

Reforestation helps SMCRA Title IV and V reclamation projects succeed

Through the Surface Mining Control and Reclamation Act (SMCRA) of 1977, the Office of Surface Mining (OSM) became responsible for managing two critical mine land reclamation challenges—abandoned mine lands (Title IV) and active mine lands (Title V). Title IV funds the restoration of mine sites abandoned before 1977, and Title V requires mine operators to minimize surface-mining impacts by restoring mine lands to their original contours.

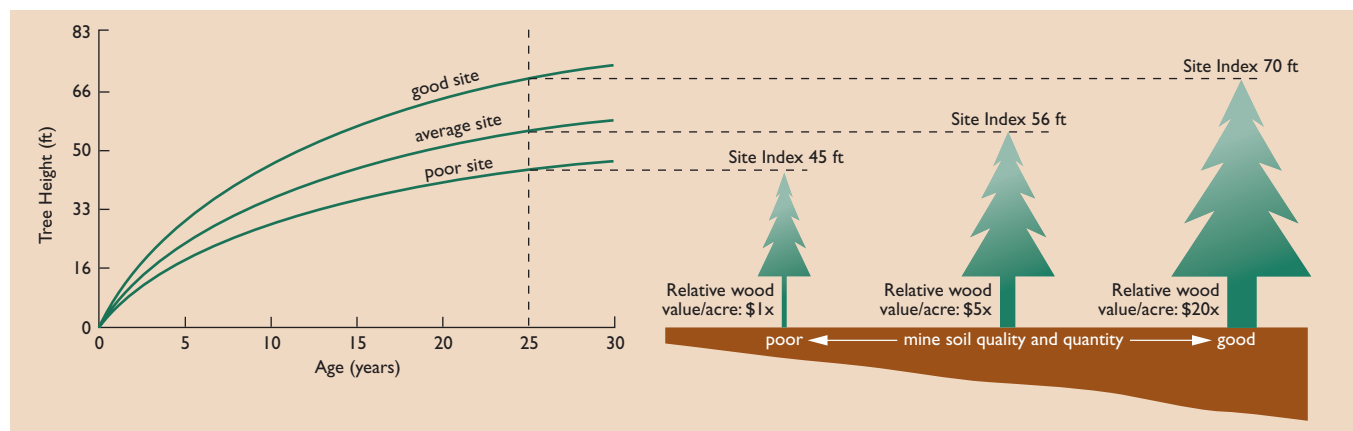
Since the advent of SMCRA, many Title V reclamation projects have involved planting fast-growing dominant grasses to create pastures and other grasslands. Although aesthetically pleasing, these rolling, grassy hills do not offer the same economic and environmental benefits as the original forests they replace, especially with respect to preserving wildlife habitats and the ability to capture carbon from the atmosphere. Moreover, once pastureland is

established, it is often difficult and costly to develop productive forests if soil has been excessively compacted and there is competition from aggressive ground covers.

By incorporating sound reforestation techniques into Title IV and Title V reclamation plans, landowners and mine operators can maximize long-term economic and environmental value.

Can reforested mine sites receive final bond release?

According to Title V, mine operators must post reclamation bonds for areas they expect to impact at the time they obtain their surface mining permit. This process includes the designation of a post-mining land-use plan and the development and approval of a complementary reclamation plan. As mining is completed and the reclama-



Following the forestry reclamation approach will lead to significant improvement in Site Index. As mine soil quality increases, tree growth increases linearly, but wood value increases exponentially. Figure based on research conducted by Dr. James Burger, Virginia Polytechnic Institute

tion process begins, the mining operator becomes eligible to apply for bond release. Many reforested mine sites have received final bond release, and OSM is currently working with the states and tribes to remove impediments to reforestation.

What are sound practices in reforesting mine lands?

More than two decades of research in the Appalachian region suggest that the following five-step forestry reclamation approach leads to productive reforestation:

- Create a new soil medium by replacing the original soil with four feet of surface soil, weathered sandstone, or the best available material
- Loosely grade the topsoil or topsoil substitutes established in step one to create a noncompacted soil growth medium
- Use native and noncompetitive ground covers that are compatible with growing trees
- Plant two types of trees—early succession species for wildlife habitat and soil stability, and commercially valuable crop trees
- Use proper tree planting techniques

How does the cost of reforestation compare with the cost of establishing pastureland?

In the past, many landowners and mine operators may have assumed that transforming mine sites to hay and pastureland is less costly than reforestation. However, reforestation is often less expensive than establishing pastureland.

First, low compaction final grading requires less bulldozer time than highly compacted pastureland projects. Moreover, because reforestation does not require dense, aggressive ground cover, the costs of fertilizer, lime, and seeding may be less than those associated with pastureland projects. Finally, in most cases, pastureland requires maintenance throughout the bond liability period to maintain site productivity and to eliminate rills and gullies, whereas forestland requires very little maintenance, in part because stable rills and gullies are compatible with forestry land uses.

Does the forestry reclamation approach increase forest timber value?

Research has shown that mine land reclaimed using the five-step forestry reclamation approach can create forests that offer greater productivity and resulting timber value than “natural” forests on unmined lands. For example, timber-size logs can often be grown on sites reclaimed in Appalachia and the Midwest through the forestry reclamation approach in the same amount of time it takes to grow pulp-size logs on other types of forest sites. In addition, the forestry reclamation approach has been shown to optimize the growth of commercially valuable hardwood species, such as northern red oak, which can further increase timber value.