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State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Norman H. Bangerter
Governor
Dee C. Hansen
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Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

October 4, 1991

Mr. James W. Buck
Amax Coal Company
One Riverfront Place
20 North West 1st Street
Evansville, IN 47708-1258

Dear Mr. Buck:

Re: Deficiencies (3) Addressing NOV N91-18-1-1, Amax Coal Company, Castle Gate Mine, ACT/007/004, Folder #2, Carbon County, Utah

As you are aware the Division issued Notice of Violation #N91-18-1-1 to Castle Gate Coal Company for problems associated with the diversions at the Schoolhouse Canyon refuse pile. A Failure to Abate Cessation Order (C91-18-1-1) was subsequently issued for not completing the required abatement as scheduled. A submittal was received at the Division offices on August 15, 1991. A deficiency memo was FAXed to the company and was followed by a formal letter, dated September 11, 1991. The applicant resubmitted refuse drainage designs received by the Division on September 11, 1991. These designs were reviewed and found to also be deficient. A letter was FAXed and sent to you on September 25, 1991 indicating the deficiencies. On October 2, 1991 the Division received a third submittal intended to abate the NOV.

The purpose of this letter is to inform you that the October 2, 1991 submittal is also considered inadequate and has not abated the NOV. Please review the attached technical memo which points out the deficiencies that still need to be addressed. You should also be aware that the Failure to Abate Cessation Order is still in effect and will restart upon your receipt of this FAX letter. We encourage you to make every effort to complete the abatement requirements as soon as possible.

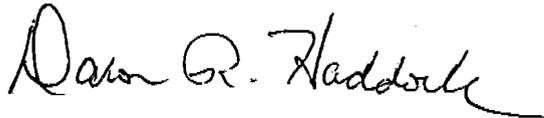
Your continued failure to submit adequate designs for this construction is of great concern to the Division especially since you have missed the abatement

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requirement to submit adequate plans 3 consecutive times. You should be aware that the final abatement date for field implementation of the refuse diversions is set at October 11, 1991. Your submittal of adequate plans is crucial to the abatement. Extensions beyond this date would be extremely difficult to justify and no further extensions will be considered for administrative review time.

If you have any questions don't hesitate to call myself or Sharon Falvey.

Sincerely,

A handwritten signature in cursive script that reads "Daron R. Haddock". The signature is written in dark ink and is positioned above the printed name and title.

Daron R. Haddock
Permit Supervisor

cc: J. Helfrich
L. Braxton
CASTGATE.LET



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October 4, 1991

TO: Daron Haddock, Permit Supervisor

FROM: Sharon Falvey, Reclamation Hydrologist *SF*

RE: Cessation Order C91-18-1-1, AMAX Coal Company, Castle Gate Mine, Carbon County, Utah, Permit # ACT/007/004, Folder #5.

SUMMARY

On December 24, 1990 the Division reviewed and reissued the Castle Gate Mine permit. The permit issuance itemized additional requirements as a Division Order including Division Order #24 which required additional drainage controls at the School House Canyon refuse site. The operator responded to the Division Order on March 1, 1991, after review, the Division determined that the operator failed to meet the requirements identified. On June 24, 1991 the Division received a Ten Day Letter issued by the Office of Surface Mining, regarding refuse pile drainage. Following the Ten Day Letter, Notice of Violation (NOV) N91-18-1-1 was issued by the Division. Our records show that the violation, issued on June 28, 1991, was received certified mail by S. Humn at Amax Coal Companies Evansville Office on July 1, 1991.

Pars of NOV N91-18-1-1 are as follows: part 1, required the applicant to obtain approval for diversion designs (by the Division) which will satisfy the requirements of R614-301-742.300 and R614-301-746.212; part 2, required complete construction of diversion channels as approved in part 1. Part 1 and part 2 were to be completed within 30 days and 60 days of issuance, respectively.

On August 14, 1991 Cessation Order C91-18-1-1 was issued for failure to meet part 1 of the violation. On September 3, 1991 the Division received a request for extension to complete part 2 of the violation. The violation was modified to allow part 2 to be completed by September 30, 1991.

On August 15, 1991 the Division received an amendment from the applicant to meet the conditions of the Cessation Order. Review again determined the operator to be out of compliance with the stated regulations. The information submitted to the Division on October 11, 1991. The applicant has increased design information necessary to obtain compliance with the regulations but still falls short of

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some necessary design features.
October 2, 1991.

This review analyzes information submitted on

ANALYSIS

R614-301-742.300
R614-301-746.212

Operator's Proposal:

The operator has provided watershed drainages for the proposed interim drainage control and final drainage control. The final drainage control is created to handle maximum design capacity of the refuse pile. The operator indicated on pg.10 of Chapter 3.4 that " The Division will be notified prior to rebuilding of the drainage ditches".

All the design ditches lead to sedimentation pond 013 and are designed for the 100 year - 6 hour rainfall event as required for refuse piles. The operator proposes designs for interim ditches 6, 7A, 7B, and 7C, and final drainages 6A, 6B, 7A, 7B, 7C.

The proposed designs include a 50% slope on final and interim ditches 7B, and 7C and final drainage ditch 6B. Designs also include a 25% slope on interim drainage ditch 6. These steep slope channels are designed at supercritical flow. In channels with 50% slopes velocities vary between 7.05 to 15.34 feet per second (fps). Ditch 7C drains approximately 19.6 acres with a design peak discharge of 15.6 cubic feet per second (cfs) over the face of the fill.

The operator has included ditch depth as well as 1 ft. of freeboard for each ditch. The operator has indicated use of a geo-textile filter fabric for all flow velocities of 5.00 ft/sec. or greater.

The applicant has included a Safety Factors of riprap design on a sloping bed for each of the steep ditches. The operator attempted to provide a determination of safety factor using a methodology referenced in Barfield, Warner and Haan "Applied Hydrology and Sedimentology for disturbed areas", 1981.

In a phone conversation with Darlene Murphy of AMAX, on October 3, 1991, I was informed that the operator intends to retain the existing ditch designs at

the base of the structure and to complete designs where they are not presently located. Therefore, little construction would be done by the operator at this time.

ANALYSIS and DEFICIENCIES

The operator indicates that the submitted final design will be a permanent structure. Because the channel is adjacent and in some cases located on the refuse pile, the potential damage created through failure of the channels is greater. Therefore the operator will need to demonstrate stability before the design structure can be accepted.

The operator attempted to show stability of the ditches using the sizing of riprap for flow on a plane sloping bed except, the operator mistakenly incorporated an incorrect equation which resulted in erroneous numbers and misrepresented the channel riprap stability. **The operator's values are in error. The operator must resubmit the analysis showing a minimum long term Safety Factors equal to or greater than 1.5. The operator must also reflect changes in text on page 10, Section 3.4.**

The operator has failed to demonstrate stability and therefore must move the words and "will remain permanent" found at the end of the statement "The Final stage drainage plan has been designed to address the drainage plan required when the refuse pile reaches its design capacity at approximately elevation of 6600 feet and will remain permanent.", on page 9 Section 3.4. A

It seems prudent that the reclamation plans be considered disassociated with this NOV/CO because, the applicant is still in the process of providing final reclamation plans that will be directly associated with the refuse pile and, will be reviewed by the Division as required by NOV N91-28-2-1. **The "Final Drainage Control" map could be misinterpreted as the reclamation plan. Since it is not, the applicant must label the exhibit so that it can not be misinterpreted and, to be sure that the applicant has provided a clear and accurate document. The applicant should entitle the map "Final Operational Drainage Map" or something similar.**

The applicant has provided ditch designs to address the regulation requirements. All ditch designs indicate that the Froude Number is well over 2. This indicates that flow in the channels have the potential to form waves as well as, surges

and hydraulic jumps that may be created when channel design features, such as slope, change. In addition, the hydraulics created by steep slope designs are capable of producing turbulent flow. The applicant has not used design criteria specific to steep slopes or, turbulent flow which increases the need for site specific filter and gravel design.

The applicant indicates that a geo-textile filter fabric will be used on channel velocities equal to or greater than 5 ft/s. But fails to include information such as: Riprap thickness, gravel blanket, the manufacture's specification and installation requirements for filter fabric placement. **Because the operator has proposed "steeply designed, high kinetic energy channels," they must provide site specific designs for riprap, gravel and filter fabric to assure stability of steeply designed channels.**

In order to maintain a clear and accurate document the operator needs to make changes in the text of the document. Some areas where this is necessary are Table 3.4-2. Additionally the inflow and outflow, riprap sizing etc. of sediment pond 013 should be checked for the greatest design flow expected the proposed design.

RECOMMENDATIONS

Numerous previous submittals were reviewed and found to be incomplete. The applicant has improved the quality of the design event and has met the storm design criteria. The operator has still failed to demonstration design stability for steep slopes therefore the submittal should not be considered adequate.

The operator should be required to meet adequate design for steep slopes and provide the manufacturers requirements and installment specifications for the proposed Filter Fabrics. Because of the critical nature of these channels the proposed designs shall be certified by a registered P.E. during construction. The applicant will need to address all issues identified in the analysis and deficiencies portion of this document.