

## **405 KAR 16:190. Backfilling and grading.**

RELATES TO: KRS 350.020, 350.093, 350.100, 350.405, 350.410, 350.450, 350.465, 30 C.F.R. Parts 730-733, 735, 816.102-.106, 917, 30 U.S.C. 1253, 1255, 1265

STATUTORY AUTHORITY: KRS Chapter 13A, 350.028, 350.100, 350.465, 30 C.F.R. Parts 730-733, 735, 816.102-.106, 917, 30 U.S.C. 1253, 1255, 1265

### **CERTIFICATION STATEMENT:**

**NECESSITY, FUNCTION, AND CONFORMITY:** KRS Chapter 350 in pertinent part requires the cabinet to promulgate rules and administrative regulations establishing performance standards for protection of people and property, land, water and other natural resources, and aesthetic values, during surface mining activities and for restoration and reclamation of surface areas affected by mining activities. This administrative regulation sets forth requirements for backfilling and grading, including requirements for highwall elimination, return to approximate original contour, timing of backfilling and grading, use of terraces, thick and thin overburden conditions, covering coal and acid and toxic materials, and regrading or stabilizing rills and gullies.

Section 1. Timing of Backfilling and Grading. Backfilling and grading shall be conducted in accordance with the requirements for contemporaneous reclamation as set forth in 405 KAR 16:020.

### **Section 2. General Backfilling and Grading Requirements.**

(1) Except as provided in subsection (9) of this section, all disturbed areas shall be returned to their approximate original contour. All spoil shall be transported, placed in a controlled manner, backfilled, compacted (where advisable to ensure stability or to prevent leaching of toxic materials), and graded to:

- (a) Eliminate all highwalls (except as otherwise provided in Section 7 of this administrative regulation), spoil piles, and depressions (excluding depressions and impoundments approved pursuant to subsection (5) or (6) of this section);
- (b) Ensure a long-term static factor of safety of at least one and three-tenths (1.3) for all portions of the reclaimed land;
- (c) Achieve a postmining slope which does not exceed the angle of repose and which does prevent slides;
- (d) Minimize erosion and adverse effects on surface and ground water both on and off the site; and
- (e) Support the approved postmining land use.

(2) Spoil, except excess spoil disposed of in accordance with 405 KAR 16:130, shall be returned to the excavated areas.

(3) Disposal of coal processing waste and underground development waste in the mined-out area shall be in accordance with 405 KAR 16:140, except that a long-term static safety factor of one and three-tenths (1.3) shall be achieved.

(4) On approval by the cabinet in order to conserve soil moisture, ensure stability, and control erosion on final graded slopes, cut-and-fill terraces may be allowed, if the terraces are compatible with the approved postmining land use and are appropriate substitutes for construction of lower grades on the reclaimed lands. The terraces shall meet the following requirements:

- (a) The width of the individual terrace bench shall not exceed twenty (20) feet, unless specifically approved by the cabinet as necessary for stability, erosion control, or roads included in the approved postmining land use plan.
- (b) The vertical distance between terraces shall be as specified by the cabinet, to prevent excessive erosion and to provide long-term stability.
- (c) The slope of the terrace outslope shall not exceed 1v:2h (fifty (50) percent). Outslopes which exceed 1v:2h (fifty (50) percent) may be approved, if they have a

minimum static safety factor of more than 1.3, provide adequate control over erosion, and closely resemble the surface configuration of the land prior to mining. In no case may highwalls be left as part of terraces.

(d) Culverts and underground rock drains shall be used on the terrace only if approved by the cabinet.

(5) Small depressions may be constructed on backfilled areas, if the depressions:

(a) Are needed to minimize erosion, conserve soil moisture, create or enhance wildlife habitat, or promote vegetation;

(b) Are not disapproved by the cabinet;

(c) Are not substitutes for compliance with approximate original contour requirements;

(d) Do not adversely affect the stability of the backfilled area; and

(e) Are not located on steep-slope outcrops.

(6) Impoundments on backfilled areas may be approved, if the impoundments:

(a) Meet the applicable requirements of 405 KAR 16:060, Section 10 and 405 KAR 16:100;

(b) Are demonstrated, to the satisfaction of the cabinet in the permit application, to have no adverse effect on the stability of the backfilled area;

(c) Are consistent with and suitable for the approved postmining land use;

(d) Are specifically approved by the cabinet in the permit application; and

(e) Are not located on steep-slope outcrops.

(7) All surface mining activities on slopes above twenty (20) degrees, or on lesser slopes that the cabinet defines as steep slopes, shall comply with the requirements of 405 KAR 20:060.

(8) All final grading; preparation of overburden before replacement of topsoil, topsoil substitutes, and topsoil supplements; and placement of topsoil, topsoil substitutes, and topsoil supplements shall be done along the contour to minimize subsequent erosion and instability. If grading, preparation, or placement along the contour is hazardous to equipment operators, then grading, preparation, and placement in a direction other than generally parallel to the contour may be used. In all cases, grading, preparation, or placement shall be conducted in a manner which minimizes erosion and provides a surface for placement of topsoil, topsoil substitutes, and topsoil supplements which will minimize slippage.

(9) The postmining slope may vary from the approximate original contour if approval is obtained from the cabinet for:

(a) The provisions for thin overburden in Section 4 of this administrative regulation;

(b) The provisions for thick overburden in Section 5 of this administrative regulation;

(c) Mountaintop removal operations in accordance with 405 KAR 8:050, Section 4;

(d) A variance from approximate original contour requirements in accordance with 405 KAR 8:050, Section 6; or

(e) Incomplete elimination of highwalls in previously mined areas in accordance with Section 7 of this administrative regulation.

### Section 3. Disposal of Acid-forming, Toxic-forming, and Combustible Materials and Coverage of Coal Seams.

(1) General. Exposed coal seams, acid-forming materials, toxic-forming materials, and combustible materials which are used, produced, or exposed during surface coal mining and reclamation operations shall be handled; disposed of; treated; and covered with nontoxic-forming, nonacid-forming, and noncombustible materials in a manner which:

(a) Minimizes adverse impacts on surface and ground water, minimizes disturbances to the hydrologic balance, and prevents material damage to the hydrologic balance;

(b) Ensures compliance with 405 KAR 16:060;

(c) Prevents sustained combustion;

- (d) Minimizes adverse impacts on plant growth and the approved postmining land use;
- (e) Ensures that the affected area is capable of sustaining sufficient vegetation to meet the revegetation requirements of 405 KAR 16:200; and
- (f) Ensures that the affected area is capable of meeting the postmining land use requirements of 405 KAR 16:210.

(2) Coverage and treatment. All exposed coal seams, acid-forming materials, toxic-forming materials, and combustible materials which are used, produced, or exposed during surface coal mining and reclamation operations shall be covered and treated as necessary to neutralize toxicity, acidity, and combustibility, in order to ensure long-term and short-term compliance with subsection (1) of this section.

(a) All exposed coal seams shall be covered with a minimum of four (4) feet of nontoxic-forming, nonacid-forming, and noncombustible materials. The cabinet shall require thicker amounts of cover, special compaction of cover, treatment, or other measures as necessary to ensure compliance with subsection (1) of this section and to prevent exposure of the coal seams by erosion.

(b) Excluding exposed coal seams, all acid-forming materials, toxic-forming materials, and combustible materials which are used, produced, or exposed during surface coal mining and reclamation operations shall be:

1. Selectively blended with nontoxic-forming, nonacid-forming, and noncombustible materials; treated; or selectively handled, or an appropriate combination of those measures shall be used, as necessary to ensure compliance with subsection (1) of this section; and

2. Covered with a minimum of four (4) feet of nontoxic-forming, nonacid-forming, and noncombustible materials. The cabinet shall require thicker amounts of cover, special compaction of cover, treatment, or other measures as necessary to ensure compliance with subsection (1) of this section and to prevent exposure of the toxic-forming, acid-forming, or combustible materials by erosion. The cabinet may approve lesser amounts of cover, or no cover (other than topsoil, topsoil substitutes, or topsoil supplements), if the applicant demonstrates, to the satisfaction of the cabinet in the permit application, that the lesser amounts are sufficient to ensure compliance with subsection (1) of this section and to maintain coverage of the toxic-forming, acid-forming, and combustible materials;

3. If required or approved by the cabinet, compacted and placed in an environment which minimizes the oxidation potential of the toxic-forming materials, acid-forming materials, and combustible materials; and

4. If required or approved by the cabinet, disposed so as to minimize surface and ground water contact with acid-forming materials, toxic-forming materials, and combustible materials. Water contact may be minimized by the encasement of those materials in low-permeability substances and by the compaction and selective placement of those materials in locations other than surface drainage courses, ground water recharge areas, or areas of significant ground water flow. As an alternative to minimizing contact with surface and ground water and if feasible based on site conditions, the cabinet may allow acid-forming materials, toxic-forming materials, and combustible materials to be placed below the permanent water table.

(3) The cabinet shall require measures in addition to those identified in subsection (2) of this section if necessary to ensure protection of the environment or the health or safety of the public.

#### Section 4. Thin Overburden.

(1) The provisions of this section apply only where the final thickness is less than eight-tenths (0.8) of the initial thickness. Initial thickness is the sum of the overburden

thickness and coal thickness prior to removal of coal. Final thickness is the product of the overburden thickness prior to removal of coal times the bulking factor to be determined for each permit area. The provisions of this section apply only if surface mining activities cannot be carried out to comply with Section 2 of this administrative regulation to achieve the approximate original contour.

(2) In surface mining activities carried out continuously in the same limited pit area for more than one (1) year from the day coal removal operations begin and where the volume of all available spoil and suitable waste materials over the permit area is demonstrated to be insufficient to achieve the approximate original contour of the lands disturbed, surface mining activities shall be conducted to meet, at a minimum, the following standards:

(a) Transport, backfill, and grade, using all available spoil and suitable waste materials from the entire mine area, to attain the lowest practicable stable grade, to achieve a static safety factor of 1.3, and to provide adequate drainage and long-term stability of the regraded areas and cover all acid-forming and toxic-forming materials;

(b) Eliminate highwalls by grading or backfilling to stable slopes not exceeding 1v:2h (fifty (50) percent), or to lesser slopes as the cabinet may specify to reduce erosion, maintain the hydrologic balance, or allow the approved postmining land use;

(c) Transport, backfill, grade, and revegetate in accordance with 405 KAR 16:200, to achieve an ecologically sound land use compatible with the prevailing use in unmined areas surrounding the permit area; and

(d) Transport, backfill, and grade, to ensure impoundments are constructed only if:

1. It has been demonstrated to the cabinet's satisfaction that all requirements of 405 KAR 16:060, 405 KAR 16:070, 405 KAR 16:080, 405 KAR 16:090, 405 KAR 16:100 and 405 KAR 16:110 have been met; and

2. The impoundments have been approved by the cabinet as suitable for the approved postmining land use and as meeting the requirements of this chapter and all other applicable federal and state laws and regulations.

#### Section 5. Thick Overburden.

(1) The provisions of this section apply only where the final thickness is greater than one and two-tenths (1.2) of the initial thickness. Initial thickness is the sum of the overburden thickness and coal thickness prior to removal of coal. Final thickness is the product of the overburden thickness prior to removal of coal times the bulking factor to be determined for each permit area. The provisions of this section apply only if surface mining activities cannot be carried out to comply with Section 2 of this administrative regulation to achieve the approximate original contour.

(2) In surface mining activities where the volume of spoil over the permit area is demonstrated to be more than sufficient to achieve the approximate original contour, surface mining activities shall be conducted to meet, at a minimum, the following standards:

(a) Transport, backfill, and grade all spoil and wastes, not required to achieve the approximate original contour of the permit area, to the lowest practicable grade, to achieve a static factor of safety of one and three-tenths (1.3) and cover all acid-forming and other toxic-forming materials;

(b) Transport, backfill and grade excess spoil and wastes only within the permit area and dispose of those materials in accordance with 405 KAR 16:130;

(c) Transport, backfill, and grade excess spoil and wastes to maintain the hydrologic balance, in accordance with 405 KAR 16:060, 405 KAR 16:070, 405 KAR 16:080, 405 KAR 16:090, 405 KAR 16:100 and 405 KAR 16:110 and to provide long-term stability by preventing slides, erosion and water pollution;

(d) Transport, backfill, grade, and revegetate wastes and excess spoil to achieve an ecologically sound land use approved by the cabinet as compatible with the prevailing

land uses in unmined areas surrounding the permit area;

(e) Eliminate all highwalls and depressions by backfilling with spoil and suitable waste materials; and

(f) Meet the revegetation requirements of 405 KAR 16:200 for all disturbed areas.

Section 6. Regrading or Stabilizing Rills and Gullies. Except as provided in subsections (a) and (b) of this section, if rills or gullies deeper than nine (9) inches form in areas that have been regraded and topsoiled, the rills and gullies shall be filled, graded, or otherwise stabilized and the area reseeded and replanted according to 405 KAR 16:200.

(1) Rills or gullies less than nine (9) inches deep shall be stabilized and the area reseeded and replanted, if the rills or gullies are disruptive to the approved postmining land use or to the establishment of vegetation, may result in additional erosion and sedimentation, or may cause or contribute to the violation of a water quality standard.

(2) Rills and gullies deeper than nine (9) inches need not be filled, regraded, and revegetated if all of the following criteria are met:

(a) They are incised to solid bedrock or are otherwise stable and not likely to further erode;

(b) They are not disruptive to the approved postmining land use or to the establishment of the vegetative cover; and

(c) They neither cause nor contribute to the violation of water quality standards.

Section 7. Remining Previously Mined Areas.

(1) General requirements. Remining operations on previously mined areas, including steep slope areas, that contain a preexisting highwall shall comply with Sections 1 through 6 of this administrative regulation except as provided in this section.

(2) Variances to backfilling and grading requirements for remining operations. The requirements within Section 2(1)(a) of this administrative regulation to completely eliminate highwalls shall apply to remining operations, except for situations in which the volume of all reasonably available spoil is demonstrated, to the satisfaction of the cabinet in the permit application, to be insufficient to completely backfill and eliminate the preexisting or modified highwall. The highwall shall be eliminated to the maximum extent technically practicable in accordance with the following criteria:

(a) All reasonably available spoil shall be used to backfill the area.

(b) The backfill shall be graded to a slope which is compatible with the approved postmining land use and which provides adequate drainage and long-term stability (one and three-tenths (1.3) long-term static factor of safety). The exposed coal seam shall be covered in accordance with Section 3 of this administrative regulation.

(c) Spoil generated or handled by the remining operation shall not be placed on the fill section of any existing or new bench.

(d) Any highwall remnant shall be stable and not pose a hazard to the public health and safety or to the environment. The permittee shall demonstrate, to the satisfaction of the cabinet in the permit application, that the postmining highwall remnant will be stable. If the highwall remnant is determined by the cabinet to be unstable or potentially unstable, the permittee shall perform any corrective measures required by the cabinet to stabilize the highwall remnant.

(e) Spoil placed on the outslope during previous mining operations shall not be disturbed if the disturbance will cause instability of the remaining spoil or otherwise increase the hazard to the public health or safety or to the environment.

(405 KAR 016:190. 8 Ky.R. 1549; eff. 1-6-1983; 10 Ky.R. 818; eff. 4-23-1984; 12 Ky.R. 939; 1322; eff. 2-4-1986; 15 Ky.R. 473; 1080; eff. 12-13-1988; 18 Ky.R. 420; 1872; eff. 11-26-1991; Crt eff. 7-3-2018; Crt eff. 6-10-2025.)