

Direct Sales Comparison Approach To Mineral Property Value **Michael R. Cartwright, Past President AIMA**

The general explanation of the direct sales comparison approach to value has been largely adapted from *The Appraisal of Real Estate, 11th Edition*.

The direct sales comparison approach to fair market value is the process in which a retrospective market value is derived by analyzing the market for transactions of similar properties and comparing those properties to the subject property. A major assumption of the direct sales comparison approach is that fair market value of a property is directly related to the transaction prices of comparable and competitive properties. Comparative sales analysis focuses on similarities and differences among property transactions that affect value. Factors affecting value of transactions include differences in property rights appraised, the motivations of buyers and sellers, financing terms, market conditions at the time of sale (the comparative number of buyers, sellers, and lenders), size, location, physical features, and if the properties produce income, economic characteristics. Ideally, elements of comparison are tested against market evidence to estimate which elements are sensitive to change and how they affect value.

This approach to value is primarily based on the principle of substitution, which holds that the value of a property tends to be set by the price that would be paid to acquire a substitute property of similar utility and desirability within a reasonable amount of time. This principle implies that the reliability of the direct sales comparison approach is diminished if substituted properties are not available in the market.

Applicability and Limitations

The direct sales comparison approach is applicable to all types of real property interests when there are sufficient recent and reliable transactions to indicate value patterns or trends in the market. For property types that are bought and sold regularly, the direct sales comparison approach often provides a supportable indication of fair market value. When a market is weak or thin and the number of reliable transactions is insufficient, the applicability of direct sales comparison approach may be limited. The direct sales comparison approach is rarely applied to some special-purpose properties because of few similar properties may be sold in a given market, even one that is geographically broad.

Generally, the direct sales comparison approach has broad applicability and is persuasive when sufficient and reliable property and transaction data are available. It usually provides the primary indication of fair market value in appraisals of properties such as single family residences which are not typically purchased for their income producing characteristics.

However, buyers of investment quality income producing properties typically concentrate on a property's economic characteristics, often focusing on the rate of return for an investment made in anticipation of future cash flows. Buyers of owner-operated properties also concentrate on a property's economic characteristics. They tend to focus more on the actual level of returns, and the size of the anticipated future cash flows, instead of the rate of return. Thoroughly analyzing comparable sales of income-producing properties can be difficult because information about the economic factors influencing buyer's decisions to purchase, as well as seller's decisions to part

with the property, is not generally available from public records or interviews with buyers and sellers.

To ensure reliability of value conclusions derived by applying the direct sales comparison approach, the appraiser must be able to verify the market data obtained and fully understand the behavioral characteristics of the buyers and sellers involved in property transactions. Caution should be exercised when sales data are provided by someone who is not a direct party to the transaction. Incorrect conclusions may result if an appraiser relies on such data without considering the motivations of the actual parties to the transactions. Errors can also result if an appraiser cannot obtain sufficient information about the buyers and sellers, opinion concerning the anticipated income and expense schedules, or potential changes in use or property operations are not appropriately considered.

The direct sales comparison approach to value includes any recent sale of the subject property. This situation generally allows for an easier analysis of the more important elements of comparison since the physical and ownership characteristics may be virtually identical.

Mineral Property Markets and Market Structure

In general there are four types of markets which have a bearing on the analysis of income-producing mineral properties: auction markets, dealer markets, and direct search markets, going from most organized and efficient to least organized and efficient.

The most integrated market is a continuous auction market for truly fungible goods in which all buyers and sellers converge at one place to bid on or offer to sell a good. The New York Stock Exchange is an example of an auction market. The main advantage of a continuous auction market is that participants can quickly and easily arrive at prices and quantities for these directly interchangeable goods. However, continuous auction markets, as opposed to periodic auctions in the real property environment, require very heavy and frequent trading to cover the expense of maintaining the market. If an appraiser is analyzing the sales or mergers of relatively large mineral producing companies the publicly traded share markets are an excellent source of readily available and reliable information.

Another highly integrated market is the dealer market. In this market the dealers specialize in various fungible commodities, purchase assets for their own inventory, and sell goods for a profit from their inventory. Dealers, unlike brokers, buy and sell commodity assets for their own accounts. The dealer's profit margin is the bid-asked spread, the difference between the price at which the dealer buys for and sells from his inventory. The metals derived from mineral resources and the over-the-counter (OTC) securities market are examples of a dealer markets. If an appraiser is analyzing the sales or mergers of rather small mineral producing companies with a relatively larger amount of shareholders than a family corporation the OTC share markets is a fair to good source of available and fairly reliable information. If an appraiser is appraising a metallic mineral producing property, such as gold and silver, the dealer, or commodity, markets are generally the most reliable source for current, historic, and future price information. A dealer market is also an excellent source of information for the appraiser needing price information for mining and mineral processing machinery and equipment.

In markets where trading in a good is sufficiently active, brokers can find it profitable to offer search services to buyers and sellers. A good example of a brokered market is real estate, where economies of scale in searches for available single family residences and some of the smaller and more actively traded commercial properties and searching for prospective buyers make it worthwhile for participants to pay brokers to conduct property searches for them. Real estate brokers in given geographic and property type markets develop generally reliable specialized knowledge about these markets and be of assistance to appraisers of these types of properties.

The least organized market, and the one in which almost all mineral property transactions occur, is a direct search market. In a direct search market individual buyers and sellers must seek each other out directly. Mineral property markets are characterized by sporadic participation and relatively high-priced and nonstandard real properties. Because of the paucity of total transactions and the specialized property needs of purchasers, such as mineral resource size, type of mineral commodity, and type of mining knowledge and skill required, it does not pay most people or firms to seek profits by specializing in such a geographically and mineral commodity diverse market. Many transactions in the diverse mineral property markets are not actually sales, but are individually negotiated mining leases with a type of owner financing in the form of a mineral production royalty.

Because of this type of market it is often difficult for a mineral property appraiser to acquire a sufficient amount of potentially comparable transactions and to verify any data other than a sales price noted in a quit claim deed. Mineral property buyers and sellers are notorious for not wanting to provide any type of detailed information about their property or their operating incomes and expenses.

Open Market Transaction Criteria

The material in this section is largely adopted from **J. Eaton**, *Real Estate Valuation In Litigation second edition (2d,ed. 1995)*.

Before a mineral property can be considered a comparable property, an appraiser must ensure that it was actually sold, not leased, and that the sale was an open market transaction. For appraisal purposes, an open market transaction is also known as an arms length transaction. If the following questions can be answered affirmatively, the sale property meets the criteria for an open market, arms-length transaction.

Did the sale convey unencumbered fee simple title or its equivalent? A negative answer to this question may not necessarily eliminate a sale as a potential comparable. For instance, if only a leased fee estate was conveyed, it may be possible to adjust the sale price of the property to reflect the impact of the leasehold interest. The sale of an unpatented mining claim located on the public domain does not transfer fee title because the United States retains the fee interest. However, the sale of an unpatented mining claim evidenced by a proper conveyance transfers all the mineral estate.

Were both the buyer and seller typically motivated? A negative answer to this question eliminates all forms of forced sales and sales in which the price paid for the property was affected by a personal relationship between the parties. It is not uncommon to find sales of

mineral properties as part of bankruptcy filings by individuals or firms. These types of transactions are better characterized as opportunistic transactions in which neither buyer nor seller are typically motivated. Mineral properties are typically bought and sold in very sparse markets, i.e. markets in which buyers or sellers are few to none. For the appraiser, sparse market activity in mineral properties can raise questions about motivation.

Were both parties well informed or well advised and acting in what they considered to be their own best interest? Not uncommonly, mineral properties are sold from a probate estate by persons who have little to no knowledge about a mineral property. The bulk of mineral property transactions tend to occur at a point in time when neither the seller nor the buyer has any great knowledge concerning the quantity and quality of the mineral resource. Mineral property information is oftentimes a closely guarded secret among buyers and sellers and, therefore, the appraiser may not be able to fully determine a definite answer to this question.

Was the property exposed in the open market for a reasonable length of time? Exposure of mineral properties to the open market is not generally accomplished in the same manner as conventional real estate such as single-family residences and small commercial properties. Sales typically occur in a direct search market and oftentimes a potential buyer (seller) will approach all owners (potential buyers) of specific types of mineral property to inquire as to its availability for sale (purchase).

Was payment made in cash or its equivalent? Just as in more conventional real estate transactions, seldom is a mineral property purchased for cash. Unlike the more conventional real estate sales there is not an active group of lenders willing to provide buyers with relatively uniform and easy to obtain mortgages or trust deeds. Most commonly, the seller is paid through a mineral production royalty which may or may not be associated with a fixed price. Payment of a purchase through a mineral production royalty is a form of installment sale. If it has an agreed upon final price it may be possible to estimate a cash equivalent value. Estimating cash equivalency, using conventional annuity payment discounting of a mineral production royalty presents problems when there is no production history or comparable royalty payment streams.

Was financing, if any, on terms generally available in the community at the time of sale and typical for the type of property in its locale? This question is directly related to the one immediately above in that a mineral production royalty is a very common method of financing mineral property sales. The main complicating factor is that there is not really any standardized form of mineral property royalty, as in the petroleum field for the solid minerals. However, financed mineral property transactions involving the same commodity, often have very similar terms and conditions. Alternate forms of financing may therefore be analyzed in the same manner as a mortgage loan for more conventional real estate.

Did the price represent normal consideration for the property sold unaffected by special financing and/or terms, services, fees, costs, or other credits incurred in the transaction? This can be a difficult question to provide a clear yes or no answer to in mineral properties. Often a mineral property transaction will involve certain types of work and/or expenditures to be made as part of the terms and conditions of the agreement. As in the immediately above question, these

special types of costs and credits may be more or less typical for certain types of mineral properties, but they may prove to be very difficult to translate into a cash equivalent value.

Prior Sales of Subject Property

Perhaps the single best indicator of fair market value for a producing mineral property is a reasonably recent, arms length sale of the subject property. Verification would be required to ensure that the property interest sold is the same as that being appraised. Adjustments may have to be made for any mineral resource, mineral product pricing and quantity, or other conditions that may have changed since the date of sale. This situation is more common for undeveloped or non-producing mineral properties. But the most recent sale may still be on the order of two or more years in age and require significant market condition adjustments. A prior sale of the subject property is unusual for producing mineral properties.

Elements of Comparison

Each and every mineral deposit of a given commodity is a truly unique occurrence in relation to its particular geographical controls, its inherent physical and chemical properties, the quantity of valuable mineral or rock that it contains, its applicable extraction and processing methods, and its geographic location with respect to the markets for its products. In order to effectively utilize the direct comparison approach to value the sales of properties being compared should take place in a relatively large, active, and open market in which there is a relatively level of actual arms length sales transactions. The mineral properties being bought and sold in this market place also must have an abundance of directly comparable qualities for which relatively simple and objective adjustments can be made in order to take minor property differences into account.

Finding an adequate amount of reliable and verifiable market data to properly support adjustments to potentially comparable mineral properties can be difficult due to the normally small number of transactions occurring in a relative narrow time frame or geographically constrained market area. Most mineral property buyers and sellers will not willingly share the detailed property data required to make reliable adjustments and knowledgeable consultants or agents may be prevented from disclosing data about a mineral property because of strict confidentiality agreements. Any sales of mineral deposits used for possible comparison will normally require at least as much research and on-site examination as the subject mineral property to accurately identify, measure, and account for any difference that may affect value.

Truly comparable mineral deposits must have similar mine lives at similar production rates with similar product mixes and market areas. Effective age and condition of the machinery and equipment of any potential comparables must be equivalent as well as equipment maintenance, rebuilding, and replacement schedules. Buyers and sellers must be carefully interviewed to determine their motivations and actual knowledge of the most important mineral property and mineral product market conditions.

The Appraisal of Real Estate notes that elements of comparison are the characteristics of properties and transactions that cause the prices paid for real estate to vary. This widely accepted textbook also notes that there are ten basic elements of comparison that should be considered in direct comparable sales analysis. A brief discussion of some of the most probable elements of comparison involved in mineral property transactions include, but are not limited to, the

following items: geographic location; physical characteristics (geology, mineral reserves,); real property rights conveyed; economic characteristics (operating expenses, lease/royalty provisions, mineral product mix); use (zoning); market conditions (date of sale); conditions of sale; financing terms; non-realty components of value (plant, machinery, and equipment), and; expenditures made immediately after purchase. Many of these common elements of comparison are interrelated with each other and do not lend themselves to independent analysis.

Most real estate texts boldly state that no particular location is inherently desirable or undesirable (AI 1996). This may be true for most conventional real estate, but it is definitely not the case for mineral properties. Mineral properties are absolutely location-dependent because a valuable mineral deposit is physically located in a particular place and any mineral production from it must also occur at that exact location. Location, in conjunction with the physical characteristics of a property, may be the most important items in looking for similarities among mineral properties. Location is also important when comparing two or more properties containing the same kind of mineral deposit because the location, and its inherent physical characteristics, may have a large influence on accessibility, mining and processing methods, operating costs, and distance to market for its mineral product.

Geographical location factors affecting value include the following: determines political boundaries, physical and legal accessibility, climatic conditions, distance to market for mineral products, distance and availability of supplies, transportation routes and modes of transport, water supply availability, quality and quantity. Geographic location determines the availability of utilities such as electricity, natural gas, water service, and sewer connections. Geographic location also determines whether a mineral deposit is within or near a governmentally specified mineral resource zone, other known mineral resource area, wilderness, or other environmentally sensitive area which can affect allowable mining processing activities.

The physical characteristics of a mineral property are the primary determinant of its economic characteristics. The details of the geology of a mineral property are of primary importance because the local geology determines the types of mineral deposits that can occur, the quality of grade of these mineral deposits, their ultimate size and physical and economic limits, and the most appropriate mining and mineral processing methods for a given mineralogical composition. A property's physical and mineral deposit characteristics are largely determined by the local geology. Local geology determines the following items: basic rock types present on the property such as intrusive, volcanic, sedimentary, or metamorphic; whether the rocks are relatively hard or soft, loosely agglomerated or well cemented, and general abrasiveness; heavy mineral placer deposits; the three dimensional size, shape, and attitude of the mineral deposit and its relative degree of economic continuity and uniformity.

Rock types and mineral deposit types determine geomechanical rock properties and geo-technical mine design parameters along with the quantity and quality (grade) of the mineral resources; any mineral product or waste stream contaminants; general mine-ability and process-ability of the mineral deposit; overburden and waste to ore ratios and mining dilution amounts; groundwater quantity and quality; topographic relief; stream flow patterns and amounts, and; elevation effects on equipment efficiency and local weather conditions.

Another part of the property's physical characteristics concerns the man-made improvements to the mineral property. Are the mine and plant capacities (nameplate and actual) coordinated and without any significant under or over sizing? Are the fixed and mobile machinery, equipment, and buildings appropriate for the mineral deposit type, size, and production rate? What is the condition, effective age, suitability, availability, and utilization of the plant and equipment? Are there depreciation and/or obsolescence issues involved with the mine and plant design and layout or the plant's machinery and equipment? Are there abnormal breakdowns, repair and maintenance schedules due to mineral deposit qualities or lack of appropriate maintenance? Are improvements to the real estate (access or haul roads, mineral stockpile, concentrate, and waste areas, tailings impoundments, equipment and parts storage, and buildings) well located, of quality construction and materials, and well maintained?

An exact description of the real property rights involved in any potentially comparable sale is quite important because mineral title and ownership aspects of potentially comparable sales include: fee simple absolute with a single person/entity as owner and operator, partial/joint ownership and/or operation of the property; fractional interests within a larger mineral property; severed surface and subsurface mineral rights; mineral/mining lease or only a license with a private entity or a governmental agency; unpatented lode mining; unpatented placer mining claims; association placer claims; unpatented mill sites adjacent to or elsewhere located; water rights; easements, encumbrances, restrictive covenants, etc. on the property in favor of others.

Most of the economic characteristics of a mineral property are determined by its physical characteristics. Economic characteristics include all of the attributes of a property that affect its income and appraisers must take care not to attribute differences in real property rights conveyed or changes in market conditions to different economic characteristics (AI 1996). It can be difficult to isolate economic characteristics from physical characteristics and real property rights when less than the fee simple title is owned. Economic characteristics that typically affect a mineral property's income include operating expenses for mining and mineral processing, capital expenses associated with improvements to the property, mineral lease and royalty terms, mineral lease expiration and renewal dates and terms, and quality of management.

Economic characteristics in general can include: type of mining operation, capital and operating expenses and maintenance and replacement expenses; exploration, development and/or reclamation expenses; lease terms, royalty rates, and other mineral interests, expiration dates, renewal or purchase options, expense recovery clauses; mining and processing related permit fees, expiration dates, and renewal options; environmental assessment reports or environmental impact studies costs and time frames; feasibility study expenses and time; environmental and reclamation requirement expenses and timing; property, severance taxes, or unpatented mining claim fees; current or potential lawsuits involving the property, obsolescence and depreciation issues of mine design, mined land support, and processing, on-site or off-site processing or custom processing and/or smelting/refining; type of mining and processing determine lowest cut-off grade/quality; responsible ownership and competent management.

Any difference in the current use or highest and best use of a potential comparable and the subject property must be addressed. The appraiser must recognize the difference and determine if the sale is an appropriate comparable and, if so, whether an adjustment is required (AI 1996), or

if an adjustment can even be made. Many mineral properties have been purchased by speculators or agents for mining companies without specifically addressing any mineral rights. Items commonly associated with highest and best use that should be examined include: then current zoning, probability of zoning change; non-conforming use limited to current owner or run with the land; zoning/permit requirements such as setbacks from property lines/streets, maximum slopes and depths, buffer zone land, view-shed/noise screening, hours of operation, noise dust limits, vehicle size and/or frequency of travel restrictions, special assessment for road damage; highest and best use at time of sale; environmental/reclamation requirements at time of sale; location within a mineral resource zone, wilderness study area, or other special land classification area.

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Market conditions at the time of sale of a potentially comparable mineral property refer to the general stability of the market at that time for mineral products/properties of that nature. Price structures such as spot or market, contract, negotiated, or administered; forward or contracted delivery prices and quantities; general mineral produce prices, quantities, and specifications; internal consumption or open market sales; special government or private project uses and prices; national, regional, and local economic conditions; demographics, growth and expected changes; interest and discount rates and mineral project related capital availability; existing/contemplated mining regulations, legislation, and/or significant court decisions. The date of sale of a comparable mineral property can be very important due to the often extreme volatility of certain mineral prices, especially metallic minerals that are sold in international markets and also experience active trading in commodity futures markets.

Conditions of sale refer to the general motivations and expectations of mineral property buyers and sellers and include: Arm's length or related person/entity transaction; vending a property in to a company by an officer, employee, or consultant; property owner-operator, investor, or speculator transaction, junior to senior mining company transaction or vice-versa; captive mine to independent or vice-versa; relative equality of knowledge and/or bargaining power; sale to or by an existing competitor or new entrant; distress on part of seller or necessity on part of buyer; back-in agreement by a larger producer, expectations of production methods and rates and new mineral product/market development; estimated mine life; contract mining/processing agreements or equipment purchase/maintenance agreements; forward/contract delivery sales; mineral product labor, supplies, or royalty escalation adjustment factors and contract clauses.

There is no typical structure for mineral property purchases in the entire industry. All cash, all finance (recourse/nonrecourse), all stock/shares (free trading, restricted, stock option), normal bank loans, royalty, working capital, or profits mineral interest financing, work commitments,

installment contract, or other combination of these methods; loan mortgage or lien on property; mineral commodity hedging requirement. Non-realty components of a transaction may include: plant, machinery, and equipment; water rights; assemblage of assets for related income producing activities; and assumption of debt or other liabilities.

Expenditures made immediately after purchase may include: joint venture capital contribution; deferred maintenance, rebuilding, refurbishing, or replacement expenses; land or mineral surveys; work commitments, exploration, development, bankable feasibility study, financing commitments; performance/surety bond payments for environmental/reclamation. The total sale price and terms and conditions of the comparable sale also need to be analyzed in order to determine how the sale price was allocated among the various components of value contained in the total mineral property sale.

To the best of this appraiser's knowledge there is no true market place for mineral properties of any kind anywhere in the world. The reason for this is that each and every mineral property is a very specialized property that normally has very few fungible and truly directly comparable characteristics beyond the fact that it is naturally occurring and contains a specific mineral commodity. What market does exist is characterized by buyers and sellers with very specialized knowledge, interests, and requirements that limit their search for acceptable transactions to a very limited number of potential participants. And, most mineral property buyers and sellers do not rely on the direct sales comparison approach to value that is typically a difficult approach to use in estimating the fair market value of a property that is primarily valuable because of what it contains, a mineable and marketable mineral resource, rather than what it can be used for.

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Back to [Approaches To Mineral Property Value](#) or
[Mineral Business Appraisal Table of Contents](#)