

permit was issued or renewed and will expire.

(3) The date and method by which the permittee was created if the permittee is not an individual.

(4) A listing of all surface and underground coal mining operations showing—

(i) Actual production for the year ending July 31, 1977, attributed to the permittee and the inclusive dates of operation.

(ii) Estimated production for the year ending December 31, 1978, attributed to the permittee and the anticipated dates of operation.

(5) A copy of coal severance tax returns for coal produced during the year ending on July 31, 1977.

(6) A copy of a notice the permittee has published in a local newspaper of general circulation in the area of each mine for which an exemption is sought once a week for two weeks stating—

(i) That an application for a small operator exemption will be filed, which if granted would exempt the operator from certain environmental protection performance standards in the Act;

(ii) The name and address of the permittee;

(iii) The location of the surface coal mining operations to which the exemption will apply; and

(iv) That public comments may be submitted to the Director, Office of Surface Mining Reclamation and Enforcement.

(f) Production from the following operations shall be attributed to the permittee—

(1) All coal produced by operations beneficially owned entirely by the permittee, or controlled by reasons of ownership, direction of the management, or in any other manner by the permittee.

(2) The pro rata share, based upon percentage of beneficial ownership, of coal produced by operations in which the permittee owns more than a 5-percent interest.

(3) All coal produced by persons who own more than 5 percent of the permittee or who directly or indirectly control the permittee by reason of stock ownership, direction of the management or in any other manner.

(4) The pro rata share of coal produced by operations owned or controlled by the person who owns or controls the permittee.

(g) The Director shall grant the request for an exemption if, upon the basis of the request and any State regulatory authority or public comments, or any other information, he finds that—

(1) The permittee has satisfied his burden of proof by demonstrating eligibility for the exemption; and

(2) The exemption will not be inconsistent with State law, regulation or permit terms.

(h) Any person aggrieved by the decision of the Director under this section may appeal within 20 days from receipt of that decision to The Office of Hearing and Appeals under 43 CFR part 4. The Office of Hearings and Appeals and the Secretary shall have the authority to stay the exemption pending the outcome of the appeal.

(i) The exemption shall be effective on the date approved. It shall remain in effect until expiration or renewal of the State permit to which it applies, December 31, 1978, or until revoked, whichever is earlier.

(j) The Director shall revoke the exemption upon finding that the exemption was erroneously issued or that the exempted operation has or will produce more than 100,000 tons of coal per year.

[42 FR 62677, Dec. 13, 1977; 43 FR 2721, Jan. 19, 1978, as amended at 43 FR 5001, Feb. 7, 1978]

PART 715—GENERAL PERFORMANCE STANDARDS

Sec.

- 715.10 Information collection.
- 715.11 General obligations.
- 715.12 Signs and markers.
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- 715.200 Interpretative rules related to general performance standards.

AUTHORITY: Pub. L. 95-87 (30 U.S.C. 1201 *et seq.*).

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SOURCE: 42 FR 62680, Dec. 13, 1977, unless otherwise noted.

§ 715.10 Information collection.

The information collection requirements contained in 30 CFR 715.13(d); 715.17 (b)(1)(v) and (j)(3); 715.18(b) (2) and (6); and 715.19 (b), (c), (d) and (e)(4) have been approved by the Office of Management and Budget under 44 U.S.C. 3507 and assigned clearance number 1029-0007. The information is being collected to meet the performance standards in section 515(b)(2) of P.L. 95-87 and are applicable during the initial regulatory program. This information will be used by OSM in measuring compliance with the performance standards until permanent programs are in effect in the States. The obligation to respond is mandatory.

[47 FR 33685, Aug. 4, 1982]

§ 715.11 General obligations.

(a) *Compliance.* All surface coal mining and reclamation operations conducted on lands where any element of the operations is regulated by a State shall comply with the initial performance standards of this part according to the time schedule specified in § 710.11. Part 717 of this chapter establishes performance standards for surface effects of underground coal mines. Initial regulations regarding the special Initial Performance Standards are established by part 716 of this chapter for—

- (1) Surface coal mining operations on steep slopes;
- (2) Surface coal mining operations involving mountaintop removal;
- (3) Special bituminous coal mines;
- (4) Anthracite surface coal mining operations;
- (5) Surface coal mining operations in Alaska; and
- (6) Surface coal mining operations on prime farmlands.

Where State environmental protection standards are adopted for a specific State because they are more stringent than the standards of parts 715, 716, and 717, they will be published in part 718 of this chapter.

(b) *Authorizations to operate.* A copy of all current permits, licenses, approved plans, or other authorizations to oper-

ate the mine shall be available for inspection at or near the mine site.

(c)(1) *Mine maps.* Any person conducting surface coal mining and reclamation operations on and after May 3, 1978, shall submit two copies of an accurate map of the mine and permit area at a scale of 1:6000 or larger. The map shall show as of May 3, 1978, the lands from which coal has not yet been removed and the lands and structures which have been used or disturbed to facilitate mining. One copy of the mine map shall be submitted to the State regulatory authority and one copy shall be submitted to the Regional Director, OSM, before July 3, 1978.

(2) In addition to the requirements of paragraph (c)(1) of this section, any person who conducted surface coal mining and reclamation operations pursuant to a small operator's exemption shall submit before March 15, 1979, two copies of an accurate map of each mine showing the permit area at a scale of 1:6000 or larger. One copy shall be submitted to the state regulatory authority and one copy to the appropriate Regional Director, OSM. The map shall show as of December 31, 1978 or the expiration date of the exemption (whichever is earlier) the lands from which coal had not yet been removed, the lands and structures which had been used or disturbed to facilitate mining, and the lands which had not been disturbed. The map need not be submitted if these areas have already been shown on mine maps submitted to the state regulatory authority, if a copy is available to the appropriate Regional Director pursuant to paragraph (c)(1) of this section or 30 CFR 720.13(b).

(d) *Indian lands—(1) Mine maps.* Any person conducting surface coal mining and reclamation operations on Indian lands under this part shall submit no fewer than 7 copies of an accurate map of the mine and authorized mining areas at a scale of 1:6000 or larger. The map shall show, as of December 16, 1977, the lands where coal has not yet been removed and the lands and structures that have been used or disturbed to facilitate surface coal mining operations.

(2) *Consultation with tribal governments.* Any requirement in this part for consultation with or notification to

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State and local governments shall be interpreted as requiring, in like manner, consultation with or notification to tribal governments. OSM shall consult with the Bureau of Indian Affairs with respect to special requirements relating to the protection of noncoal resources and with the Bureau of Land Management with respect to the requirements relating to the development, production, and recovery of mineral resources on Indian lands.

[42 FR 62680, Dec. 13, 1977, as amended at 44 FR 6682, Feb. 1, 1979; 59 FR 43419, Aug. 23, 1994]

§715.12 Signs and markers.

(a) *Specifications.* All signs required to be posted shall be of a standard design that can be seen and read easily and shall be made of durable material. The signs and other markers shall be maintained during all operations to which they pertain and shall conform to local ordinances and codes.

(b) *Mine and permit identification signs.* Signs identifying the mine area shall be displayed at all points of access to the permit area from public roads and highways. Signs shall show the name, business address, and telephone number of the permittee and identification numbers of current mining and reclamation permits or other authorizations to operate. Such signs shall not be removed until after release of all bonds.

(c) *Perimeter markers.* The perimeter of the permit area shall be clearly marked by durable and easily recognized markers, or by other means approved by the regulatory authority.

(d) *Buffer zone markers.* Buffer zones as defined in §715.17 shall be marked in a manner consistent with the perimeter markers along the interior boundary of the buffer zone.

(e) *Blasting signs.* If blasting is necessary to conduct surface coal mining operations, signs reading "Blasting Area" shall be displayed conspicuously at the edge of blasting areas along access and haul roads within the mine property. Signs reading "Blasting Area" and explaining the blasting warning and all-clear signals shall be posted at all entrances to the permit area.

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(f) *Topsoil markers.* Where topsoil or other vegetation-supporting material is segregated and stockpiled according to §715.16(c), the stockpiled material shall be marked. Markers shall remain in place until the material is removed.

§715.13 Postmining use of land.

(a) *General.* All disturbed areas shall be restored in a timely manner (1) to conditions that are capable of supporting the uses which they were capable of supporting before any mining, or (2) to higher or better uses achievable under criteria and procedures of paragraph (d) of this section.

(b) *Determining premining use of land.* The premining uses of land to which the postmining land use is compared shall be those uses which the land previously supported if the land had not been previously mined and had been properly managed.

(1) The postmining land use for land that has been previously mined and not reclaimed shall be judged on the basis of the highest and best use that can be achieved and is compatible with surrounding areas.

(2) The postmining land use for land that has received improper management shall be judged on the basis of the premining use of surrounding lands that have received proper management.

(3) If the premining use of the land was changed within 5 years of the beginning of mining, the comparison of postmining use to premining use shall include a comparison with the historic use of the land as well as its use immediately preceding mining.

(c) *Land-use categories.* Land use is categorized in the following groups. Change from one to another land use category in premining to postmining constitutes an alternate land use and the permittee shall meet the requirements of paragraph (d) of this section and all other applicable environmental protection performance standards of this chapter.

(1) *Heavy industry.* Manufacturing facilities, powerplants, airports or similar facilities.

(2) *Light industry and commercial services.* Office buildings, stores, parking facilities, apartment houses, motels, hotels, or similar facilities.

(3) *Public services.* Schools, hospitals, churches, libraries, water-treatment facilities, solid-waste disposal facilities, public parks and recreation facilities, major transmission lines, major pipelines, highways, underground and surface utilities, and other servicing structures and appurtenances.

(4) *Residential.* Single- and multiple-family housing (other than apartment houses) with necessary support facilities. Support facilities may include commercial services incorporated in and comprising less than 5 percent of the total land area of housing capacity, associated open space, and minor vehicle parking and recreation facilities supporting the housing.

(5) *Cropland.* Land used primarily for the production of cultivated and close-growing crops for harvest alone or in association with sod crops. Land used for facilities in support of farming operations are included.

(6) *Rangeland.* Includes rangelands and forest lands which support a cover of herbaceous or scrubby vegetation suitable for grazing or browsing use.

(7) *Hayland or pasture.* Land used primarily for the long-term production of adapted, domesticated forage plants to be grazed by livestock or cut and cured for livestock feed.

(8) *Forest land.* Land with at least a 25 percent tree canopy or land at least 10 percent stocked by forest trees of any size, including land formerly having had such tree cover and that will be naturally or artificially reforested.

(9) *Impoundments of water.* Land used for storing water for beneficial uses such as stock ponds, irrigation, fire protection, recreation, or water supply.

(10) *Fish and wildlife habitat and recreation lands.* Wetlands, fish and wildlife habitat, and areas managed primarily for fish and wildlife or recreation.

(11) *Combined uses.* Any appropriate combination of land uses where one land use is designated as the primary land use and one or more other land uses are designated as secondary land uses.

(d) *Criteria for approving alternative postmining use of land.* An alternative postmining land use shall be approved by the regulatory authority, after consultation with the landowner or the land-management agency having juris-

isdiction over State or Federal lands, if the following criteria are met. Proposals to remove an entire coal seam running through the upper part of a mountain, ridge, or hill must also meet these criteria in addition to the requirements of § 716.3 of this chapter.

(1) The proposed land use is compatible with adjacent land use and, where applicable, with existing local, State or Federal land use policies and plans. A written statement of the views of the authorities with statutory responsibilities for land use policies and plans shall accompany the request for approval. The permittee shall obtain any required approval of local, State or Federal land management agencies, including any necessary zoning or other changes necessarily required for the final land use.

(2) Specific plans have been prepared which show the feasibility of the proposed land use as related to needs, projected land use trends, and markets and that include a schedule showing how the proposed use will be developed and achieved within a reasonable time after mining and be sustained. The regulatory authority may require appropriate demonstrations to show that the planned procedures are feasible, reasonable, and integrated with mining and reclamation, and that the plans will result in successful reclamation.

(3) Provision of any necessary public facilities is assured as evidenced by letters of commitment from parties other than the permittee, as appropriate, to provide them in a manner compatible with the permittee's plans.

(4) Specific and feasible plans for financing attainment and maintenance of the postmining land use including letters of commitment from parties other than the permittee as appropriate, if the postmining land use is to be developed by such parties.

(5) The plans are designed under the general supervision of a registered professional engineer, or other appropriate professional, who will ensure that the plans conform to applicable accepted standards for adequate land stability, drainage, and vegetative cover, and aesthetic design appropriate for the postmining use of the site.

(6) The proposed use or uses will neither present actual or probable hazard

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to public health or safety nor will they pose any actual or probable threat of water flow diminution or pollution.

(7) The use or uses will not involve unreasonable delays in reclamation.

(8) Necessary approval of measures to prevent or mitigate adverse effects on fish and wildlife has been obtained from the regulatory authority and appropriate State and Federal fish and wildlife management agencies.

(9) Proposals to change premining land uses of range, fish and wildlife habitat, forest land, hayland, or pasture to a postmining cropland use, where the cropland would require continuous maintenance such as seeding, plowing, cultivation, fertilization, or other similar practices to be practicable or to comply with applicable Federal, State, and local laws, shall be reviewed by the regulatory authority to assure that—

(i) There is a firm written commitment by the permittee or by the landowner or land manager to provide sufficient crop management after release of applicable performance bonds to assure that the proposed postmining cropland use remains practical and reasonable;

(ii) There is sufficient water available and committed to maintain crop production; and

(iii) Topsoil quality and depth are shown to be sufficient to support the proposed use.

(10) The regulatory authority has provided by public notice not less than 45 days nor more than 60 days for interested citizens and local, State and Federal agencies to review and comment on the proposed land use.

[42 FR 62680, Dec. 13, 1977; 43 FR 2721, Jan. 19, 1978]

§715.14 Backfilling and grading.

In order to achieve the approximate original contour, the permittee shall, except as provided in this section, transport, backfill, compact (where advisable to ensure stability or to prevent leaching of toxic materials), and grade all spoil material to eliminate all highwalls, spoil piles, and depressions. Cut-and-fill terraces may be used only in those situations expressly identified in this section. The postmining graded slopes must approximate the

premining natural slopes in the area as defined in paragraph (a).

(a) *Slope measurements.* (1) To determine the natural slopes of the area before mining, sufficient slopes to adequately represent the land surface configuration, and as approved by the regulatory authority in accordance with site conditions, must be accurately measured and recorded. Each measurement shall consist of an angle of inclination along the prevailing slope extending 100 linear feet above and below or beyond the coal outcrop or the area to be disturbed; or, where this is impractical, at locations specified by the regulatory authority. Where the area has been previously mined, the measurements shall extend at least 100 feet beyond the limits of mining disturbances as determined by the regulatory authority to be representative of the premining configuration of the land. Slope measurements shall take into account natural variations in slope so as to provide accurate representation of the range of natural slopes and shall reflect geomorphic differences of the area to be disturbed. Slope measurements may be made from topographic maps showing contour lines, having sufficient detail and accuracy consistent with the submitted mining and reclamation plan.

(2) After the disturbed area has been graded, the final graded slopes shall be measured at the beginning and end of lines established on the prevailing slope at locations representative of premining slope conditions and approved by the regulatory authority. These measurements must not be made so as to allow unacceptably steep slopes to be constructed.

(b) *Final graded slopes.* (1) The final graded slopes shall not exceed either the approximate premining slopes as determined according to paragraph (a)(1) and approved by the regulatory authority or any lesser slope specified by the regulatory based on consideration of soil, climate, or other characteristics of the surrounding area. Postmining final graded slopes need not be uniform. The requirements of this paragraph may be modified by the regulatory authority where the mining is re-affecting previously mined lands that have not been restored to the

standards of this section and sufficient spoil is not available to return to the slope determined according to paragraph (a)(1). Where such modifications are approved, the permittee shall, as a minimum, be required to—

(i) Retain all overburden and spoil on the solid portion of existing or new benches; and

(ii) Backfill and grade to the most moderate slope possible to eliminate the highwall which does not exceed the angle of repose or such lesser slopes as is necessary to assure stability.

(2) On approval by the regulatory authority and 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 postmining land use approved under § 715.13, and are appropriate substitutes for construction of lower grades on the reclaimed lands. The terraces shall meet the following requirements:

(i) Where specialized grading, foundation conditions, or roads are required for the approved postmining land use, the final grading may include a terrace of adequate width to ensure the safety, stability, and erosion control necessary to implement the postmining land use plan.

(ii) The vertical distance between terraces shall be as specified by the regulatory authority to prevent excessive erosion and to provide long-term stability.

(iii) The slope of the terrace outslope shall not exceed 1v:2h (50 percent). Out-slopes which exceed 1v:2h (50 percent) may be approved if they have a minimum static safety factor of more than 1.5 and 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.

(iv) Culverts and underground rock drains shall be used on the terrace only when approved by the regulatory authority.

(3) All operations on steep slopes of 20 degrees or more or on such lesser slopes as the regulatory authority defines as a steep slope shall meet the provisions of § 716.2 of this chapter.

(c) *Mountaintop removal.* The requirements of this paragraph and of § 716.3

shall apply to surface mining operations which remove entire coal seams in the upper part of a mountain, ridge, or hill by removing all of the overburden, and where the requirements for achieving the approximate original contour of this section cannot be met. Final graded top plateau slopes on the mined area shall be less than 1v:5h so as to create a level plateau or gently rolling configuration and the out-slopes of the plateau shall not exceed 1v:2h, except where engineering data substantiates and the regulatory authority finds that a minimum static safety factor of 1.5 (or higher factors specified by the regulatory authority) will be attained. Although the area need not be restored to approximate original contour, all highwalls, spoil piles, and depressions except as provided in paragraphs (d) and (e) of this section shall be eliminated. All mountaintop removal operations shall in addition meet the provisions of § 716.3 of this chapter.

(d) *Small depressions.* The requirement of this section to achieve approximate original contour does not prohibit construction of small depressions if they are approved by the regulatory authority to minimize erosion, conserve soil moisture or promote revegetation. These depressions shall be compatible with the approved postmining land use and shall not be inappropriate substitutes for construction of lower grades on the reclaimed lands. Depressions approved under this section shall have a holding capacity of less than 1 cubic yard of water or, if it is necessary that they be larger, shall not restrict normal access throughout the area or constitute a hazard. Large, permanent impoundments shall be governed by paragraph (e) of this section and by § 715.17.

(e) *Permanent impoundments.* Permanent impoundments may be retained in mined and reclaimed areas provided all highwalls are eliminated by grading to appropriate contour and the provisions for postmining land use (§ 715.13) and protection of the hydrologic balance (§ 715.17) are met. No impoundments shall be constructed on top of areas in which excess materials are deposited pursuant to § 715.15 of this part. Impoundments shall not be used to meet

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the requirements of paragraph (j) of this section.

(f) *Definition of thin and thick restored overburden.* The thin overburden provisions of paragraph (g) of this section may apply only where the final thickness is less than 0.8 of the initial thickness. The thick overburden provisions of paragraph (h) of this section may apply only where the final thickness is greater than 1.2 of the initial thickness. Initial thickness is the sum of the overburden thickness and coal thickness. Final thickness is the product of the overburden thickness times the bulking factor to be determined for each mine area. The provisions of paragraphs (g) and (h) apply only when operations cannot be carried out to comply with the requirements of paragraph (a) of this section to achieve the approximate original contour.

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

(1) Transport, backfill, and grade, using all available spoil and suitable waste materials from the entire mine area, to attain the lowest practicable stable grade, which may not exceed the angle of repose, and to provide adequate drainage and long-term stability of the regraded areas.

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

(3) Transport, backfill, grade, and revegetate to achieve an ecologically sound land use compatible with the prevailing land use in unmined areas surrounding the permit area.

(4) Transport, backfill, and grade to ensure the impoundments are constructed only where it has been demonstrated to the regulatory authority's satisfaction that all requirements of

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§715.17 have been met and that the impoundments have been approved by the regulatory authority as meeting the requirements of this part and all other applicable Federal and State regulations.

(h) *Thick overburden.* In surface coal mining operations where the volume of spoil is demonstrated to be more than sufficient to achieve the approximate original contour surface coal mining operations shall be conducted to meet at a minimum the following standards:

(1) Transport, backfill, and grade all spoil and wastes not required to achieve approximate original contour in the surface mining area to the lowest practicable grade.

(2) Deposit, backfill, and grade excess spoil and wastes only within the permit area and dispose of such materials in conformance with this part.

(3) Transport, backfill, and grade excess spoil and wastes to maintain the hydrologic balance in accordance with this part and to provide long-term stability.

(4) Transport, backfill, grade, and revegetate wastes and excess spoil to achieve an ecologically sound land use compatible with the prevailing land uses in unmined areas surrounding the permit area.

(5) Eliminate all highwalls and depressions except as stated in paragraph (e) of this section by backfilling with spoil and suitable waste materials.

(i) *Regrading or stabilizing rills and gullies.* When rills or gullies deeper than 9 inches form in areas that have been regraded and the topsoil replaced but vegetation has not yet been established the permittee shall fill, grade, or otherwise stabilize the rills and gullies and reseed or replant the areas according to §715.20. The regulatory authority shall specify that rills or gullies of lesser size be stabilized if the rills or gullies will be disruptive to the approved postmining land use or may result in additional erosion and sedimentation.

(j) *Covering coal and acid-forming, toxic-forming, combustible, and other waste materials; stabilizing backfilled materials; and using waste material for fill—*
(1) *Cover.* All exposed coal seams remaining after mining and any acid-forming, toxic-forming, combustible

materials, or any other waste materials identified by the regulatory authority that are exposed, used, or produced during mining shall be covered with a minimum of 4 feet of nontoxic and noncombustible material; or, if necessary, treated to neutralize toxicity in order to prevent water pollution and sustained combustion, and to minimize adverse effects on plant growth and land uses. Where necessary to protect against upward migration of salts, exposure by erosion, to provide an adequate depth for plant growth, or to otherwise meet local conditions, the regulatory authority shall specify thicker amounts of cover using nontoxic material. Acid-forming or toxic-forming material shall not be buried or stored in proximity to a drainage course so as to cause or pose a threat of water pollution or otherwise violate the provisions of § 715.17 of this part.

(2) *Stabilization.* Backfilled materials shall be selectively placed and compacted wherever necessary to prevent leaching of toxic-forming materials into surface or subsurface waters in accordance with § 715.17 and wherever necessary to ensure the stability of the backfilled materials. The method of compacting material and the design specifications shall be approved by the regulatory authority before the toxic materials are covered.

(3) *Use of waste materials as fill.* Before waste materials from a coal preparation or conversion facility or from other activities conducted outside the permit area such as municipal wastes are used for fill material, it must be demonstrated to the regulatory authority by hydrogeological means and chemical and physical analyses that use of these materials will not adversely affect water quality, water flow, and vegetation; will not present hazards to public health and safety; and will not cause instability in the backfilled area.

(k) *Grading along the contour.* All final grading, preparation of overburden before replacement of topsoil, and placement of topsoil, in accordance with § 715.16, shall be done along the contour to minimize subsequent erosion and instability. If such grading, preparation or placement along the

contour would be hazardous to equipment operators then grading, preparation or 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 replacement of topsoil which will minimize slippage.

[42 FR 62680, Dec. 13, 1977; 43 FR 2721, Jan. 19, 1978, as amended at 47 FR 18553, Apr. 29, 1982]

§ 715.15 Disposal of excess spoil.

(a) *General requirements.* (1) Spoil not required to achieve the approximate original contour within the area where overburden has been removed shall be hauled or conveyed to and placed in designated disposal areas within a permit area, if the disposal areas are authorized for such purposes in the approved permit application in accordance with paragraphs (a) through (d) of this section. The spoil shall be placed in a controlled manner to ensure—

(i) That leachate and surface runoff from the fill will not degrade surface or ground waters or exceed the effluent limitations of § 715.17(a)

(ii) Stability of the fill; and

(iii) That the land mass designated as the disposal area is suitable for reclamation and revegetation compatible with the natural surroundings.

(2) The fill shall be designed using recognized professional standards, certified by a registered professional engineer, and approved by the regulatory authority.

(3) All vegetative and organic materials shall be removed from the disposal area and the topsoil shall be removed, segregated, and stored or replaced under § 715.16. If approved by the regulatory authority, organic material may be used as mulch or may be included in the topsoil to control erosion, promote growth of vegetation, or increase the moisture retention of the soil.

(4) Slope protection shall be provided to minimize surface erosion at the site. Diversion design shall conform with the requirements of § 715.17(c). All disturbed areas, including diversion ditches that are not riprapped, shall be vegetated upon completion of construction.

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(5) The disposal areas shall be located on the most moderately sloping and naturally stable areas available as approved by the regulatory authority. If such placement provides additional stability and prevents mass movement, fill materials suitable for disposal shall be placed upon or above a natural terrace, bench, or berm.

(6) The spoil shall be hauled or conveyed and placed in horizontal lifts in a controlled manner, concurrently compacted as necessary to ensure mass stability and prevent mass movement, covered, and graded to allow surface and subsurface drainage to be compatible with the natural surroundings and ensure a long-term static safety factor of 1.5.

(7) The final configuration of the fill must be suitable for postmining land uses approved in accordance with §715.13, except that no depressions or impoundments shall be allowed on the completed fill.

(8) Terraces may be utilized to control erosion and enhance stability if approved by the regulatory authority and consistent with §715.14(b)(2).

(9) Where the slope in the disposal area exceeds $1v:2.8h$ (36 percent), or such lesser slope as may be designated by the regulatory authority based on local conditions, keyway cuts (excavations to stable bedrock) or rock toe buttresses shall be constructed to stabilize the fill. Where the toe of the spoil rests on a downslope, stability analyses shall be performed to determine the size of rock toe buttresses and key way cuts.

(10) The fill shall be inspected for stability by a registered engineer or other qualified professional specialist experienced in the construction of earth and rockfill embankments at least quarterly throughout construction and during the following critical construction periods: (i) Removal of all organic material and topsoil, (ii) placement of underdrainage systems, (iii) installation of surface drainage systems, (iv) placement and compaction of fill materials, and (v) revegetation. The registered engineer or other qualified professional specialist shall provide to the regulatory authority a certified report within 2 weeks after each inspection that the fill has been constructed as

specified in the design approved by the regulatory authority. A copy of the report shall be retained at the minesite.

(11) Coal processing wastes shall not be disposed of in head-of-hollow or valley fills, and may only be disposed of in other excess spoil fills, if such waste is—

(i) Demonstrated to be nontoxic and nonacid forming; and

(ii) Demonstrated to be consistent with the design stability of the fill.

(12) If the disposal area contains springs, natural or manmade watercourses, or wet-weather seeps, an underdrain system consisting of durable rock shall be constructed from the wet areas in a manner that prevents infiltration of the water into the spoil material. The underdrain system shall be protected by an adequate filter and shall be designed and constructed using standard geotechnical engineering methods.

(13) The foundation and abutments of the fill shall be stable under all conditions of construction and operation. Sufficient foundation investigation and laboratory testing of foundation materials shall be performed in order to determine the design requirements for stability of the foundation. Analyses of foundation conditions shall include the effect of underground mine workings, if any, upon the stability of the structure.

(14) Excess spoil may be returned to underground mine workings, but only in accordance with a disposal program approved by the regulatory authority and MSHA.

(15) Disposal of excess spoil from an upper actively mined bench to a lower pre-existing bench by means of gravity transport is permitted provided that:

(i) The operator receives the prior written approval of the regulatory authority upon demonstration by the operator that the spoil to be disposed of by gravity transport is not necessary for elimination of the highwall and return of the upper bench to approximate original contour;

(ii) The following conditions and performance standards in addition to the environmental performance standards of this part are met:

(A) The highwall of the lower bench intersects (meets) the upper actively

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mined bench with no natural slope between them;

(B) The gravity transport points are determined on a site specific basis by the operator and approved by the regulatory authority to minimize hazards to health and safety and to ensure that damage will be minimized should spoil accidentally move down-slope of the lower bench;

(C) The excess spoil is placed only on solid portions of the lower pre-existing bench;

(D) All excess spoil on the lower solid bench, including that spoil immediately below the gravity transport points, is rehandled and placed in a controlled manner to eliminate as much of the lower highwall as practicable. Rehandling and placing the excess spoil on the lower solid bench shall consist of placing the excess spoil in horizontal lifts in a controlled manner, concurrently compacted as necessary to ensure mass stability and prevent mass movement, and graded to allow surface and subsurface drainage to be compatible with the natural surroundings to ensure a long term static safety factor of 1.3. Spoil on the bench prior to the current mining operation need not be rehandled except to ensure stability of the fill.

(E) A safety berm is constructed on the solid portion of the lower bench prior to gravity transport of the excess spoil. Where there is insufficient material on the lower bench to construct a safety berm, only that amount of spoil necessary for the construction of the berm may be gravity transported to the lower bench prior to construction of the berm. The safety berm must be removed by the operator by final grading operations;

(F) The area of the lower bench used to facilitate the disposal of excess spoil is considered a disturbed area.

(b) *Valley fills.* Valley fills shall meet all of the requirements of paragraph (a) of this section and the additional requirements of this section.

(1) The fill shall be designed to attain a long-term static safety factor of 1.5 based upon data obtained from subsurface exploration, geotechnical testing, foundation design, and accepted engineering analyses.

(2) A subdrainage system for the fill shall be constructed in accordance with the following:

(i) A system of underdrains constructed of durable rock shall meet the requirements of paragraph (2)(iv) of this section and:

(A) Be installed along the natural drainage system;

(B) Extend from the toe to the head of the fill; and

(C) Contain lateral drains to each area of potential drainage or seepage.

(ii) A filter system to insure the proper functioning of the rock underdrain system shall be designed and constructed using standard geotechnical engineering methods.

(iii) In constructing the underdrains, no more than 10 percent of the rock may be less than 12 inches in size and no single rock may be larger than 25 percent of the width of the drain. Rock used in underdrains shall meet the requirements of paragraph (2)(iv) of this section. The minimum size of the main underdrain shall be:

Total amount of fill material	Predominant type of fill material	Minimum size of drain, in feet	
		Width	Height
Less than 1,000,000 yd ³	Sandstone	10	4
	Shale	16	8
More than 1,000,000 yd ³	Sandstone	16	8
	Shale	16	16

(iv) Underdrains shall consist of non-degradable, non-acid or toxic forming rock such as natural sand and gravel, sandstone, limestone, or other durable rock that will not slake in water and will be free of coal, clay or shale.

(3) Spoil shall be hauled or conveyed and placed in a controlled manner and concurrently compacted as specified by the regulatory authority, in lifts no greater than 4 feet or less if required by the regulatory authority to—

(i) Achieve the densities designed to ensure mass stability;

(ii) Prevent mass movement;

(iii) Avoid contamination of the rock underdrain or rock core; and

(iv) Prevent formation of voids.

(4) Surface water runoff from the area above the fill shall be diverted away from the fill and into stabilized diversion channels designed to pass safely the runoff from a 100-year, 24-hour precipitation event or larger

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event specified by the regulatory authority. Surface runoff from the fill surface shall be diverted to stabilized channels off the fill which will safely pass the runoff from a 100-year, 24-hour precipitation event. Diversion design shall comply with the requirements of §715.17(c).

(5) The tops of the fill and any terrace constructed to stabilize the face shall be graded no steeper than 1v:20h (5 percent). The vertical distance between terraces shall not exceed 50 feet.

(6) Drainage shall not be directed over the outslope of the fill.

(7) The outslope of the fill shall not exceed 1v:2h (50 percent). The regulatory authority may require a flatter slope.

(c) *Head-of-hollow fills.* Disposal of spoil in the head-of-hollow fill shall meet all standards set forth in paragraphs (a) and (b) and the additional requirements of this section.

(1) The fill shall be designed to completely fill the disposal site to the approximate elevation of the ridgeline. A rock-core chimney drain may be utilized instead of the subdrain and surface diversion system required for valley fills. If the crest of the fill is not approximately at the same elevation as the low point of the adjacent ridgeline, the fill must be designed as specified in paragraph (b), with diversion of runoff around the fill. A fill associated with contour mining and placed at or near the coal seam, and which does not exceed 250,000 cubic yards may use the rock-core chimney drain.

(2) The alternative rock-core chimney drain system shall be designed and incorporated into the construction of head-of-hollow fills as follows:

(i) The fill shall have, along the vertical projection of the main buried stream channel or rill a vertical core of durable rock at least 16 feet thick which shall extend from the toe of the fill to the head of the fill, and from the base of the fill to the surface of the fill. A system of lateral rock underdrains shall connect this rock core to each area of potential drainage or seepage in the disposal area. Rocks used in the rock core and underdrains shall meet the requirements of paragraph (b)(2)(iv).

(ii) A filter system to ensure the proper functioning of the rock core shall be designed and constructed using standard geotechnical engineering methods.

(iii) The grading may drain surface water away from the outslope of the fill and toward the rock core. The maximum slope of the top of the fill shall be 1v:33h (3 percent). Instead of the requirements of paragraph (a)(7) of this section, a drainage pocket may be maintained at the head of the fill during and after construction, to intercept surface runoff and discharge the runoff through or over the rock drain, if stability of the fill is not impaired. In no case shall this pocket or sump have a potential for impounding more than 10,000 cubic feet of water. Terraces on the fill shall be graded with a 3- to 5-percent grade toward the fill and a 1-percent slope toward the rock core.

(3) The drainage control system shall be capable of passing safely the runoff from a 100-year, 24-hour precipitation event, or larger event specified by the regulatory authority.

(d) *Durable rock fills.* In lieu of the requirements of paragraphs (b) and (c) of this section the regulatory authority may approve alternate methods for disposal of hard rock spoil, including fill placement by dumping in a single lift, on a site specific basis, provided the services of a registered professional engineer experienced in the design and construction of earth and rockfill embankments are utilized and provided the requirements of this paragraph and paragraph (a) are met. For this section, hard rock spoil shall be defined as rockfill consisting of at least 80 percent by volume of sandstone, limestone, or other rocks that do not slake in water. Resistance of the hard rock spoil to slaking shall be determined by using the slake index and slake durability tests in accordance with guidelines and criteria established by the regulatory authority.

(1) Spoil is to be transported and placed in a specified and controlled manner which will ensure stability of the fill.

(i) The method of spoil placement shall be designed to ensure mass stability and prevent mass movement in

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accordance with the additional requirements of this section.

(ii) Loads of noncemented clay shale and/or clay spoil in the fill shall be mixed with hard rock spoil in a controlled manner to limit on a unit basis concentrations of noncemented clay shale and clay in the fill. Such materials shall comprise no more than 20 percent of the fill volume as determined by tests performed by a registered engineer and approved by the regulatory authority.

(2)(i) Stability analyses shall be made by the registered professional engineer. Parameters used in the stability analyses shall be based on adequate field reconnaissance, subsurface investigations, including borings, and laboratory tests.

(ii) The embankment which constitutes the valley fill or head-of-hollow fill shall be designed with the following factors of safety:

Case	Design condition	Minimum factor of safety
I	End of construction	1.5
II	Earthquake	1.1

(3) The design of a head-of-hollow fill shall include an internal drainage system which will ensure continued free drainage of anticipated seepage from precipitation and from springs or wet weather seeps.

(i) Anticipated discharge from springs and seeps and due to precipitation shall be based on records and/or field investigations to determine seasonal variation. The design of the internal drainage system shall be based on the maximum anticipated discharge.

(ii) All granular material used for the drainage system shall be free of clay and consist of durable particles such as natural sands and gravels, sandstone, limestone or other durable rock which will not slake in water.

(iii) The internal drain shall be protected by a properly designed filter system.

(4) Surface water runoff from the areas adjacent to and above the fill shall not be allowed to flow onto the fill and shall be diverted into stabilized channels which are designed to pass safely the runoff from a 100-year, 24-

hour precipitation event. Diversion design shall comply with the requirements of §715.17(c).

(5) The top surface of the completed fill shall be graded such that the final slope after settlement will be no steeper than 1v:20h (5 percent) toward properly designed drainage channels in natural ground along the periphery of the fill. Surface runoff from the top surface of the fill shall not be allowed to flow over the outslope of the fill.

(6) Surface runoff from the outslope of the fill shall be diverted off the fill to properly designed channels which will pass safely a 100-year, 24-hour precipitation event. Diversion design shall comply with the requirements of §715.17(c).

(7) Terraces shall be constructed on the outslope if required for control of erosion or for roads included in the approved postmining land use plan. Terraces shall meet the following requirements:

(i) The slope of the outslope between terrace benches shall not exceed 1v:2h (50 percent.).

(ii) To control surface runoff, each terrace bench shall be graded to a slope of 1v:20h (5 percent) toward the embankment. Runoff shall be collected by a ditch along the intersection of each terrace bench and the outslope.

(iii) Terrace ditches shall have a 5-percent slope toward the channels specified in paragraph (d)(6) of this section, unless steeper slopes are necessary in conjunction with approved roads.

(e) *Preexisting benches.* (1) The regulatory authority may approve the disposal of excess spoil through placement on preexisting benches: *Provided*, That the standards set forth in paragraphs (a)(1)–(a)(5) and (a)(7)–(a)(14) of this section and the requirements of this paragraph (e) are met.

(2) All spoil shall be placed on the solid portion of the preexisting bench.

(3) The fill shall be designed, using standard geotechnical analysis, to attain a long-term static safety factor of 1.3 for all portions of the fill.

(4) The preexisting bench shall be backfilled and graded to—

(i) Achieve the most moderate slope possible which does not exceed the angle of repose, and

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(ii) Eliminate the highwall to the extent practicable.

[44 FR 30628, May 25, 1979, as amended at 46 FR 37233, July 17, 1981; 47 FR 18555, Apr. 29, 1982]

§715.16 Topsoil handling.

To prevent topsoil from being contaminated by spoil or waste materials, the permittee shall remove the topsoil as a separate operation from areas to be disturbed. Topsoil shall be immediately redistributed according to the requirements of paragraph (b) of this section on areas graded to the approved postmining configuration. The topsoil shall be segregated, stockpiled, and protected from wind and water erosion and from contaminants which lessen its capability to support vegetation if sufficient graded areas are not immediately available for redistribution.

(a) *Topsoil removal.* All topsoil to be salvaged shall be removed before any drilling for blasting, mining, or other surface disturbance.

(1) All topsoil shall be removed unless use of alternative materials is approved by the regulatory authority in accordance with paragraph (a)(4) of this section. Where the removal of topsoil results in erosion that may cause air or water pollution, the regulatory authority shall limit the size of the area from which topsoil may be removed at any one time and specify methods of treatment to control erosion of exposed overburden.

(2) All of the A horizon of the topsoil as identified by soil surveys shall be removed according to paragraph (a) and then replaced on disturbed areas as the surface soil layers. Where the A horizon is less than 6 inches, a 6-inch layer that includes the A horizon and the unconsolidated material immediately below the A horizon (or all unconsolidated material if the total available is less than 6 inches) shall be removed and the mixture segregated and replaced as the surface soil layer.

(3) Where necessary to obtain soil productivity consistent with postmining land use, the regulatory authority may require that the B horizon or portions of the C horizon or other underlying layers demonstrated to have comparable quality for root de-

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velopment be segregated and replaced as subsoil.

(4) Selected overburden materials may be used instead of, or as a supplement to, topsoil where the resulting soil medium is equal to or more suitable for vegetation, and if all the following requirements are met:

(i) The permittee demonstrates that the selected overburden materials or an overburden-topsoil mixture is more suitable for restoring land capability and productivity by the results of chemical and physical analyses. These analyses shall include determinations of pH, percent organic material, nitrogen, phosphorus, potassium, texture class, and water-holding capacity, and such other analyses as required by the regulatory authority. The regulatory authority also may require that results of field-site trials or greenhouse tests be used to demonstrate the feasibility of using such overburden materials.

(ii) The chemical and physical analyses and the results of field-site trials and greenhouse tests are accompanied by a certification from a qualified soil scientist or agronomist.

(iii) The alternative material is removed, segregated, and replaced in conformance with this section.

(b) *Topsoil redistribution.* (1) After final grading and before the topsoil is replaced, regraded land shall be scarified or otherwise treated to eliminate slippage surfaces and to promote root penetration.

(2) Topsoil shall be redistributed in a manner that—

(i) Achieves an approximate uniform thickness consistent with the postmining land uses;

(ii) Prevents excess compaction of the spoil and topsoil; and

(iii) Protects the topsoil from wind and water erosion before it is seeded and planted.

(c) *Topsoil storage.* If the permit allows storage of topsoil, the stockpiled topsoil shall be placed on a stable area within the permit area where it will not be disturbed or be exposed to excessive water, wind erosion, or contaminants which lessen its capability to support vegetation before it can be redistributed on terrain graded to final contour. Stockpiles shall be selectively placed and protected from wind and

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water erosion, unnecessary compaction, and contamination by undesirable materials either by a vegetative cover as defined in §715.20(g) or by other methods demonstrated to provide equal protection such as snow fences, chemical binders, and mulching. Unless approved by the regulatory authority, stockpiled topsoil shall not be moved until required for redistribution on a disturbed area.

(d) *Nutrients and soil amendments.* Nutrients and soil amendments in the amounts and analyses as determined by soil tests shall be applied to the surface soil layer so that it will support the postmining requirements of §715.13 and the revegetation requirements of §715.20.

§715.17 Protection of the hydrologic system.

The permittee shall plan and conduct coal mining and reclamation operations to minimize disturbance to the prevailing hydrologic balance in order to prevent long-term adverse changes in the hydrologic balance that could result from surface coal mining and reclamation operations, both on- and off-site. Changes in water quality and quantity, in the depth to ground water, and in the location of surface water drainage channels shall be minimized such that the postmining land use of the disturbed land is not adversely affected and applicable Federal and State statutes and regulations are not violated. The permittee shall conduct operations so as to minimize water pollution and shall, where necessary, use treatment methods to control water pollution. The permittee shall emphasize surface coal mining and reclamation practices that will prevent or minimize water pollution and changes in flows in preference to the use of water treatment facilities. Practices to control and minimize pollution include, but are not limited to, stabilizing disturbed areas through grading, diverting runoff, achieving quick growing stands of temporary vegetation, lining drainage channels with rock or vegetation, mulching, sealing acid-forming and toxic-forming materials, and selectively placing waste materials in back-fill areas. If pollution can be controlled only by treatment, the permittee shall

operate and maintain the necessary water-treatment facilities for as long as treatment is required.

(a) *Water quality standards and effluent limitations.* All surface drainage from the disturbed area, including disturbed areas that have been graded, seeded, or planted, shall be passed through a sedimentation pond or a series of sedimentation ponds before leaving the permit area. Sedimentation ponds shall be retained until drainage from the disturbed areas has met the water quality requirements of this section and the revegetation requirements of §715.20 have been met. The regulatory authority may grant exemptions from this requirement only when the disturbed drainage area within the total disturbed area is small and if the permittee shows that sedimentation ponds are necessary to meet the effluent limitations of this paragraph and to maintain water quality in downstream receiving waters. For purpose of this section only, disturbed area shall not include those areas in which only diversion ditches, sedimentation ponds, or roads are installed in accordance with this section and the upstream area is not otherwise disturbed by the permittee. Sedimentation ponds required by this paragraph shall be constructed in accordance with paragraph (e) of this section in appropriate locations prior to any mining in the affected drainage area in order to control sedimentation or otherwise treat water in accordance with this paragraph. Discharges from areas disturbed by surface coal mining and reclamation operations must meet all applicable Federal and State laws and regulations and, at a minimum, the following numerical effluent limitations:

EFFLUENT LIMITATIONS, IN MILLIGRAMS PER LITER, MG/L, EXCEPT FOR PH

Effluent characteristics	Maximum allowable ¹	Average of daily values for 30 consecutive discharge days ¹
Iron, total	7.0	3.5
Manganese, total	4.0	2.0
Total suspended solids ²	70.0	35.0
pH ³	(4)	(4)

¹ Based on representative sampling.

²In Arizona, Colorado, Montana, New Mexico, North Dakota, South Dakota, Utah, and Wyoming, total suspended solids limitations will be determined on a case-by-case basis, but they must not be greater than 45 mg/l (maximum allowable) and 30 mg/l (average of daily value for 30 consecutive discharge days) based on a representative sampling.

³Where the application of neutralization and sedimentation treatment technology results in inability to comply with the manganese limitation set forth, the regulatory authority may allow the pH level in the discharge to exceed to a small extent the upper limit of 9.0 in order that the manganese limitations will be achieved.

⁴Within the range 6.0 to 9.0.

(1) Any overflow or other discharge of surface water from the disturbed area within the permit area demonstrated by the permittee to result from a precipitation event larger than a 10-year, 24-hours frequency event will not be subject to the effluent limitations of paragraph (a).

(2) The permittee shall install, operate, and maintain adequate facilities to treat any water discharged from the disturbed area that violates applicable federal or State laws or regulations or the limitations of paragraph (a). If the pH of waters to be discharged from the disturbed area is normally less than 6.0, an automatic line feeder or other neutralization process approved by the regulatory authority shall be installed, operated, and maintained. If, the regulatory authority finds (i) that small and infrequent treatment requirements to meet applicable standards do not necessitate use of an automatic neutralization process, and (ii) that the mine normally produces less than 500 tons of coal per day, then the regulatory authority may approve the use of a manual system if the permittee ensures consistent and timely treatment.

(3) The effluent limitations for manganese shall be applicable only to acid drainage.

(b) *Surface-water monitoring.* (1) The permittee shall submit for approval by the regulatory authority a surface-water monitoring program which meets the following requirements:

(i) Provides adequate monitoring of all discharge from the disturbed area.

(ii) Provides adequate data to describe the likely daily and seasonal variation in discharges from the disturbed area in terms of water flow, pH, total iron, total manganese, and total suspended solids and, if requested by the regulatory authority, any other parameter characteristic of the discharge.

(iii) Provides monitoring at appropriate frequencies to measure normal and abnormal variations in concentrations.

(iv) Provides an analytical quality control system including standard methods of analysis such as those specified in 40 CFR 136.

(v) Within sixty (60) days of the end of each sixty (60) day sample collection period, a report of all samples shall be made to the regulatory authority, unless the discharge for which water monitoring reports are required is subject to regulation by a National Pollution Discharge Elimination System (NPDES) permit issued in compliance with the Clean Water Act of 1977 (33 U.S.C. 1251-1378), (A) which includes equivalent reporting requirements, and (B) which requires filing of the water monitoring report within 90 days or less of sample collection. For such discharges, the reporting requirements of this paragraph may be satisfied by submitting to the regulatory authority on the same time schedule as required by the NPDES permit or within ninety (90) days following sample collection, whichever is earlier, either (1) a copy of the completed reporting form filed to meet the NPDES permit requirements, or (2) a letter identifying the State or Federal government official with whom the reporting form was filed to meet the NPDES permit requirements and the date of filing. In all cases in which analytical results of the sample collections indicate a violation of a permit condition or applicable standard has occurred, the operator shall notify the regulatory authority immediately. Where an NPDES permit effluent limitation requirement has been violated, the permittee should forward a copy of the Discharge Monitoring Report, EPA Form 3320-1, concurrently with notification of the violation.

(2) After disturbed areas have been regraded and stabilized in accordance with this part, the permittee shall monitor surface water flow and quality. Data from this monitoring shall be used to demonstrate that the quality and quantity of runoff without treatment will be consistent with the requirement of this section to minimize

disturbance to the prevailing hydrologic balance and with the requirements of this part to attain the approved postmining land use. These data shall provide a basis for approval by the regulatory authority for removal of water quality or flow control systems and for determining when the requirements of this section are met. The regulatory authority shall determine the nature of data, frequency of collection, and reporting requirements.

(3) Equipment, structures, and other measures necessary to accurately measure and sample the quality and quantity of surface water discharges from the disturbed area of the permit area shall be properly installed, maintained, and operated and shall be removed when no longer required.

(c) *Diversion and conveyance of overland flow away from disturbed areas.* In order to minimize erosion and to prevent or remove water from contacting toxic-producing deposits, overland flow from undisturbed areas may, if required or approved by the regulatory authority, be diverted away from disturbed areas by means of temporary or permanent diversion structures. The following requirements shall be met:

(1) Temporary diversion structures shall be constructed to safely pass the peak runoff from a precipitation event with a one year recurrence interval, or a larger event as specified by the regulatory authority. The design criteria must assure adequate protection of the environment and public during the existence of the temporary diversion structure.

(2) Permanent diversion structures are those remaining after mining and reclamation and approved for retention by the regulatory authority and other appropriate State and Federal agencies. To protect fills and property and to avoid danger to public health and safety, permanent diversion structures shall be constructed to safely pass the peak runoff from a precipitation event with a 100-year recurrence interval, or a larger event as specified by the regulatory authority. Permanent diversion structures shall be constructed with gently sloping banks that are stabilized by vegetation. Asphalt, concrete, or other similar linings shall not be used unless specifically required to

prevent seepage or to provide stability and are approved by the regulatory authority.

(3) Diversions shall be designed, constructed, and maintained in a manner to prevent additional contributions of suspended solids to streamflow or to runoff outside the permit area to the extent possible, using the best technology currently available. In no event shall such contributions be in excess of requirements set by applicable State or Federal law. Appropriate sediment control measures for these diversions shall include, but not be limited to, maintenances of appropriate gradients, channel lining, revegetation, roughness structures, and detention basins.

(d) *Stream channel diversions.* (1) Flow from perennial and intermittent streams within the permit area may be diverted only when the diversions are approved by the regulatory authority and they are in compliance with local, State, and Federal statutes and regulations. When streamflow is allowed to be diverted, the new stream channel shall be designed and constructed to meet the following requirements:

(i) The average stream gradient shall be maintained and the channel designed, constructed, and maintained to remain stable and to prevent additional contributions of suspended solids to streamflow, or to runoff outside the permit area to the extent possible, using the best technology currently available. In no event shall such contributions be in excess of requirements set by applicable State or Federal law. Erosion control structures such as channel lining structures, retention basins, and artificial channel roughness structures shall be used only when approved by the regulatory agency for temporary diversions where necessary or for permanent diversions where they are stable and will require only infrequent maintenance.

(ii) Channel, bank, and flood-plain configurations shall be adequate to safely pass the peak runoff of a precipitation event with a 10-year recurrence interval for temporary diversions and a 100-year recurrence interval for permanent diversions, or larger events as specified by the regulatory authority.

(iii) Fish and wildlife habitat and water and vegetation of significant

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value for wildlife shall be protected in consultation with appropriate State and Federal fish and wildlife management agencies.

(2) All temporary diversion structures shall be removed and the affected land regraded and revegetated consistent with the requirements of §§715.14 and 715.20. At the time such diversions are removed, the permittee shall ensure that downstream water treatment facilities previously protected by the diversion are modified or removed to prevent overtopping or failure of the facilities.

(3) *Buffer zone.* No land within 100 feet of an intermittent or perennial stream shall be disturbed by surface coal mining and reclamation operations unless the regulatory authority specifically authorizes surface coal mining and reclamation operations through such a stream. The area not to be disturbed shall be designated a buffer zone and marked as specified in §715.12.

(e) *Sedimentation ponds*—(1) *General requirements.* Sedimentation ponds shall be used individually or in series and shall—

(i) Be constructed before any disturbance of the undisturbed area to be drained into the pond;

(ii) Be located as near as possible to the disturbed area and out of perennial streams; unless approved by the regulatory authority;

(iii) Meet all the criteria of this section.

(2) *Sediment storage volume.* Sedimentation ponds shall provide a minimum sediment storage volume.

(3) *Detention time.* Sedimentation ponds shall provide the required theoretical detention time for the water inflow or runoff entering the pond from a 10-year, 24-hour precipitation event (design event).

(4) *Dewatering.* The water storage resulting from inflow shall be removed by a nonclogging dewatering device or a conduit spillway approved by the regulatory authority. The dewatering device shall not be located at a lower elevation than the maximum elevation of the sedimentation storage volume.

(5) Each person who conducts surface mining activities shall design, construct, and maintain sedimentation

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ponds to prevent short-circuiting to the extent possible.

(6) The design, construction, and maintenance of a sedimentation pond or other sediment control measures in accordance with this section shall not relieve the person from compliance with applicable effluent limitations as contained in paragraph (a) of this section.

(7) There shall be no out-flow through the emergency spillway during the passage of the runoff resulting from the 10-year, 24-hour precipitation event or lesser events through the sedimentation pond.

(8) Sediment shall be removed from sedimentation ponds.

(9) An appropriate combination of principal and emergency spillways shall be provided to safely discharge the runoff from a 25-year, 24-hour precipitation event, or larger event specified by the regulatory authority. The elevation of the crest of the emergency spillway shall be a minimum of 1.0 foot above the crest of the principal spillway. Emergency spillway grades and allowable velocities shall be approved by the regulatory authority.

(10) The minimum elevation at the top of the settled embankment shall be 1.0 foot above the water surface in the pond with the emergency spillway flowing at design depth. For embankments subject to settlement, this 1.0 foot minimum elevation requirement shall apply at all times, including the period after settlement.

(11) The constructed height of the dam shall be increased a minimum of 5 percent over the design height to allow for settlement, unless it has been demonstrated to the regulatory authority that the material used and the design will ensure against all settlement.

(12) The minimum top width of the embankment shall not be less than the quotient of $(H+35)/5$, where H is the height, in feet, of the embankment as measured from the upstream toe of the embankment.

(13) The combined upstream and downstream side slopes of the settled embankment shall not be less than 1v:5h, with neither slope steeper than 1v:2h. Slopes shall be designed to be stable in all cases, even if flatter side slopes are required.

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(14) The embankment foundation areas shall be cleared of all organic matter, all surfaces sloped to no steeper than 1v:1h, and the entire foundation surface scarified.

(15) The fill material shall be free of sod, large roots, other large vegetative matter, and frozen soil, and in on case shall coal-processing waste be used.

(16) The placing and spreading of fill material shall be started at the lowest point of the foundation. The fill shall be brought up in horizontal layers of such thickness as is required to facilitate compaction and meet the design requirements of this section. Compaction shall be conducted as specified in the design approved by the regulatory authority.

(17) If a sedimentation pond has an embankment that is more than 20 feet in height, as measured from the upstream toe of the embankment to the crest of the emergency spillway, or has a storage volume of 20 acre-feet or more, the following additional requirements shall be met:

(i) An appropriate combination of principal and emergency spillways shall be provided to discharge safely the runoff resulting from a 100-year, 24-hour precipitation event, or a larger event specified by the regulatory authority.

(ii) The embankment shall be designed and constructed with a static safety factor of at least 1.5, or a higher safety factor as designated by the regulatory authority to ensure stability.

(iii) Appropriate barriers shall be provided to control seepage along conduits that extend through the embankment.

(iv) The criteria of the Mine Safety and Health Administration as published in 30 CFR 77.216 shall be met.

(18) Each pond shall be designed and inspected during construction under the supervision of, and certified after construction by, a registered professional engineer.

(19) The entire embankment including the surrounding areas disturbed by construction shall be stabilized with respect to erosion by a vegetative cover or other means immediately after the embankment is completed. The active upstream face of the embankment where water will be im-

pounded may be riprapped or otherwise stabilized. Areas in which the vegetation is not successful or where rills and gullies develop shall be repaired and revegetated in accordance with § 715.20.

(20) All ponds, including those not meeting the size or other criteria of 30 CFR 77.216(a), shall be examined for structural weakness, erosion, and other hazardous conditions, and reports and modifications shall be made to the regulatory authority, in accordance with 30 CFR 77.216-3. With the approval of the regulatory authority, dams not meeting these criteria (30 CFR 77.216(a)) shall be examined four times per year.

(21) Sedimentation ponds shall not be removed until the disturbed area has been restored, and the vegetation requirements of § 715.20 are met and the drainage entering the pond has met the applicable State and Federal water quality requirements for the receiving stream. When the sedimentation pond is removed, the affected land shall be regraded and revegetated in accordance with §§ 715.14, 715.16, and 715.20, unless the pond has been approved by the regulatory authority for retention as being compatible with the approved postmining land use. If the regulatory authority approves retention, the sedimentation pond shall meet all the requirements for permanent impoundments of paragraph (k) of this section.

(22)(i) Where surface mining activities are proposed to be conducted on steep slopes, as defined in § 716.2 of this chapter, special sediment control measures may be followed if the person has demonstrated to the regulatory authority that a sedimentation pond (or series of ponds) constructed according to paragraph (e) of this section—

(A) Will jeopardize public health and safety; or

(B) Will result in contributions of suspended solids to streamflow in excess of the incremental sediment volume trapped by the additional pond size required.

(ii) Special sediment control measures shall include but not be limited to—

(A) Designing, constructing, and maintaining a sedimentation pond as near as physically possible to the disturbed area which complies with the

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design criteria of this section to the maximum extent possible.

(B) A plan and commitment to employ sufficient onsite sedimentation control measures including bench sediment storage, filtration by natural vegetation, mulching, and prompt revegetation which, in conjunction with the required sediment pond, will achieve and maintain applicable effluent limitations. The plan submitted pursuant to this paragraph shall include a detailed description of all onsite control measures to be employed, a quantitative analysis demonstrating that onsite sedimentation control measures, in conjunction with the required sedimentation pond, will achieve and maintain applicable effluent limitations, and maps depicting the location of all onsite sedimentation control measures.

(f) *Discharge structures.* Discharges from sedimentation ponds and diversions shall be controlled, where necessary, using energy dissipators, surge ponds, and other devices to reduce erosion and prevent deepening or enlargement of stream channels and to minimize disturbances to the hydrologic balance.

(g) *Acid and toxic materials.* Drainage from acid-forming and toxic-forming mine waste materials and soils into ground and surface water shall be avoided by—

(1) Identifying, burying, and treating where necessary, spoil or other materials that, in the judgment of the regulatory authority, will be toxic to vegetation or that will adversely affect water quality if not treated or buried. Such material shall be disposed of in accordance with the provision of §715.14(j);

(2) Preventing or removing water from contact with toxic-producing deposits;

(3) Burying or otherwise treating all toxic or harmful materials within 30 days, if such materials are subject to wind and water erosion, or within a lesser period designated by the regulatory authority. If storage of such materials is approved, the materials shall be placed on impermeable material and protected from erosion and contact with surface water. Coal waste ponds and other coal waste materials shall be

maintained according to paragraph (g)(4) of this section, and §715.18 shall apply;

(4) Burying or otherwise treating waste materials from coal preparation plants no later than 90 days after the cessation of the filling of the disposal area. Burial or treatment shall be in accordance with §715.14(j);

(5) Casing, sealing or otherwise managing boreholes, shafts, wells, and auger holes or other more or less horizontal holes to prevent pollution of surface or ground water and to prevent mixing of ground waters of significantly different quality. All boreholes that are within the permit area but are outside the surface coal mining area or which extend beneath the coal to be mined and into water bearing strata shall be plugged permanently in a manner approved by the regulatory authority, unless the boreholes have been approved for use in monitoring;

(6) Taking such other actions as required by the regulatory authority.

(h) *Ground water—(1) Recharge capacity of reclaimed lands.* The disturbed area shall be reclaimed to restore approximate premining recharge capacity through restoration of the capability of the reclaimed areas as a whole to transmit water to the ground water system. The recharge capacity should be restored to support the approved postmining land use and to minimize disturbances to the prevailing hydrologic balance at the mined area and in associated offsite areas. The permittee shall be responsible for monitoring according to paragraph (h)(3) of this section to ensure operations conform to this requirement.

(2) *Ground water systems.* Backfilled materials shall be placed to minimize adverse effects on ground water flow and quality, to minimize offsite effects, and to support the approved postmining land use. The permittee shall be responsible for performing monitoring according to paragraph (h)(3) of this section to ensure operations conform to this requirement.

(3) *Monitoring.* Ground water levels, infiltration rates, subsurface flow and storage characteristics, and the quality of ground water shall be monitored in a

manner approved by the regulatory authority to determine the effects of surface coal mining and reclamation operations on the recharge capacity of reclaimed lands and on the quantity and quality of water in ground water systems at the mine area and in associated offsite areas. When operations are conducted in such a manner that may affect the ground water system, ground water levels and ground water quality shall be periodically monitored using wells that can adequately reflect changes in ground water quantity and quality resulting from such operations. Sufficient water wells must be used by the permittee. The regulatory authority may require drilling and development of additional wells if needed to adequately monitor the ground water system. As specified and approved by the regulatory authority, additional hydrologic tests, such as infiltration tests and aquifer tests, must be undertaken by the permittee to demonstrate compliance with paragraph (h) (1) and (2) of this section.

(i) *Water rights and replacement.* The permittee shall replace the water supply of an owner of interest in real property who obtains all or part of his supply of water for domestic, agricultural, industrial, or other legitimate use from an underground or surface source where such supply has been affected by contamination, diminution, or interruption proximately resulting from surface coal mine operation by the permittee.

(j) *Alluvial valley floors west of the 100th meridian west longitude.* (1) Surface coal mining operations conducted in or adjacent to alluvial valley floors shall be planned and conducted so as to preserve the essential hydrologic functions of these alluvial valley floors throughout the mining and reclamation process. These functions shall be preserved by maintaining or reestablishing those hydrologic and biologic characteristics of the alluvial valley floor that are necessary to support the functions. The permittee shall provide information to the regulatory authority as required in paragraph (j)(3) of this section to allow identification of essential hydrologic functions and demonstrate that the functions will be preserved. The characteristics of an al-

luvial valley floor to be considered include, but are not limited to—

(i) The longitudinal profile (gradient), cross-sectional shape, and other channel characteristics of streams that have formed within the alluvial valley floor and that provide for maintenance of the prevailing conditions of surface flow;

(ii) Aquifers (including capillary zones and perched water zones) and confining beds within the mined area which provide for storage, transmission, and regulation of natural ground water and surface water that supply the alluvial valley floors;

(iii) Quantity and quality of surface and ground water that supply alluvial valley floors;

(iv) Depth to and seasonal fluctuations of ground water beneath alluvial valley floors;

(v) Configuration and stability of the land surface in the flood plain and adjacent low terraces in alluvial valley floors as they allow or facilitate irrigation with flood waters or subirrigation and maintain erosional equilibrium; and

(vi) Moisture-holding capacity of soils (or plant growth medium) within the alluvial valley floors, and physical and chemical characteristics of the subsoil which provide for sustained vegetation growth or cover through dry months.

(2) Surface coal mining operations located west of the 100th meridian west longitude shall not interrupt, discontinue, or preclude farming on alluvial valley floors and shall not materially damage the quantity or quality of surface or ground water that supplies these valley floors unless the premining land use has been undeveloped rangeland which is not significant to farming on the alluvial valley floors or unless the area of affected alluvial valley floor is small and provides negligible support for the production from one or more farms. This paragraph (j)(2) does not apply to those surface coal mining operations that—

(i) Were in production in the year preceding August 3, 1977, were located in or adjacent to an alluvial valley floor, and produced coal in commercial quantities during the year preceding August 3, 1977; or

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(ii) Had specific permit approval by the State regulatory authority before August 3, 1977, to conduct surface coal mining operations for an area within an alluvial valley floor.

(3)(i) Before surface mining and reclamation operations authorized under paragraph (j)(2) of this section may be issued a new revised or amended permit, the permittee shall submit, for regulatory authority approval, detailed surveys and baseline data to establish standards against which the requirements of paragraph (j)(1) of this section may be measured and from which the degree of material damage to the quantity and quality of surface and ground water that supply the alluvial valley floors may be assessed. The surveys and data shall include—

(A) A map at a scale determined by the regulatory authority, showing the location and configuration of the alluvial valley floor;

(B) Baseline data covering a full water year for each of the hydrologic functions identified in paragraph (j)(1) of this section;

(C) Plans showing how the operation will avoid, during mining and reclamation, interruption, discontinuance, or preclusion of farming on the alluvial valley floors and will not materially damage the quantity or quality of water in surface and ground water systems that supply such valley floors;

(D) Historic land use data for the proposed permit area and for farms to be affected; and

(E) Such other data as the regulatory authority may require.

(ii) Surface mining operations which qualify for the exceptions in paragraph (j)(2) of this section are not required to submit the plans prescribed in paragraph (j)(3)(i)(C) of this section.

(4) The holder of a Federal coal lease or the fee holder of any coal deposit located within or adjacent to an alluvial valley floor west of the 100th meridian west from which coal was not produced in commercial quantities between August 3, 1976, and August 3, 1977, and for which no specific permit by the appropriate State or Federal regulatory authority to conduct surface coal mining operations in the alluvial valley floors has been obtained, may be entitled to an exchange of the Federal coal lease

for a lease of other Federal coal deposits under section 510(b)(5) of the Act, or to the conveyance by the Secretary of fee title to other available Federal coal deposits in exchange for the fee title to such deposits under section 206 of the Federal Land Policy and Management Act of 1976 (90 Stat. 2743), if the Secretary determines that substantial financial and legal commitments were made by the operator prior to January 1, 1977, in connection with surface coal mining operations on such lands.

(k) *Permanent impoundments.* The permittee may construct, if authorized by the regulatory agency pursuant to this paragraph and §715.13, permanent water impoundments on mining sites as a part of reclamation activities only when they are adequately demonstrated to be in compliance with §§715.13 and 715.14 in addition to the following requirements:

(1) The size of the impoundment is adequate for its intended purposes.

(2) The impoundment dam construction is designed to achieve necessary stability with an adequate margin of safety compatible with that of structures constructed under Pub. L. 83-566 (16 U.S.C. 1006).

(3) The quality of the impounded water will be suitable on a permanent basis for its intended use and discharges from the impoundment will not degrade the quality of receiving waters below the water quality standards established pursuant to applicable Federal and State law.

(4) The level of water will be reasonably stable.

(5) Final grading will comply with the provisions of §715.14 and will provide adequate safety and access for proposed water users.

(6) Water impoundments will not result in the diminution of the quality or quantity of water used by adjacent or surrounding landowners for agricultural, industrial, recreational, or domestic uses.

(1) *Hydrologic impact of roads.* (1) *General.* Access and haul roads and associated bridges, culverts, ditches, and road rights-of-way shall be constructed, maintained, and reclaimed to prevent additional contributions of suspended solids to streamflow, or to runoff outside the permit area to the

extent possible, using the best technology currently available. In no event shall the contributions be in excess of requirements set by applicable State or Federal law. All access and haul roads shall be removed and the land affected regraded and revegetated consistent with the requirements of §§715.14 and 715.20, unless retention of a road is approved as part of a postmining land use under §715.13 as being necessary to support the postmining land use or necessary to adequately control erosion and the necessary maintenance is assured.

(2) *Construction.* (i) All roads, insofar as possible, shall be located on ridges or on the available flatter and more stable slopes to minimize erosion. Stream fords are prohibited unless they are specifically approved by the regulatory authority as temporary routes across dry streams that will not adversely affect sedimentation and that will not be used for coal haulage. Other stream crossings shall be made using bridges, culverts or other structures designed and constructed to meet the requirements of this paragraph. Roads shall not be located in active stream channels nor shall they be constructed or maintained in a manner that increases erosion or causes significant sedimentation or flooding. However, nothing in this paragraph will be construed to prohibit relocation of stream channels in accordance with paragraph (d) of this section.

(ii) In order to minimize erosion and subsequent disturbances of the hydrologic balance, roads shall be constructed in compliance with the following grade restrictions or other grades determined by the regulatory authority to be necessary to control erosion:

(A) The overall sustained grade shall not exceed 1v:10h (10 percent).

(B) The maximum grade greater than 10 percent shall not exceed 1v:6.5h (15 percent) for more than 300 feet.

(C) There shall not be more than 300 feet of grade exceeding 10 percent within each 1,000 feet.

(iii) All access and haul roads shall be adequately drained using structures such as, but not limited to, ditches, water barriers, cross drains, and ditch relief drains. For access and haul roads

that are to be maintained for more than 1 year, water-control structures shall be designed with a discharge capacity capable of passing the peak runoff from a 10-year, 24-hour precipitation event. Drainage pipes and culverts shall be constructed to avoid plugging or collapse and erosion at inlets and outlets. Drainage ditches shall be provided at the toe of all cut slopes formed by construction of roads. Trash racks and debris basins shall be installed in the drainage ditches wherever debris from the drainage area could impair the functions of drainage and sediment control structures. Ditch relief and cross drains shall be spaced according to grade. Effluent limitations of paragraph (a) of this section shall not apply to drainage from access and haul roads located outside the disturbed area as defined in this section unless otherwise specified by the regulatory authority.

(iv) Access and haul roads shall be surfaced with durable material. Toxic or acid-forming substances shall not be used. Vegetation may be cleared only for the essential width necessary for road and associated ditch construction and to serve traffic needs.

(3) *Maintenance.* (i) Access and haul roads shall be routinely maintained by means such as, but not limited to, wetting, scraping or surfacing.

(ii) Ditches, culverts, drains, trash racks, debris basins and other structures serving to drain access and haul roads shall not be restricted or blocked in any manner that impedes drainage or adversely affects the intended purpose of the structure.

(m) *Hydrologic impacts of other transport facilities.* Railroad loops, spurs, sidings and other transport facilities shall be constructed, maintained and reclaimed to control diminution or degradation of water quality and quantity and to prevent additional contributions of suspended solids to streamflow, or to run-off outside the permit area to the extent possible, using the best technology currently available. In no event shall contributions be in excess of requirements set by applicable State or Federal law.

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(n) *Discharge of waters into underground mines.* Surface and ground waters shall not be discharged or diverted into underground mine workings.

(Secs. 101, 102, 201, 501, 503-510, 515-517, 523, and 701, Surface Mining Act of 1977, Pub. L. 95-87), 30 U.S.C. 1201, 1202, 1211, 1251-1260, 1265-1267, 1273, 1291))

[42 FR 62680, Dec. 13, 1977; 43 FR 2721, Jan. 19, 1978; 43 FR 3705, Jan. 27, 1978, as amended at 43 FR 8091, Feb. 27, 1978; 43 FR 21458, May 18, 1978; 44 FR 30631, May 25, 1979; 44 FR 36887, June 22, 1979; 44 FR 77451, Dec. 31, 1979; 45 FR 6913, Jan. 30, 1980]

EFFECTIVE DATE NOTE: A document published at 44 FR 77451, Dec. 31, 1979 temporarily suspended § 715.17(a)(1) insofar as it applies to total suspended solids (TSS) discharges.

§ 715.18 Dams constructed of or impounding waste material.

(a) *General.* No waste material shall be used in or impounded by existing or new dams without the approval of the regulatory authority. The permittee shall design, locate, construct, operate, maintain, modify, and abandon or remove all dams (used either temporarily or permanently) constructed of waste materials, in accordance with the requirements of this section.

(b) *Construction of dams.* (1) Waste shall not be used in the construction of dams unless demonstrated through appropriate engineering analysis, to have no adverse effect on stability.

(2) Plans for dams subject to this section, and also including those dams that do not meet the size or other criteria of § 77.216(a) of this title, shall be approved by the regulatory authority before construction and shall contain the minimum plan requirements established by the Mining Enforcement and Safety Administration pursuant to § 77.216-2 of this title.

(3) Construction requirements are as follows:

(i) Design shall be based on the flood from the probable maximum precipitation event unless the permittee shows that the failure of the impounding structure would not cause loss of life or severely damage property or the environment, in which case depending on site conditions, a design based on a precipitation event of no less than 100-

year frequency may be approved by the regulatory authority.

(ii) The design freeboard distance between the lowest point on the embankment crest and the maximum water elevation shall be at least 3 feet to avoid overtopping by wind and wave action.

(iii) Dams shall have minimum safety factors as follows:

Case	Loading condition	Minimum safety factor
I	End of construction	1.3
II	Partial pool with steady seepage saturation.	1.5
III	Steady seepage from spillway or decant crest.	1.5
IV	Earthquake (cases II and III with seismic loading).	1.0

(iv) The dam, foundation, and abutments shall be stable under all conditions of construction and operation of the impoundment. Sufficient foundation investigations and laboratory testing shall be performed to determine the factors of safety of the dam for all loading conditions in paragraph (b)(3)(iii) of this section and for all increments of construction.

(v) Seepage through the dam, foundation, and abutments shall be controlled to prevent excessive uplift pressures, internal erosion, sloughing, removal of material by solution, or erosion of material by loss into cracks, joints, and cavities. This may require the use of impervious blankets, pervious drainage zones or blankets, toe drains, relief wells, or dental concreting of jointed rock surface in contact with embankment materials.

(vi) Allowances shall be made for settlement of the dams and the foundation so that the freeboard will be maintained.

(vii) Impoundments created by dams of waste materials shall be subject to a minimum drawdown criteria that allows the facility to be evacuated by spillways or decants of 90 percent of the volume of water stored during the design precipitation event within 10 days.

(viii) During construction of dams subject to this section, the structures shall be periodically inspected by a

registered professional engineer to ensure construction according to the approved design. On completion of construction, the structure shall be certified by a registered professional engineer experienced in the field of dam construction as having been constructed in accordance with accepted professional practice and the approved design.

(ix) A permanent identification marker, at least 6 feet high that shows the dam number assigned pursuant to § 77.216-1 of this title and the name of the person operating or controlling the dam, shall be located on or immediately adjacent to each dam within 30 days of certification of design pursuant to this section.

(4) All dams, including those not meeting the size or other criteria of § 77.216 (a) of this title, shall be routinely inspected by a registered professional engineer, or someone under the supervision of a registered professional engineer, in accordance with Mining Enforcement and Safety Administration regulations pursuant to § 77.216-3 of this title.

(5) All dams shall be routinely maintained. Vegetative growth shall be cut where necessary to facilitate inspection and repairs. Ditches and spillways shall be cleaned. Any combustible materials present on the surface, other than that used for surface stability such as mulch or dry vegetation, shall be removed and any other appropriate maintenance procedures followed.

(6) All dams subject to this section shall be certified annually as having been constructed and modified in accordance with current prudent engineering practices to minimize the possibility of failures. Any changes in the geometry of the impounding structure shall be highlighted and included in the annual certification report. These certifications shall include a report on existing and required monitoring procedures and instrumentation, the average and maximum depths and elevations of any impounded waters over the past year, existing storage capacity of impounding structures, any fires occurring in the material over the past year and any other aspects of the structures affecting their stability.

(7) Any enlargements, reductions in size, reconstruction or other modification of the dams shall be approved by the regulatory authority before construction begins.

(8) All dams shall be removed and the disturbed areas regraded, revegetated, and stabilized before the release of bond unless the regulatory authority approves retention of such dams as being compatible with an approved postmining land use (§ 715.13).

§ 715.19 Use of explosives.

(a) *General.* (1) The permittee shall comply with all applicable local, State, and Federal laws and regulations and the requirements of this section in the storage, handling, preparation, and use of explosives.

(2) Blasting operations that use more than the equivalent of 5 pounds of TNT shall be conducted according to a time schedule approved by the regulatory authority.

(3) All blasting operations shall be conducted by experienced, trained, and competent persons who understand the hazards involved. Persons working with explosive materials shall—

(i) Have demonstrated a knowledge of, and a willingness to comply with, safety and security requirements;

(ii) Be capable of using mature judgment in all situations;

(iii) Be in good physical condition and not addicted to intoxicants, narcotics, or other similar types of drugs;

(iv) Possess current knowledge of the local, State and Federal laws and regulations applicable to his work; and

(v) Have obtained a certificate of completion of training and qualification as required by State law or the regulatory authority.

(b) *Preblasting survey.* (1) On the request to the regulatory authority of a resident or owner of a manmade dwelling or structure that is located within one-half mile of any part of the permit area, the permittee shall conduct a preblasting survey of the dwelling or structure and submit a report of the survey to the regulatory authority.

(2) Personnel approved by the regulatory authority shall conduct the survey to determine the condition of the dwelling or structure and to document any preblasting damage and other

physical factors that could reasonably be affected by the blasting. Assessments of structures such as pipes, cables, transmission lines, and wells and other water systems shall be limited to surface condition and other readily available data. Special attention shall be given to the preblasting condition of wells and other water systems used for human, animal, or agricultural purposes and to the quantity and quality of the water.

(3) A written report of the survey shall be prepared and signed by the person or persons who conducted the survey and prepared the written report. The report shall include recommendations of any special conditions or proposed adjustments to the blasting procedures outlined in paragraph (e) of this section which should be incorporated into the blasting plan to prevent damage. Copies of the report shall be provided to the person requesting the survey and to the regulatory authority.

(c) *Public notice of blasting schedule.* At least 10 days, but not more than 20 days before beginning a blasting program in which explosives that use more than the equivalent of 5 pounds of TNT are detonated, the permittee shall publish a blasting schedule in a newspaper of general circulation in the locality of the proposed site. Copies of the schedule shall be distributed by mail to local governments and public utilities and to each residence within one-half mile of the blasting sites described in the schedule. The permittee shall republish and redistribute the schedule by mail at least every 3 months. Blasting schedules shall not be so general as to cover all working hours but shall identify as accurately as possible the location of the blasting sites and the time periods when blasting will occur. The blasting schedule shall contain at a minimum—

(1) Identification of the specific areas in which blasting will take place. The specific blasting areas described shall not be larger than 300 acres with a generally contiguous border;

(2) Dates and times when explosives are to be detonated expressed in not more than 4-hour increments;

(3) Methods to be used to control access to the blasting area;

(4) Types of audible warnings and all-clear signals to be used before and after blasting; and

(5) A description of possible emergency situations (defined in paragraph (e)(1)(ii) of this section), which have been approved by the regulatory authority, when it may be necessary to blast at times other than those described in the schedule.

(d) *Public notice of changes to blasting schedules.* Before blasting in areas not covered by a previous schedule or whenever the proposed frequency of individual detonations are materially changed, the permittee shall prepare a revised blasting schedule in accordance with the procedures in paragraph (c) of this section. If the change involves only a temporary adjustment of the frequency of blasts, the permittee may use alternate methods to notify the governmental bodies and individuals to whom the original schedule was sent.

(e) *Blasting procedures—(1) General.* (i) All blasting shall be conducted only during the daytime hours, defined as sunrise until sunset. Based on public requests or other considerations, including the proximity to residential areas, the regulatory authority may specify more restrictive time periods.

(ii) Blasting may not be conducted at times different from those announced in the blasting schedule except in emergency situations where rain, lightning, other atmospheric conditions, or operator or public safety requires unscheduled detonation.

(iii) Warning and all-clear signals of different character that are audible within a range of one-half mile from the point of the blast shall be given. All persons within the permit area shall be notified of the meaning of the signals through appropriate instructions and signs posted as required by §715.12.

(iv) Access to the blasting area shall be regulated to protect the public and livestock from the effects of blasting. Access to the blasting area shall be controlled to prevent unauthorized entry at least 10 minutes before each blast and until the permittee's authorized representative has determined that no unusual circumstances such as imminent slides or undetonated charges exist and access to and travel

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in or through the area can safely resume.

(v) Areas in which charged holes are awaiting firing shall be guarded, barricaded and posted, or flagged against unauthorized entry.

(vi) Airblast shall be controlled such that it does not exceed 128 decibel linear-peak at any manmade dwelling or structure located within one-half mile of the permit area.

(vii) Except where lesser distances are approved by the regulatory authority (based upon a preblasting survey or other appropriate investigations) blasting shall not be conducted within—

(A) 1,000 feet of any building used as a dwelling, school, church, hospital, or nursing facility;

(B) 500 feet of facilities including, but not limited to, disposal wells, petroleum or gas-storage facilities, municipal water-storage facilities, fluid-transmission pipelines, gas or oil-collection lines, or water and sewage lines; and

(C) 500 feet of an underground mine not totally abandoned except with the concurrence of the Mining Enforcement and Safety Administration.

(2) *Blasting standards.* (i) Blasting shall be conducted to prevent injury to persons, damage to public or private property outside the permit area, adverse impacts on any underground mine, and change in the course, channel, or availability of ground or surface waters outside the permit area.

(ii) *Ground vibration*—(A) *General.* In all blasting operations, except as otherwise authorized in paragraph (e)(2)(iii) of this section, the maximum ground vibration shall not exceed a value approved by the regulatory authority. It shall be established in accordance with the maximum peak-particle-velocity limit of paragraph (e)(2)(ii)(B), the scaled-distance equation of paragraph (e)(2)(ii)(C), or the blasting-level chart of paragraph (e)(2)(ii)(D), or such other standard established under paragraph (e)(2)(ii)(E), of this section. All structures in the vicinity of the blasting area, not listed in paragraph (e)(2)(ii)(B), of this section, such as water towers, pipelines and other utilities, tunnels, dams, impoundments, and underground mines, shall be protected from damage by es-

tablishment of a maximum allowable limit on the ground vibration, submitted by the operator and approved by the regulatory authority before the initiation of blasting.

(B) *Maximum peak-particle velocity.* (1) The maximum ground vibration shall not exceed the following limits at the location of any dwelling, public building, school, church, or community or institutional building outside the permit area.

Distance (D) from blasting site, in feet	Maximum allowable peak particle velocity (V max) for ground vibration, in inches/second ¹	Scaled-distance factor to be applied without seismic monitoring ²
0 to 300	1.25	50
301 to 5,000	1.00	55
5,001 and beyond	0.75	65

¹ Ground vibration shall be measured as particle velocity. Particle velocity shall be recorded in three mutually perpendicular directions. The maximum allowable peak particle velocity shall apply to each of the three measurements.

² Applicable to the scaled-distance equation of paragraph (e)(2)(ii)(C)(1) of this section.

(2) A seismographic record shall be provided for each blast.

(C) *Scaled-distance equation.* (1) The operator may use the scaled-distance equation, $W=(D/Ds)^2$, to determine the allowable charge weight of explosives to be detonated in any 8-millisecond period without seismic monitoring; where W =the maximum weight of explosives, in pounds; D =the distance, in feet, from the blasting site to the nearest protected structure; and Ds =the scaled-distance factor, which may initially be approved by the regulatory authority using the values for scaled-distance factor listed in paragraph (e)(2)(ii)(B)(1), of this section.

(2) The development of a modified scaled-distance factor may be authorized by the regulatory authority on receipt of a written request by the operator, supported by seismographic records of blasting at the minesite. The modified scaled-distance factor shall be determined such that the particle velocity of the predicted ground vibration will not exceed the prescribed maximum allowable peak particle velocity of paragraph (e)(2)(B)(1) of this section at a 95-percent confidence level.

(D) *Blasting-level chart.* (1) An operator may use the ground-vibration limits in Figure 1 to determine the maximum allowable ground vibration.

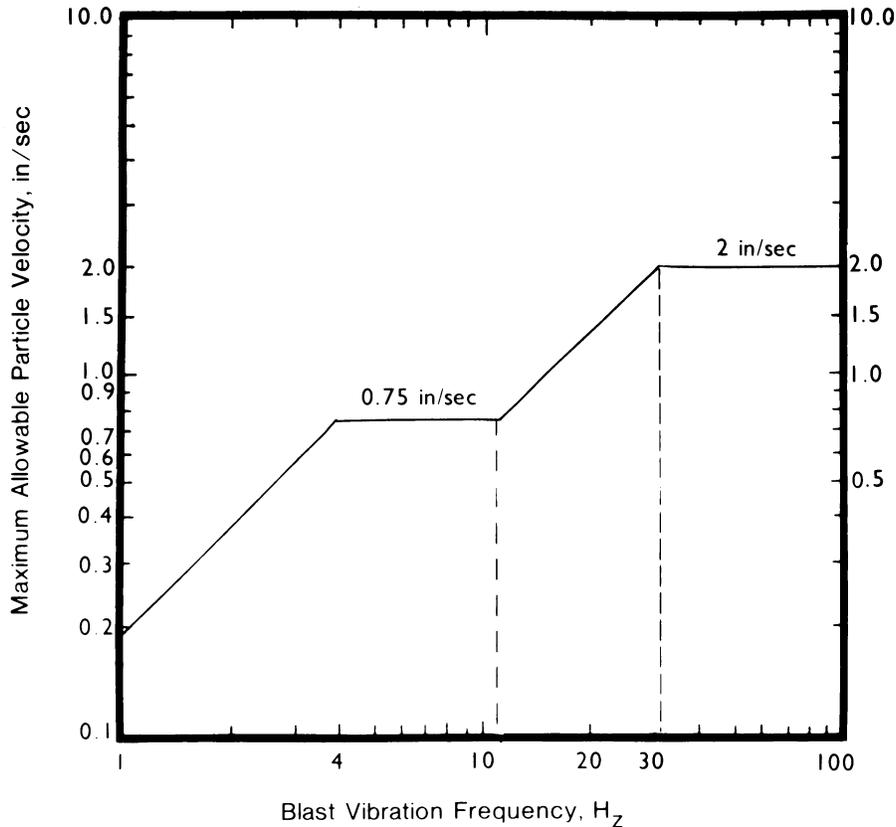


Figure 1. Alternative blasting level criteria.
(Source Modified from figure B-1, Bureau of Mines RI8507)

(2) If the Figure 1 limits are used, a seismographic record including both particle-velocity and vibration-frequency levels shall be provided for each blast. The method for the analysis of the predominant frequency contained in the blasting records shall be approved by the regulatory authority before application of this alternative blasting criterion.

(E) The maximum allowable ground vibration shall be reduced by the regulatory authority beyond the limits otherwise provided by this section, if de-

termined necessary to provide damage protection.

(F) The regulatory authority may require an operator to conduct seismic monitoring of any or all blasts and may specify the location at which the measurements are taken and the degree of detail necessary in the measurement.

(iii) If blasting is conducted in accordance with paragraph (e)(2)(i) of this section, the maximum ground-vibration and airblast standards shall not apply at the following locations:

(A) At structures owned by the permittee and not leased to another person.

(B) At structures owned by the permittee and leased to another person, if a written waiver by the lessee is submitted to the regulatory authority before blasting.

(3) *Records of blasting operations.* A record of each blast, including seismograph reports, shall be retained for at least 3 years and shall be available for inspection by the regulatory authority and the public on request. The record shall contain the following data—

- (i) Name of permittee, operator, or other person conducting the blast;
- (ii) Location, date, and time of blast;
- (iii) Name, signature, and license number of blaster-in-charge;
- (iv) Direction and distance, in feet, to nearest dwelling, school, church, or commercial or institutional building neither owned or leased by the permittee;
- (v) Weather conditions;
- (vi) Type of material blasted;
- (vii) Number of holes, burden, and spacing;
- (viii) Diameter and depth of holes;
- (ix) Types of explosives used;
- (x) Total weight of explosives used;
- (xi) Maximum weight of explosives detonated within any 8 millisecond period;
- (xii) Maximum number of holes detonated within any 8 millisecond period;
- (xiii) Methods of firing and type of circuit;
- (xiv) Type and length of stemming;
- (xv) If mats or other protections were used;
- (xvi) Type of delay detonator used, and delay periods used;
- (xvii) Seismograph records, where required, including—

(A) Seismograph reading, including exact location of seismograph and its distance from the blast;

(B) Name of person taking the seismograph reading; and

(C) Name of person and firm analyzing the seismograph record.

[42 FR 62680, Dec. 13, 1977; 43 FR 2722, Jan. 19, 1978, as amended at 48 FR 9805, Mar. 8, 1983]

§ 715.20 Revegetation.

(a) *General.* (1) The permittee shall establish on all land that has been disturbed, a diverse, effective, and permanent vegetative cover of species native to the area of disturbed land or species that will support the planned postmining uses of the land approved according to § 715.13. For areas designated as prime farmland, the reclamation procedures of § 716.7 shall apply.

(2) Revegetation shall be carried out in a manner that encourages a prompt vegetative cover and recovery of productivity levels compatible with approved land uses. The vegetative cover shall be capable of stabilizing the soil surface with respect to erosion. All disturbed lands, except water areas and surface areas of roads that are approved as a part of the postmining land use, shall be seeded or planted to achieve a vegetative cover of the same seasonal variety native to the area of disturbed land. If both the pre- and postmining land use is intensive agriculture, planting of the crops normally grown will meet the requirement. Vegetative cover will be considered of the same seasonal variety when it consists of a mixture of species of equal or superior utility for the intended land use when compared with the utility of naturally occurring vegetation during each season of the year.

(3) On Federal lands, the surface management agency shall be consulted for approval prior to revegetation regarding what species are selected, and following revegetation, to determine when the area is ready to be used.

(b) *Use of introduced species.* Introduced species may be substituted for native species only if appropriate field trials have demonstrated that the introduced species are of equal or superior utility for the approved postmining land use, or are necessary to achieve a quick, temporary, and stabilizing cover. Such species substitution shall be approved by the regulatory authority. Introduced species shall meet applicable State and Federal seed or introduced species statutes, and shall not include poisonous or potentially toxic species.

(c) *Timing of revegetation.* Seeding and planting of disturbed areas shall be

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conducted during the first normal period for favorable planting conditions after final preparation. The normal period for favorable planting shall be that planting time generally accepted locally for the type of plant materials selected to meet specific site conditions and climate. Any disturbed areas, except water areas and surface areas or roads that are approved under §715.13 as part of the postmining land use, which have been graded shall be seeded with a temporary cover of small grains, grasses, or legumes to control erosion until an adequate permanent cover is established. When rills or gullies, that would preclude the successful establishment of vegetation or the achievement of the postmining land use, form in regraded topsoil and overburden materials as specified in §715.14, additional regrading or other stabilization practices will be required before seeding and planting.

(d) *Mulching.* Mulch shall be used on all regraded and topsoiled areas to control erosion, to promote germination of seeds, and to increase the moisture retention of the soil. Mulch shall be anchored to the soil surface where appropriate, to insure effective protection of the soil and vegetation. Mulch means vegetation residues or other suitable materials that aid in soil stabilization and soil moisture conservation, thus providing micro-climatic conditions suitable for germination and growth, and do not interfere with the postmining use of the land. Annual grains such as oats, rye and wheat may be used instead of mulch when it is shown to the satisfaction of the regulatory authority that the substituted grains will provide adequate stability and that they will later be replaced by species approved for the postmining use.

(e) *Methods of revegetation.* (1) The permittee shall use technical publications or the results of laboratory and field tests approved by the regulatory authority to determine the varieties, species, seeding rates, and soil amendment practices essential for establishment and self-regeneration of vegetation. The regulatory authority shall approve species selection and planting plans.

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(2) Where hayland, pasture, or range is to be the postmining land use, the species of grasses, legumes, browse, trees, or forbes for seeding or planting and their pattern of distribution shall be selected by the permittee to provide a diverse, effective, and permanent vegetative cover with the seasonal variety, succession, distribution, and regenerative capabilities native to the area. Livestock grazing will not be allowed on reclaimed land until the seedlings are established and can sustain managed grazing. The regulatory authority, in consultation with the permittee and the landowner or in concurrence with the governmental landmanaging agency having jurisdiction over the surface, shall determine when the revegetated area is ready for livestock grazing.

(3) Where forest is to be the postmining land use, the permittee shall plant trees adapted for local site conditions and climate. Trees shall be planted in combination with an herbaceous cover of grains, grasses, legumes, forbs, or woody plants to provide a diverse, effective, and permanent vegetation cover with the seasonal variety, succession, and regeneration capabilities native to the area.

(4) Where wildlife habitat is to be included in the postmining land use, the permittee shall consult with appropriate State and Federal wildlife and land management agencies and shall select those species that will fulfill the needs of wildlife, including food, water, cover, and space. Plant groupings and water resources shall be spaced and distributed to fulfill the requirements of wildlife.

(f) *Standards for measuring success of revegetation.* (1) Success of revegetation shall be measured on the basis of reference areas approved by the regulatory authority. Reference areas mean land units of varying size and shape identified and maintained under appropriate management for the purpose of measuring ground cover, productivity and species diversity that are produced naturally. The reference areas must be representative of geology, soils, slope, aspect, and vegetation in the permit area. Management of the reference area shall be comparable to that which will be required for the approved

postmining land use of the area to be mined. The regulatory authority shall approve the estimating techniques that will be used to determine the degree of success in the revegetated area.

(2) The ground cover of living plants on the revegetated area shall be equal to the ground cover of living plants of the approved reference area for a minimum of two growing seasons. The ground cover shall not be considered equal if it is less than 90 percent of the ground cover of the reference area for any significant portion of the mined area. Exceptions may be authorized by the regulatory authority for—

(i) Previously mined areas that were not reclaimed to the standards required by this chapter prior to the effective date of these regulations. The ground cover of living plants for such areas shall not be less than required to control erosion, and in no case less than that existing before redisturbance.

(ii) Areas to be developed immediately for industrial or residential use. The ground cover of living plants shall not be less than required to control erosion. As used in this paragraph, *immediately* means less than 2 years after regrading has been completed for the area to be used; and

(iii) Areas to be used for agricultural cropland purposes. Success in revegetation of cropland shall be determined on the basis of crop production from the mined area compared to the reference area. Crop production from the mined area shall be equal to that of the approved reference area for a minimum of two growing seasons. Production shall not be considered equal if it is less than 90 percent of the production of the reference area for any significant portion of the mined area.

(3) Species diversity, distribution, seasonal variety, and vigor shall be evaluated on the basis of the results which could reasonably be expected using the methods of revegetation approved under paragraph (e) of this section.

(g) *Seeding of stockpiled topsoil.* Topsoil stockpiled in compliance with § 715.16 must be seeded or planted with an effective cover of nonnoxious, quick growing annual and perennial plants during the first normal period for fa-

vorable planting conditions or protected by other approved measures as specified in § 715.16.

§ 715.200 Interpretative rules related to general performance standards.

The following interpretations of rules promulgated in part 715 of this chapter have been adopted by the Office of Surface Mining Reclamation and Enforcement.

(a)–(b) [Reserved]

(c) *Interpretation of § 715.16(a)(4)—Topsoil Removal.* (1) Results of physical and chemical analyses of topsoil and selected overburden materials to demonstrate that the selected overburden materials or overburden materials/topsoil mixture is more suitable for restoring land capability and productivity than the available topsoil, provided the analyses, trials, or tests are certified by a qualified soil scientist or agronomist, may be obtained from any one or a combination of the following sources:

(i) U.S. Department of Agriculture Soil Conservation Service published data based on established soil series;

(ii) U.S. Department of Agriculture Soil Conservation Service Technical Guides;

(iii) State agricultural agency, university, Tennessee Valley Authority, Bureau of Land Management or U.S. Department of Agriculture Forest Service published data based on soil series properties and behavior; or

(iv) Results of physical and chemical analyses, field site trials, or greenhouse tests of the topsoil and overburden materials (soil series) from the permit area.

(2) If the operator demonstrates through soil survey or other data that the topsoil and unconsolidated material are insufficient and substitute materials will be used, only the substitute materials must be analyzed in accordance with 30 CFR 715.16(a)(4)(i).

(Sec. 501, 502, 504, 508, 515, 516, Pub. L. 95-87, 91 Stat. 467, 468, 471, 478, 492, 496 (30 U.S.C. 1251, 1252, 1254, 1258, 1265, 1266))

[45 FR 26000, Apr. 16, 1980 and 45 FR 39447, June 10, 1980, as amended at 45 FR 73946, Nov. 7, 1980]

PART 716—SPECIAL PERFORMANCE STANDARDS

Sec.

- 716.1 General obligations.
- 716.2 Steep-slope mining.
- 716.3 Mountaintop removal.
- 716.4 Special bituminous coal mines.
- 716.5 Anthracite coal mines.
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- 716.10 Information collection.

AUTHORITY: Secs. 201, 501, 527 and 529, Pub. L. 95-87, 91 Stat. 445 (30 U.S.C. 1201).

SOURCE: 42 FR 62691, Dec. 13, 1977, unless otherwise noted.

§ 716.1 General obligations.

(a) This part establishes special initial performance standards that apply in the following special circumstances—

- (1) § 716.2 applies to surface coal mining operations on steep slopes.
- (2) § 716.3 applies to surface coal mining operations involving mountaintop removal.
- (3) § 716.4 applies to special bituminous coal mines.
- (4) § 716.5 applies to anthracite surface coal mining operations.
- (5) § 716.6 applies to surface coal mining operations in Alaska.
- (6) § 716.7 applies to surface coal mining operations on prime farmlands.

(b) All surface coal mining and reclamation operations subject to this part shall comply with the applicable special performance standards in this part. Such operations shall also comply with all general performance standards in part 715 of this chapter unless specifically exempted *in this part* from the requirements of part 715.

§ 716.2 Steep-slope mining.

The permittee conducting surface coal mining and reclamation operations on natural slopes that exceed 20 degrees, or on lesser slopes that require measures to protect the area from disturbance, as determined by the regulatory authority after consideration of soils, climate, the method of operation, geology, and other regional characteristics, shall meet the following performance standards. The standards of this section do not apply where mining is done on a flat or gently rolling ter-

rain with an occasional steep slope through which the mining proceeds and leaves a plain or predominantly flat area; or where the mining is governed by § 716.3.

(a) Spoil, waste materials or debris, including that from clearing and grubbing, and abandoned or disabled equipment, shall not be placed or allowed to remain on the downslope.

(b) The highwall shall be completely covered with spoil and the disturbed are a graded to comply with the provisions of § 715.14 of this chapter. Land above the highwall shall not be disturbed unless the regulatory authority finds that the disturbance will facilitate compliance with the requirements of this section.

(c) Material in excess of that required to meet the provisions of § 715.14 of this chapter shall be disposed of in accordance with the requirements of § 715.15 of this chapter.

(d) Woody materials may be buried in the backfilled area only when burial does not cause, or add to, instability of the backfill. Woody materials may be chipped and distributed through the backfill when approved by the regulatory authority.

(e) Variances from approximate original contour restoration requirements. (1) This section applies to surface coal mining operations on steep slopes where the operation is not to be reclaimed to achieve the approximate original contour and is not a mountaintop removal operation.

(2) The objective of this subsection is to allow for a variance from the approximate original contour restoration requirements on steep slopes to—

(i) Improve watershed control of the area; and

(ii) Allow the land to be used for an industrial, commercial, residential, or public use, including recreational facilities.

(3) The regulatory authority may grant a variance from the requirement for restoration of the affected lands to their approximate original contour only if it first finds, in writing, on the basis of a showing made by the permittee, that all of the following requirements are met:

(i) The permittee has demonstrated that the purpose of the variance is to