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

September 10, 1999

Dr. Donald L. Baker
Aquarius Engineering
2000 West Maine Street
Fayetteville, AR 72701-6257

Dear Dr. Baker,

This responds to the technical questions you raised with Dr. Richard P. Savio of the U.S. Nuclear Regulatory Commission (NRC) Advisory Committee on Nuclear Waste, in a letter dated July 13, 1999, and an electronic mail dated September 2, 1999. I understand that you are concerned about the accuracy and possible errors in the numerical modeling of the unsaturated zone at Yucca Mountain by the U.S. Department of Energy (DOE). We appreciate your concern and we will certainly take your comments into consideration in our ongoing reviews of the unsaturated zone model.

Our technical staff is aware of the limitations of using numerical models to assess the performance of a potential high-level waste repository at Yucca Mountain, including unsaturated zone modeling. Technical staff from NRC and the Center for Nuclear Waste Regulatory Analyses have been reviewing and will continue to review unsaturated zone models. Your comments will be considered in the next technical staff review. That review will be documented in a report to be issued next fiscal year under the title: "Issue Resolution Status Report, Key Technical Issue: Unsaturated and Saturated Flow under Isothermal Conditions, Revision 3," currently scheduled for publication in July 2000. Issue Resolution Status Reports (IRSRs) have been issued annually by the Division of Waste Management since 1998. They are the primary mechanism we use to provide NRC comments to DOE on technical issues of concern to the staff. A copy of the current IRSR pertaining to the unsaturated and saturated zone flow issues (Revision 2, June 1999) is enclosed. The IRSRs are also posted on the INTERNET (http://www.nrc.gov/NMSS/DWM/irsr.htm).

The U.S. Department of Energy has the primary responsibility for development and validation of all numerical models for Yucca Mountain. However, the staff review can consider information provided by third parties like yourself in conducting our review of DOE models.

Once again, we appreciate your concern, and we thank you for your technical input. Neil Coleman of the NRC staff has the lead on the staff's review of unsaturated and saturated

WM-11
102
NH16

NRC FILE CENTER COPY
99-163

9909200133 990910
PDR WASTE
WM-11 PDR

zone models. You may reach him by telephone at (301) 415-6615, or by e-mail at NMC@NRC.gov if you have any further questions.

Sincerely,

C. William Reamer, Chief
High-Level Waste and
Performance Assessment Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: Issue Resolution Status Report,
Key Technical Issue:
Unsaturated and Saturated
Flow under Isothermal
Conditions, Revision 2.

cc: W. Barnard
A. Gill

zone models. You may reach him by telephone at (301) 415-6615, or by e-mail at NMC@NRC.gov if you have any further questions.

Sincerely,

C. William Reamer, Chief
High-Level Waste and
Performance Assessment Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: Issue Resolution Status Report,
Key Technical Issue:
Unsaturated and Saturated
Flow under Isothermal
Conditions, Revision 2.

cc: W. Barnard
A. Gill

DISTRIBUTION:

File Center	NMSS r/f	DWM r/f/t/f	NColeman	JCiocco	ACNW
Geos. r/f	PUBLIC				

DOCUMENT NAME: S:\DWM\ENGB\LSH\BAKER22.999

OFC	HLWB	H	HLWB		HLWB					
NAME	LHamdan	AAH	DBrooks		WReamer	CWR				
DATE	9/10/99		9/10/99		9/10/99					

OFFICIAL RECORD COPY

1) This document should/should not be made available to the PUBLIC _____ / /
(Initials) (Date)

2) This document is/is not related to the HLW program. If it is related to HLW, it should/should not be placed in the LSS. _____ / /
(Initials) (Date)