Questa Engineering Corporation
1010 Tenth Street
Golden, CO 80401

M E M O R A N D U M

DATE: February 13, 2001
TO: Mal Murphy [malmurphy@home.com]
CC: Danielle Fife [dfife@nrff.com]
RE: **SATURATED ZONE FLOW & TRANSPORT AMR Reviews**
                 Calibration of the Site-Scale Saturated Zone Flow Model
                 MDL-NBS-HS-000011

Key items in this AMR include:

1. Section 5, Assumption 1. "It is assumed that a steady-state model is sufficient for calibration purposes and the intended uses of the SZ flow model." … Says it is likely that equilibrium has occurred – instead, why don't they compute whether the model would equilibriate over this time period. **The need for transient analyses was one of Parviz Montazer's investigations last year.**

2. Section 6.7.2, p. 47, paragraph 1. "The base-case SZ flow and transport model uses 115 water level and head measurements and 10 flux values for calibration targets." It is not stated that the flux values are computed or inferred, not actual values.

3. Section 6.7.5. 2, p. 58. "Realistic quantification of the percentage of local recharge in groundwater beneath Yucca Mountain is not possible with the currently available hydrochemical database. The conservative position on this issue would be to assume shallow groundwater is composed entirely of local recharge." **Assuming that local recharge is the main component, a large-scale drawdown test of the type being**

considered by Nye Co. would help remove potential transport fluids (water) and confirm this assumption.

4. Section 6.7.7. 4, p. 70. **This paragraph notes that data from early tests reported in a 1975 publication had different permeabilities from recovery tests than from drawdown tests**. Questa has not reanalyzed those tests, but notes that skin effect or boundary effects, both of which were present on many EWDP tests, could be the cause of that observation. **It would probably be worthwhile to reanalyze those tests with current interpretation technology**.

5. Section 6.9.2, p. 90, bottom paragraph. The site-scale SZ flow model led to clumps of positive and negative residuals, "indicating some sort of bias is present in the model conceptualization." P. 94, paragraph 2: "This discrepancy should be investigated." I couldn't have said it better myself.