

Minerals Needed

According to the October, 1998 *Cyprus Sierrita Dispatch*, every American born this year will require the quantities of mineral commodities listed below during their lifetime.

Copper	1,725 pounds
Petroleum	60,308 gallons
Coal	568,575 pounds
Cement	55,650 pounds
Aluminum	6,975 pounds
Natural Gas	6,200,000 cubic feet
Iron Ore	45,225 pounds
Lead	975 pounds
Clay	24,250 pounds
Stone	1,400,000 pounds
Zinc	900 pounds
Salt	30,300 pounds



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Address Correction Requested

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Mineral Resource

Mining News

American Sandstone Acquires

Ashfork Quarries

American Sandstone recently acquired Western State Stone's sandstone quarries and Ashfork stoneyard. The Ashfork operation will continue to operate as Western States Stone. The company is one of the largest employers in the Ashfork community and has shipped thousands of tons of flagstone worldwide, providing Arizona an international reputation for fine building and decorative stone.

American Sandstone has been operated by the Blaser family since 1947 and has been in the cut stone business since the 1980s. The family developed a vertical method of pallet-packaging cut stone that has become the industry standard. The Blasers are also noted for their innovative techniques in the marketing of flagstone.

Examples of American Sandstone projects in the Phoenix area include the lovely red sandstone facing on the City of Phoenix Municipal building and the Criminal Justice Facility at 3rd Avenue and Adams.

For more information on Arizona flagstone, sandstone, or tiles contact Dayle Blaser at 520-636-4454.

Equatorial Gets APP for Mineral Park

The Arizona Department of Environmental Quality issued an Aquifer Protection Permit to Equatorial Mineral Park, Inc. for their operation near Kingman on December 3, 1998. The permit allows the company to continue their leach operations at the Mineral Park open pit copper mine and to recover copper via an SX-EW plant.

Equatorial is currently leaching the mine dumps, recently constructed dumps of blasted rock, and open pit benches, drilled and blasted in place, with dilute sulfuric acid to recover copper. They recently doubled the capacity of their SX-EW facility to 10.2 m. pounds per year.

Equatorial, a subsidiary of Equatorial Mining Ltd. of Australia, acquired the operation from Cyprus is October.

Dear Friends of ADMMR,

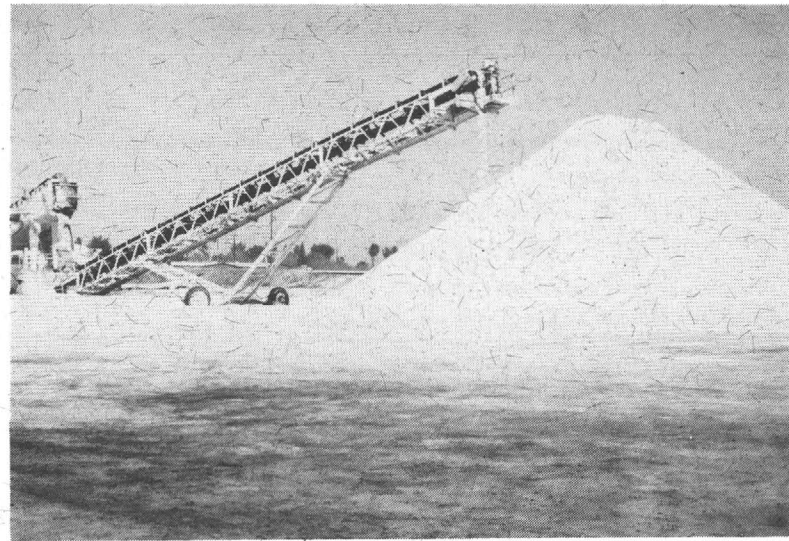
Many of you became aware of a Joint Legislative Budget Committee proposal to eliminate the mining and mineral resource development function of the Department. Thanks to your help, the word got out and many of our friends and supporters voiced their concern to the Arizona State Legislature through calls, e-mail, letters, and personal contact. The budget sub-committee hearing was held February 5th with the House and Senate sub-committee voting unanimously to continue the ADMMR!

On behalf of the Department staff, our Board of Governors, and myself, we sincerely appreciate the outpouring of support. Your efforts helped convince these key legislators that a vital and cost-effective State agency should continue to provide information, assistance, and advocacy to the mining industry, consultants, small miners, exploration geologists, rockhounds, and the general public. In truth, the support we received was broad-based, overwhelming, and very humbling.

Sincerely,

Oglebay Norton Moves to Arizona

Oglebay Norton Industrial Sands Co. relocated the headquarters of its mineral sands division from Cleveland, Ohio to Phoenix, reflecting the company's intention to expand its activities in the southwestern United States.



Harvested salt awaiting processing, Morton Salt mine - Glendale, Arizona.

Morton Salt Mine

Morton Salt mines halite (salt) from 24 operations in the United States and Canada including the huge Luke deposit in Glendale where they produce 120,000 tons of salt annually.

The deposit produces halite from a Tertiary, non-marine, high-purity salt deposit. The top of the deposit is about 900 feet below the surface while exploration drill holes 10,000 feet deep have bottomed in salt! The deposit contains 15 to 30 cubic miles of halite that runs 99.9 percent NaCl.

Morton mines the Luke Salt deposit by solution wells using solar evaporation. Fresh water is injected through the central pipe in the well and brine is recovered via a concentric annulus. Fresh water is injected at 3500 feet below the surface and brine is recovered from 1000 feet below the surface. Injection water is not heated, but is injected at ground water temperature of about 80 F°.

Morton Salt Mine continued

About 4 percent more water by volume is injected than is recovered to maintain a positive pressure in the cavity. This pressure helps to maintain the competency of the cavity roof and causes the resulting brine to flow to the surface without being pumped. There are currently four brine wells; two are in use and two are plugged. Recovered brine is 99-100 percent saturated with NaCl.

Ground sonar has shown the salt cavern from the #3 well to be about 1500' tall and 200' in diameter at its widest point. The caverns are usually pear shaped with the stem up. A layer of mineral oil is maintained at the top of the roof to control cracking and dissolving of the cavern roof.

Recovered brine is deposited in HDPE- or claylined ponds where solar evaporation causes salt to crystallize in the solution and a cake of salt to form in the ponds. Brine is maintained at a depth of 6-8 inches over the caked salt layer. Between 10 - 12 inches of salt grows in the ponds annually. Peak growth is about 2 inches per month in the long day - hot months of June, July, and August. Excessive rains may cause significant salt from the cake to return to solution.

Salt cake is harvested from the bottom of the ponds by tracked machines with laser-leveled screw augers that feed a slurry pump. The slurry, brine at 100 percent saturation with suspended salt crystals and caked salt, is washed with brine over a screen. After drying and screening, the salt is bagged, pelletized, or stockpiled for shipment.

Major markets for the Luke salt deposit are chlor-alkali plants for water treatment, livestock feed, and water softener back flushing.

Water for the operation is obtained from a grandfathered water right of 360 acre feet per year from five fresh water wells. The facility operates under Ground Water Protection Permits and Injection Well Permits. They are currently applying for an Aquifer Protection Permit.

The operation has 38 employees, 98 acres of brine ponds, and a total area of 132 acres that is located at 13000 W. Glendale Avenue.

The preceding article is from a presentation by Michele D. Jones, Facility Manager for Morton International Salt mine and solar evaporation plant at the Luke Salt deposit that was given at the March, 1999 Maricopa SME Section meeting.

H. Mason Coggin Honored

Former ADMMR Director, H. Mason Coggin, was recognized as the Arizona State Employee of the Year by the Coalition of Arizona and New Mexico Counties at their annual meeting at Kartchner Caverns on March 27. Congratulations Mason!

Coal Consumption to Increase

The National Mining Association in their September 14, 1998 NMA Mining Week reports that the Energy Information Administration predicts the U.S. will have an increase of electrical demand of 2.5 percent this year while coal production is expected to reach 1.116 billion short tons according to the report.

On the same basis the growth in 1999 is expected to be 2.0 percent of the 1998 level. Arizona has very large low sulfur coal reserves to supply new power plants as well as limestone and lime production capability to feed sulfur dioxide abatement equipment. Arizona mined coal currently fuels only two power plants, one at Page and the other in Nevada. Other Arizona power plants and industrial users of coal obtain their supply from New Mexico and Colorado.

ASSMR National Conference

The 16th Annual National Conference of the American Society for Surface Mining & Reclamation will be held August 13 -19, 1999 at the Radisson Resort in Scottsdale.

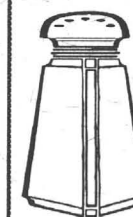
Technical papers will be presented in concurrent sessions in the following areas: hydrology; wetlands, ecology; geo-technical engineering; forestry and wildlife; soils and overburden; tailings; and landscape architecture.

Technical workshops preceding the conference will include *Biosolids for Mine Reclamation*, *Use of RUSLE (Revised Universal Soil Loss Equation) for Predicting Mined Land Reclamation Erosion* among others.

Post-conference tours include a 3-day visit to coal and uranium mine reclamation sites in New Mexico.

For more information contact ASSMR, c/o Arizona Mining Association, 2702 N. 3rd Street, Suite 2015, Phoenix, AZ 85004, 602-266-4416.

Common salt, sodium chloride, is such a familiar commodity that people tend to take it for granted. It is an essential element of our diets, yet less than 5 percent of production is used as table salt. Other uses include the manufacture of chlorine and soda ash, deicing, water treatment, and livestock feed.



Halite, the natural sodium chloride, has perfect cubic cleavage, a hardness of 2.5 and a

specific gravity of 2.1 to 2.6. The pure mineral is transparent to translucent and colorless or white. It occurs as crystals with cubic habit or as granular masses called rock salt. The melting point is 1440 degrees C. Halite is the most soluble of the common minerals.

Salt, because of its great solubility, is present to some degree in almost all natural water. Sea water is a 3.5 percent solution.



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