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MEMORANDUM FOR: Joseph J. Holonich, Chief
High-Level Waste and Uranium
Recovery Projects Branch
Division of Waste Management/NMSS

FROM: Michael J. Bell, Chief
Engineering and Geosciences Branch
Division of Waste Management/NMSS

SUBJECT: EVALUATION OF WINDBLOWN SEDIMENT AT TUBA CITY

In accordance with your recent request, we have evaluated the potential sediment buildup problem at the Tuba City, Arizona, disposal site. Based on this evaluation, we conclude that the sedimentation problem at this site is very minor and will not affect the stability of the erosion protection. A copy of this evaluation is enclosed.

DOE has requested that we provide a copy of this evaluation to them for subsequent transmittal to the Navajo Nation. The sediment issue was originally raised at a recent States/Tribes meeting.

This review was performed by Ted Johnson. If you have any questions, he may be reached at 415-6658.

Michael J. Bell, Chief
Engineering and Geosciences Branch
Division of Waste Management/NMSS

cc: D. Rom
R. Carlson
D. Gillen
S. Wastler

Enclosure: As stated

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EVALUATION OF WINDBLOWN SEDIMENT AT TUBA CITY, ARIZONA

On May 18, 1994, Ted Johnson, Dan Rom, and Bob Carlson of the NRC staff investigated a possible sediment problem at the Tuba City, Arizona tailings remediation site. This investigation was performed at the request of Russell Edge from DOE, who escorted the staff on the site walkover.

The areas in question are located where windblown sediments have been deposited in the voids of the riprap, particularly in the diversion channels and apron areas. DOE had identified these areas as potential problem areas during routine surveillance and maintenance activities at the site. The purpose of this NRC staff investigation was to determine if the sedimentation should be considered significant or should be removed.

Based on staff observations in the site area, it appears that a very small amount of windblown sediment has been deposited in the voids of the riprap in the diversion channels and apron areas of the disposal cell. The sediment is only a few inches in depth and generally does not completely fill the rock voids. The areal extent of the sedimentation is not considered to be significant.

There appears to be no reliable method to prevent sedimentation from occurring at this site. Some windblown sedimentation can be expected to occur throughout the lifetime of this disposal cell. If DOE wishes to minimize the amount of windblown sedimentation, additional planting of grass along the disturbed areas inside the fence could be performed. However, over the long term, windstorms can be expected to transport sediment from offsite to the disposal cell. Moreover, surface runoff can be expected to deposit some waterborne sediment in the voids of the riprap in the diversion channels. Thus, it may be difficult to prevent sedimentation from occurring.

Based on staff knowledge of analytical methods for determining riprap requirements, the staff concludes that the limited amount of sedimentation that exists at this site will have no effect on the stability of the riprap. Problems would be created only if the sediment became deep enough to form gullies over the rock layer. Based on the slope of the channels and the size and amount of sediment, there should be no significant buildup at this site that would affect the safety and adequacy of the erosion protection layer. Even if sedimentation does occur, it should be flushed from the rock voids during the occurrence of storm events, and the riprap is conservatively designed to account for minor concentrations of surface runoff which may occur if flow areas should become constricted.

The staff recommends that DOE continue to pursue their regularly-scheduled monitoring of the site. Any minor sediment problems that may occur could easily be mitigated by DOE's surveillance and maintenance program.