

April 21, 1999

MEMORANDUM TO: John W.N. Hickey, Chief
DCB/DWM/NMSS

FROM: C.W. Reamer, Chief /signed
HLWB/DWM/NMSS

SUBJECT: TECHNICAL ASSISTANCE REQUEST FOR THE WEST VALLEY
DEMONSTRATION PROJECT'S ANALYSIS OF PARTITION
COEFFICIENT AND SOLUBILITY VALUES USED FOR THE WEST
VALLEY ENVIRONMENTAL IMPACT STATEMENT RELEASE
MODEL

This memorandum is in response to your February 25, 1999, technical assistance request to ENGB to review and comment on SAIC's paper entitled, "Values of Partition Coefficients and Solubility Used in West Valley EIS Release Models." You also requested that ENGB review and comment on the CNWRA review of the SAIC paper, as provided in the draft November CNWRA report. Our review of both documents is attached.

If you have any questions, please call Tae Ahn.

Attachment: As stated

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ENGB REVIEW

OF

- (1) "Values of Partition Coefficients and Solubility Used in West Valley Environmental Impact Statement (EIS) Release Models" prepared by Science Applications International Corporation (SAIC) for the West Valley Demonstration Project of the NRC, 1998, and**
- (2) "Technical Review of Values of Partition Coefficient and Solubility Used In West Valley Environmental Impact Statement Release Models (Draft)" prepared by D. Pickett, C. Brossla, and P. Mackin, Center for Nuclear Waste Regulatory Analyses, 1998**

GENERAL COMMENTS

- 1. The SAIC report addressed important aspects in the estimation of radionuclide release from the West Valley site. It estimated release concentrations based on liquid-solid partitioning (i.e., sorptive radionuclide release through a soil matrix); estimated maximum concentrations based on solubility and groundwater flow; and estimated maximum concentrations based on corrosion of stainless steel components containing activated radionuclides in the reactor. The report appropriately covered most of the important issues related to West Valley site waste release models, and ENGB agrees with CNWRA that the overall SAIC approach to develop release models for performance assessment is valid.**
- 2. ENGB generally agrees with CNWRA comments and recommendations for further analysis or action by SAIC or DOE as noted below in the various subject areas. Additional ENGB comments are provided as indicated.**

SPECIFIC COMMENTS

INTRODUCTION

ENGB staff agree with the CNWRA view.

PARTITION COEFFICIENTS

ENGB staff agree with the CNWRA view.

SOLUBILITY ESTIMATIONS

ENGB staff agree with the CNWRA view. Additionally, ENGB staff suggest that the decay and ingrowth of radionuclides be considered in the estimation of long-term radionuclide releases.

Attachment

COLLOIDS

ENGB staff agree with the CNWRA view. Additionally, ENGB staff suggest that: (1) the colloid formation process, and (2) the formation and transport of Am colloids be analyzed. Only colloid filtration (transport) was addressed. Am tends to form colloids more readily than Pu.

CORROSION RELEASE MODEL

ENGB staff agree with the CNWRA view. Additionally, ENGB staff suggest that Equation (3) be validated. It is not clear how the metal corrosion increases the radionuclide release rate.

CHOICE OF BASE CASE PARAMETERS

ENGB staff agree with the CNWRA view. Additionally, ENGB staff suggest that the results in Table 6 be clarified whether they are fractional releases or fractional release rates. The fractional release rates should be per given time.

EDITORIAL COMMENT

The reference to "table 1" at the bottom of page 2-2, the top of page 2-3, and the bottom of page 3-1 should be corrected to refer to "table 3" of the SAIC report.