

DEPARTMENT OF MINES AND MINERAL RESOURCES

65th ANNUAL REPORT FY 2003/2004

W. 'Doug' Sawyer
Director



State of Arizona

Arizona Department of Mines and Mineral Resources
1502 W. Washington
Phoenix, Arizona 85007
602-255-3795 www.admmr.state.az.us

Table of Contents

Letter of Transmittal	
Personnel	5
Mission and Description	6
1st Quarter	
Director's Report.....	7
Curator's Report	9
2nd Quarter	
Director's Report.....	11
Curator's Report	13
3rd Quarter	
Director's Report.....	16
Curator's Report	27
4th Quarter	
Director's Report.....	19
Curator's Report	25
Financial Statement	27
Statistical Report	28
Publications	31
IT Activity	33
Arizona Mining Review	34
Appendix A	
Mining Activity and Current Events	40
Appendix B	
Suspicious Mining Activity	49

Personnel

Board of Governors

James W. Miller, Chairman
Sun Lakes

David C. Ridinger Vice-Chairman
Tucson

Samuel Aubrey, Member
Scottsdale

P. K. Rana Medhi, Member
Casa Grande

Raymond W. Grant, Member
Chandler

Staff

Willis D. (Doug) Sawyer
Director

Mineral Resources Information Center

Ken Phillips, Chief Engineer

Nyal Niemuth, Mining Engineer

Diane Bain, Public Information Officer

Ann Turney, Administrative Assistant

Tina Mendoza, Secretary

Arizona Mining & Mineral Museum

Susan Celestian, Museum Curator

Liz Anderson, Tour Guide

Ann Baker, Tour Guide

Shirley Cote, Tour Guide

Joanne Hesterman, Tour Guide

Alice Rosenfeld, Tour Guide

Mission

It is the mission of the Arizona Department of Mines and Mineral Resources (ADMMR) to promote the development of the mineral resources of the state through technical outreach and education. The purpose of this promotion is to encourage economic development in the mining and mineral resource industry. Our patrons or customers are the minerals industry, operators of small mines, prospectors, educators, the general public, elected officials and other state, local, and federal agencies.

Description

The ADMMR has three primary functions. The first function is to provide technical assistance to miners, exploration geologists, prospectors and others who are developing our state's mineral resources. This technical assistance includes studies of opportunities and problems facing small miners and investigation of their properties to assist in their development.

The second function is to maintain an information bank and library of mineral and mining information. The information consists of books, studies, maps, films and videotapes, individual mines files, and other archival documents.

The third function is to manage the mineral museum as the state's depository for collecting, cataloging, and displaying mineral specimens, various ores, gemstones, and lapidary material.

The Arizona Department of Mines and Mineral Resources is divided into two functional areas to fulfill the agency's statutory duties. These areas are the Mineral Resources Information Center and the Arizona Mining and Mineral Museum.

Inquiries from the public for information and assistance consume a large portion of staff time. The ADMMR technical staff provided information to 21,700 people

during the last fiscal year. The Arizona Mining and Mineral Museum welcomed 36,500 general public visitors to the museum. In addition programs in the museum were provided to 18,930 students. Public contacts are the primary process through which the objectives of the agency are carried out.

The ADMMR maintains a proactive role in encouraging the development of Arizona's mineral resources. ADMMR's advocacy roles include involvement with the Arizona Mining Association, Arizona Rock Products Association, AMIGOS, Arizona Association of Industries (member), State, county and local industrial development agencies and commissions and chambers of commerce throughout Arizona.

Public testimony is given at numerous regulatory hearings and community meetings for permits at current and planned Arizona mining operations.

Special interest earth science clubs and natural resource organizations' monthly meetings are hosted by the ADMMR. Such groups have membership's whose interests are parallel with ADMMR's duties to promote the development of the mineral resources of the state through outreach and education.

In addition, the Department assists mine developers planning new operations in Arizona by introducing them to legislators, business associations, industry lobbyists, appropriate consultants, and regulators.

The Agency represents Arizona mining at non-mining symposiums such as the Arizona Association of Industries Environmental Summit.

ADMMR responds with official letters and written statements of support for mine development, environmental impact statements, letters to editors, and anti-mining news items.

Fiscal Year 2003/04

First Quarter

Director's Report

The ADMMR was saddened to learn of the April 15th death of former director and current Board of Governors Member Leroy Kissinger. Mr. Kissinger was Director from 1988 to 1993 and supervised the Department's move from the Mineral Building on the State Fairgrounds to the current location at 1502 W. Washington, Phoenix. He was appointed to the Department's Board of Governors in February 1999 and served until his death. Mr. Kissinger understood the mission and challenges of the ADMMR and provided insight and guidance that will be sorely missed.

The ADMMR welcomes its most recent member Dr. Ray Grant who was appointed to fill out the remaining term of Leroy Kissinger. Dr. Grant is the current president of the Arizona Mineral and Mining Museum Foundation. The Department looks forward to him bringing the Foundation into a closer relationship with ADMMR and helping it accomplish its legislative mandates.

Budget Issues: As discussed during the last Board of Governor's meeting on August 27, 2003, the ADMMR was granted a FY 2004 Budget of approximately \$648,000. This budget was approved by the legislature. The Governor subsequently vetoed a rent exemption of approximately \$205,000. The main budget items were personnel, employee related, and other operating expenses that included telephone, copying, and rent payable to ADOA.

On October 1, 2003 the ADMMR received a rent invoice for \$368,100. We were budgeted to receive approximately \$253,000 for other operating expenses including rent. Based on the approved budget, we were ap-

proximately \$115,000 short on the rent if we spent all the other operating on rent alone.

In working with the Governor's Office of Strategic Planning and Budgeting (OSPB) and the Joint Legislative Budget Committee (JLBC), we proposed to pay a rent of approximately \$236,000 and seek a rent exemption of \$136,000. The normal procedure for rent exemptions is to request the exemption from the chairman of the Joint Committee on Capital Review (JCCR). The chairman is Senator Bob Burns. We prepared the request in late October and were told we would be on the agenda for November 6, 2003.

Our agenda item included three options ranging from a rent exemption of \$136,000 to no rent exemption. All exemptions included a contribution from the Mines and Minerals Fund. The third option of no rent exemption would result in the laying off of at least three department personnel and possibly as many as six.

Prior to the meeting, the Director and Chief Engineer made appointments and visited with any of the committee members as would meet with us. In general, the legislators were receptive to our plight and indicated a willingness to support option 1 - an exemption of \$136,000.

We met before the JCCR November 6, and after several minutes of discussion, we were approved a rent exemption (Option 1) of \$136,000. Included in this rent exemption is a payment of approximately \$10,000 from the Mines and Minerals Fund for "rent" for the gift shop.

Museum Admissions: In July, The Department implemented a museum admission fee for adults over the age of 18. The fee is \$2.00 per adult including sales tax of approximately \$0.12. We are not charging admission to adults accompanying their school-aged children on tours or those visiting the Mine Information Center. To date, we have averaged approximately \$1,200/month in admission fees. The monies are being deposited in the Mines and Minerals Fund.

Mine Promotion: With the increase in copper prices to almost \$ 0.95/lbs (the highest in over 6 years) and gold nearing \$400/ounce, the Department is seeing more exploration interest and activity.

One mine promotion that is receiving a lot of industry press is the Copperstone Mine in La Paz County. This mine was operated as an open pit gold mine in the 1990's and closed by Cyprus/Phelps Dodge in the late 1990's. American Bonanza, a Canadian Junior Company recently raised \$11,000,000 in venture capital to continue a subsurface drilling campaign. They have reported a number of multi-ounce gold intercepts. According to press releases, they have gold resources in the 500,000 ounces range.

In September, the Department received a number of files from JABA, Inc. representing over 20 years of work in and around the Tombstone area. Jim Briscoe believes the area contains a large gold, silver, copper deposit and is attempting to raise exploration capital. These reports will be worked into the archives after a short period.

We have begun meetings with representatives of the industrial and metals producers in conjunction with Department of Commerce, AMA, ARPA, U of A and several of the mining suppliers. The agenda from this effort may include legislative actions to encourage development of Arizona's Mineral Resources.

Arizona Mining and Mineral Museum – First Quarter

Curator's Report

Activities

July 1 Began \$2 admission fee (see attached press release)
Sept 24 Tourism Task Force Meeting in class room
Sept 27 Mesa Trib. Tab Workshop for teachers

Outside programs

Sept 15 Susan Celestian to Desert Botanical Gardens - *Geology of the Phoenix Area*

Outreach Program – Liz Anderson, Tour Guide

Sept 16 West Phoenix High School #33

Scout Program - Shirley Cote, Tour Guide

Webelos #201
Girl Scouts #28

Collection Upgrade

Minerals completed; Rocks completed; Lapidary materials in process

Gift Shop

July 14-19 15% off government employee sale (*see attached press release*)
July Introduced new kit: plaster cast of fossil (*Elrathia* or *Pecten*) w/paint & description (*see attached label*)

Lapidary Shop

Lapidary Classes — 12 students (ongoing)
Silversmithing Classes — 21 students (Sept/Oct)
Advanced Silversmithing Classes — no classes
Casting Classes — 20 students (July/Aug)

New Exhibits

Internal

July Case 51 Crystal Habits: “audience participation” - match mineral to the appropriate habit (worksheets & answer sheets available near case); by Shirley Cote (*see attached press release*)
July Hot Air Balloons in Stone by Win Richards, longtime member of Maricopa Lapidary Society. Temporary - until late February. (*see attached press release*)
September Case 58 “The Sky is Falling” (meteorites); expanded
September Case 49 “Dripping Water” (cave deposits); by Sam Nasser (*see attached press release*)

External

August Picked up exhibit at River of Time Museum

Marketing

*Rideshare Review, Phoenix Home & Garden, Arizona Highways,
The Copper Dome, Senior World, Museum News*

July 18 Channel 3 TV (in the studio) — 5 minutes with Dan Davis (Rock Balloons)
August Began association with Hickman's Egg Farm — "Ad" for Museum inside
jumbo egg cartons (*see attached text*)
August Mailed announcements re: class trips and outreach (*see attached flyers*)
Aug 3 Channel 10 TV (in the Museum) — 8-9 a.m. with Cory McCloskey
Sept 29 Channel 3 TV (in the Museum) — 5-7 a.m. with Brad Perry

Countries represented by visitors:

Australia, Belgium, Slovenia, Canada, Mexico, Italy, Germany, Russia, Turkey

States represented by visitors:

AZ, MA, NV, CO, VT, AL, MD, NC, CA, IL, TX, SD, MN, OK, PA, CT, NH, NY, IN, OH,
D.C., WA, KS, LA, WY, MI, MO, NM, TN, FL, VA, HI, NJ, OR, KY

Comments

- "Loved it"
- "Cool" "Wonderful" "Interesting" "Beautiful" "Awesome"
- "Very helpful staff!"
- "Very thoughtful & informative staff!"
- "Educational. Interesting. Keep up the good work!"
- "Likes new displays. Very educational."
- "Excellent resource!"
- "Great. Very creative!"
- "Great food"
- "I love you guys"
- "It stinks — \$2"
- "Eyecatching"
- "Shows Arizona's stuff off!"
- "The place sparkles!"

Fiscal Year 2003/04

Second Quarter

DIRECTOR'S REPORT

Resolution Copper Project: Rio Tinto through its wholly owned Kennecott Exploration has opened an office in Phoenix in support of its copper find near Superior. The offices are located near 24th Street and Lincoln. The Vice President and General Manager is Bruno Hegner, an attorney who has worked for Magma, Cyprus and now Rio Tinto. The following are some of the high points of a recent meeting between the Director and Mr. Hegner.

Rio Tinto had 6 years to invest \$25 million in the project to earn a 55% stake in the ore body.

Resolution recently completed an \$18 million drilling campaign. They drilled 17 holes from 5 surface locations (they used directional drilling. The majority of the money was spent on Geotechnical issues and not metallurgical.

Rio Tinto has been aggressive in meeting local, state and national elected officials. Overall the reception has been positive and encouraging. The mayors from Superior, Miami, and Hayden have been particularly encouraging and looking forward to the economic development of the copper mine.

The Resolution Copper deposit has a number of challenging engineering obstacles that need to be overcome. The deposit is over 7000 feet below the ground surface. The Number 9 shaft (east of the town of Superior) would have to be double in depth to reach the deposit. The temperature at the face of the ore is 170 Fahrenheit. Due in part to the depth, the ore body is in a high stress environment. The company is busy investigating fatal flaws including a reliable water

source and land rights. Those are a few of the higher profile challenges.

The ore body is estimated to contain 1.5 billion tons grading 1.5 % copper. The lateral and vertical extent of the deposit has not been defined. It is one of, if not the richest, copper ore body ever discovered in the United States and one of the 5 richest ever discovered in the entire world. The most likely mining method is initial block caving with potential for in-situ leaching. Water may be obtained from the Central Arizona Project (CAP).

The next stage of the pre-development may be the extension of the No. 9 shaft and a crosscut over to the ore body. Mr. Hegner estimates this project would cost over \$100 million.

The public time line for this project is 10 to 12 years before copper would be produced. Mr. Hegner estimates 300 to 400 employees during operations and up to a 1,000 during construction.

The Tech Cominco and ASARCO exploration groups have also been staking and active in the vicinity of the Resolution property.

Last summer, Elite Racing stopped into the ADMMR to inquire about using the building as a staging area for VIP guests and elite racers in an upcoming marathon and half marathon. The race was to be held in January 2004. I agreed to let them use the building provided they supplied the workers and put things back in place after they were finished. I expected a handful of people and maybe 2,000 runners to show up. Over the next couple of months, as we got closer to the race day, the publicity picked up and it

was apparent that the race would be much larger than I anticipated.

Race day was Sunday January 11, 2004. I opened the building for the hospitality crew at 4 am. The race promoters had probably 50 volunteers working in and around the building. Over 400 VIPs were served a continental breakfast and the elite racers used the classroom to warm up and prepare for the race. The Governor and Mayor of Phoenix were on hand for the start of the race. The race promoters gave the DMMR an unsolicited \$800 donation for the use of the building.

Nyal Niemuth and Doug Sawyer attended the December 2003 Arizona Conference of SME in Tucson. The atmosphere of the conference was more upbeat than previous conferences due in part to higher copper and gold prices. Attendance was also up slightly. A number of Canadian Juniors seem to be targeting copper and copper gold prospects. Constellation Copper Corp in Denver is looking for copper properties where the land status is private and there exists, marginal ore reserves. Constellation is close to opening the Lisbon Valley Project in southeast Utah. The President, Greg Hahn, expressed interest in several Arizona properties including Johnson Camp in Pima County.

At this time, the ADMMR has a two-year budget that will take us through July 2005. The Governor's through the Office of Strategic Planning and Budget (OSPB) proposed a supplemental budget item of \$136,300 to help pay the rent to ADOA. (You may recall that last November, the ADMMR appeared before the Joint Committee on Capital Review (JCCR) to seek an exemption of approximately \$136,000 from the ADOA rent request.) This OSPB supplemental provision requires the ADMMR to contribute approximately \$9,000 toward the rent. Copies of each of the OSPB and JLBC budgets are attached.

The annual Prospector's Day event at the ADMMR will be held on Saturday February 22, 2004. We would like to invite the Board of Governor's to attend if there are in the neighborhood.

A group of volunteers has created a fund raising, non-profit corporation to raise monies and other gifts for the operation of the Mining and Mineral Museum. Charlie Connell is Chairman of the Board and Bob Rosenberg is the President. The Friends is in the process of inviting individuals and companies to join and further the displays and exhibits in the museum. Expect a call from either Charlie or Bob in the near future.

Arizona Mining and Mineral Museum – Second Quarter

Curator's Report

Activities

Oct 16	SME Meeting/Tour of Museum
Oct 21	Family Day
Oct 27	Susan Celestian conducted an evening workshop for Pinnacle Peak Park docents, <i>The Geology of Pinnacle Peak Park</i>
Nov 5	Taped "bumper" for CBS Morning Show; showed 12-5-03
Nov 7-9	Susan Celestian attended New Mexico Mineral Symposium
Nov 12	CAMA/MECA Meetings in classroom
Nov 15	Shirley Cote & Liz Anderson attended Museum Publicity Workshop sponsored by SRP & Genealogical Assoc. of AZ
Nov 21	At monthly APS breakfast, Charlie Connell & Susan Celestian presented recognition plaques to members of APS Hauling Services for all their help with Museum projects
Nov 21	Susan Celestian spoke to Sun Lakes Rock & Gem Club (in Museum) <i>Fossils of Northern Arizona</i>
Dec 1	Susan Celestian attended AIPG field trip re: subsidence in Phoenix valley
Dec 1-6	Government Employees 15% Off Sale
Dec 3	Doug Sawyer & Susan Celestian made presentation to Arizona Rock Products meeting re: Friends of the Arizona Mining & Mineral Museum forming

Outreach Program – Liz Anderson, Tour Guide

Oct 9	Park Meadows Elementary, PTO Fair #400 - distributed 250 free passes to Museum
Dec 1	Challenger Charter School, Gilbert #33
Dec 8	Tanque Verde Elementary, Tucson #68
Dec 15	Coronado Elementary, Nogales #125

Scout Program - Shirley Cote, Tour Guide

Webelos #258
Girl Scouts #20

Collection Upgrade

Lapidary completed; Fossils completed; Artifacts begun

Gift Shop

Family Day was a great success – about \$2276 taken in.

Dec 1-6 15% off government employee sale (*see attached press release*)

Lapidary Shop

Lapidary Classes — 4 students (ongoing)
Silversmithing Classes — 21 students (Sept/Oct)

Intermediate Silversmithing Classes — 20 students (Nov/Dec)
Casting Classes — no classes

New Exhibits

Internal

Nov Case 58 Moved meteorites to larger case, added specimens
Nov Banquet of Rocks, repast for the holidays
Dec Case 14 Silver – (FINALLY) new labels, text, minerals on loan from Connells
Dec Case 119 New case furnishings

External

Oct 10-27 State Fair, *Banquet of Rocks*
Nov 1-2 Way Out Wickenburg Way, AZ Copper Minerals/Uses

Marketing

Oct 27 Provided 1500 Museum brochures to ADOE Mentoring Conference
Nov 7-9 Distributed 10 *Active Mines Directories* at the New Mexico Mineral Symposium
Dec 24 Lou Rugierro, Channel 12 dropped in near closing, asking for coal; resulted in a brief spot on the 10 o'clock news
Dec sent 150 Prospector's Day flyers to all state agencies through interagency mail
Dec 29 20 second "bumper" for CBS Morning Show (8:30 am)

Countries represented by visitors:

Australia, Ireland, England, Belgium, Taiwan, France, Japan, Iran, Kenya, Switzerland, Canada, Columbia, Mexico,

States represented by visitors:

AZ, MA, MS, NV, CO, NH, AL, MD, AR, NC, CA, IL, TX, MN, PA, CT, NH, OH, D.C., WA, KS, LA, WY, MI, MO, NM, TN, FL, VA, HI, NJ, OR, NE, AK, MT, WI, IA, ND

Comments

- "Had a rockin' good time"
- "Awesome x3"
- "Very interesting & Informative!"
- "I'll be back"
- "Geocaching"
- "Wonderful! Thank you for giving us your great volunteers!"
- "Need to make 2 trips here!"
- "Neat! Great People!"
- "Good job!!"
- "Improved"
- "Wow"
- "World class"
- "Made my day..."
- "Amazing, Informative, Well organized"
- "Kids love it – our second visit"

- “Heavy man. On many levels, it was solid...”
- “Precioso – original”
- “Muy interesante & muy completo”



Boy Scouts enjoy the Museums' wheelbarrow of samples.

DIRECTORS REPORT

Arizona Legislature/Budget: At this time, the ADMMR has a two-year budget that will take us through July 2005. The Governor, through the Office of Strategic Planning and Budget (OSPB), proposed a supplemental budget item of \$136,300 to help pay the rent to ADOA. (You may recall that last November, the ADMMR appeared before the Joint Committee on Capital Review (JCCR) to seek an exemption of approximately \$136,000 from the ADOA rent request.) This OSPB supplemental provision requires the ADMMR to contribute approximately \$9,400 toward the rent.

The legislature chose not to act on this OSPB proposal during the regular legislative session. At this time, we believe we will need to go before the JCCR in the fall to seek an adjustment for the FY 2005 budget. Currently, we have adequate budget through July 1, 2004.

Mining Properties: ADMMR was contacted regarding several mining properties.

The first was the BHP San Manuel property in Pinal County. BHP is in the midst of closing the mine, mill, and smelter complex and demolishing all surface expressions of the facilities. Various cost estimates to close the facilities have been offered by BHP personnel. The cost to close the mine/SXEW plant is roughly \$70 million while the cost to close the mill/smelter complex is estimated to be \$150 million. As part of the closure process, BHP is trying to provide infrastructure to the small community still residing in San Manuel. The infrastructure includes water system, waste waster, and hospital. BHP is actively trying to sell approximately 8400 acres of "unimpacted" land. The price of the

land is \$2500/acre or about \$20 million for the 8400 acres.

The second is the Twin Buttes property located in Pima County near Green Valley and formerly operated by Anamax and Phelps Dodge. The Parks Corporation purchased the property in 1986 from a bankruptcy sale. The property includes numerous buildings, two open pits and approximately 8700 acres. The asking price is approximately \$20 million and includes two leases by Komatsu and Phelps Dodge.

The third property in the Arizona Portland Cement plant where a third party provider asked that the ADMMR facilitate a meeting with technical decision makers. The third party would like to partner with Pima County and provide low cost natural gas from the Tangerine Road Landfill to the cement kiln.

Museum Activities: Representatives of the department will meet with Komatsu to discuss completion of the mural on the north wall. In February, the CEO and president of Komatsu visited the valley and had their picture taken in front of the mural. According to the local Road Machinery president, the mural has received favorable feedback and they are interested in pursuing the next phase that will likely include a loader or shovel.

Arizona Mining and Mineral Museum – Third Quarter

CURATOR'S REPORT

Activities

- Jan 9-11 Rockfest: Each student chose one mineral/rock; selected the correct label; put it in a zip lock bag
- Jan 11 Rock-n-Roll Marathon VIP host; 300 people in Museum
- Jan 30 CEO Komatsu here with photo session at mural
- Jan 31 Arizona Prospector's Assoc. Workday-at-the Museum -
- Feb Eagle Scout project — Project Preserve at Scott Libby — to which we donated many specimens is completed (see attached letter)
- Feb 12-15 Tucson Gem & Mineral Show
- Feb 19 Shirley Cote presented at Lowell Elementary Science Fair. She took large mineral/rock samples, Trib Tab, brochures, Family Day flyers, MLS tickets, free samples chalcedony (distributed 250), UV light box.
- Feb 21 Susan Celestian appeared on *Good Morning Arizona*, 7:20 am
- Feb 2 Prospector's Day - RECORD 502 attendees. Small boy heard to say: "This place is so cool."
- Feb 27-29 Phoenix Gem & Mineral Shop
- Feb 21-22 Apache Junction Gem & Mineral Show
- Mar 27 12th Annual Minerals of Arizona Symposium; 75 attendees
- Mar 13 Shirley Cote presented at Pinnacle Peak Elem. Science Fair. She took large mineral and rock samples, free chalcedony samples (distributed 150), brochures, Trib Tab, black sand & magnets, and UV light box
- Mar 20-21 Verde Valley Gem & Mineral Show

Outreach Program – Liz Anderson, Tour Guide

- Jan 26 Dateland Elementary, Dateland, AZ #17
- Feb 2 West Sedona School, Sedona, AZ #40
- Feb 9 Palm Valley Elementary, Goodyear, AZ #96
- Feb 23 Yucca Elementary, Yucca, AZ #24
- Mar 8 Town & Country School, Sierra Vista, AZ #45
- Mar 15 Vernon Elementary School, Vernon, AZ #100
- Mar 17 Montecito Elementary, Phoenix, AZ #60

Scout Program - Shirley Cote, Tour Guide

- Webelos #98
- Girl Scouts #51

Collection Upgrade

- Artifacts completed
- Donation by AMMMF of 20 folding plastic tables will greatly ease set up for workshops and family days

Gift Shop

Prospector's Day was a great success – about \$2401 taken in; 502 attendees

Lapidary Shop

Lapidary Classes — 43 students (ongoing)
Beginning Silversmithing Classes — 17 students (Dec/Jan)
Intermediate Silversmithing Classes — no classes
Casting Classes — 17 students (Dec/Jan)
Wire Wrap — 25

New Exhibits

Internal

February Case 57 Plate of Crinoid Calyxes (on loan)
March Case 14 *Silver* (cleaned & upgraded for first time)

External

Jan 9-11 Arizona Rockfest: "*Rolling Stones: Gather at the River*"
Feb 12-15 Tucson Gem & Mineral Show: "*Au.. What's that About?*"
Feb 27-29 Phoenix Gem & Mineral Show: "*Gather at the River*" AND "*Discover the Treasure*" — A Visual Tour of the AZMMM Gift Shop
Feb 21-22 Apache Junction Gem & Mineral Show: "*Gather at the River*"
Mar 20-21 Verde Valley Gem & Mineral Show: "*Gather at the River*"

Marketing

Article in AZ Republic, Jan 10, 2004

Countries represented by visitors:

Australia, Ireland, England, Belgium, Taiwan, France, Japan, Iran, Kenya, Switzerland, Canada, Columbia, Mexico,

States represented by visitors:

AZ, MA, NV, CO, NH, AL, CA, IL, TX, MN, PA, CT, OH, WA, KS, LA, WY, MI, MO, NM, TN, FL, VA, HI, NJ, OR, NE, AK, WI, IA, NY, SC, RI, UT, VT, IN, ME

Comments

- I touched the meteorite (it came from space!)
- Cache On!
- Awesome — keep it up!
- Educational — Pretty
- Wondrous! Fantastic! Great! Cool! Neat!
- New Ideas!
- Spectacular!
- I could spend hours here.
- Excellent place to bring out of state visitors
- Good. Would like to see more equipment exhibits.
- Very well done!

Fiscal Year 2003/04

Fourth Quarter

Director's Report

JCCR Meeting: As was presented at the last Board meeting, the partial exemption of the department's rent is on the agenda for the Joint Committee on Capitol Review (JCCR). The meeting is scheduled for 1:30 pm today. You may recall that a proposed supplemental appropriation for the rent was not addressed during the regular session of the legislature.

According to the JCCR agenda, there are 8 items on today's slate and the ADMMR item is number 5. The JLBC staff recommendation is to once again approve of the rent exemption. Attached is the JCCR agenda item and the JLBC staff recommendation.

Annual Budget: The budget season is once again upon us. Several board members have asked some general as well as specific questions regarding budgeting and strategic planning. The following section includes general background information on the state budgeting process as well as issues specific to the ADMMR's budget.

The budget always comes down to money and the ADMMR budget has two primary categories of money. The majority of the department's operating funds are known as appropriated funds. This category includes money for personnel, employee expenses, rent, travel, equipment, etc. In our case, the appropriated funds are from the state General Fund. The appropriated funds are for a particular fiscal year. Any appropriated money not spent reverts back to the General Fund at the end of the fiscal year on June 30th. The other source of funds is the Mines and Minerals Fund and this is known as a non-appropriated fund. The Mines and Minerals Fund is comprised of 14 different

sources of money including the following examples:

1. Gift Shop,
2. Education,
3. Car Made of Rocks,
4. Boras Head Frame,
5. Stamp Mill,
6. Industrial Minerals Exploration, and
7. Publications to name but a few of the sources.

The non-appropriated Mines and Minerals Fund can be rolled over from year to year and does not revert back to the General Fund at the end of the fiscal year. The majority of the Mines and Minerals Fund (approximately 60%) is composed of the gross proceeds from the re-sale of items in the Gift Shop. The Gift Shop funds are used to buy new items for resale, pay for tour guide salaries, pay for some museum office supply items, and other museum expenses. The rest of the Mines and Minerals Fund is composed of directed donations for a variety of purposes (e.g. the Car Made of Rocks).

The Department's "Budget" therefore consists of a combination of appropriated and non-appropriated funds. Certain items such as salary for full-time employees, rent, liability insurance, equipment, etc., are normally paid for from appropriated funds.

All the items purchased for resale in the gift shop, salaries for tour guides, a portion of the rent (about \$9,000 in FY 2004), expenses for creation of displays (both inside and outside the department), and any miscellaneous repair and maintenance items needed for existing displays are paid for out of the non-appropriated funds. The non-appropriated funds offer the ADMMR the most spending latitude. We must still follow the general procurement policies in the stat-

utes and the General Accounting Office; however, these monies are ours to spend “for the best interests of the State”.

Although the total ADMMR budget includes all monies from both appropriated and non-appropriated funds, in general, the Governor’s Office and the Legislative Branch are primarily interested in the appropriated funds that are provide from the State’s General Fund.

By statute, the ADMMR is required to submit an annual budget and strategic plan to the Governor’s Office of Strategic Planning and Budgeting (OSPB). The budget and strategic plan are due by September 1st of every year. We are currently planning a budget for the Fiscal Years 2006 and 2007.

For background information, the ADMMR responds to 2 branches of state government in the budgeting and strategic planning process. For organizational purposes, we are considered to be part of the executive branch and therefore part of the Governor’s annual budget proposal. As mentioned earlier, the annual budget and strategic plan for each agency must be submitted to OSPB by September 1st of every year. We must also respond to the legislative branch during the regular legislative session.

The Governor’s budget is prepared in the fall and revealed after the State of the State Address in early January. The legislative branch also prepares a budget based on their agenda and in response to their constituents.

The legislative budgeting group is known as the Joint Legislative Budget Committee (JLBC). The JLBC budget process is not revealed to either the Governor or the agencies until after the Governor’s budget is revealed. Historically, the ADMMR has not been asked to provide much input into the JLBC Budget. So beginning in January, there are 2 basic budget proposals that the legislature considers—one prepared by the Governor/OSPB and another one from the legislative leaders/JLBC.

As a small agency, the ADMMR typically has a junior OSPB analyst assigned to it. Each year the ADMMR prepares a budget based on last year’s budget and any legislatively approved changes such as salary adjustments or health care changes. This yearly budget is a “baseline budget” based on the previous year. Generally, this baseline budget **cannot** be increased unless there is a statutory change, a change in demographics, or other legislative initiative. Our budget is known as a single line item or lump sum budget.

The overall department’s OSPB/JLBC budget is comprised of the following items:

- Rent paid to ADOA,
- Employee Salaries (exclusive of tour guides),
- Employee related expenses (ERE),
- ADOA clerical charges,
- Travel,
- Equipment Replacement

The following Table 1 contains the FY 2005 budget for the ADMMR.

Table 1 ADMMR Budget FY 2005

Budget Items	Units
Full Time Equivalent Positions	7.0
Personal Services	\$326,100
Employee Related Expenses	\$67,500
Professional Services	\$400
In-state Travel	0
Other Operation Expenses	\$254,300
Total Budget	\$648,300

Most of the budget items are self-explanatory. The main item of contention is the Other Operating Expenses. This budget item includes rent paid to ADOA as well as Risk Management Insurance, equipment, telephone/internet expenses and office supplies. The current FY 2005 budget includes approximately \$254,300 for this line item.

The current rent charge from the ADOA is \$368,000 or almost 57% of the department's total appropriated budget and approximately \$114,000 more than the other operating expenses. The following Table 2 contains estimated expenses that are included in the Other Operating Expenses line item.

Table 2 Other Operating Expense

Item	Amount
ADOA Rent	\$368,000
Telephone Expense (1)	\$9600
Risk Management Insurance	\$5400
Office Supplies (1)	\$5000
Other	\$0
Total	\$388,000

Notes:(1) Estimated based on historic expenses.

Based on the preceding, the department needs approximately \$388,000 for Other Operating Expenses and we were appropriated \$254,300.

The rent paid to ADOA (\$368,000) is a statutory requirement and is assessed based on the square footage in the building and related to the price of office space in the Phoenix market place. It should be noted that the ADMMR building has been paid for and the rent is deposited in an account called the Capitalization Outlay Stabilization Fund (COSF). The COSF is administered by ADOA and includes the following expense items:

1. Electricity,
2. Water,
3. Sewer,
4. Maintenance personnel,
5. House cleaning,
6. Landscaping maintenance,
7. Capitol Police Protection, and
8. Building fund accrual for replacement of A/C units, carpeting, etc.

According to the July 2004 OSPB Budget Instructions (for FY 2006 and 2007), there are 4 scenarios that allow for funding level adjustments (budget increases).

1. Fulfilling Statutory Funding Formulas,
2. Meeting new entitlement caseload funding requirements,
3. Costs associated with new unfunded mandates, and
4. Base adjustments such as rent or other contractual obligations.

During this year's budget cycle (for FY 2006 and 2007), the ADMMR intends to request a base adjustment for the rent.

To increase the base line budget, the first step is to identify the need in the Strategic Plan. Any changes that might affect the budget such as an increase in staff, funds for museum displays, or rent increases must be approved by first the OSPB and then the legislature. At this time, department staff are preparing the strategic plan and identifying the rent issue and seeking to increase the amount of appropriated funds for the Other Operating Expenses.

OSPB Strategic Plan: As previously mentioned, the department is working on this year's strategic plan. Attached is a copy of the goals, objectives, and measurable events that are currently included in our strategic plan. The strategic plan is submitted to the OSPB with the proposed budget. Depending upon the focus of the Executive Branch and who is assigned to the ADMMR from OSPB, the goals, objectives, and measurable events change from year to year. We are compiling this year's measurable items as part of the strategic plan preparation.

In this year's strategic plan we intend to identify one major significant issue and that is the rent. We have obtained 2 (and hopefully the third one this afternoon) legislative exemptions from the DOA rent. The preferred method is to have the baseline budget increased through OSPB and JLBC.

Department Stretch Goals and Objectives:

The following are a list of goals and objectives that are not included on the OSPB list, but are proposed or are being worked on by the department staff.

Hire several new tour guides-possible a part-time lapidary shop manager.

Initiate funding quest for House of Minerals and Copper Corner.

Create 5 more topical handouts similar to the existing Turquoise and Petrified Wood handouts.

Put more museum/dept documents on the website.

Create a press kit of the museum/dept.

Start writing a volunteer training handbook--could be used for upstairs folks as well.

Publish 3 dept documents--Active Mines, Laws & Regulations, and New Stone Catalog.

Attend PDAC in spring of 2005.

Initiate electronic scanning of mine files.

Create and maintain new Oreman virtual group.

These items are not reflected in the OSPB Strategic Plan, but have been identified by customers and staff.

Annual Report: Each of the Board members should have received a draft of the annual report. If there are no recommended changes or additions, the department will submit the annual report and make it available to the public via the website.

PDAC Meeting: The annual Prospectors and Developers Annual Conference (PDAC) will be held in Toronto on March 6-9, 2005. One board member requested the status of the ADMMR's attendance.

As we are all aware, the price of copper, gold, iron, and just about every other mineral resource is at a 5 year high. The department has received a noticeable increase in both the number and quality of mineral exploration companies and individuals. This might be an excellent time to attend the conference and promote more of Arizona's abundant mineral resources.

We estimate the cost to travel to Toronto, attend the conference, sponsor/man an Arizona booth, and per diem would be approximately \$5,000. There are several sources of funding available to us. The first is to request an increase in our appropriated budget. The second is to request some outside funding source. The third is to use some monies from the Mines and Minerals Fund. Each funding source is briefly outlined below.

The legislative request would involve identifying the conference and cost in our budget and strategic plan. The budget and plan are for FY 2006 and 2007. We desire to attend the conference in March of next year. Budgeting will not arrive in time for this spring's conference. In addition, the department tried to seek funding in January 2001 for attendance to the PDAC. You may recall that the state had a large budget surplus at that time. Our modest proposal did not make it out of OSPB.

The second source would be some third party trade association or industry that supports

our mission. We have not investigated this funding source.

The third source is to use some Mines and Minerals Funds. Currently, we have approximately \$5,000 in 2 sub-fund accounts. One sub-fund is a directed donation to be used for industrial minerals exploration purposes. Although the PDAC is geared more toward base and precious minerals, the donors could be contacted and permission sought to use these sub-funds for the PDAC purpose. The second sub-fund is approximately \$800 we received last January for making the ADMMR building available for the Phoenix Rock-n-Roll Marathon. Using these 2 sources is the most expedient. We recommend committing these funds to attend the PDAC.

To adequately man the booth would require **at least 2** Arizona/department representatives. Because the conference is scheduled in the middle of the legislative session, it is not a good time for the director to be on the road. We could spare the 2 department engineers (Ken and Nyal) depending on how the legislative session is going. It might be best to send one engineer and another representative or two. Possible booth representatives include Board Members and local exploration geologists who would be willing to help man the booth in support of Arizona mining/mineral properties. Any suggestions or help would be greatly appreciated.

Mining Properties: The director was contacted regarding several mining properties.

The first is the Twin Buttes property located in Pima County near Green Valley and formerly operated by Anamax and Phelps Dodge. The Parks Corporation purchased the property in 1986 from a bankruptcy sale. The property includes numerous buildings, two open pits and approximately 8700 acres. The asking price is approximately \$20 million and includes two leases by Komatsu and Phelps Dodge. Reportedly this property was for sale, but due to high copper prices,

the owners are reassessing the mining potential.

The second property is the Arizona Portland Cement plant where a third party provider asked that the ADMMR facilitate a meeting with technical decision makers. The third party is DTE Biomass and they would like to partner with Pima County and provide low cost natural gas from the Tangerine Road Landfill to the cement kiln. That project is proceeding to the next step. The DTE Biomass representative, Mr. Stu Baker appreciates the assistance from Jim Miller.

Museum Activities: Representatives of the department met with Komatsu to discuss completion of the mural on the north wall. In February, the CEO and president of Komatsu visited the valley and had their picture taken in front of the mural. According to the local Road Machinery president, the mural has received favorable feedback and they are interested in pursuing the next phase that will likely include a loader or shovel.

Volunteers: The ADMMR's mining and mineral resource information function also receives valuable volunteer assistance. Though compared to the museum the hours are not as impressive, many projects would come to a complete standstill with this valuable help from the public.

- Jim Christensen has finished making a catalogue of the 2900 aperture cards of the microfilmed mine maps.
- Jim Christensen has nearly completed scanning and OCR'ing the 200 pages of USBM IC 8236 Iron Resources of Arizona for the digital reprint series.
- Thorny Rogers and Jessica Mortimer separately have begun to catalogue Kelsey Boltz file donation.
- Leon Estes continues to catalogue W. Heinrichs files. The Heinrichs donation is the largest donation of mine, prospect, and exploration data ever given to the ADMMR. There

are 122 file drawers of data files, plus hundreds of tubes of rolled maps and boxes of library material. Leon reports he is about 40 percent complete in sorting and cataloging the data files and expects to finish them within a year. He predicts that the 122 drawers will be condensed to 80, about 40 of which will apply to specifically to Arizona properties. He is able to completely dispose of about 30% of the files as they pertain

only to internal business functions of Mr. Heinrich's former company. Leon is a retired geophysical engineer and eminently qualified to review, catalog and condense the data.

- Doreen Webbert has nearly completed the people database from the plus 20,000-card catalogue.

Arizona Mining and Mineral Museum – Fourth Quarter

CURATOR'S REPORT

Activities

- April 2 Volunteer Recognition Banquet — 9645 hrs in 2003 (see attached)
- May 6 Susan Celestian and Liz Anderson attended *Mesa Tribune in Education* Recognition & Awards Dinner
- May 18 Shirley Cote & Liz Anderson set up booth at Arizona Science Center APS Annual Educators' Reception: Handed out 80-100 discount tickets, flyers, Trib Tabs, Apache Tears
- June Liz Anderson wrote and article about the Cactus Wren for *Copper Dome*
- Googled "Arizona Mining & Mineral Museum" -- 941 hits

Outreach Program – Liz Anderson, Tour Guide

- Apr 5 Mesquite Elementary, Tucson, AZ #69
- Apr 12 Elgin Elementary, Elgin, AZ #50
- May 24 New River Elementary, New River, AZ #26
- June 9/10 Farmington Public Library, Farmington, NM #505
- June 28 Williams Elementary SOAR, Williams, AZ #30
- Mar 15 Vernon Elementary School, Vernon, AZ #100
- Mar 17 Montecito Elementary, Phoenix, AZ #60

Scout Program - Shirley Cote, Tour Guide

- Webelos #174
- Girl Scouts #26

Collection Upgrade

Lapidary re-organization begun: Faceted stones and facetable rough in safe is re-bagged and re-labeled. Racks for fossil wood slabs are being constructed.

Gift Shop

Sales of \$5000.00 on Key 9 (merchandise lot purchased in January for \$4600 - and there is a LOT left)

Lapidary Shop

- Lapidary Classes — 3 students (ongoing)
- Beginning Silversmithing Classes — 22 students
- Intermediate Silversmithing Classes — 18 students
- Casting Classes — no classes
- Wire Wrap — 29 students

New Exhibits

Internal

- April Case 29 *Fulgurites*
- May Case 39 *Morenci Mine* (upgraded)
- May Case 40 *Ajo Mine* (upgraded)
- June Case 13 *Mercury in Arizona*

June Case 52 *Causes of Color in Minerals* - in progress

External

April/May Supai Middle School, Scottsdale, AZ
June 11- San Diego County Fair "*Discover the Treasure*"
July 5

Marketing

Press Releases: fulgurites
Ad-style announcement of egg carton program with Hickmans in *The Copper Dome*
By-line article in *Rock & Gem* on fulgurites
Began new query: "How Did You Hear About Us?"

Countries represented by visitors:

Canada, England, Philippines, Japan, Belgium, Australia, Netherlands, Mexico, Austria, Sweden, Germany

States represented by visitors:

AZ, MA, CO, AL, CA, IL, MN, PA, CT, OH, WA, KS, LA, MI, MO, NM, TN, FL, NJ, OR, AK, IA, SC, UT, IN, TX, KY, MT, NY, GA, MD, ID, OK, AR, HI

Comments

- Wonderful place Impressive! Pretty colors!
- This place rocks!
- Grandkids love it!
- Fantastic, fun & cheap!
- Very helpful
- Excellent field trip -- thanks!
- Cool Rocks! Great way to spend an afternoon!
- Excellent place to bring out of state visitors!
- Great job with the displays
- Unique!
- Bonitas
- Just as good as the first time
- Good. Would like to see more equipment exhibits.
- New Ideas!
- Wonderful Presentation!
- Worthwhile!
- Very creative!
- Thank you so much for the confirmation postcards and email. It has been a real pleasure talking to the individuals that made the appointments for me. Thank you for providing this opportunity for myself and my students. Dan Weiss, San Tan Elementary School

2003-2004 FISCAL YEAR FINANCIAL STATEMENT

Appropriated Fund #1000

Appropriation	\$648,800
Expenditures	611,921
Reverted	36,879

Mines and Mineral Resources Fund #3156

Beginning Balance 7/1/2003	\$108,083.58
Income (store sales, donations, pub sales)	181,336.42
Expenses	152,385.61
Ending Balance	137,034.39

STATISTICAL REPORT FOR ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES JULY 1, 2003 THROUGH JUNE 30, 2004.

(Some data is not available due to partial reporting periods, tabulation startup, and other unforeseen circumstances.)

(Item italicized in parentheses are measurement items in the current strategic plan)

Quarters Fiscal 2003 - 2004	1st	2nd	3rd	4th	Total
User – visitor – client satisfaction survey results, out of a possible 5	4.94	4.94	4.89	4.93	4.92
[1] Visitors <i>(Requesting mining information, Mineral Resource and Development Technical Information Center)</i>	559	487	709	604	2,359
Number of above using databases, files, library, etc. <i>(Mineral occurrence research by the public)</i>	301	276	391	304	1,272
Possible new mine startups <i>(Requests for permitting, environmental, and mine startup information)</i>	4	7	11	5	27
[2] Arizona Mining and Mineral Museum [Total of the following five groupings]	7,410	11,305	9,995	10,995	39,705
General Museum Visitors	4,082	4,188	3,985	4,573	16,828
Student Visitors [Students and teachers in scheduled school field trips to the Museum]	2,366	6,036	5,030	6,422	19,854
Club Members [Earth science club members using Museum facility.]	473	565	608	704	1,640
Americans With Disabilities	139	79	62	107	387
Scouts	229	278	139	200	846
Lapidary Shop Users / Hours	121(687)	159(1,021)	131(702)	201(906)	670(3,979)
Organized museum tours [Includes schools & other tours]	52	118	91	108	369
Special events	2	3	2	0	7
[3] Telephone contacts [Incoming and out-going]	3,209	3,478	3,948	3,239	13,874
[4] Letters and information sent out by mail, facsimile, and e-mail.	1,313	725	810	1,619	4,467
[5] Unique visitors to http://www.admmr.state.az.us/ website	11,950	14,394	11,961	13,909	52,214
Number of visits to ADMMR website pages	60,627	80,520	99,768	85,017	325,932
Number of Web pages making up ADMMR website	74	78	78	79	
Mineral and Rock samples identified for the public	138	90	111	119	458

Quarters Fiscal 2003 - 2004	1st	2nd	3rd	4th	Total
Total direct patron contacts (1+2+3+4+5+6+7)	24,710	30,836	28,683	30,976	115,205
Mining & Mineral Museum Gift Shop sales	\$20,951	\$39,490	\$37,536	\$37,407	\$131,308
Receipts adult paid admissions @\$1.88 per paid visitor	\$3,385	\$3,385	\$3,994	\$3,760	\$14,524
Publication sales	\$1,051	\$1,637	\$1,962	\$1,402	\$6,052
Mine files and library references used	402	807	1,244	757	3,210
Technical conferences held	3	16	9	3	31
Meetings attended	10	32	43	23	108
Seminars and symposiums attended	0	12	2	3	17
[6] Programs given and (number of people in attendance)	5(201)	3(147)	4(135)	5(170)	17(653)
Written or public advocacy statements	17	6	3	23	49
Mining/mineral resource properties visited	3	1	5	18	27
Volunteer hours received	2,297	2,413	3,207	2,841	10,758
Donations - Cash	\$3,478	\$2,599	\$1,005	\$1,196	\$8,278
Donations - Bulk rock & mineral material (pounds)	7,548	12,701	5,351	10,044	35,644
Donations - Individual specimens	46	20	281	1,194	1,541
Donations *Mine data, libraries, materials, collections [See list at end of table]					
Donations, Outgoing	318	316	911	0	1,545
Additions to Museum collection	45	31	0	3	79
School curriculum programs [7] number of students)	1(68)	4(300)	15(1125)	6(440)	26(1933)
Teacher mineral kits distributed	145	150	140	162	597
Additions and corrections to information base					
Museum specimens & information	2,818	745	611	2,115	6,289
Mineral resources information (<i>Files updated</i>)	54	54	41	868	1,017
New / modified internal exhibits (both in galleries and out doors)	3	5	3	7	18
External exhibits	0	7	4	1	12
Display cases cleaned, relamped, relabeled, etc.	0	0	3	3	6

*** Donations – mine and mineral data**

- Approximately 20 boxes of geologic reference material from Pat O'Hara.
- 4 boxes of Arizona geology and mining publications from Pierre Cantou.
- Twenty 5 gallon buckets of coal donated by Peabody Western and Empire Machinery.
- A display case donated by Jim Matt.

- 7 large file boxes of reports from Kelsey Boltz
- ADOT, thru Nick Priznar, donated ITGAUM 2004 Subsidence conference held in Tucson proceedings volume including CD ROM and the first DVD added to ADMMR's library.
- ADOT also provided Arabian mine data obtained from AZ 68 highway corridor project. Data has a 1-year hold prior to release.



Photo Courtesy of Phelps Dodge

Haul truck – Morenci mine,
Greenlee County

Publications

Newsletters

Arizona Mineral Resource, No. 35, July 2003

BLM 3809 Update

Tribute to John Jett and Leroy Kissinger

Arizona Mineral Resource, No 36, November, 2003

Mineral Park

Industrial Minerals

San Manuel Closure

Stamp Mill Installed at Museum

Arizona Mineral Resource, No. 37, February, 2004

Tribute to Polly Rosenbaum

Safford FEIS

Arizona Mineral Resource, No. 38, June, 2004

Resolution Copper

ADMMR Historic Photo Archive

Circulars

Circular 105, *Caves of Arizona*, 6 p

Circular 106, *Earth Science Clubs*, 2004-05

Circular 107 – *Gem Shows of Arizona*, 2004-05

Maps

Map of Arizona Copper Resources, by N.J. Niemuth, 2002. Scale 1:3,000,000. ADMMR-M02-2. Provides names and locations of principal deposits. Made to accompany OFR 1-17 *Arizona Copper Reserves*.

Outside Publications

2003 Arizona review article for *Mining Engineering*, by Nyal Niemuth

Arizona chapter of USGS 2003 *Minerals Yearbook*.

Diane Bain authored an article for the book, *50-Year History of the Tucson Show* that was released in February to commemorate the 50th Anniversary of the Tucson Gem and Mineral Show. She relates how her mother, Ann Rutledge, and 8 other mineral dealers had started the Tucson Show in 1955.

Arizona Highways interviewed Department staff members Nyal Niemuth and Diane Bain for an article entitled, *Lost Gold Mines* that appeared in the February issue. The author did a good job of balancing fun stories with facts and gave the Department lengthy coverage and accurate quotes. The Department has received many favorable comments about the article.

Diane Bain supplied a brief article to *Arizona Highways'* writer, Carrie Miner for her feature on Miami, Arizona for the March issue.

Additions Offerings on the Publication List

Mineral Education Kit A boxed set of 40+ rock and mineral samples including a collection of Arizona's commonly mined minerals, 7 of the Mohs' scale of hardness minerals, and examples of sedimentary, igneous, and metamorphic rocks. Includes a 55-page booklet. \$40.00, plus \$8.50 postage.

Computer Screen Saver photo sets are sold in the Museum gift shop. The digital products are the work and donation of Stan Celestian and are sold in the gift shop for \$4.95 to benefit the Museum.

Digital Reprints

Digital reprint on CD of US Geological Survey Bulletin 782, Ore Deposits of the Jerome and Bradshaw Mountain Quadrangles by W. Lindgren, 1926, 192 pages. The digital reprint is on a single CD-ROM. The text is in pdf format. The two 1:125,000 color plates are in both jpg and pdf formats.

INFORMATION TECHNOLOGY ACTIVITIES

Website

- An Arizona State Land Dept (SLD) handout summarizing mineral rights on state trust lands was adopted and converted to electronic format and added to the ADMMR website. We received SLD encouragement, as it was something much easier for us to do than for them.
- 34 web pages were added or updated on the ADMMR website.
- 390 links on the www.admmr.state.az.us website were reviewed. 39 required further checking, fixing, or removing.
- Arizona Significant Metal Deposits spreadsheet (adapted from USGS's Keith Long OFR 98-206 with permission) was added to the website.

On site

- ADMMR's first PCs with Microsoft's XP operating systems and the first with internal CD burners and DVD reading drives were installed.
- A new 40GB hard disk was installed in Novell server after upgrading motherboard bios. A new Novell partition and volume was created. This added 10 times the data storage previously available. A digital data archive and library is underway to take advantage of this space. It will in-

clude reports, news, company filings, government publications, digital maps and data, photographs and other images.

- New equipment purchased early in the fiscal year included a network laser printer, a LAN switch with 24 port 10/100 Ethernet and gigabit internet connectivity, new virus software, and a 4 in 1 device that serves as a combination color copier without a computer attached.
- A Cat 5e data-wiring project was started; the first phase of increasing the speed of internal network communication and connecting to a new switch and an external fiber optic connection.
- Approximately \$8k of computers, accessories, and software were purchased late in the year. The purchase included 8 new PC's so now all department computers will have Windows XP operating system and most users will have CD/RW drives
- ADMMR's IT Strategic Plan was updated and approved by GITA.

Arizona Mining Review 2003

(Note: Detailed mining-related activity is also listed in Appendix A)

At year's end the sun was once again shining brightly over Arizona as copper prices rose to levels not seen for nearly a decade. Preliminary data released by the USGS ranked Arizona third nationally in the value of mineral production, an improvement from fifth in 2002. The total value of non-fuel

production was up \$0.2 billion to \$2.1 billion. Although production fell slightly, copper prices improved resulting in an increase in total value. The tonnage of sand and gravel (construction) produced ranked fourth in the U.S. Cement (Portland) and molybdenum are the other top commodities by value. Arizona continues to rank first in value of mined gemstones.

Value Arizona of Mineral Production¹ (value in \$ 000)

Commodity	2001	2002⁴	2003⁴
Copper	1,490,000	1,260,000	1,390,000
Gemstone	1,610	1,640	na
Gold	W	1,270	na
S&G construction	288,000	294,000	319,000
Stone crushed	49,600	49,900	na
Combined values²	343,000	321,000	na
Subtotal from USGS	\$2,170,000	\$1,928,000	\$2,100,000
Coal³	322,000	307,000	na
Total	\$2,492,000	\$2,235,000	na

1. US Geological Survey (USGS) data except as noted; totals rounded to nearest million

2. Includes cement, clay, lime, gypsum, gold (in 01 and 03), molybdenum, perlite, salt, silver, dimension stone, zeolites, and iron oxides

3. Arizona Department of Mines and Mineral Resources value for coal

4. Unpublished USGS data, subject to change; official preliminary 2003 and final 2002 data will be published by the USGS in the Mineral Industry Survey, Arizona 2003 Annual Estimate.

W - withheld

Copper

Arizona continued to be the number one copper state, accounting for 67% of U.S. production. 1.6 billion pounds were produced, a 3% drop from 2002. This eighth year of decline pushed output down to an amount last seen in 1984. Phelps Dodge's production in Arizona was up slightly while Asarco's Ray and Mission operations experienced significant declines.

There was strong evidence that the bearish copper cycle was ending. The U.S. producer cathode price averaged \$0.85/lb. for the year, a 12% improvement over 2002. Copper prices reached a 6-year high by Novem-

ber 2003 and an 11-year high by July 2004. At year's-end prices exceeded a \$1.40 per pound. Inventories fell sharply in response to production problems in Indonesia and elsewhere, along with strong economic activity in China. Use of copper there, a combination of internal consumption and export in manufactured goods, has made China the world's largest copper market, surpassing the U.S. for the first time. The weakening U.S. dollar also contributed to higher copper prices.

US and Arizona Copper Production and Prices

Year	US (metric ton)	Arizona (metric ton)	Arizona (billion lbs)	Change	Price ¹ cents/lb	Change
1999	1,600,000	1,050,000	2.314		75.9	
2000	1,440,000	963,000	2.123	-8%	88.1	16.1%
2001	1,340,000	885,000	1.951	-8%	77.0	-12.6%
2002	1,140,000	767,000	1.691	-13.3%	75.8	-1.6%
2003	1,110,000	741,000	1.634	-3.3%	85.25	12.4%

Source: USGS production data

1. Metals Week US Copper Cathode Producer

Phelps Dodge (PD) produced over 75% of Arizona's copper in 2003. Improved copper prices were largely responsible for returning PD to profitability for the year and justified plans announced, in early 2004, to return two Arizona mines to full production. The company had more good news in December 2003 with the release of the Final EIS for the Safford project.

Morenci continued to be Arizona's largest copper mine and for the first time produced over half of the state's total. The all-leach operation recovered 842 million pounds in 2003. This was despite a fire during October that damaged the Metcalf solvent extraction plant, one of the mine's four SX plants.

In the first quarter, the company successfully commissioned the first-of-its-kind high-temperature and pressure concentrate leach plant at Bagdad. The \$40 million plant and EW expansion quickly achieved design capacity. The leach vessel demonstrated copper recovery exceeding 98.5% and averaged 85% availability during the year. The plant has an annual capacity to produce 35 million pounds of copper turning 15% of Bagdad's chalcopryrite concentrate production into copper cathodes. The plant also recovers 140 tons of sulfuric acid per day that is beneficially used in the oxide leach.

At year's end Bagdad was operating at about 75% of capacity but by the second quarter of 2004 would return to full capacity. Sierrita is targeting to do the same by the fourth quarter. Both mines had seen output cut to half

capacity since 2002. Bagdad had been adding workers in 2003 and Sierrita is expected to add 100 miners during 2004. Although the doubling in molybdenum oxide prices over the last two years is helping Sierrita, its molybdenum grade is forecast to fall in 2005.

In December the BLM released the Final EIS for the Safford copper project. It covers two open pit mines, Dos Pobres and San Juan, and one giant heap leach, the project that is expected to produce 250 million pounds annually by SX-EW when built. The two deposits are reported to contain over 500 million tons of oxide ore averaging nearly 0.4% copper. The operation plans to place mined material in a retreat-stacking method, unlike the advance stacking in use at Morenci, to avoid compaction of the ore. The single-lined leach pad will be the largest in the world at about 900 acres – nearly 1.5 square miles. The world's longest stackers, 100 yards, will be used to load the leach pad.

Construction is planned for 2005 – 2007 and production will hopefully begin sometime in 2007 – 2009. An average of 450 construction workers will be needed on the 18-month construction period and the mine will employ 350 people for approximately 16 years. When completed it will be an economic boon to Graham County as well as the State. The mine will generate an estimated \$151 million in state and local taxes and \$213.1 million in wages to employees.

The FEIS' preferred alternative includes a land exchange where Phelps Dodge receives land near the operation and BLM receives lands with other significant resource values including: Tasasci Marsh adjacent to Tuzigoot National Monument, and private in holdings in the Gila Box Riparian and Las Cienegas National Conservation areas and parcels that provide access to the Dos Cabezas wilderness.

Safford also became home to Phelps Dodge Mining Company offices during the year, joining the company's process technology center already in operation there.

In January Asarco and the Department of Justice reached agreement allowing the sale of Asarco's 54% share of Southern Peru Copper Corp. to Grupo Mexico's Americas Mining Corporation for \$765 million on March 31. The sale strengthened Asarco's financial situation by cutting Asarco's net debt to \$226 million, a 77% reduction of overall debt and canceled 100% of short-term debt. The agreement also calls for Asarco to fund a \$100 million trust for environmental cleanup in Arizona and other states.

Asarco operations withstood a tough economic year amid a further production drop of 27%. Mission mine production declined due to the closure of the underground portion of the mine and a temporary closure of the open pit. These cutbacks dropped output to 25% the level of 5 years ago. The company considered closing the mine in the late fall but rising copper prices made that choice unnecessary. Ray's output was off over 100 million pounds, a 29% drop from last year's record level. Both operations continued to suffer from the low copper prices and deferred investment in the mine and infrastructure. Asarco's Silver Bell was an exception to this trend, seeing an increase of over 6 million pounds to 48.6, its largest since being reborn as an SX-EW producer in 1997. In the first quarter of 2004 Grupo Mexico announced plans to increase produc-

tion from 70% to 100% at Ray and also increase output at Mission. To do so this will require a reduction of the stripping backlog that makes it difficult to increase production rapidly.

Early in 2004 Rio Tinto announced it had earned a 55% interest in the Resolution copper project near Superior by spending the required \$25 million. BHP-Billiton retains a 45% stake. Estimated reserves of at least 1 billion tons at 1.5% were reported, making it one of richest and largest copper discoveries in Arizona. Preliminary plans are to develop the deposit by block caving.

Unfortunately, the axe had fallen too swiftly on BHP-Billiton's San Manuel mine. With headframes gone, shafts backfilled and the pumps turned off, the mine was precluded from a restart and participating in the copper price recovery. The San Manuel smelter, the largest and most modern in the U.S. and once thought to be the best part of the Magma purchase, has failed to attract any buyers at the purported asking price of \$500 million. Lack of nearby concentrates is possibly to blame. Late in the year the permanent closure of the concentrator, smelter and refinery complex was announced. Barring any last minute sale, reclamation will begin in 2004 and continue during for 5-7 years at a cost likely to exceed \$100 million. All of the site's approximately 500 buildings including the two 300-foot tall smelter stacks will be removed.

Arizona Copper Production – 1999-2003

Cu (million lb.)

Mine, Company	2003	2002	2001	2000	1999
Morenci, Phelps Dodge and Sumitomo	842.4	825.4	783.2	834	960
Ray, Asarco	272.0	382.1	352.5	304	318
Bagdad, PD (Cyprus pre 2000) ¹	214.0	168.0	257.2	247	211.2
Sierrita, PD (Cyprus pre 2000) ¹	151.2	152.4	241.8	245	204.5
Mission, Asarco	51.6	80.7	138.9	189	200
Silver Bell, Asarco and Mitsui	48.6	45.0	41.9	40	46
Miami, PD (Cyprus pre 2000) ¹	35.6	21.0	88.2	137	124.2
Pinto Valley, BHP	22.0	25.1	32.0	38	na
Mineral Park, Mercator ^{2,3}	2.9	3.1	3.6	5.0	na
San Manuel, BHP	0	4.0	20.5	23	na
Total	1,640.3	1,706.8	1,959.8	2,062	~2,300

Data from company annual reports, form 10-ks, etc.

1. Production data for Oct. 1-15, 1999 is unreported.

2. Equatorial prior to June 2003.

3. ADMMR 2003 production estimate based on quarters 1-3.

Mercator Minerals Ltd. acquired the Mineral Park mine in June from Equatorial. It plans to expand production to an 11 million pounds annual rate from the current 3 million pounds by mining new material for the leach operation. In a rare win-win situation, Red Mountain Mining is quarrying and selling crushed stone from Mineral Park that otherwise would have to be removed as waste.

No construction announcements have been made but it was reported that Cambior and BHP-Billiton have discussed use of Pinto Valley's SX-EW plant and other facilities as a possible means to save time and reduce capital expenditures for the Carlota mine.

There was renewed exploration interest shown by majors Kennecott and Teck-Cominco along with number of juniors companies. Castle Rock Resources optioned the Dover property adjacent to the Morenci mine from Dover Copper Mining Company. Nord Resources announced plans to raise \$20 million to restart Johnson Camp and also acquired the Coyote Springs prospect in the Safford district. General Minerals was

active east of Ray with a porphyry copper target at the Monitor mine.

Other Metals

Rising gold prices and the availability of funding contributed to the renewal of precious metal exploration in Arizona. American Bonanza continued exploration work at Copperstone. It completed drifting to the "D" zone in early 2003 and reported multi-ounce gold grades in underground samples taken there. Throughout the year the company intersected significant gold zones from a 9,000-foot drill program to develop reserves. Abington Ventures reported positive intercepts from a 6-hole surface core-drilling program, confirming a high-grade gold vein at the Verdstone's 3 West zone in northern Yuma County. The property was last operated in the mid-1990s. Others junior companies were also active. Odessa Gold conducted 3,000 feet of drilling north of Kingman near the Golconda mine. Patriot Gold reported signing a letter of intent to purchase the Moss property 5 miles northwest of Oatman. The mine property received 36,000 feet of drilling in late 1980s and early 1990s as well as pre-feasibility study.

North Star Steel closed its Kingman steel plant in March. The 5-year old plant, with a 650,000-ton capacity, made reinforcing bars and other products. Nucor, the nations largest steel producer, purchased it for \$35 million, but reopening the plant will require finding a low-cost source of electricity.

Industrial Minerals

The residential construction market in Arizona continued to be very strong helped in part by record-low interest rates. Growth and construction in the northwest portion of metro Phoenix has led to numerous new sand and gravels operations. These include five operators in the Calderwood Butte area along the Agua Fria River north of Sun City: Rinker, Chandler RediMix, Nu West Materials; South West Sand and Gravel and Cemex.

Rinker Materials reported buying two operations during 2003 from Superstition Crushing. The properties were sand and gravel operations located at 59th and Southern Avenues in Phoenix and at 339th Avenue and the Hassayampa River west of Buckeye. An innovative expansion was accomplished by Rinker Materials purchasing a golf course adjacent to their Cortaro plant and pit north of Tucson in Marana. Creating a new a new 9-hole golf course in the depleted pit area allowed the sand and gravel resource to increased by 100 acres while continuing to provide the public with an 18-hole golf course.

In the spring of 2003 Rockland Materials filed for reorganization under Chapter 7 of the Federal Bankruptcy laws. For the prior year Rockland's revenue was in the \$40 million range and had 200 employees. The assets and operations of Rockland Materials were put up for auction in December of 2003 and sold to Arizona Materials, LLC on February 18, 2004 for \$8 million. The sale included what had been known as Rockland's Main Plant #1, Salt River Pit and Buckeye State Route 85 Plant #4. Rock-

land's leases on aggregate deposits in Chino Valley reverted to their owners.

Rockland's plans for a new cement plant were also affected by the reorganization. ARPL Tecnolgia Industrial, S.A. (parent of Peruvian Cementos Lima) purchased Stirling Bridge Cement, LLC in the spring of 2003 and formed a new Arizona company, Drake Cement, LLC. The Yavapai-Apache Nation holds a small investment position in the new company. Stirling Bridge had acquired land and mining claims north of Prescott near Drake, and was in the design and permitting stage to develop the Cedar Glade limestone quarry and construct a 350,000-ton per year cement plant. Drake Cement has increased the design capacity of the project to 650,000 tons of Type II and Type V Portland cement annually. Expectations are for construction of the \$130 million project to begin in March of 2005 and production of cement to commence in March of 2007. The new company seeks additional U.S. partners for the project.

Therm-O-Rock West Inc. began producing perlite micro spheres at its Chandler plant for customers of Basin Perlite. Perlite mined from Basin's Utah mine is processed under a toll agreement and shipped to joint compound manufacturers in Arizona, Mexico, and Malaysia.

The Federal Energy Regulatory Commission denied an Aquila subsidiary's application for the proposed underground gas storage facility to be located at Red Lake 30 miles north of Kingman. The commission was in favor of development of natural gas infrastructure, but rejected the project's request to proceed using market-based pricing. El Paso Natural Gas pursued another gas storage facility to be developed in the Luke Salt Dome west of Phoenix. The project was purchased in mid-year from subsidiaries of Pinnacle West, Gaz de France and Gulf Terra Energy Partners. Plans for Copper Eagle proceeded but drew concern due to its proximity to Luke Air Force base. The project's

proposed 9.6 billion cubic feet storage capacity would provide reserve supplies for the numerous natural gas powered electrical generation plants in the Phoenix area.

Government News

The Arizona Dept. of Mines and Mineral Resources posted two reports on its website www.admmr.state.az.us that are now among the most frequently downloaded.

The first is a BLM mineral report entitled *Results of Analyses of Standard and Blank Samples Tested at Selected Assay Laboratories in North America*. In the survey, standards and blanks for gold, silver, platinum and palladium were sent to 65 North American laboratories that perform assays for the general public. The survey lists the name and location of each laboratory tested, with results of the tests. The BLM National Training Center in Phoenix implemented the survey because of Public Land administration problems caused by inaccurate or non-reproducible precious metal assays.

Arizona Mining Scams and Unassayable Ore Projects of the Late 20th Century is the other popular download. In this report W. Scott Donaldson, a Phoenix mining attorney, provides details from a number of Arizona cases. He characterizes most 1980s schemes as “desert dirt” ventures with little evidence offered to explain why precious metals were present. In the 1990s a more sophisticated approach of unassayable gold and platinum group metals came into vogue where it was argued that a particular “ore” was not amenable to conventional fire assaying.

The future use of State Trust Lands continues to be an issue. Conflicts resulting from the constitutionally mandated revenue maximizing uses and pressure from urban sprawl resulting in a desire for preservation have a variety of groups lobbying for change and designating their “favorite” lands. Opportunities, especially related to industrial minerals, may result if the state constitution is changed. State Trust Land Reform Proposal draft maps Incentive and Option lands are viewable at: www.land.az.state.us

Appendix A

Activities and Current Events from the ADMMR Mining and Mineral Resources Information, Promotion, and Development Program

First Quarter

Rising mineral commodity prices continue to fuel increasing requests to the Department for information on Arizona mineral resource occurrences.

DOE (US Dept. of Energy) Arizona **"Mining Industry of the Future"** committee has been formed partly as a result of ADMMR attending the Mining and Energy Solutions conference in Elko NV, Aug. 25-29. The committee consists of Arizona mining company representatives along with Mary Poulton of the Mining and Geologic Engineering Department at the U of A, industry suppliers, and Doug Sawyer and Ken Phillips. Objectives of the committee are both to define and determine possible difficulties in the evolution of Arizona's mining industry and to define problems and research needs that could be met by DOE and industry partnerships.

Mercator Minerals, Ltd has acquired the **Mineral Park** mine in Mohave County, from Equatorial Mineral Park, Inc. for \$2.7 million. Mineral Park, located 16 miles north of Kingman, is a dump and bench leach copper mine with an SX-EW plant. It produced 5.0 million pounds of cathode copper in 2000, 3.6 million pounds in 2001, and 3 million pounds in 2002. A plan for mining of new ore awaits increases in the price of copper.

Mercator plans to expand copper production to 15 million pounds per year by modifying the EW plant, initiating mining with a contract miner, stacking ore on an existing leach pad, and beginning the leaching process.

Anderson Mine data has been received from Molycorp Corporation in the form of ten boxes of data. The Anderson is in Ya-

vapai County, 35 miles west of Congress, near the Santa Maria River. The Anderson, a major Arizona uranium resource, has been reported to contain reserves of 34 million pounds with a cutoff grade of 0.05 percent U_3O_8 . The uranium occurs as carnotite, tyuyamunite, weeksite, coffinite, and uraninite in late Tertiary carbonaceous lake sediments. The mine is a past producer. The ore shipped from the open pit operation from 1955 – 1959 totaled 33,230 pounds.

BHP Billiton announced that **San Manuel** is scheduled for permanent closure after fifty years of mining and smelting. BHP had hoped for a different outcome, but with the low copper prices of the past few years, there have been no buyers for the mine. San Manuel, located 45 miles south of Tucson, has been on care and maintenance since May 1999.

The **Swallow Mine stamp mill** has been installed in the Museum outdoor display area by a group of volunteers led by Charlie Connell. They have completed the first phase of installation. The project has taken 17 years to get to this point. Charles W. Brown, owner of the Swallow mine, originally donated the mill to the Department in 1986. Over the following years the mill was dismantled and transported in pieces to the Museum as resources permitted. The aim is to complete the mill and actually make it operational.

A detailed **sand and gravel deposit mineral exploration report** was acquired by the Department. It is one of first (excepting for 1000s of ADOT highway construction material deposit reports) and may represent the beginning of more professional geology and exploration work being completed on low unit value/high place value, mineral re-

sources such as construction aggregates. The sand and gravel prospect, near Casa Grande, was examined by a professional geologist on behalf of Rinker Materials (formerly United Metro Materials and Tanner before that).

Nord Resources has submitted new APP for **Johnson Camp** copper mine in possible preparation for new mining activities.

A meeting was held with Jim Briscoe, President, JABA Inc in Tucson. JABA's Arizona exploration projects were reviewed. We received a **donation of historical data** totaling 45 boxes plus maps on a greater Tombstone district precious and base metal project.

Salt River Project canceled the **Fence Lake New Mexico** mine project. Although not in Arizona, SRP had planned to strip-mine coal on 18,000 acres of public and private land and build a 44-mile rail line from the mine to the Coronado generating station in St. Johns, Arizona.

Omya Arizona's Plan of Operations with the Tonto National Forest for their **Queen Creek** white marble and limestone mine was finalized and signed on Sept. 30, 2003

Southwest Sand and Gravel Company, operated by Roger A. Van Kamp, has applied for a State Land Department material sale on 120 acres of State Trust Land in Sec. 1, T5N,R1E along the Agua Fria River north and adjacent to his fee land. He plans to expand his operation as soon as he can acquire more reserves. Southwest Sand and Gravel, the only independent sand and gravel producer in the immediate area, is one of five relatively new sand and gravel operations to be established in the Calderwood Butte area along the Agua Fria River north of Sun City in Maricopa County.

Growth and construction in the northwest portion of the Valley of the Sun has led to numerous new sand and gravels operation being established. In addition to Southwest

Sand and Gravel Company the four other sand and gravel operations in the Calderwood Butte area along the Agua Fria River north of Sun City in Maricopa County are Rinker (United Metro) in SE $\frac{1}{4}$, Sec 29, T5N,R1E; Chandler RediMix in NE $\frac{1}{4}$, Sec. 31, T5N,R1E; Nu West Materials in SW $\frac{1}{4}$, Sec. 7, T4N,R1E; South West Sand and Gravel in SE $\frac{1}{4}$, Sec. 31, T5N,R1W; and Cemex in SE $\frac{1}{4}$, Sec 7,T4N,R1E.

Atlas' **White Cliffs diatomaceous earth mine** in San Manuel is shutting down. Jon Shenk reported that the operation is closed as of Friday, October 31. He explained that there were two issues involved in the shut-down of White Cliffs; first was Atlas's desire to raise more new money and concentrate on precious metal exploration, and the other is the need for new beneficiation equipment at White Cliffs to reduce the sand contained in the current plant's product.

A recent E-bay Online Auction Service listing the **Silver Dollar** mining claim, in Yavapai County precipitated a phone call from E-bay and their online payment service, Paypal.com. The representative of their security division had numerous questions about mining claims and what they are and how they compared to real-estate. They were particularly interested in our suggestions for what we felt should be reasonable disclosure requirements and clarifications that should be included in the E-bay listing.

Second Quarter

The **copper price** for January 28, 2004 closed at 115 cents per pound – cathode. This cathode price is 21.5 cents higher than the price given at the November 2003 Board of Governors' meeting.

Phelps Dodge, Arizona's largest mining company has announced 4th Quarter 2003 positive income of \$134 million compared to a \$199 million loss for the equivalent 4th quarter in 2002 and a \$225 million loss for the same quarter in 2001. Phelps Dodge reported that their average selling price for

copper in 2001 was 70.7¢; for 2002 it was 80.7¢, and for the 4th quarter of 2003 it was 93¢.

Iron ore prices, investment in US iron ore production, and interest in iron ore development potential have increased substantially. The activity has been driven by China's expanding need for iron ore and a shortage of ocean shipping options. There has been recent Asian investment in US iron ore production facilities with production to be shipped to Chinese steel mills. Concurrently a shortage of shipping ability has developed, especially from Great Lakes terminals. Until recently lake and ocean freight for iron ore to China has been at, or just below \$15.00 per ton. Current charges have risen to about \$46.00 per ton. Arizona has two world-class iron ore deposits. Unfortunately one of them is located north of Sun City and the land is planned for residential development. The other is located on the Fort Apache Indian Reservation in northeast Arizona. They each have a potential size of over 100 million tons of iron ore grading over 50% iron.

Iron ore has been produced in Arizona at various times over the last 70 years, sometimes to supply steel mills and sometimes for industrial minerals uses. High-grade iron from deposits on the **Fort Apache Reservation** was shipped to the CF&I Steel Mill in Pueblo Colorado in the 1960s and early 1970s. Red hematite has been produced from the **Iron Chancellor Mine** south of Seligman for use as pigments and foundry mold release. Micaceous iron oxide pigment (in the form of specular hematite) has been recovered from tailings at the **Swansea Mine**. In the 1950s Kaiser Steel of California proved and patented a **taconitic iron ore deposit in the Hieroglyphic Mountains** in Maricopa County.

Rising mineral commodity prices continue to fuel increasing requests of the Department for information on Arizona mineral resource occurrences. We are again being visited and contacted by both major and junior mineral

exploration companies. There is planned drilling and other exploration activity in a number of Arizona historic base and precious metals districts. Usage of ADMMR data is up.

- Perry Durning and Bud Hillemeier, long ago very active in metal exploration in Arizona, were in for a day and half going through new data collections.
- Castle Rock is beginning to report exploration data at **Dover Copper** in the Morenci District.
- New companies have announced acquiring or optioning gold targets in Arizona including **Patriot Gold, Shoshone, and Odessa**.
- Millions of exploration dollars have been raised for expenditure in Arizona by **JABA, American Bonanza, and Abington Ventures**.

The fire last October at **Morenci's Metcalf SX plant** damaged 4 of 108 SX mixer-settler tanks. Metcalf is one of 4 SX facilities at Phelps Dodge's Morenci operations. The damages were expected to be \$5-10 million range, but the impact to 4th quarter production was expected to be small, as solutions were diverted to other 3 SX plants.

Stirling Bridge is now Drake Cement. In mid May 2003 the Stirling Bridge cement plant project was packaged and put up for sale to raise money for the various Grant Goodman corporations. Cliff Ayers resigned from Stirling Bridge and Rockland Materials and went with the sale as a contract consultant. The Stirling Bridge Cement project was sold to ARPL Technological Industrial of Cementos Lima, a Peruvian cement manufacturer who hopes to enter the USA market as both a cement producer and eventually as an aggregate and concrete producer. The price was a little more than \$1,000,000 and included mining claims and patented plant site land at Drake. The project is now known as

Drake Cement and is planned to be about 40% larger at 500,000 tons per year.

Cementos Lima owns and operates two cement plants in Peru, one with a capacity of 4.5 million tons per year in Lima and the other with 1.5 million tons per year capacity in the mountainous area of Peru. They also have 40 percent of the Peru ready mix concrete business and have been exporting cement to the USA through Houston, Texas.

Rockland Materials, as the only income-producing member of the bankrupt group of Grant Goodman-controlled companies, has continued to operate by court appointed trustees and is for sale. Sealed bids received by the Court have been deemed too low and the operations are scheduled for public auction. They consist of an operating sand and gravel mine and ready mix plant at 43rd Avenue and the Salt River in Phoenix plus reserves and permitted sand and gravel mines south of Buckeye and in Chino Valley

Cement News – Raw Materials

Portland cement is made from a mixture of calcium silicates and calcium aluminates. It is obtained from the partial fusion and combination of raw materials rich in lime, silica and aluminum with iron. These materials are extracted from the mines in their natural state in the form of limestone, quartz, clays (or some other aluminum source), and iron ore (or some other iron source). The result of the fusion, cement clinker, is then ground with gypsum. The calcium source, typically limestone or limestone-marble in Arizona, makes up the largest portion of the cement plant's raw feed.

Cement plants typically own and operate their own limestone mines. Their mines typically supply all of their calcium needs and varying amounts of their alumina, silica, and iron needs. Additional amounts of alumina, silica, and iron minerals (or industrial sources) are typically purchased and blended to make a balanced plant feed.

The expanded cement industry in Arizona and southern California has spurred the need for expanded and additional sources of cement raw materials, especially high-grade calcium carbonate, aluminum sources, and to a lesser degree, iron and gypsum sources. These needs, and the hopes of prospectors and small mining companies to fill these needs, have created a small *cement rush*. At least five companies/individuals are actively pursuing these commodities in Arizona.

Cataloging of the **Walter Heinrichs – Heinrichs GeoExploration collection** continues. Volunteers are making progress sorting, describing and cataloging the geophysical project files. The donation included a large variety of geophysical field equipment. Cataloging of equipment manuals, matching manuals and accessories to equipment and tagging and labeling of equipment has been completed. It is estimated that project file sorting and cataloging is 20-25 percent completed. It is projected that there will be about forty file drawers of project files when the sorting and cataloging is complete. The donation of information also includes over 250 sets (map tubes) of rolled project maps for which cataloging has not begun. The Heinrichs GeoExploration donation is the largest mineral resource data file collection ever received by the Department. It is estimated that about 20 percent of the projects were completed in Arizona.

Polly Rosenbaum, teacher, legislator, and Department benefactor died on December 27, 2003 at the age of 104. Polly, a State Representative for 45 years was responsible, along with Rose Mofford, Arizona's Governor at that time, and former Senator Bill Hardt, for getting the Department its new quarter in the former El Zaribah Shrine Temple. She also helped direct funding to transform the 1920 building into the elegant and graceful Museum and Department offices of today. In recognition of her efforts the State renamed the building the Polly Rosenbaum Building.

“Polly lived in Globe and had a mining background, understood the importance of mining to Arizona, both economically and historically” Doug Sawyer, Director of the Department said of Polly. “Along with the rest of Arizona, we mourn the loss of her.”

The November meeting of the **Maricopa SME** was held at the Museum with special tours provided. Fifty-five people attended the meeting. All members have some connection to professional engineering and the mining industry. Many had lived and worked in the Phoenix area and had never been to our museum in its present location.

Announcements of Phelps Dodge’s **Safford Mine** project were the hottest Arizona mining news of the quarter. On December 12 the BLM released the final environmental impact statement on Phelps Dodge’s Safford project, allowing the company to proceed with construction of the mine. Located eight miles north of Safford, the mine will be one of the nation’s largest, producing up to 250 million pounds of copper a year. It is hoped the mine will be operational by 2007.

The mine will be an economic boon to Graham County as well as the State. An average of 450 construction workers will be need on the 18-month construction period and the mine will employ 350 people for approximately 16 years. The mine will generate an estimated \$137.7 million in state and local taxes, \$282.5 million in federal income and payroll taxes, and \$13.1 million in wages to employees.

The column flotation mill at the **Oracle Ridge Mine** is being dismantled.

Cambior is formally discussing use of BHP’s **Pinto Valley** facilities if no changes are required to the permits. If no agreement can be made with BHP or the permit process must be reopened, Cambior will proceed independently and possibly begin construction in 2004.

Rio Tinto has announced the discovery of a deep copper and molybdenum mineralized porphyry deposit east of, and adjacent to, the historic Superior (Magma Mine) underground mine at its Resolution project. The **Resolution Copper Deposit**, although very deep, is a huge resource of copper with good grades. Rio Tinto is currently estimating a reserve of over one billion tons a over 1.5% copper (actually closer to 1.75% Cu). The deposit, previously called the Magma Porphyry had long been speculated to exist from hints collected from underground drilling from deep portions of the Magma Mine and surface drilling carried on by copper exploration companies over the last 25 years.

The Resolution deposit is deep. The top of the domed shaped structure is 4,500 feet below the surface. Thus far the deposit measures 5,800 feet long, 4,900 feet wide and 600 to 1500 feet thick. Virgin rock temperatures are estimated to be 80°C at the bottom of the conceptual mine. These high temperatures along with in situ rock stresses at depths of 6,500 feet will present formidable operating conditions. Preliminary rock test indicate that the deposit should be amenable to block caving mining methods.

Rio Tinto has earned a 55% ownership in the deposit by spending \$25 million in exploration and assuming an estimated \$16 million for some of the environmental liabilities of the old Magma Mine sites.

Third Quarter

Phelps Dodge – Arizona’s largest mining company has announced they are increasing production at several mining facilities in Arizona. The decision comes in response to higher copper prices and indications that the improved market for copper is sustainable. The concentrator operations at Bagdad and Sierrita are being increased to full capacity.

- Bagdad will produce at full capacity by the second quarter of 2004. Sierrita will produce at full capacity by the fourth quarter of 2004.

- The company estimates that 50 jobs will be added at **Bagdad** and 100 at **Sierrita**.
- PD will begin running its **Miami smelter** at 100 percent capacity by the third quarter of 2004, with little or no effect on current employment levels.
- The increases at **Sierrita and Bagdad** also are expected to increase byproduct molybdenum production from about 30 million pounds in 2003 to about 33 million pounds in 2003.

Morenci Mine accounts for over half of Arizona's 2003 copper production. For the first time in modern Arizona mining history, one copper mine, Phelps Dodge's Morenci Mine produced over 50 percent of Arizona's copper.

Handy and Harmon **gold** for April 14, 2004 closed at \$397.75 per troy ounce, down \$13.75 from the price given at the January 2004 Board of Governors' meeting, likely as a result of the slight increase in the strength of the dollar. It is up significantly from prices of last summer that had been in the high \$200 range.

Handy and Harmon **silver** for April 14, 2004 closed at \$7.18 per troy ounce; up 68¢ since the last board meeting. Silver prices have languished in the \$4.50 to \$5.25 range for many recent years.

Copper is Number 1 in Arizona – What's next? In decreasing order Arizona's economic mineral production by commodity is copper, coal, and sand and gravel. Then it gets complicated because of restrictions on data availability. Cement, lime, molybdenum and crushed stone and sometimes silver and gold byproducts more-or-less equally vie for the next five positions. Copper accounts for, depending on the year in question, 80 to 90 percent of Arizona's total. Coal and sand and gravel account for be-

tween 7 and 15 percent making cement, lime, moly, crushed stone, and precious metals account for 2 to 10 percent and a variety of "boutique" mineral production accounts for the remainder.

Iron prices for 2004 have increased 18 percent over those of 2003. Investment in US iron ore production, and interest in iron ore development potential have increased substantially. At just over 1000Mt, world production of iron ore was at a record high in 2002 (last year international figures were available) and crude steel production exceeded 900 Mt for the first time. This is not an indication of booming global demand for steel but a reflection of the huge and largely unexpected growth in steel production and consumption in China since the start of the decade. The tonnage growth in China's steel output since 2000 is roughly equivalent to the total annual production in the USA. Scrape iron prices have followed.

- The ADMMR has received numerous inquiries related to iron in Arizona. The **White Mountain Apache Tribe** is currently evaluating an iron ore development proposal from a California mining company.
- The owner of the **Iron Chancellor** hematite mine has signed an option agreement with the Yavapai Apache Nation in Camp Verde. The tribe is considering investing casino profits into the development of off-reservation natural resources.
- Even with the high level of interest in iron and steel, the **North Star Steel Mill** in Kingman remains shut down. It is a secondary plant and uses electric power for energy. The cost of power and the foreign demand for scrape iron continue to make the plant too expensive to operate.

Uranium prices have advanced along with many other mineral commodities. Stockpiles of uranium are continuing to be consumed

by nuclear power plants. The use of remanufactured weapons grade material into commercial fuel grade is also continuing to consume uranium from those sources. The price has increased from \$10.75 per pound of U_3O_8 last year to \$17.60. Arizona's developed breccia pipe deposits are among the highest grade in the nation. The price was at two-decade-low of \$7.10 in December of 2000.

Mineral exploration activities have rebounded. Although prospecting and mineral exploration in Arizona never stopped, we are now seeing a resurgence of activity for precious metals and copper. We are again being visited and contacted by both major and junior mineral exploration companies. There is planned drilling and other exploration activity in a number of Arizona historic base and precious metals districts. Usage of ADMMR data is up.

- Odessa Minerals has finished an initial drilling project on the **Golconda Mine** in Mohave County and has signed a joint venture agreement with Jerico to raise an additional \$400,000 to do additional drilling at the property.
- A significant increase in exploration activity was preceded by ADMMR assisting a number of exploration companies and professionals review Arizona properties and gather data. This activity was more dominate during the first half of the quarter. A number report planning or executing drilling or other serious exploration programs.

In an unofficial change in priorities, the State Land Department has taken a proactive role in encouraging development of mineral resources on **State Trust Lands**. A specific example is the current lease on **Camp Grant** limestone and silica - smelter flux quarry in Pinal County. This quarry supplied limestone and quartz to the **San Manuel Smelter** for numerous years. Now that the smelter is shut down and being planned for

removal there is no need for the flux minerals. If the quarry's leaseholder, BHP Copper abandons the lease, the property will be reclaimed. The Land Dept. has asked ADMMR to assist in finding other uses for the quartz and limestone and for someone to take over the lease and defer the reclamation that is currently required by BHP Copper. The State Land Dept. has also asked the ADMMR to assist in encouraging some other lease applicants at other locations to provide timely and accurate information to accelerate the issuance of production leases.

Arizona Materials acquired the sand, gravel and ready-mix assets of the former Rockland Materials through a disposal sale by the US Bankruptcy Court. The assets consist of an operating sand and gravel mine and ready mix plant at 43rd Avenue and the Salt River in Phoenix, plus reserves and a permitted sand and gravel mine south of Buckeye. Rockland Materials was the only income-producing member of group of companies headed by Grant Goodman. Other Grant Goodman companies included Stirling Bridge Cement.

State Land's **Old Mines Environmental Hazards Assessment Project** is providing ADMMR with an opportunity visit numerous mine locations on State Trust Lands. It is part of ADMMR's statutory duties to assist in encouraging development of mineral resources on State Trust Lands.

The Risk Management Division (the State's liability self insurance program) of the Dept. of Administration is currently attempting to quantify the potential liability the State faces at nearly 500 "**abandoned**" mine sites on State Trust Lands. Loss Risk Assessment Specialist, Doug Brown, started the evaluation project by compiling a list of all "abandoned mine sites" on State Land, then reviewing information on each in ADMMR files, and reducing the list to approximately 50 sites that need field review. Those sites that were determined to likely have tailings dumps, abandoned processing plants, or are

base metal occurrences on which old workings might be making contaminated water have been given the highest priority for field review. Department Chief Engineer Ken Phillips has accompanied Doug Brown on numerous field investigations. The addition of an ADMMR engineer provides both an opportunity for the Dept. to visit a number of mines, either never previously reviewed or not visited in many years, and to provide a mining technical oversight to the Risk Management environmental specialist point of view. All travel expense is being provided by the Dept. of Administration.

Ten properties have been visited so far. Only one has been reported for further risk evaluation because of a large number of unlabeled 55 gallon drums stored or abandoned at the site and the use of the shaft as a water source for livestock water under a State grazing lease. It is very likely that the abandoned drums have no relation to the site being an old mine. Also as a result of these field visits one property has been identified as a target for base and precious metal exploration. Another property was determined to actually be located on private land and has been recently leased to a mineral exploration company.

Fourth Quarter

Commodity Prices for Uranium, Iron Ore, Cement, Barite and Fluorspar have all seen upward pressure in the last six months to one year. This price pressure has been driven in a significant part by increased consumption in China. Arizona has developed reserves of uranium, known reserves of cement raw materials, iron ore, and fluorspar, and potential for the discovery and development of specialty barite occurrences.

- The rise in uranium prices has parties seriously reviewing and copying the recently acquired **Anderson mine** data files obtained from Molycorp as well as the Wyoming Minerals data

covering the **Dripping Springs** formation north of Globe.

- The rise in interest in iron ore deposits has resulted in the White Mountain Apache Tribe hiring a consultant, Dale Nations, to review the **Apache Iron Deposit** so that the tribe can respond to inquiries from possible developers. Ken Phillips assisted in reviewing marketing, ore grade, and transportation issues.
- Nyal Niemuth and Ken Phillips met with Starr Curtis, Todd Ingram, and Daren Fly of **Chemical Lime**. They have developed aggregate modification system employing lime that can extend the useful reserves of existing sand and gravel pits. The high demand for construction aggregates and the high cost of permitting new operations provides a market opportunity for aggregate modification, and thus, also expand the market for Arizona-produced lime.

OREMAN data has been received for the initial launch of the new virtual mines and prospects development program. The ADMMR home page link to **OREMAN** as well as the individual sections are in development. We have already received three submittals of prospects in advance of a full public announcement of this exciting new service.

- Ron Hanna has provided information on his **Duco Boy** property in Yavapai Co.
- Pat O'Hara on has provided information on his two **volcanogenic massive sulfide (VMS) prospects** near Mayer in Yavapai Co.

The **cement shortage** should be easing. The *Portland Cement Association* reports signs of easing in availability of supplies of Portland cement. Renewed international ship availability will heighten the potential for cement imports to increase later this year. Rising interest rates could slow residential

construction and thus, in part, loosen cement supplies in some U.S. regions. Both existing Arizona cement plants have doubled production capacity over the last few years. The planned new cement plant at Drake is moving along with quarry permitting and plant permitting and design. Cement imports are at their highest levels in nearly two years. Overall, the 2004 construction market will be characterized by a mixture of sectors facing both decline and recovery. The final result is a projected growth rate in cement consumption that will ease in the second half of 2004 compared to first half shortage levels.

Dan Speck of Rinker Materials reported what he felt was the most interesting recent event in Rinker Materials' operations in Arizona. In 2003 Rinker Materials purchased the golf course adjacent to their **Cortaro Plant** and sand and gravel pit at 6200 W. Cortaro Farms Road in Marana. The purchase allowed Rinker to establish a new 9 holes of golf course in the depleted pit area and develop new reserves in the area originally occupied by the prior existing 9 holes. The acquisition of the golf course increased the Cortaro Plant pit resource by 100 acres and will allow development of the resource while continuing to provide a full 18-hole golf course.

Mineral exploration activities. John Rudd is drilling a prospect for **Greystone Materials** of Pittsburgh Ohio, south of Buckeye, for a possible feldspar operation. A plan of operation is in preparation for submission to the BLM.

- The higher gold prices have interested parties in a number of "stalled" Arizona projects. Two companies have reported being in negotiations to acquire the **Yarnell gold** deposit in Yavapai Co. from Bema Mining. ADMMR encouraged both parties following meetings with BLM on the permit ability of the property.

- Six drill rigs are operating at the **Copperstone** underground.
- Drilling at the **Moss Mine**
- Exploration and drilling at the **BVO**
- Exploration at the **Yellow Jacket**
- Exploration and drilling by juniors at **Morenci**
- Permits for drilling at the **Paul Claims**
- Continued construction of a custom nonmetallic **processing mill at Bouse**
- Exploration at the Mexican Hat project (**Gold Bar and Gold Band Mine**)
- Following up on our suggestions last year, **West African Gold** announced it has acquired a number of gold prospects in Mohave County.
- Basin Perlite of Utah is having **Therm-O-Rock** in Chandler process 5 truckloads of perlite per week into microspheres for use in wallboard joint compound. This processed perlite product is 6-8 lb/cu ft. in bulk density. Customers include the new USG plant in Glendale as well as Murco Wall Products of Buckeye.
- Drilling project at **Andrada Marble** completed
- Mining Plan Of Operations submitted to the Prescott National Forest for Drake Cement's **Cedar Glade Quarries**.

BLM claims fees raised to \$165 for new claims and annual rental \$130. Insufficient payment will be a curable defect.

SUSPICIOUS MINING ACTIVITY

First Quarter

- Xerion Group is still active.
- Great American Gold is still seeking investors at Luzena Alluvium. Additional “data” on project was received.
- International Energy and US Corp. continuing releasing ore deposit news on the Crosby Mine area project, Yavapai County.
- ERDLF (Early Retirement Distributors, Canada) and Fireglow LLC (Oregon) report \$71 billion in Arizona black sand deposit, Pinal County.
- Jerry Haggard, Mining Atty., reports BLM is seeking to permanently bar Combined Metals Reduction from owning mineral rights at Klondyke and Golden Door mines in Mohave Co. due to CFR3715 violations.

Second Quarter

- International Energy and US Corp. continuing releasing ore deposit news on the Crosby Mine area project, Yavapai County. Latest release is the company being listed on the Berlin (Germany) stock exchange.
- Suspicious assays results by Don Jordan’s MRAL were discussed with the technical staff at a major mining company. Often the typical scam activities and questionable assay methods are completely foreign subjects to technical members of the legitimate mining community. Specifically the assays involved, in addition to Don Jordan, Seaway Systems Inc., Henry Chamberlain, and Arizona Desert Rose Red Sand.

Third Quarter

- A consulting “extraction” geologist, Bruce McClendon, is reported to be seeking investors in a project to re-

cover silver from a purported 1.8 million tons of tailings at the Octave Mine in Yavapai. The investments solicited are in multiples of \$10,000. The geologist guarantees that each investor will receive \$400 daily from the processing of 6 tons of tailings. The tailings will be shipped to a Mississippi location where a proprietary process will be used to recover the silver.

- US Dept. of Justice warrants were issued for arrest of Diane Flaherty and Michael Gardiner who violated Securities and Exchange Commission cease and desist orders for the sale of securities in Phoenix Mining.
- The web site is gone and phone number reports as disconnected for Copperstate Labs of Tucson and their registered assayer D. Shah.

Fourth Quarter

- A consulting “extraction” geologist, Bruce McClendon, is reported to be seeking investors in a project to recover silver from a purported 1.8 million tons of tailings at the Octave Mine in Yavapai County. The investments solicited are in multiples of \$10,000. The geologist guarantees that each investor will receive \$400 daily from the processing of 6 tons of tailings. The tailings will be shipped to a Mississippi location where a proprietary process will be used to recover the silver.
- Colin Charnley, of Manoora, Carin, Australia, stopped in at the ADMMR office to discuss his efforts to get his investment in the “Great American Gold Investment Opportunity” refunded and to get what he called “the scam” stopped. He was solicited in Australia and invested over \$(AU)100,000. He reported that he

has visited the site in Cochise County and has provided us with digital copies of 80 photographs he took during the unannounced project visit. He reported no one was at the site. He also reported that he has contacted law enforcement in Cochise County: He reported having traveled to Vancouver to confront the Great American Gold executives directly and demand his investment money back. He reported contacting the company and being promised the return of his money. While in Vancouver Mr. Charnley contacted a private investigation firm to assist him in finding the offices and individuals involved in taking his money.

- An informal visit was made to Global's leased Light Hall Millsite Maricopa courtesy of Doug Lindsay. Millsite equipment consists of small outside furnaces and "lab" trailer. No

evidence of commercial scale production has ever been noted.

- Received a report from a well-known mining attorney that a client provided David Flasha of Can Pay Mining with 42,000 ounces of silver to "collect" gold from Nevada "ore". When shipped to a legitimate New Jersey refiner the supplier received only \$24,000! So most of the silver "disappeared"!
- Assistance was provided to John Sims of the Kansas Securities Div. regarding information on Arizona Idaho Mining LLC activities near Lake Havasu City.

A release was received stating that US Corp is moving to production at its project near Bagdad. Production soon is unlikely for lack of BLM and other approvals although the company claims hundreds of millions of dollars of metals in "reserves."