

UMTRAP

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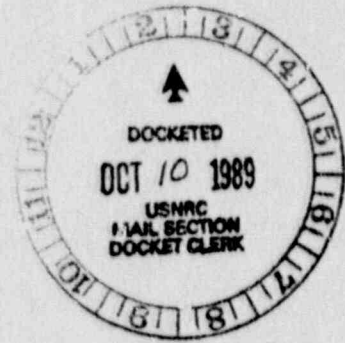
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Regulatory Publication Branch
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Office of Administration
U. S Nuclear Regulatory Commission
Washington, D. C. 20555
Attention: Ramon E. Hall

OCT 1989
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Subject: Draft NRC Staff Technical Position, "Design of Erosion Protection Covers for Stabilization of Uranium Mill Tailings Sites"

Dear Mr. Hall:

Enclosed are my comments on the subject document, submitted as requested in your letter of September 5, 1989. The identical comments are being submitted to the U. S. Department of Energy, as requested under their UMTRA Project, and to the Illinois Department of Nuclear Safety in response to a direct request from that agency.

Sincerely,

G. R. Thiers

G. R. Thiers
Principal Geotechnical Engineer
Manager, Criteria and Standards, UMTRA

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Enclosure: As Stated

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22 September 1989

M-K Environmental Services Comments on
NRC Draft Staff Technical Position,
"Design of Erosion Protection Covers for Stabilization
of Uranium Mill Tailings Sites," U.S.N.R.C., August, 1989

by

F. B. Guros and G. R. Thiers

Comment No. 1: Page 6, Sec. 2.2.2, Para. 2:

Last sentence presents "lead to the formation of a stable slope configuration", as if this were an adverse development. Possible alternate wording: "...could erode an unstable slope in a manner which could expose or release tailings to the environment before leading to the formation of a stable slope configuration."

Comment No. 2: Page 5, Para. 1 (Sec. 2.2.1)

Wording regarding design for PMP or PMF occurrence appears inappropriate. Possible alternate wording "...there is reasonable assurance that larger events will not occur during the 1000-year design life."

Comment No. 3: Page 9 Sec. 2.2.5, p. 9, last para., and Appendix A, Sec. 2.1:

Published values for allowable tractive force may not be applicable to compacted soils which exhibit dispersive or "slaking" behavior (See 'Reference' below). Candidate cover soils should be compacted and immersed to identify whether significant slaking occurs. Dispersivity of candidate soils should also be checked. Reference: Shaikh, A., et al, May 1988, "Erosion Rate of Dispersive and Nondispersive Clays", Journal of Geotechnical Engineering, ASCE, Vol. 114, No. 5., p.589.

Comment No. 4: Page A-8, Appendix A, Sec. 2.5:

Planar slopes constructed to common earthwork tolerances (e.g., ± 0.1 foot) may vary in grade downslope significantly compared with very gentle slopes which may be calculated using the NRC derivation of the Horton equation. (For example, a change of 0.2 foot in 50 feet is a slope change of 0.4 percent.)

Is an average slope considered acceptable for a design basis or must localized variations be considered?

If localized variations must be considered, the use of soil covers may be severely restricted.

Comment No. 5: Page A-9

Allowable velocity methods (e.g. Ref. A4 and "SCS, 1977" reference given in Ref. A3) should be considered acceptable in swales where flow depths are appropriate.

Comment No. 6: Page D-3, Appendix D, Sec. 2.2, Step 2:

Kirpich's Formula was not developed for planar flow on riprap-cover slopes, and will generally result in overly conservative (short) t_c values, particularly for relatively gentle slopes. More applicable methods (e.g., based on Mannings' Formula) should be considered acceptable.

Comment No. 7: Page D-4, Sec. 2.3.1:

Add the recommendation to extend the side slope riprap at least ten feet up slope beyond the top slope-side slope break point to avoid problems at the change in slope.

Comment No. 8: Page D-17, Appendix D, Sec. 4.2.2., No. 2:

Depth of "scour" (Ref. D8) is not necessarily the same as "...expected depth of gully erosion in the natural gully;...".

Is the depth of scour expected in the natural gully intended

as a minimum depth of rock protection?

Comment No. 9: Page D-6 Sec. 2.4, Step 4:

A runoff coefficient of 0.8 is highly unlikely to be appropriate for a riprap-protected cover that is designed to minimize infiltration for the purpose of compliance with groundwater standards. Antecedent moisture from most large storms will also eliminate credit that might be taken for depression storage or storage in the bedding layer. The example should be revised to use $C=1.0$