
Rules of
Department of Natural Resources
Division 40–Land Reclamation Commission
Chapter 3–Permanent Performance Requirements
for Surface Coal Mining and Related Activities

Title	Page
10 CSR 40-3.010 Signs and Markers—General Requirements.....	3
10 CSR 40-3.020 Requirements for Casing and Sealing of Drilled Holes	3
10 CSR 40-3.030 Requirements for Topsoil Removal, Storage and Redistribution	3
10 CSR 40-3.040 Requirements for Protection of the Hydrologic Balance.....	4
10 CSR 40-3.050 Requirements for the Use of Explosives	10
10 CSR 40-3.060 Requirements for the Disposal of Excess Spoil.....	14
10 CSR 40-3.070 Requirements for the Protection of Underground Mining.....	17
10 CSR 40-3.080 Requirements for the Disposal of Coal Processing Waste	17
10 CSR 40-3.090 Requirements for the Protection of Air Resources	19
10 CSR 40-3.100 Requirements for the Protection of Fish, Wildlife and Related Environmental Values and Protection Against Slides and Other Damage.....	19
10 CSR 40-3.110 Backfilling and Grading Requirements	20
10 CSR 40-3.120 Revegetation Requirements	22
10 CSR 40-3.130 Postmining Land Use Requirements.....	26
10 CSR 40-3.140 Road and Other Transportation Requirements	26
10 CSR 40-3.150 Requirements for Coal Recovery, Land Reclamation and Cessation of Operations	33
10 CSR 40-3.160 Training, Examination and Certification of Blasters	33
10 CSR 40-3.170 Signs and Markers for Underground Operations.....	44
10 CSR 40-3.180 Casing and Sealing of Exposed Underground Openings.....	44

10 CSR 40-3.190	Requirements for Topsoil Removal, Storage and Redistribution for Underground Operations	44
10 CSR 40-3.200	Requirements for Protection of the Hydrologic Balance for Underground Operations	45
10 CSR 40-3.210	Requirements for the Use of Explosives for Underground Operations	52
10 CSR 40-3.220	Disposal of Underground Development Waste and Excess Spoil	56
10 CSR 40-3.230	Requirements for the Disposal of Coal Processing Waste for Underground Operations	59
10 CSR 40-3.240	Air Resource Protection	61
10 CSR 40-3.250	Requirements for the Protection of Fish, Wildlife and Related Environmental Values and Protection Against Slides and Other Damage	61
10 CSR 40-3.260	Requirements for Backfilling and Grading for Underground Operations	62
10 CSR 40-3.270	Revegetation Requirements for Underground Operations.....	63
10 CSR 40-3.280	Requirements for Subsidence Control Associated With Underground Mining Operations	66
10 CSR 40-3.290	Requirements for Road and Other Transportation Associated With Underground Operations	67
10 CSR 40-3.300	Postmining Land Use Requirements for Underground Operations	73
10 CSR 40-3.310	Coal Recovery, Land Reclamation and Cessation of Operation for Underground Operations	74

**Title 10—DEPARTMENT OF
NATURAL RESOURCES**

**Division 40—Land Reclamation
Commission**

**Chapter 3—Permanent Performance
Requirements for Surface Coal Mining
and Related Activities**

**10 CSR 40-3.010 Signs and Markers—
General Requirements**

PURPOSE: This rule sets forth general requirements as to signs and markers applicable to permanent performance requirements for surface coal mining in keeping with section 444.810, RSMo.

(1) Specifications. Signs and markers required under this chapter shall—

- (A) Be posted and maintained by the person who conducts the surface mining activities;
- (B) Be of a uniform design throughout the operation that can be easily seen and read;
- (C) Be made of durable material; and
- (D) Conform to local ordinances and codes.

(2) Duration of Maintenance. Signs and markers shall be maintained during the conduct of all activities to which they pertain.

(3) Mine and Permit Identification Signs.

(A) Identification signs shall be displayed at each point of access to the permit area from public roads.

(B) Signs shall show the name, business address and telephone number of the person who conducts the surface mining activities and the identification number of the current permit authorizing surface mining activities.

(C) Signs shall be retained and maintained until after the release of all bonds for the permit area.

(4) Perimeter Markers. The perimeter of a permit area shall be clearly marked before the beginning of surface mining activities.

(5) Bonded Area Markers. Where the permit area is bonded incrementally, the area bonded shall be clearly marked before the beginning of surface mining activities. Where the permit area is released in segments, the segments released shall be marked at the time of the release inspection unless already delineated by natural or man-made boundaries.

(6) Buffer Zone Markers. Buffer zones shall be marked along their boundaries as required under 10 CSR 40-3.040(18).

(7) Topsoil Markers. Where topsoil or other vegetation-supporting material is segregated and stockpiled as required under 10 CSR

40-3.030(3), the stockpiled material shall be clearly marked.

Auth: section 444.530, RSMo (1994). Original rule filed Oct. 12, 1979, effective Feb. 11, 1980. Amended: Filed Jan. 5, 1987, effective July 1, 1987. Amended: Filed July 3, 1990, effective Nov. 30, 1990. Amended: Filed May 15, 1992, effective Jan. 15, 1993.*

**Original authority 1971, amended 1983, 1990, 1993.*

**10 CSR 40-3.020 Requirements for
Casing and Sealing of Drilled Holes**

PURPOSE: This rule sets forth the requirements for casing and sealing of drilled holes pursuant to sections 444.810 and 444.855.2(10)(iii), RSMo.

Editor's Note: The secretary of state has determined that the publication of this rule in its entirety would be unduly cumbersome or expensive. The entire text of the material referenced has been filed with the secretary of state. This material may be found at the Office of the Secretary of State or at the headquarters of the agency and is available to any interested person at a cost established by state law.

(1) General Requirements. Each exploration hole, other drill or borehole, well or other exposed underground opening shall be cased, sealed or otherwise managed, as approved in the permit and plan, to prevent acid or other toxic drainage from entering ground or surface waters, to minimize disturbance to the prevailing hydrologic balance and to ensure the safety of people, livestock, fish and wildlife, and machinery in the mine plan and adjacent area. If these openings are uncovered or exposed by surface mining activities within the permit area, they shall be permanently closed, unless approved for water monitoring or otherwise managed in a manner approved in the permit and plan. Use of a drilled hole or borehole or monitoring well as a water well must meet the provisions of 10 CSR 40-3.040(13). This section does not apply to holes solely drilled and used for blasting.

(2) Temporary Casing and Sealing. Each exploration hole, other drill or boreholes, wells and other exposed underground openings which have been identified in the approved permit application to be used to monitor the groundwater conditions shall be temporarily sealed before use and protected during use by barricades, fences or other protective devices approved in the permit and plan. These devices shall be inspected periodically and maintained

in good operating condition by the person who conducts the surface mining activities.

(3) Permanent Casing and Sealing. When no longer needed for monitoring or other use approved in the permit and plan, upon a finding of no adverse environmental or health or safety effect, or unless approved for transfer as a water well under 10 CSR 40-3.040(13), each exploration hole, other drilled hole or borehole, well and other exposed underground opening shall be capped, sealed, backfilled or otherwise properly managed, as required in the permit and plan under section (1) of this rule and consistent with 30 CFR 75.1711. Permanent closure measures shall be designed to prevent access to the mine workings by people, livestock, fish and wildlife and machinery and to keep acid or other toxic drainage from entering ground or surface waters.

Auth: section 444.530, RSMo (1994). Original rule filed Oct. 12, 1979, effective Feb. 11, 1980.*

**Original authority 1971, amended 1983, 1990, 1993.*

**10 CSR 40-3.030 Requirements for Top-
soil Removal, Storage and Redistribution**

PURPOSE: This rule sets forth the requirements for topsoil removal, storage and redistribution pursuant to sections 444.810 and 444.855.2(5), RSMo.

(1) General Requirements.

(A) Topsoil and subsoils to be saved under section (2) of this rule shall be separately removed and segregated from other material.

(B) After removal, topsoil shall either be immediately redistributed as required under section (4) of this rule or stockpiled pending redistribution as required under section (3) of this rule.

(C) Topsoil and subsoils to be saved under section (2) of this rule shall be removed twenty-five feet (25') in advance of mining unless otherwise stated in the permit.

(2) Topsoil Removal.

(A) Timing. Topsoil shall be removed after vegetative cover that would interfere with the use of the topsoil is cleared from the areas to be disturbed, but before any drilling, blasting, mining or other surface disturbance identified and approved in the permit and plan.

(B) Materials to be Removed. All topsoil shall be removed in a separate layer from the areas to be disturbed, unless use of substitute or supplemental materials is approved in the permit and plan in accordance with subsection (2)(E) of this rule. If use of substitute or

supplemental materials is approved, all materials to be redistributed shall be removed.

(C) Materials to be Removed in Thin Topsoil Situations. If the topsoil is less than six inches (6"), a six-inch (6") layer that includes the A horizon and the unconsolidated materials immediately below the A horizon or the A horizon and all unconsolidated material if the total available is less than six inches (6") shall be removed and the mixture segregated and redistributed as the surface soil layer, unless topsoil substitutes are approved in the permit and plan pursuant to subsection (2)(E) of this rule.

(D) Subsoil Segregation. The B horizon and portions of the C horizon, or other underlying layers demonstrated to have qualities for comparable root development shall be segregated and replaced as subsoil, if the permit and plan requires that either of these is necessary or desirable to ensure soil productivity consistent with the approved postmining land use.

(E) Topsoil Substitutes and Supplements.

1. Selected overburden materials may be substituted for or used as a supplement to topsoil, if in the permit and the plan it is determined that the resulting soil medium is equal to or more suitable for sustaining revegetation than is the available topsoil and the substitute material is the best available to support revegetation. This determination shall be based on—

A. The results of chemical and physical analyses of overburden and topsoil. These analyses shall include determinations of pH, net acidity or alkalinity, phosphorus, potassium, texture class and other analyses as required in the permit and plan. It may also be required in the permit and plan that results of field-site trials or greenhouse tests be used to demonstrate the feasibility of using these overburden materials; and

B. Results of analyses, trials and tests submitted to the director. Certification of trials and tests shall be made by a laboratory approved by the commission or director, stating that the—

(I) Proposed substitute material is equal to or more suitable for sustaining the vegetation than is the available topsoil;

(II) Substitute material is the best available material to support the vegetation; and

(III) Trials and tests were conducted using standard testing procedures.

2. Substituted or supplemental material shall be removed, segregated and replaced in compliance with the requirements for topsoil under this section.

(F) Limits on Topsoil Removal Area. These limits shall be addressed and approved as required to meet 10 CSR 40-3.040, 10 CSR 40-3.090, 10 CSR 40-6.040 and 10 CSR 40-6.050.

Where the removal of vegetative material, topsoil or other materials may result in erosion which may cause air or water pollution—

1. The size of the area from which topsoil is removed at any one time shall be limited;

2. The surface soil layer shall be redistributed at a time when the physical and chemical properties of topsoil can be protected and erosion can be minimized; and

3. Other measures shall be taken as approved or required in the permit and plan to control erosion.

(3) Topsoil Storage.

(A) Topsoil and other materials removed under section (2) of this rule shall be stockpiled only when it is impractical to promptly redistribute this material on regraded areas.

(B) Stockpiled material shall be selectively placed on a stable area within the permit area, not disturbed and protected from wind and water erosion, unnecessary compaction and contaminants which lessen the capability of the materials to support vegetation when redistributed.

1. Protection measures shall be accomplished either by—

A. An effective cover of nonnoxious quickgrowing annual and perennial plants, seeded or planted during the first normal period after removal for favorable planting conditions; or

B. Other methods demonstrated in and approved in the permit and plan to provide equal protection.

2. Unless approved in the permit and plan, stockpiled topsoil and other materials shall not be moved until required for redistribution on a regraded area.

(4) Topsoil Redistribution.

(A) After final grading and before the replacement of topsoil and other materials segregated in accordance with section (3) of this rule, regraded land shall be scarified or otherwise treated as required in the permit and plan to eliminate slippage surfaces and to promote root penetration. If the person who conducts the surface mining activities shows through appropriate tests, and the commission or director approves, that no harm will be caused to the topsoil and vegetation, scarification may be conducted after topsoiling.

(B) Topsoil and other material shall be redistributed in a manner that—

1. Achieves an approximate uniform, stable thickness consistent with the approved postmining land uses, contours and surface water drainage system;

2. Prevents excess compaction and/or contamination of the topsoil; and

3. Protects the topsoil from wind and water erosion before and after it is seeded and planted.

(5) Topsoil Nutrients and Soil Amendments. Nutrients and soil amendments in the amounts determined by soil tests shall be applied to the redistributed surface soil layer, so that it supports the approved postmining land use and meets the revegetation requirements of 10 CSR 40-3.120. All soil tests shall be performed by a qualified laboratory using standard methods approved in the permit and plan.

*Auth: section 444.530, RSMo (1994).**
Original rule filed Oct. 12, 1979, effective Feb. 11, 1980. Amended: Filed July 3, 1990, effective Nov. 30, 1990. Amended: Filed Sept. 15, 1994, effective April 30, 1995.

**Original authority 1971, amended 1983, 1990, 1993.*

10 CSR 40-3.040 Requirements for Protection of the Hydrologic Balance

PURPOSE: This rule sets forth the requirements for protection of the hydrologic balance pursuant to sections 444.810 and 444.885.2(10), RSMo.

Editor's Note: The secretary of state has determined that the publication of this rule in its entirety would be unduly cumbersome or expensive. The entire text of the rule has been filed with the secretary of state. The technical release and practice standard are incorporated by reference as they exist on the date of adoption of this rule. The entire text of this rule may be found at the headquarters of the agency and is available to any interested person at a cost established by state law.

(1) General Requirements.

(A) Surface mining activities shall be planned and conducted to minimize changes to the prevailing hydrologic balance in both the mine plan and adjacent areas in order to prevent long-term adverse changes in that balance that could result from those activities.

(B) Mining and reclamation activities shall be conducted to prevent material damage to the hydrologic balance outside the permit area.

(C) Changes in water quality and quantity, in the depth to groundwater and in the location of surface water drainage channels shall be minimized so that the approved postmining land use of the permit area is not adversely affected.

(D) In no case shall federal and state water quality statutes, regulations, standards or effluent limitations be violated.

(E) Operations shall be conducted to minimize water pollution and, where necessary, treatment methods shall be used to control water pollution.

1. Each person who conducts surface mining activities shall emphasize mining and reclamation practices that prevent or minimize water pollution. Changes in flow of drainage shall be used in preference to the use of water treatment facilities.

2. Acceptable practices to control and minimize water pollution include, but are not limited to:

A. Stabilizing disturbed areas through land shaping;

B. Diverting runoff;

C. Achieving quickly germinating and growing stands of temporary vegetation;

D. Regulating channel velocity of water;

E. Lining drainage channels with rock or vegetation;

F. Mulching;

G. Selectively placing and sealing acid- and toxic-forming materials; and

H. Selectively placing waste materials in backfill areas.

3. If the practices listed in paragraph (1)(E)2. of this rule are not adequate to meet the requirements of this chapter, the person who conducts surface mining activities shall operate and maintain the necessary water treatment facilities for as long as treatment is required under this chapter.

(2) Water Quality Standards and Effluent Limitations.

(A) General Limitations.

1. 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.

2. Sedimentation ponds and other treatment facilities shall be maintained until the disturbed area has been restored and the vegetation requirements of 10 CSR 40-3.120 are met and the quality of the untreated drainage from the disturbed area meets the applicable state and federal water quality standards and requirements for the receiving stream.

3. Exemptions may be granted in the permit and plan from these requirements only when—

A. The disturbed drainage area within the total disturbed area is small; and

B. The person who conducts the surface mining activities demonstrates that sedimentation ponds and treatment facilities are not

necessary for drainage from the disturbed drainage areas to meet the effluent limitations in the following table and the applicable state and federal water quality standards for downstream receiving waters.

4. For the 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 chapter and the upstream area is not otherwise disturbed by the person who conducts the surface mining activities.

5. Sedimentation ponds required by this section shall be constructed in accordance with section (6) of this rule, in appropriate locations before beginning any surface mining activities in the drainage area to be affected.

6. Where the sedimentation pond or series of sedimentation ponds is used so as to result in the mixing of drainage from the disturbed areas with drainage from other areas not disturbed by current surface coal mining and reclamation operations, the permittee shall achieve the effluent limitations set forth in the following for all of the mixed drainage when it leaves the permit area.

(B) Discharges of water from areas disturbed by surface mining activities shall be made in compliance with all applicable state and federal water quality laws and regulations and with the effluent limitations for coal mining promulgated by the Missouri Clean Water Commission set forth in 10 CSR 20-7.015 and promulgated by the federal government set forth in the Federal Water Pollution Control Act, P.L. 92-500, 92nd Congress.

(C) Adequate facilities shall be installed, operated and maintained to treat any water discharged from the disturbed area so that it complies with all federal and state laws, regulations and limitations of this section. If the pH of water to be discharged from the disturbed area is less than 6.0, an automatic lime feeder or other automatic neutralization process approved in the permit and plan shall be installed, operated and maintained. The permit and plan may authorize the use of a manual system, if it is found that—

1. Flow is infrequent and presents small and infrequent treatment requirements to meet applicable standards which do not require use of an automatic neutralization process; and

2. Timely and consistent treatment is ensured.

(3) Diversions and Conveyance of Overland Flow and Shallow Groundwater Flow and Ephemeral Streams. Overland flow, including flow through litter and shallow groundwater flow from undisturbed areas, and flow in ephemeral streams, may be diverted away from disturbed areas by means of temporary or permanent diversions, if required or approved

in the permit and plan as necessary to minimize erosion, to reduce the volume of water to be treated and to prevent or remove water from contact with acid- or toxic-forming materials. The following requirements shall be met for all diversions and for all collection drains that are used to transport water into water treatment facilities and for all diversions of overland and shallow groundwater flow and ephemeral streams:

(A) Temporary diversions shall be constructed to pass safely the peak runoff from a precipitation event with a two (2)-year recurrence interval or a larger event as specified in the permit and plan;

(B) To protect fills and property and to avoid danger to public health and safety, permanent diversions shall be constructed to pass safely the peak runoff from a precipitation event with a ten (10)-year recurrence interval or a larger event as specified in the permit and plan. Permanent diversions shall be constructed with gently sloping banks that are stabilized by vegetation. Asphalt, concrete or other similar linings shall be used only when approved in the permit and plan to prevent seepage or to provide stability;

(C) Diversions shall be designed, constructed and maintained in a manner which prevents additional contributions of suspended solids to streamflow and to runoff outside the permit area, to the extent possible using the best technology currently available. Appropriate sediment control measures for these diversions may include, but not be limited to, maintenance of appropriate gradients, channel lining revegetation, roughness structures and detention basins;

(D) No diversion shall be located so as to increase the potential for landslides. No diversion shall be constructed on existing landslides, unless approved in the permit and plan;

(E) When no longer needed, each temporary diversion shall be removed and the affected land regraded, topsoiled and revegetated in accordance with 10 CSR 40-3.030(4) and (5), 10 CSR 40-3.110 and 10 CSR 40-3.120;

(F) Diversion design shall incorporate the following:

1. Channel lining shall be designed using standard engineering practices to pass safely the design velocities. Riprap shall comply with the applicable requirements of 10 CSR 40-3.060(2)(B)3., except for sand and gravel;

2. Freeboard shall be no less than 0.3 feet. Protection shall be provided for transition of flows and for critical areas such as swales and curves. Where the area protected is a critical area as determined in the permit and plan, the design freeboard may be increased;