MINING AND MINERALS
IN IDAHO, 1991

PRELIMINARY DRAFT

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For more information, contact: Earl H. Bennett, State Geologist, Idaho Geological Survey, Morrill Hall, University of Idaho, Moscow, ID 83843, phone (208) 885-7991; or Virginia Gillerman, Economic Geologist, Idaho Geological Survey, Math-Geology, Room 104, Boise State University, Boise, ID 83725, phone (208) 385-4002.

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February, 1992
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INTRODUCTION

The purpose of this report is to summarize and describe all mining and mineral-related activity in Idaho for 1991. Sources used to compile this document include U.S. Forest Service and Bureau of Land Management mineral specialists in the state, the U.S. Bureau of Mines, information from the Mine Safety and Health Administration (MSHA), numerous company geologists and spokespersons, and clippings from area and trade newspapers and periodicals. Final production figures for the active mining operations in 1991 will be added to this report when available. This preliminary version is for the sole use of the U.S. Bureau of Mines, the Idaho Mining Association, the Idaho Geological Survey, and the state's Congressional delegation. Locations of selected cities and towns referenced in this report are shown in Figure 1.

World events continued to affect all internationally traded commodities including metals. The rapid demise of the Soviet Union resulted in some metals being dumped by individual partners of the former union for badly needed foreign exchange. The flood of metals depressed world markets for aluminum, nickel, gold, and platinum. On the other hand, the huge hoard of gold that western experts believed existed in the Soviet Union (estimated 1,000-3,000 tons) may be much smaller (240-375 tons) according to some Russian officials. In any event, the fear of the individual republics dumping vast amounts of gold with major international market disruptions evaporated. The war in the Persian Gulf (Desert Storm) and an attempted coup in the Soviet Union had little long-term effects on precious metals and, in fact, there seemed to be nothing that could stir gold and silver out of the doldrums.

Gold hovered at the $360 per ounce mark (although spurting to about $400 per ounce at the beginning of the Gulf war) and silver fluctuated between $3.80 and $4.50 being below $4.00 per ounce for much of the year. The Silver Institute noted that in 1990, for the first time in 13 years, demand for silver exceeded supply. Prices immediately rose to the $4.44 range on the news. However, in spite of the Institutes claims, silver inventories reached all time highs on COMEX, exceeding 277 million ounces in August. The price retreated to below $4.00 per ounce. Lead and zinc which buoyed silver prices last year were also depressed in 1991. Lead averaged about 35 cents-per-pound and zinc 50-60 cents-per-pound. London Metal Exchange stocks for both metals were very high during the year and the market was quite volatile. Civil disruptions in Zaire threatened the world's cobalt supplies and this did have a big impact on price which more than doubled from $15 per pound to over $30 per pound at year's end. Molybdenum prices were soft
Figure 1. Location of selected cities and towns in Idaho
all year, staying under $3.00 per pound. There was little price reaction when MolyCorp announced the closure of the big Questa molybdenum mine in New Mexico. The low price caused a slow down at Cyprus Mineral's Thompson Creek mine and workers were laid off in May. The problems in Zaire also affected the world price of copper which rose in anticipation of supply disruptions. This was offset by a "backwardation" in copper on the London Metals Exchange in December. A backwardation occurs when the spot price of a metal exceeds copper futures. This results in a premium for spot metal over future deliveries as normally the spot price is lower than the price of a futures contract. The backwardation "squeezed" brokers who had sold copper futures but could not get the metal for delivery. Losses occur when a broker has to pay more for the spot metal price to cover short positions. This type of abnormal pricing can be caused by someone trying to "corner the market" on a commodity. Suspicions settled on Sumitomo Corporation, however, company spokesmen denied the accusations. Copper prices hovered around $1.00 per pound all year.

Table 1 shows the preliminary non-fuel production figures for Idaho for the past three years. There was a decrease in total value from $399 million in 1990 to an estimated $283 million in 1991. The value of gold, silver, and phosphate decreased while the value of some industrial minerals increased. Idaho ranked 32nd in non-fuel mineral production in the 50 states.

According to the Idaho Department of Employment, about 2,900 people (does not include nearly 2,000 people who work in phosphate processing plants) were employed in the mining industry in 1991, with approximately 1,800 of these jobs in metal mining. Employment in mining declined by almost 19% from 1990, resulting in additional layoffs in the service sector. The department and everyone else blamed the problem on poor metal prices, especially silver, and noted that mining may never recover its previous position in the state's economic picture. Wages in the mining sector increased over 1990 and workers in the mining industry are still among the highest paid of any industrial group in the state. Idaho's economy remained strong at year's end in spite of the recession which plagued many other parts of the country. There is concern that economic problems will affect the state next year, if the recession does not end soon.

Progress was mixed on the six new gold mines (Black Pine, Stone Cabin, Buffalo Gulch, Beartrack, Yellowjacket, Grouse Creek, Figure 2) that were described last year. The Yellowjacket mine started production and the Black Pine mine began operations at year's end. Work continued at Grouse Creek, Beartrack, and Stone Cabin, but delays in obtaining 404 wetlands permits and the low price of gold slowed progress. Buffalo Gulch is on hold waiting permitting and improved metal prices. The newest addition to Idaho's mining industry is a state-of-the-art lime plant that is under construction by Chemstar Lime near Bancroft. Phosphate was a bright spot for the industry with stable prices and full production throughout the
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<td>393,441</td>
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* (in thousands)  
*/Estimated. */Preliminary. NA/Not Available. W/Witheld to avoid disclosing company proprietary data.  
value included with "Combined value" figure. XX/Not applicable.  
/Production as measured by mine shipments, sales, or marketable production (including consumption by producers).  
/Recoverable content of ores, etc.  
Data from U.S. Bureau of Mines.
year. Other industrial mineral mines and plants processing pumice, limestone, garnet, silica, and clay also maintained normal operations.

**ACTIVE MINES AND PROCESSING PLANTS**

**Coeur d’Alene Mining District (Figures 2 and 3)**

**Introduction**

Low silver and base metal prices continued to exact a heavy toll on the mines and miners in the Coeur d’Alene mining district in north Idaho. Silver was in the doldrums priced at below or just above $4 per ounce all year. The Bunker Hill Mining Company and Star Phoenix Mining Company filed for Chapter 11 protection, the Coeur mine closed, and the Sunshine mine cut its work force by two thirds. The Galena and Lucky Friday mines continued operating but at a substantial loss. According to the Department of Employment, unemployment in Shoshone County exceeded 20% by June and less than half of the 1,560 mining jobs that existed in 1990 remained after the end of 1991. A $500,000 federal grant was secured with the assistance of Congressman Larry Larocco, to help train dislocated workers in North Idaho for new jobs.

Reports by Handy and Harmon, the U.S. Bureau of Mines, and other sources of world and national mineral statistics have noted a huge world-wide surplus of silver for the past several years. The Silver User’s Association also believes that there is a glut of the metal on the market. These reports are blamed in part, for keeping silver prices at rock bottom according to the Silver Institute, a group of the leading international silver producers including the Coeur d’Alene district companies. To answer the question, the institute commissioned a study to find out just how much silver there really is in the world.

The Union Pacific Railroad announced that it would abandon its 71-mile-long rail line that goes from Plummer to Mullan and serves the mines in the Silver Valley. The railroad claims that the mines can ship concentrates by truck cheaper than by rail and that Union Pacific is losing some $200,000 per year on the line. Local residents fear that loss of the railroad will be another deterrent to continued mining operations in the depressed area. According to Union Pacific, mine rail traffic fell from 1,114 cars in 1984 to 649 cars in 1991. Governor Cecil Andrus and civic leaders protested the closure in a hearing before the Interstate Commerce Commission in November.

A major landmark in north Idaho passed into history in 1991. The last remaining stoplight on Interstate 90 (located in downtown Wallace) was taken down in September. A new 4,478 foot long viaduct bypasses (or more correctly goes over)
Figure 2. Active mines (●), processing plants (O), and mines under development (X) in Idaho, 1991
Figure 3. Coeur d'Alene Mining District, Idaho, 1991
Wallace so traffic no longer has to go through the center of town. At times, 10,000 vehicles per day went through Wallace. Never ones to pass up an opportunity for a party, local citizens gave the light a mock funeral as part of a three day "Stoplight" celebration.

The last of the infamous "houses of ill repute" (which have operated in the district since mining began in the 1880's) closed, not due to legal action but by a lack of business. Customers were driven away by a fear of AIDS and other sexually transmitted diseases. Another trademark of the district, gambling, passed into history when the FBI raided local bars and taverns and confiscated gambling machines. The raids made national news and ended a pastime that extends back to the early days of the district.

The Coeur d'Alene lost a true friend in 1991 with the death late last year of William "Bill" Anderson, former Vice President of Sunshine Mining Company.

Asarco, Inc.

Low silver prices and declining production forced Asarco to close the Coeur mine in April. The closure, which cost 130 miners their jobs, is considered temporary. The company is waiting for better silver prices to reopen the mine. The mine is owned by Coeur d'Alene Mines Corporation and produced 397,311 ounces of silver from 37,165 tons of ore before closing compared to 2,162,050 ounces of silver and 94,645 pounds of copper from 147,883 tons last year. Miners, laid off by the closure, will be eligible for assistance under the Trade Adjustment Assistance program which provides training and job counseling for workers whose jobs have been lost because of foreign competition. The program is administered by the state Department of Employment.

The Galena mine (now owned by Coeur d'Alene Mines Corporation after merging with the former owner, Callahan Mining Corporation) and operated by Asarco operated at a loss in 1991 as in 1990. Production this year was 3,278,650 ounces of silver and about 1,040 tons of lead from 182,836 tons of ore compared to 3,194,921 ounces of silver, 77,603 pounds of lead, and 93,226 pounds of copper from 173,687 tons of ore last year. The mine employs about 200. Miners rejected a $4 per-hour pay cut in August that was coupled with a company guarantee that the mine would remain open until January, 1993, when the current labor contract expires.

Bunker Hill Mining Company (U.S.) Ltd.

Many hopes and dreams were dashed when on January 17, 1991, the Bunker Hill Mining Company filed for Chapter 11 federal bankruptcy protection from creditors. The company was funded by $7.2 million raised by a public stock offering in
Canada in May, 1988. Principals of this company and its predecessor, the Bunker Ltd. Partnership, were looked upon as "white knights" when they purchased the closed facility in 1982 from Gulf Resources and Chemical Company. All in all, these ventures have lost some $22 million since 1982.

The mine, reopened in 1989, turned a profit in the first half of 1990 but started to bleed red ink in the second half of the year, losing some $2.5 million in the last quarter. In January, the United Steel Workers suggested that the company consider a buy out under an Employee Stock Ownership Plan (ESOP) but the company refused. Bunker owed $2 million in back taxes to Shoshone County, was in a lawsuit with Washington Trust Bank for defaulting on a loan, owed the Bunker Ltd. Partnership about $2 million, and was in debt to many smaller creditors including $90,000 in back wages due Bunker Hill employees. About 60 employees were laid off and company officials announced they needed a $10 million cash infusion to keep the mine going. On January 30, 1991, the mine closed and the remaining 160 workers were laid off. Prior to closure, the mine produced 16,323 tons or ore grading 1.76% lead, 0.90 ounce-per-ton silver, and 5.26% zinc. A number of firms, including the Environmental Protection Agency, filed liens against company equipment. EPA is overseeing remediation at the Bunker Hill Superfund site, a 21 square mile area around the smelter that will cost an estimated $120 million to clean up. The company looked for funding to keep the mine on standby, otherwise electric power for the pumps would be cut off and the mine would flood. Unsuccessful in raising needed capital, the company announced in April that it would be liquidated to pay creditors. The Bunker Ltd. Partnership filed for Chapter 11 protection in April, listing some $4.7 million in assets against $33.3 million in liabilities. The Pintlar Company, an affiliate of Gulf Resources and Chemical Company, was the largest creditor, owed some $21.3 million. EPA immediately demanded that electrical transformers in the mine that contained contaminants be removed before the mine flooded. This cost about $300,000. In March, the company sold timber on some 750 acres owned by Bunker Hill and the Partnership to Idaho Forest Industries. The sale raised about $1.1 million. An auction in August put the last nail in the giant mine's coffin, at least using existing facilities. The sale only raised about $600,000 with cost of the sale estimated at $50-60,000. Much of the equipment was sold for junk prices; the four hoists in the mine including the giant Norberg hoist, largest hoist in the United States when it was installed in 1944, were sold for a total of $1,000. In September, a fire destroyed the mine's rock house in a spectacular blaze. The loss was minimal as most equipment had been removed after the auction. In October, the Securities Exchange Commission (SEC) probed reports that Bunker Hill officials misled investors with its financial statements. Company officials denied any wrongdoing and pointed out that the principals in the company had themselves lost millions of dollars. Also in October, a U.S. Bankruptcy Judge authorized Bunker Ltd. Partnership to sell some 18,260 acres of timber land in north Idaho to Louisiana Pacific Corporation for $22.45 million. The sale will only net about $12-13 million
for the partnership due to existing mortgages, taxes and sale costs. In a separate deal, Wescor Forest Products Company, a Tacoma based timber broker, purchased 3,238 acres of Bunker Ltd. land located in Pend Oreille County, Washington, for $1.28 million. The company reached an agreement with Shoshone County in November to pay some $400,000 of the $1.8 million it owes in back taxes. The money will include $80,000 in cash and the rest from the sale or transfer of ownership of buildings including the main office, the concentrator, power plant, water system, a boat launch near Cataldo, a lab building, and a machine shop. A Seattle company was reportedly interested in buying some of the mine related buildings. This sparked rumors that the unnamed company might be interested in opening the closed mine and mill. Many of the historical records of the company that extend back to its beginning in 1885 were donated to the University of Idaho Library (about 260 cubic feet of material) and to the Kellogg Mining Museum. All of the mine maps and records were removed and stored by the Idaho Geological Survey.

Cleanup of the 21 square-mile Bunker Hill Superfund site continued during the year. Hecla and Gulf Resources worked to control erosion and revegetate parts of the Silver Valley. Work included planting about 140,000 trees, building erosion control terraces and rock dams, and dust mitigation. Asarco stabilized the Page mine dump. EPA removed and replaced contaminated grass and topsoil from 100 homes. Blood tests, administered to some 360 children, showed continued improvement in blood lead levels with most values near the national average. The feasibility study for the remainder of the cleanup will hopefully be completed by next June and the final cleanup will begin. This effort will include: demolition of the smelter, zinc plant, and fertilizer plant, completing soil removal and replacement for the remainder of an estimated 1,000 homes, and other mitigation and clean-up projects. The program will require an estimated 7-years for completion.

Five companies that insured Gulf Resources and Chemical Company may have to foot part of the estimated $100 million clean-up cost at the Bunker Hill Superfund site. The U.S. Court of Appeals for the Ninth Circuit Court ruled against the companies in November and said the clean-up costs are covered by standard industrial insurance. Hecla Mining Company has filed a similar suit against insurers for its part of the bill.

Callahan Mining Corporation

The big news for Callahan Mining Corporation in 1991 was the announced takeover of the company by Coeur d'Alene Mines Corporation. Under the merger plan, each share of Callahan will be exchanged for .435 shares of Cda Mines. Callahan has 7.65 million shares outstanding. The company played an important part in the long history of the Coeur d'Alene district, starting with the discovery of
what would become known as the Interstate-Callahan mine by company founder, James F. Callahan, in 1905.

The merger follows several years of red ink for Callahan. The owner of the Galena mine had a $2,451,000 loss in 1990. This trend continued into 1991 with a $1.8 million loss for the first half. Lower revenues from the Galena, the closure of the Coeur mine, and maintenance costs at the closed Ropes Gold mine in Michigan (responsible for most of the loss), adversely affected earnings. The company changed leadership as Charles D. Snead, Jr., resigned as Chairman and Chief Executive Officer. Mr. Snead joined Callahan in 1965 and served as president and CEO for the past 17 years. Mr. William A. Nicely was promoted to the position of President and CEO. Callahan had about 92 employees prior to the merger.

Low silver prices and lower production affected income from the Galena mine which turned in a loss for the second consecutive year. The mine is owned by Callahan and operated by Asarco. Callahan normally receives 50% of the cash flow of the Galena, its main revenue source.

There was more bad news from the Caladay exploration project located east of the Galena mine. Callahan has invested over $30 million in the project which included sinking a 5,100 foot shaft and considerable underground drilling. In the third quarter, the company wrote off $938,000 of Caladay costs including the remaining balance of the main tunnel and the underground hoist chamber, both capitalized in the 1960’s. Most workers were laid off at the Caladay last year and underground maintenance is being taken care of by Asarco who uses the Caladay shaft for ventilation in the Galena mine.

The company announced that the Ropes Gold mine in Michigan would be allowed to flood to reduce holding costs. Callahan closed the unprofitable mine in 1989 and it is unlikely that the mine will operate again. An exploration program continued in Michigan’s greenstone belt with partners Western Mining Corporation and Cleveland-Cliffs Iron Company.

Callahan made money from its three plants that comprise the Flexhaust Company. Flexhaust makes industrial hose and tubing. The company also received some income from Livengood Placers operated by Alaska Placer Development, 85 miles north of Fairbanks, Alaska. The placer operation recovered 4,139 ounces of gold in 1990.

Coeur d’Alene Mines Corporation

Big news for Coeur d’Alene Mines Corporation was the merger by stock transfer with Callahan Mining Corporation, owner of the Galena mine. With the merger, valued at approximately $58 million, Cda Mines now owns the Coeur mine and the
Galena mine, both operated by Asarco. The company also bought Hecla's 5% interest in the Coeur mine.

Like many mining companies, Cda Mines had a loss for the first three quarters of 1991 ($472,930) although silver production increased (4,158,536 ounces) and gold production declined only slightly (43,912 ounces) compared to last year. Silver prices fell 21 percent in the first half of 1991 compared to 1990 when prices were considered terrible. A setback for the company occurred when Asarco closed the Coeur mine. The company had an operating loss in 1990 of $1.7 million, mostly related to the planned closure of the Thunder Mountain gold mine.

The company's main source of revenue is the Rochester silver/gold mine in Nevada that maintains a positive cash flow in spite of very poor silver prices. In the first half of the year, the company spent $3.6 million for its share of the Kensington gold mine near Juneau, Alaska that is being developed with operating partner Echo Bay Mines. The Kensington will be a major new gold mine for the company. The draft Environmental Impact Statement for Kensington was released in June and a production decision will be made early in 1992. Construction costs for the new mine are estimated at about $200 million. Cda Mines was ahead of many exploration companies when it began a major exploration program in Chile several years ago. Development of the Fachinal underground gold/silver project in southern Chile looks promising.

During the year, the company completed reclamation work at the Thunder Mountain mine (located in rugged central Idaho) that was mined out last year. The Forest Service reports that Coeur d'Alene Mines has been doing a good job at reclamation at Thunder Mountain. The leach pads have all been neutralized and asphalt pads ripped out. Solution holding ponds have been backfilled with clay. The buildings and foundations have been removed. The ground has been recontoured, seeded, and mulched. At Forest Service request, a one lane access road has been left on Lightning Peak and 8,000 trees were planted. Stream and groundwater monitoring will continue.

Coeur d'Alene Mines added another environmental award to a growing list for its outstanding environmental stewardship at its various mining operations. This year, the company received the first DuPont/Conoco Environmental Leadership Award for its reclamation work at Thunder Mountain and other properties. The $50,000 prize will be distributed $20,000 each to the College of Environmental Science of the University of Alaska Southeast, Juneau, Alaska and the University of Nevada, Mackay School of Mines, Reno, Nevada and $10,000 to the Nature Conservancy for its Silver Creek Project in Idaho.

In May, the company approached the City of Coeur d'Alene with tentative plans to build a new 10 story office building on the site of the closed Wilma theater.
Corporate expansion and planned growth in the 1990's will require more room for company headquarters.

**Hecla Mining Company**

Hecla Mining Company celebrated its 100th birthday in May. Over 300 guests and dignitaries including Senator Larry Craig, Senator James McClure (retired), and Congressman Larry LaRocco, joined the birthday bash. Highlights of the festivities included the release of a company history entitled "Hecla: A century of western mining," by well-known mining historian John Fahey and the unveiling of a bronze sculpture by Deborah Copenhaver commemorating the contribution of Hecla's employees to the company's success.

The 100th year started well as the company had a $5.1 million profit for 1990 compared to a $22.4 million loss in 1989. Hecla employs over 1,000 people in 16 states. In an effort to cut first quarter losses, the company announced saving measures in July, including asking some departments to cut costs by as much as 25%. In spite of these measures, the red ink continued with losses for the first nine months of the year totaling $13.6 million versus a profit of $9 million last year. The company canceled its annual dividend to conserve cash for development at Grouse Creek and exploration at Republic, Washington. A bright spot was the Kentucky-Tennessee Clay Company which earned $5.4 million during the first nine months, more than double earnings for the same period last year.

Negotiations were completed for the merger of Coca Mines Inc. and Hecla in June. Under the agreement, .24 shares of Hecla stock were exchanged for each share of Coca stock. Hecla issued 3,083,957 shares (worth at the time $29.7 million) or 11.5% of its outstanding shares for the 12,620,324 shares of Coca. (see East-Central Idaho under Exploration).

Hecla continued to profit from its flagship gold mine, the Republic unit, in northeast Washington. The new $6.6 million, 13,000 foot long ramp, built to access the Belligerent Vein in the Golden Promise zone was completed this year. The ramp is part of the Rapid Accelerated Development (RAD) program. A $3 million exploration program was conducted from the ramp area in 1991.

Operations continued at the Lucky Friday silver mine in the Coeur d'Alene mining district. Production in 1990 was 1,894,944 ounces of silver, 17,333 tons of lead, 3,306 tons of zinc, and 916 ounces of gold compared to 1,850,531 ounces of silver, 18,857 tons of lead, and 3,164 tons of zinc in 1991. About 190 people are employed in the mine. The Friday has produced over 92 million ounces of silver in its 48 years of activity. Most production in 1991 was from the LFUL (Lucky Friday Underhand Longwall) stopes in the lower levels of the mine that were started in 1987. Cash costs for the mine are about $4.50 per ounce. Although unprofitable,
losses are still less than would be incurred by closing or mothballing the mine. Hecla also holds a 12.5% interest in the Galena Mine that was unprofitable in 1991. A 5% interest in the Coeur mine (closed in 1991) was sold to Coeur d'Alene Mines Corporation.

The Greens Creek mine in Alaska continued full operations as the lowest cost and largest silver producer in the country. Hecla receives income from its 28% interest in Greens Creek that is operated by Kennecott Corporation.

Hecla received the state’s top award for surface mining from the Governor and the State Land Board for outstanding mining practices and reclamation at the Yellow Pine heap-leach gold mine. Production from Yellow Pine for 1991 is expected to be about 15,000 ounces (down from 58,000 ounces last year) as the mine is shut down and reclaimed.

The company donated $40,000 worth of seismic equipment to North Idaho College. The equipment was part of a "rock burst" monitoring system in the Lucky Friday mine and was surplussed when replaced with newer hardware. The equipment will be used to monitor earthquake activity in north Idaho and as a teaching resource.

**Star Phoenix Mining Company**

The Star Phoenix Mining Company filed for Chapter 11, federal bankruptcy protection in March. Among creditors were 100 miners seeking back wages totaling more than $500,000. Other creditors include Washington Water Power Company, Dynatec Mining Corporation, Building Maintenance and Supply Inc., West One Bank, and Cominco Ltd. of Canada. Total debts were estimated at $6.5 million. Problems started last year when Hecla Mining Company, co-owner of the Star mine with the Bunker Ltd. Partnership, sued for the return of the property. Hecla claimed that Star Phoenix was not in compliance with terms of the mine lease and that several lien claims had been filed against the mine property. The partners of the Bunker Limited Partnership (which owns two-thirds of Star Phoenix) were unable to help due to major fiscal problems of their own (see Bunker Hill Mining Company). Frank Duvall, president of Star Phoenix, was trying to raise funds to reopen the mine and reportedly had several offers for the property in mid-year. However, the mine remained closed at year’s end with little prospect of reopening.

**Sunshine Mining Company**

Sunshine suffered continued setbacks in 1991. The company had a loss of some $115 million in 1990, exacerbated by a $26 million loss in oil futures and very low silver prices. Sunshine Precious Metals, Inc, a unit of Sunshine Mining Company, was placed on credit watch by Standard and Poors late in 1990. Early in 1991 the
company completed the liquidation of its oil and gas holdings (Argent sale) to cover the futures losses. The sale raised some $144.8 million. After selling its oil and gas holdings, the company made a purchase offer for up to 60% of its convertible subordinated reset debentures due 2008 at a cost of some $32 million in cash and 10.4 million shares of stock. This left some $35 million to pay for ongoing operations, exclusive of Sunshine Precious Metals. In May, G. Michael Boswell, Chairman and CEO, announced that the company could no longer afford to pay interest and principal on eight series of Sunshine Precious Metals’ silver-backed bonds worth some $58 million and held by 11,000 investors. The company was in default on all eight issues in October. The bonds were issued in the 1980’s to build the silver refinery at the mine, buy the Sunshine mint, and fund exploration in the Sunshine mine. Boswell noted that the subsidiary company would have to restructure to survive. In August, the company filed an amendment to a registration statement with the Securities and Exchange Commission (SEC) offering to exchange the old silver-indexed bonds for common or preferred stock. The preferred stock would be indexed to silver prices similar to the bonds. The company accepted a pre-packaged plan to let it begin bankruptcy proceedings for Sunshine Precious Metals if the swap plan failed. Questions were raised about a reorganization in 1988 that secured the bonds with only the Sunshine mine that had been placed in a new subsidiary called Sunshine Precious Metals Inc. The move, in effect, left all of the oil and gas holdings and substantial cash with the parent company, out of reach of bond holders. The defaulted bonds remain the problem of Sunshine Precious Metals. Sunshine Mining reported a loss of $8.4 million for the third quarter of 1991, down from a $34.4 million loss in the same period last year.

As part of the restructuring, the company announced in March that 281 workers at the Sunshine mine (64% of the work force) would be laid off by June and mine production would be halved. The laid-off mine workers were denied federal Trade Adjustment Assistance funds. This money is routinely paid to workers who are displaced by foreign competition for retraining and relocation. The United Steelworkers of America, the union who represent miners at the “Shine”, are appealing the decision.

Substantial personnel reductions also occurred at the company’s Dallas headquarters and Boise office. In September, the company laid off most of its exploration staff and moved some employees from the Boise office to the mine office on Big Creek.

The Sunshine mine needs a price of $4.80 per ounce silver to break even and $6.50 per ounce to be profitable. The mine produced 5.3 million ounces of silver and 2,038 pounds of copper in 1990, a recent high. Unfortunately Sunshine Precious Metals still lost $27 million for the year. Production at the mine in 1991 was 3,495,885 ounces of silver from 159,907 tons of ore, reflecting the reduced manpower during the second half of the year.
Sunshine was granted a 20 year concession to explore for diamonds from at least two known kimberlite pipes in West Africa, by the government of Sierra Leone. The deposit contains an estimated 2.4 million carats of gem-quality diamonds and will require $54 million to develop. In October, a Texas jury awarded a partner in the diamond deal, the Boulle Group, of Dallas, Texas, $40 million. The Group claimed that Sunshine had improperly broken a business agreement with them, effectively cutting the venture partner out of the diamond deal. The award awaits the decision of a state court judge as to whether the damages are appropriate. Sunshine rejected an earlier settlement offer from the Group of $2 million and 5% of gross proceeds from the diamond mine.

Sunshine International Exploration Company, a subsidiary of Sunshine Mining Company, signed an agreement with Red Rock Ventures to mine gold in Costa Rica. Red Rock is a subsidiary of Mallon Resources Corporation. Sunshine backed out of the deal in June, as it would have had to immediately pay Mallon $2.5 million and commit an additional $2.5 million to the mining project.

OTHER PRODUCING METAL MINES (Figure 2)

Cyprus Minerals Company

The lowest price for molybdenum in 13 years forced layoffs and other cutbacks at Cyprus Mineral's Thompson Creek mine located west of Challis. The moly price was not improved by closures at the Tonopah mine in Nevada and the Questa mine in New Mexico. As prices dropped to about $2.15 per pound (compare to a five-year average of about $3.20 per pound) the company was forced to layoff 106 of its 397 employees in April. Prior to the slowdown the 30,000 ton-per-day mill was running at 71% capacity and the mine at 100%. Waste was stripped off the north and east sides of the pit and 250 feet was removed off the top of the mountain. About 2 million yards per month of waste rock was moved during the summer. In spite of poor prices, the company announced in October that there would be a return to pre-layoff production levels and that the mill would restart on November 1. The mine and mill process about 27,000 tons of ore per day grading 0.11% molybdenum. A small amount of in-pit exploration and core drilling was done to confirm the mine model. The moly grease circuit, new last year, is working well. The mine is the largest employer in Custer County and accounts for about 40% of the county tax base. About 17.5 million pounds of MoS2 (95% of plant capacity) was produced at the mine in 1990.

NERCO Minerals Company

Full operations continued at NERCO Minerals' DeLamar mine in Owyhee County. Production in 1991 is expected to be approximately 36-38,000 ounces of gold. Gold and silver ore was mined from the Sommercamp, Glensilver, and South Wahl
pits. Exploration drilling north of the mine on the Ohio property intersected mineralization. A mill expansion was completed in February and shakedown problems, like excessive wear in the SAG mill, caused a few short shutdowns. A new maintenance program has been designed to solve the problems. Mill operations averaged about 3,100 tons-per-day, but the company is trying to increase this to 3,500 tons-per-day next year. The expansion will enable the mill to process over a million tons of ore per year. The heap leach was closed all year and 300,000 tons of material was removed and repositioned at the toe of a slide which threatened the heap and tailings pile. About 160 people are employed at DeLamar.

Nerco was indicted on six misdemeanor counts in U.S. District Court in Boise for violations of the Migratory Bird Treaty Act. The company has pleaded innocent to the charges which relate to the death of some 100 water fowl on the company’s tailings pond. The pond contains cyanide used in processing gold-silver ore. The charges were prepared after 23 dead birds were found at the pond last November. The company took immediate action to mitigate the problem including around-the-clock surveillance of the 125 acre pond (employing 36 people), fencing the entire area, and conducting an intensive hazing program including using propane powered noise cannons, a sophisticated radar system, loud rock music, and other audio and visual harassment techniques to discourage birds from landing on the pond. Even with these precautions, a flock of ducks was forced to land on the pond during a severe storm in April. In spite of company efforts, 56 birds were killed. To permanently correct the problem, NERCO agreed to construct an acid volatilization plant to destroy the cyanide before it goes into the pond. The process is based on new technology developed by the DuPont Company and should eliminate the problem by March, 1992. A pilot-plant program was successful. Construction of a full scale plant, which will cost several million dollars, began late in the year and should be completed next spring. Liquid in the tailings slurry will be acidified and volatilized to capture hydrogen cyanide gas which will be reused in a closed circuit within the mill. The company is also considering constructing a water treatment plant to eliminate acid runoff problems.

MinVen Corporation (and Pioneer Metals Corporation)

Pioneer Metals settled a lawsuit with Pegasus Gold resulting in Pegasus assuming ownership of the Stibnite gold mine in central Idaho. The suit involved default on a $12 million loan from Pegasus to Pioneer that was secured by the mine. MinVen Corporation purchased the mine from Pegasus for $6.5 million in mid year. MinVen employs 30 people at the site. The mining contractor, D.H. Blatner, employs an additional 70-80 contract workers at the open-pit heap-leach gold mine. The actively mined West End Pit (almost a million tons at .039 ounce-per-ton gold) contains gold in calc-silicates and fractured metasediments along a jog in the West End fault. Mining takes place on 20 foot benches and the crushed ore is
placed on 5 onload/offload pads. Gold is stripped from pregnant solution in a carbon circuit and goes through an electrowinning cell before firing. The dore contains about 30% silver. Approximately 27,000 ounces will be mined in 1991. The Splay Pit was mined out last year. Known reserves (2.6 million tons of 0.043 ounce-per-ton gold in oxides with a 2.5 to 1 strip ratio) in the Midnight, Northeast, Stibnite, and Garnet Creek pits will last for 2-3 years at present production rates. Exploration work, including soil and rock sampling, geophysics, and drilling was ongoing in 1991. Approximately 150,000 ounces of gold have been recovered from Stibnite since mining started in 1982. The property was a tungsten and gold producer in World War II and was developed in the early 1980's by Canadian Superior Mining Company. Pioneer Metals purchased the mine in 1986. MinVen spent about $10 million at the mine this year. The company has also corrected problems that led to minor diesel and cyanide contamination at the site last year.

Hecla Mining Company

Hecla Mining Company was winding down operations at the Yellow Pine mine, located at Stibnite. During 1991, Hecla finished mining low-grade ore out of the Homestake Pit and discovered about 200,000 tons of 0.05 ounce-per-ton gold oxide ore stockpiled from the old Bradley mine. About 15,000 ounces of gold were produced during the year. Recontouring and other reclamation efforts at the Homestake Pit were nearly completed, and Hecla received the state's "Award for Reclamation for Excellence in a Large Mine." Metallurgical testing continued on the larger sulfide orebody under the old Bradley Pit that contains 0.09 ounce-per-ton gold.

Idaho Gold Corporation

Idaho Gold Corporation, a subsidiary of Bema Gold Corporation, started mining the South Zone pit at the Champagne Mine west of Arco in Butte County. Geologic reserves in the South Zone were about 1.1 million tons of 0.02 ounce-per-ton gold. Some 30,000 tons of higher grade colluvial ore remain in the main Champagne pit. Phase 3 of the leach pad was constructed in May to accommodate the South Zone ore. The mine produced 24,700 ounces of gold and 182,000 ounces of silver from 1,421,000 tons of ore at a very low operating cost of $164 per-ounce gold in 1990. Production averaged about 8,000 tons of ore and 7,000 tons of waste per day. About 1,294,000 tons of waste rock was moved during the year. Revenue from the mine was $11.6 million with a $6.5 million profit. Unfortunately, exploration results were very disappointing and Idaho Gold will finish mining at the Champagne mine by spring 1992. Secondary leaching, washing, and reclamation will take another year and a half. Production decreased from 10,746 ounces of gold during the first half of 1990 to 8,173 ounces in 1991. However, production should reach about 20,000 ounces for the year. Cash cost for the mine was $208 per ounce for the first 6 months of 1991.
U.S. Antimony Corporation

U.S. Antimony opened the new Yellowjacket mine in Lemhi County after a mill shake down in May. The mill was constructed and the mine opened in a joint venture with BumbleBee Inc. A near-surface resource of about 300,000 tons of 0.1 ounce-per-ton gold was drilled out by Westgold in 1989. The mine has reserves of 41,279 ounces of gold with additional reserves possible. Ore is hosted in brecciated and oxidized Precambrian Yellowjacket Formation above a footwall fault. About 2,000 ounces of gold were poured from the new mine this year. Mine life is estimated at 10 years and the operation employs fifteen people. Mill feed was averaging about 150 tons-per-day. U.S. Antimony's custom mill at Preachers Cove on the Yankee Fork processed the concentrates from the Yellowjacket. Custom milling at Preachers Cove was curtailed due to a lawsuit. The mill was closed until very late in the year except for processing concentrates from the Yellowjacket. Plans called for restarting the mill in November to process ore from the Lost Packer mine on Loon Creek and the Black mine near Custer. There was bad news at year's end when officials announced that U.S. Antimony was near bankruptcy. The company lost $1.2 million from the lawsuit and suffered losses from a fire which burned the main office and laboratory in Thompson Falls, Montana late last year.

Other Small Mining Operations

A small tonnage of silver-lead ore was mined from the King of the West underground mine near Dollarhide Summit. The operator hopes to process the ore in a flotation mill in Kuna.

The Phi Kappa mine reportedly operated east of Ketchum.

NJB, Inc., started a small open-pit gold mine and gravity mill northeast of the Red River Ranger Station near Elk City.

Three men worked at the Lost Packer mine in Custer County and shipped some ore to U.S. Antimony's custom mill on the Yankee Fork of the Salmon River.

Placer Mines

Late this fall, A and T Mining moved downstream near Milepost 211 where Highway 95 was rerouted and construction exposed part of the old bed of the Salmon River. The company mines placer deposits and sells river gravel for construction. Earlier in the summer, A and T was mining about 500 yds. a day on John Day Creek. About 40 feet of gravel overburden had to be stripped to reach the paystreak which was within 6 to 12 feet of the old bedrock surface. The operators profited from crushing and selling the overburden rock to the county for gravel, supplementing gold recovery which averaged only $3 per yard.
Seubert Excavators, Inc., of Cottonwood, Idaho, ran seismic lines and drilled a Phase 1 program of 10 shallow (150 foot) holes on the Delamar Sage claims near Jordan Valley and 4 miles west of the Delamar Mine. They were searching for a placer/lode deposit and hoped that the survey would reveal depressions in the bedrock surface. Drill testing of the seismic targets did not find any gold mineralization. The company also ran a few seismic lines near Leggett Creek (near Golden) to look for buried placer targets, but shelved a follow-up drilling program.

Other placer operations in Idaho in 1991 included:

The Twin Springs placer (George Castle) on the Middle Fork of the Boise River ran during the summer.

A four-acre placer mine was operated in the Boise Basin by Coyote Resources and Development.

Calument Placer Mine applied for a permit to mine 25 yards-per-day on claims located adjacent to Franklin Creek near the Pony Meadows Road in Florence Basin.

A small placer gold operation on South Boone Creek in the Targhee National Forest was operated by Mace Riddle of Rexburg.

Several small placers were operating near Dixie.

A placer was operating at the 100 Dollar Bar on the west side of the Salmon River.

Ted Scharff worked a placer gold claim near Centerville.

Yellow Eagle Mining Inc., ran a small operation on Orofino Creek near Pierce.

Roeder Mining employed two people at the Golden Chariot Placer in Elmore County.

Hobby suction dredging continued to be a popular past time. A number of the small dredges operate in most of the old placer producing districts in the state during the summer months. Operation of a small dredge requires obtaining a "one-stop permit" from the Department of Water Resources.
PHOSPHATE MINES AND PLANTS (Figures 2 and 4)

Introduction

According to the U.S. Bureau of Mines, production of marketable phosphate rock in the United States during the 1991 crop year increased 1% to 46.8 million metric tons versus 46.4 million tons in 1990. This amounts to about 30% of world production. Value increased from $22.45 per metric ton in 1990 to $22.97 this year. Phosphate is produced in the United States in Florida, North Carolina, Tennessee, Idaho, Montana, and Utah. Idaho accounts for about 9-10% of the phosphate mined in the country. According to the U.S. Geological Survey and the U.S. Bureau of Mines, the high grade phosphate resources of the U.S. are dwindling and the country may turn from a net exporter of phosphate to an importer within the next few years. About 87% of the country's supply is in Florida and North Carolina and these resources are nearing depletion. Planned production in the U.S. will drop to about 17 million tons by 2030 from 46 million tons this year unless new deposits are located or technology enables us to use lower grade ores. The increased cost of using lower grade deposits may increase food costs.

The Chicago Board of Trade (CBOT) started trading futures contracts for diammonium phosphate (DAP), the principal phosphate fertilizer. The new contract reportedly was a success with 669 contracts outstanding at year's end. Futures are used to insure prices for buyers and sellers for commodities that will be delivered several months later. The contracts can also be used as a highly-leveraged speculative investment instrument.

In Idaho, the Monsanto Company and FMC Corporation produce elemental phosphorous which has a wide variety of industrial applications. J.R. Simplot Company and Conda Partnership make various grades of phosphoric acid for use in fertilizers. Rhone Poulenc Basic Chemicals Company mines phosphate in Idaho and ships the ore to an elemental phosphorous plant at Silver Bow, Montana. None of the Idaho producers ship phosphate rock as a saleable commodity. The number of operating phosphate mines and plants in the United States continued to decrease in 1990-91. Chevron placed its mine in Utah and fertilizer plant in Wyoming up for sale and Occidental Chemical Corporation closed an elemental phosphorous plant in Tennessee.

About 2,500 employees work in mining and processing phosphate in the state. According to the Idaho Department of Employment, the average wage paid for a miner in the phosphate industry in Idaho is $36,000 and for a worker in the processing plants, over $40,000. More than one-third of all non-agricultural workers in Caribou County are directly employed in the phosphate industry.
Figure 4. Phosphate mines and plants in Idaho, 1991
FMC Corporation

FMC Corporation benefited when Occidental Chemicals and Olin Corporation announced they were abandoning the elemental phosphorous business. Occidental operated plants at Columbia, Tennessee and Jefferson, Indiana and Olin maintained a unit at Joliet, Illinois. The closures resulted from the deepening national recession. FMC acquired OxyChem's customer list which should help the company maintain full production at its Pocatello plant.

FMC began construction at a new mine in Dry Valley to replace dwindling reserves at the Gay mine. Reserves at the Gay mine, located on the Fort Hall Indian Reservation, 25 miles northeast of Pocatello, will run out in 1994. About 70 million tons of ore has been removed from the Gay since mining began in the 1940's. The ore was used in FMC's plant and at Simplot's fertilizer plant, both in Pocatello. The new Dry Valley mine, located about 25 miles north of Soda Springs, will be in full production by early 1995 with about 20 years reserves. Preproduction stripping will start next year. FMC started construction on a railroad siding at the new minesite. They recently received the 404 permit for the mine. The company has other leases in the area with an additional 20 years worth of reserves. Ore will be shipped from Dry Valley to Pocatello by rail. Simplot was the mining contractor at the Gay but FMC will do its own mining at Dry Valley, employing about 75 people. Workers at the Gay mine will be offered jobs at the new mine. Both FMC and Simplot received an award in August from the State Land Board for reclamation at the Gay mine.

The company uses about 1.5 million tons of ore per year to feed the elemental phosphorous plant at Pocatello, the largest such facility in the world. The plant employs about 600 people and produces approximately 260 million pounds of elemental phosphorous per year.

To replace the loss of income from the closure of the Gay mine in 1994, leaders of the Shoshone-Bannock tribe plan on taxing businesses located on the 544,000 acre reservation which includes FMC's plant at Pocatello. Royalties on the ore extracted from the mine account for about 30 percent of the tribes revenue. The tax plan calls for imposing a 3% possessory interest tax on utility companies serving the reservation and a $100,000 annual severance tax on FMC's phosphate operation. All agricultural businesses are excluded from the new tax. The Bureau of Indian Affairs rejected the plan in May citing a lack of adequate public hearings but overturned itself and approved the tax measure in October. The counties are worried that they would loose tax revenues under the plan. About 28% of Power County's property tax income is from the reservation including a large portion from FMC. There was also concern about the legality of double taxing non-indian industries on the reservation, once by the state and counties, and again by the tribe.
The U.S. Supreme Court upheld a 9th Circuit Court of Appeals decision stating that the Shoshone-Bannock Indian tribe could dictate hiring practices at the Gay mine and in the Pocatello phosphorous plant. The appeal was filed by FMC. The tribe sued FMC in 1987 alleging that the company had failed to follow employment guidelines laid down by the Tribal Employment Rights Office (TERO). The tribe then mandated that 75 percent of the job openings and all promotions at the plant should go to Indians. The tribe also ordered FMC to pay $100,000 to the tribe annually and award one-third of its training opportunities to Indians. A federal judge blocked the Indian’s claims but was overturned by the 9th Circuit Court.

In October, the Environmental Protection Agency announced that both FMC and Simplot’s plants at Pocatello were part of the East Michaud Superfund Site. EPA had proposed adding the plant sites to its National Priorities List in 1987 and they were formally included in August last year. Heavy metals detected in the soil and water at the 2,530 acre site prompted the listing. The pollution has occurred over a long period of time. FMC’s plant has operated since 1949 and Simplot’s since 1944. In May, both FMC and Simplot agreed to conduct a Remedial Investigation and Feasibility Study, the first step in determining the type and extent of contamination. Both companies will pay for the studies and cleanup and are cooperating fully with state and federal agencies. The study, under EPA oversight, will take about two years. A proposed plan of action for site cleanup will follow the initial study.

Under an agreement with EPA and the state Department of Environmental Quality, FMC installed almost $14 million dollars worth of state-of-the-art secondary scrubbers on it’s four calciners to reduce radionucleide emissions from 8-10 curies per year to less than 4 curies. Even with the new equipment FMC may not be able at all times to meet EPA’s current standard (2 curies per year) imposed in 1989. The company has asked EPA for a waiver that will allow the plant to operate at a 4.5 curie per year level. The scrubbers will remove about 50% of the hazardous radionucleide particles emitted from the calcining operation. Water and organic material are removed from the phosphate ore by calcining the ore. In FMC’s plant, the ore is molded into briquettes, calcined, and then fed into the electric furnaces where the ore is melted and elemental phosphorous recovered. The scrubbers will be driven by four 2,000 horsepower electric motors that will consume about 5 megawatts of power annually. Another improvement, costing some $1.5 million, will prevent phosphorous gas from escaping from around the electrodes in the electric furnaces. The company is also completing a $3 million clean-water sprinkler system at the slag pit. Previously, the company used recycled water from the plant that contained phosphorous to cool the molten waste slag. When the water contacted the hot slag, phosphorous was released. Using clean water will solve the problem. All of these measures will help to reduce the visible emissions from FMC’s plant by 75%.
From 1975-1990, FMC has spent about $60 million addressing environmental problems and will spend another $40 million over the next five years. The company has a fully staffed environmental quality department in Pocatello. FMC is participating in a voluntary program with EPA to reduce the use of several hazardous solvents in the Pocatello plant by 50%.

Workers at the Gay mine received a nice Christmas present when FMC distributed some $500,000 among 88 employees. The bonus was part of an incentive program to encourage safety and improve production. The company made an agreement with the workers that if they could save FMC money in four categories, (production costs, ore quality, ore recovery, and safety) they would share in the profits.

Monsanto Company

Monsanto Company began processing ore from its new Enoch Valley mine early in the year. The new mine, with about 14 years of reserves, replaces the Henry mine that was exhausted last year. Monsanto uses about 1 million tons of ore per year to feed its elemental phosphorous plant at Soda Springs. Dravo-Soda Springs, the mining contractor, employs about 80 people. The ore is hauled from the mine to the plant on company roads built to handle the very heavy truck loads. The Soda Springs plant employs about 400 people and produces approximately 225 million pounds of elemental phosphorous per year. Monsanto also mines about 200,000 tons of quartzite per year from a nearby quarry for slag in the plants electric furnaces.

The company donated $50,000 to the University of Idaho for constructing the new McClure Earth Science building.

Kerr-McGee

Kerr-McGee installed a new $150,000 ammonia scrubber at its vanadium recovery plant in Soda Springs. The new system captures over 90% of the ammonia and recycles the gas back into the plant process. The company separates vanadium from ferrophosphorous slag, a waste product from Monsanto’s elemental phosphorous plant located across the road from Kerr McGee. Vanadium is used as a catalyst and to make specialty steel. The plant at Soda Springs is the largest producer of vanadium in the United States, employs about 60 people, and produces over 4.0 million pounds of vanadium per year. Recently, the price of vanadium pentoxide has experienced wide swings ranging from almost $9 per pound in 1990 to about $3 per pound at the end of 1991.

Waste from the vanadium plant is shipped to Evergreen Fertilizer in Soda Springs. Evergreen makes specialty fertilizers including a zinc-rich variety that is superior for
growing corn. Zinc fertilizer is also useful on calcareous soils, soils low in organic matter, and soils that have been harmed by land-leveling or erosion.

**NuWest Industries, Inc.**

NuWest Industries announced that it would not mine any new ore during November and December to conserve capital. The company uses about 1.5 million tons of ore from the Mountain Fuels Lease in Dry Valley. Conda Mining, a division of Washington Construction Company, is the mining contractor. The slowdown forced Conda Mining to temporarily lay off about two thirds of the 150 people employed in the mining venture. NuWest took over the Conda fertilizer plant when the former owner, Beker Corporation, went bankrupt in 1987. As part of the reorganization, NuWest pays the contractor for the ore before it is mined; therefore stockpiling ore ties up capital. NuWest employs about 207 people at the fertilizer plant at Conda. Western Cooperative Fertilizer of Calgary, Ontario, is a partner in the fertilizer operation known as the Conda Partnership. Western employs 46 people who operate a calciner and washing plant adjacent to the Conda plant for the partnership. Western did not ship any fertilizer to Canada in 1991.

**J.R. Simplot Company**

J.R. Simplot continued to expand and modernize facilities centered on its huge Don fertilizer plant in Pocatello. Highlighting 1991, was the completion in August of the 60 mile-long slurry pipeline connecting the Conda plant to Pocatello. The 60 mile line connects to another 27 mile-long pipeline from Conda to the company’s mine at Smoky Canyon near Afton, Wyoming on the Idaho-Wyoming border. The slurried phosphate ore is pumped to Pocatello by two 1,200 horsepower pumps at Conda. The company plans on pumping about 1.5 million tons of ore annually. The new line cost $30 million and is expected to last 30-40 years, the expected life of the Smoky Canyon mine. Over 6,000 tons of 8 inch-in-diameter, 5/8 inch thick, steel pipe were used for the project. The line will run 24 hours a day and move 230 tons of ore per hour. The route of the buried pipeline has been reclaimed and returned to a natural state. Water from the slurry will be recycled. The Union Pacific railroad will be affected by the new pipeline, loosing income from the approximately 3,000 rail cars per year that formerly transported ore from Conda to Pocatello. A bonus is a 90% reduction in dust pollution from the Pocatello plant as the ore will be used directly and eliminate ore stockpiles. Simplot, uses a proprietary filter and digestion process at the fertilizer plant which allows processing of uncalcined, organic-bearing ore. The new process enabled the company to shut down its calciners last year resulting in a 65% reduction in particulate emissions from the plant and bringing it into compliance with air quality regulations. Additional environmental updates included a $3 million improvement to the bag house to reduce particulate emissions from the stack. The company produces about 400,000 tons of phosphate fertilizer per year.
Simplot began work on a new 489 acre tailings impoundment at the Smoky Canyon mine early in 1991. The new site will disturb 137 acres of wetlands. To obtain a 404 (wetlands) permit from the Environmental Protection Agency and the U.S. Army Corp of Engineers, the company will restore up to 195 acres of former wetlands lost to livestock grazing or other uses and post a $75,000 performance bond. Over 110 persons are employed at the mine and mill.

Simplot purchased the phosphate mine at Vernal, Utah, and the fertilizer plant at Rock Springs, Wyoming, that were closed last year by Chevron Chemical Company. Farmland Industries, Inc., one of the largest farmer-owned manufacturers of farm fuels and fertilizers in the United States, is a joint venture partner in the purchase. Farmland had sales of $3.3 billion during its last fiscal year compared to an estimated $1.3 billion for Simplot. Farmland and Simplot will operate the mine as a new entity, FS Industries, and each company will independently sell the plant’s production. Chevron pumped slurried phosphate ore through a 96 mile-long pipeline from Utah to Wyoming. The company extracted sulfur (necessary to make sulfuric acid to produce phosphoric acid) from sour gas from Chevron’s gas wells in the Rock Springs area. The mine has 700 million tons of reserves. The asking price for the facility was reportedly $60 million but the amount paid by the partners has not been disclosed. Chevron reportedly spent over $300 million building and improving the mine, pipeline, and processing plant. The plant is expected to produce about 175,000 tons of fertilizer annually. About 300 people were employed in the mining and processing operations.

The company signed a $1.9 million contract with EG&G Idaho to test a new biotechnology for extracting phosphate from ore. The process, developed by EG&G, uses microorganisms at the minesite to separate the phosphate from waste rock. The company is the prime contractor for the U.S. Department of Energy at the Idaho National Engineering Laboratory. The contract is the largest awarded EG&G as part of its technology transfer program with private companies. A small pilot operation will be built at Simplot’s Pocatello plant to test the process.

**Rhone-Poulenc Basic Chemical Company**

Rhone-Poulenc mined all year at their South Rasmussen Ridge mine. The company employs about 60 people at the mine and load-out facility north of Soda Springs. The mine replaces the Wooley Valley mine which was mined out this fall. The phosphate ore is shipped to the company’s elemental phosphorous plant near Silver Bow, Montana.

**Alumet**

The Idaho Supreme Court overturned a 6th District Court decision that Alumet had defaulted on a phosphate lease agreement with the Bear Lake Grazing Company.
The 6th Court decision set minimum production at 1 million tons of ore per year from the Lanes Creek mine in Upper Valley (north of Soda Springs) with a royalty to Bear Lake of $250,000. Alumet claimed that adverse market conditions had prevented them from mining profitably. The company did mine some ore between 1978 and 1983 and paid some $9,000 in royalties. The Supreme Court ruled "..we hereby..... hold that an implied obligation of a lessee to exercise reasonable diligence in development and mining maybe suspended, or totally terminated, if the market and economic conditions are such that development would result in a net loss to the lessee."

**N.A Degerstrom, Inc.**

Degerstrom closed its gallium-silver extraction plant in Soda Springs in August due to malfunctioning equipment. The $2.25 million plant which started up in February was designed to extract silver and gallium from treater dust, a waste product of the elemental phosphorous process. The company obtained the dust from Monsanto's plant. Plans called for extracting about 4,000 kilograms of gallium and 180,000 ounces of silver per year. About 25 workers were placed on vacation awaiting the arrival and installation of new equipment.

**Soda Springs Phosphate**

Soda Springs Phosphate may have to close their doors, victims of federal regulations that banned the sale of treater dust from elemental phosphorous operations because it contains cadmium, classified as a toxic material. The company made fertilizer out of the waste product. Since 1972, Soda Springs Fertilizer has processed more than 225,000 tons of the dust from FMC and Monsanto's plants in Idaho and Rhone-Poulenc's plant in Montana. The company cut its staff in February from 15 employees to 5 and is hoping to stay in business making an organic fertilizer.

**OTHER PHOSPHATE NEWS**

A study continued to evaluate the potential health hazard from phosphate slag. The slag, a waste product of the elemental phosphorous plants at Soda Springs and Pocatello, has been used as an aggregate for concrete and road pavement for many years. Last year, in a report titled, "Idaho Radionucleide Study," the EPA warned of a potential hazard from slightly radioactive slag. The radionucleides come from the original phosphate ore which contains trace uranium and other radioactive minerals. Several towns in the area imposed bans on using the material for paving. The Science Advisory Board is evaluating EPA's report. EPA plans on keeping the local communities involved in whatever action the agency takes following completion of the review.
In November, the Shoshone-Bannock Indian tribes announced plans to adopt a new air quality standard that will fine industries on the reservation $25 per ton for each ton of dust and smoke emissions. Industries on the reservation that may be impacted by the rule include FMC, AEI Corporation, Bannock Paving Company, and a number of other non-phosphate related plants.

The Caribou National Forest, Idaho Department of Lands, and federal Bureau of Land Management signed a memorandum of understanding with Monsanto, FMC, J.R. Simplot, and the Conda Partnership to work on a Southeast Idaho Phosphate Showcase Project. Under the MOU, the companies and agencies will first produce a video and a set of printed materials about the phosphate industry in Idaho. Proposed audiences include public interest groups and high school students. The MOU also fosters a continuing partnership between industry and state and federal agencies.

In November, the Caribou National Forest dedicated a trailhead and facilities donated by J.R. Simplot. The trail at Inman Canyon south of Pocatello follows a portion of Simplot’s new slurry pipeline. Public use will include hiking, cross-country skiing, and snowmobiling.

**INDUSTRIAL MINERALS** (Figure 5)

**Limestone**

*Idaho Travertine* had an excellent year in 1991, with the plant at Idaho Falls running for the last 6 months of the year at near capacity with three shifts. The stone cutting plant and travertine quarry employ 40 people. Sales were up about 50% over last year due to the company diversifying into other rock materials than just travertine. For example, 1,200 tons of sandstone were quarried from the old Table Rock quarry near Boise for building the new Athletic Complex and Business School at the Albertson College of Idaho in Caldwell. The large sandstone blocks were trucked to Idaho Falls, cut into facing slabs, and trucked to Caldwell. New construction at St Lukes Hospital in Boise, scheduled to begin next year, will also make use of this attractive stone. Demand improved for the company’s hallmark stone, travertine. About 25,000 cubic feet of the rock was mined from the company’s quarry, located east of Idaho Falls. The stone was used to finish the interior of part of the new Idaho Power Building in Boise. The company also finished facing a large federal building in Oakland, California with dolomite from Minnesota and a new building for Chrysler Corporation in Michigan is nearing completion. Business should stay healthy, as the company has a number of new contracts for facing and building stone.

*Continental Lime* drilled two holes on limestone claims located northwest of Soda Springs on the Hatch Ranch. Four holes were drilled last year. Results were
disappointing as the lime deposit has too many impure beds. The lime would be used for making caustic soda at Green River, Wyoming and for scrubbing high sulfur coal at coal-fired power plants in the Dakotas and eastern Montana. Currently, limestone for the above uses comes from Utah and Nevada.

Chemstar Lime Company (part of the Chemical Lime Group) dedicated their new $24 million lime plant and quarry located near TenMile Pass, in September. The new plant will come on line in the second quarter of 1992. Citizens from the town of Bancroft (Pop. 393) located 6 miles northeast of the mine, welcomed the company and the 35 full-time jobs at the new facility. The new operation will account for about one-fourth of the city's tax base. The plant will produce up to 600 tons per day of two grades (98% and 90% purity) high-calcium lime. Chemstar has at least 20 years reserve and plans to mine 2 million tons per year. A new high efficiency Maerz gas-fired twin-stack kiln (for burning lime), fabric dust filters, and automated plant controls, will make this operation one of the most efficient and cleanest in the world. The new plant exceeds current environmental requirements and will achieve the lowest emissions of any lime plant in the U.S. The calcium will be mined from a Mississippian algal-reef limestone deposit. The lime will be sold to Geneva Steel in Orem, Utah and soda ash operators in Wyoming. Chemstar will also sell lime to heap-leach gold operations for maintaining the pH of cyanide solutions and for other uses in the Pacific Northwest and Intermountain states.

Owyhee Calcium Products mined oolitic limestone from a quarry near Grandview for use as an animal feed supplement. The company ships about 6-10,000 tons of the material per year. The lime is quite porous, making it easier for cattle to digest than more dense crystalline limestone that must be ground to -300 mesh to get the same effect.

Ash Grove Cement produced about 210,000 tons of cement in 1991. The company employs about 70 people at the only cement plant in Idaho located in Inkom. Lime and silica for cement production are mined from pits near the plant. The demand for cement is up in the Pacific Northwest as foreign producers who were dumping cheap cement in Seattle and Portland have been heavily fined and have stopped the practice. Dumping involves selling excess product abroad much cheaper than you can sell it at home.

West One Minerals continued negotiations with Amalgamated Sugar to provide lime for a sugar beet factory in Nampa. An 11,000 ton sample was shipped to the plant last year for testing. The test was reported to be satisfactory. The limestone is mined from a quarry near Leslie Butte, some 20 miles north of Arco.
Figure 5. Industrial mineral mines, plants, and exploration projects in Idaho, 1991
Development and testing continued at one of the highest grade lime deposits in the world, the White Rock property, located northwest of Dubois. *Faxe Kalk*, a Danish company, purchased the deposit from E.J. Wilson and Sons last year and plans on using the limestone for paper filler. Wilson will mill the material when markets are established. *Faxe Kalk* is one of the largest suppliers of filler lime in Europe and is interested in opening U.S. markets. Development of the property has been delayed by a major price war in the U.S. paper industry.

*E.J. Wilson and Sons* mined about 7,000 tons of calcium from the Morning Glory claims for animal feed. The company also sold about 3,200 tons of bentonite from the Morning Glory for sealing fish ponds, basements, and water hazards on a golf course. About 5 people are employed in the mining enterprise.

About 10,000 tons of limestone were sold to Potlatch Corporation’s paper mill in Lewiston by the *Nez Perce Indian Tribe*. The rock is quarried from the Mission Creek quarry near Lapwai. Three to five men are employed in mining and trucking the limestone.

*Treasure Canyon Calcium* shipped about 20,000 tons of limestone to J.R. Simplot’s plant in Pocatello where it is used in the production of phosphate fertilizer. The plant employs about 13 people and limestone is mined from the Treasure Canyon No.2 quarry in Franklin County.

*Idaho Lime* processed 6,650 tons of stockpiled limestone at their plant at Grangeville. The lime was used for animal feed supplement and agricultural lime. The company did not mine any new material from their limestone quarry on Slate Creek but will drill the deposit extensively next year to improve grade and reserves. Several holes were drilled on other limestone properties this year including the marble deposit near Orofino which is too hard and contains too many impurities for Idaho Lime’s use.

**Silica**

*City Transfer* mined about 100,000 tons of sand from a pit at the top of Freeze Out Hill east of Emmett for *Unimin Corporation*. The company has applied for patent on these claims. About half of the sand is used for bottle glass and the rest for sand blasting and other uses, including a white sand for golf courses. Unimin employs about 15 workers at a washing and processing plant at Emmett.

*Mackay Mining*, a small company out of Moore, Idaho, mined a 500-ton test sample of silica from near Elbow Canyon, east of Mackay.

Bert Wilfong of Sweet, Idaho, applied for a salable commodity permit for a sandstone quarry (the *Recompense Mine*) between Tripod Peak and Sagehen
Resevoir in the Emmett area. The sandstone is part of the Payette Formation. He also has a gold mining claim on the same property. There was no further activity pending a market analysis, conducted by Boise State University, and completing the permitting process.

*Table Rock Sandstone* employed two stone cutters all year to process rock from the old Table Rock sandstone quarry in Boise. Some of the stone was shipped to Idaho Travertine (see limestone section). The rock is also used for landscaping. The operation is owned by Hans and Gerhard Borbonus of Boise.

Twenty three people are employed at *Monsanto’s* silica pit located west of the elemental phosphorous plant near Soda Springs. The mining contractor is Conda Mining, Inc. *FMC* operates a similar quarry. Both companies use the silica for slag in the elemental phosphorous process.

**Diatomite**

*Grefco, Inc.* continued development of the Deep Creek diatomite deposit in Owyhee County. The deposit is one of the highest grade diatomite deposit in North America. Part of this year's work included reclamation of areas disturbed by last year’s exploration efforts.

Joe Lend from Bruneau was reportedly mining some diatomite for cat litter.

**Pumice and Perlite**

*Hess Pumice* shipped approximately 15,000 tons of pumice during the year. The company continues to make inroads in Japanese markets, shipping some 700 tons of ultra pure pumice this year. The Japanese require a very pure product and Hess has developed a way of removing all heavy minerals and other foreign substances from the pumice. About 30 people are employed at the plant in the industrial park in Malad and at the Wright’s Creek pumice mine north of town. Pumice has a wide variety of uses, most utilizing the material as an abrasive or polishing medium.

*Producers Pumice* (a subsidiary of *Builders Masonry Products*) mined almost 16,000 tons of pumice from the Rock Hollow mine near Idaho Falls. All of the material is used as light-weight aggregate. About 2-3 men are employed in the seasonal mining operation.

Three men working for *Amcor, Inc.*, mined about 11,000 tons of pumice from the Sunnyside pit near Idaho Falls. All of the material is used as light-weight aggregate.
Mountain West Bark of Rexburg leased a pumice pit near Magic Valley Reservoir. They mined and crushed some of the rock that had been stockpiled in the spring.

National Perlite (a division of Oglebay Norton) ran its perlite plant and mine in Malad until October when the operation was shut down for air quality violations. Almost 25,000 tons of bulk and expanded perlite were shipped before the plant closed. The shut down forced the layoff of 23 employees in November leaving only five at year’s end. The plant, located in town, is an old facility and dust has always been a problem. National is studying the feasibility of using a harder perlite from a different part of the deposit. The harder material will cut down on the dust problem at both the plant in town and the mill at the minesite. The company hopes to start operations early in 1992 following extensive testing of the harder perlite and new dust abatement equipment. National contributes approximately $1 million per year to the local economy.

Garnet

The largest producer of garnet in the United States, Emerald Creek Garnet, continued to increase annual production. The company shipped 29,000 tons of garnet product this year compared to 27,000 tons last year. Most of the garnet is used as an abrasive or in filtration. About 36 employees work at the mining operation, jig plant, and sizing and bagging plant. All of the garnet is dredged from Emerald and Carpenter Creeks so the operation which uses five washing plants and draglines, is also the largest placer mine in the state. Each of the five washing plants can mine about 4 acres per year. In November, it was announced that Hawkeye Developments, a Canadian company, had purchased Emerald Creek for $2.5 million. Hawkeye and partner Polestar Exploration are opening the Crystal Peak Garnet mine near Hedley, B.C. This will be Canada’s only garnet operation. Garnet mined at Crystal Peak will sell for about $100 per ton for sandblasting and about $150 per ton for use in filtration and in water jets.

Clay

Clayburn Industries employed 8 men operating the kiln at the former Simplot clay plant near Deary. A total of 1,362 tons of calcined clay for making refractory brick was shipped to the company’s plant near Abbotsford, B.C.

Applied Industrial Minerals Corporation (AIMCOR) operated the Ben-Jel bentonite pit near Oreana in Owyhee County. The company processes the white clay (used to make paper) at a plant in Caldwell. Eight people are employed at the plant that ran two shifts in 1991 due to the very high demand for this product. At Caldwell, the clay is blended for color, has other chemicals added to it, and is then dried in a gas-fired dryer. About 90 to 95% of the material is very fine (-270 mesh). Mining is done in the summertime. The bentonite is a low-cost mineral to mine and process.
but has a very high value-added bonus. The company will expand the plant, if warranted by market conditions.

**Scoria**

*Mountain West Bark* mined 45,000 tons of scoria from deposits near Rexburg and Soda Springs. The material is used for landscaping. The company’s main business is selling bark for landscaping, and they contract with 2-3 men for mining the scoria.

**Gypsum**

*Silver Still Mining Company* reportedly mined some gypsum from the Iron Mountain deposit near Weiser. The rock is used for agricultural applications.

**Stone**

Three companies produce Oakley Stone quarried south of Oakley.

*Northern Stone Supply* uses four contractors for mining quartzite at its Rocky Mountain Quartzite quarry. About 40 people are employed in the operation with Northern Stone employing three full time workers. The company sells slab quartzite for paving and facing applications.

*Idaho Quartzite* is undergoing reorganization. The company shipped 1,500 to 2,000 tons of quartzite flagstone to markets in the U.S. and overseas. The company does not have its own quarries but buys quartzite from other operators.

*Oakley Valley Stone* employed about 30 workers during the year mining and selling Oakley stone. The company gets quartzite from the Valley View mine.

*The Rocktile Company* in Boise cuts 125,000 square feet of tile from Oakley Stone annually. Most of the tile is used as a facing stone. Slabbed rough quartzite is purchased from other companies. The tile is shipped to markets in the U.S., Europe, and Japan. Rocktile has a 13,000 square-foot tile-cutting production plant in Boise and employs 8-12 people. The business has been in operation for about 5 years under the current owners. A large inventory of over 30,000 square feet of tile insures quick turnaround on orders. The company can do specialty work like edge finishing and honing tile and also sells flag stone.

**Gemstones**

*Tino Murillo* has been extracting a green variety of turquoise which is called Chalchihuitl, the ancient stone of the Aztecs, from claims near Garner Canyon,
north of Island Park. Mr. Murillo sells the stone at the Lemhi Rock Shop in Pocatello. He has submitted a plan to the U.S. Forest Service to mine it and sell the material.

*Spencer Opal* continued to operate on their newly patented property. The claims are open in the summer months for fee collecting by rock hounds.

*Calvin Lichtenwalder* was attempting to develop some opal claims near Spencer Opal.

*Larry Ridley* built road, moved a waste dump, and opened an exploration pit for jasper on the White Rind mining claim at Indian Hot Springs on the Bruneau River. He is trying to expand activities on the claim which is grandfathered into the Bruneau River wilderness study area.

Under U.S. Forest Service regulations, mineral collecting in a national recreation area is illegal except by special permit. Enforcement of this rule was stepped up to stop commercial collectors and other rock hounds from collecting smoky quartz, aquamarine, and other crystals from the Sawtooth Mountains and the rest of the Sawtooth National Recreation Area. A special permit may be granted by the Forest Service for collecting minerals for scientific research.

**Aluminum Recycling Plant**

*IMSAMET* (a division of EnviroSource, Inc.) agreed to pay fines totaling $86,000 for violating air quality standards at its aluminum can recycling plant near Hauser Lake. The company also agreed to conduct a second round of emission tests for air-quality standards. The plant annually recycles some 80 million pounds of aluminum cans and 40,000 pounds of additional scrap and employs 75 people. The melted aluminum is trucked to Kaiser Aluminum’s Trentwood plant near Spokane.

**Zeolites**

*Teague Mineral Products* mined zeolite (clinoptilite) from a quarry near the old townsite of Sheaville near the Idaho-Oregon border in Owyhee County. The mineral is processed at Teague’s plant at Adrian, Oregon. A new market for the zeolite is in waste water treatment.

*John and Tony Clapier* from Dietrich were reported to be mining zeolite (clinoptilite) for cow feed.
Kyanite

division staked some claims and did surface mapping near about 20 miles from . The area is underlain by high-grade Precambrian metamorphic rocks. rumored to be interested in known kyanite deposits in the region. CONFIDENTIAL

EXPLORATION (Figure 6)

Introduction

Exploration activity in Idaho during 1991 was down about 50% from 1990 (Figure 6). The principal target of the 42 advanced projects was gold, though a few projects for base metals were underway. Of the six development projects noted last year, two, Pegasus Gold Company's Black Pine mine and U.S. Antimony's Yellowjacket deposit, were in production by year's end. Meridian Gold's Beartrack project at Leesburg, Idaho Gold Corporation's Buffalo Gulch mine near Elk City, Hecla's Grouse Creek project in Custer County, and Nerco Minerals proposed Stone Cabin mine in Owyhee County were delayed in part, by low gold prices and wetland permitting problems. A new gold discovery near Shale Mountain in the Kelly-Cayuse Roadless area was announced by a federal/state team who mapped and sampled the breccia-hosted occurrence.

Coeur d'Alene District

Exploration is part of normal mine development at all three remaining operating mines (Galena, Lucky Friday, and Sunshine) in the Coeur d'Alene district. Exploration was at a minimum in 1991, as the three mines cut back expenses and still lost money due to low silver and base metal prices. The main exploration project in recent years has been the Caladay project (Callahan Mining Corporation) which was shut down last year.

Other North Idaho

Cominco dropped the Buckhorn mine (Scout Mountain project) which was drilled last year. The mine is located in northern Idaho near the Idaho-Montana border.

Shoshone Silver employed a 2-3 man crew driving 200 feet of exploration drift during the summer at the Keep Cool mine in north Idaho.

Hecla Mining Company acquired a claim block leased by Cominco American from the Blackdome Mining Company and other parties near Blackdome Peak in Shoshone County. Cominco explored the area over the past few years for base
Figure 6. Exploration projects in Idaho, 1990 and 1991
(1991 - o = surface exploration, • = drilling program)
metals. Hecla is reportedly interested in the extensive kyanite deposits that are in this area as well as the metal potential.

In the Ruby Mining District of Clearwater County, *Kennecott Exploration* drilled seven core holes, each about 400 feet deep, at the King David mine. The target was several high-grade Coeur d'Alene type veins. Although there were some interesting intercepts, grades were inconsistent, and the company dropped the property.

*Kennecott* explored two copper skarn occurrences in Latah County. Both prospects were mapped and sampled. Three helicopter-supported Winkie holes were drilled at the Lad project on Laguna Creek north of Bovil. This property was later dropped. Somewhat better success was obtained at the LBC prospect on Little Bear Creek near Troy where Kennecott drilled seven shallow Winkie core holes into Belt Series rocks that are intruded by quartz diorite. Results are being evaluated.

*Fercott Gold USA Inc.*, announced plans to process 11,000 tons of stockpiled ore and start an open-pit gold and silver mine between Cottonwood and Ferdinand. Fercott will use a process for extracting the metals that was developed several years ago. Plans call for initially processing 50 tons of ore per day, eventually increasing to 150 or more tons per day. Production is planned for this fall employing about 20 people.

*Gold Fields* reclaimed and dropped a property in Florence Basin that was drilled last year.

*Cominco* conducted a drilling project in the Red River/Big Creek area near Dixie. Sixteen shallow reverse circulation (RC) drill holes were completed totalling 3,360 feet.

*Newmont Gold Company* drilled for the second year at Leggett Creek near Golden. They put down about 25 reverse circulation and core holes, but were somewhat disappointed with results. The company will continue reconnaissance exploration in the state next year. An unsubstantiated rumor noted that Newmont had been discussing a possible exploration program on lands owned or controlled by Potlatch Corporation near Pierce.

*Canyon Resources* reclaimed and dropped the Robinson Dyke property at Dixie. *Western Mine Engineering* is still promoting the property.

*NJB Mines, Inc.*, is developing a small open-pit gold mine near the Red River Ranger Station. A 25 ton-per-day gravity mill was built at Johnson Ranch, about seven miles from the mine. Mill feed averages about 0.125 ounce-per-ton gold
based on a test run of several tons of ore. Mining should start in the spring, after
construction of one more access road.

_Idaho Consolidated Metals Corporation_, announced plans for about 3,000 feet of
diamond drilling at the Petsite mine, south of Orogrande. Four tunnels at the mine
totalling about 1,200 feet have been reopened. The drilling program will test a
gold-bearing vein at depth that is exposed in the Walligura tunnel. The company
will use a proprietary process developed by Idaho Mining and Development
Corporation for extracting metals from the ore, if mining is warranted.

_Idaho Gold’s_ Buffalo Gulch heap-leach gold project near Elk City was delayed by
the 404 wetlands permitting process. The company had to resubmit lots of
information to several agencies including the Army Corp of Engineers and EPA.
Final BLM and State permits for Buffalo Gulch, which contains 4.8 million tons of
0.023 ounce-per-ton gold, were received last year. The project has been put on
hold indefinitely due to the protracted permitting process and low metal prices.
Four deposits, Buffalo Gulch, Erickson Reef, Deadwood, and Friday, contain
mineable oxide reserves of 9.2 million tons. The ore averages 0.025 ounce-per-ton
gold for a total of 230,000 ounces.

**Salmon Area**

A flurry of exploration activity in the Salmon area last year was sparked by the
Beartrack discovery two years ago. The action cooled down considerably in 1991.
Teck Resources, Corona, and Gold Fields, dropped or reduced their joint venture
interests. A number of properties were on hold waiting for improved metal prices.

A 404 (wetlands) permit, the snag that has recently caught many new mining
ventures in the United States, held up operations at the Beartrack gold mine under
development by _Meridian Gold_, a subsidiary of FMC Gold. The company plans to
restore 81.5 acres of wetlands or 2.5 acres for every acre impacted by the
proposed mine. The permit delay and weak gold prices have postponed startup of
the mine until next March. Meridian did some drilling at Beartrack this year and
lots of reclamation on outlying areas of the project. The open-pit heap leach
operation will produce 600,000 ounces of gold over its 7-year life, and employ
about 150 people with a $4 million annual payroll. Meridian was presented an
award by Governor Cecil Andrus and the Department of Lands for outstanding
reclamation on an exploration project during development of the Beartrack venture.

_Formation Capital_ regained full control of their Morning Glory and King Solomon,
Bobcat/Redrock, Moose Creek, and other properties in the Leesburg/Salmon
area. _Gold Fields_ drilled several of the sites this year and then dropped its option
as operator on the properties. Gold Fields then reclaimed, recontoured, and
reseeded, the Gannett Creek, Moose Creek, and Bobcat joint ventures. Formation
compiled results from past year's work and did additional surface mapping, geophysical surveys, and soil sampling, particularly on the Bobcat/Redrock land package. Four new target areas were identified. Permits were obtained and financing is being sought to drill new targets in the Moose Creek area, north of the Beartrack deposit, and at Comet Creek Ridge, near one of the original lode claims in the district.

*Hecla* would like to joint venture their Bowman project near Williams Pass, which is already a joint venture with Formation Capitol. Formation remapped the copper bearing area.

*Teck* drilled six holes at the Morning Glory property (adjacent to Beartrack) with some gold intercepts. The company reclaimed the King Solomon mine area where it has a joint venture with Formation Capital.

*FMC* returned the 17,000 acre Arnett Creek property to *American Gold Resources (AGR)*. Last year FMC drilled 35,000 feet near the Little Chief and Haidee mines near Arnett Creek. An independent resource estimation by consultants Pincock, Allen and Holt calculated a "potentially minable reserve" at Arnett Creek of 11.7 million tons of 0.028 ounce-per-ton gold for a total resource of 330,000 ounces. A larger "probable/possible" mineral inventory of 21 million tons of 0.024 ounce-per-ton gold totalling 500,000 ounces was also calculated for the deposit. All the ore is oxide. This year AGR did three column leach tests at Kappes Cassidy metallurgical consultants in Reno with recoveries of over 90%.

*FMC* was active in the Blacktail Creek area in the headwaters of Fourth of July Creek east of North Fork. The company drilled 10 reverse circulation holes into a thrust fault separating rocks of the Big Creek and Yellowjacket Formations. Results were disappointing.

*West Fork Gold Mining* hired a consultant to compile diamond drill data from their property on the West Fork of Indian Creek. The company has had an active drilling program in the area for several years.

*Noranda Exploration* had a geochemistry and geophysics program at the Harmony mine located on Withington Creek south of Salmon. They submitted a plan of operation to drill a single core hole. The company also had a project at McConn Creek just north of West Fork Gold's property near Shoup.

*Bill Wheeler* from Missoula mined 1,300 tons of what he believed was platinum ore from the ridge between Twin and Quartz Creeks for testing. However, analytical results were negative for platinum.
N.A. Degerstrom explored the Allison Project at the Ramshorn Ranch on Silver Creek near Meyers Cove southwest of Salmon. They did not have any luck with six RC holes and dropped the lease. Narrow gold veins cut Tertiary volcanics at the property.

Atlas Corporation started a 12-hole drilling program in December on Musgrove Creek. The company also mapped and sampled the property. GEXA Gold held the prospect last year and reclaimed 2,800 feet of drill road this season.

Metron Resources reclaimed disturbed ground at the Porphyry Dike project.

Gwalia (USA) Ltd., still holds the Pine Creek property but did no major work this year.

Placer Dome did some reclamation required from last year’s work on Kinney and Wimpey Creek.

There was no activity at Ditch Creek this year. It is rumored that FMC will drop their claims and that American Gold Resources wants to pick up the property.

Cominco leased the Iron Creek property south of Salmon from Centurion Gold Ltd. Company geologists mapped the area and ran geophysical and soil geochemical surveys looking for copper-cobalt mineralization. Cominco was also rumored to be exploring at Hayden Creek in the Lemhi Range.

Southwest of Salmon, Panther Gold worked on the Rabbitsfoot property. They drilled 1,000 feet in 3 RC holes and were evaluating the results at year’s end. The property was drilled a few years ago by Amax.

Charles Duus drilled two 50-foot-deep airtrack holes to bedrock near his Monitor mine. Like other small miners in the area, he wished metal prices would improve.

There was no activity in the Lemhi Pass thorium district. Idaho Energy has been active in the area over the past few years and controls thorium prospects on both sides of the Idaho-Montana state line.

West-Central Idaho

Placer Dome completed the third year of a project at Red Mountain near Quartz Creek, north of Yellow Pine in Valley County. Eight reverse circulation holes totalling about 3,200 feet were drilled into a gold-bearing silicified zone. Results from the drilling program were disappointing.
Cambior USA, Inc., a Canadian company, established a land position on Antimony Ridge, due south of Yellow Pine, and on the ridge just west of Johnson Creek. Surface mapping and sampling were started this fall before a snowstorm postponed exploration activity until next year.

Kennecott was rumored to have had considerable success with its drilling program at the Moscow Mine near Moore Creek, in central Idaho. The gold-bearing shear zone cuts a roof pendant in the batholith. Kennecott drilled 13 core holes totaling 6,119 feet and did detailed geologic mapping around the mine. It was the third year of the project.

Independence Mining pulled out of the Profile Peak or Big Creek joint venture with NERCO Minerals following last year's drilling. The target is gold mineralization near the old McCrae tungsten mine. The project is located in Valley County, near the headwaters of Smith Creek (a tributary of Big Creek), and about 8 miles northwest of the village of Edwardsburg. NERCO formed a new partnership with Great Basin Exploration. Great Basin, as operator, drilled 15 holes and recovered 9,000 feet of core. The company also built 1,500 feet of new road, mapped and sampled the area, and did a regional airborne EM survey. Results of the exploration work are being evaluated.

There was renewed activity at the old mining town of Warren in Valley County. Unity Gold Mines, Inc., cleaned out and retimbered 2,200 feet of a 5,200 foot-long crosscut at the old Unity Mine. The crew of four men were within 50-75 feet of intersecting the Number 4 or Little Giant vein, which averaged over 5 ounce-per-ton gold. Historic records show that the crosscut intersects eight veins. Unity hopes to develop enough ore to justify construction of a 25 ton-per-day mill. The company also leases the Cochran property 13 miles south of Warren. The first 300 feet of a tunnel at the Cochran is open. The target at the mine is the Beartrack vein.

Also in Warren, Jim Striker started a new tunnel under the Rescue Mine, which was last operated in 1942. He and his crew are putting in a new decline to reach reserves below the Number 3 level. From old mine records, they estimate that 13,000 tons of ore grading 1.5 ounce-per-ton gold are left on the level. Striker received a letter of commendation from the state and Forest Service for cleaning up an old diesel spill on the property.

Jack Walker was reported to be building a small custom mill near Big Creek. The mill will service several small mines in the area.

Robert Scott dug three test pits on his claims in the Riordan Lake area south of Yellow Pine. He later filled in and reseeded the site.
Yellow Eagle Mining of Ogden, Utah, dug three back hoe trenches, about 20 feet deep, in the Davis pit area of Ruby Meadows south of Burgdorf. The company was looking for gold and black sands (which contain rare-earth minerals). Results were disappointing.

Alta Gold Company did not do any mining or exploration at the Copper Cliffs mine at Cuprum. Reserves of copper ore at the mine are exhausted. The company also controls the Red Ledge massive sulfide deposit located above Hells Canyon Dam. Texasgulf drilled out 43 million tons of 4% Zn (plus Cu and Ag) ore several years ago. Alta is studying access problems at the property. They are also negotiating with the owner of the Bluejacket Mine, another massive sulfide in the Seven Devils terrane, over processing and haulage options for mining the deposit. The Forest Service and several state agencies are still concerned about reclamation at Cuprum and acid mine drainage at Red Ledge.

Cominco staked claims near Peck Mountain, northwest of Council, on a massive sulfide target. They mapped the property and ran geophysical and soil geochemical surveys this year. Asarco was rumored to be doing reconnaissance work in the same area but was looking for copper-gold skarns.

East-Central Idaho

Hecla Mining Company took over as operator of the Grouse Creek project at Jordan Creek on the Yankee Fork when Hecla recently merged with CoCa Mines. The project includes two orebodies, the volcanic-hosted Sunbeam deposit and the sediment-hosted Grouse Creek orebody. Grouse Creek is a blind deposit which was discovered by Sunbeam Mining (forerunner of Coca in the area) during stepout drilling from Sunbeam. Hecla employed 14 persons, including two environmental coordinators, on the project. Work consisted of permitting, and exploration and development drilling. A Supplemental Draft Environmental Impact Statement was released in September. The mine will employ 150-200 people during construction and about 100 during normal operations, with an annual payroll of about $4 million. Cost of construction, scheduled to begin in 1992, is estimated at $40 million. The revised mine plan calls for no net loss of wetlands by enhancing wetlands on lower Jordan Creek. The proposed 3,000 ton-per-day mill will process the ore using a carbon-in-pulp circuit. About 3,600 tons of ore and 17,000 tons of waste rock will be moved daily. The mine will yield 70,000 ounces of gold and 1.5 million ounces of silver annually. Reserves at the end of last year were 3.3 million tons of .075 ounce-per-ton gold in the Sunbeam deposit, and 6.4 million tons of .049 ounce-per-ton gold and 2 ounce-per-ton silver at Grouse Creek. Results from the 44,000 feet of reverse circulation and 8,000 feet of core drilling in 1991 were not yet calculated into the mine plan. Approximately $9.4 million in local and county taxes would be paid over the eight-year life of the mine. The Challis city council approved a resolution of support for the project.
Sunshine Mining Company resumed a drilling program on a gold skarn in the Sawtooth National Recreation Area (SNRA) authorized under an exploration plan filed with the Forest Service in 1989. The SNRA is closed to locating new claims. N.A. Degerstrom is a joint venture partner. The company drilled 8-10 holes totalling 2,360 feet in Washington Basin, an environmentally sensitive area. The program was completed by September 30 to minimize the impact on a local herd of mountain goats. Sunshine has since dropped the project due to corporate financial difficulties and resulting layoffs. Degerstrom has also dropped their interest, citing concern over the environmental sensitivity of the area.

Umont Mining Inc. and Western Mining Company USA (an Australian firm) signed an agreement covering the Bayhorse district. The district was in the news last year as a potential site for a state centennial park. The state and Umont could not agree on a purchase price and the project was dropped. Mines in the Bayhorse district have produced lead and silver and have a potential for fluorspar. Western is working with the Idaho Department of Parks and Recreation to preserve historic buildings and sites in the district. The properties were last evaluated by Inspiration Resources in 1981. During 1991, Western deepened one old drill hole and compiled old data.

Battle Mountain Gold completed a reclamation and reseeding project at the Rook's Creek prospect.

Cyprus Minerals did some gold exploration on claims adjoining their Thompson Creek molybdenum mine in Custer County. The company ran ground magnetics, in addition to mapping and sampling, to define targets in a magnetite skarn. They drilled 29 shallow RC holes using a Cantera all-terrain drill rig to minimize environmental impact.

Only a little surface work was done at the Greyhound Mine owned by Yanke Machine. The property was optioned to a Canadian firm.

Canyon Resources dropped out of their joint venture with Wombat Mining (a subsidiary of Kookaburra Gold) at the Hoodoo mine on Slate Creek in Custer County. Only a small amount of surface work was done. Canyon was concerned about the mine location which is very close to the Sawtooth National Recreation Area. It would be difficult to permit a drilling program in this area. The Hoodoo mine is a stratabound zinc deposit that was last mined in the mid-1970's.

South-Central Idaho

BioMyne, Inc., continued with a gold exploration program near the West Fork of Warm Springs Creek, west of Ketchum. The company did drilling, sampling, and
trenching, at a number of localities in the area. Two holes were drilled last year and 10 helicopter assisted RC holes this year (maximum depth, 300 feet). The company was formed by a group of investors from New Jersey that are following up on a proposal made by a professor at Princeton University three years ago. The original work on the project was done by students at Princeton. BioMyne is taking special efforts to protect the environment and reclaim disturbed areas at exploration sites. The company reclaimed their work by the end of the season.

*Rothchild's Corporation* did some underground exploration and drilling at the *Webfoot mine* in the Vienna district. There was no activity at the company's mill on Warm Springs Creek near Ketchum.

*Newmont* dropped its option signed late last year on the Atlanta gold project and returned the property to *Atlanta Gold Corporation*. Newmont was interested in high-grade gold veins located below known low-grade deposits on the top of Atlanta Hill. Almost a mile of core and 12,000 feet of reverse circulation drilling in 12 holes has been completed. The angle holes were precollared with a rotary tool and then core drilled through the Atlanta lode target zone to depths of 600 to 1,200 feet. Eleven of the 12 holes hit the silicified shear zone. The best intercept was 11 feet of 0.318 ounce-per-ton gold at a depth of 1,100 feet depth. Newmont is rumored to have had quite a few intercepts running about 0.6 ounce-per-ton gold over very narrow widths. The lode is over 11,000 feet long at the surface and contains at least six ore shoots that were worked by the old-timers. After completing drilling at a cost of nearly $500,000, Newmont was unable to substantially increase known reserves. Other interesting intercepts included 2 feet of 0.71 ounce-per-ton gold at a depth of 1,013 feet, 2.8 feet of 0.60 ounce-per-ton gold at 1,395 feet, and 15 feet of 0.32 ounce-per-ton gold at 1,105 feet (including visible gold). The two main surface exposures contain reserves of 8.3 million tons of 0.08 ounce per ton gold and 6.2 million tons of 0.049 ounce-per-ton gold and 0.088 ounce-per-ton silver. Undeterred, Atlanta Gold raised money with a private placement and started their own $375,000 drilling program to evaluate the full length of the shear zone. Drilling started in the fall and will continue into next year with 2-3 rigs. The holes are combined RC/core angle holes. Atlanta expects vein widths of 6-8 feet grading a third ounce gold. They think the next step is to go underground. The company continues to seek a joint venture partner.

*Newmont* completed their third year of exploration in the Rocky Bar district on claims leased from *GEXA Gold*. Eleven RC holes, totalling some 12,000 feet, were drilled including a deep hole at the Ophir mine near Hardscrabble Gulch. Newmont drilled 30 reverse circulation holes in 1990 at the property totaling 17,000+ feet. Although gold mineralization was found extending along a northeast trend from Red Warrior Gulch to Spanish Town, reserves were insufficient and Newmont dropped the property. *GEXA* is reportedly considering a small underground operation at the Ophir or Ada-Elmore mines, both old producers in the district.
Cactus West had success with a soil sampling program on claims in the eastern portion of the Rocky Bar District. The property is near the Bonaparte Mine and Cayuse Creek, southeast of the townsite of Rocky Bar. The soils showed a sizable 100+ ppb gold anomaly. Cactus also did a little rock chip sampling and plans to trench the property and define drill targets next year.

RST Mining continued to drill at James Creek Summit where it put down one core hole. RST also drilled an RC hole up Hardscrabble Gulch in the Rocky Bar district.

Precious Metals Technology Inc., planned to move their cyanide mill from the Princess Blue Ribbon mine, near Willow Creek in Camas County, to the Doniphen mine, located 12 miles west of Hailey. Precious Metals started work at the Doniphen mine last year. The Blue Ribbon was closed when a tailings dam collapsed in March, 1990. Negotiations continued over the $27,500 fine imposed by the Department of Environmental Quality for the company’s failure to post a $9,000 bond to cover damage caused by the failure. The company agreed to pay a fine of $5,000 in December for violating state water quality standards and will submit plans for reclaiming Big Beaver and Willow Creeks.

Jeff Toone of Buhl submitted a plan for core drilling after getting some good gold values at the head of Reedy Creek, south of Couch Summit in Camas County.

Honolulu Copper looked at the old Alder Creek District, just west of Mackay, as a potential site for a sulfuric acid copper-leaching operation. There may be a gold potential as well. Rumors in Mackay were many, but facts few.

Westmont Mining was back for another year at the DSA property at the head of the North Fork of the Big Lost River and drilled 1,040 feet of core in two holes. Some mineralization was found in slump breccias and debris flows at this stratabound base-metal deposit. A geochemical sampling and mapping program was completed. The future of DSA and Westmont’s other base metal properties were thrown into doubt when Westmont’s parent company, Costain Minerals, sold all its base metal assets to Cambior, but retained gold properties for the new Westmont Gold Company.

Plexus Resources put down 20 angle reverse circulation holes totalling 6,030 feet on two properties at Navarre Creek west of Mackay. A minor amount of surface work, including a ground magnetic survey and trenching, was also completed. Neither Plexus nor its joint venture partner want to continue work at this time, so the project is on hold.

Fred Wolske took out about 100 tons of lead-silver ore from the old Fletcher or Hornsilver Creek claims at Carrietown in Camas County for metallurgical testing in Boise this winter. He was also testing a silica deposit near Howe east of Arco.
Boise Basin

Overall, there was lots of reclamation action in the Boise Basin, but not much exploration activity. Boise Basin is the largest gold producing area in Idaho with some 3 million ounces to its credit.

**ABC Mining** was unable to reclaim a placer site on Buck Skin Creek. The Forest Service attached their bond and did the work.

**Cominco** did exploration and rehabilitation work on the Elk Horn project, north of Idaho City. The company plans more work next year.

**Independence Mining** maintained their claims at the Mineral Mountain project that they drilled last year near Alder Creek Summit.

**Cactus West Exploration** did a little soil and rock chip sampling on their Century project near Placerville. A 10 hole RC program was scheduled for December. **Pegasus** drilled the nearby Gold Hill property also owned by Cactus. Pegasus can earn a 51% interest in the property by spending $1.5 million over a 5-year period. Drilling last year found low-grade gold values. One hole intersected 20 feet of 1.13 ounce-per-ton gold.

**Frontino** had hoped to drill the Mineral Mountain project, four miles northeast of Placerville, but only did assessment work in 1991.

**Equinox Resources** explored at the Boise Queen mine in Ada County, east of Boise. A soil sampling program was completed this spring over the Boise Queen, West, and Celtic shear zones. Based on encouraging results from this survey five RC holes (both angle and vertical) were drilled across the Boise Queen zone late in the year. The drill program failed to duplicate the soil geochemistry and the property was returned to the owner.

Southeast Idaho

**Newmont Exploration Ltd.** continued an exploration program started last year on Caribou Mountain in Bonneville County. The company reclaimed 2.3 miles of road built in 1989 and 1990 and drilled six RC holes totaling 3,000 feet in House Basin. The holes were all accessed from the old House Basin road. The target is disseminated gold in the Ephraim Formation adjacent to a syenite intrusion. The Caribou National Forest helped resolve wildlife and environmental concerns that developed last year by getting all of the environmental groups and the Newmont geologists together on a tour. A compromise was reached when it was realized that threatened species do not inhabit the exploration area.
Pegasus Gold Inc. continued to develop the Black Pine heap-leach open-pit gold mine in Cassia County. The 10,500 acre property was purchased from Noranda Exploration last year for $6.4 million. The mine has proven and probable reserves of 15.8 million tons of 0.028 ounce-per-ton gold (further broken down into 7.7 million tons of 0.042 ounce-per-ton gold and 8.1 million tons of 0.014 ounce-per-ton gold). The separate A, B, and Tallman pits will be mined. Most of the higher grade material is in the B pit with most of the bulk tonnage in the A pit. Reserves are sufficient for at least 4 years of mining at an average rate of 60,000 ounces per year, with actual output varying between 40 and 80,000 ounces per year. About 3.2 million tons will be mined annually with a stripping ratio of 1:1. The mine plan was amended to treat all the ore as run-of-the-mine and to build one large valley-fill leach pad which was under construction in mid-October. The changes required new permits which delayed startup until December, 1991. This year’s work centered on completing the leach pad; all other surface facilities are finished. Exploration and development drilling of 21,000 feet of reverse circulation holes was completed in late summer and fall. About 100 people were employed during construction of the mine and recovery plan with permanent employment estimated at around 38 workers. The ore will be processed in a carbon-in-pulp mill. The capital cost of the Black Pine project is about $16 million. Fifteen different permits were obtained and the total environmental bond is $1.8 million. Four cattle were killed when they wandered into an area closed to grazing and drank water from an old pond contaminated by naturally high arsenic values in the surrounding rocks and from a 1950’s vintage mining operation. Pegasus cleaned up the old problem area.


Cordex reclaimed and then dropped the Mink Creek property acquired last year. The prospect is located 15 miles south of Pocatello.

The Sawtooth Forest approved an Environmental Assessment for the Ensign Company for building a 5,000 ton-per-year tungsten mine near George Creek Canyon in the Raft River Range, just south of the Idaho border near Yost, Utah.

Neal Twitchell continued to drive an adit at Conner Creek in the Albion Range.

Placer Dome retained their claims at Blue Hill and Coal Creek near Middle Mountain south of Oakley. No work was done on the claims which were staked last year.

Placer Dome drilled at least 10 holes (one core and the rest RC) totaling 6,000 feet at the Kilgore prospect north of Ashton in eastern Idaho. Mapping and gradient
IP/resistivity and ground magnetic surveys were also completed. Kennecott Exploration drilled the precious metal-hot spring system a few years ago. The deposit is believed to be Pliocene to Miocene in age. Placer was active at Kilgore last year and plans to return in 1992.

Gold Fields did a little surface mapping and sampling at Cherry Creek in southeastern Idaho. The property is scheduled to be drilled next year, if funds are available.

Atlas Corporation did more mapping on their claims south of Twin Falls.

The Stokes Brothers had planned a drilling program in Formation Canyon at the south end of the Black Pine Range. However, permitting delays due to an unusual land/mineral rights separation and a protected bird habitat study will delay the drilling till spring.

Southwest Idaho

The permitting process for NERCO Mineral’s new Stone Cabin mine continued. The new property, located on Florida Mountain in Owyhee County, is about 5 miles east of the DeLamar mine and contains 13-14 million tons of gold-silver ore. The ore will be processed in the mill at DeLamar or on a new heap-leach pad to be constructed on the west slope of Jacob’s Gulch. About 80 to 100 people will be added to the present work force of 150 employees at DeLamar. The mine will have about a 10-year life span. The 404 wetlands permitting process delayed development during 1991.

NERCO Exploration was active on their Twin Peaks project located a few miles north of the DeLamar mine. They were drilling at the end of November on the Georgiana claims.

Placer Dome drilled 5-7 reverse circulation holes in November at the Black Sheep prospect in Slaughterhouse Gulch, 5 miles north of the DeLamar Mine. Mapping and sampling were completed earlier in the year.

War Eagle Mining Company leased their property on the southeast side of War Eagle Mountain above Silver City to Great Basin Exploration Corporation of Henderson, Nevada. Great Basin reportedly drilled 2 core holes.

Early in the year, Noranda signed an agreement with Gold Canyon Resources to further explore the Blue Dog hot springs gold property north of Weiser. Noranda drilled 4,000 feet in about 20 reverse circulation holes. The silicified and clay-altered rock caused drilling problems. Results were disappointing and Noranda dropped the property. Gold Canyon entered an agreement with Bradner
Resources giving Gold Canyon 100% ownership in Blue Dog. The property contains a geological resource of 3 million tons of 0.05 ounce-per-ton gold. A second silicified zone has been identified southeast of the main gold zone.

**CONFIDENTIAL RUMOR**--there may be an announcement soon of a deal between [redacted] and their consultants, [redacted], and [redacted] on the [redacted].

A joint venture of Silver Standard Resources, Carlin Resources, and Bradner Resources had a drilling program in March and April at the Chandler property near Weiser. The property is adjacent to the Blue Dog project. The joint venture drilled 2,985 feet in 12 holes, all of which intersected anomalous gold in altered rocks. Three holes intersected tens-of-feet grading 0.01 ounce-per-ton gold.

AMAX Exploration leased the Idaho-Almaden property owned by ICAN Minerals. The old mercury mine, east of Weiser, contains reserves of 30 million tons of 0.03 ounce-per-ton gold. However, the gold is silica encapsulated so the ore would have to be milled adding significantly to the cost of the operation. AMAX did surface mapping and sampling this summer and drilled three core holes. The company also permitted eight holes on BLM ground for a January, 1992, drilling program. According to the BLM, a mini-staking rush is underway along all of the ridges going west from the Idaho-Almaden to the Snake River.

Atlas Corporation did surface work and drilled four RC holes in August on claims leased from Manville at Thirsty Mountain north of Weiser.

Manville ran geophysics on its claims at Indianhead (west of Weiser) and on the Pioneer claims near Arco. Manville would like farm out its entire property portfolio and get out of the gold business.

Western Epithermal and the J.L. Carroll Mineral Exploration Office, drilled seven holes on the WD-VAR claims (old Consolidated Mercury prospect) near the mouth of Crane Creek in Washington County, northeast of Weiser. Cyprus drilled the property, which is owned by Western Epithermal, last year.

Asarco put down 10 drill holes totalling 2,500 feet with a track-mounted drill rig at the Olfer Project near Olds Ferry in Washington County. The company reclaimed the sites and returned the property to its owner, Don Adair. Asarco first drilled the area in 1989, then Adair drilled it, and finally Asarco picked up the claims for a second time. The target was an epithermal hot spring similar to the Kirby deposit located across the Snake River in Oregon.

Sunshine Mining Company did additional mapping and sampling and reopened and sampled old adits at the Cartwright Creek prospect. They also dug several
bulldozer and backhoe trenches. Sunshine has drilled 17 holes at the prospect in the past couple of years. Due to the company’s financial difficulties, this interesting high grade gold vein/hot spring system is available for joint venture.

*Hartman Associates* reopened access roads and sampled and reclosed two adits at the Adelmann Mine in the foothills east of Boise.

**Other Mining Related News**

As elsewhere in the United States, concern about water availability and quality are more in the public eye than ever before and as population pressures increase, will become even more visible and controversial. Idaho is a high water-use state, consuming some 6.5 billion gallons of water per year, most for agricultural purposes. About 195 million gallons a day is used for drinking water and 90% of this water comes from underground aquifers. The state Ground Water Quality Council created by the legislature in 1989, approved a new "State Water Quality Plan" that will be submitted to the legislature in 1992. Opposition to the plan stated that it weakens the role of local government in ensuring ground water quality and accused the board of being dominated by special interest groups.

Concern about pollution at the Superfund site at Smelterville spilled over into the lower reaches of the South Fork of the Coeur d’Alene River and Lake Coeur d’Alene. In the past, mill tailings from mines in the Coeur d’Alene district were dumped into active streams and heavy metals in the tailings contaminated the river system. How polluted are the lake and lower river is a question currently under study. Metals of interest include lead, cadmium, and arsenic. There is also concern about nutrient pollution and related algae and other aquatic plant infestations choking the lake. In March, the Coeur d’Alene Indian tribe revived a long-standing claim to ownership of the lake based on treaty rights. Washington Water Power, Hagadone Corporation, and Hecla Mining Company, banded together to block the tribe’s assertion. The state also asked a U.S. District Court to dismiss the tribe’s claim, arguing that the 11th amendment to the U.S. Constitution made the state immune to this type of legal action. If the tribe were to win, they may be entitled to rents and other payments for people using the lake. In August, the tribe filed suit against the eight largest mining companies with present or past activity in the Coeur d’Alene Mining District and the Union Pacific Railroad. The suit asked that the companies clean up the watershed. The tribes threats had immediate effects. Local, state, and federal agencies including EPA and the Idaho Division of Environmental Quality, started a unified effort called the Coeur d’Alene Basin Restoration Project to study the lake and try and find a way to solve problems without resorting to “Superfund” which will add years and millions of dollars to the cost of any remedial action. Asarco Inc. and Hecla Mining Company formed the Council for Mineral Information to gather data about pollution in the lake and river. The companies believed that the risks to human health from drinking
water or eating fish from the lake was exaggerated. The Council retained
Parametrix Inc., and Environmental Toxicology International from the Seattle area to
review EPA data collected since 1982 on arsenic, cadmium, lead, and mercury
pollution in the lake. The industry study concluded that the lake sediments did
contain some "hot spots" but that "no adverse health effects would be expected to
occur under typical conditions of exposure of these metals found in the lake and
river beds." The Coeur d'Alene Indian tribe, citing a report by Ridolfi Engineers of
Seattle, disputed the industry claim.

Under the state Antidegradation Agreement of 1989 (passed to comply with the
antidegradation policy of the Federal Clean Water Act), citizens and concerned
groups are able to nominate stream segments in Idaho for protection as
"outstanding resource waters." Such streams are protected from water quality
degradation. The process has been controversial. An attempt by conservation
groups to protect the entire Middle Fork of the Salmon River and its 27 tributaries
under the act was defeated in the last legislature. However, this year the Idaho
Mining Association nominated the main stem of the Middle Fork for protection and
the Idaho Conservation League recommended the main stem and three tributaries.
Hearings were held this year on nominated stream segments including the Middle
Fork, and the Selway River and six tributaries, which will be considered by the next
legislature.

The National Marine Fisheries Service classified the Chinook Salmon in the
Columbia River system as a threatened species. The salmon run has fallen from
1.5 million to fewer than 10,000 in the Columbia Basin in Idaho, Oregon, and
Washington. In the past four years, fewer than 400 fall chinook salmon returned to
the Snake River each year. The problem is believed to be caused by dams on the
Columbia and Snake Rivers which kill young salmon as they try to return to the
Pacific. A possible cure is to release large amounts of water from the dams at
certain times of the year thereby flushing the young salmon down the river. The
negative affects on agriculture (which relies on the impounded water for irrigation),
river commerce, and large electrical power users including the northwest aluminum
industry, may be substantial. Electrical power rates could increase dramatically
according to the Bonneville Power Administration.

The town of Atlanta was in the news in late May when high water on the Middle
fork of the Boise River washed out the Kirby dam that housed the towns small
hydroelectric plant operated by Atlanta Power. The dam had been strengthened
by an emergency stabilization program the year before. Of greater concern than
the power plant, were the millions of tons of old mill tailings from early day mining
operations that were contained behind the dam. An estimated 40% of the tails
were flushed down the Middle Fork when the dam failed. Warnings were issued by
the Department of Health and Welfare about drinking the arsenic-tainted water. It
is expected that there will be little lasting effects from the disaster on water quality.
It was announced in October that the Forest Service and the Bureau of
Reclamation would build a new rock-filled sediment containment dam at the site at
a cost of some $1.5 million. The Forest Service will own the dam and Atlanta Power
will install new generating equipment 350 feet downstream from the dam. In mid-
November, the Boise National Forest awarded a $334,450 contract to Western
Construction Company of Boise for the first phase of work on the dam. Federal
emergency funds, obtained by the Boise National Forest, will pay for the new dam
which is to be completed prior to spring runoff. A new bridge, purchased "used" in
the midwest, was installed in November.

A lawsuit, filed in 1983, by the Idaho Attorney General’s Office against Noranda Inc.
and M.A. Hanna Company took a new twist. The litigation concerns an estimated
$7 million cleanup of the Blackbird copper-cobalt mine in Lemhi County sought by
the state under the federal Superfund Act. The companies filed a third party
complaint naming the Departments of Interior and Agriculture as well as the U.S.
Geological Survey, Bureau of Mines, Bureau of Land Management, Forest Service,
and several state agencies among others, as co-defendants. Tired of eight years
of negotiations with no results, Cecil Andrus, Governor of Idaho, asked the state
Division of Environmental Quality to get the Blackbird mine site added to the
National Priorities List for cleanup under Superfund, administered by the federal
Environmental Protection Agency. Noranda sold the mill at the mine this year. The
mill machinery was shipped to Mexico and the building will be salvaged. The old
mine may draw some interest yet, as civil unrest in Zaire, the world’s major source
of cobalt, drove prices to over $25 per pound and was of concern to cobalt users.

The Idaho Mining Association completed an educational videotape entitled “Mining
in the Gem State.” The tape will be made available to schools and interested
groups in the state.

Reform of the 1872 mining law continued to be a hot topic in 1991. Senator Dale
Bumpers of Arkansas and Congressman Nick Rahall from West Virginia introduced
bills that would greatly change the venerable federal mining law. Neither bill went
anywhere but an attempt to place a one-year moratorium on patenting mining
claims was defeated on the Senate floor by a single vote. Both Idaho senators
Larry Craig and Steve Symms voted against the moratorium. This has been an
issue for a number of years and the attack on the 1872 act will continue in future
congresses.

The M-K Ferguson Company hauled 353 truck loads of "hot" soil from the Idaho
Department of Parks and Recreation building site in Boise to Lowman for disposal.
The Boise site was the location of a dump for uranium tailings obtained from
blacksands. The blacksands were mined in the 1940’s and 50’s from placers in
Bear Valley. Heavy minerals, including minerals containing uranium, were
separated in a plant near Lowman. The "hot material" is stored in specially
constructed cells that are pits capped and lined with a soil-rock roof. Monitoring wells were also drilled around the cells. The storage facility should keep the uraniferous sand stable for at least 200 years. Cost of the project is estimated at $2-4 million.

EPA evaluated tailings at the Triumph mine near Hailey and was concerned about possible lead and arsenic contamination of nearby homesites and waterways. A study by EPA contractor, Ecology and Environment Inc., found the potential hazard by analyzing 60 air, water, and soil samples. Area residents were warned of the danger and encouraged to undergo blood and urine tests for lead and arsenic. Residents were relieved when results made available in December, showed little sign of lead or arsenic in 39 people, including children, who had been tested. Further evaluation is underway to determine if the site should be included on EPA's national priorities list for cleanup under Superfund. The mine received more notoriety when the Blaine County Highway Department used four tons of the tailings for fill when replacing an old bridge across Hyndman Creek with a culvert. The state Department of Environmental Quality encouraged the department to remove the contaminated tailings. The county was also cited for failing to obtain state or federal permits to replace the bridge.

The Pacific Stock Exchange delisted Clayton Silver Mines for failure to meet listing standards. The Clayton Silver mine in central Idaho closed in 1986 due to low silver prices. A major shareholder in Clayton, Harry F. Magnuson, well known Idaho mining entrepreneur, reportedly exchanged a majority share of Clayton Silver Mines stock for shares in mines in El Salvador. The Central American mines are controlled by Southern Star Consolidated Corporation of Palm Beach Gardens, Florida. The company would be renamed Clayton International Resources; Southern Star would have a controlling interest. There was no activity at the mine in 1991.

Negotiations over wilderness lands in Idaho ended the second year without a final settlement. At stake is the fate of about 9.3 million acres in 10 national forests in Idaho. Conservation groups met with industry and recreation interests to try and hammer out the next wilderness bill for Idaho. The selection process is being monitored by the Mediation Institute of Seattle, Washington, funded by a $200,000 grant from the state. Originally the state was broken into six areas for discussion. This idea was set aside and participants decided to concentrate on two areas involving the Challis and Salmon National Forests (east-central part of the state) and the NezPerce and Clearwater forests (northern part of the state). Negotiations broke down in central Idaho when cattle men and other grazing interests questioned how grazing in wilderness areas would be guaranteed by conservation groups. Progress was made in the north until November when national conservation group leaders disagreed with conservation group negotiators in Idaho and the local conservationists resigned from the regional discussion panel. It was
announced late in November that the talks would go on but it was unknown who the representatives from the environmental side would be.

In 1989, the U.S. Air Force proposed expanding the 112,000 acre Saylor Creek bombing range at Mt. Home Air Force Base to 1.5 million acres. This sparked concern from local ranchers, who use the area for grazing, and environmental groups, especially the Foundation for North American Wild Sheep. With the size of the U.S. military expected to decrease as a result of changing world political events, the Air Force announced that the base might be expendable. Early in the year, Governor Cecil Andrus and the Bureau of Land Management offered the Air Force a 147,000 acre expansion area in Owyhee County called the Big Springs bombing range. The range is on both federal and state land. The offer is an enticement to keep the base in Idaho and to continue with a planned reorganization and expansion of the facility.

Governor Andrus banned shipments of high level radioactive waste from Colorado to the Idaho National Engineering Laboratory for storage. The Governor claimed that the shipments were in violation of state air quality regulations. State troopers were called out to inspect all trucks carrying such waste and to turn back any vehicles not meeting state safety codes. The governor took the action to draw attention to the United State's inadequate national policy for handling radioactive waste. A federal judge ruled in May that the Governor's actions violated the U.S. constitution and signed an order forbidding interference with future shipments. The state is appealing the decision. In November, Governor Andrus interpreted as blackmail and economic intimidation, an interagency memo from DOE director, Admiral James Watkins, that hinted that operations at INEL might be scaled back. The national lab is the largest single employer in the state, accounting for some 13,000 jobs.
**INDEX TO MINING COMPANIES ACTIVE IN IDAHO IN 1991**

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