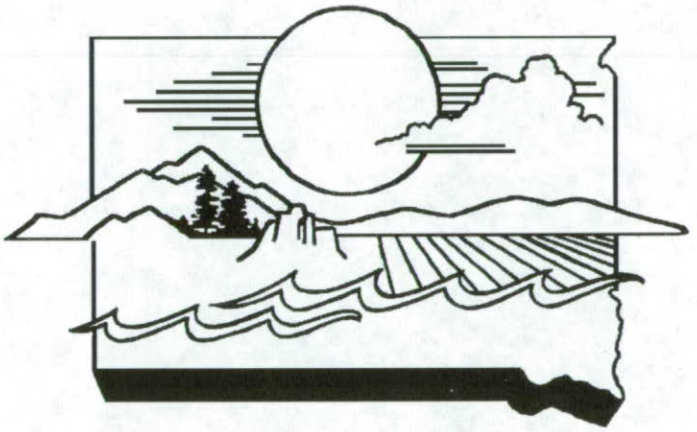
SUMMARY OF THE LARGE SCALE GOLD SURFACE MINING INDUSTRY IN THE BLACK HILLS

1994



Protecting South Dakota's Tomorrow... Today

PREPARED BY THE OFFICE OF MINERALS AND MINING
S.D. DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
MARCH 1995

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INTRODUCTION

Pursuant to SDCL 45-6B-93, the Department of Environment and Natural Resources is required to publish an annual summary of the status of the large scale gold and silver surface mining industry in the Black Hills of South Dakota. This summary, which covers the period from January 1 to December 31, 1994, is based on annual reports submitted by permitted large scale gold and silver mine operators.

Summary

In 1994, LAC Minerals made significant progress in controlling acid rock drainage. At the Richmond Hill Mine, the company removed about 90 percent of the waste rock from its waste rock depository in Spruce Gulch. This acid-generating rock was placed in an impoundment in the Richmond Hill Pit that is being capped with a low-permeability soil liner. LAC Minerals plans to complete construction of the impoundment, including final seeding by mid-1995.

Several large scale gold companies conducted abandoned mine reclamation in 1994. Brohm completed removal of the old Gilt Edge tailings and removed tailings from the Strawberry Creek channel. Homestake reclaimed the Wasp Number 2 tailings and the Double Rainbow Mine, and began reclamation on the waste rock dump below the Yates Shaft. Golden Reward completed reclamation of the Lundberg, Dorr, and Wilson, and the Horseshoe Mill tailings. Wharf completed seeding of the Bald Mountain tailings impoundments.

The large scale gold mines made progress in 1995 toward reclaiming 500 acres of surface mining disturbed land that must be completed by September 1, 1997. Approximately 243 of the 1,571 acres of surface mine disturbed land have been reclaimed to date as defined in SDCL 45-6B-90. Also, about 260 of the 2,050 acres of affected land have been reclaimed and can be considered for reclamation credit as defined in SDCL 45-6B-97.

Although some previously reclaimed areas were redisturbed this year, there are several large reclamation projects started in 1994 that will either be continued or completed in 1995. Homestake will continue reclaiming the East Waste Rock Disposal Facility. Golden Reward will complete reclamation of the backfilled Pet Hill Pit. Wharf Resources will reclaim part of the Ross Valley Spent Ore Depository. LAC Minerals will complete the waste rock impoundment and reclaim the former waste rock dump area this year.

\S/

Steven M. Pirner
Acting Secretary

MAJOR EVENTS IN 1994

Acid Mine Drainage Mitigation

LAC Minerals made substantial progress in carrying out its acid mine drainage mitigation plan in 1994. The Board of Minerals and Environment approved LAC's permit amendment application that contained the mitigation plan on February 16, 1994. Shortly after this approval, LAC Minerals began moving reactive waste rock from the waste rock dump to the pit impoundment. During this time, LAC Minerals also completed plans and specifications for design of the waste rock impoundment and capping system. Figure 1 shows a cross-section of the cap.

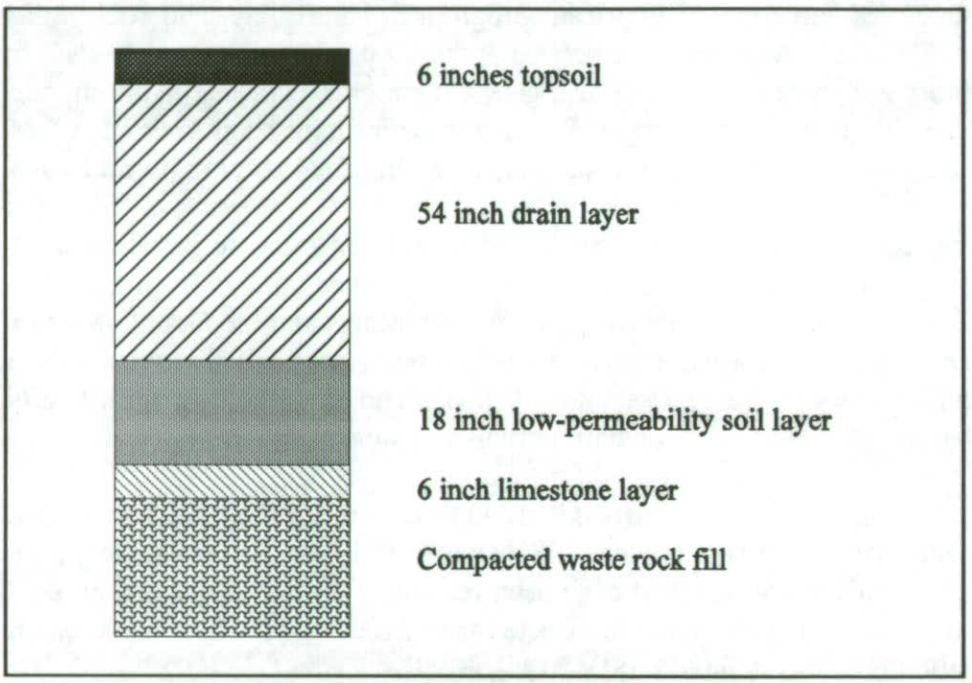


Figure 1 - Cross Section of LAC Impoundment Cap

By October, about 90 percent of the waste rock was removed from the waste dump. LAC Minerals placed a low-permeability soil liner over about 50 percent of the impoundment. The company also placed topsoil on the lowest lifts in the North Gulch and West Thumb areas of the impoundment. This completed the cap in these areas. Construction activities were suspended at this point due to the onset of winter weather. LAC Minerals then sprayed Entec, a biodegradable sealant, over the exposed areas of the dump to reduce infiltration through the impoundment during the winter.

Construction on the pit impoundment will resume during the spring of 1995. LAC Minerals plans to complete construction by late summer 1995.

Although pit impoundment construction activities were suspended, LAC Minerals continued with acid mine drainage mitigation in other areas. Most of the acid generating spent ore has been

removed from Pad 3 and placed in the pit impoundment. During the winter, LAC Minerals blended limestone with the remaining spent ore to neutralize any acid generated from reactive sulfides. Limestone is also being mixed into the soil in the former waste dump area to neutralize potential acidity from acid salt contamination.

Brohm submitted additional information in 1994 to complete its acid mine drainage mitigation permit amendment application. The application was considered complete and filed on November 28, 1994, and the Board of Minerals and Environment approved the permit amendment on March 16, 1995. The plan involves regrading and capping the Ruby Waste Dump, partially backfilling the Sunday and Dakota Maid Pits, capping the Sunday Pit backfill, regrading and capping the leach pad area, and actively treating any acid mine drainage.

Abandoned Mine Reclamation

Several large scale gold mining companies began and/or completed abandoned mine reclamation projects in 1994. Brohm Mining completed the removal of the old Gilt Edge Mine tailings located on its mine site and reclaimed 5.4 acres of land in the tailings area. The tailings were mixed with fly ash from the Ben French Power Plant in Rapid City to buffer any acid generation. They were then deposited on the upper benches of the Sunday and Dakota Maid Pits. These tailings will be capped in the future. A leak detection system was also placed in the tailings to monitor any leachate and to check the success of the alkaline addition and cap integrity.

Brohm also removed tailings from 0.3 acres of the Strawberry Creek channel below its mine site. During this project, an acid mine seep was discovered coming from an old underground working, the Langley Adit. Brohm contained the seep, and with the tailings removal, water quality in Strawberry Creek has greatly improved. Brohm also reclaimed 2.4 acres of abandoned mine land at the old Koppel Mill in Galena, South Dakota.

Homestake Mining reclaimed about 12 acres at the Wasp Number 2 tailings area (see Photo 1), one mile south of Lead. The area was regraded to a 2.5:1 (H:V) slope and stabilized. Since no topsoil is available for reclamation, Homestake seeded, fertilized, and mulched directly on the regraded tailings.

Homestake also began reclaiming the waste rock dump located immediately to the south of its Yates Shaft in Lead. Approximately 20 acres are under reclamation at this site. Homestake plans to complete regrading activities in 1995 that will reduce the slope of the waste rock dump. After grading has been completed, topsoil will be applied, and the area will be seeded.

Also, Homestake reclaimed about one acre at the Double Rainbow Mine near Galena along Bear Butte Creek in 1994. The company removed approximately 16,000 tons of stockpiled sulfide rock from the site and plugged a 261-foot deep shaft at the mine. Since Homestake plugged the shaft, drainage from the shaft into Bear Butte Creek has been eliminated. Homestake plans to regrade the area, amend soils with limestone, and reseed the amended soils.

Photo 1 - Regraded Wasp # 2 tailings

The Golden Reward Mining Company completed reclamation work on the Lundberg, Dorr, and Wilson tailings along Fantail Creek and the Horseshoe Mill tailings in Stewart Gulch. Both sites are on Golden Reward property at the base of Terry Peak. Approximately 20 acres were reclaimed during these two projects. Since these tailings are located along intermittent streams, French drains have been installed to carry water during low flow. During high flow, water is carried along a surface channel. Golden Reward placed approximately two feet of waste rock from the operation over the French drain system. Topsoil was selectively placed over some waste rock, and both areas were seeded.

Wharf Resources also scarified, reseeded, and fertilized approximately 70 acres of the Bald Mountain tailings impoundments in 1994. These tailings are located near Trojan, South Dakota. The tailings were covered with waste rock, regraded, and stabilized in place in 1993.

New Permits

The Department issued no new permits for any large scale gold and silver mines in 1994. However, LAC Minerals did submit a large scale permit application in December 1994 to mine clay and limestone north of its current permit boundary. These materials will be used in the acid mine drainage reclamation project covered under Large Scale Permit No. 445. The application was considered complete on January 4, 1995, and the permit was issued on February 23, 1995.

Wharf Resources originally planned to submit a permit application for its proposed Clinton Project north and east of the present Annie Creek mine in 1993. However, submission of the application has been delayed until sometime in 1995.

Permit Amendments

Brohm Mining submitted supplemental information to complete its permit amendment application. The amendment application was originally submitted in June 1993, and outlined a long-term acid mine drainage mitigation plan.

Brohm plans to regrade and cap about twelve million tons of waste rock and spent ore in its "valley fill" waste rock dump located in the headwaters of Ruby Gulch, an intermittent tributary to Bear Butte Creek. The Dakota Maid and Sunday Pits will be partially backfilled, and caps will be installed over the backfilled pits. The leach pad will be regraded, and a cap will be placed over it. The caps are being constructed to reduce the infiltration of water and air into the reactive sulfide rocks. A water treatment plant will ensure any acid drainage is brought up to water quality standards before it is discharged. Brohm will be required to operate the treatment plant as long as contaminated water flowing from the reclaimed facility requires treatment. This treatment could continue for many decades.

The amendment application was considered procedurally complete on November 28, 1994. The Board of Minerals and Environment approved the permit amendment on March 16, 1995. Many technical details of the reclamation plan remain incomplete, but they may be completed and approved by late summer 1995.

Wharf Resources submitted a permit amendment application on December 30, 1994, that would allow them to stockpile and process ore and waste rock material generated from the Terry Peak Road (State Highway 473) Improvement Project near the Wharf Mine. A small ridge that creates a sight hazard will be removed between the Wharf Mine access road and the Terry Peak Lodge Road. This highway project will generate 400,000 tons of potential or probable ore, and 900,000 tons of waste rock. This waste rock will be backfilled into the Foley Ridge Pit at the Wharf Mine.

In the area of the Terry Peak Road project, there are many old underground workings (stopes) that are hazardous to construction crews. Since Wharf has expertise in working with stopes, the South Dakota Department of Transportation will have Wharf do the work in the stope area. These stopes need to be backfilled before the new road is constructed. Wharf will take all ore and waste rock to their mine. Waste rock will be used to backfill the open stopes and bring the road to the final grade.

Construction activities for this road project will begin in May 1995 or upon approval of the amendment application and should be completed by September 1995.

Major Technical Revisions Conditionally Approved by The Department

January 31	Homestake Mining - Sediment Control Pond Design for the Haul Road Crossing at Deadwood Creek.

February 23	LAC Minerals - Use a water treatment plant for contaminant removal of stormwater and waste dump leachate before discharge.
March 11	Homestake Mining - Construct a rock filled buttress to enhance the stability of the south pit wall of the Open Cut.
March 25	LAC Minerals - Raise berm on east side of Stormwater Pond to increase the capacity of the pond.
May 24	Brohm - Use ProMac, a bactericide, on the Ruby Gulch Waste Dump to control the growth of acid producing bacteria.
June 27	Golden Reward - Add an additional 1.77 acres of contiguous affected land to accommodate the Southwest Liberty haul road.
June 27	Brohm - Test the bio-oxidation process on a 5,000-ton pile of sulfide ore.
August 11	LAC Minerals - Reduce soil liner thickness in the cap system of the Richmond Hill Waste Impoundment.
August 15	Golden Reward - Add an additional 1.95 acres of contiguous affected land for the Fantail/South Bonanza backfill haul road.
September 9	Homestake Mining - Allow Homestake to continue deposition of waste rock on the East Waste Rock Disposal Facility.
September 30	Golden Reward - Add an additional 5.35 acres of contiguous affected land for the expansion of the West Liberty Pit.
October 17	Homestake Mining - Allow Homestake to extend the East Waste Rock Disposal Facility to the east and disturb 14 additional acres. (Note: Homestake decided in early 1995 not to do this project).
November 3	Wharf Resources - Allow Wharf to partially line the Contingency pond.

Special, Exceptional, Critical, or Unique Land Determinations

The Department received no Requests for Determination of Special, Exceptional, Critical, or Unique Lands for potential large scale gold mines in 1994. However, the Department did make a determination on LAC Mineral's proposed clay and limestone mine just to the north of its current Richmond Hill Mine. LAC Minerals submitted a Request for Determination for this large scale operation on February 2, 1994. On April 18, 1994, the Department determined that the area did not have special, exceptional, critical, or unique lands characteristics. The area was not placed on the preliminary list.

Also, the Department received no petitions in 1994 to add lands to the preliminary list of special, exceptional, critical, or unique lands.

Notices of Violation

The Department issued no Notices of Violation to any large scale gold and silver operation in 1994.

Fossils Found at Richmond Hill Mine

In mid-October, LAC Minerals uncovered a small cave (or sinkhole) in its limestone quarry. Several Pleistocene or Pliocene fossils were found in the cave. LAC Minerals invited officials from the South Dakota Department of Education and Cultural Affairs and the South Dakota School of Mines to inspect the fossils. They found a camel leg bone, several coyote skulls, and many mice, squirrels, and other small animal bones. This appears to be a major find for this area of the Black Hills. Archaeologists will return to the site in 1995 to further study the fossils.

October Rains

From October 5 through 7, unusually heavy rains soaked the northern Black Hills. These heavy rains caused problems at the two large scale gold mines involved in acid mine drainage mitigation.

A retention pond at the base of the waste rock dump at the Richmond Hill Mine overflowed. This pond contained acid drainage from the waste rock dump and was designed to hold a 10-year, 24-hour storm event (five inches of rains in 24 hours). However, over seven inches of rain fell in a 24-hour period, the equivalent of about a 300-year storm. To further complicate matters, a loss of power to the site prevented the pumping of water to another pond. Contaminated water flowed down Spruce Gulch and into Squaw Creek.

Heavy rains also led to the discovery of an acidic seep at the Gilt Edge Mine. This seep originated from the Langley Adit near the Sunday Pit. Acidic water from the seep flowed down Strawberry Creek into Bear Butte Creek. Discolored water was present from just below the seep in Strawberry Creek downstream to Sturgis. Brohm Mining took measures to contain this water. After the seep was contained, water quality in Strawberry and Bear Butte Creeks dramatically improved. The origin of the contaminated water that flowed from the adit is currently being investigated.

Homestake's Highway 14A Tunnel Stabilization Project

In August 1994, cracks were noticed along the top portion of the tunnel constructed over Highway 14A for Homestake Mining's haul road to the Sawpit Waste Rock Depository. Also, small pieces of cement fell from the top of the tunnel creating a safety hazard. Homestake immediately closed the tunnel until repairs were completed. A bypass was constructed to the north of the tunnel that closed the haul road to Sawpit Gulch for several months.

Upon further investigation, Homestake discovered that differential settling was occurring around the foundation of the tunnel. Before they could make repairs to the tunnel, the foundation had to be stabilized. Homestake applied a high pressure grout to compact construction fill material on the north side of the tunnel. The foundation was then stabilized, and repairs to the tunnel began. Homestake repaired the tunnel by installing a concrete tension beam along the top of the tunnel. Repairs were completed in late November 1994.

Since Homestake could not haul waste rock to the Sawpit Depository, they resumed waste rock disposal on top of the East Waste Rock Depository. Once repairs to the tunnel were completed, the bypass was removed and the haul road to the Sawpit Depository was reconstructed.

Pet Hill Reclamation Project

The Golden Reward Mining Company started work in the Pet Hill Pit in 1989. Upon completion of mining, the pit was backfilled. In 1994, the backfilled pit was regraded to approximately the pre-mining contours. Topsoil was then placed over the regraded hill. Essentially, Golden Reward reconstructed Pet Hill. Seeding will be completed in 1995, and tree planting will be completed in 1996.

Photo 2 - Pet Hill Prior to Mining

Photo 3 - Pet Hill Pit During Mining

Photo 4 - Pet Hill Reconstructed

The Lundberg, Dorr, and Wilson tailings reclamation project that was mentioned earlier in this report is at the bottom of the Pet Hill reclaimed area. These two reclamation projects blend into one large reclamation project.

ACREAGE AND PRODUCTION TABLES

The following tables were developed by compiling information from annual reports and supplemental information submitted to the Department by the large scale gold mines. The Department also used inspection reports and other records in completing these tables.

Since the annual reports for these operations were required to be submitted by January 1, 1995, some production information in those reports was estimated for the month of December. This information has since been updated, and this updated information is included in these tables.

The graph in Appendix I shows a comparison of reclaimed versus affected acreage for each large scale gold mine company.

TABLE 1 - PERMITTED AFFECTED AND AFFECTED ACREAGE				
Permit Number	**Operator**	**Permitted Affected Acres**	**Additional Acres Affected Past Year**	**Total Acres Affected as of Dec. 31, 1994**
439	Brohm Mining Corp.	406.00	0.00	184.90
208	Dakota Placers, Inc.	81.00	0.00	12.00
450	Golden Reward Mining Co.,L.P.	486.42	6.93	409.18
332 & 456	Homestake Mining Company	665.40	71.50	526.90
445	LAC Minerals (USA), Inc.	431.80	4.55	309.25
416	Minerva Explorations, Inc.	122.00	0.00	0.00
356, 434, & 435	Wharf Resources	685.62	25.85	607.70
TOTALS		2,878.24	108.83	2,049.93

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 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.

Additional Acres Affected Past Year - Previously unaffected acres disturbed from January 1 to December 31, 1994. This acreage is also included in "Total Acres Affected as of Dec. 31, 1994."

Total Acres Affected as of Dec. 31, 1994 - All land currently affected by the large scale gold and silver operations under permit as of December 31, 1994. This includes all lands described above in "Permitted Affected Acres."

TABLE 2 - SURFACE MINING DISTURBED ACREAGE			
Permit Number	**Operator**	**Additional Surface Mining Acres Disturbed Past Year**	**Total Surface Mining Disturbed Acres as of Dec. 31, 1994**
439	Brohm Mining Corp.	0.00	161.80
208	Dakota Placers, Inc.	0.00	4.05
450	Golden Reward Mining Co.,L.P.	6.30	226.85
332 & 456	Homestake Mining Company	71.50	503.70
445	LAC Minerals (USA), Inc.	0.38	190.60
416	Minerva Explorations, Inc.	0.00	0.00
356, 434, & 435	Wharf Resources	20.15	483.73
TOTALS		98.33	1,570.73

Definitions:

Additional Surface Mining Acres Disturbed Past Year - Previously unaffected surface mining land disturbed from January 1 to December 31, 1994. This acreage is also included in "Total Surface Mining Disturbed Acres as of Dec. 31, 1994."

Total Surface Mining Disturbed Acres as of Dec. 31, 1994 - 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, and haul roads in pit areas or 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.

TABLE 3 - INTERIM RECLAIMED ACREAGE			
Permit Number	**Operator**	**Additional Interim Reclaimed Acres Past Year**	**Total Interim Reclaimed Acres as of Dec. 31, 1994**
439	Brohm Mining Corp.	0.00	0.55
208	Dakota Placers, Inc.	0.00	0.00
450	Golden Reward Mining Co.,L.P.	17.90	20.17
332 & 456	Homestake Mining Company	4.70	67.60
445	LAC Minerals (USA), Inc.	0.00	30.80
416	Minerva Explorations, Inc.	0.00	0.00
356, 434, & 435	Wharf Resources	2.24	36.64
TOTALS		24.84	155.76

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.

Additional Interim Reclaimed Acres Past Year - Acres under interim reclamation from January 1 to December 31, 1994. These acres are also included in "Total Interim Reclaimed Acres."

Total Interim Reclaimed Acres as of Dec. 31, 1994 - The total number of acres under interim reclamation as of December 31, 1994. This is only a cumulative total of interim reclaimed acres since the permits were issued. Some of these acres have already been redisturbed or have been counted as final reclamation.

TABLE 4 - FINAL RECLAIMED ACREAGE FOR PAST YEAR			
Permit Number	**Operator**	**Final Reclaimed Acres Past Year that Meet Post-Mine Land Use**	**Final Reclaimed Acres Past Year that Do Not Meet Post-Mine Land Use**
439	Brohm Mining Corp.	0.00	6.70
208	Dakota Placers, Inc.	0.00	0.00
450	Golden Reward Mining Co.,L.P.	0.00	20.79
332 & 456	Homestake Mining Company	24.23	13.13
445	LAC Minerals (USA), Inc.	0.00	1.53
416	Minerva Explorations, Inc.	0.00	0.00
356, 434, & 435	Wharf Resources	0.00	13.87
	TOTALS	24.23	56.02

Definitions:

Final Reclaimed Acres Past Year That Meet Post-Mine Land Use - Affected land under final reclamation from January 1 to December 31, 1994, 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.

Final Reclaimed Acres Past Year That Do Not Meet Post-Mine Land Use - Affected land under final reclamation from January 1 to December 31, 1994, that may have a permanent, self-sustaining vegetative cover which does not meet the requirements of the approved reclamation plan and does not meet the reclamation requirements of SDCL 45-6B and ARSD 74:29.

TABLE 5 - TOTAL FINAL RECLAIMED ACREAGE As of December 31, 1994			
Permit Number	**Operator**	**Final Reclaimed Acres that Meet Post-Mine Land Use**	**Final Reclaimed Acres that Do Not Meet Post-Mine Land Use**
439	Brohm Mining Corp.	0.00	12.00
208	Dakota Placers, Inc.	0.00	0.00
450	Golden Reward Mining Co.,L.P.	0.00	47.49
332 & 456	Homestake Mining Company	32.70	109.87
445	LAC Minerals (USA), Inc.	11.30	1.53
416	Minerva Explorations, Inc.	0.00	0.00
356, 434, & 435	Wharf Resources	46.15	46.16
TOTALS		90.15	217.05

Definitions:

Final Reclaimed Acres That Meet Post-Mine Land Use - Affected land under final reclamation as of December 31, 1994, 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.

Final Reclaimed Acres That Do Not Meet Post-Mine Land Use - Affected land under final reclamation as of December 31, 1994, that does not meet the requirements of the approved reclamation plan and the reclamation requirements of SDCL 45-6B and ARSD 74:29. These acres also include areas graded and seeded that may or may not have a vegetative cover.

TABLE 6 - RECLAMATION ACREAGE GOAL AND CREDITS As of December 31, 1994			
Permit Number	**Operator**	**Surface Mined Acres Reclaimed that Apply Toward Sept. 1, 1997, 500-Acre Reclamation Goal (SDCL 45-6B-90)**	**Total Affected Acres Reclaimed that Apply as Reclamation Credit in 1992 Mining Initiative (SDCL 45-6B-97)**
439	Brohm Mining Corp.	12.00	12.00
208	Dakota Placers, Inc.	0.00	0.00
450	Golden Reward Mining Co.,L.P.	0.00	0.00
332 & 456	Homestake Mining Company	142.57	142.57
445	LAC Minerals (USA), Inc.	12.83	12.83
416	Minerva Explorations, Inc.	0.00	0.00
356, 434, & 435	Wharf Resources	75.19	92.20
TOTALS		242.59	259.60

Definitions:

Surface Mined Acres Reclaimed That Apply Toward Sept. 1, 1997, 500 Acre Reclamation Goal - Total amount of surface mining disturbed acres under final reclamation as of December 31, 1994. These acres can be counted toward the 500 acres that are required under SDCL 45-6B-90 to be reclaimed by September 1, 1997. Final grading, topsoil replacement, erosion and drainage control, and seeding have been conducted on these acres.

Total Affected Acres Reclaimed That Apply as Reclamation Credit in 1992 Mining Initiative - Affected land under final reclamation as of December 31, 1994, that does and does not meet the requirements of the approved reclamation plan and the reclamation requirements of SDCL 45-6B and ARSD 74:29. These acres can be considered for reclaimed acreage credit as provided under SDCL 45-6B-97. Final grading, topsoil placement, erosion and drainage control, and seeding have been conducted on these acres.

TABLE 7 - ORE AND WASTE ROCK PRODUCTION FIGURES January 1 to December 31, 1994				
Permit Number	**Operator**	**Tons of Ore Mined Past Year**	**Tons of Ore Processed Past Year**	**Tons of Waste Rock and Overburden Mined Past Year**
439	Brohm Mining Corp.	0.00	0.00	0.00
208	Dakota Placers, Inc.	0.00	1,318.00	0.00
450	Golden Reward Mining Co.,L.P.	1,887,163.00	1,810,605.00	4,273,760.00
332 & 456	Homestake Mining Company	1,092,075.00	1,243,806.00	13,200,281.00
445	LAC Minerals (USA), Inc.	0.00	0.00	0.38
416	Minerva Explorations, Inc.	0.00	0.00	0.00
356, 434, & 435	Wharf Resources	4,200,150.00	4,364,200.00	7,723,700.00
TOTALS		7,179,388.00	7,419,929.00	25,197,741.38

Definitions:

Tons of Ore Mined Past Year - Tons of ore mined at each operation from January 1 to December 31, 1994.

Tons of Ore Processed Past Year - Tons of ore processed at each operation from January 1 to December 31, 1994.

Tons of Waste Rock and Overburden Mined Past Year - Tons of waste rock and overburden mined at each operation from January 1 to December 31, 1994.

TABLE 8 - GOLD AND SILVER PRODUCTION January 1 to December 31, 1994			
Permit Number	**Operator**	**Ounces of Gold Produced Past Year**	**Ounces of Silver Produced Past Year**
439	Brohm Mining Corp.	2,370.00	5,585.00
208	Dakota Placers, Inc.	0.00	0.00
450	Golden Reward Mining Co.,L.P.	52,556.00	12,795.00
332 & 456	Homestake Mining Company	100,665.00	25,001.00
445	LAC Minerals (USA), Inc.	2,254.00	1,032.00
416	Minerva Explorations, Inc.	0.00	0.00
356, 434, & 435	Wharf Resources	105,282.00	25,088.00
SUBTOTAL		263,127.00	69,501.00
N.A.	Homestake Underground	293,271.00	72,837.00
TOTALS		556,398.00	142,338.00

Definitions:

Ounces of Gold Produced - Ounces of gold produced at each operation from January 1 to December 31, 1994.

Ounces of Silver Produced - Ounces of silver produced at each operation from January 1 to December 31, 1994.

TABLE 9 - WATER AND CYANIDE USE[1] January 1 to December 31, 1994				
Permit Number	**Operator**	**Gallons Ground Water Withdrawn Past Year**	**Gallons Surface Water Withdrawn Past Year**	**Pounds of Cyanide Used Past Year**
439	Brohm Mining Corp.	2,782,700.00	0.00	73,200.00
208	Dakota Placers, Inc.	4,000,000.00	0.00	0.00
450	Golden Reward Mining Co.,L.P.	17,838,400.00	11,257,600.00	382,867.00
332 & 456	Homestake Mining Company	0.00	54,516,000.00[2]	1,281,120.00
445	LAC Minerals (USA), Inc.	1,987,000.00	20,276,000.00	9,000.00
445	Minerva Explorations, Inc.	0.00	0.00	0.00
356, 434, & 435	Wharf Resources	20,000,000.00	0.00	752,681.00
TOTALS		46,608,100.00	86,049,600.00	2,498,868.00

1 Water and cyanide use by Homestake's underground mine is not included in this table.

2 Homestake used 5,440,000 of fresh water and 49,076,000 of recycled treated water from its waste water treatment plant for its Open Cut operations in 1994.

Definitions:

Gallons Groundwater Withdrawn - The amount of groundwater withdrawn by each operation from January 1 to December 31, 1994.

Gallons Surface Water Withdrawn - The amount of surface water withdrawn by each operation from January 1 to December 31, 1994.

Pounds of Cyanide Used - The amount of cyanide used at each operation from January 1 to December 31, 1994.

TABLE 10 - RECLAMATION BOND AMOUNTS FOR LARGE SCALE GOLD MINES				
Permit Number	**Operator**	**Original Bond Amount**	**Current Bond Amount**	**Type of Bond**
439	Brohm Mining Corp.	$672,376	$1,230,876	Certificate of Deposit
208	Dakota Placers, Inc.	$32,715	$27,000	Certificate of Deposit
450	Golden Reward Mining Co., L.P.	$954,384	$1,057,009	Certificates of Deposit
332 & 456	Homestake Mining Company	$928,790	$1,737,000	Surety Bond
416	Minerva Explorations, Inc.	$661,800	$0*	--
445	LAC Minerals (USA), Inc.	$656,000	$10,700,000	Irrevocable Letter of Credit
356, 434, & 435	Wharf Resources	$732,800	$1,686,000	Certificate of Deposit

* Minerva Explorations is required to submit a reclamation bond in the amount of $661,800 before the commencement of mining

OPERATIONAL PLANS FOR 1995

Brohm Mining Corporation

Brohm Mining plans to begin crushing and leaching about 650,000 tons of broken sulfide rock in 1995. Also, Brohm will be required to maintain all National Pollutant Discharge Elimination System (NPDES) permit compliance schedules in 1995.

The acid mine drainage mitigation plan, which was submitted as part of a permit amendment, was considered procedurally complete on November 28, 1994. The Board of Minerals and Environment approved the permit amendment on March 16, 1995.

Brohm is proceeding with plans to obtain a mine permit for the Anchor Hill oxide deposit. The permit application will be submitted during the spring or summer of 1995. The Anchor Hill deposit contains approximately 8.58 million tons of ore and 8.4 million tons of waste rock.

Dakota Placers, Inc.

Brightwater Inc., an affiliate of the Dunbar Resort, has purchased the Red Placer and Excelsior Claims that were permitted under Dakota Placers Mine Permit No. 208. Brightwater, together with Homestake Mining, is planning to reclaim the area. This includes 12 acres that were affected under Mine Permit No. 208 at the Red Placer Claim. Neither Brightwater nor Homestake have any plans to mine this area.

Golden Reward Mining Company, L.P.

Golden Reward will mine four pit areas within its permit boundary in 1995. These include the South Harmony, Harmony, West Liberty, and South Liberty Pits. About 2,116,920 tons of ore and 5,820,290 tons of waste rock will be removed this year.

Golden Reward also plans to modify the reclamation plan for its mine. These plans will more accurately reflect the final reclamation of the site. A reclamation plan for the Fantail area, which was required by a technical revision that approved mining in that area, will also be submitted.

Homestake Mining Company

Homestake Mining plans to continue mining the west and south sides of the Open Cut in 1995. Haul truck usage of the East Side Haul Road will end as mining progresses to the south.

Homestake will continue stripping topsoil in Sawpit Gulch as they continue to place waste rock in Sawpit Gulch. The company plans to complete the French Drain under the Sawpit Waste Rock Disposal Area and construct the upper check dam. The south diversion canal will be constructed.

Homestake will continue reclamation work on the East Waste Rock Disposal Area and the area affected by the detour through the Sawpit Haul Road Crossing. They will also reclaim the temporary haul road used for the construction of the Sawpit Haul Road Crossing if it is not needed to haul rock for the Lead Mall Stabilization Project. Interim reclamation of the Sawpit topsoil stockpiles will be conducted.

LAC Minerals (USA), Inc.

LAC Minerals will complete acid mine drainage mitigation work at the Richmond Hill mine in 1995. Approximately 90 percent of the waste rock was removed from the waste rock dump before construction activities were suspended for the winter. Work on the pit impoundment construction will resume in spring 1995 when the weather allows the placement of clay. Meanwhile, LAC plans to continue adding limestone to the spent ore on Pad 3 through the winter and spring.

Photo 5 - LAC Contractors Removing Acid Generating Rock from Waste Rock Dump

LAC Minerals is currently evaluating future plans that may include additional processing, mining, or both.

Minerva Explorations, Inc.

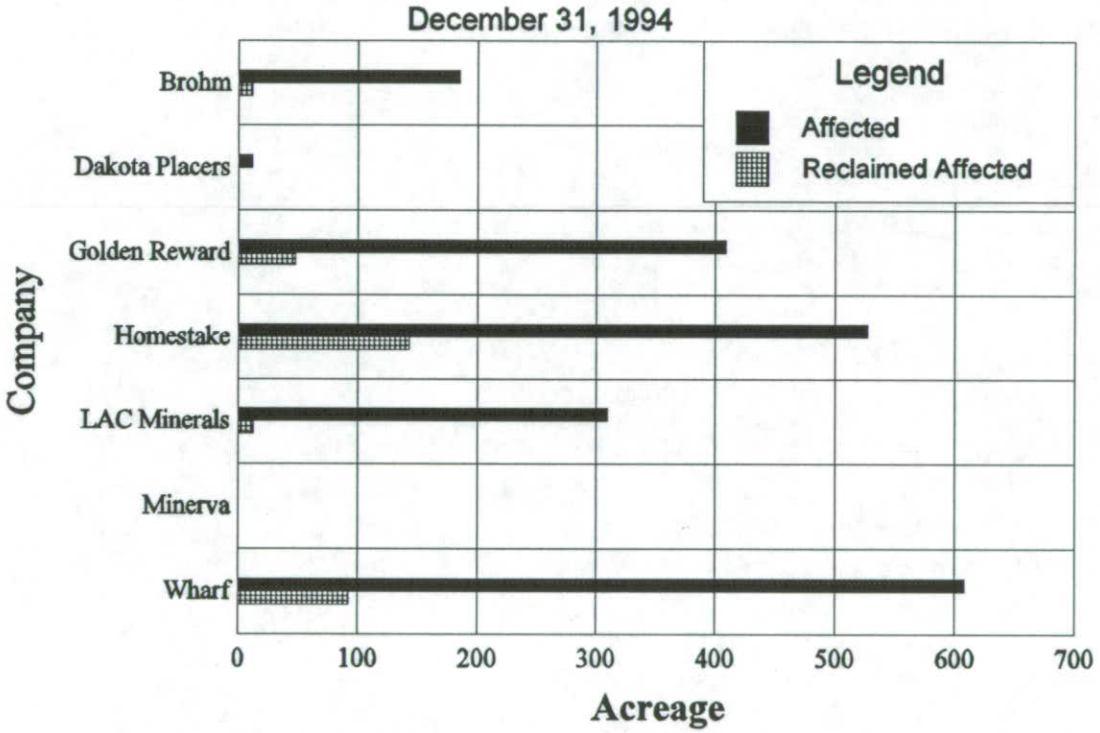
Minerva Explorations may approach the Lawrence County Commission in 1995 and pursue another application for a Conditional Use Permit. They feel that the approval of this application would allow development of the Ragged Top Mine. The Commission denied a transfer of a Conditional Use Permit from Homestake to Minerva in 1994. That same year, they also denied a new application for a permit by Minerva. With these denials, negotiations between Minerva and LAC Minerals to process the Ragged Top ore at the Richmond Hill Mine ended.

Wharf Resources

Wharf Resources plans to mine the West Wall, Annie Arm, 33 Vertical, Juno Cut, Vulcan, and 4A Pits in 1995. They plan to complete mining of the Juno Cut pit and backfill it in November. The Ross Valley Spent Ore Dump will be expanded from the 6,220 level to the 6,310 level.

As mentioned earlier, Wharf will work with the South Dakota Department of Transportation on a project to eliminate safety hazards on Terry Peak Road. They will conduct construction activities for the Department of Transportation from May through September. Ore and waste rock from the construction project that contains gold ore will be transported to the Wharf Mine. Waste rock from the Wharf Mine will be used to backfill open stopes underneath the present road and bring the new road up to the final grade.

It is possible that Wharf may submit a permit application to mine the Clinton Expansion Project, which is immediately northeast of the current Wharf Mine, in 1995.

APPENDIX I

Reclaimed vs. Affected Acreage