Violations of Market Value Standards with the Income Approach

Trevor R. Ellis, CPG, CMA, CGA, FAusIMM
Mineral Property Appraiser
Ellis International Services, Inc.
Denver, Colorado
www.minevaluation.com

Valuation Session, SME 2005 Annual Meeting, Salt Lake City

Or:

Don't Get Caught Doing This!

Real Example 1

- Mined stockpile of an industrial mineral
- Report by a mining consulting house stated the value at approx. $300 million
- Value calculated from the quoted market price of the mineral refined to high purity
- Two individuals lost most of their life’s savings investing in a project to process the stockpile

Real Example 1

- Author’s appraisal for commercial loan security: $0 to negative
- Problems:
  - Serious title issues
  - Remote from markets
  - Serious metallurgical process uncertainties

Real Example 1

- Consultant's value estimate:
  - Based on refined value of all of the *in situ* industrial mineral ($/lb x total lbs)
  - No accounting for:
    - Capital costs
    - Operating costs
    - Transport costs
    - Project risk
    - Project schedule

Real Example 1

- No attempt by consultant to consider the market for the subject *as is*
- If it was worth that much, why was it still there?

Real Example 2

- Package of dormant gold mines
- Mining Engineer estimated Net Present Value as ~$10 Billion
- His report presented to a major commercial lender as security for financing
- Report contains detailed mine development and operating plans and cash flow calculations

Real Example 2

- Author's preliminary review for lender found market value likely <\$10 million
- Problems with mining engineer's report:
  - No market transaction derived inputs
  - Highly optimistic revenue projections
  - Extremely low cost projections
  - Project risk largely ignored
- An individual who loaned \$200 million likely lost it all

Real Example 2

- No attempt by mining engineer to consider the market for the subject *as is*
- Both lenders confused investment value for market value
- If the subject was worth that much, why were the mines not already redeveloped?

Real Example 3

- Dormant onyx mine, last mined 60 years ago
- Remote from major product markets
- Reports by three consultants over last 20 years place the property value at $2 Billion - $6 Billion
- Owner bought it 20 years ago for $20 million
- A mining consultant’s recent “aggressively conservative” detailed appraisal shows the value as at least $2.8 Billion

Real Example 3

- Owner applied for financing based on the "aggressively conservative" appraisal
- Author's review found:
  - Consultant did a detailed study of product's market
  - No market valuation principles applied using inputs from property market transactions
  - Value estimated based on:
    - Summation of 100+ years of projected mine income
    - No time value discounting
    - High product transportation cost ignored

Real Example 3

- None of the four appraisals considered the market for the subject *as is* (sales comparison approach)
- If the onyx deposit is worth Billions:
  - Why has the mine been dormant for 60 years?
  - How could the owner have bought the property for $20 million only 20 years ago – at the time the first appraisal said it was worth Billions?
- Owner did not receive the loan

Real Example 4

- Undeveloped sand deposit adjacent to existing sand and gravel mine
- Highly competitive sand and gravel market with surplus of sand
- Career minerals appraiser found the market value to be >$2 million
- Relied entirely on net present value of projected income

Real Example 4

- Author’s review found:
  - Reserve over-estimated, with little consideration for the realities of mine engineering
  - Sand specifications mismatched to demand
  - Assumed immediate mine start-up capturing a major share of the sand market
  - Capital and operating cost estimates optimistically low
  - No inclusion of project and market risk

Real Example 4

- Appraiser did not analyze the market for the property *as is* (sales comparison approach)
- If the deposit was worth >$2 million, why had the struggling adjacent mining operation (same ownership) not already expanded into it, and captured a major share of the sand market?

Real Example 4

- Multiple sales of nearby sand and gravel properties, at only approximately surface value, were all ignored (deemed "not comparable")
- Due to the appraisal, the owner spent much of his personal savings on unwarranted litigation

Valid Market Value Estimation by the Income Approach

- The extractive industries standards (GN 14) of the International Valuation Standards state:
  - At 5.3.1 “Sales analysis and other market analysis can often yield market factors such as a market discount rate, a risk factor or uncertainty factor that may be used in the Income Approach.”
  - At 5.3.3 “For the Valuer to report a Market Value estimate resulting from such an [NPV/DCF/real options] analysis, all inputs and assumptions must reflect available market-based evidence and current expectations and perceptions of market participants, in accordance with GN 9. Any departure from the requirements and analysis protocol of GN 9 must be specified.”

Valid Market Value Estimation by the Income Approach

- A market-based discount rate can often be extracted by sales analysis of an operation of similar nature and similar lifespan
- Care must be taken that analysis calculation for the sale is conducted on a similar basis as the analysis of the subject

Year	Activity	Production Tons/yr (000)	Investment & Expense $(000)	Royalty Cents/ton	Income $(000)	PV @ 9.6% $(000)
1999	Purchase		835		-835	-835
2000	Permit		42		-42	-38
2001	Production	60	1	75	44	37
2002		100	1	78	77	59
2003		120	1	82	97	67
2004		120	1	85	101	64
2005		120	1	88	104	60
2006		120	1	91	108	57
2007		120	1	93	111	53
2008		120	1	96	114	50
2009		120	1	98	117	47
2010		120	1	100	119	43
2011		120	1	103	122	40
2012		120	1	103	122	37
2013		120	1	103	122	34
2014		120	1	103	122	31
2015		120	1	103	122	28
2016		120	1	103	122	26
2017		120	1	103	122	23
2018		120	1	103	122	21
2019		120	1	103	122	19
2020		120	1	103	122	18
2021		120	1	103	122	16
2022		120	1	103	122	15
2023	Reclamation		100		-100	-11
2024	Sale				400	40

Total PV= 0

Author's Observations

- Minerals appraisers who provide high value estimates generally get the most work.
- The common practice of lenders of allowing their client to choose and pay the minerals appraiser, encourages very high appraised values.
- The minerals appraiser who provides a well developed estimate of market value after another consultant has provided an astronomical value to the same client, will generally not get his last invoice paid.