

Minerals of Arizona Symposium

The eighth annual *Minerals of Arizona* symposium will be held on Saturday, March 27 from 8 am to 5 pm at the Museum. The highly popular symposium is sponsored by the Museum and the Arizona Mineral and Mining Museum Foundation. The \$30 registration fee includes admission to the talks, program abstracts, refreshments, and lunch.

For more information, including presentation subjects and list of speakers, call the Museum at 255-3795.

Gem Shows

Note! Arizona's gemshow season is in full swing.

January 16-17, Flagg Gem & Mineral Show, **January 29-February 7**, Tyson Well Sell-A-Rama, **February 3-7**, Quartzsite PowWow, **February 11-14**, Tucson Gem & Mineral Show, **March 5-7**, Phoenix Gem & Mineral Show
For a complete listing see our web site or order Circular 80, *Arizona Gem Shows, 1998-99*.



Arizona Department of Mines & Mineral Resources
1502 West Washington
Phoenix, Arizona 85007

Address Correction Requested

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Mineral Resource**ADMMR Welcomes New Director**

The Department is pleased to announce the selection by the Board of Governors of Willis D. (Doug) Sawyer as Director. Sawyer will assume duties as Director on January 19, 1999. He brings a blend of experience to the position from both the public and private sectors. Sawyer is a native of Arizona and has spent the majority of his 20 years of professional experience working in Arizona and New Mexico. He grew up on the west side of Phoenix. He attended the University of Arizona College of Mines where he earned several academic scholarships including: Jackling, Phelps Dodge Corporation, and Cyprus Amax. During the summer, he worked for Phelps Dodge Corporation and for a local mining consultant.

After earning a Bachelor of Science in Geological Engineering he began his professional career in Silver City, New Mexico working for Kennecott Copper at their Chino Mines Company. After two years, low copper prices provided the 'push' for him to return to graduate school where he earned a Master Degree in Geological Engineering with an emphasis in geotechnical engineering.

After graduate school he began work for Dames & Moore in their Earth Structures Design Group in the Phoenix office. Projects included concrete and earth fill dams, building foundation analysis, site investigations, solid waste landfills, and other mine-related projects.

Between 1988 and 1994 he worked for Waste Management Inc. on a number of "greenfield" landfill projects, a large waste transfer station, a medical waste incinerator, environmental compliance, construction projects, and business acquisitions. He was responsible for

over \$50,000,000 in capital improvements and was the project engineer for the Butterfield Station and Gray Wolf Landfills located in Maricopa and Yavapai Counties respectively.

In 1994 he was hired as the Director of Engineering

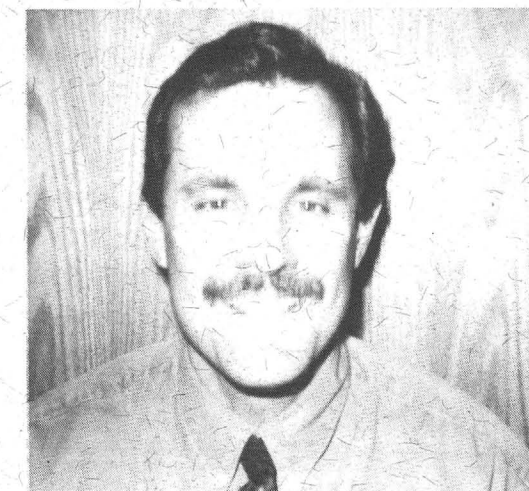
for EMCON where he managed solid and hazardous waste projects and developed business. His client base included Browning Ferris Industries (BFI), Sanifill, City of Phoenix, City of Tucson, Maricopa, Navajo, Pima, Pinal, Greenlee, and Yavapai Counties as well as several Indian Tribes.

Since May of 1997, he has served as the Arizona Department of Environmental Quality (ADEQ) Ombudsman and manager of the Compliance Assistance Sec-

tion. In this role he acted as a resource for ADEQ customers and provided assistance to resolve problems and complaints.

Sawyer looks forward to working with both the professional mining community and also the recreational miner and rockhound. He said, "I am very interested in promoting mining in Arizona and making it easier for economic mineral deposits to be developed into working mines." He plans to work closely with State and Federal agencies to better coordinate permitting of new and existing mines. A top priority will also be the completion of the Department facilities that needs a number of capital improvements. The Museum is a key component of the educational and outreach opportunities afforded the mining industry.

ADMMR is pleased with the diversity of experience that Sawyer will bring to the Department, his background in, and understanding of, Arizona's industries, and the enthusiasm he has for his new duties.



Willis D. (Doug) Sawyer

Active Mines Directory Available

The Directory of Active Mines in Arizona, 1999 will be available January 20. One hundred twenty-three mines and 71 sand and gravel operators are active in Arizona this year. A 1:1,000,000 scale map is included. The directory lists mine name, location, type of operation, number of employees and company name, address, phone, and key personnel. The directory may be purchased at ADMMR for \$5.00 or \$6.50 by mail.

Arizona Number 1 Mining State

[The following summary is excerpted from the Active Mines Directory]

As it has for nine of the last ten years, Arizona led the Nation in total nonfuel mineral production in 1997. Arizona's production exceeded \$3.5 billion, a 17 percent decrease from 1996. Arizona also leads the Nation in copper production, accounting for 65 percent of the total U.S. copper mine production. Excluding sand and gravel operations, there are 65 mining companies operating 126 mines. There are 71 sand and gravel producers in the state. More than 18,000 people are directly employed by the mining industry.

Copper

Despite a continued high demand for copper, the industry suffered wide-spread losses in the first three quarters of 1998 because of an 11-year low in copper prices. The Asian economic troubles and heavy production from South America are being blamed for the price drop. In the first nine months of 1998 copper was 32 cents lower than in the first nine months of 1997. Despite this, it should be noted that 1997 production from Arizona copper mines was near an all-time high of 2.7 billion pounds with a value of \$2.93 billion.

Copper and its by-products represents over 80 percent of Arizona's nonfuel mineral value. Production comes primarily from four major companies. The Western Economic Analysis Center reports that Arizona's economy received more than \$10.4 billion and nearly 82,000 Arizona residents had jobs in 1997 as a result of the direct and indirect contributions of the copper industry.



Do you need this information in an alternative format? Please call the Department at 255-3795.

Coal

Coal ranks second to copper in economic importance in the State. In 1997 Arizona's coal production was 11,723,000 short tons, having an estimated value of \$279 million. All production is from land leased from the Navajo and Hopi Nations by Peabody Western Group. Royalties from coal production total \$30 million annually.

Peabody Group, parent company of Arizona's Peabody Western Coal Company, completed restructuring its U.S. operations this summer. Peabody Group became an independent, privately held company when it was acquired by Lehman Merchant Banking Partners. The sale made Peabody Group the world's largest private sector coal company. The Flagstaff office was closed and management of the company's two Arizona properties was relocated to St. Louis, Missouri.

Gold and silver

Arizona's 1997 gold production was not reported by the Department of Interior (either USGS or former USBM) for the first time since reporting began in 1880! Arizona's only operating primary gold mine, Gold Road, produced 35,098 troy ounces in 1997 according to Addwest Mineral's annual report. ADMMR estimates by-product recovery of gold from the sulfide operations of the copper mines would be at least 50,000 ounces. Silver production totaled 5.6 million ounces, recovered as a by-product of copper mining.

Industrial Minerals

Although the mining of copper and its by-products accounts for 80 percent of the State's mineral production by value, mining in Arizona continues to be a diversified activity. Coal, industrial minerals, and gold largely account for the remaining 20 percent. Sand and gravel for construction aggregates, cement, and lime for chemical and construction material uses make up the majority of industrial mineral value. In 1998 Salt River Sand & Rock, located in Maricopa County, again operated the second largest sand and gravel plant in the U.S.

Gemstones

Arizona is a leading state in the value of mined gemstones in the United States. Approximately \$4 million worth of commercial gemstone production is reported for Arizona annually. Turquoise, peridot, and petrified wood account for most of the value, with amethyst, chrysocolla, azurite, malachite, and fire agate also being produced.

Arizona Rated High

Arizona was recently ranked in the top 10 areas in North America for overall investment attractiveness for mining.

The Fraser Institute, a leading Canadian economic think tank, announced that in their survey of mining companies Arizona ranked in the top 10 in attractiveness for mining investment. Traits that influence a company's investment decisions include mineral potential and the area's policy and attitude towards mining.

Sacaton Fine Example

Thanks to an Arizona mine Wisconsin's Department of Natural Resources may approve the first mine to meet the state's tough new permitting requirements. Rio Algom, is seeking approval for the Crandon zinc project. The company's Wisconsin subsidiary Nicolet Minerals has selected Asarco's Sacaton copper mine located in Pinal County to serve as one of two examples of a mine that had operated for 10 years and has been closed for 10 years without legal violations or significant pollution resulting from acid mine drainage.

Spheres!

Doug Duffy, Museum volunteer and head of the lapidary shop, adjusts the shop's latest acquisition - a sphere-making machine. The snowflake obsidian pictured in the machine is the second sphere produced on the newly-purchased equipment.

Prior to going on the machine each sphere must be carefully prepared. Six cuts are required to make the rough material into a cube. Four edges are removed from the cube and then 16 more cuts take off the corners created by those cuts. This leaves the shape close enough to a sphere to be placed in the machine. If any of the cuts are only slightly off, the piece will be thrown out. Each sphere requires about 50 continuous hours on the machine, from rough grinding to fine polishing.

The new equipment will be used in lapidary classes and for making spheres for Museum display and for sale in the gift shop.

8th Annual Family Day

The Arizona Mining and Mineral Museum, in conjunction with the Arizona Prospectors Association, is hosting the *Eighth Annual Prospectors and Family Day* on Saturday, February 27 from 11:00 am to 4:00 pm at the Museum.

This fun-filled event features hands-on activities for all ages. There will be gold panning, metal detecting, prospecting equipment demonstrations, ore crushing demonstrations, gold wheel operation, mineral identification, and lapidary demonstrations, including rock polishing, faceting, wire trees, and cabochons.

Admission and parking for the event are free, some activities involve a fee.

ADMMR website:
www.admmr.state.az.us

