Bethesda Mining Company

Bethesda Mining is a midsized coal mining company with 20 mines located in Ohio, Pennsylvania, West Virginia, and Kentucky. The company operates deep mines as well as strip mines. Most of the coal mined is sold under contract, with excess production sold on the spot market.

The coal mining industry, especially high-sulfur coal operations such as Bethesda, has been hard-hit by environmental regulations. Recently, however, a combination of increased demand for coal and new pollution reduction technologies has led to an improved market demand for high-sulfur coal. Bethesda has just been approached by Mid-Ohio Electric Company with a request to supply coal for its electric generators for the next four years. Bethesda Mining does not have enough excess capacity at its existing mines to guarantee the contract. The company is considering opening a strip mine in Ohio on 5,000 acres of land purchased 10 years ago for $6 million. Based on a recent appraisal, the company feels it could receive $5 million on an aftertax basis if it sold the land today.

Strip mining is a process where the layers of topsoil above a coal vein are removed and the exposed coal is removed. Some time ago, the company would simply remove the coal and leave the land in an unusable condition. Changes in mining regulations now force a company to reclaim the land; that is, when the mining is completed, the land must be restored to near its original condition. The land can then be used for other purposes. Because it is currently operating at full capacity, Bethesda will need to purchase additional necessary equipment, which will cost $30 million. The equipment will be depreciated on a seven-year MACRS schedule. The contract runs for only four years. At that time the coal from the site will be entirely mined. The company feels that the equipment can be sold for 60 percent of its initial purchase price. However, Bethesda plans to open another strip mine at that time and will use the equipment at the new mine.

The contract calls for the delivery of 600,000 tons of coal per year at a price of $34 per ton. Bethesda Mining feels that coal production will be 650,000 tons, 725,000 tons, 810,000 tons, and 740,000 tons, respectively, over the next four years. The excess production will be sold in the spot market at an average of $40 per ton. Variable costs amount to $13 per ton, and fixed costs are $2,500,000 per year. The mine will require a net working capital investment of 5 percent of sales. The NWC will be built up in the year prior to the sales.

Bethesda will be responsible for reclaiming the land at termination of the mining. This will occur in year 5. The company uses an outside company for reclamation of all the company's strip mines. It is estimated the cost of reclamation will be $4 million. After the land is reclaimed, the company plans to donate the land to the state for use as a public park and recreation area. This will occur in year 6 and result in a charitable expense deduction of $6 million. Bethesda faces a 38 percent tax rate and has a 12 percent required return on new strip mine projects. Assume that a loss in any year will result in a tax credit.

You have been approached by the president of the company with a request to analyze the project. Calculate the payback period, profitability index, average accounting return, net present value, internal rate of return, and modified internal rate of return for the new strip mine. Should Bethesda Mining take the contract and open the mine?

Goodweek Tires, Inc.

After extensive research and development, Goodweek Tires, Inc., has recently developed a new tire, the SuperTread, and must decide whether to make the investment necessary to produce and market it. The tire would be ideal for drivers doing a large amount of wet weather and off-road driving in addition to normal freeway usage. The research and development costs so far have totaled about $10 million. The SuperTread would be put on the market beginning this year, and Goodweek expects it to stay on the market for a total of four years. Test marketing costing $5 million has shown that there is a significant market for a SuperTread-type tire.

As a financial analyst at Goodweek Tires, you have been asked by your CFO, Adam Smith, to evaluate the SuperTread project and provide a recommendation on whether to go ahead with the investment. Except for the initial investment that will occur immediately, assume all cash flows will occur at year-end.

Goodweek must initially invest $120 million in production equipment to make the SuperTread. This equipment can be sold for $51 million at the end of four years. Goodweek intends to sell the SuperTread to two distinct markets:

1. *The original equipment manufacturer (OEM) market*: The OEM market consists primarily of the large automobile companies (like General Motors) that buy tires for new cars. In the OEM market, the SuperTread is expected to sell for $36 per tire. The variable cost to produce each tire is $18.
2. *The replacement market*: The replacement market consists of all tires purchased after the automobile has left the factory. This market allows higher margins; Goodweek expects to sell the SuperTread for $59 per tire there. Variable costs are the same as in the OEM market.

Goodweek Tires intends to raise prices at 1 percent above the inflation rate; variable costs will also increase at 1 percent above the inflation rate. In addition, the SuperTread project will incur $25 million in marketing and general administration costs the first year. This cost is expected to increase at the inflation rate in the subsequent years.

Goodweek's corporate tax rate is 40 percent. Annual inflation is expected to remain constant at 3.25 percent. The company uses a 15.9 percent discount rate to evaluate new product decisions. Automotive industry analysts expect automobile manufacturers to produce 2 million new cars this year and production to grow at 2.5 percent per year thereafter. Each new car needs four tires (the spare tires are undersized and are in a different category). Goodweek Tires expects the SuperTread to capture 11 percent of the OEM market.

Industry analysts estimate that the replacement tire market size will be 14 million tires this year and that it will grow at 2 percent annually. Goodweek expects the SuperTread to capture an 8 percent market share.

The appropriate depreciation schedule for the equipment is the seven-year MACRS depreciation schedule. The immediate initial working capital requirement is $11 million. Thereafter, the net working capital requirements will be 15 percent of sales. What are the NPV, payback period, discounted payback period, AAR, IRR, and PI on this project?