

Consolidated Mineral Large Noncoal Mining Operations Calculation of Bond Amounts

Consolidated Minerals

The term, consolidated minerals, is used to describe rock that is compacted into layers and is relatively consistent in composition, such as sandstone, limestone, granite, and bluestone. Mine operations in Pennsylvania use a variety of mining techniques. Reclamation plans are used in determining bond amounts and these plans must consider the post-mining land use, quantity of minerals mined, and volume of soils available for reclamation.

General Methodology

The rules and regulations that govern noncoal mining operations require the mine operator to post a bond to ensure the reclamation of the mine site. The Department of Environmental Protection (DEP) is required to establish a bond rate schedule (BRS) based on the estimated cost to DEP to complete the reclamation requirements of the permit. DEP developed the BRS using actual bid costs submitted for abandoned mine lands and forfeited mine site reclamation contracts and other appropriate sources.

The bond amount is based on the mine operator's description of the maximum amount of reclamation required during the term of the permit and the BRS. The BRS is published in the *Pennsylvania Bulletin* and can be found at the Bureau of Mining Programs (BMP) website at: www.dep.pa.gov/Business/Land/Mining/BureauofMiningPrograms/Bonding/Pages/default.aspx.

Two types of mining permits – large noncoal and small noncoal mining permits – are available to mine operators. Large noncoal mining permits have no regulatory limit on the quantity of minerals to be mined. The limits are established in the mining permit based on the mining and reclamation plan. This fact sheet discusses bonding on large noncoal mining permits. For information about bonding of small noncoal permits, please see the fact sheet entitled “Small Noncoal Mining Operations Calculation of Bond Amounts.”

Bond Calculation – Large Noncoal Mining Permits

The basic approach to bonding large noncoal mine sites is to apply a flat per-acre rate, used to cover minor grading and revegetation, and supplement that with the bond to account for spoil storage, backfilling, highwall blasting, demolition, or other site-specific costs.

The BRS includes a per-acre rate for an area that is or will be disturbed for mining. This rate is for the cost of minor grading and revegetation. The per-acre rate for the support area is for the cost of revegetation. The additional bond to cover the cost to achieve the post-mining land use for activities such as backfilling, highwall blasting, demolition, and other site-specific features are also considered in determining the bond required for the mine site.

DEP will calculate the bond liability based on the maximum portion of the permitted area that the operator is authorized to disturb at any specific time. This area is described in the operator's mining and reclamation plans and must include all of the land affected by mining activities that is not planted, growing, and stabilized.

The post-mining reclamation plan can be accomplished using a variety of techniques depending on the volume of mineral to be mined and the availability of soil above the mineral to be mined, called overburden, that can be used to achieve the post-mining reclamation contours. The amount of the bond is calculated taking into consideration the reclamation contours approved in the permit and the method used to achieve the reclamation.

One method of achieving the post-mining contour is to stockpile the overburden and then backfill the pit after the mineral has been extracted. This process returns the area to the approximate original contour or an approved alternative reclamation contour. The bond is calculated using a cost per cubic yard of overburden required to be moved to achieve the post-mining contours.

Some sites mine the consolidated minerals below the water table, and water impoundment is the post-mining land use. Initially, while the mining is above the projected post-mining water level, the bond is calculated using the per-acre rate for mining the entire mining area. Once the mining has advanced below the post-mining water level, the reclamation bond calculation should account for reclamation slopes to a depth of 50 feet below the anticipated post-mining water level and provide for a safety bench around the perimeter of the impoundment. The area below the safety bench is no longer required to be included in the per-acre mining rate calculations, and the bonds can be adjusted accordingly.

Another method of reclamation is to blast the material around the perimeter of the pit to achieve the post-mining reclamation contours. The amount of the bond is calculated taking into account the length of the highwall and the depth of mining. Table 1 of the BRS provides the rates used to calculate the bond amount on these sites.

Underground mines have additional reclamation cost considerations for the reclamation of the surface effects of underground mines including sealing the deep mine openings, securing the mine opening, sealing the boreholes, and the removal of structures. Table 2 of the BRS provides the rates to calculate the bond amount. If backfilling is required to achieve the post-mining contours, the cost is calculated using a cost per cubic yard of overburden.

Erosion and sedimentation control ponds and treatment ponds are bonded using a flat rate for each pond that will be removed when mining is complete. This rate includes dewatering the pond, grading, topsoil replacement, and revegetation.

Available cost information will be used in the event that a feature on a mine site is not listed in the BRS and the cost is necessary to calculate the reclamation bond. If enough data is not available, the rate will be set from *Means Building Construction Cost Data* or *Walker's Building Estimator's Reference Book*. Structure demolition costs may be included for structures that are not compatible with the post-mining land use. Structures, that have reasonable post-mining uses and are approved to remain by the landowner, do not require bonding.

A mine operator who intends to delay activation of a mine site for an extended period of time can request the bond be adjusted down to the minimum bond established in the regulations. The mining permit can be issued by posting the minimum bond. No mining activities can occur within the permit until the full amount of the bond is posted.

For more information, visit www.dep.pa.gov.