



Department of Mines and Mineral Resources

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MINING SCAMS

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A time-honored method to bilk the public of millions of dollars is the ubiquitous mining swindle. Since an unusually rich ore deposit, or bonanza, has historically produced enormous profits for the developer, many of us believe that we too, like the '49er, can strike it rich. The glamour attached to "discovery" create, in the imagination of some people, a relatively easy way to attain fantastic wealth.

Although money can be made in mining and this Department certainly encourages mining, we also have a responsibility to urge the public to exercise prudence in its investment. Too many persons have lost their hard-earned savings on an ill-advised mineral scheme. Archives are full of outrageous examples of mining scams and swindles in which the only beneficiary was a glib entrepreneur with unbounded optimism. In most cases, he disappeared before his investors realized what happened.

When making an investment in any mineral enterprise, there are a number of factors or key features to consider. A checklist of significant considerations follows:

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| 1. Title | 8. Reporting Procedure |
| 2. Sampling and Assaying | 9. Security and Safety |
| 3. Type of Commodity | 10. Marketing Procedure |
| 4. Mining Method | 11. Distribution of Profit |
| 5. Mill Site and Method | 12. Tax |
| 6. Recovery Process | 13. Sequence of Development |
| 7. Permitting | 14. Engineering Reports |

Prerequisite to the investment in the development of a mineral deposit is legal access to the resource. The potential investor should know who ultimately owns or administers the subject mineral property and commodity. The property may be controlled by the State, Federal Government, Indian tribe, or a private individual or organization. Moreover, jurisdiction over the land surface may be separate from the jurisdiction of the underlying mineral resource. Where ownership or control of the mineral rights is severed from the surface rights, obvious legal problems can arise.

If a mining claim or prospecting permit for minerals is not legitimate, the money invested is wasted from the beginning. In addition, the investor should understand basic differences between leasable and locatable minerals and lode and placer deposits. These classifications determine the type of mining agreement and/or claim established on the resource. Very specific requirements must be met and procedures followed to gain the right to develop a mineral deposit. Furthermore, encumbrances against the deposit, though legal, may be detrimental to its development.

Typical examples of cloudy or illegal title to a mineral deposit include oversized claims, inappropriate claim designation and improper filing, failure to perform annual assessment or to file affidavits of labor, or location of claims on a privately held mineral estate. The investor should establish exactly what rights he has to the property in question and what conditions are imposed before he spends one penny on exploration or development.

Perhaps the next major consideration in evaluating a mineral investment is the sample and assay data. One sample does not make a mine. A person who brings a rock that contains two ounces of gold per ton, to an investor, may be carrying the entire mine in his hand. One such high-grade ore specimen is not representative of the deposit. Many samples, commonly numbering in the thousands, are required to give a reasonably accurate measure of the tenor, or quality, and tonnage of the ore.

Depending on the configuration and geologic setting of a mineral deposit, there are recommended scientific procedures to follow and methods to use to properly sample the mineralization. The investor should be satisfied that the samples referred to by the mine promoter were collected specifically from the property of interest and also that they were collected in a proper way. The sampling method should be adequately described and each sample site precisely located, preferably on a map.

It is important not to forget the practice of deliberately salting, or adulterating, samples. Ingenious ways have been devised to fraudulently enhance the grade of samples either before or after they are collected, regardless of the method of collection. The temptation to salt is particularly appealing when dealing with a mineral of high unit-value such as diamond or gold.

Once collected the samples must be properly prepared and assayed. In general, the final sample preparation and assay should be done by qualified laboratories. Assayers registered in Arizona are generally familiar with different types of ore and are knowledgeable about the proper method to test for particular metals or other components.

All ores are amenable to rigid testing and comments to the effect that the ore is unassayable are simple not true. Statements belittling the methods of registered assayers, complaining for example that they never report all the gold, are immediately suspect. Modern copying devices also make it a rather simple procedure to later falsify the assayer's report. If there is any question, of course, the sample pulps (unused prepared portion) may be sent to another lab for comparison.

Spectrographic analyses do not provide an accurate test of mineral samples. This type of analysis, though relatively inexpensive and useful in providing a list of components in a sample, does not yield a reliable, quantitative measure of tenor. Often a billion- or trillion-dollar "ore body" is created by simply multiplying the generalized amount of

each of the metals listed in a spectrographic analysis by their current market price. An ore body, however, is not that simple. At this time, there is no commercially acceptable process known whereby each element can be recovered from a deposit.

A degree of skepticism should also be reserved for ores said to contain uncommon metals or minerals. Because of their rarity, these substances may command a very high price and are therefore extremely attractive to the investor. The platinum-group metals including platinum, palladium, rhodium, ruthenium, iridium, and osmium, are the darlings of the swindler. Considering their high unit-value, even minute amounts of these metals appear to be a reasonably good bet to the innocent investor.

The problem here is usually the grade or tonnage, or a combination of both. The amount of platinum, for example, is generally too low to realistically consider extraction, or the tonnage is almost limited to a hand specimen. As a primary ore, platinum has never been mined in Arizona; its only production has come from trace amounts recovered in the final stage of refining copper ores. The geologic environment of Arizona, diverse as it is, does not encourage the search for platinum-group metals, graphite, cobalt, nickel, bauxite, diamonds, and a number of other commodities.

As plans are drawn to mine an ore deposit, proposals are made which frequently are misinformed and ill-advised. There are innumerable examples of deep shafts and long adits driven to "nowhere". Many of these openings have been cut at great expense and with little or no evidence to suggest they would meet success.

An example of a mining scheme which can be described at best as ignorant was recently sold to a number of investors in the Chemehuevis Placer District, near Lake Havasu City, Arizona. The plan called for an investor to purchase a plot of ground 60 x 120 feet in size from which 8,000 cubic yards of unconsolidated gold-bearing gravel would be dug and treated. In order to recover 8,000 cubic yards of gravel from this plot, the excavation would require vertical walls, 30 feet deep!

Since loose gravel cannot be mined at a slope exceeding its natural angle of repose, approximately 45°, the maximum amount of material that an investor could ideally and safely expect to obtain from an isolated parcel is about 62 percent of the total, or 5,000 cubic yards. No attempt was made to explain to the purchaser that, in this case, after an investment of \$50,000 he would actually get less than two-thirds

of what he paid for. This scenario illustrates one catch to a sales promotion involving fractional interests in a mineral property. The entire land package, comprised of all individually-owned parcels, must be mined together to insure each investor's return.

An interesting twist to this story is the statement made later by the developer that only 40 percent of the aggregate was gold-bearing. Consequently the investor was now entitled to 20,000 cubic yards of gravel (to yield 8,000 cubic yards of gold-bearing material) from his plot. Since 5,000 yards was the maximum he could physically dig, this is truly adding insult to injury.

There is a tendency among many of us to want to build. We want others to see our accomplishments. To some degree this attitude explains why a mine tunnel is begun with little justification.

The same propensity for building might explain why a mineral processing mill is erected or a leaching facility is frequently constructed without any obvious sign of ore. Another reason these engineering marvels are installed is due to their impressiveness. The humming, turning, grinding, and screeching of equipment and the smoke and odors of a mine plant are exciting to the potential investor. He sees industry in action - his money at work - and profits just around the corner.

Unfortunately, however, he is commonly one of a multitude who has emptied his pockets for a pipe dream. With a paltry amount of ore stockpiled, a dump laden with debris, or an old mine map showing the "lost" ore body, the developer spends the last dime of every investor getting ready to treat the mineral-rich rock. The \$500,000 mill, designed to treat 500 tons per day, mills nothing, and the dreams of many become a nightmare.

Even when good ore exists, the treatment facility is often poorly designed. Frequently its component parts are improperly matched or not sized adequately. Materials handling procedures are commonly cumbersome and energy intensive. An adequate supply of water may be lacking. Hazardous operating conditions may be present. These circumstances are a few costly examples that can shut a plant down abruptly.

The recovery process is in many cases a mystery to the investor. Technological methods vary according to the metal or mineral recovered. In addition there are many variants based on the size of the mineral component, its

gangue association, its state of chemical alteration, the hardness and specific gravity of the ore, permeability of the ore, and a myriad of other factors.

The milling and metallurgical treatment of ores is comprised of both physical and chemical means of beneficiation. These processes though technically sound and well understood by the professional are frequently vague and confusing to the lay person. An investor not familiar with basic physical-chemical laws is easily misled.

Proprietary methods utilizing secret chemicals and "black box" techniques, therefore, are often praised as technological breakthroughs. According to the developer, these so-called miraculous inventions will convert formerly worthless rock to metal-rich ore or improve, manyfold, the recovery of a metal or other commodity that heretofore had been difficult to extract. One should exercise caution when evaluating such claims.

Developers often speak of 100 percent recovery. Complete extraction, however, of most constituents is essentially unknown over the long term. At the turn of the century a mining firm in Ajo built a giant retort into which ores were to be shoveled and melted. Spigots were tapped into the vessel at various locations and labeled copper, lead, zinc, gold, silver, etc. All the investor had to do, after he had helped finance the operation, was turn the spigot for the metal he desired. Understandably the entire operation fizzled.

In many cases difficult technical problems are oversimplified. The ill-informed investor is merely asked to retain faith in the management and to perhaps ante a bit more so that this "minor problem" can be speedily resolved.

A host of other factors should be evaluated by the prospective investor before spending money on a mine or a beneficiation plant. Proper permitting must be obtained at various stages of development from local, state, and federal authorities. In addition to routine reports required by certain government agencies, internal reports generated for management and for the investors should be factual, accurate, and timely.

On-site security should be adequate to protect expensive equipment and supplies as well as the mine or plant product. Of course appropriate security measures must be taken also whenever the product, especially a high-value material such as bullion, is transported from the treatment facility. Acceptable safety procedures must be implemented and must

be adhered to rigidly from the start to finish of any operation. Even after termination of operations, it is imperative that hazardous materials be properly disposed of and unsafe conditions, such as open shafts, be resolved.

Proposed or actual marketing of the mine or mill product should be reviewed thoroughly by the investor. There may be assessed charges for further treatment of the product. There may be by-product credits returned to the miner. The investor should also be aware of the involvement of any intermediate sales agents and their remuneration.

Another obvious consideration is the distribution of profits. What liens, including ownership royalties, loan payments, and rental fees, must be deducted from the gross to determine the net profit? Are estimates of operating expenses and pro-forma statements realistic? The investor should be satisfied with the form of payment whether it is in cash, stock, or in-kind.

Like other high-risk investments, mine and mineral developments are often subjected to careful scrutiny by the Internal Revenue Service. Beware of accelerated tax write-offs. Such an advantage was one of the attractions in the Chemehuevis Placer scam referred to earlier. Supposedly the investor would receive a \$50,000 write-off on his tax statement the first year of his investment by merely paying an advance of \$10,000 and signing a promissory note for an additional \$40,000. (The prospectus projected within four years a net income, based on gold production, of \$139,000.)

In this particular case, the courts apparently upheld an IRS ruling disallowing the tax deduction. Reportedly the original developers of this program, some \$3 million richer, are now unavailable.

In every mineral development there is a logical sequence of events with which the enthusiastic, yet uninitiated, investor may be unfamiliar. Each project can be broken into phases, the completion of which can be evaluated before expending large sums of additional funds. There is no legitimate reason for throwing good money after bad. Classic examples exist which have expensive land being purchased on the basis of someone else's assays or a costly mill being constructed without proven ore.

Engineering reports are useful tools that will assist the mine developer and investor. Decisions to pursue a project into the next stage, and in a particular manner, will be made easier and more logically after consultation with the appropriate professional engineer, whether a geologist, mini-

ng engineer, or metallurgist. Other professional assistance such as financial and legal is generally warranted.

In general, professional evaluation and advice should be sought outside of the developing organization. Principals with the firm and other vested partners, though well intentioned, may write overly optimistic reports. Statements, for example, referring to the attractiveness of a deposit because of its close proximity to a famous producer or the historically proven improvement of ore grade with depth in the mining district may have the ring of authority but are often pure speculation. Such reports frequently speak glowingly of questionable assets that may be virtually worthless, e.g., raw mill sites, dilapidated buildings or sheds, and rusted, dismantled equipment. Past production records may be doctored, and projected production/cost data may be presented in an unrealistic manner. Profits are often inflated or guaranteed in such company-prepared prospectuses. It is recommended, therefore, that most professional advice be obtained from consultants who have no financial connection with the company principals, the property, the mineral technology to be employed, or any part of the proposed operation.

The Arizona Department of Mines and Mineral Resources, with offices in Phoenix and Tucson, is perhaps one of the first places an investor should go seeking information. Knowledgeable, qualified engineers can provide him existing historical data on numerous properties and discuss solutions to problems he may have.

Lists of registered assayers and engineers are available at the department. In addition, an excellent reference library is maintained, as well as a museum in which the interested individual can obtain hands-on knowledge of rocks and minerals.

While it is obvious that venture capital is needed to start a mine or mineral project, and the Department promotes the development of Arizona's mineral resources, we believe it is essential that the investor be as well informed as possible. Under the best of circumstances mining is a risky business and we should never tolerate fraudulent practices within the industry. An informed investor, therefore, is better prepared to take the risk without being fleeced at the same time.