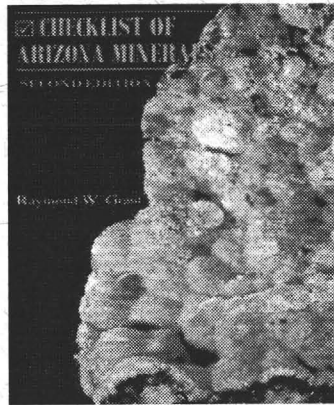


### Checklist of Arizona Minerals Released

The Department's Open File Report 07-25, *Checklist of Arizona Minerals*, by Dr. Raymond W. Grant is now available.

The format for the checklist is similar to that used in the third edition of *Mineralogy of Arizona* (Anthony, et al., 1995). Mineral names in the list indicate mineral species found in Arizona. The formula for the mineral and the page number in the third edition of *Mineralogy of Arizona* are given for each entry. A description of additional localities for some minerals previously found at only one locality in Arizona is provided. Minerals that have been added to the list since the revised third edition of *Mineralogy of Arizona* are also identified. A stunning photograph by Harvey Jong of one of the new species, grandviewite, graces the cover.

Copies are available at the Department at 1502 West Washington or may be ordered. The price is \$15.00, plus \$6.50 shipping and handling if mailed.



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## Mineral Resource

### A COMMENTARY ON THE MINING LAW

by Dr. Madan M. Singh, Director

#### Historical Review

"An Act to Promote the Development of the Mining Resources of the United States," (as amended 30 USC 22-54, 611-615), is often referred to as the General Mining Law of 1872. In the media and common perception the emphasis seems to be on the date 1872. This conveys the impression that the law has remained unchanged since it was first promulgated, even though the law has been modified several times since its passage. The United States Constitution is not referred to as "the Constitution of 1776."

Some of the laws that have changed the original Mining Law include (but are not limited to):

Antiquities Act of 1906 (16 USC 431-433) allowed the President to set aside certain areas as park and conservation land to protect all historic and prehistoric sites on federal lands. These areas are given the title of "National Monuments." It also empowers the President to reserve or accept private lands for that purpose. The aim is to prohibit excavation or destruction of these antiquities.

Mineral Leasing Act of 1920 (as amended 30 USC 181 *et seq.*), whereby "deposits of coal, phosphate, sodium, potassium, oil, oil shale, gilsonite (including all vein-type solid hydrocarbons), or gas; and lands containing such deposits" were excluded from being locatable. Also the US reserved the "ownership of and the right to extract helium from all gas produced from lands leased or otherwise granted."

Mineral Leasing Act of Acquired Lands of 1947 (30 USC 351 *et seq.*), by which "lands within the recreation area, subject to valid existing rights, are hereby withdrawn from location, entry, and patent under the United States mining laws."

Materials Act of 1947 (as amended 30 USC 601 *et seq.*) authorizes the disposal "of mineral materials (including but not limited to common varieties of the following: sand, stone, gravel, pumice, pumicite, cinders, and clay) and vegetative materials" on public lands. The sale is by competitive bidding.

Multiple Mineral Development Act of 1954 (30 USC Chapter 12, 521), which permits the use of public lands for both mining operations under the mining laws and leasing operations under the leasing acts. This applies to public domain and patented lands in which the US retained mineral rights.

The Multiple Surface Use Act of 1955 (30 USC 611-615) amended the Mining Law so that "common varieties

of sand, stone, gravel, pumice, pumicite or cinders and .... petrified wood" were no longer "deemed a valuable mineral deposit" so they were subject to the 1947 Materials Act and hence saleable.

The Geothermal Steam Act of 1970 (30 USC Chapter 23) provided authority for the leasing of geothermal resources.

Federal Land Policy and Management Act of 1976 (43 USC Chapter 35, 1701) granted the Secretary of the Interior broad authority for the management, use and protection of public lands. It imposed requirements for the filing of location notices and proof of labor with the US Bureau of Land Management (BLM). It also required that a plan of operations be approved.

A number of land areas have been withdrawn from mining under laws not directly related to mining. In Arizona, the Department of Defense controls nearly 8 million acres of land on which no mining is permitted; Indian Reservations cover 25 million acres that are generally not open to mining. However, pursuant to the Indian Mineral Development Act of 1982 (25 USC 2101 *et seq.*), a tribe "may enter into any joint venture, operating, production sharing, service, managerial, lease or other agreement, or any amendment, supplement or other modification of such agreement providing for the exploration for, or extraction, processing, or other development of, oil, gas, uranium, coal, geothermal, or other energy or nonenergy mineral resources."

#### The Conservation Movement

The conservation movement began before enactment of the Mining Law in 1864 when President Abraham Lincoln transferred the Yosemite Valley from the public domain to the State of California, with the stipulation that State authorities "shall provide against the wanton destruction of the fish and game found within the said reservation and against their capture and destruction for purposes of merchandise or profit." In 1872, the year that the General Mining Law was passed, the Yellowstone National Park was established forbidding the "wanton destruction" of wildlife. However, specific wildlife protection did not

In the US Congress **HR 2262 "Hardrock Mining and Reclamation Act of 2007"** was passed by the House on November 1, 2007. Senator Jeff Bingaman of New Mexico, chairman of the Senate Environment and Public Works Committee, expects to bring a companion Senate bill up for consideration in early 2008.



take effect until passage of the Yellowstone Park Protection Act of 1894. President Harrison signed the Forest Reservation Creation Act of 1881 and President Roosevelt the Federal Bird Reservation in 1903, which established the "refuge" at Pelican Island. This was followed in rapid succession by 4 more refuges in Louisiana and Florida. Several other laws relating to birds and other wildlife were established over the years which are not enumerated here.

The Wilderness Act of 1964 (16 USC 1131-1136, 78 Stat. 890) created The National Wilderness Preservation System to contain lands that were "untrammeled by man." They were to be managed "for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness..." No roads or structures were to be built. Vehicles and other mechanical equipment were not to be used. The minimum size was set at 5,000 acres, with certain exceptions. The bill established 9.1 million acres of federally protected wilderness in national forests.

The Endangered Species Act of 1973 redirected emphasis on refuges. This Act has provided extensive protection for endangered species. Over 25 refuges were added to the National Wildlife Refuge System under this authority.

The Endangered American Wilderness Act of 1978 added about 1.3 million acres in 10 Western States to the wilderness areas of the country. The Colorado Wilderness Act of 1993 designated 19 areas within the National Forests and public lands of Colorado, encompassing 612,000 acres, as components of the National Wilderness Preservation System. Currently there are 702 Wilderness areas in the United States covering 107,436, 608 acres.

#### Considerations for a Viable Minerals Industry

Access to Federal lands is critical to maintaining a viable minerals industry in the United States. To date, only 0.02 percent of the total land area in the United States has been used for mining. Yet there seems to be a clamor to close off more federal lands to mining. With globalization much of the country's manufacturing capability has been exported to developing countries resulting in the loss of numerous jobs for skilled workers and consequent huge negative impact on the middle class. With increasing restrictions on mining the industry is being encouraged to close mines and move to nations with less oppressive regulations. High-paying jobs are being lost.

In Arizona the BLM governs 12.2 million acres of land of which one-fourth are withdrawn from mining. The Forest Service controls another 11.4 million acres, of which 4.56 million acres are wilderness, i.e., over 40%. Arizona has the second largest number of wilderness areas in the country, at 90, occupying 6.25% of the State. Mining claims currently cover 800,000 acres, 3.4% of federal lands. There are approximately 38,000 claims not counting mill site claims. Generally only 1 in 1,000 prospects develops into a mine. This implies that there would be, at most, 38 mines.

It is evident that possession of the land is required prior to exploration, for protection against preemption during the discovery period. This has led to the concept of *pedis possessio* under which prospectors set up claim monuments to establish their rights. After staking the claim, the right of property is dependent on *discovery* and *development*; i.e., *discovery* is made the source of the title and *development* or *working* the basis for continuance of the title. These two principles constitute the foundation of all laws with respect to mining rights.

In 1894 the Secretary of the Interior ruled "where minerals have been found and the evidence is that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing a valuable mine, the requirements of the statute have been met." This *prudent man* rule became the standard to be met to issue a patent. In 1933 the Department of the Interior added the *marketability* of the mined product to the criteria needed to satisfy discovery requirements; the "mineral locator or applicant, to justify his possession, must show that by reason of accessibility, *bona fides* in development, proximity to market, existence of present demand, and other factors, the deposit is of such value that it can be mined, removed, and disposed of at a profit."

In the last 50 years pressures to recognize recreational uses and non-mineral development have tested the concept that mining is the highest and best use of the land. It is difficult to assess the value of recreation or scenic beauty. Housing and commercial development are attractive to local governments because these yield taxes more rapidly.

There is a common misconception that mining claims can be bought simply by staking and paying \$5 per acre; that is essentially the filing fee for the patent. In reality it takes enormous sums of money, running into the millions, to establish *discovery* and meet *marketability* criteria. Should a mine reach production, after risking the investment, the operator pays income taxes, employment taxes, sales taxes, property taxes, fuel taxes, state taxes, county and local government taxes, like any other business. In fiscal year 2007 the State of Arizona collected more than \$52.5 million in taxes from the mining industry; this does not include county and local taxes, or contributions to school districts and other entities.

There is continuing pressure to impose new environmental restrictions on the hardrock mining industry. Currently, the mining industry has to meet all the requirements that apply to other industries: the National Environmental Policy Act, Clean Air Act, Clean Water Act, Re-



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source Conservation & Recovery Act, Safe Drinking Water Act, Toxic Substances Control Act, Superfund Rules & Amendments, Reclamation Requirements, US Bureau of Land Management Rules, National Forest Service Requirements, and State statutes and regulations. A 1999 Report by the National Research Council of The National Academies entitled *Hardrock Mining on Federal Lands* specifically recommends that the BLM and the Forest Service "should continue to use comprehensive performance-based standards rather than using rigid, technically prescriptive standards." Any further standards or enforcement mechanisms would, therefore, be duplicative.

Another issue that seems to dominate discussion is the period for which the mining operations should be permitted. Investments tend to shy away from projects that have arbitrary time-limitations placed on them. Any such restrictions will hinder the flow of capital into the industry since the capital outlays cover the life of the mine, including prospecting, exploration, development, mining, milling, mineral processing, closure, reclamation, and post-closure activities on the property. Certainty of tenure or title is a prerequisite to obtaining financing for the project.

Reclamation of the land has now become an integral part of mine operations, and is included in the plans submitted for approval to the appropriate agencies. In the distant past the necessity for reclamation was not well recognized by the industry or the communities in which mining was conducted. Hence there are a number of abandoned mines that need to be reclaimed. Perhaps this could be accomplished by creating a fund from mining operations, similar to that for coal mining under the Surface Mining Control and Reclamation Act of 1977. Caution in its application is required as per the World Bank that mining is "particularly sensitive to (royalty) effects because of its cost structure and vulnerability to substantial market-driven demand and price swings."

#### Security Concerns

A recent report on *Minerals, Critical Minerals, and the US Economy*, released in October 2007 by the NRC, states "Globalization means that mineral resources have become an issue with importance for national security." According to the US Geological Survey, in 2006 the United States imported 100 percent of 17 minerals and more than 50 percent of 45 other minerals. Many of the countries from where we import many of these minerals may not remain friendly in the future, and their own needs for these same minerals may be expected to increase. This will not only raise the cost, but make them unavailable. The US should not put itself in a position where supply of minerals can only be maintained through military action, putting our young men and women at risk.

According to *Competitiveness of the US Minerals and Metals Industry* by the NRC (1990) "the United States has a fundamental interest in maintaining a competitive minerals and metals sector that will continue to contribute sig-

nificantly to the nation's economic strength and military security." Another report by the NRC (2007) *Managing Materials for a 21<sup>st</sup> Century Military* expounds "Increased environmental awareness and regulation have added to the operational costs of mining, and have placed social pressure on mining companies to limit operations. Whatever the reason for shutting down, restarting a US mining operation in response to supply interruptions for materials could be very time consuming and expensive."

Over the years the US has experienced the export of most of the fishing industry, the fabrics industry, the automotive industry, the manufacture of many electronics components, call centers, offshore work for accounting and legal firms, and even surgical procedures. There are many mineral deposits in the country; let us keep the mining industry here!

### Museum News

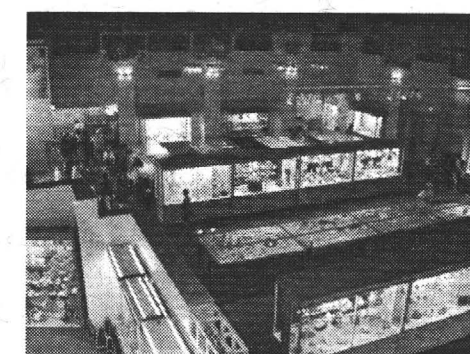
by Dr. Jan. C. Rasmussen, Curator

#### Let There Be Light!!

Over 24,000 school children (150 to 250 per school day) and 16,000 adults visit the museum each year. That's a lot of potential voters and supporters of minerals and mining! We need to better present the message about the value and beauty of minerals and mining to our society. However, the State only supplies one salary and rent. All other expenses are covered by donations from individuals and organizations, volunteer workers, and profits from the gift shop.

#### How Can You Help?

- **Light bulbs for cases** (high intensity, daylight, UV protected) @ \$10/case x 50 = \$5,000
- **New cases** (8 large cases @ about \$5,000 per case, and 10 smaller cases @ about \$4,000 per case for a total of \$74,000). Get your name on one or more new cases as the donor!
- **Renovate the old 1940s cases** with new doors @ \$2,000 per case for 17 cases = \$34,000 (Currently it takes two strong men and an electric screw driver to get into a case to dust it or change the light bulbs).



Overview of Museum showing old cases

Whether you can donate \$10 or \$1,000,000, please help get the message out about the value of minerals and mining. Your donation is tax deductible. Call Jan at 602-771-1612.