WPO 22508

NS-1: DEWEY LAKE DATA COLLECTION AND COMPILATION
Planning Memo of Record

TO: D. R. Anderson

FROM: R. Beauheim

SUBJECT: FEP Screening Issue NS-1

STATEMENT OF SCREENING ISSUE

There are two basic screening issues regarding the Dewey Lake redbeds:

Is there now, or will there be at any time over the next 10,000 years, a laterally continuous water table within the Dewey Lake? If so, it can conceivably be argued that, because of the relatively pure nature of Dewey Lake waters where they have been encountered, that: a) this water table should be monitored during the active-institutional-control phase of the WIPP; and b) from a regulatory standpoint, potable water does exist within the WIPP site area.

Is there any significant potential for radionuclide release through the Dewey Lake to the accessible environment (i.e. across the site boundary) under either undisturbed or human-intrusion conditions? If so, then contaminant/radionuclide transport within the Dewey Lake might need to be explicitly included in future repository-evaluation calculations.

The revised "baseline" position for contaminant transport within the Dewey Lake, as of 2/95, is that: a) there is no laterally continuous "water table" within the unit in the site area; and b) there will be no contaminant transport through the Dewey Lake to the accessible environment, under either undisturbed or human-intrusion conditions. This approach is based on the assumed completion of this activity. If this effort is not funded, it will be necessary to return to a position in which any (or at least a portion of any) radionuclides partitioned into the Dewey Lake in calculations of brine flow are assumed to be releases to the accessible environment.

APPROACH
Calculation Design

The Dewey Lake evaluation study consists of several small efforts. These include:

Compilation of existing lithologic, stratigraphic, and hydrologic data for the Dewey Lake and Dockum Group.

Analysis of existing Dewey Lake core from the core library.

Analysis of Dewey Lake core to collected at the H-19 pad.

These three closely-coordinated efforts will lead directly to:

Development and documentation of a conceptual flow and transport model for the Dewey Lake.

Definition of a reasonable sorption-distribution coefficient for the Dewey Lake (K_d), using existing literature values, and considering colloid transport.

SWCF-A: 1.1.6.3: PA: NG: TSK; NSFEP-SCRN (2cys)

Performing a short pumping test at the WQSP-6a well, in order to obtain site-specific hydraulic data; g) perform a 1D infiltration calculation through the WIPP unsaturated zone.

These two efforts, combined with the conceptual model derived from the first three steps, will provide both literature-based and site-specific information required for:

Use of the regional-scale 3D model in one-dimensional vertical calculations to calculate the effects of climate change on water levels and hence any distribution of a water table within the Dewey Lake.

Completion of lateral one-dimensional contaminant-transport calculations to assess the feasibility of radionuclide releases through the Dewey Lake quantitatively.

Resource Estimate for NS-1: DEWEY LAKE DATA COLLECTION AND COMPILATION

Total cost: $150 K

Duration: one year to final reporting.

Reporting of conceptual and numerical model requirements to PA: 9/95.

Final reporting of required PA parameters and distributions for evaluation of Dewey Lake: 3/96.