Mine Design 484

HW 9

Report subjects Introduction, Location, Geology, and Reserves & Quality will be adapted and finalized from the written report completed in MinE 483 to include current project details.

Drafts of the Summary and Executive Summary are included in the assignment because you have now completed all subject areas of the report and have all the information needed.

Refer to the 484 Syllabus for more details about each subject area.

These papers will be graded on content, completeness and consistency as well as grammar and spelling. Team members must identify which separate parts of the assignment each has written for grading.

Additional Comments

Introduction/Location - If the report is brief, the introduction can be eliminated but a location section is important to orient the reader to the project. The introduction should state the problem or define the project. It should describe the key elements of the project. This is a good place to discuss reserve or deposit ownership and royalties, taxes and wheelage payments if germane. If ownership issues are complex, it may be preferable to discuss these factors in the reserves and quality section(s).

Geology - Discuss the local and regional geologic and geographic features that will influence the mining operations. Include a discussion of the topography including natural features such as rivers and lakes. Remember the ABET criteria for geology instruction. Try to include these elements in your report. What are the physical surroundings in which the reserve is located? What are the structural features that influence the property? Briefly discuss the mineralogy and/or petrology if it is a hard rock project. If a coal project, a brief characterization is better. Leave the detailed discussion of the quality parameters for the Reserves and Quality Section. Maps with proper legends will probably convey the message better than verbal descriptions. For a coal project, the following parameters can be mapped or discussed:

a. Structure or bottom of coal contour
b. Stratigraphy or strip log  
c. Typical seam cross sections  
d. Roof or floor material or overburden analysis if it will affect mineability  
e. Seam thickness isopach  
f. Intrusions, faulting, folding, washouts and outcrop or subcrop  
g. Stresses, both magnitude and direction  
h. Drill hole locations and spacing. Is the spacing close enough to properly evaluate the reserve?  
i. Oil and gas wells  
j. Methane content  
k. Other workings above, below and adjacent (this influences ground control and mine drainage calculations; previous mining experience should be discussed in the Mining Section)  
l. Surface features such as housing, railroads, streams that affect the design

Reserves and Quality - The orebody, coal seam or reserve should be analyzed in detail for quantity and quality. These can be in separate sections of the report. Is the drilling or are the sample points on a close enough spacing to properly evaluate the reserve? Use of the USGS parameters of measured, indicated or inferred status is a good starting point. In nearly all instances, a major project will require information gathered on a sample spacing closer than measured status prior to development. Usually geostatistical methods are utilized to determine quantity and quality. A discussion of how geostatistics is applied specifically to the proposed project may be beyond the scope of an undergraduate report. Reserve quality information is frequently best conveyed by mapping. Whether by map or test, the basis for the analysis such as "main bench only - 1.60 specific gravity float" must be given. Adverse coal or mineral ownership should be noted on the reserve maps. All maps and plans should have complete legends. Quality is generally reported as field average and by time period forecast that corresponds to the mine production plan. This section is dependant on the mining horizon selected which is a function of the mining method, equipment and conditions.