

TITLE 38
LEGISLATIVE RULE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF MINING AND RECLAMATION
SERIES 2
WEST VIRGINIA SURFACE MINING RECLAMATION RULE

Commercial Forestry Regulations

7.4. Standards Applicable to Approximate Original Contour Variance Operations with a Postmining Land Use of Commercial Forestry and Forestry.

7.4.a. Applicability.

7.4.a.1. Commercial forestry and forestry may be approved as a postmining land use for surface mining operations that receive variances from the general requirement to restore the postmining site to its approximate original contour. An applicant may request AOC variance for purposes of this section for the entire permit area or any segment thereof. Commercial forestry shall be established on areas receiving a variance from AOC and either commercial forestry or forestry shall be established on all portions of the permit area. Provided, that the faces of valley fills shall be reclaimed as described in subparagraph 7.4.b.1.J of this rule.

7.4.b. Requirements.

7.4.b.1. The Secretary may authorize commercial forestry and forestry as a postmining use only if the following conditions have been satisfied:

7.4.b.1.A. Planting and Management Plan Development.

7.4.b.1.A.1. A West Virginia registered professional forester shall develop a planting plan and long-term management plan for the permitted area that meets the requirements of the West Virginia Surface Coal Mining and Reclamation Act. These plans shall be made a part of the surface mining permit application and shall be the basis for determining the capability of the applicant to meet the requirements of this rule. The plans shall be in sufficient detail to demonstrate that the requirements of the commercial forestry and forestry uses can be met. The plans shall contain a signed statement of intent from the landowner demonstrating its commitment to long-term implementation and management in accordance with the plan. Once final bond release is authorized, the permittees responsibility for implementing the long-term management plan ceases. Upon final bond release, the jurisdiction of the Secretary over the permittee, the operator, the landowner or any other responsible party shall cease. The minimum required content of these plans shall be as follows:

7.4.b.1.A.2. The landowner or other responsible party shall submit their objectives for achieving commercial forestry and forestry postmining land uses. The Secretary may approve the uses only when the planting plan and long-term management plan demonstrate that the forest will be managed only for long-term forest products, such as sawlogs or veneer, that take 50 to 80 years to mature.

7.4.b.1.A.3. A commercial species planting plan and prescription shall be developed by the West Virginia registered professional forester to achieve the commercial forestry and forestry use. The plan shall include the following:

7.4.b.1.A.3.(a). A topographic map of the permit area, 1:12000 or finer, showing the mapped location of premining native soil. A description of each soil mapping unit that includes, at a minimum, total depth and volume to bedrock, soil horizons, including the O,A,E,B,C, and Cr horizon depths, soil texture, structure, color, reaction and bedrock type and a site index for common native tree species. An approved certified professional soil scientist shall conduct a detailed on-site survey, create the maps, and provide the written description of the soils. As part of the field survey, the soil scientist shall map and certify the slopes that are 50% or less with a confidence level of 2%.

7.4.b.1.A.3.(b). An approved geologist shall create a certified geology map showing the location, depth, and volume of all strata in the mined area, the physical and chemical properties of each stratum to include rock texture, pH, potential acidity and alkalinity, For each stratum proposed as soil medium, the following information shall also be provided: total soluble salts, degree of weathering, extractable levels of phosphorus, potassium, calcium, magnesium, manganese, and iron and other properties required by the Secretary to select best available materials for mine soils.

7.4.b.1.A.3.(c) A description of the present soils and soil substitutes to be used as the plant medium and the proposed handling, and placement of these materials. The handling plan shall include procedures to:

7.4.b.1.A.3.(c)(1) Protect native soil organisms and the native seed pool;

7.4.b.1.A.3.(c)(2) Include organic debris such as litter, branches, small logs, roots, and stumps in the soil;

7.4.b.1.A.3.(c)(3) Inoculate the mine soil with native soil organisms;

7.4.b.1.A.3.(c)(4) Increase soil fertility; and

7.4.b.1.A.3.(c)(5) Encourage plant succession.

7.4.b.1.A.3.(d). A surface preparation plan which includes a description of the methods for replacing and grading the soil and other soil substitutes and their preparation for seeding and tree planting.

7.4.b.1.A.3.(e). Liming and fertilization plans.

7.4.b.1.A.3.(f). Mulching type, rates and procedures.

7.4.b.1.A.3.(g). Species seeding rates and procedures for application of perennial and annual herbaceous, shrub, and vine plant materials for ground cover.

7.4.b.1.A.3.(h). A tree planting prescription to establish commercial forestry and forestry, to include species, stems per acre, planting mixes, and site-specific arrangements to maximize productivity.

7.4.b.1.A.4. A long-term management plan shall be developed by a West Virginia registered professional forester. The plan shall include:

7.4.b.1.A.4.(a). A topographic map, with a minimum scale of 1:12000 shall be used to show the boundaries and extent of the proposed surface mining operation, the boundaries of areas being planned for commercial forestry and forestry land uses, and the proposed postmining surface configuration, stream drainages and wetlands, and the plant species mix that will be planted in each area.

7.4.b.1.A.4.(b). A proposed schedule of all silvicultural activities necessary to develop the forest resources for commercial forestry and forestry.

7.4.b.1.A.4.(c). A description of activities necessary to protect the forest resources from vandalism, wildfire, insects, diseases, exotic organisms and herbivory detrimental to long-term success.

7.4.b.1.A.4.(d). A plan to assure forest access for future management, protection, and eventual utilization of the forest resources. The plan shall be developed to minimize adverse environmental impacts, including additional road building and other land disturbances. Forestry best management practices shall be followed.

7.4.b.1.A.4.(e). A plan for using forestry best management practices to minimize silvicultural and harvesting impacts on the permit area and on waters of the state. Best Management Practices shall be sufficient to assure compliance with applicable state and federal water quality standards.

7.4.b.1.A.5. A signed statement from the permittee containing financial information and data sufficient to demonstrate:

7.4.b.1.A.5.(a). That achieving the commercial forestry use is practicable with respect to the private financial capability necessary to achieve the use; and

7.4.b.1.A.5.(b). That the commercial forestry use will be obtainable according to data regarding expected need and market.

7.4.b.1.A.6. Two copies of the planting plan, management plan, pertinent maps and statement of intent shall be submitted to the appropriate Division of Forestry District Forester and two copies of each plan shall be submitted to the Secretary of the Department of Environmental Protection.

7.4.b.1.B. Oversight Procedures for Achieving Commercial Forestry and Forestry.

7.4.b.1.B.1. Before approving a commercial forestry and forestry reclamation plan, the Secretary shall assure that the planting plan, long-term management plan, and statement of intent are reviewed and approved by a registered professional forester employed either by the West Virginia Division of Forestry or the Secretary of the Department of Environmental Protection and that a professional soil scientist employed by the Secretary reviews and field verifies the soil slope and sandstone mapping. Before approving the reclamation plan, the Secretary shall assure that the reviewing forester has made site-specific written findings adequately addressing each of the elements of the plans and statements. The

reviewing forester and soil scientist shall make these findings within 45 days of receipt of the plans and maps.

7.4.b.1.B.2. If after reviewing the plans, the reviewing forester and soil scientist find that the plans and statements comply with the requirements of this land use, they shall prepare written findings stating the basis of approval. A copy of the findings shall be sent to the Secretary and to the surface mining permit supervisor for the region in which the permit is located. The written findings shall be made part of the facts and findings section of the surface mining permit application file. The Secretary shall assure that the plans and statements comply with the requirements of this rule and other provisions of the approved state surface mining program.

7.4.b.1.B.3. If the reviewing forester finds the plans to be insufficient, the forester shall either:

7.4.b.1.B.3.(a). Contact the preparing forester or the permittee and provide the permittee with an opportunity to make the changes necessary to bring the reclamation plan into compliance with the regulations, or

7.4.b.1.B.3.(b). Notify the Secretary that the reclamation plan does not meet the requirements of the regulations. The Secretary may not approve the surface mining permit until finding that the reclamation plans satisfy all of the requirements of the regulations.

7.4.b.1.C. Landscape Criteria.

7.4.b.1.C.1. For commercial forestry areas, the Secretary shall assure that the postmining landscape is rolling, and diverse. The backfill on the mine bench shall be configured to create a postmining topography that includes the principles of land forming (e.g., the creation of swales) to reflect the premining irregularities in the land. Postmining landform shall provide a rolling topography with slopes between 5% and 20% with an average slope of 10% to 15%. The elevation change between the ridgeline and the valleys shall be varied. The slope lengths shall not exceed 500 feet. The minimum thickness of backfill, including mine soil, placed on the pavement of the basal seam mined in any particular area shall be ten (10) feet.

7.4.b.1.C.2. For commercial forestry areas, the surface pattern shall contain watersheds of various sizes, shall exhibit a dendritic drainage pattern that simulates the premining pattern, and shall include the drainage channels, sediment control or other water retention surfaces, which shall remain on the site after bond release.

7.4.b.1.C.3. For commercial forestry areas, where drainage channel design criteria do not mandate erosion control materials, and in other drainage areas where applicable, bioengineering techniques such as fascines, branch packings, live crib walls, and plantings of native herbs and shrubs appropriate for the site shall be used, to the extent possible, to increase the site biodiversity. Only native stone shall be used for erosion control.

7.4.b.1.C.4. For commercial forestry areas, at least 3 ponds, permanent impoundments or wetlands totaling at least 3.0 acres shall be created on each 200 acres of commercial forestry area. They shall be dispersed throughout the landscape and each water body shall be no smaller than 0.20 acres. All ponds, permanent impoundments or wetlands shall be subject to the requirements of subsection 5.5 of this rule, and shall be left in place after final bond

release. The substrate of the ponds and wetlands must be capable of retaining water to support aquatic and littoral vegetation.

7.4.b.1.C.5. For forestry areas, all ponds and impoundments, except for ponds and impoundments located below the valley fills created during mining shall be left in place after bond release. Any pond or impoundment left in place is subject to requirements under subsection 5.5 of this rule. The substrate of the ponds and wetlands must be capable of retaining water to support aquatic and littoral vegetation.

7.4.b.1.C.6. Before Phase III bond release may be approved, the ponds, permanent impoundments or wetlands used to satisfy parts 7.4.d.1.C.4 and 5 of this rule shall be vegetated on the perimeter with at least six native herbaceous species typical of the region at the density of not less than 1 plant per linear foot of edge, and at least 4 native shrub species at a density of not less than 1 shrub per 6 linear feet of edge. No species of herbaceous or shrub species shall be less than 15% of the total for its life form. This requirement may be met by planted vegetation or that which naturally colonizes the site.

7.4.b.1.C.7. The landscape criteria in parts 7.4.b.1.C.1, 2, 3, 4, 5, and 6 above do not apply to valley fills.

7.4.b.1.D. Soil and Soil Substitutes.

7.4.b.1.D.1. Soil is defined as and shall consist of the O, A, E, B, C and Cr horizons. O horizon means the top-most horizon or layer of soil dominated by organic material derived from dead plants and animals at various stages of decomposition; it is sometimes referred to as the duff or litter layer or the forest floor. Cr horizon means the horizon or layer below the C horizon, consisting of weathered or soft bedrock including saprolite or partly consolidated soft sandstone, siltstone, or shale.

7.4.b.1.D.2. The Secretary shall require the operator to recover and use the soil volume equal to the total soil volume on the mined area, as shown on the soil maps and survey except for those areas with a slope of at least 50%. The Secretary shall assure that all saved soil includes all of the material from the O through Cr horizons.

7.4.b.1.D.3. When the soil volume recovered in part 7.4.b.1.D.2. above is insufficient to meet the depth requirements, selected overburden materials may be used as soil substitutes. In such cases, the Secretary shall require the operator to recover and use all of the weathered, slightly acid brown sandstone from within ten (10) feet of the soil surface on the mined area. This weathered, slightly acid, brown sandstone material may contain or be supplemented with up to 25% by-volume weathered, slightly acid brown shale or siltstone from within ten (10) feet of the soil surface. Material from this layer may be removed with the soil and mixed with the soil in order to meet the depth requirement. Provided, that once the operator has recovered material sufficient to meet the depth requirements, it may cease recovering such material.

7.4.b.1.D.4. When the materials described in parts 7.4.b.1.D.2 and 3 of this rule are insufficient to meet the depth requirements, then the Secretary shall require the operator to recover and use all of the weathered, slightly acid, brown sandstone from below ten feet of the soil surface on the mined area. Provided, that once the operator has recovered material sufficient to meet the depth requirements, it may cease recovering such material.

7.4.b.1.D.5. If the applicant affirmatively demonstrates that the materials described in parts 7.4.b.1.D.2, 3, and 4 of this rule within the mined area are insufficient to meet the depth requirements, then up to 2/3 of the mine soil may consist of the best available material or mix of materials.

7.4.b.1.D.6. Before approving the use of soil substitutes, the Secretary shall require the permittee to demonstrate that the selected overburden material is suitable for restoring land capability and productivity and is in accordance with 14.3.c of this rule. This will be demonstrated by the results of chemical and physical analyses that show that this material is at least 75% sandstone, has at least 15% fines (<2mm), has a net acid-base accounting between -3 and +3 calcium carbonate equivalent per 1000 tons of material excluding siderite effects, a soluble salt level less than 1.0 mmhos/cm, to result in a long-term equilibrium pH of between 5.0 and 6.5 and additional analyses as the Secretary deems necessary. If this spoil is made up of strongly contrasting materials with respect to acid/base accounting these materials shall be blended.

7.4.b.1.D.7. The mine soils shall be distributed across the disturbed areas, except the faces of valley fills, in a uniform and consistent mix.

7.4.b.1.D.8. For commercial forestry areas, the final surface material used as the planting and growth medium (hereinafter referred to as commercial forestry mine soil) shall consist of a minimum of four feet, and an average of at least five feet, of soil or a mixture of materials consisting of no less than one-third soil and two-thirds of the materials described in parts 7.4.b.1.D.3. and 4. of this rule.

7.4.b.1.D.9. For forestry areas, the final surface material used as the planting and growth medium (forestry mine soil) shall consist of a minimum of 4 feet of soil, or a mixture of soil and suitable soil substitutes described in parts 7.4.b.1.D.4 through 6 of this rule.

7.4.b.1.D.10. Commercial forestry mine soil shall be placed on that portion of the mined area which receives an AOC variance. For a proposed mine permit area or any specifically defined segment of the proposed permit area that does not satisfy the volumetric criteria for AOC, an AOC variance shall be required. In order to define the portion of the permit classified as AOC-compliant or AOC-variant, the permit may be divided into segments. The number of segments shall not exceed the number of excess spoil disposal areas proposed and each segment shall include at least one associated fill. In no event will there be more variance segments than there are excess spoil disposal areas on the permit area. For each segment, the AOC status shall be defined as complying with AOC if that segment meets the backfill volume, valley fill design, backfill inflection point tests and other criteria as described in the AOC policy adopted by the Secretary.

7.4.b.1.D.11. Forestry mine soil shall, at a minimum, be placed on all areas achieving AOC except for Valley fill faces.

7.4.b.1.D.12. If the applicant does not demonstrate that there is sufficient material available on the permit area to satisfy the requirements of subparagraph 7.4.d.1.D., then the Secretary may not authorize this post mining land use.

7.4.b.1.D.13. The Secretary shall require the operator to include, as part of the commercial forestry and forestry mine soil mix, organic debris such as forest litter, branches, small logs, roots and stumps in the soil to help reseed and resprout the native vegetation,

inoculate the mine soil with native soil organisms, increase soil fertility, and encourage plant succession.

7.4.b.1.D.14. The Secretary shall require that soil be removed and re-applied in a manner that minimizes stockpiling to protect seed pools and soil organisms. Only soil removed from the mined area during the one-year period immediately following commencement of soil removal may be placed in a long-term stockpile. Except for soil in a long-term stockpile, soil redistribution shall be done within six months of soil removal. Except for soil in a long-term stockpile, soil shall be stored for less than six months in piles less than six feet high and 24 feet wide in a stable area within the permit area where it will not be disturbed and will be protected from water or wind erosion or contaminants that lessen its capability to support vegetation. Long-term stockpiles shall be seeded with the legumes specified in the ground cover mixes used for reforestation (part 7.4.d.1.G.1. of this rule).

7.4.b.1.E. Soil Placement and Grading.

7.4.b.1.E.1. The Secretary shall require the permittee to place mine soil loosely and in a non-compacted manner while meeting static safety factor requirements. Mine soil shall be graded only when necessary to maintain stability or on slopes greater than 20% unless otherwise approved by the Secretary. Grading shall be minimized to reduce compaction. When grading is approved by the Secretary, only light grading equipment may be used to grade the tops off the piles, roughly leveling the area with no more than one or two passes. Tracking in and rubber-tired equipment shall not be used. Non-permanent roads, equipment yards, and other trafficked areas shall be deep-ripped (24" to 36") to mitigate compaction and to allow these areas to be restored to productive commercial forestry. Soil physical quality shall be inadequate if it inhibits water infiltration or prevents root penetration or if their physical properties or water-supplying capacities cause them to restrict root growth of trees common to the area. Slopes greater than 50% shall be compacted no more than is necessary to achieve stability and non-erodability.

7.4.b.1.E.2. The Secretary shall require the permittee to leave soil surfaces rough with random depressions across the entire surface to catch seed and sediment, conserve soil water, and promote revegetation. Organic debris such as forest litter, logs, and stumps shall be left on and in the soil.

7.4.b.1.F. Liming and Fertilizing.

7.4.b.1.F.1. The Secretary shall require the permittee to apply lime where the average soil pH is less than 5.5. Lime rates will be used to achieve a uniform soil pH of 6.0. An alternate maximum or minimum soil pH may be approved, however, based on the optimum pH for the forest revegetation species. Soil pH may vary from 4.5 to a maximum of 7.0 from place to place across the reclaimed area with no more than 10% of the site below pH 5.0 and/or no more than 10% of the site above pH 6.5. Low and high pH levels may be approved only when tree species tolerant of the pH range have been approved for planting.

7.4.b.1.F.2. The Secretary shall require the permittee to fertilize based on the needs of trees and ground cover vegetation. The permittee shall apply up to 300 pounds/acre of diammonium phosphate (18-46-0) and up to 100 pounds/acre potassium sulfate (0-0-52) with the ground cover seeding. Other fertilizer materials and rates may be used only if the Secretary finds that the substitutions are appropriate based on soil tests performed by state certified laboratories.

7.4.b.1.G. Ground Cover Vegetation.

7.4.b.1.G.1. The Secretary shall require the permittee to establish a temporary erosion control vegetative cover as contemporaneously as practicable with backfilling and grading until a permanent tree cover can be established. This cover shall consist of a combination of native and domesticated non-competitive and non-invasive cool and warm season grasses and other herbaceous vine or shrub species including legume species and ericaceous shrubs. All species shall be slow growing, tolerant of low pH, and compatible with tree establishment and growth. The ground cover vegetation shall be capable of stabilizing the soil from excessive erosion, but it should be minimized to control tree-damaging rodent population, and allow the establishment and unrestricted growth of native herbaceous plants and trees. Seeding rates and composition must be in the planting plan. The following ground cover mix and seeding rates (pounds/acre) shall be used: winter wheat (15 lbs/acre, fall seeding), foxtail millet (5 lbs/acre, summer seeding), redtop (2 lbs/acre), perennial ryegrass (2 lbs/acre), orchard grass (5 lbs/acre), weeping lovegrass (2 lbs/acre) kobe lespedeza (5 lbs/acre), birdsfoot trefoil (10 lbs/acre), and white clover (3 lbs/acre). Kentucky-31 fescue, sericia lespedeza, all vetches, clovers (except ladino and white clover) and other aggressive or invasive species shall not be used. South- and west-facing slopes with a soil pH of 6.0 or greater, the four grasses in the mixture shall be replaced with 20 lbs/acre of warm-season grasses consisting of the following species: Niagara big bluestem (5 lbs/acre), Camper little bluestem (2 lbs/acre), Indian grass (2 lbs/acre), and Shelter switch grass (1 lb/acre), or other varieties of these species approved by the Secretary. Also, a selection of at least 3 native shrub species native of the area shall be included in the ground cover mix. Provided, that on slopes less than 20%, the Secretary may approve lesser or no vegetative cover when tree growth and productivity will be enhanced and sedimentation will not result. Lesser or no vegetative cover may only be authorized by the Secretary when mulch or other soil stabilizing practices have been used to protect all disturbed areas unless demonstrated that the reduced cover is sufficient to control erosion and air pollution attendant to erosion regardless of slope.

7.4.b.1.G.2. All mixes shall be compatible with the plant and animal species of the region and the commercial forestry use. The Secretary shall require the use of a variety of site-specific ground cover treatments so that different ground cover treatments are used on different parts of the reclamation area to add biodiversity and landscape mosaic to the overall plan.

7.4.b.1.G.3. The permittee may regrade and reseed only those rills and gullies that are unstable and/or disrupt the approved postmining land use or the establishment of vegetative cover or cause or contribute to a violation of the water quality standards for the receiving stream.

7.4.b.1.H. Tree Species and Compositions.

7.4.b.1.H.1. Commercial tree and nurse tree species selection shall be based on site-specific characteristics and long-term goals outlined in the forest management plan and approved by a registered professional forester. For commercial forestry areas, the Secretary shall assure that all areas suitable for hardwoods are planted with native hardwoods at a rate of 500 seedlings per acre in continuous mixtures across the permitted area with at least six (6) species from the following list: white oak, chestnut oak, northern red oak, black oak, white ash, yellow-poplar, basswood, cucumber magnolia, black walnut, sugar maple, black cherry, or native hickories. For forestry areas, the Secretary shall assure that all areas suitable for hardwoods are

planted with native hardwoods at a rate of 450 seedlings per acre in continuous mixtures across the permitted area with at least three (3) or four (4) species from the following list white oak, chestnut oak, northern red oak, black oak, white ash, yellow-poplar, basswood, cucumber magnolia, black walnut, sugar maple, black cherry, or native hickories.

7.4.b.1.H.2. For commercial forestry areas, each of the species shall be not less than 10% of the total planted composition and at least 75% of the total planted woody plant composition shall be from the list of species in part 7.4.b.1.H.1. Species shall be selected based on their compatibility and expected site-specific long-term dynamics. For forestry, if only three species from the above list are planted, then each of the species shall be not less than 20% of the total planted composition. If four species from the list in part 7.4.b.1.H.1. are planted, then each of the species shall be not less than 15% of the total planted composition. Species shall be selected based on their compatibility and expected site-specific long-term dynamics.

7.4.b.1.H.3. Between 5% and 10% of the required number of woody plants shall be a planted in a continuous mix of three or more nurse tree and shrub species that improve soil quality and habitat for wildlife. They shall consist of black alder, black locust, bristley locust, redbud, or bi-color lespedeza or other non-invasive, native nurse tree or shrub species, approved by the Secretary. One to five acres within each 100 acres of the permit area shall be left unplanted with trees, but left with ponds, wetlands or ground cover vegetation only. These areas may be continuous or divided into 2-4 separate parcels, each at least 0.25 acres large.

7.4.b.1.H.4. On areas unsuitable for hardwoods, the Secretary may authorize the following conifers: Virginia pine, red pine, white pine, pitch pine, or pitch x loblolly hybrid pine. Areas unsuitable for hardwoods shall be limited to southwest-facing slopes greater than 10% or areas where the soil pH is less than 5.5. These conifers shall be planted as single-species stands less than 10 acres in size at the same rate as the hardwood requirements in part 7.4.b.1.H.1 of this rule. The Secretary shall assure that no reclaimed area of the permit area contains a total of more than 15% conifers.

7.4.b.1.H.5. The Secretary shall assure that the specific species and selection of trees and shrubs shall be based on the suitability of the planting site for each species' site requirements based on soil type, degree of compaction, ground cover, competition, topographic position, and aspect.

7.4.b.1.H.6. For commercial forestry areas only, in addition to the trees and shrubs required in the sections above, 2-0 white pine seedlings shall be planted across all sites at a rate of 5 to 10 trees per acre. These trees will be used for the productivity check required for Phase III bond release.

7.4.b.1.I. Standards of Success.

7.4.b.1.I.1. The Secretary shall assure the ability of the commercial forestry and forestry areas to produce a high-quality commercial forest by confirming, after on-site soil testing, that the mine soil selection, placement, and preparation criteria in parts 7.4.d.1.D.7 through 11 of this rule are met before Phase I bond release may occur. Before approving Phase I bond release, a professional soil scientist shall certify, and the Secretary shall make a written finding that the mine soil meets these criteria.

7.4.b.1.I.2. The Secretary shall not authorize Phase II bond release for commercial forestry before the end of the fifth tree growing season. The Secretary may approve

Phase II bond release only if the tree survival is equal to or greater than 300 commercial trees per acre (80% of which must be commercial hardwood species listed in part 7.4.b.1.H.1 of this rule) or the rate specified in the forest management plan, whichever is greater. For forestry, Phase II bond release may be granted by the Secretary at the end of the second growing season only if the tree survival is equal to or greater than 300 trees per acre, 60% of which must be commercial hardwood species listed in part 7.4.b.1.H.1 of this rule, or the rate specified in the forest management plan, whichever is greater. Furthermore, for both commercial forestry and forestry areas, there shall be 70% ground cover where ground cover includes tree canopy, shrub and herbaceous cover, and organic litter, except where a lesser vegetation cover has been authorized, and at least 80% of all trees and shrubs used to determine re-vegetation success must have been in place for at least 60% of the applicable minimum period of responsibility. Trees and shrubs counted in determining such success shall be healthy and shall have been in place for not less than two growing seasons with no evidence of die back.

7.4.b.1.I.3. The Secretary may approve Phase III bond release for commercial forestry and forestry areas only if all criteria for Phase II bond release in part 7.4.b.1.I.2 of this rule are still being met at the time Phase III bond release is considered. For forestry areas, Phase III bond release may not be authorized until at least five growing seasons have passed since the trees were planted. Above and beyond all other standards in effect, for commercial forestry areas, phase III bond release may not be authorized unless commercial forest productivity has been achieved by the end of the twelfth growing season or, if such productivity has not been achieved, if a commercial forestry mitigation plan is submitted to the Secretary, approved and completed. Commercial forest productivity is achieved only when annual height increments of the white pine indicator species, based on the average of four or more consecutive annual height increments, is equal to or greater than 1.5 feet. The Secretary shall measure the average four-year growth increment of all trees along two perpendicular transects across the site that will achieve a tree sample size of no less than two trees per acre.

7.4.b.1.I.4. A commercial forestry mitigation plan shall require a permittee who has not achieved commercial forestry productivity requirements by the end of the twelfth growing season to either pay to the Special Reclamation Fund an amount equal to twice the remaining bond amount or to perform an equivalent amount of in-kind mitigation. The Secretary shall use any money collected under this plan to establish forests on bond forfeiture sites. In-kind mitigation requires establishing forests on AML or bond forfeiture sites. After completion of the mitigation plan, Phase III bond release may be approved if the Secretary finds that the failure to achieve productivity did not result from a failure to follow the provisions of this rule did not result in environmental damage and the site meets the standards of 9.3.h of this rule.

7.4.b.1.I.5. The Secretary may release all or part of the bond for the commercial forestry and forestry variance or increment thereof in accordance with this subsection and 38-2-12.2.d. and 12.2.e. of this rule. The Secretary may release the variance portion if all appropriate standards have been met without regard to the bonding scheme selected for the permit.

7.4.b.1.J. Front Faces of Valley Fills.

7.4.b.1.J.1. Front faces of valley fills shall be exempt from the requirements of this rule except that:

7.4.b.1.J.1.(a). They shall be graded and compacted no more than is necessary to achieve stability and non-erodability;

7.4.b.1.J.1.(b). The groundcover mixes described in subparagraph 7.4.d.1.G. shall be used unless the Secretary requires a different mixture;

7.4.b.1.J.1.(c). Surface material shall be composed of soil and the materials described in subparagraph 7.4.b.1.D.¹

7.4.b.1.J.1.(c). Kentucky 31 fescue, seresia lespedeza, vetches, clovers (except ladino and white clover) or other invasive species may not be used; and

7.4.b.1.J.2. Although not required by this rule, native, non-invasive trees may be planted on the faces of fills.

7.4.b.1.K. Long-term Monitoring and Adaptive Management. The Secretary shall under-take, with the assistance of the Division of Forestry or other forestry research units, a performance assessment of all Commercial Forestland permits within 10 years of Phase III bond release. Species composition, biodiversity, productivity, carbon capture, wildlife habitat, stream and wetland biota, and hydrologic function will be assessed. Results will be reported, analyzed, interpreted and used as part of an adaptive management program to improve the regulations and guidelines for Commercial Forestland.

¹ The deletion of the words “**Surface material shall be composed of soil and the materials described in subparagraph 7.4.b.1.D**” in old 7.4.1.J.1.(c) was not approved by OSM. Federal Register dated March 2, 2006