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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340
801-359-3940 (Fax)
801-538-5319 (TDD)

November 18, 1994

TO: Daron Haddock
FROM: Tom Munson
RE: Response to Ten Day Notice (TDN) X94-020-179-004 TV2, Hiawatha Mine, U.S. Fuel Company, ACT/007/011, File Folder #5, Carbon County, Utah

SYNOPSIS

The Division received a response to TDN X94-020-179-004 TV2 on November 4, 1994 and the response indicated a new TDN was being issued, TDN X94-020-179-005, which addresses drainage control related to the topsoil piles. This memo addresses the appropriateness of this TDN in relation to the requirements of the rules.

ANALYSIS

The TDN states:

"The failure to construct and certify drainage control for all areas disturbed by mining operations. Various topsoil piles throughout the permit. Cited Rules-{R645-301-742 and R645-301-731.121}"

The current plan lists all the Small Area Exemptions or as they are now called by many mining operations, BTCA areas, in appendix V-8. These areas either due to their size, topographic location, or inability to get their drainage to a sediment pond are treated with the Best Technology Currently Available to prevent additional contributions of sediment to streamflow outside the permit area and to minimize erosion. The plan calls out each of the topsoil piles as the following:

ACREAGE

- 1. Topsoil Pile Below Slurry Pond #5 .28 acres
- 2. Topsoil Pile Below Slurry Pond #4 .25 acres
- 3. Equipment Storage Yard Topsoil Pile .69 acres
- 4. South Fork Topsoil Pile .30 acres
- 5. North Fork Junction Topsoil Pile .06 acres



Maps providing the location of each site are also provided in Appendix V-8 and on Drawing II-1 and exhibit V-9. A description of the sediment controls are found in Appendix V-8 for each topsoil area.

An analysis of the topsoil pile drainage was completed using a curve number analysis, assuming a curve number of 70 and the 100 year-6 hour storm precipitation of 2.12 inches. The results of the analysis indicated, assuming a minimum berm height of 1 foot with 2H:1V sideslope, that the storage capacity contained 4 feet behind the 1 foot berm would be:

Cross-Sectional Areas of Impounded Water for Various Berm Heights, in Square Feet

		Distance behind Toe of Berm (feet)										
		4	10	20	30	40	50	60	70	80	90	100
Berm Height (feet)												
	1	5	11	21	31	41	51	61	71	81	91	101
2	12	24	44	64	84	104	124	144	164	184	204	

$$\text{Berm Dia} = \sqrt{\frac{4 \times \text{Area} \times 43,560}{\pi}}$$

Example Calculation of storage volume contained behind a berm 1' high for a distance of four feet would be as follows:

$$\text{Circ} = \pi \text{ Dia}$$

.69 acres is largest topsoil area (equipment yard storage topsoil pile), therefore the linear circumference is 195.6 feet.

If you take that linear circumference and multiply it times the cross sectional area for a distance of four feet behind the berm you get a storage volume of 5 sq. ft. times the linear circumference of 195.6 ft. for a total storage volume contained behind the berm of 978 cubic feet. The 100 year-6 hour storm of 2.12 inches provides an excess runoff volume of .2874 inches (assuming a curve number of 70) times .69 acres equals .2 acre-inches of runoff volume. This equates to 726 cubic feet of runoff volume from the 100 year-6 hour storm for the .69 acres. Therefore, the 726 cubic feet of runoff volume is contained behind a berm 1 foot high which holds 978 cubic feet runoff four feet behind the berm. The important fact to note is that the 100 year-6 hour storm produces insignificant runoff.

The Division has required the operator to amend the permit to include a statement which requires that all the berms will be maintained at a minimum height of 1 foot so that the storage volume for the 100 year-6 hour storm will be contained behind all topsoil berms treating all runoff and sediment.

No violation will be issued since the current areas have a minimum of a 1 foot berms around them and an a technical analysis demonstrates that this provides adequate treatment for retaining sediment within the disturbed area.

One topsoil area berm will be modified at the request of the permittee to provide rock gabion filter outlet. This topsoil pile is South Fork Topsoil Pile. A rock gabion filter of at least 2 feet wide, 2 feet high, and 2 feet long allows treated runoff to discharge.

The permittee has changed the heading language contained in Appendix V-8 to BTCA Alternate Sediment Control Areas to avoid confusion with the regulatory term, Small Area Exemption.

FINDING

The Division finds the permittee's plan for BTCA areas acceptable to meet the requirements of the regulations. The operator has provided the sediment controls and designs to demonstrate that no additional contributions of suspended sediment will flow to stream flow outside the permit area.

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