



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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September 1, 2021

MEMORANDUM TO: Melissa C. Ralph, Acting Chief
Low-Level Waste and Projects Branch
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

THROUGH: Christopher A. McKenney, Chief *Ch A McKenney* Signed by McKenney, Christopher
Risk and Technical Analysis Branch on 08/31/21
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

FROM: A. Christianne Ridge, Senior Risk Analyst *A Christianne Ridge* Signed by Ridge, Alavanja
Risk and Technical Analysis Branch on 09/01/21
Division of Decommissioning, Uranium Recovery,
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

SUBJECT: TELECONFERENCE SUMMARY: DISCUSSION WITH THE
U.S. DEPARTMENT OF ENERGY ON MODELING OF
EVAPOTRANSPIRATION FROM THE CLOSURE COVER FOR THE
SALTSTONE DISPOSAL FACILITY

On August 26, 2021, the U.S. Nuclear Regulatory Commission (NRC) staff held a technical call with staff and contractors of the U.S. Department of Energy (DOE) to discuss the DOE model of the closure cap of the Saltstone Disposal Facility (SDF) at the DOE Savannah River Site. The NRC staff held the call to support the staff's review of the DOE 2020 SDF Performance Assessment (PA) (available in the NRC's Agencywide Documents Access and Management System [ADAMS] under Package Accession No. ML2019A055). The discussion related to the revised closure cap model (available in ADAMS under Accession No. ML21160A064) that the DOE submitted in response to the NRC Request for Supplemental Information (available in ADAMS under Accession No. ML20254A003).

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The NRC staff noted that the revised closure cap model projected that the infiltration rate would decrease as the projected thickness of the layer of soil above the erosion barrier decreased due to erosion. The NRC staff questioned that result because the main processes by which an evapotranspiration (ET) cover limits infiltration are water storage and ET, and a cover's capacity for both water storage and ET depends on the soil layer thickness. The NRC staff noted that, in the DOE document that describes closure cap model, the DOE indicated that the counter-intuitive result could be explained by increased run-off. However, the NRC staff indicated that in the water balances the DOE provided (available in ADAMS under Accession No. ML21196A077), ET accounts for a much larger fraction of the water balance than runoff does, irrespective of soil layer thickness.

The NRC staff also noted that the DOE model projected significant ET even when the soil layer above the erosion barrier reached zero thickness. The NRC staff questioned that intermediate model result because the DOE also had assumed that plant roots would not penetrate the erosion barrier. Consequently, in the DOE conceptual model, plants could not live and transpire water without a soil layer above the erosion barrier.

The DOE acknowledged the NRC staff concern and proposed that the DOE evaluate plant-related parameters in the closure cap model. The DOE indicated that it expected that correcting the plant-based parameters would decrease projected ET and increase projected runoff without significantly changing the projected infiltration rate. The NRC staff noted that increased projected runoff would affect the NRC staff review of erosion of the closure cap. In response to an NRC question, the DOE indicated that it would inform the NRC staff of the expected date of providing revised information after it had an opportunity to evaluate the effects on the closure cap model.

Call Participants

U.S. NRC	U.S. DOE	U.S. DOE Contractors
Hans Arlt	Pat Suggs	Steven Hommel
Christopher McKenney		Larry Romanowski
A. Christianne Ridge		Kent Rosenberger
Harry Felsher		

Teleconference Summary: Discussion with the U.S. Department of Energy on Modeling of Evapotranspiration from the Closure Cover for the Saltstone Disposal Facility in the U.S. Department of Energy Response to the U.S. Nuclear Regulatory Commission Request for Supplemental Information
 DATE September 1, 2021

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