



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 16, 2019

Mark Kautsky, Site Manager
U.S. Department of Energy
Office of Legacy Management
2597 Legacy Way
Grand Junction, CO 81503

SUBJECT: THE U.S. NUCLEAR REGULATORY COMMISSION STAFF REVIEW OF U.S. DEPARTMENT OF ENERGY REPORT ENTITLED "RESULTS OF THE LABORATORY BATCH TEST OF PHOSPHATE AMENDMENT ADDED TO SHIPROCK SEDIMENT AND GROUNDWATER" (Docket Number WM-00058)

Dear Mr. Kautsky:

I am writing in response to the U.S. Department of Energy (DOE) letter dated June 27, 2019, providing the U.S. Nuclear Regulatory Commission (NRC) with the DOE report entitled "Results of the Laboratory Batch Test of Phosphate Amendment Added to Shiprock Sediment and Groundwater" for the Shiprock, New Mexico, Uranium Mill Tailings Radiation Control Act (UMTRCA) site (Agencywide Documents Access and Management System [ADAMS] Accession Number ML19183A398). The report provides the results of the DOE's batch tests dealing with the addition of the phosphate amendment as part of an experiment to reduce uranium in groundwater. The report recommends that additional column tests be performed to further determine the efficacy of the addition of the phosphate amendment to reduce the uranium in the site groundwater. The NRC staff has reviewed the report and has the following comments and suggestions:

- 1) DOE did not discuss several chemical aspects of the batch tests that may be relevant to the use of the phosphate amendment. Suggest that the DOE include a discussion of: (a) the significant decrease in nitrate in the soil and groundwater test; (b) the slight increase in specific conductance in the soil and groundwater test; and (c) the lack of phosphate in the liquid even at time zero for the river water test.
- 2) DOE used two analytical methods for uranium, inductively coupled plasma (ICP) and kinetic phosphorescence analysis (KPA). The conclusions in the report are based on the KPA results, as the ICP results were all below the minimum analytical detection limit (MDL). Suggest that DOE verify that the KPA method is an acceptable method (e.g., ASTM D5174). Also, it would be helpful if DOE explained why the inductively coupled plasma/mass spectrometry analytical method was not used, which is widely used and likely could have achieved a sufficiently low MDL unlike the ICP method.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's ADAMS. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions concerning the NRC comments please feel free to contact me at 301-415-6749 or at Dominick.Orlando@nrc.gov.

Sincerely,

//RA//

Dominick Orlando, Senior Project Manager
Uranium Recovery and Materials
Decommissioning Branch
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No. WM-00058

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