

ENVIRONMENTAL QUALITY

CHAPTER 24

RECLAMATION

Subchapter 9

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Underground Coal and Uranium Mining

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Subchapter 9

Strip and Underground Mine Reclamation Act:
Underground Coal and Uranium Mining17.24.901 GENERAL APPLICATION AND REVIEW REQUIREMENTS

(1) In addition to appropriate material required under subchapter 3, any plan for underground mining must include the following:

(a) a detailed description, with appropriate drawings, of permanent entry seals and down-slope barriers designed to ensure stability under anticipated hydraulic heads developed while promoting mine inundation after mine closure for the proposed mine plan area;

(b) descriptions, including appropriate maps and cross-section drawings, of the proposed disposal methods and sites for placing waste and excess spoil generated at surface areas affected by surface operations and facilities. Each plan must describe the geotechnical-investigation, design, construction, operation, maintenance and removal, if appropriate, of the structures and be prepared according to ARM 17.24.313, 17.24.320, 17.24.505, 17.24.510, and 17.24.520;

(c)(i) a complete subsidence control plan for the proposed operation which must include:

(A) a map of the proposed underground workings;

(B) the proposed technique of coal extraction, such as longwall, room and pillar, hydraulic mining, or other methods;

(C) a description of the sequence and timing for the development of the underground workings;

(D) a description of the physical and geological conditions, such as depth of cover, seam thickness, and lithology of overlying strata, affecting the subsidence potential;

(E) an analysis of the amount and lateral extent of planned or controlled subsidence anticipated, using acceptable geotechnical practices, including specific methods proposed for the control of subsidence;

(F) a survey, including a map at 1":400' scale or larger as determined by the department and a narrative, which shows the location and type of all structures, renewable resource lands, and domestic water supplies within the permit area and adjacent areas, and whether subsidence, if it should occur, could cause material damage or diminish the reasonably foreseeable use of such structures or lands, or could contaminate, diminish, or interrupt such domestic water supplies; and

(G) of the structures and domestic water supplies identified in (1)(c)(i)(F) (the structure survey requirements of ARM 17.24.911(4) notwithstanding), a survey of the condition of all non-commercial buildings or occupied residential dwellings and structures related thereto, and a determination, in accordance with ARM 17.24.304(1)(e) and (1)(f), of the quality and quantity of all domestic water supplies.

(I) The applicant must submit copies of the results of this survey and determination to the surface owner of the land where the above structures and domestic water supplies are found, as well as to the department.

(II) If the applicant cannot make this survey and determination because the surface owner will not allow access, the applicant must notify the surface owner, in writing, of the effect that denial of access will have on the rebuttable presumption of causation of subsidence as stated in ARM 17.24.911(8)(b). This notification must be documented in the application;

(ii) If the plan shows that no such structures or renewable resource lands, or domestic water supplies exist, or that no such material damage or diminution of the reasonably foreseeable use of such structures or lands, and no contamination, diminution, or interruption of such water supplies would occur as a result of mine subsidence, and if the department agrees with such conclusion, no further information must be provided in the application under this section;

(iii) In the event the survey shows such structures, renewable resource lands, or water supplies exist, and that subsidence could cause material damage or diminution of value or foreseeable use of the land or contamination, diminution, or interruption of such water supplies, or if the department determines that such damage or diminution or contamination, diminution, or interruption could occur, the application must include the following information:

(A) a detailed description of the measures to be taken to prevent subsidence and subsidence-related damage, including:

(I) the anticipated effects of planned subsidence, if any, and a map of the proposed underground mine workings which shows the location and extent of the areas in which planned-subsidence mining methods will be used and that identifies all areas where the measures in (1)(e)(i)(C) will be taken to prevent subsidence-related damage;

(II) measures, if any, to be taken in the mine to prevent subsidence including, but not limited to, such measures as backstowing or backfilling of voids, leaving support pillars of coal, and areas in which no coal removal is planned, including a description of the overlying area to be protected by leaving coal in place;

(III) measures to be taken on the surface to prevent material damage or diminution of the value or the reasonably foreseeable use of structures or the surface, including such measures as reinforcement of sensitive structures or features, installation of footers designed to reduce damage caused by movement, change of location of pipelines, utility lines, or other features, relocation of movable improvements to sites outside the angle-of-draw, and monitoring to determine the commencement and degree of subsidence so that other appropriate measures can be taken to prevent material damage in accordance with ARM 17.24.911. For areas where planned subsidence is proposed, written consent or request by the owners of non-commercial buildings and occupied residential dwellings and structures related thereto that material damage prevention measures should not or need not be taken may be provided in lieu of a description of prevention measures to be taken;

(B) a detailed description of the measures to be taken to mitigate the effects of any material damage or diminution of value or foreseeable use of lands that may occur, including one or more of the following:

(I) restoration or rehabilitation of structures and features, including approximate land-surface contours, to premining condition;

(II) replacement of structures and water sources adversely affected by subsidence;

(III) purchase of structures prior to mining and restoration of the land after subsidence to a condition capable of supporting and suitable for the structures and foreseeable land uses; and

(IV) purchase of non-cancelable insurance policies payable to surface owner in the full amount of the possible material damage or other comparable measures;

(C) a detailed description of measures to be taken to determine the degree of material damage or diminution of value or foreseeable use of the surface, including such measures as:

(I) the results of presubsidence surveys of all structures and surface features that might be materially damaged by subsidence;

(II) monitoring proposed to measure deformations near specified structures or features or otherwise as appropriate for the operation;

(D) any other information that the department deems necessary to demonstrate compliance with ARM 17.24.911;

(d) location of each water and subsidence monitoring point;

(e) location of each facility that will remain on the proposed permit area as a permanent feature, after the completion of underground mining operations;

(f) a description of the design, operation and maintenance of any proposed processing waste disposal facility, including flow diagrams and any other necessary drawings and maps, for the approval of the department and the mine safety and health administration;

(g) a description of the source and quality of waste to be stowed, area to be backfilled, percent of the mine void to be filled, method of constructing underground retaining walls, influence of the backfilling operation on the active underground mine operations, surface area to be supported by the backfill, and the anticipated occurrence of surface effects following backfilling, including:

(i) a description of the source of the hydraulic transport mediums, method of dewatering the placed backfill, retention of water underground, treatment of water if released to the surface; and

(ii) a description of each permanent monitoring well to be located in the backfilled area, the stratum underlying the mined coal, and gradient from the backfilled area.

(h) a complete description, where applicable, of any hydraulic mining or transport system for coal, including:

(i) the source of the hydraulic medium;

(ii) methods for dewatering the coal;

(iii) methods for control or containment of water underground; and

(iv) treatment of water to be released at the surface, if any.

(2) The requirements of (1)(g) and (h) also apply to pneumatic backfilling operations, except where the operations are exempted by the department from requirements specifying hydrologic monitoring. (History: 82-4-204, MCA; IMP, 82-4-222, MCA; NEW, 1980 MAR p. 725, Eff. 4/1/80; AMD, 1989 MAR p. 30, Eff. 1/13/89; TRANS, from DSL, 1996 MAR p. 2852; AMD, 1999 MAR p. 811, Eff. 4/23/99; AMD, 1999 MAR p. 2768, Eff. 12/3/99; AMD, 2004 MAR p. 2548, Eff. 10/22/04; AMD, 2012 MAR p. 737, Eff. 4/13/12.)

17.24.902 APPLICATION REQUIREMENTS FOR IN SITU COAL PROCESSING OPERATIONS (1) Except as provided in ARM 17.24.905, an application for a permit for in situ coal processing operations must be made according to all requirements of ARM 17.24.901. In addition, the mining and reclamation operations plan for operations involving in situ processing operations must contain information establishing how those operations will be conducted in compliance with the requirements of ARM 17.24.907, including:

(a) delineation of proposed holes and wells and production zones for approval of the department;

(b) specifications of drill holes and casings proposed to be used;

(c) a plan for treatment, confinement or disposal of all acid-forming, toxic-forming or radioactive gases, solids, or liquids constituting a fire, health, safety or environmental hazard caused by the mining and recovery process; and

(d) plans for monitoring surface and ground water and air quality as required by the department.

(2) No permit may be issued for in situ coal processing operations unless the department first finds, in writing, upon the basis of a complete application, that the operation will be conducted in compliance with all requirements of ARM 17.24.903 through 17.24.907. (History: 82-4-204, 82-4-205, 82-4-207, MCA; IMP, 82-4-222, MCA; NEW, 1980 MAR p. 725, Eff. 4/1/80; AMD, 1989 MAR p. 30, Eff. 1/13/89; TRANS, from DSL, 1996 MAR p. 2852; AMD, 2012 MAR p. 1617, Eff. 8/10/12.)

17.24.903 GENERAL PERFORMANCE STANDARDS (1) In addition to all appropriate requirements of subchapters 4 through 8, and 10 through 13, except ARM 17.24.519 and as provided in ARM 17.24.905, the following requirements apply to underground mining operations:

(a) Each prospecting hole, other drill hole or borehole, shaft, well, or other exposed underground opening must be cased, lined, or otherwise managed as approved by the department to prevent acid or other toxic drainage from entering ground and 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, and the safety and integrity of underground mines in the area, present and future. Each prospecting hole, drill hole, borehole, or well that is uncovered or exposed by mining operations must be permanently sealed, in compliance with ARM 17.24.1005, unless approved for water monitoring or otherwise managed in a manner approved by the department. Use of a drilled hole or monitoring well as a water well must meet the provisions of ARM 17.24.647. This rule does not apply to holes drilled and used for blasting in the area affected by surface operations.

(b) Each mine entry, open to the surface, that is temporarily inactive, but has a further projected useful service under the approved permit application, must be protected by barricades or other covering devices, fenced, and posted with signs to prevent access into the entry and to identify the hazardous nature of the opening. These devices must be periodically inspected and maintained in good operating condition by the operator.

(c) Each prospecting hole, other drill hole or borehole, shaft, well, and other exposed underground opening that has been identified in the approved permit application for use to return underground development waste, coal processing waste, water to underground workings, or to be used to monitor ground water conditions, must be temporarily sealed until actual use.

(d) When no longer needed for monitoring or other use approved by the department and upon a finding of no adverse environmental or health and safety effects, each shaft, drift, adit, tunnel, prospecting hole, entry way or other opening to the surface from underground must be capped, sealed, backfilled, or otherwise properly managed, as required by the department in accordance with (1)(a), (g), (h), and (i). Permanent closure measures must be designed to prevent access to the mine workings by people, livestock, fish, wildlife, and machinery and to keep acid or other toxic drainage from entering ground or surface waters.

(e) In addition to the measures identified in ARM 17.24.631 through 17.24.646, the following practices are acceptable for minimizing water pollution in underground mines:

- (i) designing mines to prevent gravity drainage of acid waters;
- (ii) sealing;
- (iii) controlling subsidence; and
- (iv) preventing acid mine drainage;

(f) In addition to the requirements of ARM 17.24.633(1), any discharge of water from underground workings to surface waters that does not meet the effluent limitations of ARM 17.24.633 must also be passed through a sedimentation pond, a series of sedimentation ponds, or a treatment facility before leaving the permit area.

(g) In addition to the requirements of ARM 17.24.633(2), sedimentation ponds and treatment facilities that receive discharges from underground workings must be maintained until the discharge continuously meets the effluent limitations of ARM 17.24.633 without treatment or until the discharge has permanently ceased.

(h) Surface entries and accesses to underground workings, including adits and slopes, must be located, designed, constructed, and utilized to prevent or control gravity discharge of water from the mine.

(i) Gravity discharge of water from an underground mine, other than a drift mine in an acid-producing or iron-producing coal seam, may be allowed by the department, if it is demonstrated that:

(i)(A) the discharge, without treatment, satisfies the water effluent limitations of ARM 17.24.633 and all applicable state and federal water quality standards; and

(B) any changes in the prevailing hydrologic balance are minimal and the approved postmining land uses will not be adversely affected; or,

(ii)(A) the discharge is conveyed to a treatment facility in the permit area in accordance with ARM 17.24.633 through 17.24.640;

(B) all water from the underground mine discharged from the treatment facility meets the effluent limitations of ARM 17.24.633 and all other applicable state and federal statutes and regulations; and

(C) consistent maintenance of the treatment facility will occur throughout the anticipated period of gravity discharge;

(j) For a drift mine located in acid-producing or iron-producing coal seams, surface entries and accesses must be located in such a manner as to prevent any gravity discharge from the mine.

(2) Adversely affected water supplies must be replaced in accordance with 82-4-243 and 82-4-253, MCA, and ARM 17.24.648. (History: 82-4-204, 82-4-207, MCA; IMP, 82-4-227, 82-4-231, 82-4-232, 82-4-233, 82-4-243, 82-4-253, MCA; NEW, 1980 MAR p. 725, Eff. 4/1/80; AMD, 1989 MAR p. 30, Eff. 1/13/89; TRANS, from DSL, 1996 MAR p. 2852; AMD, 1999 MAR p. 811, Eff. 4/23/99; AMD, 2004 MAR p. 2548, Eff. 10/22/04; AMD, 2012 MAR p. 1617, Eff. 8/10/12.)

17.24.904 IN SITU COAL PROCESSING OPERATION PERFORMANCE STANDARDS (1) An operator who conducts in situ coal processing operations shall comply with ARM 17.24.903.

(2) In situ coal processing operations must also be planned and conducted to minimize disturbance to the prevailing hydrologic balance by:

(a) avoiding discharge of fluids into holes or wells, other than as approved by the department;

(b) injecting process recovery fluids only into geologic zones or intervals approved as production zones by the department;

(c) avoiding annular injection between the walls of the drill hole and the casing; and

(d) preventing discharge of process fluid into surface waters.

(3) An operator who conducts in situ coal processing operations shall follow a plan approved pursuant to ARM 17.24.902.

(4) An operator who conducts in situ coal processing operations shall prevent flow of the process recovery fluid:

- (a) horizontally beyond the affected area identified in the permit; and
- (b) vertically into overlying or underlying aquifers.

(5) An operator who conducts in situ coal processing operations shall restore the quality of affected ground water in the mine plan and adjacent areas, including ground water above and below the production zone, to the approximate premining levels or better, to ensure that the potential for use of the ground water is not diminished.

(6) An operator who conducts in situ coal processing operations shall monitor the quality and quantity of surface and ground water and the subsurface flow and storage characteristics, in a manner approved by the department under ARM 17.24.645 and 17.24.646 to measure changes in the quantity and quality of water in surface and ground water systems in the mine plan and adjacent areas. Air and water quality monitoring must be conducted in accordance with monitoring programs approved by the department as necessary according to appropriate federal and state air and water quality standards. (History: 82-4-204, MCA; IMP, 82-4-227, 82-4-231, 82-4-232, 82-4-233, MCA; NEW, 1980 MAR p. 725, Eff. 4/1/80; AMD, 1989 MAR p. 30, Eff. 1/13/89; TRANS, from DSL, 1996 MAR p. 2852.)

17.24.905 RULES NOT APPLICABLE TO IN SITU COAL OPERATIONS

(1) The following rules are not applicable to in situ coal gasification:

- (a) ARM 17.24.311 (Air Pollution Control Plan);
- (b) ARM 17.24.519 (Monitoring for Settlement); and
- (c) ARM 17.24.831 through 17.24.837 (auger mining and re-mining rules).

(2) All other rules may apply on a mine-specific basis. (History: 82-4-207, MCA; IMP, 82-4-221, 82-4-222, 82-4-223, 82-4-225, 82-4-227, 82-4-228, 82-4-231, 82-4-232, 82-4-233, 82-4-237, 82-4-238, 82-4-240, 82-4-243, MCA; NEW, 2012 MAR p. 1617, Eff. 8/10/12; AMD, 2014 MAR p. 678, Eff. 4/11/14.)

Rule 17.24.906 reserved

17.24.907 IN SITU URANIUM PROCESSING OPERATION

PERFORMANCE STANDARDS (1) With regard to the subsurface hydrologic effects of in situ uranium mining, the operator shall comply with all rules of the department, and the operator's bond shall ensure compliance with those rules. With regard to all other effects, the performance standards of this subchapter apply. (History: 82-4-204, MCA; IMP, 82-4-227, 82-4-231, 82-4-232, 82-4-233, MCA; NEW, 1980 MAR p. 725, Eff. 4/1/80; AMD, 1989 MAR p. 30, Eff. 1/13/89; TRANS, from DSL, 1996 MAR p. 3042.)

Rules 17.24.908 through 17.24.910 reserved

17.24.911 SUBSIDENCE CONTROL (1) Underground mining operations must be planned and conducted to prevent or minimize subsidence and subsidence-related material damage to the surface to the extent technologically and economically feasible, to maintain the value and reasonably foreseeable use of surface lands, and to prevent contamination, diminution, and interruption of domestic water supplies. This may be accomplished by leaving adequate coal in place, backfilling, or other measures to support the surface, or by conducting underground mining in a manner that provides for planned and controlled subsidence.

(2) If the operator utilizes planned and controlled subsidence in the mining operation, all necessary measures must be taken to prevent material damage to non-commercial buildings and occupied residential dwellings and all structures related thereto. Such measures are not required if the operator has the written consent of the owners of such structures.

(3) Nothing herein prohibits the standard method of room and pillar mining.

(4) A person engaged in underground mining operations shall comply with all provisions of the subsidence control plan prepared pursuant to ARM 17.24.901 and approved by the department.

(5) A mining schedule must be distributed by mail to all owners of property and residents within the area above the underground workings and adjacent areas. The operator shall notify each such person by mail at least six months prior to mining beneath his or her property or residence. The notification must contain, at a minimum:

(a) identification of specific areas in which mining will take place;

(b) dates of mining activities that could cause subsidence and affect specific structures; and

(c) measures to be taken to prevent or control adverse surface effects.

(6) Upon request to the department by a resident or owner of a structure within the affected area, the operator shall promptly conduct a premining survey of the dwelling or structure as follows:

(a) Any survey requested more than 30 days before the planned initiation of said operations must be completed by the operator before the initiation of the operations.

(b) The survey must determine the condition of the dwelling or structure and document any premining damage. It should identify any physical features which could reasonably be affected by subsidence caused by mining. Special attention must be given to the premining condition of wells and other water systems used for human, animal, or agricultural purposes and to the quantity and quality of that water. Assessment of such features as pipes, cables, transmission lines, wells, or other water systems must be limited to the surface condition and relatively available data.

(c) If a structure is renovated or added to subsequent to a premining survey, then upon request to the department a survey of such additions or renovations must be performed.

(d) A written report of the survey must be prepared and signed by the person conducting the survey. Copies of the report must be provided to the person requesting the report and to the department. If the person requesting the survey disagrees with the results of the survey, he or she may notify, in writing, both the operator and the department of the specific areas of disagreement.

(7) An operator who conducts underground mining which results in subsidence that causes material damage or reduces the value or reasonably foreseeable use of the surface lands shall, in accordance with 82-4-243, MCA, and with respect to each surface area affected by subsidence:

(a) restore, rehabilitate, or remove and replace each damaged structure, feature or value promptly after the damage is suffered to the condition it would have been in if no subsidence had occurred and restore the land to a condition capable of supporting the reasonably foreseeable uses it was capable of supporting before subsidence; or

(b) purchase the damaged structure or feature for its fair market, presubsidence value, and, after subsidence occurs, to the extent technologically and economically feasible, promptly restore the land surface to a condition capable of and suitable for supporting the purchased structure and other foreseeable uses it was capable of supporting before mining. Nothing in this section grants or authorizes an exercise of the power of condemnation or the right of eminent domain by any person engaged in underground mining operations; or

(c) compensate the owner of any surface structure in the full amount of the diminution in value resulting from subsidence, by purchasing, prior to mining, a noncancellable, premium-prepaid insurance policy or other means approved by the department, thereby assuring before mining begins that payment will occur; indemnify every person with an interest in the surface for all damages suffered as a result of the subsidence; and, to the extent technologically and economically feasible, fully restore the land to a condition capable of maintaining reasonably foreseeable uses which it could support before subsidence.

(8) If damage to any non-commercial building or occupied residential dwelling or structure related thereto occurs as a result of earth movement within an area determined by projecting a specified angle of draw from the outermost boundary of any underground mine workings to the surface of the land, a rebuttable presumption of causation of the damage by subsidence exists. The presumption applies to a 30-degree angle of draw.

(a) An operator or permit applicant may request that the presumption apply to an angle of draw different from 30 degrees. The department may approve application of the presumption to a site-specific angle of draw different from 30 degrees if an operator or applicant demonstrates and the department determines in writing that the proposed angle of draw has a more reasonable basis than 30 degrees, based on a site-specific geotechnical analysis of the potential surface impacts of the mining operation.

(b) If the operator or applicant is denied access to the land or property for the purpose of conducting the presubsidence survey in accordance with ARM 17.24.901(1)(c)(i)(G), no rebuttable presumption exists.

(c) The presumption of causation must be rebutted, if the evidence establishes that:

- (i) the damage predated the mining in question;
- (ii) the damage was proximately caused by some other factor or factors and was not proximately caused by subsidence; or
- (iii) the damage occurred outside the surface area circumscribed by the angle of draw.

(d) In any determination whether damage to protected structures was caused by subsidence from underground mining, all relevant and available information will be considered by the department.

(9) Within a schedule approved by the department, the operator shall submit a detailed plan of the underground workings. The plan shall include maps and descriptions of significant features of the underground workings, including the size, configuration, and approximate location of pillars and entries, extraction ratios, measures taken to prevent subsidence and related damages, areas of full extraction, and other information required by the department.

(10) If subsidence-related damage occurs, additional bond in accordance with ARM 17.24.1104(2) may be required. (History: 82-4-204, 82-4-231, MCA; IMP, 82-4-227, 82-4-231, 82-4-243, MCA; NEW, 1980 MAR p. 725, Eff. 4/1/80; AMD, 1989 MAR p. 30, Eff. 1/13/89; TRANS, from DSL, 1996 MAR p. 3042; AMD, 1999 MAR p. 811, Eff. 4/23/99; AMD, 2004 MAR p. 2548, Eff. 10/22/04.)

17.24.912 BUFFER ZONES (1) Underground mining operations must not be conducted beneath or adjacent to any perennial stream or impoundment having a storage volume of 20 acre-feet or more, unless the department, on the basis of detailed subsurface information, determines that subsidence will not cause material damage to streams, water bodies and associated structures. If subsidence causes material damage, then measures will be taken to the extent technologically and economically feasible to correct the same and to prevent additional subsidence from occurring.

(2) Underground mining operations beneath any aquifer that serves as a significant source of water supply to any public water system must be conducted so as to avoid disruption of the aquifer and consequent exchange of ground water between the aquifer and other strata. The department may prohibit mining in the vicinity of the aquifer or may limit the percentage of coal extraction to protect the aquifer and water supply.

(3) Underground mining operations must not be conducted beneath or in close proximity to any public buildings, including, but not limited to, churches, schools, hospitals, courthouses, and government offices, unless the department, on the basis of detailed subsurface information, determines that subsidence from those operations would not cause material damage to these structures and specifically authorizes the mining operations.

(4) The department shall suspend underground mining under urbanized areas, cities, towns, and communities, and adjacent to industrial or commercial buildings, major impoundments or permanent streams if it finds imminent danger to inhabitants of the urbanized areas, cities, towns, or communities. (History: 82-4-204, 82-4-205, MCA; IMP, 82-4-227, 82-4-231, MCA; NEW, 1980 MAR p. 725, Eff. 4/1/80; AMD, 1989 MAR p. 30, Eff. 1/13/89; TRANS, from DSL, 1996 MAR p. 3042.)

Rules 17.24.913 through 17.24.919 reserved

17.24.920 PLACEMENT AND DISPOSAL OF UNDERGROUND DEVELOPMENT WASTE: SPECIAL APPLICATION REQUIREMENTS (1) Each application must contain, where applicable, a narrative and appropriate maps and cross-sections prepared to meet the standards of ARM 17.24.305, describing the proposed disposal methods and sites for placing underground development waste in accordance with ARM 17.24.924 through 17.24.927.

(2) Each plan must describe the geotechnical investigation, design, construction, operation, maintenance, and removal, if appropriate, of the site or structure and be prepared in accordance with ARM 17.24.320. (History: 82-4-204, 82-4-205, 82-4-231, MCA; IMP, 82-4-222, MCA; NEW, 1990 MAR p. 936, Eff. 5/18/90; TRANS, from DSL, 1996 MAR p. 3042.)

Rules 17.24.921 through 17.24.923 reserved

17.24.924 DISPOSAL OF UNDERGROUND DEVELOPMENT WASTE:
GENERAL REQUIREMENTS

(1) To the extent that underground development waste is not proposed for backstowing, it must be demonstrated, to the satisfaction of the department, that valid physical, economic, safety, environmental or other reasons exist for not doing so. Underground development waste to be returned to underground mine workings must be disposed of in accordance with a program approved by the department and the mine safety and health administration.

(2) Underground development waste materials from activities located outside the permit area may be disposed of in the permit area only with approval of the department. Approval must be based upon a showing that disposal will be in accordance with this rule and all applicable rules.

(3) Underground development waste must be hauled or conveyed to and placed in designated disposal areas within a permit area. Underground development waste may not be placed in an impoundment or an embankment. The waste must be placed in a controlled manner to ensure:

(a) that the leachate and surface runoff will be in compliance with ARM 17.24.631 and 17.24.633;

(b) stability and prevention of mass movement during and after construction;

(c) that reclamation and revegetation of the waste disposal area will be achieved in accordance with subchapters 5 through 8, except, in the case of waste disposal structures outside of mine excavation areas, those provisions of subchapter 5 related to approximate original contour are not required;

(d) that a public hazard will not be created; and

(e) that combustion will not occur.

(4)(a) Each waste disposal structure must be designed using current prudent design standards, certified by a licensed professional engineer experienced in the design of similar earth and waste structures, and approved by the department.

(b) Waste disposal structures must meet the requirements of 30 CFR 77.214 and 77.215.

(5) All vegetation and other organic materials must be removed from the disposal site and the soil must be removed, segregated, and stored or replaced pursuant to ARM 17.24.701 through 17.24.703. If approved by the department, organic material may be used as mulch or may be included in the soil to control erosion, promote growth of vegetation, or increase moisture retention of the soil.

(6) Slope protection must be provided to minimize surface erosion at the site. Diversions necessary to control erosion, prevent water infiltration, and ensure stability must be installed. Diversion design must conform with the requirements of ARM 17.24.635 through 17.24.637. All disturbed areas, including diversion ditches that are not riprapped, must be vegetated upon completion of construction.

(7) Except for head-of-hollow and valley fills, disposal structures must be located on the most moderately sloping and naturally stable areas available, except that the department may approve disposal in another area upon determining that disposal in that area would be more environmentally protective. Materials suitable for disposal must be placed upon or above a natural terrace, bench, or berm, if such placement provides additional stability and prevents mass movement.

(8) The waste must be hauled or conveyed and placed in horizontal lifts of not greater than four feet in thickness 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 and ensure a long-term static safety factor of 1.5.

(9) Following final grading of the waste disposal structure, the waste must be covered with a minimum of four feet of the best available non-toxic and non-combustible material, in a manner that does not impede drainage from the underdrains, unless the applicant demonstrates and the department finds that a lesser depth will provide for revegetation consistent with ARM 17.24.711, 17.24.713, 17.24.714, 17.24.716 through 17.24.718, 17.24.721, 17.24.723 through 17.24.726, and 17.24.731. Toxic, acid-forming, and other deleterious waste must be handled and covered in accordance with ARM 17.24.501(2) and 17.24.505(2).

(10) The final configuration of a structure must be suitable for postmining land uses approved in accordance with ARM 17.24.762, except that no depressions or impoundments may be placed on the completed structure.

(11) The final configuration of the structure must be designed to minimize erosion. Terraces may be utilized to control erosion and enhance stability if approved by the department. The outslope of the fill must not exceed 1v:3h, unless otherwise approved in writing by the department, but in no case may the outslope exceed 1v:2h.

(12) Where the natural slope of the disposal site exceeds 1v:3h, or such lesser slope as may be designated by the department based on local conditions, keyway cuts (excavations to stabilized bedrock) or rock toe buttresses must be constructed to stabilize the fill. Where the toe of the underground development waste rests on a downslope, stability analyses must be performed in accordance with ARM 17.24.320 to determine the size of the rock toe buttresses and keyway cuts.

(13) If the disposal site contains springs, natural or manmade watercourses, or wet-weather seeps, an underdrain system consisting of durable rock must be constructed in a manner that prevents infiltration of the water into the underground development waste material and to ensure stability of the disposal structure.

(14) The underdrain system for a structure must be constructed in accordance with the following:

(a) Underdrains must consist of non-degradable, non-acid and non-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 other nondurable material.

(b) A system of underdrains must:

(i) be installed along the natural drainage system;

(ii) extend from the toe to the head of the fill; and

(iii) contain lateral drains to each area of potential drainage or seepage.

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

(d) 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. The minimum size of the main underdrain must meet the following specifications:

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

(15) Drainage must not be directed over the outslope of the fill.

(16) Surface water runoff from the area above a structure must be diverted away from the structure and into stabilized diversion channels designed to pass safely the runoff from a 100-year, six-hour precipitation event or larger event specified by the department. Surface runoff from the structure surface must be diverted to stabilized channels off the fill that will safely pass the runoff from a 100-year, six-hour precipitation event. Diversion design must comply with the requirements of ARM 17.24.637.

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

(18)(a) A qualified licensed professional engineer, or other qualified professional specialist under the direction of the professional engineer, shall inspect each structure during construction. The professional engineer or specialist must be experienced in the construction of earth and waste structures.

(b) The inspections must be made at least quarterly throughout construction and during critical construction periods. The department may require more frequent inspections during any construction period, as necessary. Critical construction periods include, at a minimum:

(i) foundation preparation including the removal of all organic material and soil;

(ii) placement of underdrains and protective filter systems;

(iii) installation of final surface drainage systems; and

(iv) the final grading and revegetation of the site.

(c) Quarterly inspections by the engineer or specialist must also be conducted during placement and compaction of underground development waste. More frequent inspections must be conducted if the department determines that a danger of harm exists to the public health and safety or the environment or that more frequent inspection is necessary to ensure compliance. Inspections must continue until the waste disposal structure has been finally graded and revegetated or until a later time as required by the department.

(d) The qualified licensed professional engineer shall provide a certified report to the department within seven working days after each inspection that the structure has been constructed and maintained as designed and in accordance with the approved plan and this subchapter. The report must include appearances of instability, structural weakness, and other hazardous conditions.

(e) The certified report on the drainage system and protective filters must include color photographs taken during and after construction, but before underdrains are covered with underground development waste. If the underdrain system is constructed in phases, each phase must be certified separately. The photographs accompanying each certified report must be taken in adequate size and number with enough terrain or other physical features of the site shown to provide a relative scale to the photographs and to specifically and clearly identify the site.

(f) A copy of each inspection report must be retained at or near the minesite.

(19) If any inspection discloses that a potential hazard exists, the department must be informed promptly of the finding and of the emergency procedures formulated for public protection and remedial action. If adequate procedures cannot be formulated or implemented, the department must be notified immediately. The department shall then notify the appropriate emergency agencies that other emergency procedures are required to protect the public. The department shall also notify the owner of land upon which the disposal structure is located (if that owner is different from the mining company), adjacent landowners, residences, and businesses that could be adversely affected, including those at least one mile down gradient from the disposal site, of the potential hazard and of the actions being taken.

(20) Disposal of underground waste by incorporation into spoils backfill of excavation areas must be in accordance with (3) and (19). (History: 82-4-204, 82-4-231, MCA; IMP, 82-4-227, 82-4-231, 82-4-232, 82-4-233, MCA; NEW, 1990 MAR p. 936, Eff. 5/18/90; AMD, 1994 MAR p. 2957, Eff. 11/11/94; TRANS, from DSL, 1996 MAR p. 3042; AMD, 1999 MAR p. 811, Eff. 4/23/99; AMD, 1999 MAR p. 2768, Eff. 12/3/99; AMD, 2004 MAR p. 2548, Eff. 10/22/04; AMD, 2012 MAR p. 737, Eff. 4/13/12.)

17.24.925 DISPOSAL OF UNDERGROUND DEVELOPMENT WASTE:

VALLEY FILL (1) Disposal of underground development waste in valley fills must meet all the requirements of ARM 17.24.924, and the following additional requirements of this rule.

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

(3) Underground development waste must be hauled or conveyed and placed in a controlled manner and concurrently compacted as specified by the department, in lifts no greater than four feet, or less if required by the department, to:

- (a) achieve densities designed to ensure mass stability;
- (b) prevent mass movement;
- (c) avoid contamination of the rock underdrain; and
- (d) prevent formation of voids.

(4) The top of the fill must be graded no steeper than 1v:5h, unless otherwise approved in writing by the department.

(5) To control surface runoff, each terrace bench must be graded to a slope of 1v:20h toward the fill. A ditch must be constructed on the inside of each terrace to intercept runoff and divert it toward the channels specified in ARM 17.24.924(16).

(History: 82-4-204, 82-4-205, 82-4-231, MCA; IMP, 82-4-227, 82-4-231, 82-4-232, 82-4-233, MCA; NEW, 1990 MAR p. 936, Eff. 5/18/90; TRANS, from DSL, 1996 MAR p. 3042; AMD, 1999 MAR p. 811, Eff. 4/23/99.)

17.24.926 DISPOSAL OF UNDERGROUND DEVELOPMENT WASTE:

HEAD-OF-HOLLOW FILL (1) Disposal of underground development waste in a head-of-hollow fill must meet all the requirements of ARM 17.24.924 and 17.24.925.

(2) The drainage control system for the head-of-hollow fill must be capable of passing safely the runoff from a 100-year, six-hour precipitation event, or larger event specified by the department. (History: 82-4-204, 82-4-205, 82-4-231, MCA; IMP, 82-4-227, 82-4-231, 82-4-232, 82-4-233, MCA; NEW, 1990 MAR p. 936, Eff. 5/18/90; TRANS, from DSL, 1996 MAR p. 3042; AMD, 2012 MAR p. 737, Eff. 4/13/12.)

17.24.927 DISPOSAL OF UNDERGROUND DEVELOPMENT WASTE: DURABLE ROCK FILLS (1) The department may approve disposal of underground development waste in a durable rock fill on a site-specific basis, provided the method of construction is certified by a licensed professional engineer experienced in the design of earth and rockfill embankments and provided the requirements of ARM 17.24.924 and this rule are met. Underground development waste is eligible for disposal in durable rock fills if it is rock material consisting of at least 80% by volume of sandstone, limestone, or other rocks that do not slake in water and that are non-acid, non-toxic, non-acid-forming and non-toxic-forming. Resistance of the waste to slaking must be determined by using the slake index and slake durability tests in accordance with guidelines and criteria established by the department. Underground development waste must be transported and placed in a specified and controlled manner that will ensure stability of the fill.

(a) The method of waste placement must be designed to ensure mass stability and prevent mass movement.

(b) Loads of noncemented clay shale and/or clay underground development waste in the fill must be mixed with hard rock underground development waste in a controlled manner to limit on a unit basis concentrations of noncemented clay shale and clay in the fill. These noncemented materials must comprise no more than 20% of the fill volume as determined by tests performed by a registered professional engineer and approved by the department.

(2) A qualified licensed professional engineer shall conduct stability analyses in accordance with ARM 17.24.920 and shall certify that the design of the durable rock fill will ensure the stability of the fill and meet all other applicable requirements.

(a) Parameters used in the stability analyses must be based on adequate field reconnaissance, subsurface investigations, including borings, and laboratory tests.

(b) The durable rock fill must be designed with the following factors of safety:

Case	Design Condition	Minimum Factor Of Safety
I	Long-term	1.5
II	Earthquake	1.1

(3) The design of the durable rock fill must include an internal drainage system, in accordance with ARM 17.24.924(14), that will ensure continued free drainage of anticipated seepage from precipitation and from springs or wet-weather seeps.

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

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

(c) The internal drain system must be protected by a properly designed filter system.

(4) Surface water runoff from the areas adjacent to and above the fill must not be allowed to flow into the fill and must be diverted into stabilized channels that are designed to pass safely the runoff from a 100-year, six-hour precipitation event. Diversion design must comply with the requirements of ARM 17.24.637.

(5) The top surface of the completed fill must be graded such that the final slope after settlement will be no steeper than 1v:5h, unless otherwise approved in writing by the department, toward properly designed drainage channels constructed in undisturbed ground along the periphery of the fill. Surface runoff from the top of the fill must not be allowed to flow over the outslope of the fill.

(6) Surface runoff from the outslope of the fill must be diverted off the fill to properly designed channels that will pass safely a 100-year, six-hour precipitation event. Diversion design must comply with the requirements of ARM 17.24.637.

(7) Terraces must be constructed on the outslope if necessary for control of erosion. Terraces must meet the following requirements:

(a) The slope of the outslope between terrace benches must not exceed 1v:3h, unless otherwise approved in writing by the department.

(b) To control surface runoff, each terrace bench must be graded to a slope of 1v:20h toward the fill.

(c) A ditch must be constructed on the inside of each terrace to intercept runoff and divert it toward the channels specified in (6). (History: 82-4-204, 82-4-231, MCA; IMP, 82-4-227, 82-4-231, 82-4-232, 82-4-233, MCA; NEW, 1990 MAR p. 936, Eff. 5/18/90; AMD, 1994 MAR p. 2957, Eff. 11/11/94; TRANS, from DSL, 1996 MAR p. 3042; AMD, 1999 MAR p. 811, Eff. 4/23/99; AMD, 2004 MAR p. 2548, Eff. 10/22/04; AMD, 2012 MAR p. 737, Eff. 4/13/12.)

Rules 17.24.928 and 17.24.929 reserved

17.24.930 PLACEMENT AND DISPOSAL OF COAL PROCESSING

WASTE: SPECIAL APPLICATION REQUIREMENTS (1) Each application must contain, where applicable, a narrative explaining the construction, modification, use, maintenance, removal, and reclamation of coal processing waste removal, handling, storage, transportation and disposal sites and structures in the permit area in accordance with ARM 17.24.932, including appropriate maps that meet the requirements of ARM 17.24.305 and describing the location of each source of waste, waste storage area, and waste disposal structure.

(2) Each application must contain a general plan and detailed design plan for each coal processing waste disposal area and structure proposed within the permit area.

(a) Each general plan must:

(i) be prepared by, or under the direction of and certified by a qualified licensed professional engineer experienced in the construction of earth and rock fill embankments;

(ii) contain a description, a map prepared according to ARM 17.24.305, and appropriate cross-sections of the structure and its location;

(iii) contain hydrologic and geologic information required to assess the hydrologic impact of the structure;

(iv) contain a survey describing the potential effect on the structure from subsidence of the subsurface strata resulting from past or future underground mining activities; and

(v) contain a certification statement that includes a schedule setting forth the dates that any detailed design plan for structures that are not submitted with the general plan will be submitted to the department. The department must have approved, in writing, the detailed design plan for a structure before construction of the structure begins.

(b) Each detailed design plan for a structure must:

(i) be prepared by, or under the direction of, and certified by a qualified registered professional engineer experienced in the construction of earth and rock embankments with assistance from experts in related fields such as geology, land surveying, and landscape architecture;

(ii) describe the operation and maintenance requirements for each structure;

(iii) describe the timetable and plans to remove each structure, if appropriate;

and

(iv) include geotechnical investigations and design and construction specifications for the structure.

(3) If the application includes a proposal to impound coal processing waste, the following is required:

(a) design information and impoundment operation that meets the requirements of ARM 17.24.505(5);

(b) demonstration of compliance with the requirements of 30 CFR 77.216-1 and 77.216-2;

(c) the results of a geotechnical investigation of the proposed dam or embankment and impoundment foundation areas to determine the structural competence of the geological materials there to support the dam or embankment and impounded wastes. The geotechnical investigation must be planned and supervised by an engineer or engineering geologist in accordance with the following criteria:

(i) the number, location, and depth of borings and test pits must be determined using current prudent engineering practice for the size of the dam or embankment, quantity of wastes to be impounded, and subsurface conditions;

(ii) the character of the overburden and bedrock, the proposed abutment sites, and any adverse geotechnical conditions which may affect the particular dam, embankment, or impoundment site must be considered;

(iii) all springs, seepage, and ground water flow observed or anticipated during wet periods in the area of the proposed dam or embankment must be identified;

(iv) consideration must be given to the possibility of mudflows, rock-debris falls, or other landslides into the dam, embankment, or impounded wastes; and

(d) if the dam or embankment is at least 20 feet high or the impoundment has a proposed capacity of more than 20 acre-feet:

(i) a stability analysis, which must include, but not be limited to, strength parameters, pore pressures, and long-term seepage conditions; and

(ii) a description of each engineering design assumption and calculation with a discussion of each option considered in selecting the specific design parameters and construction methods. (History: 82-4-204, 82-4-231, MCA; IMP, 82-4-222, MCA; NEW, 1990 MAR p. 936, Eff. 5/18/90; AMD, 1994 MAR p. 2957, Eff. 11/11/94; TRANS, from DSL, 1996 MAR p. 3042; AMD, 2004 MAR p. 2548, Eff. 10/22/04.)

Rule 17.24.931 reserved

17.24.932 DISPOSAL OF COAL PROCESSING WASTE (1) To the extent that coal processing waste is not proposed for backstowing, it must be demonstrated to the satisfaction of the department that valid physical, economic, safety, environmental or other reasons exist for not doing so. Coal processing waste to be returned to underground mine works must be disposed of in accordance with a program approved by the department and the mine safety and health administration.

(2) All coal processing waste that is not backstowed must be hauled or conveyed and placed in new and existing disposal areas approved by the department. These areas must be within a permit area.

(3) Coal processing waste may be disposed of in head-of-hollow or valley fill configurations, including in an underground development waste fill, if the processing waste is:

(a) placed in accordance with (6) through (10);

(b) demonstrated to be non-toxic, non-acid-forming, and otherwise nondeleterious or disposed of in accordance with ARM 17.24.505; and

(c) demonstrated to be consistent with the design stability of the fill.

(4) Coal processing waste materials from activities located outside a permit area, such as those activities at other mines or abandoned mine waste piles, may not be disposed of in the permit area unless it can be demonstrated that:

(a) disposal will be conducted in accordance with ARM 17.24.510; and

(b) there will be no instability of the disposal area or the fill.

(5)(a) All coal processing waste disposal areas must be inspected, on behalf of the operator, by a qualified and licensed professional engineer, in accordance with ARM 17.24.924 and the additional requirements of this section.

(b) Inspection must occur at least quarterly, beginning within seven days after the preparation of the disposal area begins, and be made in accordance with the same critical construction period schedule as contained in ARM 17.24.924(18)(b). The department may require more frequent inspection based upon an evaluation of the potential danger to the health or safety of the public and the potential harm to land, air and water resources.

(c) Inspections must include such observations and tests as may be necessary to evaluate the potential hazards to human life and property, to ensure that all organic material and soil have been removed and that proper construction and maintenance are occurring in accordance with the plan submitted under ARM 17.24.930 and approved by the department.

(d) The inspector shall consider steepness of slopes, seepage, and other visible factors which could indicate potential failure, and the results of failure with respect to the threat to human life and property.

(6) Coal processing waste disposal areas and structures must be designed, constructed, and reclaimed in compliance with ARM 17.24.924 and the requirements of this rule. In addition, if disposal in valley or head-of-hollow fill is proposed, the relevant requirements of ARM 17.24.925 and 17.24.926 apply.

(7) A properly designed subdrainage system must be installed. Each system must:

- (a) freely drain all water discharged beneath the fill;
- (b) be protected by an adequate filter;
- (c) be covered so as to protect against the entrance of surface water or leachate from the coal processing waste; and
- (d) meet the requirements of ARM 17.24.924(13).

(8)(a) During construction or modification of all coal processing waste structures, coal processing waste must be:

- (i) spread in layers no more than 24 inches in thickness; and
- (ii) compacted to attain 90 percent of the maximum dry density to prevent spontaneous combustion and to provide the strength required for stability of the coal processing waste. Dry densities must be determined in accordance with the American Association of State Highway and Transportation Officials (AASHTO) Specifications T99-93 (sixteenth edition, 1993) or an equivalent method. This publication is on file and available for inspection at the Helena and Billings offices of the department.

(b) Variations may be allowed in the requirements of (a) for disposal of dewatered fine coal waste (minus 28 sieve size) with approval of the department.

(9) Following grading of the coal processing waste disposal area, the site must be covered with a minimum of four feet of the best available non-toxic and non-combustible material, and in a manner that does not impede flow from subdrainage systems. Toxic, acid-forming and other deleterious coal processing waste must be handled and covered in accordance with ARM 17.24.501(2) and 17.24.505(2). The coal processing waste disposal area must be revegetated in accordance with subchapter 7.

(10) Coal processing waste fires must be extinguished by the operator in accordance with a plan approved by the department and in compliance with the applicable requirements of the mine safety and health administration. The plan must contain, at a minimum, provisions to ensure that only those persons authorized by the operator and who have an understanding of the procedures to be used may be involved in the extinguishing operations. (History: 82-4-204, 82-4-231, MCA; IMP, 82-4-227, 82-4-231, 82-4-232, 82-4-233, MCA; NEW, 1990 MAR p. 936, Eff. 5/18/90; AMD, 1994 MAR p. 2957, Eff. 11/11/94; TRANS, from DSL, 1996 MAR p. 3042; AMD, 1999 MAR p. 811, Eff. 4/23/99; AMD, 1999 MAR p. 2768, Eff. 12/3/99; AMD, 2004 MAR p. 2548, Eff. 10/22/04.)

