainly for road construction projects.

Sioux quartzite became the second most prolific non-metallic mineral commodity produced during 2005 with 3,428,092 tons reported. It is quarried from four locations in southeastern South Dakota. Most of the quartzite is crushed and used in construction. Some larger blocks are used for rip-rap, railroad ballast, and occasionally for decorative purposes. Limestone production followed closely in third at 3,371,533 tons reported in 2005. Limestone is produced in the Black Hills of western South Dakota and is used primarily in the production of cement and for construction projects.

A total of 332,385 tons of dimension stone was mined by Dakota Granite Company and Cold Spring Granite Company from quarries near Milbank in northeastern South Dakota. Due to its beauty and distinctive red color, the "mahogany" granite is used primarily for monuments and building construction. Much of it goes to international markets.

Other minerals produced in smaller amounts during 2004 include iron ore, mica schist, pegmatite minerals (feldspar, mica, rose quartz), placer gold, shale, and slate. On August 9, 2005, Cold Spring Granite submitted a small scale mine permit application to expand its existing granite quarry covered under Large Scale Mine Permit No. 8. The 6.79 acre area will be used to store granite blocks, and the reclamation plan for the area is based on a post mine land use of cropland. The permit will be granted sometime in 2006.

Exploration

In 2005, only one exploration permit was issued by the department. The permit was granted to Dakota Stone, a mining and stone supply company. Dakota Stone is planning to explore for building-quality slate in the central Black Hills region.

Gold exploration activities in South Dakota continued to be limited despite higher gold prices. None of the large scale gold mines conducted exploration activities in 2005, and only one placer mining operation reported exploration activities.

Wharf Resources, which operates a large scale gold mine located in the Black Hills, completed reclamation activities for thirteen exploration permits in 2005. These permits were issued between 1988 and 1995. A total of 24 acres and 2,072 drill holes were reclaimed. Close-out inspections were performed by department staff in 2004 and 2005. In January 2006, based on the recommendation of the department, the board released Wharf Resources from liability at these exploration sites.

Environmental Issues

Gilt Edge Mine: EPA continued acid water treatment at the Gilt Edge Superfund Site in 2005. Water treatment resumed on September 29, 2005 after some adjustments were made earlier in the year to improve the efficiency of the water treatment plant. The plant treated 19.1 million gallons in 2005, and water treatment will continue in 2006.

Over the last few years, EPA has been conducting a large-scale test to treat water in the Anchor Hill Pit using biological processes. After pH adjustments were made using lime and caustic, ethanol, molasses, and phosphoric acid were added to the water to enhance the growth of bacteria. The bacteria created conditions for metals precipitation. The goal of the test was to reduce the acidity and heavy metal concentrations of the water so it could meet water quality standards and be discharged directly without further treatment. The test entered its operational phase in 2004 and EPA discharged 100,000 gallons of water from the pit. During 2005, EPA discharged 12 million gallons from the pit. Additional discharges are planned for 2006. The process still needs additional work before it can be considered an alternative treatment method to the current water treatment plant.

At the end of the year, the leachate collection pond at the toe of the reclaimed Ruby Waste Rock Depository was replaced with an underground vault. Leachate from the toe will be collected in the new vault and pumped to the water treatment plant. A new pumphouse is currently under construction at the toe of the depository and will be completed in early 2006.

EPA and the state continue to prepare plans to reclaim the rest of the site, including the mine pits and heap leach pad. A feasibility study on reclamation options is scheduled to be completed sometime in 2006.