WOMEN'S MINING COALITION

Mining Process:
Part 4 of a Six-Part Series

Mining Process: What Happens as a Project Begins Mining?

Overview

Once the final decision is made to proceed to the mine development stage, the culmination of many years of exploration, feasibility determination, financing, and permitting come to fruition. At this point in the process, a company will have spent a minimum of tens of millions of dollars to conduct the exploration and analyses required to "prove up" a deposit, as well as working through the permitting process. The permitting process alone can take five to ten years on average to get to the point where all permissions have been granted and all permits received. Part of the permitting process involves conducting biological and cultural surveys, and many other types of baseline surveys. Another significant part of the permitting process is public outreach and opportunities for public comment and input.

At this stage, a company will begin purchasing mining equipment that is specific to the mining method chosen and whether the operation will be underground or surface. Additional personnel must be hired that are both professional (mining engineers, metallurgists, geologists, accountants, environmental professionals) as well as truck drivers, equipment operators, technicians, and laborers.

Types of Permits Required to Mine

There are many different types of permits that must be acquired prior to mining a deposit. There are also different types of permits required depending on whether the deposit is hardrock or coal. Some examples of these permits are as follows:

- Plan of Operation: on public lands, an operator must submit a plan of operation or a summary of a proposed operation which includes how the operation will be conducted, the facilities to be constructed, a reclamation plan, a reclamation bond calculation, and a tentative closure plan.
- Authorization to Proceed: on publicly managed land, a proposed operation is required to be analyzed under the National Environmental Policy Act (NEPA)[1]. The authorizing agency is responsible for preparation of the NEPA document. This is one of the major points during the overall permitting process that affords public review and comment periods. Once the NEPA analysis has been completed, and all requirements to prevent and mitigate environmental impacts have been satisfied, the authorizing agency will issue a Decision Record and Authorization to Proceed.

[1] P.L.91-190, as amended. NEPA applies to major federal actions proposed by all Federal agencies. In certain states there may be similar state environmental analyses that must be performed on state and sometimes private lands if they are included in a project.

- Proponents must also permit certain activities with the state[2] in which the project will be conducted. These include but are not limited to:
    - Water pollution control permit
    - Stormwater pollution prevention and control permit
    - Air permits
    - Water use (water rights in the Western U.S.) permit
    - Landfill permits
    - Sanitation permits
    - Potable water permits
- In some cases there may also be county or other local permits that may be required.

A permit may have to be renewed or modified multiple times over the mine life. Updated and new information is incorporated into the renewal application before re-approval. Depending on the type of permit, the renewals may also require a public comment period before approval.

During the Mining Process

The mining process is intended to produce useable minerals and other resources to be used in the manufacturing of downstream products. The mining company pursues an ongoing process of material sampling and assaying, and refining mine plans and ore processing methodologies. Mined material is continually assayed to determine whether it is ore or waste. The grade or concentration of the ore and its geologic characteristics determine how it is processed. There are many different types of processing methodologies, and one or more may be used to recover a specific ore type. After certain types of processing, tailings, or material devoid of ore, may be produced. Tailings are placed into tailings impoundments for permanent disposal.

All mining operations, including pit designs and underground designs (as applicable), ore processing or milling operations and related facilities, tailings impoundments, and reclamation and closure activities must be engineered in accordance with regulatory requirements. These plans and engineering designs must be approved by the appropriate regulatory entity prior to implementation.

Throughout the entire mine life environmental management of the mine site and the overall mine operation is ongoing. Pursuant to the many permits required, routine sampling, reporting and other types of permit compliance must be met. Permit compliance is site-specific and can be related to water (surface and groundwater), air emissions, waste generation and disposal, and wildlife. The reclamation permit and bond adjustments are subject to routine periodic reviews in order to update for any reclamation conducted and for cost fluctuations.

Mining operations are dynamic and are closely monitored during their mine life.

[2] These examples are primarily from the State of Nevada and are just samples of permits that may be required. Other states may have similar or different permits, depending upon their individual state statutes.