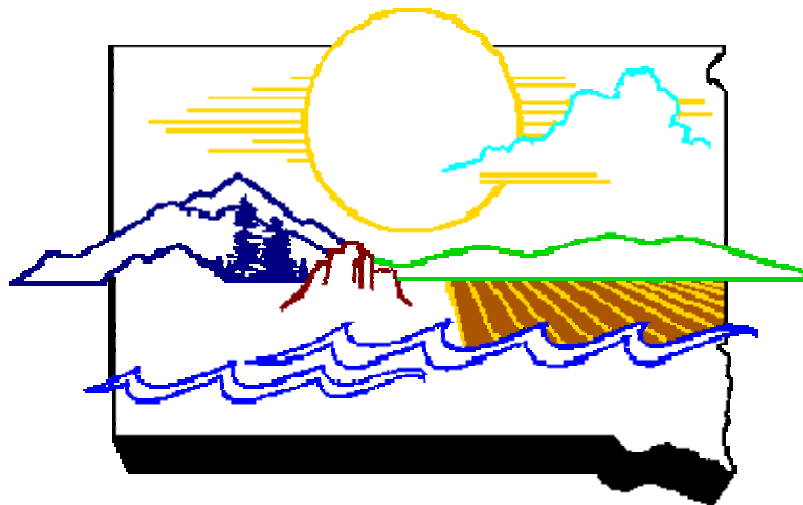


**SUMMARY OF  
THE MINING INDUSTRY IN SOUTH DAKOTA**

**2008**



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

**PREPARED BY  
THE MINERALS AND MINING PROGRAM  
SD DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES  
MAY 2009**

<http://denr.sd.gov>

Summary of the Mining Industry in South Dakota - 2008  
May 2009

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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, 2008. The information in this report is based on annual reports and other information submitted by mining operations permitted under Chapter 45-6B.

## 2008 Summary

At the end of 2008, there were a total of 43 mine permits that covered mining of minerals in the state including gold, bentonite, dimension stone, slate, and mica schist. Heap leach gold mines led all permitted mines in production with 3.4 million tons of ore mined, followed by dimensions stone (218,832 tons), bentonite (114,000 tons) and mica schist (39,499 tons). Gold production and value at heap leach gold mines increased in 2008 due to higher gold prices. Wharf Resources was the only company to report gold production in 2008, with 60,665 ounces produced, an increase from the 57,628 ounces reported in 2007. The average price of gold in 2008 was \$871.96/ounce, yielding a gross value of about \$52.9 million. Other minerals produced in lesser amounts include agricultural lime, iron ore, placer gold ore, shale, and slate.

Powertech (USA), Inc. submitted a request for determination of special, exceptional, critical, or unique lands in August, the first step in applying for a state large scale mine permit for a proposed in situ uranium mine near Edgemont. The company plans to submit its mine permit application sometime in 2009. The Board of Minerals and Environment also approved a second uranium exploration permit for Powertech in November as it was completing drilling under its first permit. The department has developed a web page (<http://denr.sd.gov/des/mm/powertechpage.aspx>) which contains information from Powertech's mine and exploration permit applications.

After the National Science Foundation selected the Homestake underground mine as the site for a deep underground science and engineering laboratory in 2007, crews were busy in 2008 refurbishing the mine infrastructure and pumping out water that has been filling the mine since it was closed. It is expected that water will be pumped down to the 4,850-foot level of the mine by spring 2009 so that physics experiments can begin in an interim lab at that level later in the year. The interim laboratory would allow some experiments to begin while the plans for the laboratory at the 7400 level are being developed.

\S/

Steven M. Pirner  
Secretary

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

**2008**



Photo 1.1 – Deer utilizing wildlife habitat at Golden Reward Mine

# MAJOR 2008 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 E4 Energy, Golden Reward Mining, Homestake Mining, LAC Minerals, and Brohm Mining. Wharf Resources reported 60,665 ounces of gold production in 2008. With the exception of Wharf and E4 Energy, 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 in postclosure in 2006. Golden Reward plans to ask the Board of Minerals and Environment in early 2009 to release about 401 reclaimed acres from reclamation liability and place them under postclosure status.

## Wharf Constructs Fifth Leach Pad

The department approved a technical revision in May 2008, to allow Wharf to construct a fifth leach pad to hold additional ore from the American Eagle Pit. The heap leach gold mine is located four miles west of Lead. The new leach pad was completed in the fall, and Wharf began loading ore onto the pad by the end of the year. About 37 acres of unaffected land was disturbed during construction of the new leach pad. The new leach pad will hold about 5.3 million tons of ore and will allow Wharf to continue mining activities through 2012.



Photo 1.2 – Wharf Pad 5 construction.

## Gilt Edge Update

In 2008, EPA continued acid water treatment at the Gilt Edge Superfund site located 4.5 miles southeast of Lead. A total of 156.6 million gallons were treated and discharged in 2008, and water treatment will continue in 2009. A feasibility study outlining reclamation options for the site was also completed.

## Notices of Violation

In April 2008, Wharf Resources was issued a notice of violation and order by the South Dakota Department of Environment and Natural Resources for violations of its surface water discharge

and mine permits. The violations were a result of biomass sludge discharges from its bio-treatment facility into Annie Creek. Wharf was required to upgrade its water treatment system, evaluate and clean up short stretches of two creeks below the mine, and pay a \$149,300 penalty.

## **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. 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.

LAC constructed a full-scale biological treatment plant in 2008 capable of treating the entire leach pad effluent to discharge standards. The biological treatment system will operate on a year-round basis, ultimately reducing the volume of water in the storage ponds. The holding capacity of the stormwater pond will be reduced, allowing for the reclamation of the existing pond and construction of a smaller pond.

## **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 2008 to convert the mine into a deep underground science and engineering laboratory. Crews refurbished the mine infrastructure and began pumping out water that has been filling the mine since it was closed. It is expected that water will be pumped down to the 4,850-foot level of the mine by Spring 2009 so that physics experiments can begin in an interim lab at that level later in the year. The interim laboratory would allow some experiments to begin while the plans for the laboratory at the 7400 level are being developed. Additional water needs to be pumped and funding from the National Science Foundation needs to be obtained before a deep underground lab can be established at the 7400 foot level of the mine.



## **Technical Revisions Approved by the Department in 2008**

January 28	Wharf Resources – Make modifications to the Ross Valley Bio-Treatment Facility.
February 11	Wharf Resources – Add a 14,930 gallon double-lined diesel storage tank at the Trojan Fuel Station and relocate the fuel station pump table.
February 25	Wharf Resources – Modify the process area piping system.
February 27	Wharf Resources – Relocate the Warbonnet topsoil stockpile to the old Foley-Portland haul road and place topsoil from the American Eagle pit into the relocated stockpile.
February 29	Wharf Resources – Discontinue PM-10 ambient air monitoring.
April 7	Wharf Resources – Revise forage production performance criteria at the Wharf Mine for the post mine land use of woodland grazing.
May 13	Wharf Resources – Construct a new heap leach pad (Pad 5) in the Grenada area and a new pond (Reliance Pond) to store storm event water.
May 19	Wharf Resources – Install a water supply conduit constructed of metal pipe in the Trojan pit as the pit is backfilled.
June 16	Wharf Resources – Construct a lined storage pond on southeast side of the Juno Depository.
July 31	Homestake Mining – Modify the current ground water quality monitoring program.
December 8	Wharf Resources – Construct a road across the reclaimed Ross Valley Depository to reroute the effluent discharge pipe from the Ross Valley Bio-Treatment Plant.



# **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 2008. 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 2008.



Photo 1.3 – Reclaimed Pit Impoundment and Spruce Gulch area at Richmond Hill Mine.

**TABLE 1.1 – AFFECTED MINED LAND ACREAGE**

<b>Permit Number</b>	<b>Operator</b>	<b>Permitted Affected Acres</b>	<b>Acres Affected Year 2008</b>	<b>Total Acres Affected as of Dec. 31, 2008</b>
439 & 462	Brohm Mining Corp.	564.00	0.00	263.00
416	E4 Energy, Inc.	122.00	0.00	0.00
450	Golden Reward Mining Co., LP	493.62	0.00	408.44
332 & 456	Homestake Mining Company	177.50	0.00	137.39
445	LAC Minerals (USA), LLC	439.10	0.00	337.37
356, 434, 435, & 464	Wharf Resources (USA), Inc.	1102.76	71.73	1040.52
<b>TOTALS</b>		2898.98	71.73	2186.72

**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.

**Acres Affected Year 2008** - Previously unaffected acres disturbed from January 1 to December 31, 2008. This acreage is also included in "Total Acres Affected as of Dec. 31, 2008."

**Total Acres Affected as of Dec. 31, 2008** - All land currently affected by the large scale gold and silver operations under permit as of December 31, 2008. 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 2008</b>	<b>Total Surface Mining Disturbed Acres as of Dec. 31, 2008</b>
439 & 462	Brohm Mining Corp.	0.00	202.10
416	E4 Energy, Inc.	0.00	0.00
450	Golden Reward Mining Co., LP	0.00	368.16
332 & 456	Homestake Mining Company	0.00	108.70
445	LAC Minerals (USA), LLC	0.00	202.02
356, 434, 435, & 464	Wharf Resources (USA), Inc.	71.73	934.27
<b>TOTALS</b>		71.73	1815.25

**Definitions:**

**Surface Mining Disturbed Acres Year 2008** - Previously unaffected surface mining land disturbed from January 1 to December 31, 2008. This acreage is also included in "Total Surface Mining Disturbed Acres as of Dec. 31, 2008."

**Total Surface Mining Disturbed Acres as of Dec. 31, 2008** - 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.

**TABLE 1.3 – INTERIM RECLAIMED ACREAGE**

<b>Permit Number</b>	<b>Operator</b>	<b>Interim Reclaimed Acres Year 2008</b>	<b>Total Interim Reclaimed Acres as of Dec. 31, 2008</b>
439 & 462	Brohm Mining Corp.	0.00	0.95
416	E4 Energy, Inc.	0.00	0.00
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	13.99
356, 434, 435, & 464	Wharf Resources (USA), Inc.	13.77	29.08
<b>TOTALS</b>		13.77	44.02

**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 2008** - Acres under interim reclamation from January 1 to December 31, 2008. These acres are also included in "Total Interim Reclaimed Acres."

**Total Interim Reclaimed Acres as of Dec. 31, 2008** - The total number of acres under interim reclamation as of December 31, 2008. Acres redisturbed or now considered as final reclamation are not included in these totals.

<b>TABLE 1.4 – FINAL RECLAIMED ACREAGE FOR YEAR 2008</b>			
<b>Permit Number</b>	<b>Operator</b>	<b>Final Reclaimed Acres Year 2008 that Meet Post-Mine Land Use<sup>1</sup></b>	<b>Final Reclaimed Acres Year 2008 that Do Not Meet Post-Mine Land Use</b>
439 & 462	Brohm Mining Corp.	0.00	0.00
416	E4 Energy, Inc.	0.00	0.00
450	Golden Reward Mining Co., LP	5.23	0.00
332 & 456	Homestake Mining Company	0.00	0.00
445	LAC Minerals (USA), LLC	0.00	0.00
356, 434, 435, & 464	Wharf Resources (USA), Inc.	0.00	12.37
<b>TOTALS</b>		5.23	12.37

<sup>1</sup>The final reclaimed acres during the past year 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 Year 2008 That Meet Post-Mine Land Use** – Affected land reclaimed prior to 2008, previously considered as not meeting the post-mine land use, that met the post-mine land use in 2008. 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 2008 That Do Not Meet Post-Mine Land Use** - Affected land reclaimed between January 1 and December 31, 2008, 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, 2008**

<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>
439 & 462	Brohm Mining Corp.	0.00	79.50	0.00
416	E4 Energy, Inc.	0.00	0.00	0.00
450	Golden Reward Mining Co., LP	406.03	2.41	0.00
332 & 456	Homestake Mining Company	13.08	113.53	499.74
445	LAC Minerals (USA), LLC	241.98	19.97	0.00
356, 434, 435, & 464	Wharf Resources (USA), Inc.	300.91	139.92	0.00
<b>TOTALS</b>		962.00	355.33	499.74

<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, 2008, 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, 2008, 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, 2008**

<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>
439 & 462	Brohm Mining Corp.	65.00	73.20
416	E4 Energy, Inc.	0.00	0.00
450	Golden Reward Mining Co., LP	368.16	408.44
332 & 456	Homestake Mining Company	104.46	126.61
445	LAC Minerals (USA), LLC	171.63	261.95
356, 434, 435, & 464	Wharf Resources (USA), Inc.	431.20	440.83
<b>TOTALS</b>		<b>1140.45</b>	<b>1311.03</b>

**Definitions:**

**Surface Mined Acres Reclaimed** - Total amount of surface mining disturbed acres under final reclamation as of December 31, 2008. 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, 2008, 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 not included.



**TABLE 1.7 - ORE AND WASTE ROCK PRODUCTION  
January 1 to December 31, 2008**

<b>Permit Number</b>	<b>Operator</b>	<b>Tons of Ore Mined Year 2008</b>	<b>Tons of Ore Processed Year 2008</b>	<b>Tons of Waste Rock and Overburden Mined Year 2008</b>
439 & 462	Brohm Mining Corp.	0	0	0
416	E4 Energy, Inc.	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.	3,399,647	3,247,081	13,303,529
<b>TOTALS</b>		3,399,647	3,247,081	13,303,529

**TABLE 1.8 – GOLD AND SILVER PRODUCTION  
January 1 to December 31, 2008**

<b>Permit Number</b>	<b>Operator</b>	<b>Ounces of Gold Produced Year 2008</b>	<b>Ounces of Silver Produced Year 2008</b>
439 & 462	Brohm Mining Corp.	0	0
416	E4 Energy, Inc.	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.	60,665	226,000
<b>TOTALS</b>		60,665	226,000
<b>ESTIMATED VALUE<sup>1</sup></b>		\$52,897,453	\$3,387,740

<sup>1</sup>Based on 2008 average gold price of \$871.96/oz and 2008 average silver price of \$14.99/oz.

**TABLE 1.9 – WATER AND CYANIDE USE  
January 1 to December 31, 2008**

<b>Permit Number</b>	<b>Operator</b>	<b>Gallons Ground Water Withdrawn Year 2008</b>	<b>Gallons Surface Water Withdrawn Year 2008</b>	<b>Pounds of Cyanide Used Year 2008</b>
439 & 462	Brohm Mining Corp.	0	0	0
416	E4 Energy, Inc.	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	2,126,000	0	0
356, 434, 435, & 462	Wharf Resources (USA), Inc.	51,414,400	82,249,971	812,065
<b>TOTALS</b>		53,640,400	82,249,971	812,065

<b>TABLE 1.10 – BOND AMOUNTS FOR LARGE SCALE GOLD MINES</b>				
<b>As of December 31, 2008</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>
439 & 462	Brohm Mining Corp.	\$6,707,606 <sup>3</sup>	\$0	\$0
416	E4 Energy, Inc.	\$0 <sup>4</sup>	\$0	\$0
450	Golden Reward Mining Co., LP	\$1,549,000 <sup>5</sup>	\$132,000 <sup>5</sup>	\$0
332 & 456	Homestake Mining (Open Cut)	\$1,246,000	\$40,184,630	\$0
445	LAC Minerals (USA), LLC	\$10,700,000 <sup>6</sup>	\$0	\$0
356, 434, 435, & 464	Wharf Resources (USA), Inc.	\$12,331,422 <sup>6</sup>	\$8,120,700 <sup>6</sup>	\$500,000

<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. Golden Reward submitted a postclosure bond as per agreement for drainage control work in the West Liberty Pit.

<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 the maximum \$500,000 bond allowed under state mining law. Since the maximum amount was increased to \$1 million during the 2009 legislative session, Wharf’s financial assurance will be recalculated after 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, 2008.

<sup>4</sup> As part of the mine permit transfer from E4 Energy, Bald Mountain Mining Co. will be required to submit a reclamation bond in the amount of \$13,362 in Spring 2009 to cover costs to plug seven monitoring wells.

<sup>5</sup> The department will update the reclamation and postclosure bonds for Golden Reward in February 2009, as part of its release of liability petition and postclosure plan which have been submitted.

<sup>6</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 2009.

# **OPERATIONAL PLANS FOR 2009**

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## **Brohm Mining Corp.**

EPA will continue water treatment at the Superfund site located 4.5 miles southeast of Lead in 2009. Routine operation and maintenance activities will continue through the year. The remaining reclamation activities are anticipated to begin when federal Superfund money becomes available.

## **E4 Energy, Inc.**

E4 Energy will be transferring Large Scale Mine Permit No. 416 to the Bald Mountain Mining Co. in Spring 2009. The permit covers a site located about 5 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. The permit was transferred to Minerva Explorations in 1991 which was eventually taken over by the present permit holder E4 Energy. After the permit is transferred, Bald Mountain Mining hopes to mine the property in the future.

## **Golden Reward Mining Company, LP**

In January 2009, Golden Reward's release of liability petition and postclosure plan for its mine site two miles southwest of Lead will be presented to the Board of Minerals and Environment. The company will ask the board to release liability for approximately 401 reclaimed acres at the mine site and place the acres under postclosure care for 30 years.

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

Homestake will continue reclamation and closure activities in 2009 at its Lead Open Cut surface mine. Postclosure monitoring, maintenance, and water treatment activities will continue in the released areas. The company plans to remove a portion of the Deadwood Creek crossing that was part of the haul road to the Sawpit Waste Rock Facility. A buttress will also be constructed in the Bobtail Gulch portion of the East Waste Rock Depository to mitigate some stability issues.

## **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 will also be working on a release of

reclamation liability petition, updated reclamation plan for unreclaimed areas of the mine site, and a postclosure plan, which may be submitted to the department sometime in 2010.

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

Wharf will continue to develop the American Eagle pit in 2009 at its heap leach gold mine located four miles west of Lead. Waste rock from the pit will be used to backfill the Trojan and Deep Portland pits. Crushed ore will be loaded onto Leach Pads 3 and 5, with Pad 3 being off-loaded to the Polo Spent Ore Depository by the middle of the year. Wharf will also install additional monitoring wells in the Process area and expand in situ treatment to the North Foley and Polo Spent Ore Depositories.



Photo 1.4 – View of Homestake’s reclaimed East Waste Rock Depository from the Sawpit Depository.

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

**2008**



Photo 2.1 – Placer mine area in Foster Gulch reclaimed by Black Hills Prospecting Club.



# **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 and as defined in section 45-6B-83.1 for the period January 1 to December 31, 2008. This does not include acreages for mining operations regulated under SDCL Chapter 45-6 (505 licensed mine operators and 1,894 active licensed sites), mineral exploration regulated under SDCL Chapter 45-6C (11 operators and 26 permits, excluding oil and gas), or uranium exploration regulated under SDCL Chapter 45-6D (1 operator, 2 permits.) Sources for this information include permit applications, operating and reclamation plans, annual reports, department inspections, and operator information.

## **New Mine Permit Applications**

No new mine permits were granted in 2008. However, two mine permit applications were submitted to the department. American Colloid Company submitted two large scale mine permit applications for bentonite 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. Department action on the permit applications is anticipated sometime in 2009.



Photo 2.2 – Shear/Clarkson East area.



Photo 2.3 – Shear/Clarkson West area.

## **Permit Amendments**

Pacer Corporation submitted an application in September 2008, 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 2009.

## Special or Unique Land Determinations

The department made five special, exceptional, critical, or unique lands determinations for proposed mining operations in 2008. This is the first step in the process of obtaining a state mine permit. In January, American Colloid submitted requests for determination for two proposed large scale bentonite mining operations about seven to ten miles northwest of Belle Fourche in the Shear/Clarkson area. In April 2008, the department determined that both areas were not eligible for inclusion on the preliminary list of special, exceptional, critical, or unique lands. American Colloid has since submitted large scale mine permit applications for the Shear/Clarkson area (see New Permits section).

Powertech (USA), Inc. submitted a request for determination in August 2008, for a proposed in situ uranium mine about 13 miles northwest of Edgemont. The in situ mining process involves injecting ground water fortified with carbon dioxide and oxygen into an aquifer containing the uranium. The uranium is then oxidized, dissolved, and pumped out of the aquifer to a central processing facility where the water will be treated to remove the uranium. On December 31, 2008, the department determined that the area was not eligible for inclusion on the preliminary list of special, exceptional, critical, or unique lands. However, the Oglala Sioux Tribe, Defenders of the Black Hills, and two individuals filed petitions to have the area declared special, exceptional, critical, and unique. The Board of Minerals and Environment will hold a hearing in February 2009 to consider the petitions and determine whether the area should be placed on the preliminary list.



Photo 2.4 – Proposed Burdock mining area.



Photo 2.5 – Proposed Dewey mining area.

The department also received two requests for determination for proposed small scale placer mining operations. In October 2007, B4Time, LLC submitted a request for determination for a proposed placer mining operation along Crooked Creek about 3.5 miles southwest of Mystic. B4 Time plans to use a small bobcat, backhoe, and dump truck to mine material and process it in a trommel sluice.

On April 21, 2008, the department determined the proposed mining area was not eligible for inclusion on the preliminary list of special, exceptional, critical, or unique lands. In September 2008, Douglas Ottema submitted a request for determination for a proposed placer mining operation about 0.5 miles east of Tinton. Mr. Ottema plans to use a dozer and excavator to mine material from several pits and process it with a gravity wash plant. On May 27, 2008, the department determined that the proposed mining area was not eligible for inclusion on the preliminary list of special, exceptional, critical, or unique lands.

## **Powertech Uranium Exploration Update**

Powertech (USA), Inc. completed drilling under its initial 155-hole uranium exploration permit issued in 2007 along the southwest fringe of the Black Hills. The company drilled 20 exploration holes under the permit in Custer and Fall River Counties in 2008 and plans to close the permit in 2009. Most of the holes were plugged in accordance with state plugging regulations. The holes that were not plugged were developed into monitoring and test wells.

The company also submitted an application for a second 30-hole uranium exploration permit for the same area. This is only the second application the department has received for a uranium exploration operation since the uranium exploration statutes (SDCL 45-6D) were adopted in the early 1980's. Holes will range in depth from 300 to 800 feet. The exploration project will consist of condemnation drilling to ensure that planned mine facilities will not be located over ore zones. On November 19, 2008, the Board of Minerals and Environment unanimously approved the application.

The department has developed a web page for Powertech's mine and exploration 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.

## **Revisions to In Situ Leach Mining Rules Adopted by Board**

After being initially adopted in 2007 by the Board of Minerals and Environment, revisions were made to the in situ leach mining regulations in 2008 to clarify timing and application completeness issues. Revisions were also made to the state's Underground Injection Control (UIC) regulations to cover in situ leach mining operations and to the regulations for capping, sealing, and plugging uranium and other mineral exploration test holes.

<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	16	16	11	43
Permitted Affected Acres	562	2,851	2,899	6,312
Total Affected Acres	43	1,684	2,187	3,914
Surface Mining Disturbed Lands Acres	29	1,339	1,815	3,183

<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	23	934	1,311	2,268
Reclaimed Surface Mining Disturbed Acres	13	867	1,140	2,020
Releasable Reclaimed Acres	13	291	962	1,266
Released Reclaimed Acres in 2008	0	0	0	0

<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 2008. 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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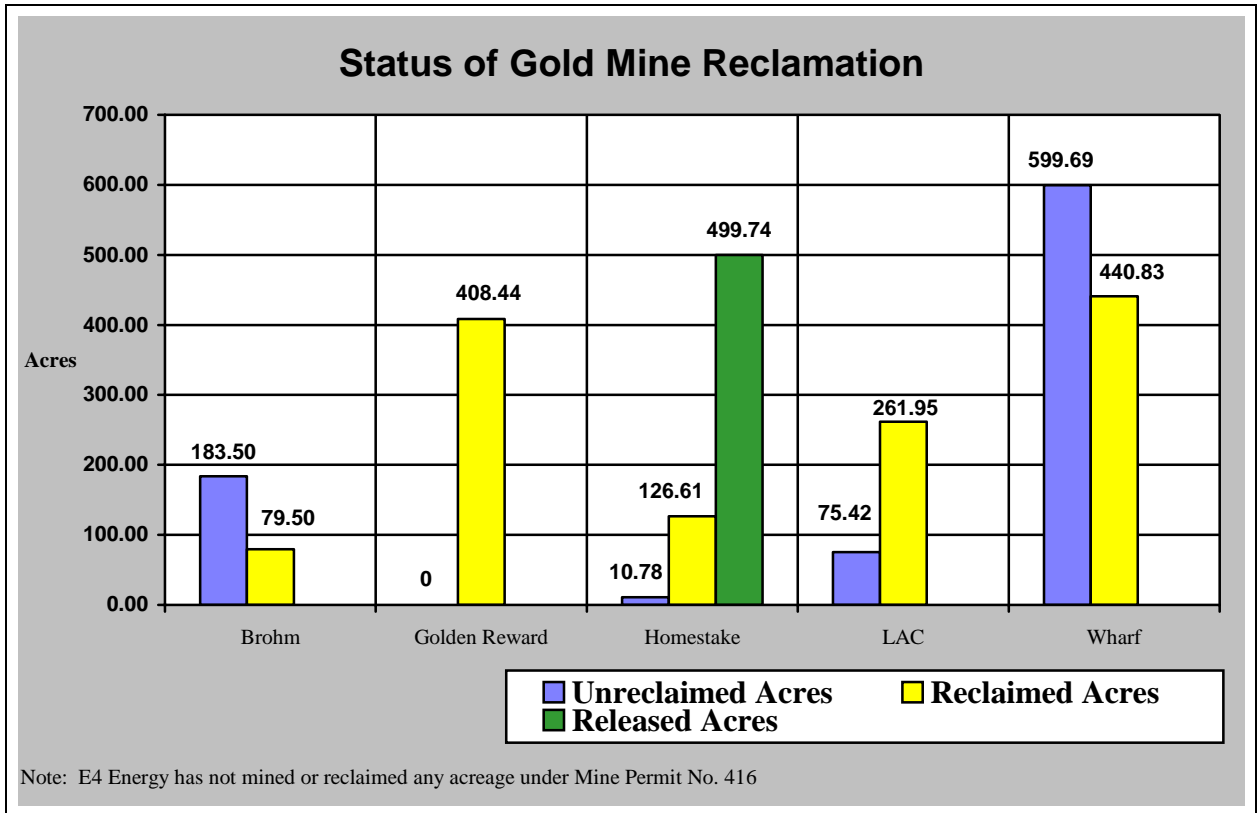


Figure 1A – Unreclaimed, Reclaimed, and Released Acres at Large Scale Surface Gold Mines as of December 31, 2008.

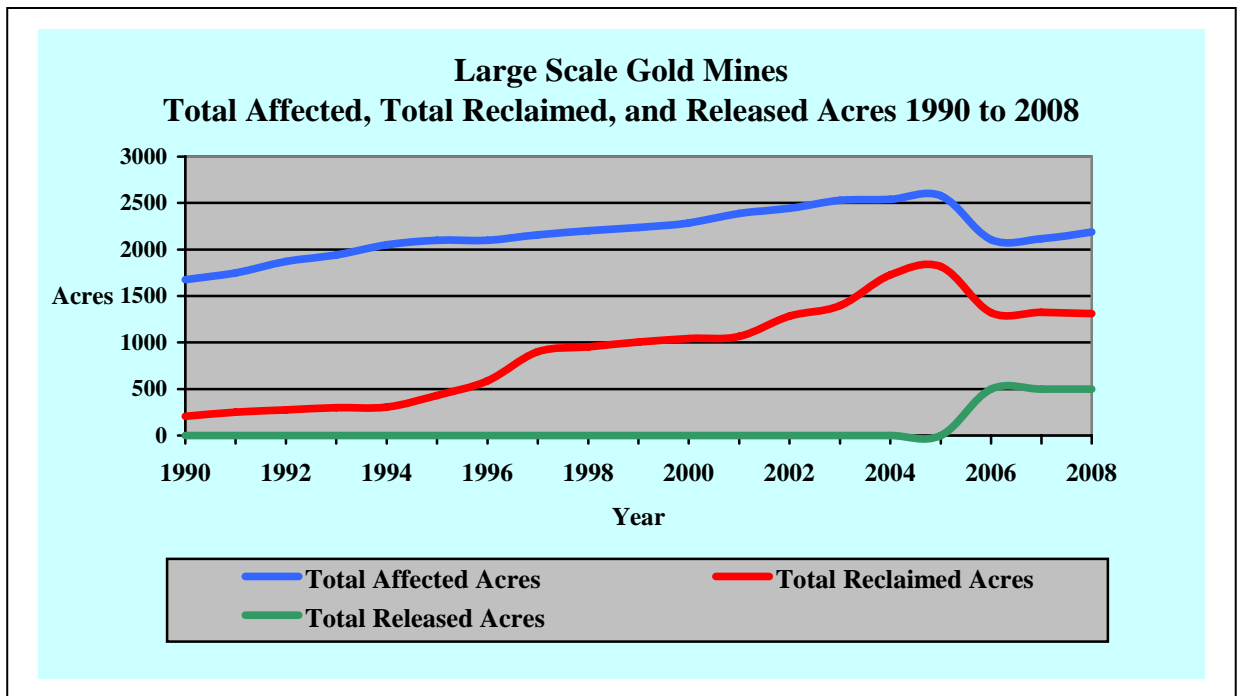


Figure 2A – Total Affected, Total Reclaimed, and Released Acreage at Large Scale Surface Gold Mines from 1990 to 2008.



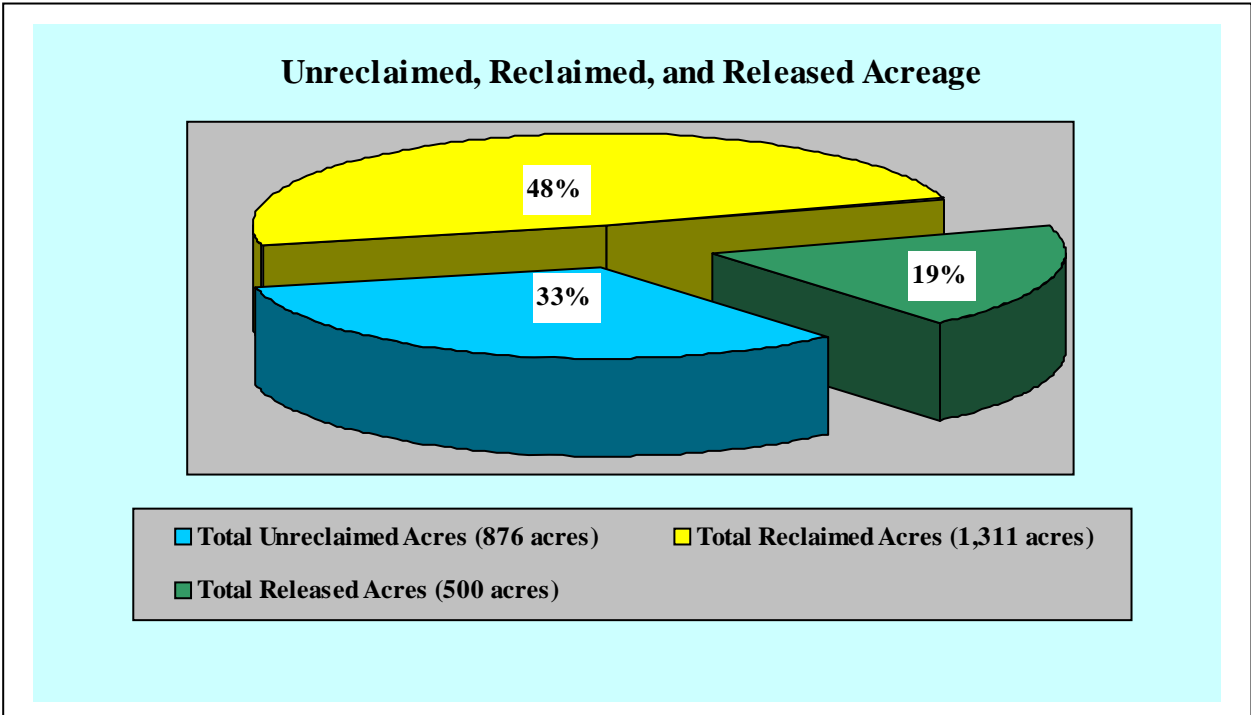


Figure 3A – Comparison of Unreclaimed, Reclaimed, and Released Acreage at Large Scale Surface Gold Mines in 2008.