



STATE OF ARIZONA
DEPARTMENT OF MINERAL RESOURCES

MINERAL BUILDING, FAIRGROUNDS
PHOENIX, ARIZONA 85007

602/255-3791

The Honorable Bruce Babbitt
Governor of the State of Arizona
West Wing, Capitol Building
Phoenix, Arizona 85007

Dear Governor Babbitt:

In accordance with A.R.S. 27-106, we are pleased to submit the Annual Report of the Department of Mineral Resources. The report covers the Department's activities for 1981-1982 fiscal year. An abstract of the Director's Quarterly Reports and a financial statement are included. The Arizona Department of Mineral Resources Museum is a function of the Department and its activities are included.

The mining industry's basic role in society is to provide vital raw materials that are necessary for our present quality of life, balanced with an equitable evaluation of society's other needs.

The Department's objectives are to gather, interpret and disseminate mineral information to encourage interest and investment in Arizona's mineral resources. The mineral information applies to land use planning and resource management as well as the original intent of mineral promotion.

It is the intent of the Department of Mineral Resources to meet its responsibilities in fulfilling its prime obligation, "to aid in the promotion and development of mineral resources of the State." New mineral discoveries and operations provide increased employment opportunities and an expanded tax base. This will be done in a manner compatible with the changing and expanding goals of society.

Respectfully yours,

BOARD OF GOVERNORS
DEPARTMENT OF MINERAL RESOURCES

Richard C. Cole, Chairman
Brian Donnaly, Vice-Chairman
Donald W. Hart, Secretary
Albert H. Mackenzie, Member
Edna Vinck, Member

BOARD OF GOVERNORS

Richard C. Cole, Chairman - Pinetop
(Term expires January 31, 1983)

Brian Donnaly - Phoenix
Vice Chairman
(Term expires January 31, 1987)

Donald W. Hart - Phoenix
Secretary
(Term expires January 31, 1986)

Edna Vinck - Globe
(Term expires January 31, 1984)

Albert H. Mackenzie - Phoenix
(Term expires January 31, 1985)

STAFF PERSONNEL

Phoenix Office - Mineral Resource Building, Fairgrounds 255-3791

John H. Jett	Director
Ken A. Phillips.	Field Engineer
Richard R. Beard	Mining Engineer
Nyal J. Niemuth.	Mineral Resources Specialist
Arthur W. Bloyd.	Museum Curator
Ann Turney	Administrative Assistant
Aleta Phillips	Secretary/Bookkeeper
Janice Coggin.	Secretary/Receptionist
William Hammers.	Custodian

Tucson Office - 416 W. Congress, Room 161 882-5399

Michael N. Greeley	Mining Engineer
Clifford J. Hicks.	Geological Engineer
Frances Derrick.	Secretary

FORWARD

The Department of Mineral Resources was created for the purpose of providing aid in the promotion and development of the mineral resources of the State of Arizona.

The Department is controlled by a Board of Governors consisting of five members from various parts of the State. These members are appointed for five year terms by the Governor of Arizona. The Board of Governors serve without compensation other than their actual expenses incurred when attending Board meetings which are required by law to be held quarterly. The Board of Governors outlines the policies of the Department and employs the Director, who by law must be an Arizona registered mining engineer. To carry out the policies established, the Director in turn employs such field and office force as is consistent with the appropriation and with the policies of the Board.

The Annual Report is supposed to include copies of the Director's Quarterly Report to the Board of Governors. With the intent of saving on mailing and reproduction costs, the reports have been abstracted. Copies of the complete report will be furnished to any that request them.

ARIZONA DEPARTMENT OF MINERAL RESOURCES

The Arizona Department of Mineral Resources provides assistance in the promotion, development and marketing of Arizona mineral resources. Particular emphasis is placed on providing prospectors and small miners with semi-technical and engineering assistance and general economic information. The Department cooperates with but is careful not to encroach upon the field of activity of the private consulting engineer.

An analysis of the powers and duties of the Department as established under ARS 27-102, provided the Department with the following objectives:

1. Provide technical assistance to prospectors, explorationists, developers and operators of small mines.
2. Disseminate comprehensive mining and mineral information to the citizens and government officials of Arizona counties.
3. Study conditions regarding small mine activity and seek solutions to problems.
4. Serve as the State's public bureau of mining and mineral information.
5. Maintain and expand the Department's mine file library.
6. Provide educational services in the field of mineral resources and mining.
7. Analyze proposed Federal and State administrative actions.
8. Develop interagency cooperation between the Department and local State and Federal offices.
9. Collect and disseminate information available on mineral occurrences, prospects, partially developed properties and known mines in the State in order to promote further exploration.
10. Provide publications in the form of mineral report , annual directories, technical reports, annual mineral industry survey information circulars and media articles.
11. Develop an inventory of Arizona minerals.

GENERAL

The promotion or development of any mineral deposit must start with its being "found" or located. Therefore, prospecting and or exploration are the first steps on the way to starting a viable profitable mining operation.

To encourage the prospecting for mineral ore deposits, there must be a ready market and the right price for the end products. Ore can be elementarily defined as something that can be mined at a profit. If there is no profit the deposit is only a resource - something that has no present value but which may have some potential for the future.

The exploration budget of the large major mining companies are clearly cyclical, expanding in times of favorable metal prices and consumption equal to or exceeding production and curtailing in times of decreasing consumption and falling mineral prices.

However, the small entrepreneur often known as a prospector-small miner, explorationist, mine promoter is motivated quite differently. He is always more optimistic than the professional realists of the large companies. It is the eternal optimism and the hope of making the "big strike" that keeps mineral prospecting and exploration quite active through periods of otherwise depressed metal markets. His activities will most hopefully lead to the discovery of interesting prospects that can be sold for possible development years in the future. Perhaps better yet his activities will lead to a precious metal deposit, or a small vein, with metallic or non-metallic mineral, that can be economically mined by the small miner.

It is this type of activity that keeps the department very busy even though major mine activity is curtailed. It is estimated that the expenditures of these prospector-small miners is in the tens of millions of dollars. It

is interesting to note that much of these expenditures and activities are in outlying areas, away from the metropolitan center.

DEPARTMENT ACTIVITIES

Four quarterly Board of Governors meetings were held during the year. One was held in Prescott. Copies of the minutes of the meetings are available to the public. The Board continued with a project to obtain new or improved facilities for the agency including its Mineral Museum. A determination of ownership of the building presently being occupied was requested of and made by the Attorney General's staff. Since the owners are reluctant to accept responsibility, the department is going ahead and requesting architectural fees for a study in next years budget.

The U.S. Bureau of Mines MILS project was completed. Two additional small projects were obtained. The projects involved micro-filming underground maps. Approximately 3,000 maps were involved.

New signs were purchased and erected on the office building. Two mineral display tables were taken to Tucson. One was set up in the lobby of the old State building. We hope to eventually have at least 10 display tables set up. An official seal design was adopted by the board. Three large bookcases were made and donated to the Tucson office by the Arizona Mining and Prospecting Association. Additional office space was obtained for the Tucson office. We are in the process of moving numerous library books to Tucson, in addition, to equipment; fulfilling the intent of making the Tucson office a full-time, full-service office.

An agreement was made with the State office of the Bureau of Land Management where the Arizona Department of Mineral Resources receives microfiche of all claim and assessment work recordings which we will make

Department Activities
Continued

available to the public in Tucson. This saves the Southern Arizona people the time and expense of driving to Phoenix.

Four new Board members were appointed to the Board and a new Vice-Chairman and Secretary were elected.

A memorandum of understanding was signed with the U.S. Bureau of Mines. It is anticipated better cooperation and assistance to both organizations will result.

MILS is proving an excellent investment. The data is being studied by increasing numbers, including other governmental agencies. In addition, some companies and individuals are reproducing the maps and indexes for their own files. There are 167 maps in the series. It is one of our objectives to integrate the total data into our filing system for ready use.

A Beryl Project was started by field engineer, Ken Phillips. It is the intent to have a buying station established in Arizona and provide Beryl Prospecting Programs in various parts of the State.

Films were loaned to a Tucson High School and to a Natural Resources workshop for Arizona youths. Publications were provided to Scottsdale and Mesa Public libraries, School libraries in Salome and Wenden, Mohave Community College library at Kingman and Lake Havasu City and to Cochise College.

Special groups of 53 from New Zealand and Australia visited the Mineral Museum. We are in their planned schedule. This was the second year for the tour.

The Department returned part of its appropriation at request of the Budget Office.

Department Activities
Continued

Cost reduction activities instituted to offset returned funds included, stopping file reproduction for the public on the office copy machine, requesting self-addressed stamped envelopes for most out-of-state publication requests, eliminated free publications, limited number of publications, suspended some publications, reduced In-State travel and eliminated Out-of-State travel.

Mineral displays were provided for the Tucson Gem and Mineral Show, the Bisbee Gem Show and the State Fair.

The engineers worked with the State Mine Inspector's staff to develop and present programs on cyaniding dangers and precaution.

The Director and Board Chairman, Rick Cole, were elected to the Board of Directors of the Arizona Council of AIME.

The crusher was used many times in sample preparation for the small miners and also for in-house use.

Specimens were provided to Glendale High School and Maricopa Lapidary Society.

One field engineer attended a technical course on sampling, fire-assaying and chemical analysis of gold and silver. The course was conducted by the Mining College at the University of Idaho.

Some mineral specimens were traded with a Museum in Argentina.

The Department maintains a Mineral Resource Museum as an aid in teaching prospecting and educating the public on Arizona minerals, emphasizing that all material things must originally come from the earth. Donations and contributions to the Department for Museum use included the following:

Approximately 600 specimens at estimated value of \$8,000.

One display case.

Department Activities
Continued

167 pounds of garnet.

Over 600 pounds of specimens for educational kits.

One of the largest geodes on display, weighing over 410 pounds.

\$80 cash contribution.

2 saws, tumblers, grinding equipment.

28 pieces of gemstones made into jewelry.

17 boxes of unclassified specimens.

62 geodes.

MEETINGS ATTENDED

One hundred sixteen meetings were attended by the Director and/or technical staff. They were attended in order to receive and disseminate information critical and pertinent to the promotion of Arizona mineral resources. Technical societies, environmental associations, prospector-small miner groups, Federal and State agencies, and administrative seminars were included.

PROGRAMS PRESENTED

Sixty-one (61) technical programs were provided to prospector-small miner groups, technical societies, school, rockhound and lapidary groups and other specialized groups with interest in Arizona minerals. One hundred fifty-eight (158) school groups involving Five Thousand Two-Hundred eighty-four students were provided lectures and programs in the Museum.

GOVERNMENT AGENCIES ASSISTED

Two of the goals of the Department are to disseminate comprehensive mining and mineral information to government officials and to serve as the

Department Activities
Continued

state's public bureau of mining and mineral information. Assistance was provided in response to 131 governmental entities from both in and out of Arizona.

NEWS MEDIA

The Phoenix and Tucson daily newspapers plus the Daily Reporter, Pay-Dirt, Western Prospector and Miner, Lake Havasu Herald, Mesa Magazine, Arizona Highways, California Mining Journal, Riverside (Calif.) Enterprise, Sunset Magazine, State News Services, Engineering & Mining Journal, Treasure Chest Publications, American Metal Market and the Blyth Enterprise requested assistance. In addition, four television stations and a radio station requested service. Two engineers were interviewed at different times for T.V. programs.

OUT-OF-STATE AND OUT-OF-COUNTRY

Prospectors-small miners, explorationists, investors, salesmen, and others with interest in Arizona minerals came from the Canadian provinces, Old Mexico, South Africa, Poland and England. In addition, the office visitors came from 21 states the first quarter, 13 states the second quarter, 26 states the third quarter and 23 states the fourth quarter. This is a good indication of how widespread the interest is in Arizona minerals and where the many millions of dollars being invested are coming from.

MINERAL COMMODITIES DISCUSSED

The Department's engineers must have a very broad range of knowledge relating to minerals. Some of the various minerals they were required to

Department Activities
Continued

discuss included cobalt, fluorite, gold, zeolites, silica, coal, silver, copper, vanadium, molybdenum, perlite, magnetite, tantalum, limestone, marble, tungsten, bentonite, gypsum, sulfur, flagstone, lead, zinc, mica, beryllium, galium, zirconium, uranium, clay, tuff, barite, glauber's salt, foundry sand, gemstones, black sands, iron, hematite, rutile, vermiculite, ilmenite, mercury, rhyolite, scoria, platinum, kaolin and diatomaceous earth.

PROPERTIES DISCUSSED

The engineering technical staff discussed 794 mineral properties with visitors. Accumulative four quarter statistics indicate these visitors represented five foreign countries and 83 states other than Arizona. Some states and countries were repeated in separate quarters.

SMALL MINE AND PROSPECT ACTIVITY

Prospectors, small miners, investors and others with mineral interest came to the Department's offices to talk with the engineers and/or research the mine files. It is interesting to note that most of this activity centered in areas away from the heavily populated urban areas. This results in a large demand for the delivery of our services to people out in the field.

<u>County</u>	<u>Mine Files Studied</u>	<u>Discussions with Engineers</u>	<u>Total Activity</u>
Apache	5	-	5
Cochise	197	59	256
Coconino	16	2	18
Gila	179	52	231
Graham	61	10	71

Small Mine & Prospect Activity
Continued

<u>County</u>	<u>Mine Files Studied</u>	<u>Discussions with Engineers</u>	<u>Total Activity</u>
Greenlee	30	7	37
Maricopa	398	63	461
Mohave	328	81	409
Navajo	5	-	5
Pima	158	61	219
Pinal	152	32	184
Santa Cruz	105	47	152
Yavapai	1,088	226	1,314
Yuma	211	68	279
Not Identified	<u>1</u>	<u>36</u>	<u>37</u>
TOTAL	2,934	744	3,678

OTHER USES OF DEPARTMENT'S LIBRARY

The Department maintains and is constantly adding to an excellent reference library oriented towards Arizona minerals. It is open to the public and used by all that are interested. Some of the material used included:

- 238 Publications of Arizona Bureau of Geology and Mineral Technology.
- 201 Publications of United States Geological Survey - Bulletins and Professional Papers.
- 100 Publications of the U.S. Bureau of Mines, Department of Interior.
- 441 Miscellaneous geology reports, technical and reference books, trade journals (current and out of print) bibliographies.
- 184 Map uses (est.)
- 173 MILS (est.)

Department Activities
Continued

PUBLIC CONTACTS

Telephone contacts	11,710
Office visitors	<u>4,158</u>
TOTAL	15,868

MUSEUM ATTENDANCE

	<u>No. Groups</u>	<u>Visitors</u>
School Groups	158	5,680
Other Groups	48	975
Others	<u>-</u>	<u>37,858</u>
TOTAL VISITORS	206	44,513

MINERAL IDENTIFICATION

Includes visual, chemical, spectroscopy, scintillometer, and fluorescent tests.

748

MISCELLANEOUS STATISTICS

Educators Kits	177
Field Trip Information	472
Programs Provided	61
Meetings Attended	116
Mine Visits	336
Mine Reports Written	187
Field Interviews	244
Conferences & APSMOA	21
New Mine Files Developed	128

Department Activities
Continued

Publications Printed	18
Pages Mimeographed	170,761
Photocopies Sold	3,047
Publications Sold	1,141

FUTURE ACTIVITIES

Consistent with a good, forward planning process, a long-term view must be maintained. Therefore, additional objectives have been established for future activities. However, they may be modified as industry needs, technology or regulations change. They have not been placed in a specific planning cycle at this time.

These future activities include:

1. Establish a mineral exploration program data depository and maintain a composite map of location and type of exploration activity.
2. Develop a mineral property sampling capability, including equipment to collect and analyze samples with emphasis on non-metallic minerals. Necessary equipment will include hand-sampling tools, a core drill, and a bulk sample analytical and processing plant such as a small portable mill.
3. Establish an ore buying station so there will be a market for small lots of ore minerals.
4. Develop a regional mineral resources evaluation program to study groups of old properties for suitability for cooperative development (custom mill-type studies) or as a mineral exploration target.
5. Develop an active "abandoned mines" safety and environmental hazard program to:
 - a. Locate and map abandoned shafts, adits, open pits, and caved areas.
 - b. Evaluate them for mineral potential or as anchor points for sophisticated mineral exploration programs.

Future Activities
Continued

- c. Propose solutions to the safety hazard presented by abandoned shafts, adits, open pits and caved areas.
 - d. Assist in environment clean-up programs by filling excavations found to be of no value with waste and tailings.
- 6. Function as an administering agency for Federal and State mineral lands reclamation plans.
 - 7. Establish a touring Mineral Museum to provide statewide programs, lectures, and displays.
 - 8. Establish a position of Public Information Officer in the Department's Phoenix office.
 - 9. Prepare an inter-library cross-reference index of publications on Arizona's mineral resources and mines.

It became desirable to try to obtain data on where the visitors to the Mineral Museum resided. This would be separate from the prospecting and mining activity.

A guest sign-in book was set up. It is estimated that no more than 10% of the visitors signed the register. Signing was volunteer and no employee was anywhere near the book to suggest or request signing. Even when a visitor signed their was no way to determine if he or she signed for one, two, or many more. As an example, out of 43 Australia and New Zealand visitors on a tour only 5 signed the book. Other signatures noted tour groups. Others would say group, family, bunch or other words.

The Register was checked for 1981-1982. Visitors came from all states (49) except Delaware. Seven provinces of Canada were represented. In addition, visitors registering came from 8 European countries including England, West Germany, Switzerland, Holland, France, Netherlands, Belgium, and Italy. South and Central America was represented by Argentina, Guatemala and Mexico. Hong Kong, China, Japan, Australia, New Zealand, Indonesia along with the Scandinavian countries Norway and Denmark were represented.

It is interesting to note the Museum is being included on scheduled tours. Sequar tours from Monterey Park, California had a group from Japan in. The Australian tour was previously mentioned. It was a second trip. Many of the out-of-state visitors noted that they were on their way to the Tucson Gem and Mineral Show, a show that is internationally acknowledged and attended. Another group was from the Gemological Institute of Southern California.

All of this is accomplished with no advertising or brochure; just word of mouth and correspondence.

RECEIPTS AND EXPENDITURES

A Statement of Expenditures is attached. Total funds returned to the State amounted to \$11,841, most of this from Personal Services and Employee Related funds. The funds were returned at the request of the Budget office in order to help offset declining State revenues. Travel funds were the second largest dollar figure returned. Operating funds were at such a minimum in the beginning, with over 70% directed, very little could be saved in this area.

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FISCAL YEAR END REPORT

1981-1982

	<u>Appropriation</u>	<u>Expenditures</u>	<u>Funds Reverted Back To General Fund</u>
Personal Services	\$ 272,900.00	\$266,770.08	\$ 6,129.92
Employee Related	\$ 54,800.00	\$ 53,592.11	\$ 1,207.89
Travel - In State	\$ 12,600.00	\$ 10,377.28	\$ 2,222.72
Travel - Out of State	\$ 1,300.00	\$ 678.59	\$ 621.41
Operating Expenditures	\$ 31,700.00		\$ 954.11
Advertising		\$ 3,283.06	
Communication		4,776.79	
Insurance		2,900.00	
Lease/Rental - Land & Bldgs.		3,747.66	
Lease/Rental - Other Machine		556.44	
Printing & Photography		713.40	
Repair/Maintenance - Contract		128.74	
Repair/Maintenance - NonContract		3,287.33	
Operating Supplies		1,126.36	
Repair/Maintenance Supplies		6,666.87	
Utilities		3,559.24	
Miscellaneous			
Total Operating Expenses		\$ 30,745.89	
Capital Outlay	\$ 2,500.00	\$ 1,794.35	\$ 705.65
TOTALS	\$ 375,800.00	\$363,958.30	\$ 11,841.70

The Board of Governors of December 1980 of the Arizona Department of Mineral Resources unanimously adopted the following resolution relating to multiple use of public lands.

R E S O L U T I O N

As a general principal, the Board of Governors of the Department of Mineral Resources supports a multiple usage of any public land. Secondly, a mineral and water inventory must be taken before there are any permanent withdrawals into wilderness areas or any other restricted use areas.

Any proposal for withdrawal of public lands from multiple usage shall be supported by a sociological, economic impact statement, showing an analysis of the cost-benefit factors involved, and taking into account the effect on national security by the withdrawal of any potential strategic mineral resources.