



# OFFICE OF SURFACE MINING
## RECLAMATION AND ENFORCEMENT

# MARYLAND
## ROADS

## Evaluation Year 2002

# TABLE OF CONTENTS

## Objective

To review implementation of Maryland regulations relating to the design, construction, maintenance, and reclamation of roads used to facilitate surface and deep coal mining operations.

## Summary

Roads in Maryland are generally in compliance with regulations relating to design, construction, and maintenance, including the regulations that were implemented in February of 2001. Maryland has educated the mining industry on the new requirements through memorandum advisories. The permit application form, however, has not reflected all of the update requirements, and some requirements are not being fully addressed in the application, particularly those relating to certification, classification, and reclamation. In addition, some roads are being used for mining activities for significant periods of time before being certified, "as built".

## Background/History

Maryland revised regulations pertaining to roads on January 26, 2001. The regulations became effective on February 5, 2001. All applications issued after that date were required to comply with the new regulations. These regulations, found under the Code of Maryland Regulations (COMAR) 26.20.01, .02, and .19 included changes to the definitions of roads, classification, specifications, location, design, construction, certification, maintenance, and reclamation.

## Scope/Methodology

A file review was first conducted of all permits issued between the February 5, 2001 implementation date of the road regulations, and June 1, 2002, the beginning date of review. The purpose of the file review was to determine whether applications complied with all requirements, with emphasis on those changes that occurred as a result of the February 2001 regulatory revisions.

The file review was followed by a site visit to each of the permits to document field conditions and determine if the roads were in compliance with program and permit requirements.

A checklist was developed to document the file review and field review results (Exhibit A).

**Findings**

General

1. A database check by Maryland (Exhibit B) revealed that seven permits had been issued since the implementation of the new road requirements. Four of the permits were new issuances, and three were significant revisions.

Application Review

1. COMAR 26.20.02.13BB includes two areas (Exhibit C) which must be addressed in the permit application[1] as follows:

    a. Cross-sections, drawings, and specifications – COMAR 26.20.02.13BB(1) and (2) require a detailed description of each road. Of the 11 requirements under these criteria, eight of the requirements were either met by all seven permits, or were not applicable. The remaining three requirements are addressed as follows:

        i. Gradient - COMAR 26.20.19.03B(2) limits the gradient for primary roads to 15% or less for any section of road. The only exception to this requirement would be if the road meets the criteria for designation as an "existing structure" in accordance with COMAR 26.20.17. Such a designation would include, among other requirements, a showing that the road could meet performance standards, that the risk of environmental harm or public health or safety is not significant, and that monitoring of the structure would take place. Two permits, SM-99-432 and DM-00-111 included plans for portions of the primary roads to have slopes of 22% and 16.8% respectively. Neither road was addressed as an existing structure in the application under the COMAR criteria. Further research revealed that the road for SM-99-432 had been in use under a former permit as far back as 1977 and would thus meet the time criteria for designation as an "Existing structure" [2] under the Maryland program. The road would still

**DM-00-111 gradient**

**SM-99-432 gradient**

[1] Haul road requirements are addressed under module IV, item #3 (Roads and Transportation Plan), of the permit application

[2] A structure or facility used in connection with, or to facilitate, mining and reclamation operations for which construction began before approval of the Regulatory Program (2/18/82).

have to meet the remaining criteria under COMAR 26.20.17 in order to receive a waiver from gradient design requirements. Field measurements with a clinometer of the road for DM-00-111 indicated a maximum slope of approximately 12% as opposed to the "as built" certification of 16.8%. If the 12% measurement were confirmed and certified by the permittee's engineer, a revision to the "as built" certification would resolve this concern.

ii. Surfacing Materials – One permit (SM-02-441) did not meet the requirement that the application contain specifications for surfacing materials. Since road construction has not started on this site, no on-site assessment of surfacing materials could be made.

iii. Drainage Ditches – One permit, (SM-01-439) did not include drainage ditches in the drawings, cross-sections, and specifications of the original application, though there are drainage ditches present on the site. Maryland is presently conducting an informal review of an operator letter dated February 14, 2002 indicating the necessity to upgrade the road.

**SM-01-439 ditches**

iv. Drainage Structures – One permit (SM-01-438) did not include drainage structures in the application drawings, cross-sections, and specifications. On-site review showed that drainage is directed back toward the mine area through natural road tilt. Drainage from the mine area then passes through sedimentation ponds. road drainage structures may be unnecessary as a result.

**SM-01-438 drainage pattern**

b. Reclamation – COMAR 26.20.02.13 BB.(7) requires that the permit contain a description of the plans to remove and reclaim each road if it is not to remain as a permanent structure. Of the five permits that did not intend to leave a permanent road, four did not contain a description of plans to remove the road. This information is not requested in the permit application.

Field Review

1. COMAR 26.20.19 includes nine areas (Exhibit D) which must either be addressed in the application, or implemented in the field. They are:

a. Road classification – COMAR 26.20.19.01A. requires that roads be classified as either primary or ancillary. Two of the seven permits were properly classified. The remaining five permits were not classified as either primary or ancillary in the permit application. This information is not requested in the permit application.

b. Environmental protection – COMAR 26.20.19.01D. requires that roads be designed, constructed, utilized, maintained, and restored to:
   i. Control erosion – All seven permits had roads designed, constructed, and maintained to control erosion.
   ii. Control damage to wildlife – All seven permits had roads designed, constructed, and maintained to control or prevent damage to fish, wildlife, and their habitat.
   iii. Control suspended solids – Six of the seven permits had roads designed, constructed, and maintained to control suspended solids or runoff outside the permit area. One permit, SM-99-432, did not have energy dissipaters installed below the culverts, which was resulting in erosion at the point where the pipes from the culverts were discharging.
   iv. Meet water quality standards - All seven permits had roads designed, constructed, and maintained to meet water quality standards.
   v. Alteration of stream flow – All six permits for which this standard was applicable had roads designed, constructed, and maintained to refrain from seriously altering the normal flow of water in streams and drainage channels.
   vi. Property damage - All seven permits had roads designed, constructed, and maintained to prevent or control damage to public or private property.
   vii. Surfacing material – Six of the seven permits had roads designed, constructed, and maintained to use nonacid-forming and nontoxic substances in road surfacing. One permit, SM-02-441, did not address the surfacing material which would be used on the road. The road for this permit had not been constructed as of the time of inspection.

c. Design certification – COMAR 26.20.19.01F. requires that plans and drawings for primary roads be prepared by, or under the direction of, and certified by a qualified registered professional engineer as meeting the requirements of COMAR. Five of the seven permits met this standard. Two permits, SM-00-435 and SM-02-441, did not meet the standard. The one, an amendment to SM-00-435, altered the horizontal and vertical road alignment and reduced road acreage from five acres to three acres. The plans and drawings were on file for this permit, but there was no certification. There was, however, a certification for the "as-built" road on file. Plans and drawings were also on file for the other permit, SM-02-441, but the file did not contain a certification. Construction of this road had not begun as of the inspection date.

**SM-00-435 road**

Construction certification – COMAR 26.20.19.01G requires that primary roads, upon completion of construction, be certified by a registered professional engineer in a report to the BOM indicating that the road has been constructed in accordance with the approved plan. Of the seven permits reviewed, four had construction certifications completed. Of the remaining three permits, one had not yet begun construction, and the other two (SM-99-432 and SM-01-439) were being actively used as roads without construction certification. The road under permit SM-01-439 had been in existence and usage under another permit prior to its inclusion under permit 439. A certification had been submitted for modifications to the under Permit SM-01-439, but had been returned for corrections[3].

**SM-01-439**

A review of inspection reports indicates that the average time from usage (mining underway) to certification is 139 days, with a range of 40 to 235 days, and with one of the permits not certified as of the finalization of this report (see table below).

| Permit Number | Mining Underway | Road Certified "as built" | Time Lapse, days (mining to certification) |
|---|---|---|---|
| SM-00-435 | 11/28/01 | 1/17/02 | 50 |
| SM-01-438 | 10/12/01 | 4/24/02 | 194 |
| DM-00-111 | 6/22/01 | 10/16/01 | 116 |
| SM-01-439 | 3/28/02[4] | Not certified a.o 11/18/02 | 235 |
| SM-01-440 | 11/29/01 | 1/8/02 | 40 |
| SM-99-432 | 5/1/02 | 11/13/02 | 197 |
| SM-02-441 | NA | NA | NA |
| **AVERAGE TIME LAPSE (days)** | | | **139** |

There is no specific regulatory requirement under the Maryland program that roads not be used until construction is completed and roads certified. However, in order for environmental and safety requirements to be effective, there should be some consideration given regarding usage and/or a time limit for completion of construction of the roads prior to use. Maryland has a comparable permit condition relating to impoundments that requires certification prior to beginning coal mining operations[5].

d. Road location – COMAR 26.20.19.02 requires that roads which are located in the channel of an intermittent or perennial stream, or cross such a stream be approved

[3] The upgrading of the road is to include widening, surfacing material, crowning, and berms.
[4] This existing road permitted under SM-84-207 was not permitted and used under SM-01-439 until this date.
[5] SITE PREPARATION AND AUTHORIZATION TO BEGIN MINING, item II.

by BOM and that crossings be temporary only during periods of construction. None of the permits reviewed crossed through such streams.

e. Road embankment design – COMAR 26.20.19.03D.requires that primary road embankments be designed for a minimum static safety factor of 1.3 and contain sufficient moisture content to achieve proper compaction. All seven permits included documentation for meeting the static safety factor but none of the six applicable permits addressed the moisture content requirement. This information is not requested in the permit application.

f. Drainage control – COMAR 26.20.19.04A. requires that road drainage control be designed, constructed, and maintained to safely pass peak runoff from a 2-year, 24-hour precipitation event, have drainage pipes and culverts installed and maintained to prevent or control erosion at inlets and outlets, and have ditches constructed and maintained to prevent uncontrolled drainage over the road.

Five of the seven permits included documentation of road drainage being designed for a peak runoff event[6]. Two permits (SM-01-438 and SM-01-439) did not include the required documentation for runoff design. This information is not requested in the permit application.

**SM-01-438**

Three of the permits had drainage pipes/culverts as part of the road design plan. One of the three (SM-99-432) did not have required energy dissipaters installed at culvert #6 and was exhibiting erosion at the outlet. This same permit utilized oversize pipes from that required in the design. Another (SM-01-438) used 12" smooth PVC pipe instead of the 12" corrugated metal called for in the plan. The third permit had the pipes installed as designed.

Five of the six permits for which ditches were part of the design plan were constructed and maintained to prevent uncontrolled drainage over the road surface and embankment. One permit (SM-99-432) did not have a grass lining for the ditches as designed. Instead, stone had been used. The operator intends to modify the plans to include this change prior to certifying "as built".

**SM-99-432 stone ditch lining**

g. Damage from a catastrophic event – COMAR requires that roads damaged by catastrophic events be repaired as soon as practicable. None of the permits exhibited evidence of the occurrence of a catastrophic event.

h. Road reclamation – COMAR 26.20.19.07 requires that non-permanent roads be reclaimed to certain standards. None of the roads for the permits reviewed were

[6] 2 year/24 hour precipitation event

in a state of reclamation. Two permits, SM-00-435 and SM-01-438, were to be left permanently but did not include required assurance of future maintenance.

**Recommendations**

1. Maryland should consider revising the permit application under Module IV, item #3 to request all information relating to the updated road requirements, particularly those related to certification requirements, runoff design requirements, removal of non-permanent roads, classification of primary or ancillary, and documentation of sufficient moisture content for proper compaction of embankments.
2. Maryland should assure that road construction is completed and "as built" certifications submitted as soon as practicable.
3. Maryland should either revise regulations to include exceptions to maximum slope requirements or assure that all permits comply with the requirements of COMAR 26.20.19.03B(2).
4. Maryland should assure that any modifications that occur between the time a road is designed and constructed is reflected in the "as built" design and certification, and verified in the field. This includes culvert/pipe design, ditch lining, and gradient.

Exhibit A

# *Road File Review*
# *MDE Topical Study EY02*

Permit #: _____ Operator: _____

Reviewer: _____

Issue date: _____ Review Date: _____

| # | Question | Yes | No | N/A | Comments |
|---|---|---|---|---|---|
| | **A. Definitions [COMAR 26.20.01.02]** | | | | |
| *1* | Does the proposed road meet the definition for road? [B. (82)] | | | | |
| | **B. Application [COMAR 26.20.02.13]** | | | | |
| *1* | Does the application contain x-sections, design drawings, and specifications for: [BB. (1)] | | | | |
| | a. Road width? | | | | |
| | b. Gradient? | | | | |
| | c. Surfacing materials? | | | | |
| | d. Cuts? | | | | |
| | e. Fill embankments? | | | | |
| | f. Culverts? | | | | |
| | g. Bridges? | | | | |
| | h. Drainage ditches? | | | | |
| | i. Crossings? | | | | |
| | i. If road crosses perennial or intermittent streams, has BOM approved per COMAR 26.20.19? [BB. (2)] | | | | |
| | j. Drainage structures? | | | | |
| *2* | Does the application contain a description of the plans to remove and reclaim each road if not to remain as a permanent structure? | | | | |
| *3* | Does the application contain a description of each support facility, including plans, drawings, map, cross sections, design drawings, specs? [COMAR CC.] | | | | |
| | **B. Requirements [COMAR 26.20.19]** | | | | |
| *1* | Was road properly classified as primary or ancillary [.01A.] | | | | |
| *2* | Has road been located, designed, constructed, utilized, and maintained, and restored to: [.01D.] | | | | |
| | a. Control erosion, siltation and air pollution through vegetating, watering, using chemical or other dust suppressants, or otherwise | | | | |

| # | Question | Yes | No | N/A | Comments |
|---|---|---|---|---|---|
| | stabilizing | | | | |
| | b. Control or prevent damage to fish, wildlife, or their habitat? | | | | |
| | c. Control or prevent additional suspended solids to stream flow or runoff outside the permit area? | | | | |
| | d. Neither cause nor contribute to violation of water quality standards | | | | |
| | e. Refrain from seriously altering the normal flow of water in streams or drainage channels? | | | | |
| | f. Prevent or control damage to public or private property | | | | |
| | g. Use nonacid-forming and nontoxic substances in road surfacing? | | | | |
| *3* | Have plans and drawings for primary roads been prepared by, or under the direction of, and certified by a qualified registered professional engineer as meeting the requirements of COMAR? [.01F.] | | | | |
| *4* | Has construction or reconstruction of primary roads been certified in a report to the BOM by a RPE, indicating road has been constructed in accordance with the approved plan? [.01G.] | | | | |
| *5* | Is road located in the channel of an intermittent or perennial stream, or cross such stream? [.02] | | | | |
| | a. If answer is "yes" to above, has this been approved by the BOM in accordance with COMAR26.20.20 and 26.20.21.02-.04 | | | | |
| | b. Are stream crossings temporary only during periods of construction | | | | |
| *6* | Are primary road embankments designed: [.03D. (9)-(11)] | | | | |
| | a. For a minimum static safety factor of 1.3? [.03D. (9)] (note: this is considered met if embankment meets other criteria, has slope not steeper than 2:1 and foundation slope equal to or less than 25%) | | | | |
| | b. To contain sufficient moisture content to achieve proper compaction? | | | | |
| *7* | Is drainage control designed, constructed, and maintained to: [.04A.] | | | | |
| | a. Safely pass peak runoff from a 2-year, 24-hour precipitation event? | | | | |
| | b. Have drainage pipes and culverts installed as designed and maintained in a free and operating condition to prevent or control erosion at inlets and outlets? | | | | |
| | c. Have ditches constructed and maintained to prevent uncontrolled drainage over the road surface and embankment? | | | | |
| *8* | Has a road damaged by a catastrophic event such as a flood been repaired as soon as practicable? | | | | |
| *9* | Has a non-permanent road been reclaimed: [.07] | | | | |
| | a. As soon as practicable after no longer needed | | | | |
| | b. By closing the road to traffic? | | | | |
| | c. By removing all bridges and culverts? | | | | |
| | d. By removing or disposing of road surfacing materials that are | | | | |

| # | Question | Yes | No | N/A | Comments |
|---|---|---|---|---|---|
| | incompatible with he postmining land use and reveg. Requirements? | | | | |
| | e. By reshaping cut and fill slopes as necessary to be compatible with the postmining land use and complement the natural drainage pattern | | | | |
| | f. Protecting the natural drainage pattern by installing dikes or cross drains to control surface runoff and erosion | | | | |
| | g. By scarifying or ripping the roadbed, replacing topsoil or substitute material, and revegetating disturbed surfaces? | | | | |
| *Other Comments:* | | | | | |

January 31, 2003

Exhibit B

**MARYLAND DEPARTMENT OF THE ENVIRONMENT**
WATER MANAGEMENT ADMINISTRATION
*BUREAU OF MINES*

160 South Water St. Frostburg, MD 21532 • (301) 689-6104 • FAX (301) 689-

# Memorandum

**To:** Jeff Smith, OSM

**From:** Jeff Snyder

**Date:** 6-1-02

**Re:** Maryland Haulroad As-Built's Permitted

*roads permitted for construction & As-Built's approved under the new design requirements since Feb. 5, 2001:*

SM-99-432 (Amendment, OPA 01-49) Barton Mining - Jackson Mtn Mine @ Barton

(Haulroad currently under construction)

DM-00-111 (Amendment, OPA 01-37) George Creek - Aaron Run Deep Mine @ Westernport

(Haulroad constructed As-Built approved 1/18/02)

SM-00-435 (Amendment, OPA 01-38) G & S Coal Company - Pee Wee Hill Mine @ Kitzmiller

(Haulroad constructed As-Built approved 1/17/02)

SM-01-438 (Original, OPA 97-42) Mountaineer Mining Corp. - Porter Mine @ Eckhart

(Haulroad constructed As-Built approved 5/31/02)

SM-01-439 (Original, OPA 99-54) United Energy Coal - Naked Lake Mine @ Vale Summit

(Haulroad currently under construction)

SM-01-440 (Original, OPA 00-31) G & S Coal Company - Miller Road Mine @ Barton

(Haulroad constructed As-Built approved 1/8/02)

SM-02-441 (Original, OPA 00-30) Millennium Resources - Wildman Mine @ Swanton

(Permit not started as of this date)

Exhibit C

# *Road File Review EY02*
# *MDE Topical Study*
# *Application Review Summary Findings*
# *[COMAR 26.20.02.13]*

| # | Question | Yes | No | N/A | Comments |
|---|---|---|---|---|---|
| *1* | Does the application contain x-sections, design drawings, and specifications for: [BB. (1)] | | | | |
| | a. Road width? | 7 | | | |
| | b. Gradient? | 7 | | | |
| | c. Surfacing materials? | 6 | 1 | | |
| | d. Cuts? | 3 | | 4 | |
| | e. Fill embankments? | 5 | | 2 | |
| | f. Culverts? | 6 | | 1 | |
| | g. Bridges? | | | 7 | |
| | h. Drainage ditches? | 6 | 1 | | |
| | i. Crossings? | | | 7 | |
| | i. If road crosses perennial or intermittent streams, has BOM approved per COMAR 26.20.19? [BB. (2)] | | | 7 | |
| | j. Drainage structures? | 6 | 1 | | |
| *2* | Does the application contain a description of the plans to remove and reclaim each road if not to remain as a permanent structure? | 1 | 4 | 2 | |
| *3* | Does the application contain a description of each support facility, including plans, drawings, map, cross sections, design drawings, specs? [COMAR CC.] | | | 7 | |

Exhibit D

***Road File Review EY02***
***MDE Topical Study***
***Field Review Summary Findings***
***[COMAR 26.20.19]***

| # | Question | Yes | No | N/A | Comments |
|---|---|---|---|---|---|
| *1* | Was road properly classified as primary or ancillary [.01A.] | 2 | 5 | | |
| *2* | Has road been located, designed, constructed, utilized, and maintained, and restored to: [.01D.] | | | | |
| | a. Control erosion, siltation and air pollution through vegetating, watering, using chemical or other dust suppressants, or otherwise stabilizing | 7 | | | |
| | b. Control or prevent damage to fish, wildlife, or their habitat? | 7 | | | |
| | c. Control or prevent additional suspended solids to stream flow or runoff outside the permit area? | 6 | 1 | | |
| | d. Neither cause nor contribute to violation of water quality standards | 7 | | | |
| | e. Refrain from seriously altering the normal flow of water in streams or drainage channels? | 6 | | 1 | |
| | f. Prevent or control damage to public or private property | 7 | | | |
| | g. Use nonacid-forming and nontoxic substances in road surfacing? | 6 | 1 | | |
| *3* | Have plans and drawings for primary roads been prepared by, or under the direction of, and certified by a qualified registered professional engineer as meeting the requirements of COMAR? [.01F.] | 5 | 2 | | |
| *4* | Has construction or reconstruction of primary roads been certified in a report to the BOM by a RPE, indicating road has been constructed in accordance with the approved plan? [.01G.] | 4 | 1 | 1 | |
| *5* | Is road located in the channel of an intermittent or perennial stream, or cross such stream? [.02] | 1 | 6 | | |
| | a. If answer is "yes" to above, has this been approved by the BOM in accordance with COMAR26.20.20 and 26.20.21.02-.04 | | | 7 | |
| | b. Are stream crossings temporary only during periods of construction | | | 7 | |
| *6* | Are primary road embankments designed: [.03D. (9)-(11)] | | | | |
| | a. For a minimum static safety factor of 1.3? [.03D. (9)] (note: this is considered met if embankment meets other criteria, has slope not steeper than 2:1 and foundation slope equal to or less than 25%) | 7 | | | |
| | b. To contain sufficient moisture content to achieve proper compaction? | | 6[7] | 1 | |

[7] Moisture content was not tested

| # | Question | Yes | No | N/A | Comments |
|---|---|---|---|---|---|
| *7* | Is drainage control designed, constructed, and maintained to: [.04A.] | | | | |
| | a. Safely pass peak runoff from a 2-year, 24-hour precipitation event? | 5 | 2 | | |
| | b. Have drainage pipes and culverts installed as designed and maintained in a free and operating condition to prevent or control erosion at inlets and outlets? | 1 | 2 | 4 | |
| | c. Have ditches constructed and maintained to prevent uncontrolled drainage over the road surface and embankment? | 4 | 2 | 1 | |
| *8* | Has a road damaged by a catastrophic event such as a flood been repaired as soon as practicable? | 1 | | 6 | |
| *9* | Has a non-permanent road been reclaimed: [.07] | | | | |
| | a. As soon as practicable after no longer needed | | | 7 | |
| | b. By closing the road to traffic? | | | 7 | |
| | c. By removing all bridges and culverts? | | | 7 | |
| | d. By removing or disposing of road surfacing materials that are incompatible with he postmining land use and reveg. Requirements? | | | 7 | |
| | e. By reshaping cut and fill slopes as necessary to be compatible with the postmining land use and complement the natural drainage pattern | | | 7 | |
| | f. Protecting the natural drainage pattern by installing dikes or cross drains to control surface runoff and erosion | | | 7 | |
| | g. By scarifying or ripping the roadbed, replacing topsoil or substitute material, and revegetating disturbed surfaces? | | | 7 | |