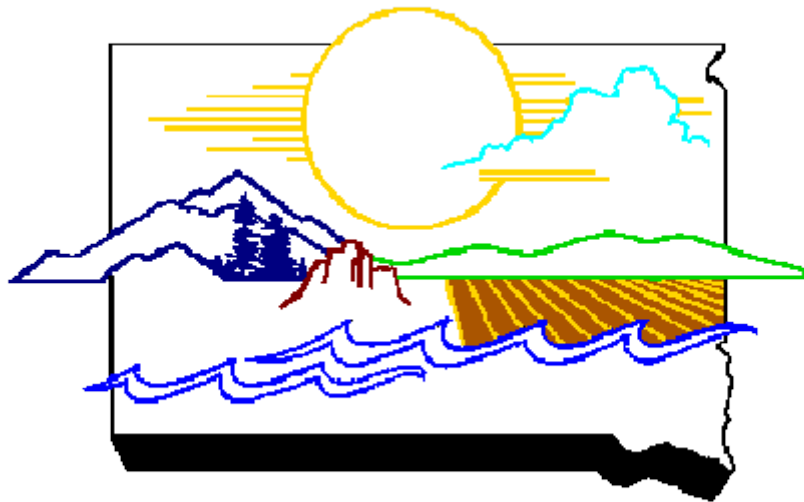


**SUMMARY OF  
THE MINING INDUSTRY IN SOUTH DAKOTA**

**2010**



*Protecting South Dakota's Tomorrow ... Today*

**PREPARED BY  
THE MINERALS AND MINING PROGRAM  
SD DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
MAY 2011**

<http://denr.sd.gov>

Summary of the Mining Industry in South Dakota - 2010  
May 2011

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# INTRODUCTION

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The Department of Environment and Natural Resources is required by state law to prepare a "Summary of the Large Scale Gold Surface Mining Industry in the Black Hills" and a "Publication of Surface Mine Disturbed Land and Reclamation Acreages under Chapter 45-6B." These two reports have been combined into a single report entitled "Summary of the Mining Industry in South Dakota." This report covers mining activities from January 1 to December 31, 2010. The information in this report is based on annual reports and other information submitted by mining operations permitted under the South Dakota Mined Land Reclamation Act, Chapter 45-6B.

## **2010 Summary**

At the end of 2010, there were a total of 47 mine permits that covered mining of minerals in the state including gold, bentonite, dimension stone, slate, and mica schist. Heap leach gold mining led all permitted mines in production with 3.62 million tons of ore mined, followed by dimension stone (208,711 tons), mica schist (20,100 tons) and slate (2,787 tons). Gold production and value increased in 2010 due to higher gold prices. Wharf Resources was the only company to report gold production in 2010, with 73,325 ounces produced, an increase from the 67,738 ounces reported in 2009. The average price of gold in 2010 was \$1,224/ounce, yielding a gross value of about \$89.8 million. Other minerals produced in lesser amounts include agricultural lime, limestone, and placer gold ore.

In September 2010, the department received a Request for Determination of Special, Exceptional, Critical, and Unique Lands from Wharf Resources for its proposed mine expansion project approximately three miles west of Lead. This is the first step in the process of obtaining a large scale mine permit for the project. Wharf will affect approximately 430 acres during the seven year life of the expansion project. It will involve open pit mining and the use of waste rock to backfill previously mined areas. Ore extracted from the expansion areas will be trucked to the existing permitted Wharf Mine heap leach facility for processing. Neutralized spent ore will be deposited in permitted facilities which may include the current American Eagle and Deep Portland Pits. The land will be reclaimed to woodland grazing, recreation, and residential and commercial development. Wharf submitted a mine permit application for the expansion in March 2011, and a public hearing on the application is anticipated in late 2011 or early 2012.

The department issued five mine permits in 2010. This is the most permits the department has issued in a single year for several years. Four of the mine permits were issued to American Colloid for new bentonite mining operations west and north of Belle Fourche. The other mine permit was issued to Douglas Ottema for a placer mining operation near Tinton.

\s/

Steven M. Pirner  
Secretary

# **SUMMARY OF THE LARGE SCALE GOLD MINING INDUSTRY IN THE BLACK HILLS**

## **2010**



Photo 1.1 – Reclaimed former Spruce Gulch Waste Rock Facility at LAC Mineral’s Richmond Hill Mine.



# **MAJOR 2010 GOLD MINING EVENTS**

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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 the permits. The other permits are held by Bald Mountain Mining, Homestake Mining, LAC Minerals, and Brohm Mining. Wharf Resources reported 73,325 ounces of gold production in 2010. With the exception of Wharf and Bald Mountain Mining, the other mines are in varying stages of reclamation and closure, with about 500 acres of Homestake's reclaimed area being released from reclamation liability and placed into postclosure in 2006. In early 2009, the Board of Minerals and Environment released about 401 reclaimed acres from reclamation liability at the Golden Reward Mine and placed them into postclosure status.

## **Special or Unique Lands Determination for Wharf Expansion Project**

In September 2010, the department received a Request for Determination of Special, Exceptional, Critical, and Unique Lands from Wharf Resources for its proposed mine expansion project approximately three miles west of Lead. This is the first step in the process of obtaining a large scale mine permit for the project.



Photo 1.2 – Proposed Green Mountain Mine area.



Photo 1.3 – Proposed Harmony Hill Mine.

The proposed mine expansion involves expansion of the Wharf Mine and re-mining of portions of the reclaimed Golden Reward Mine. Wharf Resources will affect approximately 430 acres during the seven year life of the expansion project. It will involve open pit mining and the use of waste rock to backfill previously mined areas. Ore extracted from the expansion areas will be trucked to the existing permitted Wharf Mine heap leach facility for processing. Neutralized spent ore will be deposited in permitted facilities which may include the current American Eagle and Deep Portland Pits. Reclamation will be conducted concurrently with the mining operation. The land will be reclaimed to woodland grazing, recreation, and residential and commercial development.

On January 13, 2011, the department determined the Terry Cemetery mentioned in Wharf's Request for Determination is eligible for inclusion on the Preliminary List of Special, Exceptional, Critical, or Unique Lands. In addition, petitions to nominate the cemetery to the preliminary list were submitted by Jeannine Guern, Vernon Davis, and Larry Miller. The Board of Minerals and Environment held a hearing in March 2011 to consider the petitions and also determine whether the cemetery should be placed on the preliminary list.

Wharf submitted a mine permit application for the expansion in March 2011, and a public hearing on the application is anticipated in late 2011 or early 2012.

## **Additional Reclaimed Acres Released at Golden Reward**

In June 2010, the department inspected the reclaimed but unreleased acres at Golden Reward. During the inspection, the department determined an average live vegetative cover of 40 percent had been established on the 0.57 acre former rubble disposal site that was diverse and self sustaining with no noxious weed infestations. As a result, on December 17, 2010, the 0.57 acre former rubble site was released and placed into postclosure status. This increased the total amount of reclaimed acres released for large scale gold mines to 908.05 acres.

## **Gilt Edge Update**

In 2010, EPA continued acid water treatment at the Gilt Edge Superfund site located four and one-half miles southeast of Lead. A total of 166.8 million gallons were treated and discharged in 2010, and water treatment will continue in 2011. At the end of 2010, acid water and sludge volumes at the mine were reduced to a new record low of 34.1 million gallons since the mine became a Superfund site. EPA also continued repairs on storm water diversion ditches along the capped Ruby Waste Rock Depository to prevent storm water from entering the depository and creating additional acid drainage. Repairs should be completed in 2011.

## **Golden Reward Mine Permit Transferred to Wharf Resources**

On November 18, 2010, the Board of Minerals and Environment approved the transfer of Large Scale Mine Permit No. 450 from the Golden Reward Mining Company to Wharf Resources. Wharf owns the Golden Reward Mine located near Lead. Since the company wanted to eliminate the Golden Reward portion of its corporate structure, Wharf requested a transfer of the mine permit.

## **Mitigation Update at Richmond Hill Mine**

Reclamation activities at the Richmond Hill Mine, located four miles northwest of Lead, continue to be successful. This was an open pit heap leach gold mine that developed an acid-mine drainage problem during operations in the early 1990's. Most of the reclamation was completed by the mine operator, LAC Minerals (USA), LLC, in the mid-1990's. The pit impoundment, backfilled with acid-generating rock and covered with a low permeability capping system, continues to perform as designed. The capped leach pads also continue to perform well. Monitoring data shows the capping systems are effective in reducing water infiltration into the spent ore.

Ground and surface water quality around the mine site is closely monitored. With a few minor exceptions, monitoring continues to show stable or improving water quality in all of the reclaimed areas. Biological assessments of Cleopatra Creek below the mine show that the stream remains healthy and supports a viable cold water fishery.

## **Development of Homestake Mine as Site for Deep Underground Laboratory Continues**

In July 2007, the National Science Foundation selected the Homestake underground mine in Lead as the site for a deep underground science and engineering laboratory. Work continued in 2010 to develop an interim lab at the 4850 level of the mine. A staging room, a larger detection cavern, and a secondary access tunnel have been carved out of the rock in preparation for various experiments set to begin in 2011.

## **Technical Revisions Approved by the Department in 2010**

April 6	Wharf Resources – Allow for a pushback of the proposed American Eagle Pit affecting 1.2 acres.
July 26	Wharf Resources – Construct the Portland Denitrification Pad adjacent to and connected to the 33 Vertical, Polo, and 33 Vertical/Polo lined containment areas for spent ore disposal.
September 8	Wharf Resources – Reline and expand the capacity of the Ross Valley Lined Containment Pond.
November 23	Wharf Resources – Construct a carbon column water treatment plant, two flumes for French drains, a warehouse addition, and a potable drinking water system.



# LARGE SCALE GOLD MINE ACREAGE AND PRODUCTION TABLES

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The following tables were developed by compiling information from operator annual reports, supplemental information submitted to the department by the large scale gold mines, inspection reports, and other available information. Acreage from the Gilt Edge Superfund site that was previously mined by Brohm is included in the tables to show the progress being made to reclaim the mine site.

Various charts and graphs comparing total affected, total reclaimed, and released acreage are in Appendix 1. The bar chart on page A-2 compares affected acreage, reclaimed acreage, and released acreage for each company. The graph on page A-2 shows the trend of total affected acres, total reclaimed acres, and released acres for the large scale gold industry from 1990 to 2010. The pie chart on page A-3 shows total reclaimed acres, total unreclaimed acres, and released acres for the large scale gold mine industry in 2010.



Photo 1.4 – Reclaimed Whiteside Pit at the Wharf Mine.

**TABLE 1.1 – AFFECTED MINED LAND ACREAGE**

<b>Permit Number</b>	<b>Operator</b>	<b>Original Permitted Affected Acres</b>	<b>Released Acres</b>	<b>Current Permitted Affected Acres</b>	<b>Acres Affected Year 2010</b>	<b>Total Acres Affected as of Dec. 31, 2010</b>
416	Bald Mountain Mining	122.00	0.00	122.00	0.00	0.00
439 & 462	Brohm Mining Corp.	564.00	0.00	564.00	0.00	263.00
450	Golden Reward Mining Co., LP	408.44	403.47	4.97	0.00	4.97
332 & 456	Homestake Mining Company	679.95	504.58	175.37	1.80	137.16
445	LAC Minerals (USA), LLC	439.10	0.00	439.10	0.00	337.37
356, 434, 435, & 464	Wharf Resources (USA), Inc.	1123.94	0.00	1123.94	0.00	1031.52
<b>TOTALS</b>		3337.43	908.05	2429.38	1.80	1774.02

**Definitions:**

**Permitted Affected Acres** - As defined in SDCL 45-6B-3(1), permitted affected land involves all lands permitted to be affected by a mining operation. This includes land from which overburden is to be or has been removed; land upon which overburden, waste rock, mine spoil, or mill tailings are to be or have been deposited; land disturbed by the building of access roads, railroad loops, warehouses, storage areas, or other support facilities for the purpose of mining; and land affected by surface subsidence, unstable slopes, and other surface effects caused by underground mine workings. Released acres are not included.

**Released Acres** - Final reclaimed acres that meet the post-mine land use and have been released by the Board of Minerals and Environment. These acres are no longer considered permitted affected acres. As a result, the current permitted affected acreage is 4.97 acres for Golden Reward and 175.37 acres for Homestake.

**Acres Affected Year 2010** - Previously unaffected acres disturbed from January 1 to December 31, 2010. This acreage is also included in "Total Acres Affected as of Dec. 31, 2010."

**Total Acres Affected as of Dec. 31, 2010** - All land currently affected by the large scale gold and silver operations under permit as of December 31, 2010. This includes all lands described above in "Permitted Affected Acres." Released acres are not included.

<b>TABLE 1.2 – SURFACE MINING DISTURBED LAND ACREAGE</b>			
<b>Permit Number</b>	<b>Operator</b>	<b>Surface Mining Disturbed Acres Year 2010</b>	<b>Total Surface Mining Disturbed Acres as of Dec. 31, 2010</b>
416	Bald Mountain Mining	0.00	0.00
439 & 462	Brohm Mining Corp.	0.00	202.10
450	Golden Reward Mining Co., LP	0.00	4.97
332 & 456	Homestake Mining Company	1.80	108.39
445	LAC Minerals (USA), LLC	0.00	202.02
356, 434, 435, & 464	Wharf Resources (USA), Inc.	0.00	974.22
<b>TOTALS</b>		1.80	1491.71

**Definitions:**

**Surface Mining Disturbed Acres Year 2010** - Previously unaffected surface mining land disturbed from January 1 to December 31, 2010. This acreage is also included in "Total Surface Mining Disturbed Acres as of Dec. 31, 2010."

**Total Surface Mining Disturbed Acres as of Dec. 31, 2010** - As defined in SDCL 45-6B-3(15), surface mining disturbed land is land from which overburden has been removed; land upon which overburden, waste rock, mine spoil, or mill tailings have been deposited; land mined which has no overburden; heap leach pads; and process ponds. Surface mining disturbed lands include overburden and waste rock dumps, spent ore dumps, tailings impoundments, heap leach pads, open pits, process ponds, haul roads in pit areas, or haul roads constructed largely of waste rock, spent ore, or overburden. Surface mining disturbed lands **do not** include access roads, haul roads constructed from normal cut and fill methods, railroad loops, utility corridors, buildings including process plants, land application areas, topsoil stockpiles, ore stockpiles, crusher areas, storage areas, sediment and erosion control structures, and land affected by surface subsidence, unstable slopes, and other surface effects caused by underground mine workings. Released acres are not included.

<b>TABLE 1.3 – INTERIM RECLAIMED ACREAGE</b>			
<b>Permit Number</b>	<b>Operator</b>	<b>Interim Reclaimed Acres Year 2010</b>	<b>Total Interim Reclaimed Acres as of Dec. 31, 2010</b>
416	Bald Mountain Mining	0.00	0.00
439 & 462	Brohm Mining Corp.	0.00	0.95
450	Golden Reward Mining Co., LP	0.00	0.00
332 & 456	Homestake Mining Company	0.00	0.00
445	LAC Minerals (USA), LLC	0.00	14.43
356, 434, 435, & 464	Wharf Resources (USA), Inc.	0.00	33.65
<b>TOTALS</b>		0.00	49.03

**Definitions:**

**Interim Reclamation** - As defined in ARSD 74:29:01:01(17), interim reclamation is reclamation performed during a mining operation or between mining phases to stabilize affected land by regrading and revegetating to control erosion, improve aesthetics, and minimize hazards. It can be construed to be temporary reclamation or soil stabilization for affected land that will be disturbed again.

**Interim Reclaimed Acres Year 2010** - Acres under interim reclamation from January 1 to December 31, 2010. These acres are also included in "Total Interim Reclaimed Acres."

**Total Interim Reclaimed Acres as of Dec. 31, 2010** - The total number of acres under interim reclamation as of December 31, 2010. Acres redisturbed or now considered as final reclamation are not included in these totals.

<b>TABLE 1.4 – FINAL RECLAIMED ACREAGE FOR YEAR 2010</b>			
<b>Permit Number</b>	<b>Operator</b>	<b>Final Reclaimed Acres Year 2010 that Meet Post-Mine Land Use</b>	<b>Final Reclaimed Acres Year 2010 that Do Not Meet Post-Mine Land Use</b>
416	Bald Mountain Mining	0.00	0.00
439 & 462	Brohm Mining Corp.	0.00	0.00
450	Golden Reward Mining Co., LP	0.00	0.00
332 & 456	Homestake Mining Company	0.00	19.61
445	LAC Minerals (USA), LLC	19.97	0.00
356, 434, 435, & 464	Wharf Resources (USA), Inc.	0.00	0.00
<b>TOTALS</b>		19.97	19.61

**Definitions:**

**Final Reclaimed Acres Year 2010 That Meet Post-Mine Land Use** – Affected land reclaimed prior to 2010, previously considered as not meeting the post-mine land use, that met the post-mine land use in 2010. These acres meet the requirements of the reclamation plan, SDCL 45-6B, and ARSD 74:29, and can be considered for bond release. Released acres are not included.

**Final Reclaimed Acres Year 2010 That Do Not Meet Post-Mine Land Use** - Affected land reclaimed between January 1 and December 31, 2010, that does not meet the requirements of the approved reclamation plan and the reclamation requirements of SDCL 45-6B and ARSD 74:29. Final grading, topsoil placement, erosion and drainage control, and seeding and planting have been conducted on these acres. However, these acres cannot be considered for bond release since they have not met the post-mining land use criteria.

**TABLE 1.5 – TOTAL FINAL RECLAIMED AND RELEASED ACREAGE****As of December 31, 2010**

<b>Permit Number</b>	<b>Operator</b>	<b>Final Reclaimed Acres that Meet Post-Mine Land Use<sup>1</sup></b>	<b>Final Reclaimed Acres that Do Not Meet Post-Mine Land Use</b>	<b>Final Reclaimed Acres that Have Been Released</b>
416	Bald Mountain Mining	0.00	0.00	0.00
439 & 462	Brohm Mining Corp.	0.00	79.50	0.00
450	Golden Reward Mining Co., LP	3.13	1.84	403.47
332 & 456	Homestake Mining Company	8.24	127.65	504.58
445	LAC Minerals (USA), LLC	261.95	0.00	0.00
356, 434, 435, & 464	Wharf Resources (USA), Inc.	270.36	133.90	0.00
<b>TOTALS</b>		543.68	342.89	908.05

<sup>1</sup>The final reclaimed acres that meet the post-mining land use in this table are industry figures. The department may not necessarily agree with the reported acreage and will need to confirm in the field that these acres do meet the post-mine land use criteria.

**Definitions:**

**Final Reclaimed Acres That Meet Post-Mine Land Use** - Affected land reclaimed as of December 31, 2010, that has a permanent, self-sustaining vegetative cover which meets the requirements of the approved reclamation plan and meets the reclamation requirements of SDCL 45-6B and ARSD 74:29. These acres can be considered for bond release. Released acres are not included.

**Final Reclaimed Acres That Do Not Meet Post-Mine Land Use** - Affected land reclaimed as of December 31, 2010, that does not meet the requirements of the approved reclamation plan and the reclamation requirements of SDCL 45-6B and ARSD 74:29. Final grading, topsoil placement, erosion and drainage control, and seeding and planting have been conducted on these acres. However, these acres cannot be considered for bond release since they have not met the post-mining land use criteria.

**Final Reclaimed Acres that Have Been Released** – Final reclaimed acres that meet the post-mine land use and have been released by the Board of Minerals and Environment. These acres are now under postclosure status.



**TABLE 1.6 – SURFACE MINED RECLAMATION ACREAGE AND  
RECLAMATION CREDITS  
As of December 31, 2010**

<b>Permit Number</b>	<b>Operator</b>	<b>Surface Mined Acres Reclaimed (SDCL 45-6B-86)</b>	<b>Total Affected Acres Reclaimed that Apply as Reclamation Credit per 1992 Mining Initiative (SDCL 45-6B-97)</b>
416	Bald Mountain Mining	0.00	0.00
439 & 462	Brohm Mining Corp.	65.00	73.20
450	Golden Reward Mining Co., LP	4.97	408.44
332 & 456	Homestake Mining Company	107.12	640.47
445	LAC Minerals (USA), LLC	171.63	261.95
356, 434, 435, & 464	Wharf Resources (USA), Inc.	401.36	404.26
<b>TOTALS</b>		750.08	1788.32

**Definitions:**

**Surface Mined Acres Reclaimed** - Total amount of surface mining disturbed acres under final reclamation as of December 31, 2010. The department is required to report these acres under SDCL 45-6B-86. Final grading, topsoil replacement, erosion and drainage control, and seeding and planting have been conducted on these acres. Released acres are not included.

**Total Affected Acres Reclaimed That Apply as Reclamation Credit per 1992 Mining Initiative** - Affected land under final reclamation as of December 31, 2010, that can be considered for reclaimed acreage credit as provided under SDCL 45-6B-97. Pursuant to SDCL 45-6B-97, reclamation is performed when the operator completes required grading, topsoil placement, erosion and drainage control, and seeding and planting. Released acres are included.

**TABLE 1.7 - ORE AND WASTE ROCK PRODUCTION**  
**January 1 to December 31, 2010**

<b>Permit Number</b>	<b>Operator</b>	<b>Tons of Ore Mined Year 2010</b>	<b>Tons of Ore Processed Year 2010</b>	<b>Tons of Waste Rock and Overburden Mined Year 2010</b>
416	Bald Mountain Mining	0	0	0
439 & 462	Brohm Mining Corp.	0	0	0
450	Golden Reward Mining Co., LP	0	0	0
332 & 456	Homestake Mining Company (Open Cut)	0	0	0
445	LAC Minerals (USA), LLC	0	0	0
356, 434, 435, & 462	Wharf Resources (USA), Inc.	3,615,701	3,420,701	9,256,418
<b>TOTALS</b>		3,615,701	3,420,701	9,256,418

**TABLE 1.8 – GOLD AND SILVER PRODUCTION**  
**January 1 to December 31, 2010**

<b>Permit Number</b>	<b>Operator</b>	<b>Ounces of Gold Produced Year 2010</b>	<b>Ounces of Silver Produced Year 2010</b>
416	Bald Mountain Mining	0	0
439 & 462	Brohm Mining Corp.	0	0
450	Golden Reward Mining Co., LP	0	0
332 & 456	Homestake Mining Company	0	0
445	LAC Minerals (USA), LLC	0	0
356, 434, 435, & 462	Wharf Resources (USA), Inc.	73,325	148,105
<b>TOTALS</b>		73,325	148,105
<b>ESTIMATED VALUE<sup>1</sup></b>		\$89,788,662	\$2,990,240

<sup>1</sup>Based on 2010 average gold price of \$1,224.53/oz and 2010 average silver price of \$20.19/oz.

**TABLE 1.9 – WATER AND CYANIDE USE**  
**January 1 to December 31, 2010**

<b>Permit Number</b>	<b>Operator</b>	<b>Gallons Ground Water Withdrawn Year 2010</b>	<b>Gallons Surface Water Withdrawn Year 2010</b>	<b>Pounds of Cyanide Used Year 2010</b>
416	Bald Mountain Mining	0	0	0
439 & 462	Brohm Mining Corp.	0	0	0
450	Golden Reward Mining Co., LP	100,000	0	0
332 & 456	Homestake Mining Company	0	0	0
445	LAC Minerals (USA), LLC	531,000	0	0
356, 434, 435, & 462	Wharf Resources (USA), Inc.	67,592,400	93,700,000	763,238
<b>TOTALS</b>		65,786,400	93,700,000	763,238

<b>TABLE 1.10 – BOND AMOUNTS FOR LARGE SCALE GOLD MINES</b> <b>As of December 31, 2010</b>				
<b>Permit Number</b>	<b>Operator</b>	<b>Reclamation Bond</b>	<b>Postclosure Bond<sup>1</sup></b>	<b>Cyanide Spill Bond<sup>2</sup></b>
416	Bald Mountain Mining	\$13,362	\$0	\$0
439 & 462	Brohm Mining Corp.	\$7,355,505 <sup>3</sup>	\$0	\$0
450	Golden Reward Mining Co., LP	\$5,600	\$1,767,077	\$0
332 & 456	Homestake Mining (Open Cut)	\$1,246,000	\$42,369,890	\$0
445	LAC Minerals (USA), LLC	\$10,700,000 <sup>4</sup>	\$0	\$0
356, 434, 435, & 464	Wharf Resources (USA), Inc.	\$15,554,622 <sup>4</sup>	\$9,887,777 <sup>4</sup>	\$537,300

<sup>1</sup> Postclosure bonds are not generally required to be submitted until the reclamation bond is released. However, by condition to Mine Permit No. 464, Wharf was required to submit a postclosure bond prior to closure.

<sup>2</sup> Financial assurance, or “cyanide spill bonds” are required under SDCL 45-6B-20.1. This financial assurance covers the cost of remediating accidental releases of cyanide or other leaching agents to the environment if a mine fails to do so. Wharf is the only mine where cyanide heap leaching is being done at this time and has submitted a \$523,500 bond since the maximum amount was increased to \$1 million on July 1, 2009.

<sup>3</sup> Because of Dakota Mining Corp’s bankruptcy, Brohm’s reclamation bond has been placed in a state account for use in reclamation of the Gilt Edge Mine. \$2 million was used for reclamation expenses in March 2002. Interest from the bond is compounded and applied to the bond. The bond amount shown is current as of December 31, 2010.

<sup>4</sup>The department is in the process of reviewing reclamation and postclosure bond calculations for LAC Minerals and Wharf Resources. Any revisions to the calculations will be completed in 2011.

# **OPERATIONAL PLANS FOR 2011**

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## **Bald Mountain Mining**

Bald Mountain Mining's permit covers a site located about five miles west of Lead in the Ragged Top area along the rim of Spearfish Canyon. No mining has been conducted under the mine permit since it was originally issued to Homestake in 1984. Bald Mountain Mining hopes to mine the property in the future.

## **Brohm Mining Corp.**

EPA will continue water treatment at the Superfund site located four and one-half miles southeast of Lead in 2011. Both the Sunday and the Anchor Hill Pits will essentially be empty of acid water by March for the first time since the mine became a Superfund site. Routine operation and maintenance activities will continue through the year. The remaining reclamation activities are anticipated to begin when federal Superfund money becomes available. The department will continue review of revised preliminary remedial designs for Operational Unit 1 (OU1) which covers reclamation of the site except for the reclaimed Ruby Depository.

## **Homestake Mining Company (Barrick Gold Corp.)**

Homestake will continue reclamation and closure activities in 2011 at its Lead Open Cut surface mine. Postclosure monitoring, maintenance, and water treatment activities will continue in the released areas.

## **LAC Minerals (USA), LLC (Richmond Hill Mine)**

LAC Minerals will continue monitoring and active water treatment at the Richmond Hill Mine located four miles northwest of Lead. The company also plans to submit a release of reclamation liability petition, updated reclamation plan for unreclaimed areas of the mine site, and a postclosure plan to the department sometime in 2011. There are also plans to modify the process area holding ponds.

## **Wharf Resources (USA), Inc.**

Wharf submitted a large scale mine permit application to expand its mining operation at both the Wharf and Golden Reward Mines in March 2011. The company will continue to mine the highwalls between the American Eagle, Deep Portland, and Trojan Pits. Crushed ore from the



mining area will be loaded onto Leach Pads 2 and 5. Leach Pad 5 will be off loaded. Off loaded spent ore from the leach pads will be placed on the lined Portland Denitrification Pad. Inspection and maintenance activities at the Golden Reward Mine will continue as required under the postclosure monitoring plan.



Photo 1.5 – Completed tech-span removal project at Homestake's former haul road crossing over Deadwood Creek.

**SUMMARY OF SURFACE MINED DISTURBED AND RECLAMATION  
ACRES UNDER SDCL 45-6B-86**

**2010**



Photo 2.1 – Reclaimed area at Pete Lien's Rapid City Quarry.



# SUMMARY OF ALL MINE PERMITS

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This portion of the report summarizes information on the number of acres of surface mining disturbed land and the amount reclaimed as required by SDCL 45-6B-86 for the period January 1 to December 31, 2010. This does not include acreages for mining operations regulated under SDCL Chapter 45-6 (519 licensed mine operators and 1,821 active licensed sites), mineral exploration regulated under SDCL Chapter 45-6C (11 operators and 27 permits, excluding oil and gas), or uranium exploration regulated under SDCL Chapter 45-6D (1 operator, 1 permit.) Sources for this information include permit applications, operating and reclamation plans, annual reports, department inspections, and operator information.

## New Mine Permit Applications

Five new mine permits were granted in 2010. In April and May, the department issued two large scale mine permits to American Colloid for bentonite mining in the Shear/Clarkson area near Belle Fourche. About 62 acres will be mined and about 186 acres will be affected at the Shear/Clarkson East operation, while about 44 acres will be mined and about 177 acres will be affected at the Shear/Clarkson West operation. Both areas will be mined using cut and fill mining techniques and will be reclaimed to rangeland for livestock grazing.

In June, the department issued two additional large scale mine permits to American Colloid for bentonite mining in the Davis Ranch area north of Belle Fourche. About 100 acres will be mined and about 265 acres will be affected at the Davis North operations, while about 121 acres will be mined and about 238 acres will be affected at the Davis South operation. Both areas will be mined using cut and fill mining techniques and will be reclaimed to rangeland for livestock grazing.



Photo 2.2 – Proposed Davis North mine area.



Photo 2.3 – Proposed Davis South mine area.

Finally, in April, the department issued a small scale mine permit to Douglas Ottema for a placer gold mining operation near Tinton. Mr. Ottema will affect a total of 10 acres and remove a maximum of 25,000 tons of ore annually during the 20 year life of the project. Mining will be conducted in three phases, and ore extracted during each phase will be processed using a gravity wash process plant. Reclamation will be conducted concurrently with mining. The proposed future use of the mine is grassland.

## **Permit Amendments**

The department continued review of Pacer Corporation's application to amend Large Scale Mine Permit No. 467. The amendment would allow Pacer to add about 41 acres of contiguous affected land inside the mine permit boundary. Most of the additional acreage will be used to expand the current mine pit to the north and west. The department will take action on the permit amendment application sometime in 2011 after approval of Pacer's plan of operations by the US Forest Service.

## **Status of Powertech Permit Applications for Proposed In Situ Uranium Mining Operation**

Powertech (USA), Inc. is a uranium company that plans to develop an in situ uranium mining operation in Custer and Fall River Counties north of Edgemont, South Dakota. The company plans to use in situ mining techniques which involve injecting native groundwater enriched in oxygen and carbon dioxide into a uranium ore body through injection wells. The enriched water dissolves the uranium ore which is pumped to the surface through production wells. The uranium is then removed from the water and concentrated at a nearby processing plant.

During the 2011 legislative session, the South Dakota Legislature passed Senate Bill 158. The new law reduces duplication of state and federal requirements for in situ uranium mining operations by tolling, or setting aside, the department's Class III UIC rules and in-situ leach mining rules (ARSD 74:29:11) effective July 1, 2011. Because of this law, Powertech is no longer required to obtain a Class III UIC permit from the department or address the in situ mining rules in a mine permit application. Other state permits such as a water rights permit and a ground water discharge permit will still be required.

The company submitted a Class III UIC permit application to the Environmental Protection Agency (EPA) in December 2008. EPA has determined that the application is complete and is currently conducting a technical review of the application.

On February 25, 2009, Powertech submitted a uranium recovery license application to the Nuclear Regulatory Commission (NRC). The NRC informed the company that the application would not be accepted for technical and environmental review since some required information was not included in the application. Powertech resubmitted the application on August 10, 2009 with additional information, and the NRC found it acceptable for technical and environmental

review on October 2, 2009. The NRC has since conducted a technical and environmental review of the application and has requested additional information from Powertech.

The department has developed a web page for Powertech's various permit applications which can be found at <http://denr.sd.gov/des/mm/powertechpage.aspx>. The web page has links to information from the department's permit files such as permit applications, correspondence, public notices, and inspection reports. Please note the state Class III UIC permit application currently on the web page is no longer required due to Senate Bill 158. Therefore, no further action will be taken on the permit application at this time.

<b>Table 2.1 – Number of Mine Permits and Permitted Affected, Total Affected, and Surface Mine Disturbed Acreage</b>				
	<b>All Small Scale Permits</b>	<b>All Non-Gold Large Scale Permits</b>	<b>Large Scale Gold Permits<sup>1</sup></b>	<b>All Mine Permits</b>
Number of Permits	17	19	11	47
Permitted Affected Acres	572	3,688	2,429	6,689
Total Affected Acres	44	1,665	1,774	3,483
Surface Mining Disturbed Lands Acres	29	1,355	1,492	2,876

<sup>1</sup> The acreage figures for large scale gold mines are separated for clarification purposes. The large scale gold mine statistics are not included in the figures for all non-gold large scale permits.

#### **Definitions:**

**Small Scale Mining Permit** - Permit for operations that extract less than 25,000 tons of ore or overburden per calendar year and disturb less than 10 acres of land.

**Large Scale Mining Permit** - Permit for operations that extract more than 25,000 tons of ore or overburden per calendar year and disturb more than 10 acres.

**Permitted Affected Acres** - Pursuant to SDCL 45-6B-3(1), this involves all lands permitted to be disturbed by a mining operation, including land from which overburden is to be or has been removed, and land upon which overburden, waste rock, mine spoil, or mill tailings is to be or has been deposited; land which is disturbed by the building of access roads, railroad loops, warehouses, storage areas, or other support facilities for the purpose of mining; and land affected by surface subsidence, unstable slopes, and other surface effects caused by underground mine workings.

**Total Affected Acres** - This includes all the land currently affected by the mining operations under permit. The total affected acres statistics are included in the figures for permitted affected acres.

**Surface Mining Disturbed Lands Acres** - Pursuant to SDCL 45-6B-3(15), this includes all the land from which overburden has been removed, land upon which overburden, waste rock, mine spoil, or mill tailings have been deposited, land mined which has no overburden, heap leach pads, and process ponds. The surface mining disturbed lands statistics are included in the figures for total affected acres.



<b>Table 2.2 – Reclaimed and Released Reclaimed Acres</b>				
	<b>All Small Scale Permits</b>	<b>All Non-Gold Large Scale Permits</b>	<b>Large Scale Gold Permits<sup>1</sup></b>	<b>All Mine Permits</b>
Total Reclaimed Acres	25	916	887	1,828
Reclaimed Surface Mining Disturbed Acres	13	852	750	1,615
Releasable Reclaimed Acres	14	266	544	824
Released Reclaimed Acres in 2010	0	0	1	1

<sup>1</sup> The acreage figures for large scale gold mines are separated for clarification purposes. The large scale gold mine statistics are not included in the figures for all non-gold large scale permits.

#### **Definitions:**

**Total Reclaimed Acres** - This includes all the land for which the operator completes required grading, topsoil replacement, erosion and drainage control, and any required planting and seeding that the department finds has resulted or will later result in final reclamation. For large scale gold mines, these acres can be applied toward reclamation acreage credit as provided under SDCL 45-6B-97.

**Reclaimed Surface Mining Disturbed Acres** - Pursuant to SDCL 45-6B-86, this includes all surface mining disturbed lands for which the operator has completed required grading, topsoil replacement, erosion and drainage control, and any required planting and seeding that the department finds will later result in final reclamation.

**Releasable Reclaimed Acres** - This includes all the reclaimed land for which reclamation surety and liability can be released as determined by the department. Such land must meet the minimum reclamation standards pursuant to ARSD 74:29:07. These figures do not include any acreage for which release of surety or liability has been granted by the Board of Minerals and Environment. The releasable reclaimed acres statistics are included in the figures for total reclaimed acres.

**Released Reclaimed Acres** - This includes all the reclaimed land for which reclamation surety and liability has been released by the Board of Minerals and Environment in 2010. This land has met the minimum reclamation standards pursuant to ARSD 74:29:07. The released reclaimed acres statistics are included in the figures for total reclaimed acres.

# APPENDIX 1

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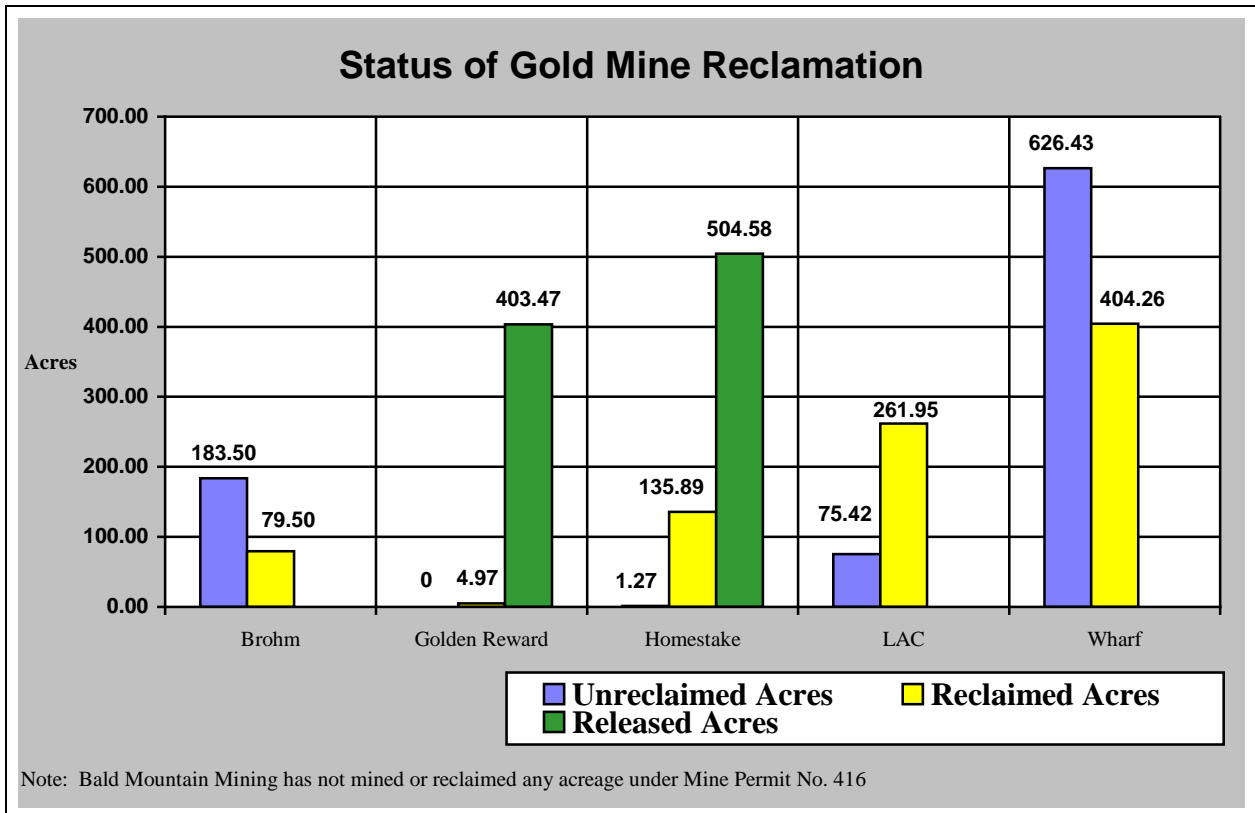


Figure 1A – Unreclaimed, Reclaimed, and Released Acres at Large Scale Surface Gold Mines as of December 31, 2010.

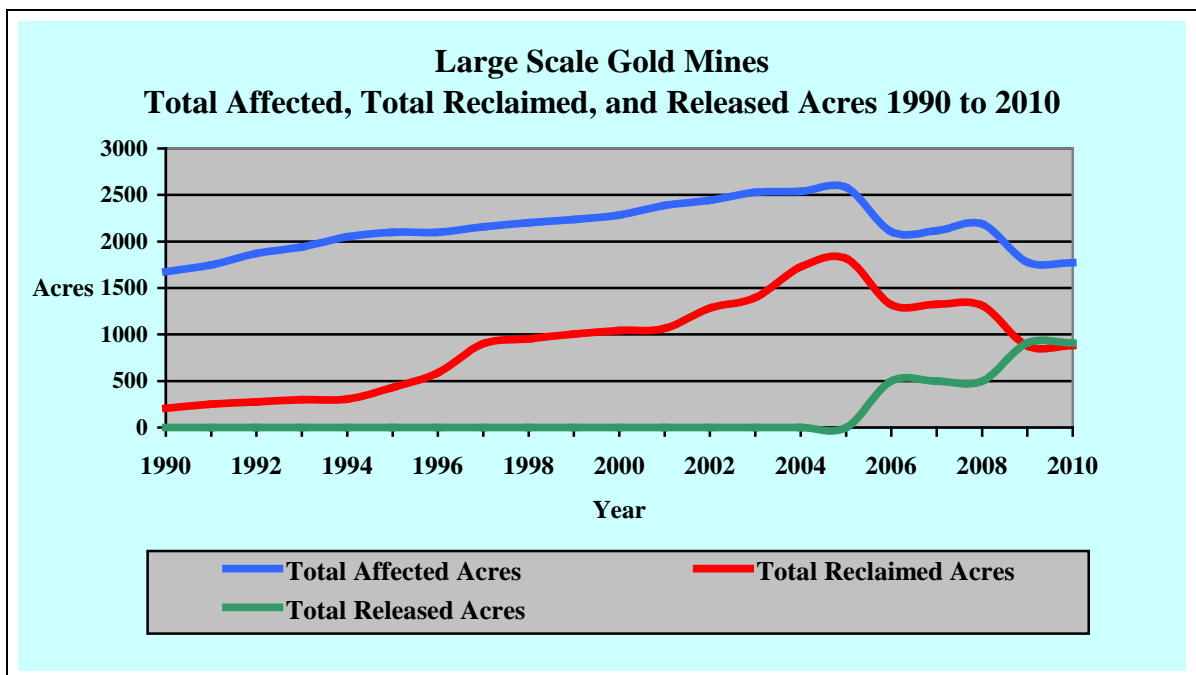


Figure 2A – Total Affected, Total Reclaimed, and Released Acreage at Large Scale Surface Gold Mines from 1990 to 2010.

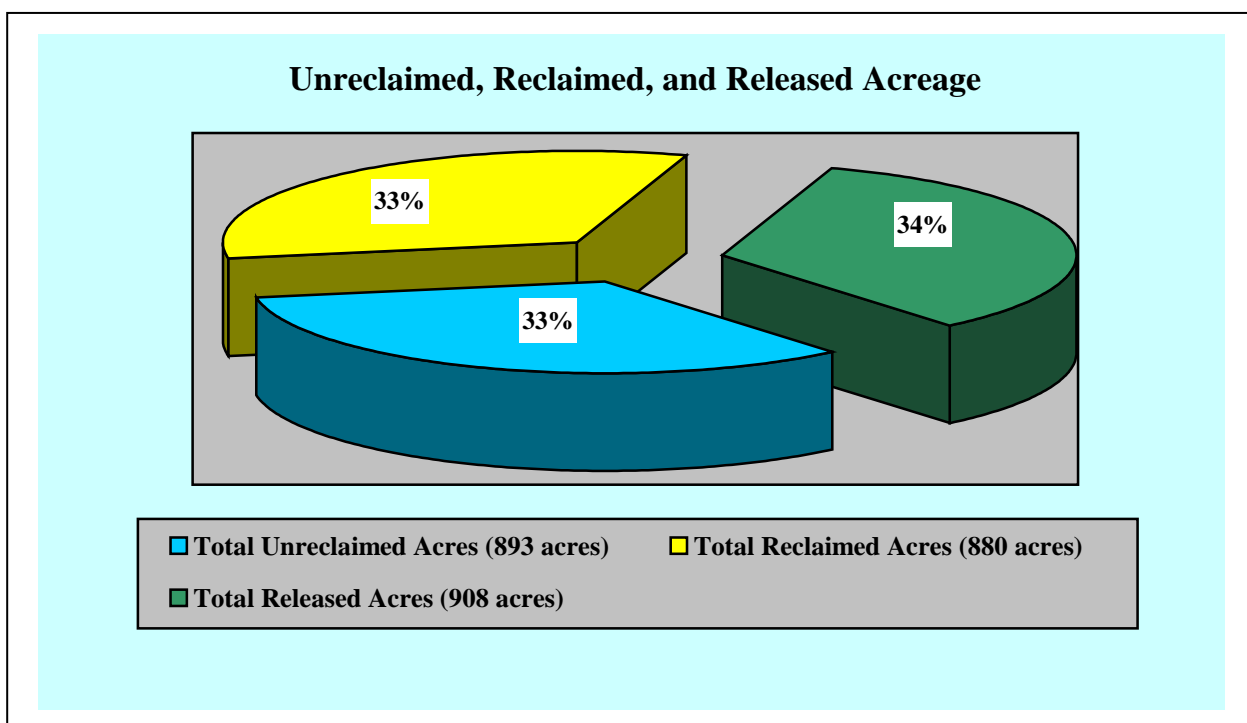


Figure 3A – Comparison of Unreclaimed, Reclaimed, and Released Acreage at Large Scale Surface Gold Mines in 2010.