



Public Service Commission

State of North Dakota

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May 6, 2009

Mr. Jesse Noel, P.E.
Manager, Engineering & Environment
Dakota Westmoreland Corporation
Beulah Mine
P.O. Box 39
Beulah, ND 58523-0039

Dear Mr. Noel:

The Reclamation Division has reviewed your letter dated April 30, 2009 regarding NOV-0902. We understand that DWC has repaired the erosion along the haulroad area near Brush Creek and installed a combination of BMP's to control runoff and that the road slope will be hydro mulched in the near future. This area will be inspected by staff on the next inspection.

In accordance with the remedial actions specified in NOV-0902, please submit detailed plans for repairing the recreated drainageway in the N $\frac{1}{2}$ of the SE $\frac{1}{4}$ of Section 16 within 15 days of receipt of the NOV. The plans must include details for repairing the rock check dams to allow them to function properly. We believe that the rock check dams, as presently installed, may have contributed to increased erosion in the drainageway. Therefore, please provide detailed plans regarding how the rock check dams will be repaired to allow them to function as intended. The rock check dams must be built according to established rock dam installation specifications, such as NRCS's Rock Check Dam Fact Sheet (attached). It is important that rock check dams be constructed using a combination of properly sized rock to ensure there are no voids that allow water to jet through the dam's structure, as indicated in Kenneth N. Brooks, et. al. book entitled "Hydrology and the Management of Watersheds", which is available for viewing online.

If you have any questions, please contact this office.

Sincerely,

James R. Deutsch
Director
Reclamation Division

Enclosure

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ROCK CHECK DAM

What is a Rock Check Dam?

A small rock dam constructed across a drainage way, swale or road ditch.

When is a Rock Check Dam Used?

Rock Check Dams are used where runoff is concentrated in a drainage way, swale, or road ditch that has lost all its natural protection due to the fire, or will receive increased flow rates as a result of fire in the contributing drainage area. The rock dams will reduce erosion and trap sediment generated from adjacent areas or the ditch itself. Rock Check Dams should be limited to use in open channels that drain 50 acres or less.

How is the Rock Check Dam Installed?

The maximum height of the rock check dam should not exceed 3.0 feet. The top of the dam should be at least 1 foot below the top of the channel or swale. The top width should be a minimum of 3 feet. The maximum spacing between the dams should be as follows:

Channel Slope (%)	<i>Rock Check Dam Spacing (feet)</i>		
	Dam Height, H		
	1 ft	2 ft	3 ft
< 2	100	200	300
2 - 5	40	80	120
5 - 10	20	40	60
10 - 15	13	25	40
15 - 20	10	20	30
> 20	not recommended		

The center of the dam shall be at least 1.5 feet lower than the sides. The base of the dam should be keyed into the channel bottom to a depth of 2 feet. The ends of the dam should be keyed into the channel sides a minimum of 4 feet. The rock should be of sufficient size and quality to meet Colorado Department of Transportation specifications for 9 inch D₅₀ Rock Riprap.

What Maintenance is Required?

The Rock Check Dam should be inspected after every rainfall event, and repaired as necessary.



FIGURE 1 - Typical Rock Check Structures

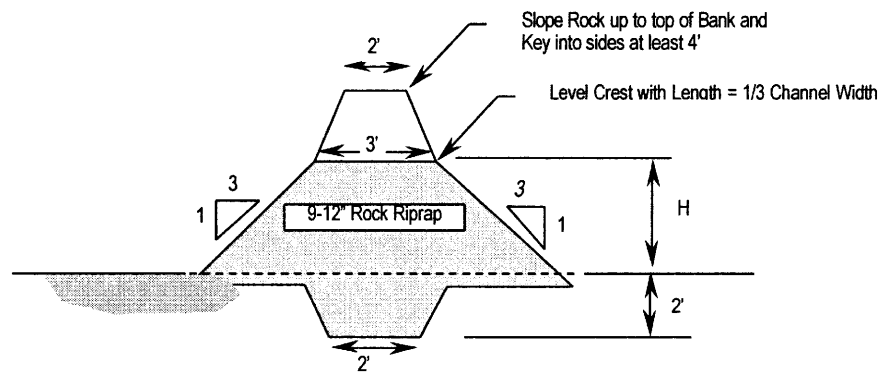


FIGURE 2 - Typical Cross Section of a Rock Check Structure

NOTE: After a fire many trees are weakened from burning around the base of the trunk. The trees can fall over or blow down without warning. Shallow rooted trees can also fall. Therefore be extremely alert when around burned trees.