

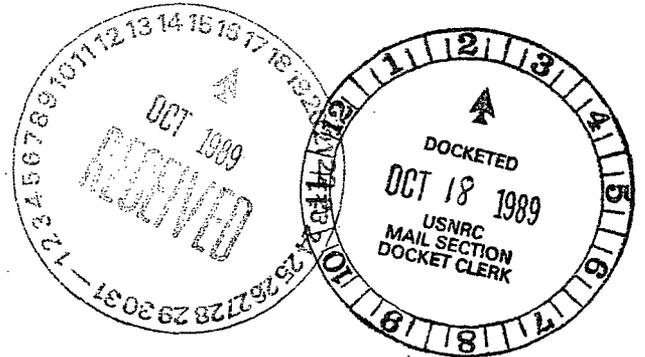
WM-73 2



Department of Energy  
Albuquerque Operations Office  
P. O. Box 5400  
Albuquerque, New Mexico 87115

OCT 12 1989

Mr. Edward F. Hawkins  
Licensing Branch 1  
Uranium Recovery Field Office  
Nuclear Regulatory Commission, Region IV  
P.O. Box 25325  
Denver, CO 80225



Dear Ed,

Enclosed for your information is one (1) copy of Project Interface Document (PID) No.'s 18-S-11 and 18-S-12 concerning the Tuba City, Arizona site. Both PIDS are considered to be a "Class II" change pursuant to Section 8.11 of the Remedial Action Plan.

PID No. 18-S-12 concerns the Department of Energy's (DOE) recent decision to cease compaction of the bedding material. Attached to the PID is a paper entitled "Reasons to Halt Bedding Compaction", dated September 1989.

Should you have any questions or feel the "Class II" designation for either PID should be redesignated as "Class I", please contact Michael Abrams of my staff at (505) 844-3941, immediately.

Sincerely,

Mark L. Matthews  
Acting Project Manager  
Uranium Mill Tailings Project Office

Enclosure

cc w/o enclosure:  
C. Watson, UMTRA  
D. Gillen, NRC-HQ  
J. Oldham, MK-F  
K. Agogino, JE

OFFICIAL DOCKET COPY

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**MORRISON  
KNUDSEN**

UMTRA PROJECT OFFICE  
PROJECT INTERFACE DOCUMENT

Site Tuba City	Date 19 Sept. 1989	PID No. 18-S-11	Site No. 18	Vic Pro No.
Originator and Location D. Bolton, San Francisco	Phone (415) 442-7586	Organization MKES	Answer By:	References: Subcontract: Subcontract No:
Subject Tuba City, Surveillance and Maintenance - Aerial Photography Coverage				

Description of Problem and Recommended Solution

Clarification

Change

PROBLEM: It is necessary to increase the project area covered by vertical photographs to include monitor wells 901 and 910 north of the highway 160, and the area to the southeast between the site boundary and Moenkopi Wash, to conform with the draft S&M Plan.

SOLUTION: Revise Spec. No. 01056 - Aerial Photography and Mapping, paragraph 1.3.A, and Drawing No. TUB-PS-10-0835, to indicate the increased area of photographic coverage.

Originator *D. Bolton* 9-19-89  
Signature Date

Disposition  Approved  Disapproved  Approved as Noted

Criteria Change?  Yes  No  
(If Yes, DOE approval required)

Class II

**CONTROLLED  
WORK COPY**

RAC Site Manager *R. E. Waddington* for

RAC Project Control *J. J. [unclear]* 9-21-89

RAC Engineering/Design *[unclear]* 9-19-89

RAC Construction Engineer *Robert E. Cooney*

Reviewed for Quality Requirements *Phil D. Lento* 9/21/89  
Signature Date

Distribution	Name	Location
RAC Site Mgr.	<u><i>R. W. [unclear]</i></u>	
DOE Proj Engr.	<u><i>M. [unclear]</i></u>	
TAC Site Mgr.	<u><i>E. [unclear]</i></u>	
RAC Site Qual. Engr.	<u><i>W. Naves</i></u>	
RAC HS&E Mgr.	<u><i>F. [unclear]</i></u>	

Name	Location
RAC Constr. Engr. Mgr.	<u><i>R. Cooney</i></u>
RAC Qual. Mgr.	<u><i>P. [unclear]</i></u>
Other	<u><i>J. Oldham</i></u> <u><i>F. Felie</i></u>
	<u><i>J. Nymas</i></u>
	<u><i>J. Garcia</i></u>

Cost/Time Est.  
 Attached  
 Not Required  
 DOE Approval Req.



**MORRISON  
KNUDSEN**

UMTRA PROJECT OFFICE  
PROJECT INTERFACE DOCUMENT

Site Tuba City	Date 25 Sept. 1989	PID No. 18-S-12	Site No. 18	Vic Pro No.
Originator and Location Derek M. Bolton, SEO	Phone 415/ 442-7586	Organization MKES	Answer By:	References: Subcontract: Subcontract No:
Subject Tuba City - Delete Bedding Compaction from Specification				

Description of Problem and Recommended Solution  Clarification  Change

Problem: It has been determined that compaction of the bedding may be detrimental to the erosion barrier performance.

Solution: Delete all references to compaction from specification 02278, Rev.3 - Erosion Protection, Paragraphs 3.1, 3.1.B, 3.1.F and 4.2. Delete Paragraph 3.1.C and renumber Paragraphs 3.1.D thru F.

Originator [Signature] 9-25-89  
Signature Date

Disposition  Approved  Disapproved  Approved as Noted

Criteria Change?  Yes  No  
(If Yes, DOE approval required)

Class II

CONTROLLED WORK COPY

RAC Site Manager [Signature] 9/27/89  
RAC Project Control [Signature] 9/27/89  
RAC Engineering/Design [Signature] 9/25/89  
RAC Construction Engineer [Signature] 9/26/89  
Reviewed for Quality Requirements [Signature] 9/27/89

Signature Date

Distribution	Name	Location	Name	Location	Cost/Time Est.
RAC Site Mgr.	<u>R. Wilhee</u>		RAC Constr. Engr. Mgr.	<u>R. Cooney</u>	<input type="checkbox"/> Attached <input type="checkbox"/> Not Required <input type="checkbox"/> DOE Approval Req.
DOE Proj Engr.	<u>M. Abrams</u>		RAC Qual. Mgr.	<u>P. Cate</u>	
TAC Site Mgr.	<u>E. Books</u>		Other	<u>J. Oldham</u> <u>F. Feliz</u>	
RAC Site Qual. Engr.	<u>W. Hayes</u>			<u>J. Hymas</u>	
RAC HS&E Mgr.	<u>E. Petelko</u>			<u>J. Garcia</u>	

UMTRA PROJECT  
TUBA CITY, ARIZONA  
REASONS TO HALT  
BEDDING COMPACTION

SEPTEMBER 1989

TUBA CITY DISPOSAL CELL  
REASONS TO HALT BEDDING COMPACTION

CURRENT SITUATION

The technical specifications for the Tuba City remedial action construction currently call for compaction of the bedding layer by four passes of a smooth drum roller. This compaction should be halted and the specifications changed. This document records the basis for that recommendation.

About ten percent of the bedding at the Tuba City pile has been placed to date. Visually, the compaction produced a very dense layer with a very smooth surface. The dense, smooth bedding will not function as a suitable or efficient bedding layer, for the reasons described below.

TECHNICAL BACKGROUND

As a matter of terminology, note that the bedding layer is often referred to as the filter layer, the filter blanket, or the drain layer. Regardless of the precise term used, the layer of importance to this recommendation is the six-inch layer of silts, sands, and gravels placed on top of the silts and clays of the radon barrier and beneath the cobbles and boulders of the erosion barrier or riprap layer.

The NRC report "Development of Riprap Design Criteria by Riprap Testing in Flumes: Phase I" NUREG/CR-4651 prepared by S.R. Abt et al. on page 76 states the following:

The 2-inch median stone diameter riprap was tested in the outdoor facility on a 20 percent slope with and without a 6-inch thick filter blanket. The average unit discharge at failure of the 2-inch riprap without a filter was 0.30 cfs/ft. However, when a 6-inch filter blanket was placed beneath the 6-inch layer of 2-inch riprap, the unit discharge at failure increased to 0.50 cfs/ft. Apparently, the presence of the filter increased the resistance to riprap movement by nearly 67 percent. The same riprap and method of placement was used in all tests."

To state the observation another way: an erosion barrier not properly bedded is likely to be 40 percent less stable than an erosion barrier that is properly bedded.

The riprap placed on the compacted and smooth, unyielding surface of the Tuba City disposal cell bedding will most likely perform as the riprap in the NRC tests placed without a bedding layer. In short, if we compact the bedding at Tuba City, the riprap will be at least 40 percent less stable than if we do not compact the bedding.

There is a very simple technical explanation for the difference in the performance of riprap placed with and without adequate bedding. Less energy is required to move an object down a smooth surface than down a rough surface. If there is no bedding or the bedding is compacted so that it is unyielding and smooth, less energy is required to fail the riprap layer than is required if the bedding surface is rough or the riprap tends to bed into the filter materials. The tests reported by the NRC merely confirm this logical deduction.

Dr. Steven Abt, of Colorado State University, was in charge of the work described in the NRC report referenced above. In addition, he has supervised many other studies on the erosional stability of riprap and cover systems such as those used on the UMTRA Project. He is probably the foremost authority on the subject of riprap stability. He concurs with the conclusions that we should not be compacting the bedding layer at Tuba City or other UMTRA Project sites.

#### CONCLUSION

Hence, there is an overwhelming preponderance of logic, test data, and expert opinion to backup the recommendation to stop compaction of the Tuba City bedding layer and to desist from this practice at other UMTRA Project sites.