

Preliminary Financial Review of the Proposed McDonald Gold Mine

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This purpose of this paper is to take a preliminary look at the likely profitability of a gold mine that is proposed by Canyon Resources. The mine that may be built, the McDonald Gold mine, would be located largely on Montana state lands bordering the Blackfoot River. A very important caveat accompanying this paper is that it is not meant to be used as a definitive feasibility study of the mine. In order to do that the author would have to be privy to many more intimate details of the project. Instead, this study uses publicly available data and the informed judgment of Mr. Jim Kuipers, P.E., a mining engineer, as inputs to this financial analysis. Mr. Kuiper's paper accompanies this study and serves as a basis for many of the assumptions used herein. The methodology of discounted cashflow (DCF) analysis used in this paper is the industry-standard usually used for financial evaluation of mining projects. The objective of this paper therefore is to obtain reasonable idea of the profitability of the proposed project, and to investigate the effect of changes in some important project variables on profitability.

Included in this paper are two sets of financial models: (1) McDonald Upside series, and (2) McDonald Base series. These two sets of financial model results are largely based on the two cases described in Mr. Kuiper's paper as (1) Upside Case and (2) Base Case.

The first series of financial model runs roughly corresponds to the most optimistic interpretation of publicly available data that have some level of evidence to support it. As discussed in Mr. Kuiper's paper, Canyon Resources initially disclosed some of the important attributes of the McDonald mine as modeled in his Base Case summary. Subsequent to releasing the information shown in Base Case, Canyon Resources released a re-interpretation of their initial evaluation that resulted in a much more optimistic view of the proposed mine. Mr. Kuiper's interpretation of the attributes of this more optimistic case is used as a source for most of the assumptions of this study's McDonald Upside Case.

The intent of this study is to use the McDonald Upside Case as an optimistic view of financial viability of the proposed mine. The second series of cases presented in this document, McDonald Base Cases, can be further used as an alternative, and perhaps more realistic, view of the possible profitability of the proposed mine. In conjunction, the two sets of cases may be thought of as an examination into the likely financial viability of the project with a series of reasonable and optimistic inputs for the most important project variables.

Important Project Variables

In most cases the two most important determinants of mining project profitability are the commodity price and the operating cost of the project. In the case of the McDonald gold mine, both gold and silver are produced, but the gold price has by far the most significant impact on profitability. Another critical variable in this analysis is the operating cost of the project—or in this case the variable costs of producing each ounce of gold.

A second tier of influential variables in DCF analysis includes the discount rate (the “interest rate” on project funds) and the host of financial and tax circumstances of the project (e.g., the state and federal income tax rates and royalty rates that would be paid to the owners of project lands).

McDonald Upside Case Scenarios

The McDonald Upside Base scenario represents a mid-point for the most optimistic model of evaluating the profitability of the mine (Figure 1). As more fully disclosed in Mr. Kuiper’s companion paper, the McDonald Upside Cases assume that the project will produce gold and silver over a 16-year life, with total gold output of about 5.2 million ounces, and total silver output of approximately 8 million ounces.

The gold and silver prices used in this model are the Comex spot gold price and the Handy and Harmon spot silver price as of February 11, 2000 (\$311.10 and \$5.37, respectively). Using current metal prices in the analysis portrays project profitability if gold and silver prices remain unchanged from current levels. Of course no one knows what actual commodity prices would be during the project, but this simplified look gives an idea of financial viability if the future mimics the present. An implicit assumption in this analysis is that the total amount of gold reserves with a \$350 gold price will remain mineable at a \$311.10 gold price. It is possible that the lower gold price will render some of the higher-cost portions of the gold no longer profitable to mine. But, this model makes the generous assumption that a reduction of the gold price from \$350 to \$311.10 per ounce would not result in a reduction in project gold reserves.

The assumed operating cost in this scenario, \$174 per ounce of gold produced, is a variant of the similar figure of \$176 per ounce shown in Mr. Kuiper’s Upside Case. A portion of the operating cost of the mine is dependent on gold and silver prices—when the gold price increases, some of the operating costs that are based on gold prices, also increase. Observation of gold price and operating cost behavior in this model shows roughly that, for every 10 percent increase/decrease in gold price, operating costs increase/decrease by 1 percent. The Upside case detailed in Mr. Kuiper’s paper uses an assumed gold price of \$350 per ounce. But, this paper uses the current gold price of \$311.10. The difference between those two prices is about 11%. Therefore, the assumed operating costs in this scenario were decreased by about 1.1%—from \$176 to \$174 per ounce of gold produced.

Based on interpretations of typical mining industry tax situations, this model assumes that the project will be taxed at 34 percent of project profits for federal income tax, and at 6 percent of profits for Montana state income tax. State income tax is deducted from taxable income before federal income tax is calculated. A modified form of the Accelerated Cost Recovery System (ACRS) covering mining equipment depreciation is also used by the model. Additionally, this financial model assumes the use of percentage depletion, with the value of 15% that is applicable to gold and silver mines.

Figure 1 – McDonald Upside Case Base Assumptions

ASSUMPTIONS	VALUE
Mined Waste, tons	610,000,000
Mined Ore, tons	370,000,000
Backfill, tons	25,000,000
Mine Life (years)	16
Crushed Ore, tons	123,000,000
ROM Ore, tons	82,000,000
Average Gold Grade, troy oz./ton	0.019
Contained Gold, oz.	7,200,000
Gold and Silver Recovery, %	72%
Total Recoverable Gold, oz.	5,184,000
Average Silver Grade, troy oz./ton	0.029
Contained Silver, oz.	11,111,111
Total Recoverable Silver, oz	8,000,000
Gold Price, 2000\$/oz.	\$311.10
Silver Price, 2000\$/oz.	\$5.37
Delay of Production, 1=yes, 0=no (Working Capital buildup)	1
Life-of-Project Operating Costs, 2000 \$/oz. Gold	\$174.00
Pre-Stripping (2000\$/ton)	\$0.50
Transportation & Refining (% of Gross Revenue)	0.2%
State School Trust Royalty (% of Gross Revenue-Trans. & Refining)	5.0%
State Lands Percent of Total Mine (% of 100%)	80%
Metal Mines License Tax (% of Gross Revenue)	1.6%
Gross Proceeds Tax (% of Gross Revenue x mill levy [335.83 mills])	3.0%
Property Tax (annual value ([2000\$])	\$1,600,000
General and Administrative ([2000\$]) - year specific	
Reclamation ([2000\$]) - year specific	
Annual Wages, Salaries, and Benefits - 387 emp. X \$34,000/yr. X 1.35 ovrhd.	\$17,763,300
Material, Supplies & Services - residual to meet target operating cost/ oz.	
Franco-American NSR Interest (% per year)	4.0%
Depreciation - 7 year MACRS schedule (see below)	
Depletion Allowance (percentage depletion)	15%
Project Taxable Profile=0, Corporate Taxable Profile=1	0
Federal Income Tax Rate (% of Taxable Income)	34%
Montana Income Tax Rate (% of Taxable Income)	6%
Real Discount Rate (percent)	15%

A discount rate of 15 percent on project cashflow is assumed here. The significance of this number is that it represents the “interest rate” that Canyon Resources needs to pay on the project funds used in this model. The discount rate is the “opportunity cost” of the funds used by the mining company. Without delving deeply into economic theory, a 15 percent discount rate implies that, in order to compete with other firms raising money through the stock and other capital markets, Canyon Resources must pay investors at least a 15 percent return on stockholder’s investments. In this author’s opinion, a value of 15 percent is probably the single most widely used value for the discount rate.

Finally, another important but relatively hidden assumption is that all numbers in this analysis are net of inflation. I.e., all numbers are adjusted for assumed inflation throughout the project life. The importance of this assumption can be illustrated by examining the effect of a nominal inflation rate on the gold price. If an annual inflation rate of 3 percent is assumed to cover McDonald project life, an inflation-adjusted value of \$300 for the gold price actually works out to a non-inflation-adjusted value of \$628 when the McDonald project reclamation work would end—25 years after the project starts in the Upside Case.

McDonald Upside Cases Results

Shown below in Figure 2 are the results from the financial model run for Upside First Case

Figure 2 – McDonald Upside First Case Results

ANNUITY EQUIVALENT VALUE PER OUNCE OF GOLD PRODUCED	BOY 2000 Dollars Per Ounce of Gold	NPV BOY 2000 Dollars
Total Capital Cost	\$151.73	\$ 214,029,753
Pre-Stripping	\$14.72	\$ 20,759,924
Transportation and Refining	\$0.64	\$ 901,075
State School Trust Royalty	\$12.75	\$ 17,985,452
Metal Mines Tax	\$5.10	\$ 7,189,851
Gross Proceeds Tax	\$3.22	\$ 4,539,119
Property Tax	\$5.32	\$ 7,498,805
General and Administrative	\$11.87	\$ 16,745,486
Reclamation	\$1.03	\$ 1,451,334
Wages & Salaries	\$57.01	\$ 80,419,106
Materials, Supplies, & Services	\$62.39	\$ 88,003,491
Total Operating Cost (Pre-Income Tax)	\$174.00	\$ 245,493,644
Franco-American NSR	\$12.75	\$ 17,985,452
Total Direct Operating Cost + Royalties	\$186.75	\$ 263,479,096
Gold Revenue	\$311.10	\$ 438,847,420
Silver Revenue	\$8.29	\$ 11,689,954

Total Revenue	\$319.39	\$ 450,537,374
Total Pre-Tax Income	(\$19.09)	\$ 882,134,023
Depreciation	\$87.37	\$ 123,250,970
Depletion	\$26.25	\$ 37,031,904
Total Noncash	\$113.62	\$ 160,282,874
Federal Income Tax	\$10.25	\$ 14,451,927
Montana Income Tax	\$1.92	\$ 2,713,128
TOTAL COST (AFTER-INCOME TAX)	\$350.64	\$ 494,673,903
ABOVE-NORMAL PROFIT (ECONOMIC RENT)	(\$31.26)	\$ (44,092,745)
RETURN ON EQUITY (ROE)	11.3%	11.3%

The most important result shown here is literally the “bottom-line”. The return on equity for Canyon Resources falls short of the required 15 percent return. Instead, the project would only return 11.3 percent on equity. If an investor that expects to get a 15 percent return on equity were to value the project, he would say that it was worth -\$44 million. This value can be found by looking down the third column of the output (NPV BOY 2000 dollars—Net Present Value, Beginning-of-Year 2000 dollars) and finding the row labeled Above-Normal Profit (Economic Rent). The Economic Rent is a value that tells an investor how much more (in dollars, not percent) the project would return to the investor than a similar project that returned exactly 15 percent. Because this project only returns 11.3 percent to the investor, the value of the project is \$44 million dollars less than if the investor invested all of the project funds in an interest-bearing account with a 15 percent interest rate.

The second scenario of the Upside Cases (Breakeven Operating Cost) solves for the maximum operating cost that would allow the project to achieve a 15 percent return to the investor, with today’s gold and silver prices. Remember, the base case assumes that the operating cost of the project is equal to about \$174 per ounce of gold produced. The second scenario calculates how much the operating cost must be reduced before the investor could expect a project rate-of-return of 15 percent.

Results of the Breakeven Operating Cost scenario show that project operating costs must decline from \$174 per ounce of gold to about \$131 per ounce, in order for the project to return a 15 percent “interest rate” to each project investor. Put another way, if the McDonald project operating costs were reduced by about 25 percent, to \$131 per ounce, the rate of return to investors would be 15 percent, and the Economic Rent would be exactly zero. If project-operating costs actually declined below \$131 per ounce, then the return to the investor would exceed 15 percent, and the Economic Rent would climb above zero.

The final scenario in the Upside Cases (Breakeven Gold Price) returns the operating cost assumption to \$174 per ounce and calculates the increase in the gold price needed to push the project up to the required 15 percent rate of return.

Results of this Breakeven Gold Price scenario show that the gold price must increase by about 14 percent--to \$354 per ounce, to make a return of 15 percent for the entire project. An investor with a choice of investing in the McDonald gold or putting the same amount of money in a savings account that yielded exactly 15 percent would be indifferent between the two because they would yield exactly the same result. But, the Breakeven Gold Price scenario would have to have a 14 percent increase in the gold price to \$354 per ounce before a 15 percent rate of return could be achieved.

Summary of McDonald Upside Case Results

Even using the optimistic assumptions inherent in the McDonald Upside, the project would not break even under current metal market conditions. To achieve minimum profitability, the project must decrease operating costs by about 25 percent or gold prices must rise by about 14 percent. It is important to note that a temporary or transient decrease in operating costs or increase in gold prices would not be sufficient to ensure project profitability. The cost decrease or gold price increase must be maintained throughout the production-period of the project to meet a minimum 15 percent rate of return. Also, all costs and prices quoted in this model are inflation-adjusted. E.g., to maintain a gold price of \$354 per ounce over 18 years with an inflation rate of 3 percent, the actual (nominal) gold price in the 18th year would have to be \$511 per ounce.

McDonald Base Cases

Figure 3 shows the assumptions for the first of the McDonald Base Cases.

Figure 3 – McDonald Base Case First Scenario Assumptions

ASSUMPTIONS	VALUE
Mined Waste, tons	440,000,000
Mined Ore, tons	205,000,000
Backfill, tons	53,000,000
Mine Life (years)	12
Crushed Ore, tons	123,000,000
ROM Ore, tons	82,000,000
Average Gold Grade, oz/ton	0.025
Contained Gold, oz.	5,200,000
Gold and Silver Recovery, %	72%
Total Recoverable Gold, oz.	3,744,000
Average Silver Grade, oz/ton	0.054
Contained Silver, oz.	11,111,111
Total Recoverable Silver, oz	8,000,000
Gold Price, 2000\$/oz.	\$311.10

Silver Price, 2000\$/oz.	\$5.37
Delay of Production, 1=yes, 0=no (Working Capital buildup)	1
Life-of-Project Operating Costs, 2000 \$/oz. Gold	\$231.00
Pre-Stripping (BOY 2000\$/ton)	\$0.50
Transportation & Refining (% of Gross Revenue)	0.2%
State School Trust Royalty (% of Gross Revenue-Trans. & Refining)	5.0%
State Lands Percent of Total Mine (% of 100%)	80%
Metal Mines License Tax (% of Gross Revenue)	1.6%
Gross Proceeds Tax (% of Gross Revenue x mill levy [335.83 mills])	3.0%
Property Tax (annual value [BOY 2000\$])	\$1,600,000
General and Administrative [BOY 2000\$] - year specific	
Reclamation [BOY 2000\$] - year specific	
Annual Wages, Salaries, and Benefits - 387 emp. X \$34,000/yr. X 1.35 ovrhd.	\$17,763,300
Material, Supplies & Services - residual to meet target operating cost/ oz.	
Franco-American NSR Interest (% per year)	4.0%
Depreciation - 7 year MACRS schedule (see below)	
Depletion Allowance (percentage depletion)	15%
Project Tax Profile=0,Corporate Tax Profile=1	0
Federal Income Tax Rate (% of Taxable Income)	34%
Montana Income Tax Rate (% of Taxable Income)	6%
Real Discount Rate (percent)	15%

Some of the more important differences between the Base Cases and the Upside Cases is that the Base Cases assume a shorter project production term—12 years instead of 16, a higher operating cost--\$227 instead of \$174 per ounce of gold produced, and fewer producible ounces of gold—3.7 million instead of 5.2 million ounces. Otherwise, the cases use most of the same assumptions for the other variables.

Once again it is important to note that the Base Case in Mr. Kuiper’s paper assumes an operating cost of \$231 per ounce with a gold price of \$375 per ounce. Keeping in mind the project relationship between gold price and operating price discussed above, the operating cost used in this Base Case analysis is \$227 per ounce (the 17 percent gold price reduction from \$375 to \$311.10 working out to a 1.7 percent reduction in operating costs from \$231 to \$227 per ounce).

Results from the first Base Case analysis are shown in Figure 4 below. This model run shows that the project yields a rate-of-return of only 6.8 percent. This number translates into a project value of about -\$60 million dollars. Clearly, using base case assumptions, the McDonald gold mine is not even close to profitability.

Using a similar methodology as above with the Upside Cases, the next scenario solves for the operating cost decrease that is required to ensure that the mine has at least a 15 percent rate of return. The operating cost that yields a return of 15 percent is about \$164 per ounce—a reduction of approximately 28 percent from the base value of \$227 per ounce.

Figure 4 – Base Case First Run Scenario

ANNUITY EQUIVALENT VALUE PER OUNCE OF GOLD PRODUCED	BOY 2000 Dollars Per Ounce of Gold	NPV BOY 2000 Dollars
Total Capital Cost	\$ 128.38	\$ 158,711,268
Pre-Stripping	\$ 15.70	\$ 19,407,687
Transportation and Refining	\$ 0.65	\$ 797,544
State School Trust Royalty	\$ 12.88	\$ 15,918,984
Metal Mines Tax	\$ 5.15	\$ 6,362,669
Gross Proceeds Tax	\$ 3.25	\$ 4,017,590
Property Tax	\$ 5.72	\$ 7,074,323
General and Administrative	\$ 13.17	\$ 16,275,367
Reclamation	\$ 1.68	\$ 2,072,961
Wages & Salaries	\$ 59.52	\$ 73,584,470
Materials, Supplies, & Services	\$ 109.29	\$ 135,109,837
Total Operating Cost (Pre-Income Tax)	\$ 227.00	\$ 280,621,432
Franco-American NSR	\$ 12.88	\$ 15,918,984
Total Direct Operating Cost + Royalties	\$ 239.88	\$ 296,540,416
Gold Revenue	\$ 311.10	\$ 384,587,344
Silver Revenue	\$ 11.47	\$ 14,184,806
Total Revenue	\$ 322.57	\$ 398,772,150
Total Pre-Tax Income	\$ (45.69)	\$ 908,363,245
Depreciation	\$ 75.93	\$ 93,860,354
Depletion	\$ 17.98	\$ 22,225,934
Total Noncash	\$ 93.90	\$ 116,086,288
Federal Income Tax	\$ 2.66	\$ 3,289,303
Montana Income Tax	\$ 0.50	\$ 617,516
TOTAL COST (AFTER-INCOME TAX)	\$ 371.42	\$ 459,158,504
TOTAL GROSS REVENUE	\$ 322.57	\$ 398,772,150
ABOVE-NORMAL PROFIT (ECONOMIC RENT)	\$ (48.85)	\$ (60,386,354)
RETURN ON EQUITY (ROE)	6.8%	6.8%

Solving for a breakeven gold price in the Base Case series yields a value of \$374 per ounce—an increase of about 20 percent over the current price of \$311.10 per ounce. This 20 percent increase in gold price (after adjusting for inflation) would be required to be

maintained throughout the life of gold production at the mine (about 12 years) in order for the project to meet minimum profitability requirements.

Conclusions

This paper presents a preliminary examination of the profitability of the proposed McDonald gold mine. The primary inputs to this analysis are publicly available reports that do not contain the kind of detail needed to perform a definitive analysis. However, even by using the approximate numbers available to the author, a reasonable picture of the profitability of the project under some likely conditions can be obtained.

Results from both the Upside Cases and the Base Cases show that the mine would likely not be profitable under current market conditions. Under the most optimistic scenarios, operating costs must be reduced by at least 25 percent (to \$131 per ounce), or gold prices increased by at least 14 percent (to \$354 per ounce), before a minimal level of profitability could be reached. Using more conservative, and perhaps more realistic assumptions, the operating costs of the Base Case need to be decreased by 28 percent (to about \$164 per ounce), or the gold price must be increased by about 20 percent (to about \$374 per ounce), before a minimum level of profitability can be achieved.

Additional cases examining McDonald mine downside scenarios were not examined in this paper because they would only reinforce the conclusions reached with the other, more generous cases. The McDonald gold mine is not profitable under current market conditions. And, significant changes in costs and/or prices would be required before the project would become profitable.